May your wealth be easily divisible by two: Marital dissolution and personal wealth of German men and women over the life course

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May your wealth be easily divisible by two: Marital dissolution and personal wealth of German men and women over the life course

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Abstract

Wealth provides advantages above those provided by earnings including the access to an objective and subjective economic buffer during financial hardship (Spilerman, 2000). However, individuals differ greatly in their ability to generate and maintain wealth (Killewald, Pfeffer, & Schachner, 2017). The lack of sufficient private wealth is becoming progressively problematic, as even countries with generous welfare systems, such as Germany, have increasingly emphasised personal economic responsibility throughout the life course (Seeleib-Kaiser, 2016). It is thus urgent to understand the factors that disrupt individuals' wealth accumulation given their implications for the economic wellbeing of the population in forthcoming years.

While family dynamics have been recognised as a source of stratification (McLanahan & Percheski, 2008), marital dissolution has received little attention within wealth stratification research despite this event being linked to a range of financial – and potentially wealth-relevant – burdens (e.g. relocation costs, administrative divorce costs). This thesis investigates the association between marital dissolution and wealth of men and women in Germany. I thereby expand on an incipient body of US research that found that marital dissolution is associated with substantially lower household or per-capita wealth (e.g. Zagorsky, 2005; Zissimopoulos, Karney, & Rauer, 2015). These studies, however, almost exclusively used cross-sectional data and static theories, although the processes linking marital dissolution and wealth are likely dynamic, with important wealth-related processes taking place before and after marital separation and divorce. Furthermore, due to data restrictions, previous studies insufficiently considered gender differences although the economic outcomes of marital dissolution, at least for income, have been shown to differ between men and women. To address these shortcomings in previous research, I aim to (*a) explain how marital dissolution affects individuals' wealth levels and wealth accumulation, including immediate and long-term outcomes*, and *(b) explore how, and to what degree, the association between marital dissolution and wealth is gendered.*

I rely on three methodological and theoretical developments to address these aims. *First*, I draw on the life course framework, which provides a set of heuristics that acknowledge patterns of stability and change. *Second*, addressing limitations of static methods applied in previous research, I build on statistical methods that provide more appropriate tools to analyse patterns of progression, individual change, and dynamic processes. My quantitative approach includes panel regressions and sequence analysis. *Third*, I rely on novel longitudinal wealth data from the German Socio-Economic Panel (SOEP). These data are unique in that they were collected separately for each household member (i.e. at the personal level), which enable a gender-sensitive approach.

My thesis highlights a range of key findings: *First*, marital dissolution is associated with a substantial

immediate wealth penalty for both men and women. Examining changes in wealth along the multi-stage process of marital dissolution (i.e. anticipation of the dissolution of the marriage, separation of the marital household, legal divorce, post-divorce adjustment), it becomes evident that the majority of wealth, and particularly housing wealth, is lost during marital separation. Administrative divorce costs add no additional wealth penalty. *Second*, although both men and women experience substantial personal wealth penalties and end up with similar housing wealth levels, divorced women hold lower financial wealth. Despite common public perceptions that *all* available resources are divided equally at divorce, some within-couple wealth inequalities – particularly in financial wealth – are maintained in line with legal regulations. Thus, women endure a financially more precarious position after divorce. *Third*, previous experiences of marital dissolution are commonly associated with substantially lower wealth in late working age for both men and women, although women are more disadvantaged. *Finally*, lower wealth of ever-divorced men and women in late working age compared to continuously married men and women is a direct result of the immediate wealth shocks experienced around marital dissolution rather than divorcees' differences in wealth accumulation rates after divorce. Thus, results also highlight that divorcees cannot compensate initial shocks over time. Furthermore, selection effects by which those with less wealth are disproportionately more likely to divorce, can partially explain divorced men's initial wealth gaps but not the gap for women.

I conclude that marital dissolution is a life course event that importantly influences men's and women's wealth standings and prospects. More precisely, it is associated with substantial reductions in men's and women's personal wealth with lasting economic repercussions for the majority of divorcees. This can, for instance, have flow-on effects on divorcees' social participation, welfare reliance, or their social network. Deflated wealth by implication also has economic consequences for children, as divorced parents likely have fewer resources that can be passed down. Although my thesis provides an important first step towards a more thorough understanding of the economic consequences of marital dissolution for private wealth, more research is needed to explicate potential within and across country heterogeneity. Overall, my thesis highlights the importance to include wealth in addition to income when assessing the economic wellbeing of divorced families.

Declaration by author

This thesis is composed of my original work, and contains no material previously published or written by another person except where due reference has been made in the text. I have clearly stated the contribution by others to jointly-authored works that I have included in my thesis.

I have clearly stated the contribution of others to my thesis as a whole, including statistical assistance, survey design, data analysis, significant technical procedures, professional editorial advice, financial support and any other original research work used or reported in my thesis. The content of my thesis is the result of work I have carried out since the commencement of my higher degree by research candidature and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution. I have clearly stated which parts of my thesis, if any, have been submitted to qualify for another award.

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Publications included in this thesis

[1] **Kapelle, N.,** & Baxter, J. (2020). Marital dissolution and personal wealth: Examining gendered trends across the dissolution process. *Journal of Marriage and Family, Online first*. DOI: 10.1111/jomf.12707

[2] **Kapelle, N.,** & Vidal, S. (2020). Diversity in family life course patterns and intra-cohort wealth disparities in late working age. SOEPpapers, No. 1092. Berlin, Germany: DIW.

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[1] **Kapelle, N.** & Vidal, S. (2020). Diversity in family life course patterns and intra-cohort wealth disparities in late working age. Submitted to *Journal of Population Research*

Other publications during candidature

Peer-reviewed papers

[1] **Kapelle, N.** & Lersch, P. M. (2020). The accumulation of wealth in marriage: Over-time change and within-couple inequalities. *European Sociological Review, Online first*. doi:10.1093/esr/jcaa006

[2] Spallek, M., Haynes, M., Baxter, J. & **Kapelle, N.** (2020). The value of administrative data for longitudinal social research: A case study investigating income support receipt and relationship separation in Australia. *International Journal of Social Research Methodology, 23*(5), 467-481. doi:10.1080/13645579.2019.1707984

Conference abstracts and papers

[1] **Kapelle, N.** & Vidal, S. (2020) Diversity in family pathways and personal wealth disparities at late working age. Paper presented at EPC 2020 webinars, 24.06 – 26.06.2020.

[2] **Kapelle, N.** & Baxter, J. (2019) Marital dissolution and personal wealth: Examining gendered trends across the dissolution process. Paper presented at 2019 conference of the European Divorce Network, 17.10 – 19.10.2019, Florence, Italy.

[3] **Kapelle, N.** & Baxter, J. (2019) Marital dissolution and personal wealth: Examining gendered trends across the dissolution process. Paper presented at Society for Longitudinal and Lifecourse Studies (SLLS) 2019 Annual Conference, 25.09 – 27.09.2019, Potsdam, Germany.

[4] **Kapelle, N.** & Vidal, S. (2019) Diversity in family pathways and personal wealth disparities at late working age. Paper presented at Society for Longitudinal and Lifecourse Studies (SLLS) 2019 Annual Conference, 25.09 – 27.09.2019, Potsdam, Germany.

[5] **Kapelle, N.** & Lersch, P. (2019) The accumulation of wealth in marriage: Over-time change and intra-couple inequalities. Invited paper presentation at the international workshop "Money within the household", 03.07 – 05.07.2019, Oxford, United Kingdom.

[6] **Kapelle, N.** & Lersch, P. (2018) The accumulation of wealth in marriage: Over-time change and intra-couple inequalities. Paper presentation at the international workshop "Inequality within Couples - On the Origin and Relevance of the Intra-household Distribution of Economic Resources", 01.10 – 02.10.2018, Berlin, Germany

[7] **Kapelle, N.** & Lersch, P. (2018) The accumulation of wealth in marriage: Over-time change and intra-couple inequalities. Paper presentation at SOEP2018 - 13th International German Socio-Economic Panel User Conference, 19.07 – 20.07.2018, Berlin, Germany.

[8] **Kapelle, N.** & Lersch, P. (2018) The accumulation of wealth in marriage: Over-time change and intra-couple inequalities. Paper presentation at Society for Longitudinal and Lifecourse Studies (SLLS) 2018 Annual Conference, 09.07 – 11.07.2018, Milan, Italy.

[9] Spallek, M., Haynes, M., Baxter, J., & **Kapelle, N.** (2017). The value of administrative data for longitudinal social research: A case study investigating income support receipt and relationship separation in Australia. Paper presented at International Life Course Conference, 24.10. – 26.10.2020, Sydney, Australia.

[10] **Kapelle, N.** (2017) The gendered association between union dissolution and savings: A longitudinal analysis of Australian panel data. Paper presentation at RC28 Spring Meeting, 30.03 – 01.04.2017, Cologne, Germany.

[11] **Kapelle, N.** (2016) May your assets easily be divisible by two: The association between union dissolution and wealth in Australia. Paper presented at Australian Sociological Association (TASA) Conference, 28.11 – 01.12.2016, Melbourne, Australia.

[12] **Kapelle, N.** (2016) May your assets easily be divisible by two: The association between union dissolution and wealth in Australia. Paper presented at Longitudinal Data Conference 2016, Australian Government Department of Social Services, 25.10 – 27.10.2016, Canberra, Australia.

Contributions by others to the thesis

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Statement of parts of the thesis submitted to qualify for the award of another degree

No works submitted towards another degree have been included in this thesis.

Research involving human or animal subjects

This project has been reviewed by the Office of Research Ethics and is deemed to be exempt from ethics review under the National Statement on Ethical Conduct in Human Research and University of Queensland policy. Ethics approval number 2020001771. See Appendix D.

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In line with notions from the Life Course Framework that postulate the importance of historical events for the life course of individuals, I feel utterly privileged that I have been able to always make choices about my own life including travelling, and eventually moving to Australia. I would like to acknowledge that this is a privilege that too many people born during the communistic regime of the German Democratic Republic did not have or had to pay for with their lives.

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Family dissolution, marriage, economic wellbeing, wealth, gender, inequality, panel data analysis, life course, family law, sequences analysis

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Fields of Research (FoR) Classification

FoR code: 1608, Sociology, 60%

FoR code: 1603, Demography, 25%

FoR code: 0104, Statistics, 15%

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List of Abbreviations

ASW	Average silhouette width
CAD	Cumulative advantage/disadvantage
CAPI	Computer-assisted personal interviews
CAWI	Computer-assisted web interviews
CH	Calinski-Harabasz
COVID-19	Coronavirus disease 2019
EU	European Union
FD	First difference
FML	Full maximum likelihood
FRG	Federal Republic of Germany
GDR	German Democratic Republic
GDP	Gross domestic product
GLS	Generalised least-squares
HGSD	Hubert's Sommers' D
HRS	Health and Retirement Study
IHS	Inverse-Hyperbolic-Sine
LSDV	Least squares dummy variable
MAR	Missing at random
MCAR	Missing completely at random
MICE	Multiple imputation by chained equations
ML	Maximum likelihood
NMAR	Not missing at random
OECD	Organisation for Economic Co-operation and Development
OM	Optimal matching
OLS	Ordinary least square
PAPI	Paper-and-pencil interviews
PBC	Point Biserial Correlation
POLS	Pooled ordinary least square
RML	Restricted maximum likelihood
SIOPS	Standard International Occupational Prestige Scale
SOEP	German Socio-Economic Panel
UK	The United Kingdom of Great Britain and Northern Ireland
US/USA/United States	The United States of America

1. Chapter – Introduction

This thesis investigates the association between marital dissolution and personal wealth of men and women in Germany using data from the German Socio-Economic Panel (SOEP). Although a large body of research has examined the economic consequences of marital dissolution for men's and women's incomes, the consequences for wealth have been largely under-researched. This is problematic, because wealth and income are two distinctly different measures of economic wellbeing and only weakly correlated. Thus, income-based studies can provide only little indication of the consequences of marital dissolution on wealth. The present thesis contributes to an incipient body of literature on wealth and marital dissolution to provide a more thorough understanding of the wealth of divorcees. My thesis results contribute important evidence to a growing body of wealth research.

To more thoroughly introduce my thesis topic, I will elaborate on my motivation and research design, including thesis objectives and research questions, within the present introductory chapter. Furthermore, I will summarise previous empirical research and highlight methodological and theoretical limitations. Based on these limitations, I emphasise recent developments that I will be built upon to advance research on the association between marital dissolution and wealth. I will also use the introductory chapter to clarify relevant aspects of the German context, including private wealth accumulation, demographic family developments, the economic standing of men and women, and relevant features of German family law. I will conclude the introduction with a summary of my thesis contributions and overall structure.

1.1 Setting the scene

Prior to the outbreak of COVID-19 and the economic downturn associated with the pandemic, formal measures of economic wellbeing and security had placed Germany on a secure footing with a stable overall GDP growth rate, declining unemployment rates, and rising average household income and private wealth (Credit Suisse, 2019; Grabka & Halbmeier, 2019; Piketty, 2014). Such strong economic standing and growth is an excellent way to increase living standards and opportunities within the society. However, households and individuals differ markedly in the rate at which they benefit from the apparent prosperity, with economic inequalities soaring in recent decades (Piketty, 2014).

While income inequality has been widely recognised by policymakers, stratification researchers, and the public, wealth inequality has received comparatively little attention despite higher disparities in the distribution of wealth compared to income (Keister & Moller, 2000; Killewald et al., 2017;

Skopek, Buchholz, & Blossfeld, 2014; Wolff, 2016). Within the OECD, the top 10 percent of income earners receive around 24 percent of all disposable income, whereas the top 10 percent of households hold about half (52 percent) of all household wealth. In Germany, differences between income and wealth inequality are even larger, with 23 percent of income and 60 percent of wealth held by the top 10 percent (OECD, 2019). Within the Eurozone, Germany thus ranks amongst the countries with the highest wealth inequalities (European Central Bank, 2020).

Despite the high prevalence of wealth inequality, the drivers behind it have not been fully explored. This is partially a result of the general oversight of wealth as a dimension of social inequality – and economic wellbeing particularly – within the sociological literature (Keister, 2000; Spilerman, 2000). Thus, until more recently, income had been considered the main proxy of economic wellbeing within sociological research, which was reinforced by a lack of comprehensive survey-based wealth data. Income and wealth are, however, distinctly different and correlate only weakly. This means that income measures alone insufficiently describe the economic wellbeing of households and their members (Killewald et al., 2017; Rodríguez, Díaz-Giménez, Quadrini, & Ríos-Rull, 2002). Whereas income refers to the current "flow" of economic resources (e.g. wages, returns of investment, pensions, and social transfers), wealth, defined as the sum of assets minus liabilities (e.g. Killewald et al., 2017, p. 380), refers to a "stock" of resources.[1] As a result, income is susceptible to sudden changes due to expected and unexpected economic shocks such as ill health, care-related employment breaks, or unemployment (Wolff & Zacharias, 2009). This income volatility has been highlighted in recent months through compulsory working hour and wage reductions, as well as redundancies due to containment measures on the COVID-19 pandemic. Compared to income, wealth reflects a resource stock that – depending on the available level of wealth – can be used to support current and future consumption even in the absence of income. Some wealth components can also be beneficial without being consumed, such as the family home (Keister, 2000). Thus, access to sufficient wealth provides an important real and psychological safety net.

Over recent decades, this economic safety net function has gained importance. Even countries with generous welfare systems, such as Germany, have increasingly emphasised personal responsibility and more market-based solutions to ensure the economic wellbeing of individuals and households in light of an aging population (Ebbinghaus, 2015; Seeleib-Kaiser, 2016). The accumulation of sufficient private wealth and, thus, the establishment of financial security over the life course have become pressing matters to households and their members. A thorough understanding of factors that

[1] Net wealth is also referred to as net worth. For readability reasons, I will use the term wealth instead of net worth throughout the thesis to refer to the sum of assets minus liabilities.

may hinder households and their members to establish and maintain this safety net is of tremendous interest to governments and society in order to minimise welfare reliance, ensure social participation (particularly of their most vulnerable members), and identify aspects that may further contribute to present economic inequalities.

In one of the first sociological overview articles of wealth stratification and its consequences, Keister and Moller (2000) emphasised that family structure plays "an important role in creating and maintaining differences in wealth ownership" (p. 73). Wealth differences between family types emerge, for instance, through institutional opportunity and constraint structures that differ between families (e.g. tax advantages for the married), but also family structure-related differences in consumptions costs (e.g. consumption costs generally increase with a rising number of children), financial behaviour (e.g. difference in saving motives or spending habits), or resource flows (e.g. income levels or financial support from family). Additionally, the likelihood of transitioning between family structures is socially stratified along wealth-relevant characteristics. For instance, more economically advantaged individuals with higher wealth accumulation potentials have been found to be more likely to enter marriage, whereas less economically advantaged individuals are more likely to stay single or cohabit (Eads & Tach, 2016; Gibson-Davis, Edin, & McLanahan, 2005; Gibson-Davis, Gassman-Pines, & Lehrman, 2018). Finally, transitions between family states, such as entering marriage or a marital dissolution, may themselves be associated with wealth increases or declines as a form of financial turning points. Thus, family transitions are of particular interest to stratification research as a trigger point for changes in wealth levels and wealth accumulation potentials. In the present thesis, I focus on marital dissolution and its association to the wealth of men and women.

1.2 Thesis objectives, questions, and design

How marital dissolution generates economic instability, and thus potentially relates to inequalities, is of particular interest due the historically high divorce rates in most European societies over the last decades, as well as the increasing normalisation of divorce as part of a contemporary life course (Eurostat, 2018; PORDATA, 2020; Stevenson & Wolfers, 2007; Van Winkle, 2018). On average, the divorce-to-marriage ratio quadrupled within the European Union (EU), from 11.3 divorces per 100 marriages in 1970 to 44.3 divorces per 100 marriages in 2010 (PORDATA, 2020). Similar trends apply to Germany, which will be discussed in more detail in section 1.5.

The economic consequences of marital dissolution for spouses and their children have been the focus of ample research. Since the 1980s, studies have consistently highlighted substantial declines in

women's disposable, adjusted household income[2] associated with marital dissolution, whereas men's income has been shown to be less affected; some studies have even highlighted men's income improvements around marital dissolution (Andreß, Borgloh, Brockel, Giesselmann, & Hummelsheim, 2006; De Vaus, Gray, Qu, & Stanton, 2017). Studies on income recovery have, thus, mainly focused on women's post-divorce coping and examined mechanisms such as (re)employment and remarriage, as well as the protective function of different welfare state regimes (Jansen, Mortelmans, & Snoeckx, 2009; Mortelmans & Jansen, 2010; Pasteels & Mortelmans, 2017; Wu & Schimmele, 2005).[3]

Compared to income, the consequences of marital dissolution for men's and women's wealth have received only little attention. Based on the previously highlighted substantial differences between income and wealth, in-depth income research can, however, only provide limited evidence on how marital dissolution is associated with wealth. Although an incipient body of research (which will be elaborated in section 1.3) has provided first indications on the economic consequences of marital dissolution for wealth, previous research efforts were limited by two main shortcomings: *Firstly*, previous studies were restricted by a lack of longitudinal wealth data and/or detailed data on marital biographies. The majority of studies have therefore been characterised by a longstanding overreliance on cross-sectional data and theory (i.e. static methods and theory) which do not account for changes over time. This is a distinct limitation as the processes linking marital dissolution and wealth accumulation are likely dynamic, with important wealth-related processes taking place both prior to divorce and in the following years. *Secondly*, wealth data have commonly been collected at the household level, meaning that one reference household member provides wealth information for the entire household. For married spouses, this assumes that both spouses equally own and access all household resources, which has been criticised and refuted by several researchers (Grabka, Marcus, & Sierminska, 2015; Joseph & Rowlingson, 2012). To compare wealth prior to marital dissolution to wealth after this event, household-level wealth data require researchers to make assumptions about the split of the available household wealth – for instance, assuming that household wealth is "simply" divided by two through marital dissolution. This stands in contrast to the *de jure* regulations about the division of wealth, which are generally more complex and regularly exclude some wealth components (e.g. pre-marital wealth) and, depending on the country, consider other aspects such as

[2] Household income is commonly adjusted for the household size. Several adjustment methods including the per capita approach, the OECD equivalence scale, the OECD-modified scale or the square root scale have been suggested and used in previous research (Martin, 2017; OECD, n.d.).

[3] Only few studies provided an analysis of men's post-divorce economic coping. These include research by Raz-Yurovich (2011), who examined employment trajectories of men and women after divorce, and a study by Jansen et al. (2009), who compared income trajectories of men and women by their employment and re-partnering behaviour.

the future wellbeing of spouses and children. Additionally, crude assumptions about the division of wealth at divorce may overlook potential gender bias in the actual division of property, for instance, based on perceptions of higher entitlements for the main income earner – commonly men (Bessière, 2019). Overall, household-level wealth data have thus limited gender-sensitive analyses of the association between marital dissolution and wealth.[4]

To address these two shortcomings of previous research, the present thesis aims to:

1. *Explain how marital dissolution affects individuals' wealth levels and wealth accumulation, including immediate and long-term outcomes.*
2. *Explore how, and to what degree, the association between marital dissolution and wealth is gendered.*

I rely on three theoretical and methodological developments to help me address these aims and advance research on the economic consequences of marital dissolution for wealth. These developments also define the research design of my thesis: *Firstly*, the growing popularity of the life course approach – which seeks to understand factors that shape individuals' lives from birth to death – provides a set of heuristics that acknowledge time, timing, and long-term patterns of stability and change in contrast to previous static theories (George, 2003, p. 671). My theoretical approach is enriched, for instance, by ideas about the anticipation of events like marital dissolution or the long-term economic constraints that may result from marital dissolution for the accumulation of wealth and wealth levels in older age. *Secondly*, the life course scholarship has also been closely connected to advancements in statistical methods and longitudinal data collection that provide tools to better describe patterns of progression, individual change, and dynamic processes than was previously possible with cross-sectional data and methods (Brüderl, Kratz, & Bauer, 2019; Mayer, 2019). Although longitudinal data and methods have been widely used within social science over the last decades, they have been applied insufficiently to examine the association between marital dissolution and wealth. This is problematic, as previously applied cross-sectional methods only enable an assessment of point-in-time wealth level disparities (e.g. wealth levels of different family types in a specific year), whereas longitudinal data facilitate the analysis of within-person wealth changes over time (e.g. an individual's wealth in years before divorce compared to the same person's wealth in years after divorce). Although a longitudinal research design guided by the life course framework can

[4] Within the present thesis, I refer to male and female by the term "gender". I like to acknowledge that gender itself is not a binary construct and generally refers to a broader and fluid spectrum of identities, which can however not be considered within the current thesis based on data limitations and a generally lower recognition of identities beyond the male-female-definition (Ayoub & Paternotte, 2020; Westbrook & Saperstein, 2015).

be approached through a qualitative or quantitative empirical lens (De Vaus, 2001), the present thesis takes a quantitative approach to provide a more thorough understanding of the association between marital dissolution and wealth. I rely on longitudinal wealth data from the German Socio-Economic Panel (SOEP) study collected on a quadrennial basis since 2002. Through the description of patterns of progression, I establish a direction and magnitude of causal relationship throughout the thesis, particularly within the theoretical framework. Nevertheless, it should be emphasised that – despite the commonly perceived superiority of quantitative longitudinal data methods in comparison to cross-sectional methods – longitudinal research designs are no panacea to uncover causality (Blossfeld & Rohwer, 1997). I will therefore rely on a probabilistic way of causal thinking and thoroughly discuss potential alternative explanations for the analysed phenomena and results (e.g. consider the possibilities of reverse causality). *Thirdly*, using the SOEP data does not only allow for the application of longitudinal methods; the data are also unique in the way that they are collected at the personal level.[5] This means that wealth levels and accumulation can be assessed separately for each household member including marital partners, providing an indication of individual rather than household-level economic wellbeing. The SOEP data therefore enable a longitudinal comparison between and within households (Killewald et al., 2017). For divorce research, this means that analyses can consider potential gender differences more appropriately, as no assumptions need to be made about wealth ownership within marriage and wealth division at divorce. Building on these advancements to address my thesis aims, I pose the following overarching research questions:

> *Do wealth levels and wealth accumulation rates of German men and women change in relation to marital dissolution? If so, how do they change, how can we explain the observed changes?*

Within the present thesis, I refer to marital dissolution as the breakdown of a marital partnership (i.e. a consensual and contractual relationship recognised by law) and define marital dissolution as a process rather than a discrete event. I argue that marital dissolution includes several sub-stages or events including separation (i.e. the split of the marital household into two separate households) and legal divorce (i.e. legal termination of the marriage by the family court). More broadly, the marital dissolution process can also include the anticipation of separation and divorce during marriage, or adjustments after divorce. As Germany only legalised same-sex marriages in October 2017, I focus on opposite-sex spouses in my thesis. Furthermore, I will concentrate on the dissolution of the first marriage, as higher order marital dissolution are likely associated with uniquely different wealth-

[5] Personal wealth data is aggregated to the household level during the data management process by the SOEP team. Thus, data users are able to rely on both personal-level and household-level wealth data.

related arrangements and socio-demographic compositions compared to first-time marital dissolution (Burgoyne & Morison, 1997; Shafer & James, 2013). Thus, it is relevant to consider the two as distinct family events. The focus on first-time marital dissolution is also data-driven, as higher order marital dissolutions are not well covered in household panel data due to their naturally lower prevalence.

1.3 Previous research on the association between marital dissolution and wealth

Previous research on the association between marital dissolution and wealth is sparse and commonly based on cross-sectional approaches (i.e. point-in-time comparisons that cannot account for factors such as selectivity, systematic wealth changes over time, or marital dissolution as a process). Early US-based family research on wealth focused mainly on the disparities between different family types and showed that currently divorced individuals hold substantially lower total household net wealth and per capita[6] wealth than continuously married individuals (e.g. Hao, 1996; Korczyk, 1998; Lupton & Smith, 2003). Additionally, these studies highlighted gender differences, with ever-divorced women owning fewer resources than ever-divorced men (Hao, 1996; Lupton & Smith, 2003; Yamokoski & Keister, 2006). These US results have been complemented by recent German research from Lersch (2017), who used SOEP wealth data to examine the distribution of personal, per capita, and household net wealth across marital states. His descriptive results showed that first-time married respondents have the overall highest wealth levels across all wealth measures, whereas divorced respondents hold about half the wealth of first-time married respondents. Remarried respondents are only slightly better off than divorced respondents, but hold substantially less wealth than married respondents. For personal wealth, Lersch (2017) showed that across all marital states, women own fewer resources than men in the same marital status category.

Overall, previous studies have relied largely on descriptive or cross-sectional methods to highlight wealth differences between married, divorced, and remarried respondents. These studies have compared heterogeneous groups and, although studies theoretically acknowledged that the probability of experiencing a divorce is unlikely to be randomly distributed amongst couples, data have limited researchers' ability to address these selection effects in their analyses. Divorced individuals already differ during their marriage from other (continuously) married individuals. A small body of research has shown, for instance, that financially stressed spouses with high financial

[6] Per capita wealth divides household wealth by the number of adult household members to obtain a per person wealth measure.

disagreement and lower wealth accumulation potential (i.e. lower education and lower earnings) are more likely to divorce (Amato, 2010; Dew, 2009, 2016; Dew, Britt, & Huston, 2012). More specifically, US research from Eads and Tach (2016) and Dew (2011) showed that the presence of large unsecured debts (e.g. credit card debts), which likely reflects financial hardship, is linked to a higher divorce likelihood. Thus, based on cross-sectional results, it remains unclear whether and to what degree marital dissolution itself is associated with changes in wealth. This same remains true when attempting to understand to what level inherent differences between the divorced and married drive wealth disparities. Additionally, cross-sectional studies have disregarded that wealth levels are not static, but a result of ongoing processes. To fully understand differences in wealth levels between the divorced and married, aspects such as age or the timing of marriage and divorce likely matter.

Longitudinal data and methods can provide more suitable tools to scrutinise the association between marital dissolution and wealth. To the best of my knowledge, only two studies have been published to date that use longitudinal data to examine the association between marital dissolution and household-level wealth. Based on annual wealth data from the US National Longitudinal Survey of Youth (NLSY79) and time series regressions, Zagorsky (2005) found that divorce from the first marriage is associated with a 77 percentage point decline in log-transformed per capita wealth[7] compared to years when respondents were single and never married. In comparison, entering the first marriage is associated with a 93 percentage point increase in per capita wealth. Upon further analysis, Zagorsky (2005) did not find substantial gender differences in the relative wealth declines associated with divorce based on gender interactions, although his descriptive results indicated slightly larger absolute median wealth declines for divorced women than divorced men.

Additionally, Zagorsky (2005) also provided some indication of post-divorce wealth accumulation. Divorcees were found to experience a yearly per capita wealth increase of 14 percent, whilst those who remained continuously married increased their per capita wealth by 16 percent every year. Zagorsky (2005), however, excluded divorced respondents once they re-partnered. As the majority of US divorcees enter remarriage in less than 4 years and a substantial proportion enter cohabitation shortly after divorce (Wilson & Clarke, 1992; Xu, Hudspeth, & Bartkowski, 2006), Zagorsky (2005) likely excluded a large portion of divorcees. This possibly biased his results, particularly as re-partnering could assist in the financial recovery as suggested to be the case for the income of divorcees (Jansen et al., 2009). Furthermore, re-partnered divorcees likely differ from un-partnered divorcees in terms of characteristics relevant to divorcees' wealth accumulation potential (Shafer, 2013; Shafer

[7] As the log-transformation drops zero and negative wealth values, Zagorsky (2005) assigned zero net wealth a value of 1$ prior to the log-transformation. For negative net wealth values, he used a hyperbolic sine transformation.

& Jensen, 2013; Vespa, 2012). Finally, Zagorsky (2005) used panel data from the NLSY79 waves 1985 to 2000; this restricted his respondents' age range to 20 to 28 years of age in 1985 and 35 to 43 years of age in 2000. His analyses, therefore, focused predominately on divorces at early- to mid-adulthood (Brown, Lin, & Payne, 2014). It remains unclear whether the results from Zagorsky (2005) are applicable to older divorcees as well.

A second study that analysed the effect of marital dissolution on wealth using longitudinal data was published by Sharma (2015). He used US household-level wealth data from the Health and Retirement Study (HRS) and limited his analyses to two survey waves, 2004 and 2010. Excluding respondents younger than 50 years of age in 2004, Sharma (2015) focused solely on the association of marital dissolution and wealth in older age. Whereas Zagorsky (2005) defined marital dissolution as the point of legal divorce, Sharma (2015) combined marital separation and divorce into a single category to generate a marital dissolution dummy. In his predictions, Sharma (2015) showed that older women experience a $370,000 decrease in their absolute household net wealth associated with marital dissolution. For men, the associated decline is almost three times lower at $128,000. Focusing on household net worth rather than a measure adjusted for the household size, Sharma (2015) neglected that household wealth is generally higher for married couples compared to single person households based on the presence of two adults compared to one. Nevertheless, his results showed larger and statistically significant gender differences compared to the study by Zagorsky (2005). Although the two studies focused on the same country context, the US, their results are difficult to compare due to large discrepancies in the age brackets under investigation, as well as the definitions of the measures for marital dissolution and wealth.

Concerns about potential long-term consequences of marital dissolution for the wealth of divorced men and women, another incipient body of research has predicted wealth levels in older age using respondents' current marital status and selected previous marital events. Exclusively relying on US data and respondents aged 51 to 61, studies have unequivocally found that continuous marriage is associated with higher household wealth levels in older age compared to individuals that ever experienced a marital dissolution (Addo & Lichter, 2013; Holden & Kuo, 1996; Ulker, 2008; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015). While being remarried in older age is associated with higher household wealth levels compared to respondents that stayed divorced until old age (Ulker, 2008; Wilmoth & Koso, 2002), serial marital dissolution is linked to severely penalised wealth levels in older age (Ulker, 2008; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015). Relative wealth penalties are larger for women than men, although women seem to reap greater benefits from remarriage than men according to Wilmoth and Koso (2002). Although these studies have

acknowledged the link between earlier life course events for wealth outcomes in older age, categorising entire marital life courses through blunt summary indicators potentially obscured relevant time-dependent processes. These processes, for instance, refer to the timing of marriage, divorce, or remarriage within the life course – if they take place at all – or the duration between these experiences. As such, none of these previous studies accounted for time since first divorce or time until remarriage in their analyses, although the timing of those life course events likely matters for later life outcomes. Divorce at an early age could, for instance, provide more time for wealth recovery or be less detrimental than divorce at an older age.

1.4 Personal wealth and the division of marital property

The inclusion of wealth data into longitudinal household surveys has rapidly increased with the rising awareness of wealth inequality and interest in its causes and consequences (e.g. with regard to education, race, or social origin). One of the main methodological challenges for family-related stratification research has been the way wealth is measured within these surveys (Killewald et al., 2017). For the majority of household surveys, one reference person of a household is asked to provide the main share of information on assets and liabilities for the entire household, making the household the unit of analysis (see Killewald et al. (2017) for an overview of panel studies that collect wealth data). As total household wealth naturally tends to increase with the number of adult household members, comparisons of total household wealth between different household types (e.g. married compared to unmarried individuals) likely overestimates the actual degree of economic inequalities. To achieve better comparability between different family arrangements, researchers have commonly adjusted household wealth and divided it by the number of adult household members to obtain a per capita wealth measure.

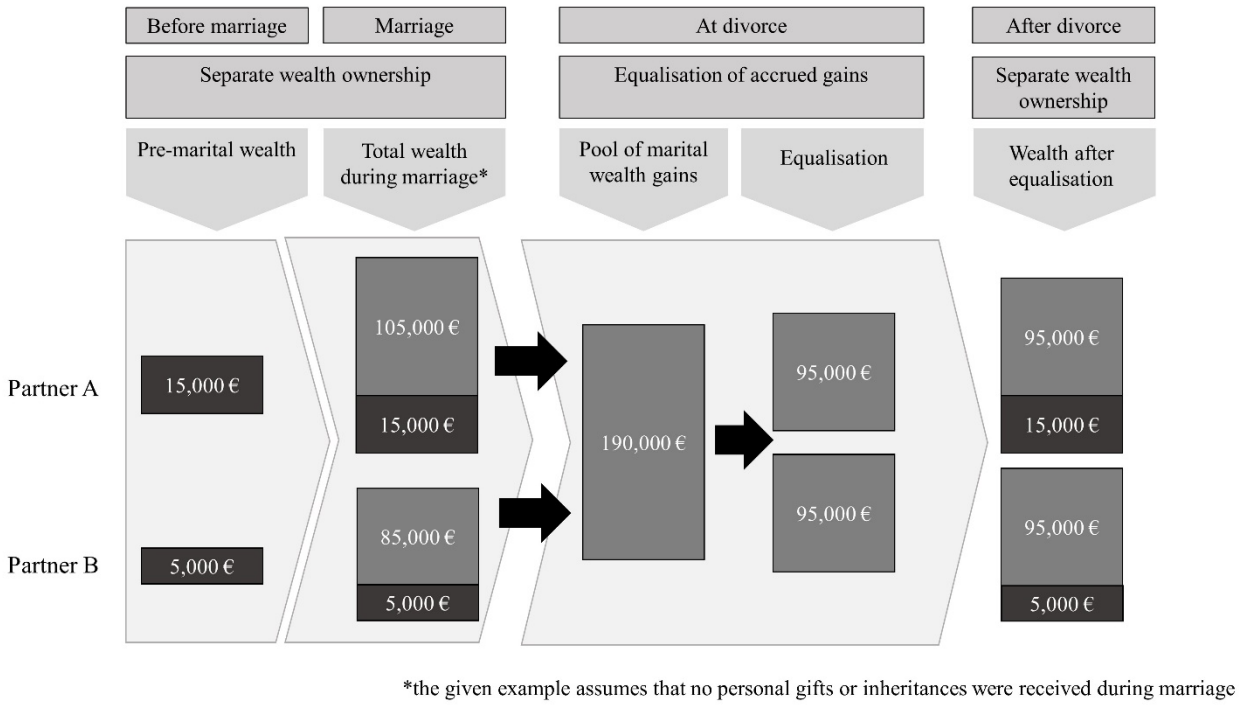
While per capita wealth provides a more appropriate way to analyse wealth differences between individuals in various marital states than an analysis of unadjusted total household wealth, it is limited in its conclusiveness about intra-household inequality (i.e. inequalities between members of the same household, such as husband and wife). This is because researchers have to assume that married spouses pool all resources with (largely) equal access to those resources when using the per capita wealth measure. By implication, this means that households are expected to be economically homogenous units (Becker, 1993). Although spouses indeed benefit from some sharing of expenses or joint savings, the assumptions around full pooling and sharing have been questioned by a growing body of quantitative and qualitative researchers (Bennett, 2013; Joseph & Rowlingson, 2012; Pahl, 1983, 1995, 2008; Vogler & Pahl, 1994). Whereas qualitative work by Joseph and Rowlingson (2012)

highlighted that not all wealth is equally distributed between married spouses, recent advances in the collection of wealth data at the personal level within household panel studies have fostered novel quantitative German and French research (Frémeaux & Leturcq, 2020; Grabka et al., 2015; Kapelle & Lersch, 2020). In support of qualitative results by Joseph and Rowlingson (2012), these studies have quantitatively highlighted substantial within-couple wealth inequalities and emphasised an individualisation of wealth – or at least some wealth components – within couples (Frémeaux & Leturcq, 2020; Kapelle & Lersch, 2020). Financial wealth (e.g. money in savings accounts) in particular is held individually, whereas housing property is commonly owned jointly. Furthermore, these studies have persistently revealed that women commonly hold less wealth – and particularly less non-joint wealth – than their subsequent male partners (Grabka et al., 2015; Kapelle & Lersch, 2020). In Germany, for instance, women's personal net wealth is on average €33,000 lower than the personal net wealth of their male partners (Grabka et al., 2015). Overall, the per capita wealth measure that simply divides all available household resources by two for the married obscures a certain degree of wealth inequalities within households. Whereas evidence on per capita wealth likely over-estimates the resources married women hold and can freely access, it under-estimates men's resources. In return, this can lead to an over- and under-estimation of wealth inequalities between married and non-married men and women.

Although using per capita wealth has been the most appropriate approach for the majority of family studies due to the lack of personal level wealth data, this approach may be particularly unsuitable for the analysis of the association between marital dissolution and wealth. Comparing per capita wealth during marriage to per capita wealth after divorce not only presumes that household resources are shared (largely) equally during the marriage, but additionally assumes that all available wealth is divided equally at divorce. Family law across the majority of Western countries is, however, *de jure* more complex in its guidelines about the division of property. In Germany, the majority of couples – 90 to 95 percent – follow the default marital property regime of the community of accrued gains (*Zugewinngemeinschaft*; § 1363 of the German Civil Code) (Dutta, 2012; Stach, 1988). According to this regime, each spouse maintains ownership over their assets and liabilities during the marriage. At divorce, wealth gains that were accrued during the marriage are equalised (*Zugewinnsausgleich*). Equalisation payments are particularly crucial if one spouse accumulated a greater wealth share than the other during the marriage. Importantly, personal wealth that was owned prior to the marriage, as well as personal inheritances and gifts received during the marriage, are not necessarily included in the matrimonial property pool and, thus, household wealth is not simply divided in two at divorce. Figure 1.1 graphically depicts this wealth division process within the German community of accrued

gains using a hypothetical example. The German matrimonial property division process is not unique; similar or even more individualised *de jure* regulations can, for instance, be found in Sweden, Spain, or Belgium.[8]

Figure 1.1 Division of wealth at divorce



Notes: The depicted example is purely hypothetical and actual division processes are dependent on the unique circumstances of couples.

Overall, this means that within-couple wealth disparities are not necessarily equalised at divorce depending on the origin of those disparities. This may lead to different financial experiences for men and women with regard to marital dissolution-related wealth processes. This seems particularly likely in light of recent German research that showed that wealth disparities between spouses stem, to a large degree, from pre-marital wealth inequalities – at least for marriages entered into after 2002 (Kapelle & Lersch, 2020).

[8] A current overview of family law regulating matrimonial property regimes across European countries is provided by the Conseil des Notariats de l'Union Européenne (CNUE) on http://www.couples-europe.eu/en/home.

Although marital wealth (i.e. wealth accumulated jointly during the marriage) should *de jure* be divided equally, recent work from Bessière (2019) additionally highlighted that *de facto* arrangements about the division of marital wealth are often gendered, which additionally disadvantages divorced women's financial situation – at least in the study's context of France. Bessière (2019) found that division processes favour men based on normative notions that perceive men's financial contributions during the marriage as superior to women's financial and non-financial contributions.[9] How within-couple wealth inequalities influence the association between marital dissolution and wealth, including potentially gendered effects, is thus directly governed by legal regulations about the division of property. However, they may additionally be guided by *de facto* gendered practices.

Overall, the outlined concerns about the use of per capita wealth to assess the association between marital dissolution and wealth highlight the importance of using personal-level wealth data. While this was not feasible for previous studies, the current thesis is able to rely on unique longitudinal, personal-level wealth data from the German Socio-Economic Panel (SOEP).

1.5 The German context

In addition to its unique personal-level wealth data, Germany constitutes a relevant country context for the current thesis based, *inter alia*, on its comparatively high wealth inequalities, institutionally restricted access to homeownership through a prudential mortgage system, or conservative policies that encourage a male-breadwinner arrangement in marriage with potentially gendered consequences for wealth if the marriage breaks down. The following sections will elaborate more thoroughly on context specifics that are relevant for my thesis.

1.5.1 Private wealth accumulation

To understand the accumulation and distribution of wealth in Germany, it is important to highlight that Germany was divided into the Federal Republic of Germany (FRG) in the West and the German Democratic Republic (GDR) in the East between 1949 and 1990. The two countries had substantially different labour market and welfare state regimes that determined the capacity and perceived need to accumulate wealth. While the social market economy of the FGR incentivised private savings and investments, the centrally-planned economy in the GDR extensively limited private investments and asset ownership, holding wage dispersion low. Starting in 1945, the GDR additionally expropriated a large proportion of private property and business assets. As a result, only 41 percent of GDR housing

[9] See also work by Zelizer (1989) on the gendered meaning of money within households.

property was privately owned by the end of the 1980s compared to 91 percent in the FGR. Due to the lack of investment options in the GDR, the majority of private wealth was therefore accumulated in savings accounts (Hauser et al., 1996).

After reunification in 1990, the GDR regime was gradually replaced by FRG policies to establish a unified Germany. Expropriated GDR property was largely returned to their rightful owners, GDR Mark converted favourably to Deutsche Mark, and large economic incentives were put in place to aid former GDR residents in their wealth accumulation (Hauser et al., 1996). Nevertheless, even three decades after reunification, wealth disparities between Eastern and Western Germany remain substantial with only a slow decline in the East-West divide in wealth holdings (Grabka, 2014). Wages have been comparatively low and unemployment rates high in Eastern Germany after the political and economic reorganisation (Grabka, 2014; Hauser, 2009). Persistent East-West inequalities are also based on wealth differences generated during Germany's division and the perpetuation of differences by processes of intergenerational transmission, particularly with regard to housing equity (Frick & Grabka, 2009; Grabka & Westermeier, 2014). In 1993, 51 percent of Western German households held housing property, whereas only 28 percent of Eastern Germans were homeowners (Ritter, 2006).

One important aspect that determines an individual's position within the wealth distribution is the ownership of housing property. Within the Eurozone, Germany's overall homeownership rate is the second lowest. In 2018, Germany had a homeownership rate of 52 percent; in comparison, the rate was 65 percent for France, 69 percent for the Netherlands, 72 percent for Italy, and even 76 percent for Spain (European Statistical Office, 2020). The traditionally low homeownership rates in Germany are a result of a strong rental housing market, a prudential mortgage system that requires large down payments, and high transaction costs (Lersch & Dewilde, 2018; Voigtländer, 2009). Nevertheless, 60 percent of private wealth is held in the primary property constituting an important share within the wealth portfolio of Germans (Frick, Grabka, & Hauser, 2010). Furthermore, homeownership itself, and its anticipation, may be associated with higher saving rates. Alternatively, homeownership may also be selective of financially more successful individuals. As a result, German homeowners are generally found to hold more total private wealth than renters (Frick & Grabka, 2009; Grabka & Halbmeier, 2019; Lersch & Dewilde, 2018).

1.5.2 Historical changes in the family life course

The 20th century has been characterised by a range of family demographic changes in most European societies (Lesthaeghe, 2014; Van De Kaa, 1987). As Amato (2000) described it, "the most dramatic – and the most far-reaching in its implications – was the increase in the rate of divorce" (p. 1269). The rise in divorce rates commenced in the early 1970s in the majority of European countries. As previously mentioned, the EU divorce-to-marriage ratio quadrupled between 1970 and 2010, from 11.3 divorces per 100 marriages to 44.3 divorces per 100 marriages. In Germany, the ratio increased from 18.1 to 49.0 between 1970 and 2010 (Eurostat, 2018; PORDATA, 2020).

The division of Germany into the FRG and the GDR also influenced the development of divorce rates and family patterns. Divorce was generally more common in the GDR due to lower religious affiliations, greater gender equity in the employment intensity of men and women, and higher social acceptance of divergence from the traditional family pattern of continuous marriage (Böttcher, 2006). Since reunification, divorce rates in the West and East have, however, converged. This is also characterised by a general stall or even decline in the divorce-to-marriage ratio in recent decades for the majority of EU countries (Eurostat, 2018; PORDATA, 2020). In Germany, the divorce-to-marriage ratio peaked in 2003 with a ratio of 55.9 divorces per 100 marriages, but has since declined to 32.9 divorces per 100 marriages in 2018. The ratio of 2018 is comparable with the ratios in the early to mid-1990s (Eurostat, 2018). While similar ratio declines after a peak can be seen, for instance, in Denmark, Switzerland, or Belgium, the rate rather plateaued in other EU countries such as France, Sweden, Spain, or the Netherlands (PORDATA, 2020).

The recent stall or decline in divorce rates has to be viewed in light of simultaneous developments in other family patterns (Heaton, 2002). The German marriage rate plummeted from 7.4 marriages per 1,000 persons in 1970 (FGR: 7.3; GDR: 7.7) to 4.4 marriages per 1,000 persons in 2010 (FGR: 4.7; GDR: 3.8). From 2010 to 2018, German marriage rates ranged from 4.6 to 5.4 marriages per 1,000 persons (Statistisches Bundesamt, 2020a). Additionally, the age at marriage entry increased from 25 to 35 for men and from 23 to 32 for women between 1970 to 2018 (Bundesinstitut für Bevölkerungsforschung, 2018; Statistisches Bundesamt, 2019). The decrease in marriage rates and postponement of marriage is partially a result of a rising acceptance of alternative family arrangements such as cohabitation – either instead of marriage or as a trial marriage – and non-marital childbirth. Rising age at marriage has been associated with increasing marital stability mediated by partners' maturity, time spent in pre-marital cohabitation, and financial stability established prior to marriage entry (Amato, Johnson, Booth, & Rogers, 2003). Thus, marriage entry has become socially stratified to individuals with naturally lower divorce risks, while declining marriage rates have

resulted in fewer individuals at risk of experiencing a divorce. Nevertheless, divorce rates have stayed historically high over the last decades and marital dissolution has become a defining feature in modern family life (Stevenson & Wolfers, 2007; Van Winkle, 2018).

1.5.3 Economic gender inequality and the family

Despite strict gender-discrimination laws, occupational segregation and undervaluing of jobs within female-dominated industries and occupations carry a significant penalty for German women's earnings and access to wealth building tools (Busch, 2013; Hausmann, Kleinert, & Leuze, 2015). Additionally, Germany's – but particularly formerly Western Germany's – persistent cultural and institutional support for traditional family arrangements has emphasised women's role as a caregiver and provided incentives for married women to reduce their work hours (Aisenbrey & Fasang, 2017; Trappe, Pollmann-Schult, & Schmitt, 2015). In contrast, social norms around the advantages of out-of-home care for children's development – as well as pronatalist family programmes that facilitated the compatibility of family life and work for all social strata – encouraged Eastern German women's engagement in the labour market (Huinink et al., 1995; Kreyenfeld, 2004). Although family policies of the former East were replaced by Western German policies during the Germany reunification, gender egalitarian attitudes have remained higher in the former East compared to the former West (Ebner, Kühhirt, & Lersch, 2020). Lasting differences between the former East and West are also reflected in currently higher part-time employment and inactivity rates amongst Western German married women – and particularly mothers – compared to Eastern German women. In 2016, 66.8 percent of Western German mothers and 72.4 percent of Eastern German mothers were active in the labour market. While only 25.8 percent of Western German mothers worked full-time, it was 51.6 percent in the East (Keller & Kahle, 2018). With overall 36.6 percent of women working part-time, Germany had the second highest part-time employment rate for women within the EU in 2018 (EU: 26.5 percent) despite Germany's overall high employment rate (76.9 percent amongst the working age population in 2019; OECD: 69.5 percent) (OECD, 2020a, 2020b).

German wives earn and own less than their husbands, although income differences are smaller for Eastern German couples than Western German couples based on the discussed higher employment activity and full-time rates amongst Eastern German women, but also generally lower wages in the East (Grabka et al., 2015; Statistisches Bundesamt, 2020b; Trappe & Sørensen, 2006). The within-couple wealth gap for German couples was recently estimated to be €33,000 to the disadvantage of wives (Grabka et al., 2015). These inequalities, that are partially contingent on the German patriarchal system, encourage a power imbalance during the marriage and may lead to potentially gendered

consequences if the marriage dissolves. Although the German social security system is rather generous compared to other countries such as the US, the generosity is linked to previous employment contributions and income levels. Thus, lower income and labour market participation rates make German women's financial situation more volatile immediately after marital dissolution compared to German men's, but also compared to women in other countries such as the US (Bayaz-Ozturk, Burkhauser, Couch, & Hauser, 2018). This has long-term economic consequences for German women's income. Whereas British women, for instance, regain pre-separation income levels on average after eight years, it takes German women on average 12 years (Andreß et al., 2006).

1.5.4 Family divorce law and financial support for divorcees

The strong institutional support for women's economic reliance on husbands during marriage stands in contrast to Germany's family law. As already emphasised in section 1.4, the default German matrimonial property regime emphasises a *de jure* equal division of marital property (i.e. excluding pre-marital wealth and personal inheritance or gifts received during the marriage), but does not consider the future need of the economically less advantaged spouses – commonly the wife – as is common in the US or Australia (Shann, 2011; Sheehan & Hughes, 2000; Voena, 2015). Although the higher earning spouse – typically the man – is obliged to ensure the economic wellbeing of the lower earning spouses prior to legal divorce[10], post-divorce alimony regulations emphasise the principle of financial self-sufficiency. Alimony is therefore only granted if specific circumstances are given, the most important being childcare responsibilities. In January 2008, regulations for post-divorce alimony were further tightened and an even stronger emphasis was put on the obligation to work. Whereas the duration of payments was less regulated prior to 2008, the duration of post-divorce alimony remains temporary and is commonly restricted to three years after childbirth unless an extension is granted (Bröckel & Andreß, 2015). Non-payment or under-payment of alimony continue to be common for the majority of eligible spouses (Andreß, Borgloh, Güllner, & Wilking, 2003).

One in two German divorces is between parents of dependent children (Statistisches Bundesamt, 2017). After the spouses form two separate households, monetary child support must be paid by the non-residential parent. Nevertheless, only a minority of residential parents receive child support from their ex-partner and only half of all payments are sufficient (Bröckel & Andreß, 2015). Single

[10] During marriage this is, in the majority of cases, given through a certain degree of voluntary financial sharing. Once the couple separates (i.e. division of the couple household into two separate households), the preservation of marital living standards is reinforced through separation alimony if the less advantaged partner demands it. As separation is considered a time to reflect about the future of the marriage and it is not assumed that separation will necessarily end in divorce, separation alimony does not require the payee to establish financial independence (e.g. increase working hours).

parenthood and non-compliance with child support payments disproportionally affect women's financial circumstances as children more commonly reside with mothers after separation and divorce (Statistisches Bundesamt, 2018b). According to Walper (2018), 84 percent of children reside with mothers after marital dissolution while only seven percent reside with the father; nine percent of children live in shared residential arrangements. This further emphasises the higher financial pressure for women's households after divorce.

1.6 Thesis contributions

My thesis contributes important insights to the wider literature on wealth stratification and its drivers. By focusing on family dynamics – and more specifically marital dissolution as a trigger for substantial wealth changes – I focus on an under-researched dimension within family-related wealth research. With historically high divorce rates and the normalisation of marital dissolution as a feature of contemporary life courses over recent decades, it is critical to thoroughly understand to what degree marital dissolution matters for the stratification of wealth between individuals in the short-term, but also long-term. More precisely, this means that it is relevant to consider to what degree marital dissolution is associated with immediate wealth consequences, but also to scrutinise to what degree potential immediate penalties or other wealth-relevant changes which are associated with marital dissolution (e.g. the loss of tax benefits, ceased access to former partner's economic resources, etc.) produce disadvantage in years after divorce, resulting in longer-term consequences that are relevant for wealth inequalities in older age.

The main contribution of the current thesis is the expansion of previous divorce research through the focus on wealth. Previous research predominantly concentrated on income-based measures to assess the economic consequences of marital dissolution. As wealth and income are only weakly correlated and cover substantially different aspects of economic wellbeing, as highlighted in section 1.1, income studies provide only an inconclusive picture of the economic consequences of marital dissolution. The present thesis focuses on wealth as an alternative measure of economic wellbeing of divorcees, thereby raising awareness of the important but under-researched relation between family and wealth research. My research output can therefore contribute relevant evidence to a better understanding of the economic situation and needs of individuals that experience a marital dissolution. In return, this has the potential to provide important information to policymakers to adjust or establish interventions to alleviate possible adverse consequences of marital dissolution for wealth.

Analysing wealth changes around marital dissolution, I make a range of additional contributions. Theoretically, I define marital dissolution as a process rather than point-in-time event. I identify several stages within the marital dissolution process and am able to thoroughly describe economic behaviour and institutional contexts that may drive wealth changes at each stage and throughout the process. I consequently go beyond previous research that commonly focused on the time of legal divorce, enabling the provision of explanations of when and how wealth may change, including in years leading up to divorce and after divorce. This can highlight at what point wealth is lost or recovered (if at all), which is policy-relevant for the establishment of targeted assistance to individuals and, by implication, their children.

To bring this process-sensitive approach into my empirical analysis, I rely on longitudinal wealth data and apply panel data methods. Compared to the mostly cross-sectional methods applied by previous research, I am able to more appropriately model the dynamics of and changes in wealth in light of marital dissolution. This also means that I can provide more robust estimations that better account for the impact of omitted variables or selection into divorce. Furthermore, the use of a household panel dataset such as the SOEP seems particularly relevant as it allows me to account for and assess the importance of other individual-level or household-level characteristics in the association between marital dissolution and wealth. For instance, I am able to consider differences by the timing of marital separation and divorce within the life course, the influence of remarriage on wealth accumulation after divorce, or the potential economic constraints associated with the presence and number of children. Within my thesis, I am thus able to empirically identify and highlight some factors that potentially enhance or inhibit the wealth of divorcees. In return this means that I can detect risk groups that experience lasting wealth repercussions. From a data standpoint, my thesis also displays a relevant example of how sophisticated *longitudinal* wealth data can be used within sociological research, which emphasises the importance for continuous funding and collection of wealth data.

Furthermore, I theoretically describe potential sources of gender heterogeneity in the association between marital dissolution and wealth, whereby I rely on a range of different theoretical notions from sociology and economics. In contrast to previous research that assumed that wealth is equally owned within marriage and equally divided at marital dissolution, I provide a theoretical description of how the within-couple gender wealth gap, as well as institutional legislations on the division of wealth at divorce, and social norms around ownership and entitlement to wealth may be linked to different wealth outcomes for men and women around marital dissolution. Furthermore, I also provide theoretical nuances of potential gender differences in the accumulation of wealth after divorce, including both un-partnered and partnered divorcees. My work thus extends the previous research of

Zagorsky (2005), who only focused on un-partnered divorcees' wealth accumulation due to his restriction to household-level wealth data. To conduct gender-sensitive analyses of wealth before, during, and after marital separation and divorce, including re-partnered divorcees, I exploit German *personal*-level wealth data. Providing a more gender-sensitive theoretical and empirical research approach, my thesis findings will offer important insights into whether and to what degree wealth changes around marital dissolution are experienced differently by men and women. First of all, this will assist to verify the effectiveness of current aspirations to minimise gender inequalities in economic outcomes across the life courses of men and women. Secondly, my results will provide evidence for whether there is a need to establish more gender-sensitive interventions for divorcees.

1.7 Thesis structure

The current chapter – Chapter 1 – has set the scene for my thesis and posed research aims that are addressed throughout and empirically analysed in Chapters 4, 5, and 6. In preparation for these empirical chapters, Chapter 2 explains relevant concepts for the analyses of the association between marital dissolution and wealth of men and women. It starts in section 2.1 with an elaboration of the life course framework. Building on this section, I proceed to explain the accumulation of wealth over the life course in section 2.2. Here, I focus on the channels of wealth accumulation and their relevance throughout the life course, but also sources of wealth stratification. I proceed to explore the relevance of the marriage wealth premium for wealth accumulation and the severity of its loss at marital dissolution in section 2.3. In section 2.4, the gender wealth gap is discussed. I conclude the chapter in section 2.5 with concluding remarks and overarching expectations about the association of marital dissolution and men's and women' personal wealth.

Chapter 3 provides background on the data and methodological approach applied to address the thesis aims. Section 3.1 commences with an introduction of the German Socio-Economic Panel (SOEP) study, followed by an overview of the SOEP wealth module and the methodological challenges of wealth data in section 3.2. Next, I briefly describe how marital dissolution is captured within the SOEP in section 3.3. After providing an overview of the thesis-relevant data specifics, I continue to discuss the empirical approach and introduce the main statistical methods used within my thesis in section 3.4. Chapter 3 finishes with a brief summary of the data and methods.

Chapter 4 is the first empirical chapter of my thesis. It builds upon previous empirical research which showed potentially steep wealth declines associated with marital dissolution for both men and women (Zagorsky, 2005), but which treated marital dissolution as a point-in-time event. Theoretically, I argue

that this point-in-time approach may be limiting and marital dissolution should be examined as a process with wealth-relevant stages, including time prior to legal divorce and time after legal divorce. Gendered differences in the marital dissolution process are also discussed. More precisely, Chapter 4 addresses the following research questions: (1) how does personal net wealth change over the marital dissolution process? And (2) how do the potential changes vary for men and women? Using fixed-effects methods, I explore personal wealth changes over the theoretically defined marital dissolution process to explore the potentially dynamic nature of the association between marital dissolution and personal wealth of men and women. I additionally disaggregate personal wealth into housing wealth and financial wealth to gain a better understanding of underlying processes that may impact the two components differently.

In Chapter 5, I explore how diversity in family life courses, including partnership and childbearing histories, matters for wealth differences between individuals at the age of 51 to 59. As family life courses and wealth accumulation likely differ depending on whether individuals grew up in the former GDR or FGR, as discussed in section 1.5, I decided to focus on Western German respondents for this chapter. Western Germany provides a relevant context as the "standard" family life course – continuous marriage with, on average, two children – has been the culturally and institutionally supported family pattern within the rather conservative system. Thus, following this life course pattern may provide wealth-relevant advantages and therefore lead to the highest wealth levels in late working age. In return, family life courses that divert from the "norm", for instance through marital instability, may be associated with financial constraints. More precisely, Chapter 5 addresses (1) whether and to what degree a departure from the "standard" family pattern is associated with lower wealth in late working age, and (2) which family patterns are associated with particularly high wealth disadvantages in older age. Focusing on retrospective family history data from the West German baby boomer cohort, I identify typical family trajectory patterns using multichannel sequence analysis and cluster analysis. Family trajectories capture family histories between ages 16 and 50. Next, I model personal wealth levels in late working age (i.e. at the age of 51 to 59) as a function of family patterns.

The final empirical chapter, Chapter 6, explores the reasons behind a wealth gap between ever-divorced individuals and continuously married individuals in older age in more detail. Despite strong empirical evidence on income recovery in years after divorce (Andreß et al., 2006; Fisher & Low, 2016), wealth recovery until preretirement age seems unfeasible for the majority of divorcees. In my last empirical chapter I therefore address (1) to what degree the synergy between the initial wealth shock and potentially deteriorated wealth accumulation potentials after divorce explains the apparent lack of wealth recovery for divorcees until late working age compared to continuously married

individuals once selection is accounted for. Then, in order to fully understand the sources of gender disparities of the ever-divorced in older age that were illustrated in previous research (Wilmoth & Koso, 2002), I also address (2) to what degree the wealth trajectories of divorcees are gendered. To answer these questions, I use a doubly robust estimation strategy. This means that divorced and continuously married respondents are matched (on pre-divorce characteristics) to address selection effects, but also to assign a hypothetical divorce date to continuously married respondents (i.e. married respondents are assigned the divorce year of their divorced match). This way, I am able to count the time since (hypothetical) divorce consistently between the treatment (i.e. divorced sample) and control group (i.e. continuously married sample). Finally, multivariate random-effects growth curve models are used to examine wealth growth rates after (hypothetical) divorce and wealth level differences in the first year after divorce. This helps to better identify the potential drivers behind a wealth recovery lack after divorce.

The thesis is concluded with Chapter 7. After a brief overview of my thesis in section 7.1, I summarise the key findings and discuss their implications in sections 7.2 and 7.3. The chapter additionally highlights the limitations of the thesis and discusses opportunities for future research in section 7.4. I finish my thesis with concluding remarks in section 7.5.

2. Chapter – Theoretical background

The following thesis chapter provides an outline of theoretical concepts guiding my research. I start with an overview of the life course framework which provides the conceptual background to my research questions and design. Next, I elaborate on the wealth accumulation process. Furthermore, I briefly outline potential costs associated with marital dissolution. These costs will be discussed in more detail in the relevant empirical chapters of my thesis. Due to the complexity and underlying centrality of the marriage wealth premium and the gender wealth gap for my thesis topic, I elaborate on these two concepts in more detail within the present chapter. Finally, I summarise the present chapter with concluding remarks.

2.1 The life course framework

Sociological stratification studies, at their core, have aimed to reveal inequalities and disadvantages and understand their causes and consequences. Subsequently, the field of study has provided relevant impulses for interventions to alleviate and prevent adverse ramifications for disadvantaged individuals and households (e.g. Grusky, 2001; Kerbo, 2007). Although, those objectives of sociological stratification research have changed little over the last decades, rising complexity and diversity of contemporary societies – as well as theoretical and methodological advancements – have led to an increasing demand for more sophisticated approaches that span longer timeframes of human behaviour and development, even able to link trends across generations. As a response, the life course framework has increasingly provided an intellectual foundation for stratification research over the past five decades (Elder, 2000; Elder & Giele, 2009; Mayer, 2000; O'Rand, 2006).

The life course framework is a sophisticated heuristic paradigm for the study of the multifaceted behavioural processes that shape human lives between birth and death within individuals' unique social, cultural, and historical contexts. The individual actor is situated at the core of every life course. Often referred to as "human agency", individuals are assumed to construct their own life courses through choices and actions (Elder, 1994). In line with notions from action theory, or more precisely rational choice theory, individual decision-making is assumed to be goal-oriented and driven by the desire to improve – or at least maintain – wellbeing over time while minimising any anticipated immediate or long-term adverse repercussions (Bandura, 2006; Becker, 1976; Makowski 2017; Sen, 1990). Human agency is thereby guided by prior experiences and constraints or opportunity structures within an individual's environment. Researchers, however, also emphasise that decision-making is,

to some degree, enforced by habits or routines and thus not always a result of conscious processes (Bernardi, Huinink, & Settersten, 2019, 2020; Elder, 2000; Elder & Giele, 2009).

Sociology has become an important disciplinary anchor for life course scholarship through the earlier works of Glen Hill Elder Jr., Karl Ulrich Mayer, or Richard A. Settersten Jr. (e.g. Elder, 1994; Mayer, 2004; Settersten, 2003b). More recently, the joint work by Laura Bernardi, Johannes Huinink, and Richard A. Settersten Jr. has provided substantial advancements (Bernardi et al., 2019, 2020). Despite the importance of sociology for life course scholarship, life course research has been carried out within and across a variety of disciplines including psychology, demography, anthropology, education, and epidemiology. Although the life course framework is not (yet) considered a theory *per se* that can be used to deduct testable hypotheses (Mayer, 2019), it provides a heuristic approach to the study of lives based on a range of research themes that unify research across disciplines. Such themes include the overarching commitment to taking a 'long view' of time and consideration of multiple life domains and levels, as well as their complexity, as contexts for developmental processes and human decision-making (Bernardi et al., 2019; Elder & Giele, 2009; Levy & the Pavie Team, 2005; Mayer, 2004; Settersten, 2003b). The recently developed *Life Course Cube* from Bernardi et al. (2019, 2020) aims to systematically represent these themes and their interconnectedness. A more elaborate discussion about these life course themes and their interconnectedness within the system of the *Life Course Cube* will be provided in section 2.1.2.

Whereas a range of theories – although partially outdated – provide researchers testable hypotheses on the likelihood of and reasons for divorce[11], or the life-time accumulation of wealth[12], no unifying theory is yet available for the study of the economic consequences of marital dissolution. In the current thesis, I therefore build on the heuristics of the life course framework (which provides a range of relevant indications for the association of interest to the present thesis) and a methodological tool kit that allows me to explore dynamic personal wealth changes around marital dissolution.

2.1.1 Life course concepts

Before I move to a more elaborate description of the core principles of life course scholarship, I define some basic conceptual elements of the life course approach: *life stages*, *transitions, events,* and

[11] For instance, Becker's neoclassical economic theory of household organisation, social exchange theory, or bargaining theory (Albrecht & Kunz, 1980; Becker, 1993; Lundberg & Pollak, 1996).
[12] The most predominant economic theory to explain wealth accumulation is Modigliani's life cycle theory of income and consumption (Modigliani, 1986; Tin, 1998).

trajectories (Alwin, 2012; Elder, 2000; Elder, Johnson Kirkpatrick, & Crosnoe, 2003; Hutchison, 2011).

Life stages, which refer to discrete periods of an individual's life (e.g. marriage, retirement, adolescence, etc.), may be considered the most basic components of the life course. Sometimes referred to as age-related development stages such as childhood, adolescence, adulthood, and old age, different life stages are associated with particular socially anticipated roles and responsibilities.[13] Considering marriage as a stage, one spouse may take on the role of the homemaker whom is commonly expected to be responsible for running and managing the family home (e.g. grocery shopping, cleaning, caring for children, etc.).

Transitions refers to changes in life stages or enacted roles. It therefore represents a distinct departure from the prior stage or role (Elder et al., 2003). Next to transitions, life course researchers also use the term *events* to refer to a change in an individual's state. Although the terms *event* and *transition* are often used interchangeably, Settersten (2003b) emphasises that, although both are rather brief in scope, events are often conceptualised as a relatively abrupt change whereas transitions associate with a more gradual change (p. 25). To provide relevant examples for the current thesis, the day of legal divorce may broadly be considered an event. The divorce proceedings, which commonly take several months or even years and include the court trial, counselling, or mediation sessions, could be considered a transition. Looking at the entire family life course from early age to death, events such as the day of legal divorce, handing in the divorce papers, or the day the couple moves apart may seem too compartmentalised and are likely aggregated into a single divorce transition. This highlights the flexibility and context-dependency in the usage of the two terms *event* and *transition*.

Naturally, events and transitions encourage a modification in an individual's status or identity and, thus, provide opportunity for individual changes in behaviour or expectations. As a result, life events and transitions require adaptation, which – depending on the severity and individuals' unique

[13] Historically, individuals were thought to follow a particular sequence of life stages as a result of natural growth and maturation processes, but also based on norms (Alwin, 2012). The sequence of those stages has been referred to as a "life cycle". With regard to the family life cycle, research has generally referred to the following consecutive stages: (i) young, un-partnered adults, (ii) coupling or marrying, (iii) childbearing families, (iv) childrearing families, (v) families after the children have left the family home, and (vi) senior couples (Mattessich & Hill, 1987). In contrast to this rigid and idealised order within the family life cycle, rising individualisation and social change have led to more complex family life courses including marital instability and blended families. Life course scholars have since distanced themselves from a strict linear structure of life stage sequences, particularly for the family life. Nevertheless, age-related processes are still relevant for some aspects of life course research (O'Rand & Krecker, 1990; Settersten, 2003b). For instance, the tripartition of the life course into education and training during early years in the life course, work activities that dominate the middle phase of an individual's life course, and finally the absence of work activity during older age is still a widely used and accepted concept (Kohli, 2007).

circumstances – may be experienced as stressful and undesirable. In particular, disruptive events or transitions – those which strongly contradict individuals' anticipated structures of their life and require large adaptation – are sometimes referred to as *turning points* (Bernardi et al., 2019; Settersten, 2003b; Wheaton & Gotlib, 1997). Marital dissolution may, for instance, be considered a turning point depending on its real and psychological severity for an individual and the unique adaptation tools (e.g. income, support network, mental health, etc.) available to minimise negative repercussions.

The aggregation of discrete and bounded *stages*, *transitions,* and *events*, including the associated roles, expectations, and responsibilities in a certain life domain such as the family, constitute an individual's life course *trajectory* in that specific domain. A *trajectory* thus defines the long-term pattern of stability and change in an individual's life. Whereas research commonly focuses on the trajectory in one life domain such as the family, or even more specifically the marital status, based on analytical convenience, Mayer (2003) emphasises the multidimensionality of life courses. This means that life courses are shaped by the intersection of trajectories in a wide variety of life course domains including, *inter alia*, education, work, housing, health, childbearing, or partnership. In practice, different life course trajectories are likely interconnected and therefore mutually dependent, leading to cross-domain flow-on effects. Overall, the life course of an individual can thus be defined as the aggregation of an individual's life course trajectories across different life course domains (Giele & Elder, 1998).

2.1.2 Life course dimensions and their interdependencies

To understand the structure in which individual life courses take place, an increasingly sound set of themes – or what Mayer (2004) refers to as "signposts" – has been identified by several researchers (e.g. Elder, 1994; Mayer, 2004; Settersten, 2003b). The identified themes have defined and guided life course inquiries, model formation, and research designs over the last decades. More recently, the *Life Course Cube* has provided a tool that systematically structures previously identified themes within three broader dimensions, *time*, *life domains*, and *levels,* to explain individual decision making. Each dimension is assumed to show interdependencies within itself (i.e. first-order interdependencies) and across the dimensions (i.e. second-order and third-order interdependencies). At the centre of the cube is the individual agent.

2.1.2.1 First-order interdependencies within dimensions

Interdependence of life domains

Life domains, which include *inter alia*, family, work, housing, health, or education, are multidimensional, as already mentioned in section 2.1.1. This also means that an individual's decisions, choices, and goals in one domain carry important implications for the development within other domains. As a result, resources and constraints in one domain also determine investments in another domain depending on individual preferences. Relevant for wealth accumulation, for instance, the decision and capacity to buy housing property is likely tied to an individual's marital status, presence of children or fertility intensions, and employment status and security (Lersch & Dewilde, 2015; Mulder, 2013; Mulder & Wagner, 1998; Voigtländer, 2014). The employment status and financial standing are themselves linked to the family domain, as financially more advantaged individuals are more likely to enter marriage whereas financially less advantaged individuals are more likely to postpone marriage or get divorced (Eads & Tach, 2016; Gibson-Davis et al., 2005; Gibson-Davis et al., 2018).

Interdependence across levels

Bernardi et al. (2019) identify three levels of analysis that shape individual development and human agency: inner-individual, individual, and supra-individual. The inner-individual level refers to individuals' genetic makeup or physical and psychological attributes such as their subjective wellbeing, values, or attitudes. The individual level comprises characteristics that are overtly assigned to an individual including a person's gender, citizenship status, education, social status, or economic standing. The last level, the supra-individual level, refers to the socio-cultural environment and structures that embed individual development – and thus opportunities and constraints – within the historical time and geographical circumstances (e.g. the social welfare system of a state, the cultural norms and values of a society, etc.)[14] as well as within the closer social network (e.g. linkage between an individual's live and the lives of their partner, parents, children, friends, colleagues, etc.) (Elder & Giele, 2009; Settersten, 2003b).

Representing the interconnectedness between levels within the context of the present thesis, saving goals (inner-individual level) are provoked, shaped, and constrained by saving and investment opportunities and norms within an individual's environment (supra-individual level; e.g. housing

[14] This explicitly emphasises the importance of cohort and period effects.

market, banking system, societal norms about couples saving for a joint future and children, etc.). This link is additionally tied to an individual's race or gender (individual level; e.g. discrimination in the banking system according to race or gender) and their education (individual level; e.g. education may reflect a person's financial literacy, which in turn relates to saving behaviour), but also to the presence of others (supra-individual level; e.g. couples have different saving incentives than a single-person household).

Time-related interdependencies

Time-related interdependencies within the life course framework refer to connections between the *past*, *present,* and *future*.[15] Individual development is lifelong, meaning that specific developments or experiences cannot be understood in isolation, but have to be seen within the context of the entire life course. Each choice restricts or opens up specific pathways through the clearance or closure of future life chances. Based on those interdependencies across time, life courses are often described as self-referential (Mayer, 2003). This path dependency means that individuals cumulate and compound disadvantage or advantage over the life course (Dannefer, 2003; O'Rand, 1996). As cohort members age, their life courses become increasingly heterogeneous. As a result, inequalities – for instance in wealth – are commonly lower between younger individuals, but rise with age (Dannefer, 2003; Halpern-Manners, Warren, Raymo, & Nicholson, 2015; Hurd, 2002). For instance, entry into university depends, *inter alia*, on previous school achievements and, as a result, leads to higher pay and thus higher potential to save or be granted access to credit. Major life course events or turning points, such as marital dissolution, job loss, or a recession, can also shape future pathways depending on an individual's resilience (i.e. available coping tools) (Settersten, 2003b).

Not only do experiences of the past influence the future, but expectations about the future also affect current decisions and actions. Individuals anticipate future consequences that are associated with certain actions. This affects the likelihood of taking a certain action or to "prepare" before an action is taken (Bernardi et al., 2019). For instance, women have been shown to increase their labour market attachment prior to marital dissolution, which is possibly related to their anticipation of the imminent loss of male partner's income or other upcoming costs of separation and divorce (Özcan & Breen, 2012).

[15] Mayer (2019) argued that the time dimension requires the reference to at least one life course domain or level to provide it with content. He suggested viewing time as an overarching concept that infiltrates all life course interdependencies across levels and domains. A recent response from Bernardi et al. (2020), however, emphasised that time has to be considered as a dimension in its own right within life course research. See Bernardi et al. (2020) for a detailed discussion on this matter.

2.1.2.2 Second-order and third-order interdependencies between dimensions

The three life course dimensions *time*, *domains*, and *levels*, are not only connected within themselves, but are interconnected between each other through second-order and third-order interdependencies, which is a crucial feature of life course research (Bernardi et al., 2019). Second-order refers to interdependencies between only two of three dimensions and third-order interdependencies acknowledge the intersection between all three dimensions.

For instance, ascribed traits commonly determine individuals' and societal expectations about their life course trajectories within the different life course domains. Family trajectories and the timing of transitions vary, for instance, between men and women in line with social expectations (Allendorf, Thornton, Mitchell, Young-DeMarco, & Ghimire, 2017; Mortimer, Oesterle, & Krüger, 2005; Settersten, 2003a; Settersten & Mayer, 1997). In addition, the transition to parenthood or marriage is associated with different societal expectations about behaviour for men and women that vary across geographical location or historical time. For instance, in Western Germany, women were expected to stay at home with children, whereas Eastern German women were encouraged to re-enter the labour market (Trappe et al., 2015). In practice, the timing of actual life course events and transitions may differ from cultural norms. Indeed, life courses have become more de-standardised over the last decades. Nevertheless, transitions and events that do not follow the expected timings (e.g. childbearing out-of-wedlock, childlessness within marriage, very early first marriage, etc.) may be regarded as violations of social norms and values and can evoke adverse repercussions (Settersten, 2003a). This can have flow-on effects on later life course outcomes. If violations become a common pattern, this can, however, prompt reciprocal changes in the social world and its expectations about the timing of events and transitions. For the current thesis, it is thus, for instance, relevant to consider the specific current and past German welfare state regulation and social norms that influence family patterns and wealth accumulation, but also how family patterns have changed over time in light of the second demographic transition within Europe (Lesthaeghe, 2010).

2.2 The accumulation of wealth over the life course

Wealth accumulation, as inherent in the word "accumulation", should be understood as a dynamic process with a clear time-related and goal-oriented focus. The following section will elaborate on the accumulation of wealth over the life course, which provides relevant background for the three empirical thesis chapters.

Early, economic wealth accumulation theories such as the 'life cycle theory of income and consumption', in line with rational choice theory, assumed that households or individuals consciously save to secure their financial wellbeing during retirement (Becker, 1976; Modigliani, 1986; Tin, 1998). Social scientists have expanded this saving motive to reflect more general precautionary saving intentions aimed at protecting current and future economic standing from a wider range of expected and unexpected economic shocks such as ill health, loss of job, or care-related career interruptions in addition to retirement. Individual saving is thus driven by the desire to generate and maintain financial security over the life course (Becker, 1976; Keister, 2000). Other relevant saving goals are related to social prestige, status and power, or the transfer of resources and their advantages to significant others (e.g. children, spouse) (Henretta & Campbell, 1978; Keister & Moller, 2000; Kohli & Künemund, 2003; Land & Russell, 1996; Pfeffer, 2011; Rossi, 2014; Shapiro, 2001).

Whereas the desire to achieve or maintain sufficient financial security may be considered universal[16], wealth accumulation opportunities and constraints are highly stratified within the multifaceted context of the life course. To comprehend this context, it is important to elaborate on the pathways through which wealth can be accumulated and understand the constraints within and across these pathways. Wealth accumulation occurs through three main channels: *surplus income*, *financial transfers*, and *wealth appreciation* (e.g. Gittleman & Wolff, 2004; Keister & Moller, 2000; Killewald et al., 2017; Spilerman, 2000).

First, excess income that is not consumed may be accumulated. Income itself may stem from labour market activities and social welfare benefits, as well as asset revenue such as rental income, interest, or dividends (Statistisches Bundesamt, 2018d). If asset revenue is regularly re-invested, wealth can accumulate exponentially.[17] As the majority of individuals start with relative low wealth levels – or even debt – when they first enter the labour market, the wealth accumulation process usually commences through savings of labour market earnings (Killewald et al., 2017). At the start, wealth is likely stored in more easily accessible savings or bank accounts, fulfilling the inherent need of a safety net which, however, limits returns on investment due to the nature of those saving modes.[18] Once a desirable threshold of easily accessible savings is reached, the likelihood rises that wealth portfolios are diversified. Portfolios may then include investments in more risky wealth components that are characterised by higher returns of investments or less accessible wealth in the form of property.

[16] What is considered "sufficient" naturally varies between individuals and societies, depending upon, for instance, individual preferences, social norms, or available financial support structures.
[17] Compounded interest effects are sometimes also considered under the pathway of wealth appreciation.
[18] The accumulation of wealth in savings or bank accounts may also be necessary as other investment modes have higher access requirements. For instance, property investments depend upon a substantial deposit.

Overall, the described sequence of investment stages assumes that individuals are able to access required resources (e.g. sufficient labour market income, stable employment), have the previously acquired necessary skills to make profitable investment decisions (e.g. financial literacy, education), and are not facing structural barriers that prevents access to investments options, such as those based on race, gender, marital status, or the local investment market and asset policies (Carney, Gale, & Oliver, 2001; Chiteji, 2010; Hao, 2007; Ozawa & Lee, 2006). Individual wealth generation through income is not only a product of own agency, but also has to be seen in connection to significant others such as parents or the spouse (i.e. linked lives). For instance, parental upbringing – including norms and values about saving and consumption – likely shapes an individual's behaviour throughout their life, influencing how much income is consumed or saved (LeBaron, Holmes, Jorgensen, & Bean, 2020).

Second, wealth may be obtained through financial transfers such as *inter vivos* transfers (i.e. asset transfers made during the life of the grantor), inheritances, or other windfall profits. Intergenerational wealth transmissions, including both bequests and *inter vivos* transfers, are commonly estimated to account for at least 50 percent of household wealth in the US (Gale & Scholz, 1994; Kotlikoff & Summers, 1981; Wilhelm, 2001). In Germany, it is estimated that intergenerational transfers contribute about 30 to 50 percent of the stock of private wealth (Alvaredo, Garbinti, & Piketty, 2017; Corneo, Bönke, & Westermeier, 2016). Thus, intergenerationally transmitted wealth can be a major contributor to a households' economic wellbeing and represents an important driver of rising wealth inequalities between households (Pfeffer & Killewald, 2017). The likelihood to receive inheritances naturally increases as individuals age. In the US, for example, heirs are commonly around 50 years of age (Zagheni & Wagner, 2015). Similar statistics apply to Germany, where two thirds of inheritances are received after the age of 40. In comparison, only one third of *inter vivos* transfers occur after this age (Szydlik, 2009). This is based on the fact that *inter vivos* transfers, for instance from parents to their children or grandchildren, are particularly likely to take place during certain life course events, transitions, and stages based on social norms and obligations. Relevant events, transitions, and stages, for instance, include marriage entry, childbirth, education, or times of financial hardship (Leopold & Schneider, 2011a; Pfeffer & Killewald, 2017). Overall, this second wealth accumulation channel – and more specifically intergenerational transfers – assumes that donors themselves have accumulated sufficient wealth to pass on, emphasising the importance of linked lives for an individual's wealth accumulation.

Third, the value of certain assets such as property, tangible assets (e.g. jewellery, gold, coins), or shares may increase in favourable markets leading to capital appreciation and therefore an increase

in the total value of wealth over time. This again depends on the diversity of the wealth portfolio and investment strategies deployed earlier in the life course, or even by others if those assets are inherited or gifted, which emphasises the path dependency of wealth accumulation (Dannefer, 2003; O'Rand, 1996).

Overall, these elaborations stress the cumulative nature of wealth over time with rather low wealth levels during younger ages and rising wealth as individuals age; there exists a wealth plateau or decline after retirement based on ceased labour market income and reliance on accumulated resources (Hurst, Luoh, Stafford, & Gale, 1998; Wolff, 1998). While this has commonly been considered the normative wealth accumulation pathway, the life course framework emphasises that this anticipated pathway can easily be disrupted and diverged through drastic events and transitions. One of those "turning points" in the anticipated wealth accumulation pathway may be marital dissolution, which can have important immediate consequences for wealth. In line with ideas about the cumulation of advantage and disadvantage, marital dissolution can be linked to deteriorated wealth accumulation potentials after divorce and thus influence wealth outcomes later within the life course.

2.3 Marital dissolution-related costs and the loss of the marriage wealth premium

Marital dissolution is associated with a range of wealth-relevant expenses throughout the marital dissolution process. Already prior to marital separation (i.e. the split of the married household into two separate households), spouses may anticipate repercussions of marital dissolution and adjust, for instance, the level of joint financial cooperation or increase their working hours (Finke & Pierce, 2006; Özcan & Breen, 2012). Separation itself can be costly based on the relocation of at least one spouse, although previous research showed that both spouses often eventually relocate due to high costs of the initial family home (Bröckel & Andreß, 2015; Mulder, 2013). The legal divorce proceeding commonly requires both spouses to pay for substantial administrative court fees and lawyer fees. In preparation for the finalisation of legal divorce, spouses also have to come to an agreement regarding jointly held wealth and the equalisation of marital wealth. This can incur costs and losses associated with the divestment of assets in order to allow a division of marital wealth between spouses (e.g. selling the family home, dividing shares, etc.). These temporally distinct costs and losses associated with marital dissolution will be discussed in more detail in Chapter 4.

In addition to the mentioned costs, divorcees likely lose a range of social and economic wealth-related benefits commonly associated with first marriage. Based on the centrality of the lack or loss of the

"marriage wealth premium" for short-term and long-term economic consequences of marital dissolution and the complexity of this premium, I will provide a more detailed elaboration on this premium at this stage of my thesis.

2.3.1 Social and economic benefits of marriage

Compared to single-headed households, couples benefit from economies of scale. This means that per capita expenses are cheaper based on the sharing of household items (e.g. the car, household appliances and furniture, etc.) and living space (e.g. rent) within couple households. As a result, living within single-headed households is more expensive than living in a couple household on a per capita basis. Although economies of scale are theoretically not influenced by the legal status of a couple (married or cohabiting), married spouses are more likely to pool and share their economic resources compared to cohabiters as an inherent feature of marriage, which will be discussed further in the following paragraphs (Vogler, Lyonette, & Wiggins, 2008).

Marriage is associated with normative roles and responsibilities for men and women, as well as a set of experiences that ought to take place within marriage in a certain order (e.g. have the first child shortly after marriage, etc.). These roles, responsibilities, and experiences differ distinctly from those associated with cohabitation or singlehood. Overall, this is commonly denoted the "marital script" (Dew, 2008; Waite & Gallagher, 2001). This script also contains a range of wealth-relevant expectations for the married and, thus, guides their savings objectives. The marital script, for instance, explicitly encourages investments for the family and a joint future (e.g. retirement, children's education, etc.) (Dew, 2008; Knoll, Tamborini, & Whitman, 2012; Townsend, 2002; Waite & Gallagher, 2001). Joint investments are more profitable and can, over time, lead to compounded interest effects as emphasised in section 2.2. Despite women's increased economic independence and rising individualisation within marriage over recent decades (Lewis, 2001; Lewis & Bennett, 2004), joint money management still becomes increasingly likely over time in marriage and with the transition to parenthood (Eickmeyer, Manning, & Brown, 2019; Hiekel, Liefbroer, & Poortman, 2014). According to Becker (1993) children can be considered a marriage-specific joint investment. Thus, parenthood transforms marriage into a collective enterprise to serve a social insurance function for children and care-takers who reduce their investments in the labour market (Blumstein & Schwartz, 1983; Curtis, 1986; Pollak, 1985). Thus, to compensate income losses of the carer – in line with gender norms, commonly those of the wife – and maximise utility, resource pooling and sharing becomes more likely (Eickmeyer et al., 2019). Conformity with this normative marital behaviour is socially rewarded through *inter vivos* transfers (Leopold & Schneider, 2011a).

Normative behaviour with regard to marriage entry and roles fulfilled within marriage is also endorsed through institutional structures and privileges for the married compared to non-married individuals, which – in line with the life course framework – emphasises the embeddedness of individual opportunities and constraints within their environmental circumstances. Married spouses and parents can often financially profit from tax reductions or joint insurances (e.g. health care insurance) and pensions, which reduces their household costs and frees up income that can be saved (Buslei & Wrohlich, 2014; Härtel, 2001; Vollmer, 2007). The German conservative welfare state system applies joint taxation with income splitting for married spouses (*Ehegattensplitting*) (Dearing, Hofer, Lietz, Winter-Ebmer, & Wrohlich, 2007). For spouses with within-couple earning gaps, the income splitting can substantially reduce the taxes that the higher earning spouse has to pay. Advantages such as income splitting or joint insurances and pensions rest on the notion of traditional ideas about gender roles and specialisation within marriage (Lundberg & Pollak, 1993). This means that women are expected to focus on un-paid labour, whereas men specialise in the labour market (Aisenbrey & Fasang, 2017; Trappe et al., 2015). According to Becker (1993) such behaviour is expected to maximise the utility of the entire household. In light of a rising prevalence of cohabiting couples and erosion of patriarchal family values and practices, tax systems and policies that encourage or favour such traditional gender roles have been heavily criticised over the last decades. Nevertheless, they are still in place (Pateman, 1988; Trzcinski, 2000; Wersig, 2011).

Next to tax or insurance privileges of the married, married spouses also benefit from other structural advantages, particularly with regard to homeownership. Entry into homeownership is more likely within marriage (Thomas & Mulder, 2016), although a large proportion of couples already cohabit prior to getting married (Heuveline & Timberlake, 2004). Homeownership represents a long-term investment with high front-loaded costs which require substantial commitment from spouses and joint saving efforts in order to qualify for a mortgage and achieve homeownership (Mulder & Wagner, 1998). In Germany, for instance, homeownership is largely restricted to the married due to high legal service charges and taxes (i.e. notarial fees, land transfer tax, and registration of ownership of land and property)[19]. This is accompanied by a comparatively prudential mortgage system (i.e. conservative lending system) that requires a substantial deposit and/or income security (Dewilde & Stier, 2014; Voigtländer, 2014, 2016).

[19] Legal service charges and taxes associated with property acquisition are up to 8 percent of the property value in Germany compared to 2.6 percent in the Netherlands or 1.3 percent in the UK (Voigtländer, 2016).

In addition to potential direct benefits associated with marriage (e.g. tax bonuses, better credit accessibility, etc.), selection into marriage likely matters for stratification processes. As already emphasised, marriage is associated with a range of normative economic behaviours. Those social norms that define marriage establish the perception of an "economic bar", which refers to social and financial markers (e.g. earnings, employment, assets) that couples feel need to be achieved in order to merit marriage entry and conform to the "marital script" (Gibson-Davis et al., 2018). Marriage entry is therefore more likely with rising asset ownership and wealth accumulation potentials (e.g. higher levels of education or income) (Lloyd & South, 1996; Schneider, 2011; Schwartz & Mare, 2005; Xie, Raymo, Goyette, & Thornton, 2003). In turn, this means that cohabiting couples are likely to postpone marriage entry if they face financial difficulties including indebtedness, lack of savings, or credit constraints that restrict them from taking out a mortgage (Addo, 2014; Carlson, McLanahan, & England, 2004; Edin & Reed, 2005; Gibson-Davis et al., 2005; Smock, Manning, & Porter, 2005).

Furthermore, spouses mate assortatively, meaning that spouses with similarly wealth-enhancing characteristics (e.g. income, education, parental wealth) are likely to couple (Charles, Hurst, & Killewald, 2013; Eika, Mogstad, & Zafar, 2019; Schwartz, 2010, 2013). This can in turn enhance their savings potential and makes joint investments even more beneficial. These mating patterns are dependent on the social background and network (e.g. meeting the spouse within the neighbourhood, at university, within the social circle, etc.), individual preferences (e.g. age, height, character traits, etc.), and cultural norms. Although previous assortative mating patterns, for instance by religious affiliation or ascribed traits such as race, have eroded due to growing secularisation and modernisation of societies, they have been replaced by patterns based on achieved characteristics such as education or income (Blossfeld, 2009; Lichter & Qian, 2019). Although this has the potential to accelerate the wealth accumulation of spouses compared to unmarried individuals, no research has yet explored this specific avenue for wealth inequality.

2.3.2 The marriage wealth premium in higher order unions

Based on the mentioned benefits associated with marriage, empirical research has confirmed a substantial wealth accumulation benefit for *first*-time married spouses compared to never-married singles and cohabiters (Kapelle & Lersch, 2020; Lersch, 2017; Painter, Frech, & Williams, 2015; Painter & Vespa, 2012). There are three theoretical reasons to expect differences in marriage wealth premiums in higher order unions.

First, based on the life course framework, a previous divorce experience and potentially continuous connection to the former spouse and children may influence decision-making within the new marriage. Furthermore, expectations about the longevity and consistency of the relationship might be lower in remarriage than in first marriage. Additionally, previous experiences on the division of household resources likely increase the cautiousness about the consequences of joint investments in remarriage and a desire to protect the personal and biological children's economic wellbeing. Overall, this leads to a higher likelihood of separate rather than joint systems of money management within higher-order unions compared to first marriage (Burgoyne & Morison, 1997; Kan & Laurie, 2014). Thus, remarried spouses are less likely to benefit from the sharing of resources and joint investments compared to first marriage.

Second, early investments benefit wealth accumulation throughout the life course based on compounded interest effects and natural wealth appreciation. As remarriage naturally takes place later in the life course, remarried spouses have less time to benefit from those wealth advantages compared to the first-time married.

Third, as divorce and remarriage are not in line with the normative family life course of continuous marriage, it is likely that social support – for instance through *inter vivos* transfers – is lower in remarriage than first-marriage. This does not only apply to financial support from parents to their remarried adult children, but is also important for the level of support that children provide to their remarried parents (Kalmijn, 2007). Violations of the social norm are thus socially penalised.

Although cross-sectional previous research found lower wealth levels amongst the remarried compared to first-time married (e.g. Lersch, 2017; Wilmoth & Koso, 2002), it remains unclear whether the remarried indeed benefit less from their marriage with regard to wealth accumulation processes than first-time married spouses.

2.4 Gender wealth gap

The previously described marital wealth premium has been shown to benefit both men's and women's wealth accumulation (Kapelle & Lersch, 2020; Lersch, 2017). Its loss, in addition to other wealth-related dissolution costs (e.g. costs associated with the division of joint assets, administrative divorce costs, etc.), may thus affect both men's and women's wealth resources to some degree. Nevertheless, wealth-related consequences of marital dissolution could overall carry higher penalties for women than men based on underlying gender differences in wealth accumulation potentials.

As emphasised within the introductory thesis chapter, pre-marital wealth as well as personal gifts and inheritances received during the marriage are not divided at divorce under the German default marital property regime. Gender differences in those non-marital wealth components are thus maintained through divorce. This is particularly crucial as substantial within-couple wealth inequalities – to the disadvantages of women – are mainly based on pre-marital differences (Grabka et al., 2015; Kapelle & Lersch, 2020). Additionally, Bessière (2019) emphasised that despite a legally equal division of *marital* wealth (i.e. wealth accumulated during the marriage excluding personal inheritances and gifts), the *de facto* division of this wealth often reinforces gender differences based on gender norms around men's and women's economic entitlements. As men are traditionally considered the main earner of the household, they are perceived to be entitled to a larger share of marital wealth, whereas women's economic and non-economic contributions to the household are commonly undervalued (Zelizer, 1989).

To further understand why women enter marriage with fewer resources or why they may differ from men in their wealth accumulation during marriage and after divorce, it is important to elaborate on the overarching, pervasive gendered structure in wealth processes; the gender wealth gap.

Although wealth is not a direct function of labour market income as emphasised in section 2.2, earning differences likely contribute to gender wealth disparities and are often cited as one of the main drivers of the gender wealth gap. Gendered earning inequalities, commonly denoted the gender pay gap, are expected to emerge partially through the undervaluing of jobs within female-dominated industries, occupational segregation, women's lower labour market attachment, and gender discrimination (Blau & Kahn, 2007; Hakim, 1992; Perales, 2013). Thus, while women tend to work fewer hours, they also work in occupations that have lower hourly wages than men even once differences in education, responsibility, or work experience are accounted for (de Ruijter, van Doorne-Huiskes, & Schippers, 2003; England, Reid, & Kilbourne, 1996). Additionally, women are less likely to hold managerial positions, which is deemed to be a result of pervasive gender barriers that limit women from rising beyond a certain hierarchical level – the so called "glass ceiling" (Arulampalam, Booth, & Bryan, 2007).

Gender pay differences have theoretically been explained through human capital theory and gender norms. According to Becker (1985), women have a predisposition to specialise in non-market work based on inherent biological differences. Thus, women are expected to be less inclined to invest into their human capital, whereas men specialise in paid labour with higher human capital investments. Within the family, Becker (1993) sees this specialisation as a necessary step to maximise household

production. The bargaining approach additionally argues that the partner with more resources – commonly the man – has higher bargaining power and will hence spend less time doing "undesired" unpaid labour (Blood & Wolfe, 1960). From a human capital point of view, Polachek (1981) further emphasises that women's higher likelihood of taking care-related career breaks or reductions in their working hours leads to a depreciation of women's human capital and, thus, lower pay. Finally, based on ideas around "doing gender" and gender stereotypes, men and women are expected to behave in gender-conforming ways (Alwin, Braun, & Scott, 1992; Gorman & Fritzsche, 2002; Mays, 2012). Violations of those norms can have social repercussions, such as gender-based discriminations or other interpersonal sanctions in the form of ridicule, gossip, or ostracism, which shape individuals' decision-making (Settersten, 2003a; Tinsley, Howell, & Amanatullah, 2015). Social norms thus reinforce the gender division of labour, but may also lead to gender differences in pay negotiations or women's selection into more flexible, but lower paid jobs in order to take on care responsibilities that often do not allow for a rigid work structure and long working hours (Alwin et al., 1992; Gorman & Fritzsche, 2002; Wade, 2001).

Despite women's rising educational achievements over the last decade, gender ideologies about a traditional division of labour are still institutionally endorsed, for instance through childcare and parental leave systems, or higher taxation of the lower earning spouse (Castro-García & Pazos-Moran, 2016; Kreyenfeld & Hank, 2000; Orloff, 1993; Zoch & Hondralis, 2017). As a result, women (but particularly mothers) earn substantially less than men, which reduces the amount women can personally save (Boll & Lagemann, 2019; Lersch, Jacob, & Hank, 2017; Raley, Mattingly, & Bianchi, 2006).

While differences in absolute labour market earnings are one aspect that contributes to gender wealth differences, Chang (2010) emphasised that gender wealth differences are not merely a result of income differences, but are also amplified based on the idea that men's earnings translate into wealth more efficiently due to the "wealth escalator". The wealth escalator refers to wealth-building tools that men – based on their higher intensity of labour market attachment, higher earnings, occupations, or hierarchical positions – are more likely to benefit from. These tools include fringe benefits such as pension entitlements or bonus payments, as well as structural advantages such as tax bonuses or government benefits. This emphasises the structural embeddedness of individual's wealth accumulation within an institutional context that over-proportionally benefits men's wealth accumulation compared to women.

Gender differences in investment behaviour and access to different investments have been cited as another potential driver of the gender wealth gap (Fisher, 2010; Sierminska, Frick, & Grabka, 2010). Women invest more conservatively, with main wealth components being savings accounts and housing wealth, whereas men often have a more diverse wealth portfolio including high-risk wealth components that have the potential to yield higher returns of investment in favourable markets (Austen, Jefferson, & Ong, 2014; Hinz, Mccarthy, & Turner, 1997; Sundén & Surette, 1998). Men's and women's investment strategies seem to align with gender role expectations and norms (e.g. women are expected to be more cautious, etc.). Some researchers have thus explained gendered investment strategies with a higher risk-aversion of women compared to men (Bajtelsmit & Bernasek, 1996; Jianakoplos & Bernasek, 1998). Other studies, however, showed that women tend to have lower financial literacy; this could explain women's lower stock market participation and their alleged risk aversion (Almenberg & Dreber, 2015; Huston, 2010; Lusardi & Mitchell, 2008). Institutionalised structural constraints to the access of credit or mortgage are other limiting factors for women's investment efforts (Alesina, Lotti, & Mistrulli, 2013; Ladd, 1998).

Finally, considering that intergenerational transfers constitute a substantial proportion of private wealth, gendered transfers would have the potential to contribute to the gender wealth gap. Bessière (2019) emphasised that family wealth planning through intergenerational transfers often endorses men's normative entitlement to relevant assets such as property or businesses. In the majority of Western societies however, including Germany, law prohibits the discrimination of heirs based on their gender, which may be difficult to circumvent in practice. Thus, researchers commonly find that the likelihood to receive inheritances and the average value received do not differ by gender (Edlund & Kopczuk, 2009; Leopold & Schneider, 2011b; Szydlik, 2004). As the distribution of *inter vivos* transfers is not legally regulated, gender practices as described by Bessière (2019) seem more likely to emerge through this type of intergenerational transfer. Previous empirical evidence on *inter vivos* transfers is, however, not conclusive about gender differences. In Germany, men are generally found to have a higher likelihood to receive *inter vivos* transfers and receive higher transfers than women (Deindl & Isengard, 2011; Leopold & Schneider, 2011b). As suggested by Bessière (2019), Leopold and Schneider (2011a) further showed that German men are more likely to be gifted housing property, whereas the authors found no gender differences for cash transfers.[20] Results for other countries contradict the German findings: For Sweden, Nordblom and Ohlsson (2011) showed that women are more likely to receive *inter vivos* transfers than men and also receive higher transfers. A recent US

[20] Gender differences in financial *inter vivos* transfers may be "compensated" through higher non-financial support from parents to their adult daughters, for instance, through support with childcare.

study by Loxton (2019) found that women are more likely to receive *inter vivos* transfers, although her analyses did not detect gender differences in the amount of transfers.

In line with these theoretical ideas about factors that enhance men's and inhibit women's wealth accumulation, previous research has persistently found a substantial gender-wealth gap to the disadvantage of women (Bonnet, Keogh, & Rapoport, 2014; Grabka et al., 2015; Kapelle & Lersch, 2020; Lersch, 2017; Sierminska et al., 2010). This is likely to shape men's and women's wealth accumulation throughout marital dissolution and thereafter.

2.5 Concluding remarks

This chapter has discussed key concepts that are relevant for the present thesis. At the core, I highlighted the importance of considering the association between marital dissolution and personal wealth using a life course framework. Most prominently, the framework acknowledges men's and women's financial anticipation of marital dissolution, the immediate effects of marital separation and divorce for wealth, and the cumulation of marital dissolution-related wealth disadvantage over time. Marital dissolution may substantially divert an individual's wealth accumulation trajectory from their anticipated trajectory, with relevant differences between men and women based on their unique opportunity structures and constraints. To thoroughly examine the wealth changes of men and women throughout the marital dissolution process, in line with the life course approach, I use longitudinal data and methods which I will elaborate on in the next thesis chapter. Following the methodological chapter, I continue with the in-depth empirical analyses of my research questions within Chapters 4, 5, and 6.

3. Chapter – Data and methodology

Chapter 2 elaborated on the life course framework as the guiding framework for the present thesis. As previously highlighted, life course research is bound to the overarching commitment to taking the "long view", highlighting the importance of analysing individual development as a time-dependent process. Longitudinal data and their analysis have thus become "the current gold standard of quantitative social science" as Mayer (2009) highlighted. Using data from the German Socio-Economic Panel (SOEP) study, the present thesis follows these recommendations in its analyses of dynamic wealth changes associated with marital dissolution in the life courses of German men and women. In the present thesis chapter, I will elaborate on and justify the data and methods applied in the empirical Chapters 4, 5, and 6.

Before proceeding to the descriptions of the SOEP data, it seems relevant to briefly define longitudinal data and highlight their advantages. Longitudinal data refer to data gathered during the observation of subjects on a number of variables over time (Longhi & Nandi, 2015, p. 3; Ruspini, 2002, p. 3). Although the term "panel data" is often used interchangeably with "longitudinal data", panel data – that repeatedly interview the same subjects over time – are only one way to obtain longitudinal data. Next to the prospective research design of panel data, longitudinal data can also be gathered via a retrospective research design. Within this type of design, respondents are asked to provide information on life histories including events and other past aspects of their own life courses, such as their living arrangements at a specific age or their educational career.[21] The majority of household panel surveys utilise both methods of data collection to comprehensively capture the life courses of respondents.

Although longitudinal data are more expensive and difficult to collect and handle, they have several advantages over cross-sectional data: Firstly, through the repeated measurement of the same units over time, the data enable researchers to control for time-constant unknown unit of interest characteristics. Secondly, while cross-sectional data can only answer questions of point-in-time level differences between subjects or trends[22], longitudinal data can additionally be used to analyse

[21] Some authors suggest that – depending on the research questions – a repeated cross-sectional survey design may also be partially counted as a way to collect longitudinal data. As repeated cross-sectional studies collected data from completely different or largely different respondents at successive time points, they are commonly used for trend analyses and cannot assess individual change (e.g. Longhi & Nandi, 2015; Ruspini, 2002).

[22] For instance, researchers could examine the wealth of private households across different age groups, which has previously been used to explain how wealth may be accumulated over the life course. Associated results, however, under-estimated cohort differences (i.e. earlier cohorts had less wealth than younger cohorts at similar ages across their life course (Alessie, Lusardi, & Aldershof, 1997; King & Dicks-Mireaux, 1982; Land & Russell, 1996; Wolff, 1998)

questions around within-subject changes over time.[23] Thirdly, longitudinal data enable the analysis of individuals' dynamics, including the distinction of age and cohort effects. While time-varying heterogeneity of unobservable variables can still bias results, the time-constant part of unobserved heterogeneity can at least be controlled for with panel data. Finally, longitudinal data provide information on the temporal order of life stages, events, and transitions, which enables a more appropriate assessment of causal links compared to cross-sectional data (Andreß, Golsch, & Schmidt, 2013; Hsiao, 2014).

3.1 The German Socio-Economic Panel (SOEP) study

The present thesis utilises data from the German Socio-Economic Panel (SOEP) study, version 34 (doi:10.5684/soep.v34; see Goebel et al. (2019) for detailed descriptions on the SOEP data). The SOEP is a large ongoing household panel study with a yearly repeated collection of information from all adult household members aged 17 years and over, as well as a collection of detailed retrospective individual histories on a range of topics (e.g. socio-economic background, relationship histories, etc.). The dataset was established in 1984 with approximately 6,000 households and 12,000 individual respondents as a representative cross-section of the German adult population living in private households, and a subsample that over-sampled households originating from Turkey, Spain, Italy, Greece, and former Yugoslavia. With the unique historic situations of the German reunification in 1989, the SOEP was expanded in June 1990 – even before the Economic, Social, and Monetary Union – to include a subsample of 2,200 East-German households with almost 4,500 respondents. Over the years, new samples have been added to include special subpopulations such as migrants, refugees, high-income households, or at-risk families (e.g. single parents or large families). Panel attrition has additionally challenged the representativeness of the data and the adequacy of the sample size. Thus, several refreshment samples have been included. Currently the survey contains a total of nearly 15,000 households with 30,000 members (Goebel et al., 2019).

Compared to other household panel studies, the SOEP uses rather comprehensive following rules whereby household members are followed and surveyed even once they leave the originally sampled household. This is, for instance, the case after divorce or when children move out of their parental household. Hence, both the original household with its remaining household members and the new household with its members are surveyed. Additionally, if a new person enters a sampled household

[23] For instance, wealth changes of the same individuals over time.

(e.g. the partner of a household member) they become part of the SOEP sample and are followed from then onwards (Schonlau, Watson, & Kroh, 2011).

Ever since its implementation in 1984, the aim of the SOEP survey – like other household panel studies – was to enable the analysis of individual-level and household-level experiences over a long period of time and thus improve the understanding of the prevalence, duration, pattern, intersection, and impact of life course events, stages, and transitions embedded within the social network and historical time. Therefore, the data include a range of core topics such as household demography and population, education and qualification, occupation and employment, earnings and working time, housing and rent, and physical and mental health, as well as subjective indicators on attitudes, values, and personality. To cover these topics, the SOEP includes a stable set of core annual questions which is enhanced with rotating modules covering themes such as wealth or social networks (Goebel et al., 2019). The present thesis heavily relies on the wealth module which contains information on individual-level and aggregated household-level wealth data in the years 2002, 2007, 2012, and 2017 (Grabka & Westermeier, 2015).

To gather information, the SOEP uses several modes of data collection with face-to-face interviewing as the default. Original data recording was conducted by the interviewers via paper-and-pencil interviews (PAPI mode). To ease the transfer of the data into an electronic format, computer-assisted personal interviews (CAPI mode) have been used since 1998 (Schräpler, Schupp, & Wagner, 2010). Recently, computer-assisted web interviews (CAWI) have been offered as an alternative to PAPI and CAPI interviews. Nevertheless, personal contact between the interviewers and respondents will remain an important feature of the SOEP (Lüdtke & Schupp, 2017). Interviewers gather information using two central survey instruments: a household questionnaire, which is completed by the household head, and an individual questionnaire, which each adult household member is asked to complete. To cover retrospective life course stages, events, and transitions, respondents are asked to complete biography questionnaires (Goebel et al., 2019). This is particularly crucial for the current thesis as, for a large portion of SOEP respondents, detailed marital histories are available.

The SOEP survey is particularly well-suited for the purpose of the current thesis as it (a) measures current and past marital dissolution events, (b) contains a sufficient number of marital dissolution events due to a comparatively large sample size and long panel, (c) is internationally unique in collecting comprehensive wealth data at the individual level over four waves, and (d) provides a wide range of auxiliary variables on characteristics of the respondents and their households.

3.2 The SOEP wealth module

3.2.1 Wealth components

Starting in 2002, the SOEP survey team has been collecting comprehensive wealth data on a quadrennial basis (2002, 2007, 2012, and 2017). The wealth module covers a total of nine asset and liability components. Information on asset components is collected for financial assets, business assets, tangible assets, owner-occupied housing, other property, and private pensions and life insurances. The debt components include mortgage debts for owner-occupied property, mortgage on other property, and consumer credits. In 2002, information on assets in building loans was included under the category of 'private pensions and life insurances'; it has been collected as a separate wealth component since 2007 (Grabka & Westermeier, 2015).

A range of wealth components are not covered within the SOEP wealth module, including cash, the value of livestock and crops, equipment, intangible fixed assets, claims against private health insurance companies, commercial loans, and commercial holdings in residential buildings. Additionally, the SOEP does not cover public pension entitlements due to the structure of the German pension system (Grabka & Westermeier, 2015). As the German state pension system is a redistributive model whereby individuals collect pension points over their working lives,[24] pension points cannot be paid out as a lump sum, nor can pension entitlements be accessed prior to the legal retirement age. During retirement, pension points are converted into a monthly state pension with individual pay-out amounts determined by the total amount of points collected and the yearly fixed cash value assigned to a pension point. Sierminska et al. (2010) – in line with discussions by Spilerman (2000) – highlighted that, based on the unique characteristics of the German state pension system, pension entitlement differs substantially from other wealth components that can be liquidised, transferred, or used as collateral.

3.2.2 The measurement of wealth

Whereas other panel studies commonly measure the majority of wealth components at the household-level, with one household member providing information on the financial standing of the entire household, all wealth information is collected at the individual-level within the SOEP. This means

[24] This means that pension payments of contributors are not saved in a personal account that is accessed in older age, but payments are used to fund current pensions. This is also known as the pay-as-you-go system.

that each household member 17 years of age or older is surveyed about their personal and potentially shared assets and liabilities.

Wealth data collection follows several steps: Firstly, a filter question (yes/no) is asked to assess whether the respondent personally holds a certain type of asset or liability. Secondly, if respondents answer in the affirmative, they are asked to provide the total value of the asset or liability. Thirdly, a second filter question (yes/no) is asked to assess whether the asset or liability is held jointly. This is only done for wealth components that can theoretically be owned jointly (e.g. housing equity). Fourthly, if respondents affirm joint ownership, they are asked to provide their personal share in percentage points. Using the total metric value of wealth components and their personal shares, the SOEP team calculates the value of personally owned assets and liabilities. Based on all household members' personal wealth, the SOEP team further aggregates personal-level wealth to the household-level.

3.2.3 Methodological challenges and quality of the wealth data

3.2.3.1 Non-response, attrition, and misreporting

More complexity is introduced by the fact that the provision of wealth data is generally considered sensitive, which leads to higher incidences of non-response, attrition, or misreporting than less sensitive data such as age, gender, or the level of schooling (Riphahn & Serfling, 2005). While this challenge is shared across household panel surveys that collect wealth data, it requires more elaborate statistical techniques to deal with missing wealth information. This is done by the SOEP survey team to ensure ease of use of wealth data and data quality. SOEP users are thus provided with edited and imputed wealth data.

The stepwise editing and imputation process conducted by the SOEP team is complex, but transparent and well documented by Grabka and Westermeier (2015). First, non-missing wealth data are assessed for consistency and plausibility across household members. Following a set of logical rules, information is harmonised across members. Second, item non-response and unit non-response are addressed by means of imputation where necessary. Item non-response refers to missing information on certain wealth components while the respondent completed other parts of the questionnaire. Unit non-response applies when the respondent did not participate in a certain survey year. As all household members are surveyed separately about potentially jointly held wealth components, logical imputation may be used to impute filter data (e.g. homeowner yes/no) and metric values (e.g. property

values) for respondents where partners or other household members provided valid wealth data. If filter data cannot be logically imputed, the SOEP team proceeds to imputations by means of logistic regression. The remaining missing data on metric values are further imputed through multiple imputation by chained equations and a univariate imputation procedure for panel data (row-and-column method by Little and Su (1989)) which relies on information across waves.

Missing SOEP wealth data are assumed to be missing at random (Allison, 1987) and covariates included in the imputation models vary for the different wealth components after careful consideration by the SOEP survey team. Imputations for cases of item non-response and cases of unit non-response are conducted separately. A detailed description of the editing and imputation process of SOEP wealth data is provided by Grabka and Westermeier (2015).

For the first three wealth waves, around 39 percent of data are edited and/or imputed. Incidences of item non-response are, however, relatively low and range between zero percent for debts on other property and up to 14 percent for measures on private insurance (Grabka & Westermeier, 2015). As the latest wealth data (i.e. wave 2017) were released only recently (i.e. in mid-2019), there is no current technical report on missing data available as of yet.

The edited and imputed SOEP wealth data compare well to other wealth data based on the economic balance sheets of the German Federal Statistical Office and Deutsche Bundesbank, although the SOEP data slightly underestimate per capita wealth. This is unlikely due to an inferior quality of the SOEP data, but rather a reflection of the wealth components that are not covered within the SOEP, such as the value of vehicles (Grabka & Westermeier, 2015). To better cover more affluent households, the SOEP has included a subsample of "high-income households" since 2002. While this likely also covers a greater share of the more wealthy population, it is unlikely that the data adequately reflect the top one percent of the wealth distribution within the German population (Schröder et al., 2019; Westermeier & Grabka, 2015). This is, however, no issue for the current thesis, as the focus lies on the average effect of marital dissolution on wealth for the wider population.

3.2.3.2 Skewness of the wealth data and empirical implications

It has been well recognised that household wealth is distributed unequally within the population; wealth inequality is thereby even more severe than income inequality. Within OECD countries, the wealthiest 10 percent of households own, on average, 52 percent of total household wealth. In comparison, the bottom 60 percent of households hold only 12 percent of all household wealth (Balestra & Tonkin, 2018). Based on 2017 SOEP data, the top 10 percent of the German population

owns 56 percent of all wealth while the bottom 60 percent of Germans own only 5 percent of the total wealth (Grabka & Halbmeier, 2019). Thus, the wealth distribution is highly right-skewed, as illustrated in Figure 3.1 , based on calculations from Goebel et al. (2019) who used the 2017 SOEP wealth data.

Figure 3.1 Wealth distribution by quantiles

Notes: Graph based on calculations from Goebel et al. (2019). SOEP v34, top-coding of top 0.1 percent.

To deal with the skewness of the data, Killewald et al. (2017) provided a range of suggestions. Firstly, top-coding and – depending on the measure – bottom-coding can reduce the potential influence of extreme outliers. Top- and bottom-coding refer to the censoring of data points above an upper bound or below a lower bound. In the present thesis, top- and bottom-coding is applied to the top and bottom one percent of the net wealth distribution of a given year. Secondly, wealth data can be transformed to deal with the skewness of the data. As total net wealth refers to all assets minus liabilities, the measure can contain zero and negative values; thus, this must be considered in the transformation. Common transformations such as the natural log can, for instance, solely deal with skewedness in positive values, but several alternatives of wealth data transformations have been discussed in the literature (Killewald et al., 2017). Firstly, an Inverse-Hyperbolic-Sine (IHS) transformation may be employed to wealth data. The IHS transformation can be expressed as:

$$ihs(x) = \log(\sqrt{x^2 + 1} + x)$$

where x represents wealth and $ihs(x)$ represents the transformed wealth variable. This type of data transformation has the advantage of being able deal with negative and zero values. It generates a function that is about linear for wealth values around zero and logarithmic for large values (Friedline, Masa, & Chowa, 2015; Pence, 2006).

Secondly, individuals or households can be ranked according to where they sit within the wealth distribution and the rank measure can then be used as an outcome variable or predictor in further analyses. Ranging, for instance, from 0 to 1, the rank measure indicates the proportion of units that have less or more wealth than the reference unit. The choice to use an IHS-transformation or the rank units should be made considering the specific research aims and questions. Within the present thesis, both approaches are applied.

3.3 Marital dissolution measurement within the SOEP

Whereas each empirical chapter provides detailed information on the measures used for the analyses, the present section provides a brief overview of how marital dissolution is captured within the SOEP data to provide a sound background for the following empirical chapters.

On a yearly basis, SOEP participants are asked to indicate their current marital status with the question "What is your marital status?". While the response categories for this question have been expanded over the years to reflect the increasing recognition of non-heterosexual couples, the core categories to capture the legal marital status have stayed consistent: "married, living together with spouse", "married, living (permanently) separated from my spouse", "single, never married", "divorced", and "widowed". Additionally, respondents are asked to indicate whether their family situation has changed since 1st of January of the previous year (i.e. for the 2002 questionnaire, respondents are asked about changes after 31st December 2000). Life course transitions covered within this question include marriage, divorce, separation, and widowhood next to events like childbirth. If respondents indicate that their family situation has changed, they are further asked to indicate in which month and year (i.e. current interview year or the previous year) this change occurred. For marital transitions that may have occurred prior to panel entry, respondents are asked to complete a retrospective biography questionnaire that also covers other topics such as respondents' family of origin or their living situation at the age of 15. With regard to the marital history, the biography questionnaire covers information on the year of marriage entry and potential year of marital dissolution for up to three marriages. For marital dissolution, the questionnaire distinguished between widowhood and divorce.

Relationship information from all data sources is compiled by the SOEP team into two datasets: BIOMARSY and BIOMARSM. BIOMARSY provides yearly information on the marital status and transitions since the year of birth, while BIOMARSM refers to monthly information on marital states and transitions since panel entry (Goebel, 2017). The present thesis utilises information from both datasets.

3.4 Statistical methodology

3.4.1 Addressing missing data

As already mentioned in section 3.2.3.1 when referring to missing data within the SOEP wealth module, panel household surveys require researchers to deal with missing data due to item non-response or unit non-response. Inadequate treatment of missing values can lead to biased or inefficient results. To appropriately choose methods for treating missing data, it is crucial to understand the mechanisms that lead to missing data. In line with Rubin's work, the mechanisms for missing data can broadly be classified as 'missing completely at random' (MCAR), 'missing at random' (MAR), and 'not missing at random' (NMAR) (Little & Rubin, 2002; Rubin, 1976).

MCAR occurs when the probability of missing data on a variable is completely unrelated to any other variable, observed or unobserved, and the missing value itself. Hence, the occurrence of missing values is completely unsystematic and the observed data are a random subsample of the complete population-level data. In this case, researchers may discard non-complete data using techniques such as complete-case analysis (i.e. exclude all units which have missing data on any of the relevant variables) and obtain unbiased estimation results. Depending on how many cases are deleted from the sample, the deletion can however lead to a substantial reduction in the sample size and statistical power of the outcome analyses. Additionally, in practice it is highly unlikely that missingness is indeed unsystematic, as assumed by the MCAR mechanism (Little & Rubin, 2002).

If missing data are not MCAR, they may either be MAR or NMAR. MAR occurs when missingness is related to other observed variables, but not the underlying true value of the incomplete data. On the other hand, data can be classified as NMAR if the missing data systematically relate to the true underlying value that is missing. Empirically, however, it is impossible to verify whether missing data are MAR or NMAR, as the required information for such an assessment depends on the unobserved data themselves. Currently, available missing data methods necessarily assume that missing data are MAR instead of NMAR.

To obtain possible unbiased results under the assumption of MAR and maintain the full set of sample units, researchers commonly impute missing data. Imputation methods can vary in their complexity. Simple single-imputation methods include approaches such as mean imputations (i.e. missing values are filled with the group or population mean), carrying forward values (i.e. using information from previous years), including missing values as a category for categorical measures, or regression-based methods with or without a random component to replace a missing value with a single predicted value. These methods can circumvent some of the drawbacks of data deletion techniques, but likely lead to artificially small standard errors. This is because imputed values are treated equally to non-imputed data within the outcome analysis and uncertainty in the imputation is neglected (Gelman & Hill, 2006; Little & Rubin, 2002).

Multiple imputation provides an approach to deal with missing data while reducing drawbacks from the other previously mentioned methods. It proceeds in three main steps: firstly, missing values are identified and replaced by a set of plausible values resulting in multiple completed datasets. For non-missing data, values are consistent across the series of *m* dataset, while stochastically imputed values differ to reflect the uncertainty of imputations. Traditionally, five imputed datasets were suggested to be sufficient, although recent scholars have started to recommend a larger number of *m* to appropriately account for cross-imputation variation – particularly if the share of missing data is high (Azur, Stuart, Frangakis, & Leaf, 2011; Schaefer, 1997; White, Royston, & Wood, 2011). Secondly, the desired outcome analysis is performed separately for each generated dataset. Thus, if the first step resulted in five completed datasets, five separate outcome analyses are conducted. Thirdly, results of the sets of outcome analyses are pooled into a single multiple-imputed result. For missing data that are MAR, this approach produces results that are both unbiased and efficient (Little & Rubin, 2002).

While several approaches to multiple imputations are available, the current thesis employs 'multiple imputation by chained equations' (MICE) to address missing data (Van Buuren, 2007). The MICE approach was chosen as it can handle various variable types (i.e. ordinal, continuous, etc.) and each variable can be modelled according to its distribution (i.e. linear regression, logistic regression, etc.). In addition to its flexibility, MICE can handle data complexity including bounds or survey skip patterns (Azur et al., 2011). The MICE algorithm uses a chain of regression equations to obtain imputations. Firstly, all missing values are filled through simple random sampling with replacement using observed values of the variable. In the next step, one variable with missing data is regressed on other variables in the dataset using the appropriate regression model depending on the variables' distributions. The regression is restricted to individuals with valid observations in the variable with missing data. Missing data points in the variable are now replaced with a random draw from the

posterior predictive distribution. The process is repeated for each variable with missing values in turn. To stabilise the imputation results the process is cycled through multiple times. This is referred to as the burn-in period. As the described process results in only one completed dataset, it is repeated *m* times to obtain several completed datasets (Azur et al., 2011; White et al., 2011).

For panel data, the imputation process faces an additional complexity. As available MICE-based imputation methods commonly handle only cross-sectional data, I followed suggestions by Young and Johnson (2015) for the empirical thesis Chapters 4 and 5 and reshaped panel data into a wide format.[25] This means that each unit is represented in a single row with repeated responses captured in separate variables. This way, information from previous years can easily be incorporated as predictors into the imputation regressions. As many measures are stable over time and thus predict values in following years, the inclusion of information from previous years leads to better quality of imputed data.

Multiple imputations were conducted for all three empirical chapters and a detailed overview of variables used within the subsequent imputations is provided within each chapter. Analyses of all empirical thesis chapters are based on $m = 5$ imputed dataset[26] and results across the datasets are pooled using Rubin's rules (Rubin, 1987).

3.4.2 Longitudinal data analyses

In the present thesis, I utilise statistical modelling techniques from two approaches of longitudinal research to understand wealth dynamics around marital dissolution within the life courses of German men and women: (i) variable-based and (ii) process-based (Cornwell, 2015). A variable-based approach commonly refers to models that examine whether and/or when an event occurs (i.e. event history analysis), as well as models that predict change in an outcome over time (i.e. panel analysis and growth curve analysis). One could also classify variable-based approaches as approaches that are concerned with certain life course transitions. As I focus on changes of wealth as a potential outcome of marital dissolution, I utilise the second type of models. The process-based approach to longitudinal research refers to the algorithmic tradition of identifying patterns across whole sequences of events, transitions, and states that, for instance, represent life courses or other types of temporal processes.

[25] For thesis Chapter 6, I conducted imputations separately for each survey year as the chapter relies on all available 34 survey years. Conducting imputations in the wide format for 34 years and a substantial number of variables was unfeasible and impractical.

[26] As the amount of missing data is rather low for all three empirical chapters, I decided to restrict *m* to 5. Additionally, a larger number of *m* datasets requires substantially more computational time and/or upgraded hardware capacity, which was unfeasible in light of thesis equipment and time restrictions.

"Entire" life courses or long timeframes of a life course can be mapped through sequence analysis (Aisenbrey & Fasang, 2010).

While a wide range of methods can be used to analyse longitudinal data, the following sections focus solely on methods that I deemed appropriate to answer my main thesis research aims within the three empirical chapters.

3.4.2.1 Fixed-effects and random-effects models

The statistically simplest approach to analysing panel data is to apply a cross-sectional method through 'pooled ordinary least square' (POLS) regression models. This means that panel waves are pooled and each repeated measurement of a sample unit is treated as an independent observation. As this approach does not acknowledge that observations are nested within individuals over time, POLS violates regression assumptions about no serial correlation (i.e. independence between observations) and can lead to substantially biased estimations (Andreß et al., 2013).

The hierarchical panel data structure (i.e. person-year observation nested within individuals) can be statistically represented in a regression model as follows:

$$y_{it} = \beta_0 + \beta_1 x_{1it} + \gamma_1 z_{1i} + u_i + \varepsilon_{it} \qquad \textbf{(1)}$$

where subscript i denotes individuals and subscript t denotes the time period (e.g. waves, years, etc.). Therefore, y_{it} represents the outcome variable, which varies across individuals and over time as indicated by the subscripts i and t. The intercept term is denoted β_0. The equation further contains two independent variables: the time-varying variable x_{it} (e.g. income, hours worked, etc.) and the time-constant variable z_i (e.g. migration background, place of birth, etc.). Compared to a regression with cross-sectional data, the error term of panel regressions is split into the two components u_i and ε_{it}. The first error term, u_i, is an individual-specific effect that relates to all unobserved and stable characteristics of individuals which may influence the estimation of the outcome variable. The second error term, ε_{it}, is an idiosyncratic error term (i.e. purely random) that varies across individuals over time.

One commonly used approach to appropriately leverage the hierarchical panel data structure (i.e. person-year observation nested within individuals) are fixed-effects regression models. These models can illustrate how changes over time in individuals' characteristics are associated with changes over time in their outcomes, which is ideal for the present thesis to assess how marital status changes (i.e.

from being married to separated to divorced) are associated with personal wealth changes. Three common approaches to estimate fixed-effects regression models are available to researchers: (i) the mean-deviation method, (ii) the least squares dummy variable (LSDV) method, and (iii) the first difference (FD) method (Allison, 2009; Andreß et al., 2013; Wooldridge, 2010). While all approaches have the potential to provide valid estimation results, the LSDV approach relies on the inclusion of dummy variables to represent all sample units within the data. As the present thesis draws on a large set of SOEP sample respondents, the LSDV approach is cumbersome and unsuitable. The FD approach is commonly considered inferior to the other two methods as it uses only two waves of data (e.g. last year married and first year of being divorced). If more than two waves are available – as is the case for the SOEP data – the FD discards important information. I thus estimate fixed-effects models by mean-differencing.

The mean-differencing approach calculates the mean value of outcome and explanatory variables for each respondent across all available time points in a first step (e.g. for three waves: $\bar{y}_i = (y_{i1} + y_{i2} + y_{i3})/3$). For time-constant components, taking the average results in their original values. In the second step, all measurements are centred on their unit-specific means (e.g. $y_{i1} - \bar{y}_i$), which is commonly referred to as the 'within transformation' (Andreß et al., 2013). As time-constant factors are averaged out through the mean centring, equation 1 can be rewritten as follows:

$$y_{it} - \bar{y}_i = \beta_1(x_{1it} - \bar{x}_{1i}) + (\varepsilon_{it} - \bar{\varepsilon}_i) \qquad \textbf{(2)}\ ^{27}$$

The fixed-effects model thus relies solely on within individual variation in the selected variables while discarding any between individual variation. Although this makes these models less efficient due to the loss of information and only applicable if the research focuses on within-individual variation, it allows researchers to implicitly account for any observable and unobservable time-constant heterogeneity. These fixed-effects models, however, require at least two observations of the same individual over time and substantial variation in the variables of interest. As these models are ideal to estimate how changes over time in individuals' characteristics (e.g. marital status) are associated with changes over time in their outcomes (e.g. wealth), this approach is used for the empirical analysis applied in Chapter 4.

[27] Although the within-transformation averaged out the intercept, a range of statistical programmes – including STATA – nevertheless provide an estimate of a regression constant. This is due to the fact that the programme uses a slightly different transformation whereby the unit-specific mean is not subtracted from all variables. Rather, the programme considers how much the unit-specific means deviate from the subsequent overall mean. According to Andreß et al. (2013) the fixed-effects regression equation should thus include a constant term and may be re-written as follows: $y_{it} - \bar{y}_i = \beta_0 + \beta_1(x_{1it} - \bar{x}_{1i}) + (\varepsilon_{it} - \bar{\varepsilon}_i)$.

A less restrictive modelling approach compared to the fixed-effects estimation approach is the random-effects model. This model uses a combination of between individual and within individual variation for a more efficient estimation of the impact of the independent variables on the dependent variable – under the premise that model assumptions hold. Random-effects models also statistically originate from the generalised linear equation model for panel data (see equation 1) which includes both time-dependent and time-constant independent variables and an error term consisting of two components, u_i and ε_{it}. Whereas the fixed-effects approach differences out the error term u_i (i.e. the unobserved time-constant heterogeneity), the random-effects approach assumes that u_i is a random variable with specific characteristics: First, it is assumed to come from a random distribution, meaning that it is independent and identically distributed with a mean of 0 and constant variance. Second, it is assumed to be uncorrelated with the other explanatory variables. Based on those assumptions, the error term u_i is estimated as part of the panel regression model and captures time-related correlations. Because the random-effects model divides the regression error term into the two components, u_i and ε_{it}, it is also called a variance components model, error component model, or random intercept multilevel model (Longhi & Nandi, 2015; Rabe-Hesketh & Skrondal, 2012).

3.4.2.2 Growth curve models

A special case of the previously introduced random-effects model is the growth-curve model that contains a coefficient of time. Within the current thesis, I use this model to scrutinise wealth growth rates *after* marital dissolution to understand the degree or lack of financial recovery after this life course event. In addition, it allows me to simultaneously assess the prevalence of a potential *immediate* wealth-penalty linked to marital dissolution. Although growth curve models can be estimated within a fixed-effects framework, based on the limited number of wealth waves and thus restricted timeframe, in addition to limited sample of divorced respondents, I deemed the fixed-effects approach unfeasible for the current thesis and apply growth curve models that are based on a random-effects estimation approach.

Disregarding the panel structure of the data, one may try to examine the change in wealth using a simple cross-sectional regression model that is fitted to the panel data and written as:

$$y_{it} = \beta_0 + \beta_1 TIME + \varepsilon_{it} \qquad \textbf{(3)}$$

The outcome variable (e.g. wealth) is denoted as y_{it}, which again varies across individuals i and over time t. The intercept is reflected by β_0, which represents the expected value of the outcome variable when all independent variables included in the model are equal to zero. *TIME* refers to a temporal

measurement (e.g. wave, age, time since event, etc.) and β_1 represents the expected change in y_{it} for a one unit increase in *TIME*. The idiosyncratic error term that varies across individuals over time is denoted ε_{it}. While this model represents the average intercept and slope of the sample, it does not address differences in individuals' trajectories and potentially underlying systematic differences between individuals. Additionally, it violates assumptions about independence and constant error variance, which likely leads to biased coefficient estimates and incorrect standard errors. To appropriately address these methodological downsides of applying a cross-sectional approach to panel data, researchers have been drawing on growth models. These models leverage the panel structure to address individual variation in the level and rate of change of a response variable. The following elaborations on the logic of growth models are based on the textbook "Applied Longitudinal Data Analysis: Modelling Change and Event Occurrence" by Singer and Willett (2003).

For growth models, two core questions are of substantial interest and determining for the empirical analysis: (1) How does the outcome change over time? (2) What predicts differences in change? Applied to the current thesis, these questions can be rephrased as: (1) How does wealth change over time for each individual? (2) Can one predict differences in wealth trajectories according to marital status and gender? The first question in growth models is generally of a descriptive nature and refers to a characterisation of each individual's pattern of change over time. It is thus concerned with the description of the shape of each respondent's growth trajectory. The second question puts individuals' patterns of change in relation to each other and is concerned about the inter-individual differences in change. It thus allows researchers to scrutinise how individuals' growth patterns deviate from the average growth pattern and to identify predictors of the disparities (e.g. marital status, gender, education, etc.). Empirically, these two questions are defined as the level-1 model that describes within-individual change and the level-2 model that describes inter-individual differences in change. Singer and Willett (2003) consider these two models to be linked and jointly refer to them as the 'multilevel model of change'.

Representing the panel structures, the multilevel model of change generalises the intercept β_0 and slope β_1 of equation 3 to β_{0i} and β_{1i}, representing random terms that can take on different values for each panel respondent. Equation 3 can thus be rewritten as follows to represent the unconditional growth model:

$$y_{it} = \beta_{0i} + \beta_{1i} TIME_{it} + \varepsilon_{it} \qquad \textbf{(4)}$$

The baseline level of individual i is now represented as β_{0i} at $TIME_{it} = 0$. Subsequently β_{1i} denotes the rate of change of individual i during the panel observation and the error term ε_{it} is defined as the portion of individual's i's outcome that is unpredicted at time t.

The association between the inter-individual differences in change is codified in a level-2 sub-model. Each level-1 parameter (i.e. slope and intercept) is defined in a separate model with fixed and random components, resulting in two level-2 sub-models:

$$\beta_{0i} = \gamma_{00} + \zeta_{0i} \quad \textbf{(5)}$$

$$\beta_{1i} = \gamma_{10} + \zeta_{1i} \quad \textbf{(6)}$$

The terms γ_{00} and γ_{10} are fixed paramters that represent the average intercept and slope across all individuals. Each individual's variation from this grand intercept and slope is represented by the random components ζ_{0i} and ζ_{1i}, respectively. As change trajectories may differ across time-constant predictor variables (e.g. gender, migration background, etc.), the model can be extended to include such a predictor z:

$$\beta_{0i} = \gamma_{00} + \gamma_{01} z_i + \zeta_{0i} \quad \textbf{(7)}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11} z_i + \zeta_{1i} \quad \textbf{(8)}$$

The extension of the models now implies that the individual level intercept and rate of change are functions of z. It should be acknowledged that the time-constant predictor z is not required to appear in both level-2 models, depending on the expected influence of the predictor on the initial status or change rate. Within these extended models, γ_{00} and γ_{10} now represent the population average intercept and slope when $z = 0$. The level-2 slopes, γ_{01} and γ_{11}, can be thought of as shifts associated with the predictor and thus represent the effect of the predictor on the change trajectory (intercept and slope). Consequently, ζ_{0i} and ζ_{1i} now denote the level-2 residuals that represent those proportions of the intercept and slope that are unexplained net of the effect of z.

Level-1 and level-2 models can be collapsed into a single composite model:

$$y_{it} = [\gamma_{00} + \gamma_{10} TIME_{it} + \gamma_{01} z_i + \gamma_{11} (z_i * TIME_{it})] + [\zeta_{0i} + \zeta_{1i} TIME_{it} + \varepsilon_{it}] \quad \textbf{(9)}$$

The first parenthesis now contains the structural component of the composite model, while the stochastic component (i.e. the random effects) is represented within the second parenthesis. Depending on the specific research objective, this multilevel model of change can be extended with

additional predictors at the individual level and time-varying predictors at the between individual level.

While growth models can generally be estimated via generalised least-squares (GLS) and maximum likelihood (ML) estimations, the method of maximum likelihood (ML) is more widespread. Within ML estimations, it is further distinguished between full (FML) and restricted maximum likelihood (RML) estimations. The two methods differ in how the likelihood function is formed, which in turn affects the parameter estimation and approaches used to test the hypotheses. Furthermore, an important consideration is that goodness-of-fit statistics computed in either method differ in their meaning: Under the FML estimation, goodness-of-fit parameters describe the fit of the entire model. In comparison, under the RML method, they relate only to the stochastic portion (i.e. the random effects) of the multilevel model of change. Within the current thesis, I use the FML technique to estimate the model parameters and apply growth models in the empirical analysis of Chapter 6.

3.4.2.3 Sequence analysis

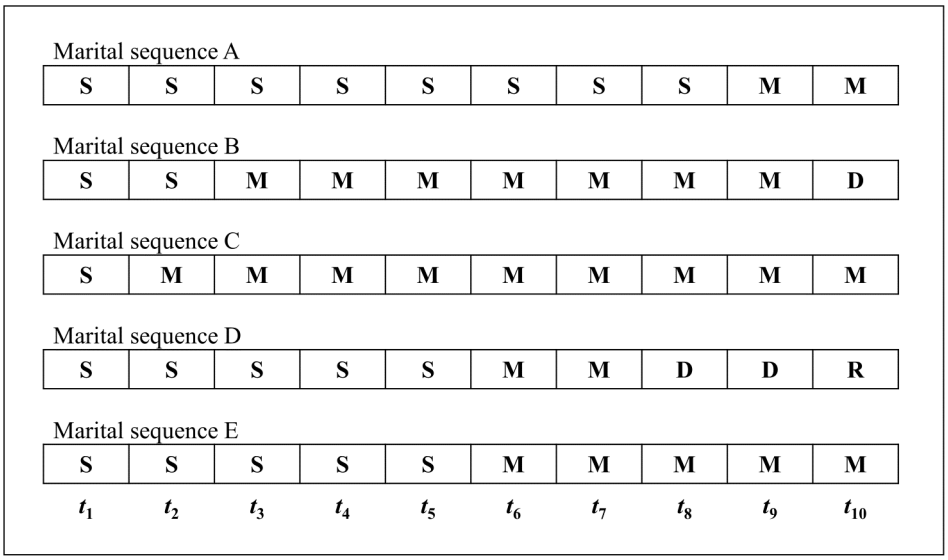
While the previous methods single out a specific life course event (e.g. marital dissolution) to examine its association to an outcome (e.g. wealth), the life course framework emphasises the importance to consider holistic trajectories – or at least long spells of the life course – to understand the embeddedness and continuity of events, transitions, and stages within the life course. As defined in Chapter 2, trajectories describe a succession of categorical states (e.g. marital status[28]) at time points (e.g. age) over a given time period (e.g. between age 15 to 50). The change from one state to another is commonly marked by an event and transition (e.g. marriage, divorce, childbirth, etc.).[29] The occurrence, order, and frequency of transitions and events is a defining feature of an individual's trajectory. Each individual therefore has their unique life course trajectory that represents their individual long-term patterns of stability and change over time. As the universe of trajectories within a population increases with the number of possible states, length of the time periods, and interval of measured time points within this interval, a simultaneous description of all trajectories or the identification of common patterns quickly becomes a methodological challenge. For instance, respondents' marital status grouped into four states – never-married, single (S), married (M), divorced (D), and remarried (R) – from age 15 to 50 (36 years) results in $4^{36} = 4{,}722{,}366{,}482{,}869{,}645{,}213{,}696$

[28] Marital status states may encompass "never-married, single", "married", "divorced", or "widowed", but can also reflect a higher complexity such as "first-time married", "second-time divorced", etc.

[29] As highlighted previously, divorce itself could be considered an event as it only takes up a small share within a longer timeframe (e.g. when considering trajectories from age 15 to 50). However, it may also be defined as a transition as it contains several shorter events or transitions including handing in the divorce papers, the divorce proceeding, signing the divorce papers, etc.

possible unique sequences if all types of transitions were possible.[30] Example sequences are illustrated in Figure 3.2.

Figure 3.2 Example of marital trajectories



Notes: Five artificial marital sequences with ten time points displayed with the following states: never-married, single (S), married (M), divorced (D), and remarried (R).

The methodological challenge is to handle the trajectory universe and reduce it to a set of common patterns that distinctly capture all trajectories. To systematically leverage the rich information of the available universe of individuals' trajectories, researchers have been using sequence analysis. This algorithmic method (1) describes and visualises sequences, (2) compares whole sequences across sample respondents, and (3) identifies relevant patterns amongst the universe of available sequences when combined with a clustering method. This allows for a meaningful reduction of complex information to more manageable clusters of individuals with similar sequences (Abbott & Tsay, 2000). Originally this method was developed by Vladimir Levenshtein in 1965 and has been applied in bioinformatics (e.g. to analyse DNA sequences) and computer science (e.g. for speech recognition). Since its adaptation into the social science in the 1980s, it has been advanced to cater for the analysis of social patterns (Abbott, 1983, 1995; Aisenbrey & Fasang, 2010).

[30] In reality, individuals can of course not transition back to the state "never-married, single" once they have been married. The example given is therefore purely to demonstrate how quickly the number of sequences increases.

In order to compare sequences, a quantitative value has to be assigned to differences between each pair of sequences. In other words, the dissimilarity between two sequences is measured by the total amount of operations taken to convert one sequence into another. To calculate a value of dissimilarity/similarity 'optimal matching' (OM) can be applied. OM relies on three different possible operations (Levenshtein, 1966): insertion, deletions (i.e. a state is inserted or deleted), and substitutions/replacements (i.e. a state is substituted by another). Each operation has a cost assigned to it. While insertion and deletion costs are the same and constant, substitution costs can differ. The simplest way to set substitution costs is to define them as uniform, meaning that all states are assumed to be equally different. However, it is also possible to set substitution costs driven by data (i.e. from transition likelihoods between states) or manually (i.e. based on theoretical ideas). For instance, having one child compared to two children may be perceived as substantially different than having one child compared to no child. Conversion costs can now be calculated for each pair of observations' sequences. The lower the costs associated with the conversion of one sequence into another, the more similar these two sequences are (i.e. low conversion costs represent very similar life courses). Costs are stored in an *n* by *n* dissimilarity matrix (Cornwell, 2015).

An alternative to OM is 'Hamming distance', which uses only substitution and no insertion/deletion to achieve the same goal as OM (Hamming, 1950). While OM emphasises the occurrence and duration of events, Hamming distance emphasises the timing of events (Cornwell, 2015). As the former is more relevant for the current thesis, I apply OM in the sequences analysis conducted within Chapter 5.[31]

As previously mentioned, potential aims and advantages of sequence analysis are the detection of latent groups within the available universe of sequences, but also the reduction of this universe to relevant groups or clusters. Ideally these groups or clusters are internally homogeneous, but highly heterogeneous across groups or clusters. This can be achieved through the use of cluster analysis on the dissimilarity matrix (Everitt, Landau, Leese, & Stahl, 2011). A range of clustering algorithms are available to the researcher such as hierarchical clustering, centroid-based clustering, distribution-based clustering, or density-based clustering. The present thesis uses a hierarchical-based clustering approach which is widely deployed within sequence analysis research. This approach aims at establishing a hierarchy of clusters with two strategies available: agglomerative (i.e. "bottom-up") and divisive (i.e. "top-down"). Agglomerative clustering starts with considering each observation as

[31] As a robustness check, Hamming distance is applied to assess the stability of sequence analysis and cluster analysis results. Results show that Hamming distance does not lead to substantially different results within the context of the current thesis.

a single cluster and progressively merges similar sequences into larger clusters. Divisive clustering uses the reverse approach and starts with all observations in one cluster which is gradually split into smaller clusters (Everitt et al., 2011). For the present thesis, I apply agglomerative clustering to form relevant clusters within the sequential-based methods applied in Chapter 5.

Another decision that needs to be taken is to define how the algorithm "decides" which clusters are similar and should be merged in the next iteration of the process. This is called the linkage function. While there are a variety of linkage functions available, Ward's method is frequently used in sequence analysis. This method relies on information about the increase in within-cluster variance that would result from merging two existing clusters. It has the advantage of producing few very small clusters compared to other methods, such as the average linkage (Everitt et al., 2011). This is particularly useful when clusters are to be used in subsequent regression analysis as a predictor or outcome variable.

Theoretically, agglomerative clustering would continue until all sequences are merged into one large cluster. Thus, researchers need to decide about the final number of *k* clusters; this decision is generally based on a combination of theoretical and empirical criteria. From a theoretical standpoint, researchers need to assess the interpretability and practicability of potential cluster solutions. Empirically, the choice can be made using a variety of available indices, such as average silhouette width (ASW), Hubert's Sommers' D (HGSD), point biserial correlation (PBC), and Calinski-Harabasz (CH) index (see Studer (2013) for detailed definitions). Depending on the focus and objectives of the study, the two standpoints should balance. For instance, if a study aims to reduce the complexity of sequences while illustrating diversity of life courses, an eight cluster solution may provide more elaborate and substantially relevant information on the diversity of family or labour market patterns than a five cluster solution. If the aim is to detect latent groups using a data driven method, the researcher's decision about the final cluster solution is likely to be driven by empirical indices (Cornwell, 2015).

The life course framework emphasises that different life course domains are interconnected and outcomes cannot solely be a result of dynamics in one domain, but have to be understood within the wider complexity of individuals' life courses. For instance, marital states and transitions are closely linked to fertility decisions and, ultimately, the number of children over the life course. Analysing domains in isolation from each other thus seems insufficient or misleading. Gauthier, Widmer, Bucher, and Notredame (2010) therefore suggested an extension of sequence analysis to simultaneously take into account multiple trajectories such as employment, housing, partnership, and

fertility. This approach is referred to as multi-channel sequence analysis. The main difference to single channel sequence analysis is in the creation of the dissimilarity matrix, which is more complex for multi-channel sequence analysis. Steps that are taken after the creation of the dissimilarity matrix are, however, consistent with the approach for the more common single-channel sequence analysis. Within the current thesis, I apply multi-channel sequence analysis in Chapter 5 to reduce the diversity of family life courses, including both childbearing and marital histories, to meaningful and common family life course clusters. Identified clusters are subsequently used within a regression framework to predict wealth in older age.

3.5 Summary of methodology

Within this third thesis chapter, I provided an overview of the data and methods used within the thesis and clarified the advantages and disadvantages of these data and methods. Within the following three thesis chapters I empirically analyse and theoretically discuss the association between marital dissolution and personal wealth to address the posed thesis research questions. SOEP data are used for all three thesis chapters. Additionally, all three chapters use personal net wealth as their main outcome measure. Depending on the chapter, I will additionally add a per capita wealth measure (i.e. household wealth divided by the number of adults) or disaggregate the personal net wealth measure into personal housing wealth and remaining personal financial wealth, where relevant. Analyses for all three chapters are gender-sensitive to examine potential gender differences in the association of interest. Finally, all three empirical chapters have in common the use of multiple imputation to deal with missing values on any relevant analytical variables, in addition to wealth data, that are edited and multiple imputed by the SOEP team.

The empirical methods outlined in section 3.4.2 are applicable to different research aims and are consequently employed selectively in the following empirical chapters. Chapter 4 aims to identify how an individuals' transition through marital dissolution is linked to personal wealth changes, including a rather detailed account of stages of a marital dissolution process (i.e. anticipation, separation, the legal divorce proceedings, and immediate post-divorce coping). To achieve this, I use fixed-effects regression models and compare changes in personal wealth of the same respondents as they move through the marital dissolution process. Any observed and unobserved time-constant confounders are accounted for, reducing bias.

Chapter 5 seeks to understand the association between holistic life course trajectories of family formations and personal wealth of men and women at age 51 to 59. Family trajectories refer to the

intersection of childbearing and marital biographies between ages 16 to 50. Within this chapter, I use multi-channels sequence analysis and cluster analysis to identify the most common family clusters within the Western German baby boomer cohort (i.e. respondents born between 1943 and 1966) as a first analytical step. The focus on Western Germany seemed relevant – compared to Eastern Germany – as Western Germany has been characterised by persistently strong social and political support for a traditional family pathway (i.e. continuous marriage and, on average, two children) with a gender-specific division of labour within the marital household, despite increasing family complexity and individualisation even within marriage. Deviations from the traditional family pathway, for instance through marital dissolution, has the potential to be associated with substantial economic penalties; this shall be examined within Chapter 5. The decision to focus solely on Western Germany was additionally driven methodologically, as sample sizes for Eastern Germany are substantially lower than for Western Germany. Once the standard Western Germany family clusters are identified, I move to the second analytical step, which is the assessment of the association of family clusters and personal wealth in older age through means of ordinary least squares regressions with cluster robust standard errors.

Finally, Chapter 6 seeks to understand how wealth is accumulated after divorce and to what degree a potential immediate wealth decline associated with marital dissolution matters for post-divorce wealth accumulation. I utilise growth models to assess immediate wealth differences between the married and divorced, as well as differences in their wealth accumulation rates over time. Selection into divorce is accounted for through matching prior to the outcome regression, which shall be explained in more detail in Chapter 6.

In summary, while some empirical aspects, such as the use of multiple imputation and personal wealth as the main outcome measure, are consistent across the following three thesis chapters, the analytical methods for each chapter are selected to suit the empirical problem at hand.

4. Chapter – Examining gendered trends across the marital dissolution process

An earlier version of this chapter has been published as a working paper in the Life Course Centre working paper series. An amended version of this chapter has been publication in the *Journal of Marriage and Family*, and is reproduced here with permission from the journal.

Kapelle, N., & Baxter, J. (2019). *Marital dissolution and personal wealth: Examining gendered trends across the dissolution process*. Life Course Centre Working Paper Series No. 2019–22. Brisbane, Australia: ARC Centre of Excellence for Children and Families over the Life Course, The University of Queensland.

Kapelle, N., & Baxter, J. (2020). Marital dissolution and personal wealth: Examining gendered trends across the dissolution process. *Journal of Marriage and Family.* Online first. DOI: 10.1111/jomf.12707

As required by policy of The University of Queensland, the following table provides an overview of each author's contributions to the journal publication:

Contributor	Statement of contribution	%
Nicole Kapelle	writing of text	90
	proof-reading	5
	theoretical derivations	85
	data management	100
	numerical calculations	100
	preparation of figures	100
	initial concept	100
Janeen Baxter	writing of text	10
	proof-reading	95
	theoretical derivations	15
	supervision, guidance	100

4.1 Introduction

Rising divorce rates since the 1960s have prompted ample research on the economic consequences of marital dissolution for income measures (e.g. Andreß et al., 2006; Bayaz-Ozturk et al., 2018; Eurostat, 2018). The consequences of marital dissolution for wealth have however attracted less attention. This omission is critical as sufficient wealth provides an important safety net for current and future consumption needs even in the absence of income flows (Killewald et al., 2017), which is becoming increasingly important to privately secure economic well-being (Seeleib-Kaiser, 2016). It is thus essential to understand the degree to which life course events such as marital dissolution may disrupt wealth accumulation processes.

This thesis chapter examines the association between marital dissolution and wealth, and adds to the existing literature in two ways. First, previous wealth-related divorce research has commonly conceptualised marital dissolution as a single point-in-time event by focusing solely on divorce (i.e. the legal dissolution of a marriage) (Zagorsky, 2005). This may be over-simplistic as a large number of European countries such as England, the Netherlands, Italy, or Germany commonly only permit legal divorce after a substantial separation period (i.e. division of the couple household into two separate households). Depending on the country, separation and divorce should therefore be considered two distinct stages. Furthermore, sociological and psychological stress research has suggested that marital dissolution should be seen as a process with several stages (e.g. Amato, 2000; Pledge, 1992). Based on this literature and legal regulations, I argue that four broad stages of the marital dissolution process can be identified. These stages are theoretically relevant to financial well-being: separation plans during the marriage, the period of separation, the legal divorce proceeding, and post-divorce adjustment. Arguably, wealth holdings may vary across each stage in potentially non-linear ways. My current thesis chapter enables a greater understanding of these possible variations.

Second, and as previously highlighted in Chapter 1, previous research has examined the association between marital dissolution and *household*-level wealth measures based on a lack of comprehensive *personal*-level wealth data. For comparability reasons, household wealth was commonly divided in two for married couples (i.e. per capita wealth) and compared to single-headed households' wealth levels after divorce (e.g. Zagorsky, 2005). Such an approach seems valid for previous studies that commonly focused on the USA, where marital property regimes favour an equal division of all resources (Voena, 2015). However, in Germany and other European countries property division at divorce is more regimented and commonly only considers wealth accumulated during the marriage.

Pre-marital wealth (but also personal inheritances or gifts received during the marriage) is thus not necessarily divided. This is critical, as previous research illustrated substantial within-couple wealth inequalities, to the disadvantage of women, which largely stem from pre-marital wealth disparities (Kapelle & Lersch, 2020). A per-capita approach would therefore be misleading in a country such as Germany, and may distort the analyses of potentially gendered effects as men's baseline wealth during marriage is likely higher than that of women. I thus analysed *personal*-level net wealth to examine economic consequences of marital dissolution for men and women.

Two research questions are herein addressed. First, how does personal net wealth change over the marital dissolution process? Second, do the observed changes vary for men and women? To address these questions, fixed-effects regression models are examined using longitudinal data from the German Socio-Economic Panel Study (SOEP, 2002–2017).

4.2 Background

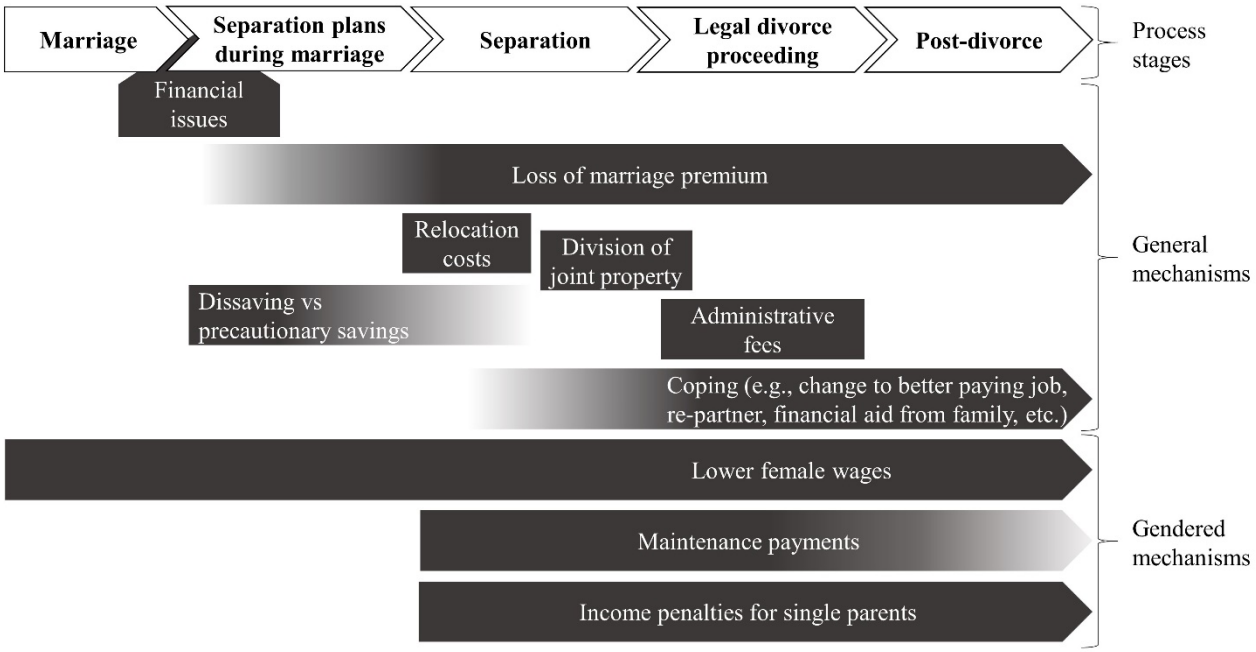
Theoretically, the marital dissolution process may be classified into four distinct stages: (1) Separation plans while still living in the marital household, (2) separation of spouses and the associated dissolution of the marital household into two independent households, (3) the legal divorce proceeding, and (4) post-divorce adjustments. Figure 4.1 represents these four stages of the marital dissolution process (top row). Additionally, the figure highlights the costs and financial strategies of marital dissolution. The middle rows show changes in financial behaviour and costs associated with different stages of the marital dissolution process. The bottom four rows highlight institutional features that may have gendered consequences for wealth holdings. For example, women typically earn less than men, and in many cases, women remain the main carers of children, while men provide maintenance payments to support children. At the same time, both men and women may experience income penalties as single parents with custody of children. Of course, not all marriages dissolve in the same way, and the associated costs and financial coping strategies will vary accordingly. Nevertheless, the figure highlights some of the likely mechanisms underlying changes in wealth holdings from marital dissolution, and, importantly, draws attention to potential variations in wealth outcomes across stages of the dissolution process and by gender.

4.2.1 Stage 1: Separation plans during the marriage

The commencement of the marital dissolution process and associated separation plans are typically instigated by heightened levels of marital dissatisfaction and feelings of estrangement (Amato, 2000;

Broman, 2002). During this phase of the marital dissolution process, spouses may experience personal wealth declines as estrangement could cause them to question joint financial investments. This could lead to declining economic cooperation and thus reduced marital wealth premiums (Lersch, 2017). In anticipation of potential future wealth divisions, some spouses may even start to conceal or over-spend their personal wealth (Jeanfreau, Holden, & Brazeal, 2020).

Figure 4.1 Hypothetical marital dissolution process and associated financial costs, behaviour and institutional features



Wealth declines may not only be a result of separation plans, but could also be the cause of dissatisfaction with and doubts about the future of the marriage. Previous research illustrated that financial difficulties, particularly increases in consumer debt, are linked to a higher likelihood of marital conflict and thus separation (Dew, 2011; Eads & Tach, 2016). Hence, wealth declines can be the cause or consequence of separation plans, although the two are likely interconnected.

In contrast to findings about personal wealth declines, some researchers have argued that it may also be plausible to expect precautionary savings (Finke & Pierce, 2006; Pericoli & Ventura, 2012). In line with ideas of the life course framework (Bernardi et al., 2019), individuals are likely to anticipate adverse consequences of marital dissolution such as the loss of partner's income, or costs associated with finding and moving to new accommodation, and eventual legal fees for divorce proceedings. To

avert associated financial declines, previous US research suggested that equal-earning spouses save in anticipation of marital dissolution whereas economically unequal spouses dissave when a dissolution is imminent (Finke & Pierce, 2006). For economically unequal couples the precautionary savings motive is thus likely overruled by concerns of the higher-earning spouse of future resource redistribution to the lower-earning spouse. This is expected to create a saving disincentive for such couples. As within-couple economic inequality is relatively high in Germany, I argue that dissaving may be a more likely scenario for the country context of the present thesis. Thus, substantial personal wealth declines are expected immediately prior to separation, either due to financial difficulties associated with declining relationship quality, or because couples save less due to declining spousal commitment (*Pre-Separation Declines Hypothesis*).

4.2.2 Stage 2: The separation of the marital household

In most cases the decision to leave a marriage requires the formation of two separate households. Although this physical separation may be a necessary step to gain emotional distance, it is also a legal requirement for divorce in most European countries. Relocation and the establishment of a new household require a range of one-off payments (e.g. costs for a moving company, new furniture and appliances, rental bond) that may drain savings. Additional ongoing costs due to lower economies of scale and thus higher per capita expenses may lead to persistently increased financial pressure (Sørensen, 1994). Whereas separation requires at least one spouse to move out of the family home, budget constraints often force both spouses to eventually relocate to a more affordable dwelling (Bröckel & Andreß, 2015; Mulder, 2013).

Questions about residency rights become a priority early on during separation, particularly for married homeowners who commonly own their property jointly. The spouse who remains in the family home must legally financially compensate the non-resident spouse while both spouses also continue to pay mortgage instalments. While moving out of the family home is associated with relocation costs, remaining may also incur substantial costs for homeowners (Mulder, 2013).

In addition to residency rights, homeowners also have to decide how to proceed with the family home. Whereas a family home is commonly owned jointly, it also regularly constitutes the major share of the marital wealth portfolio (Thomas & Mulder, 2016). Thus, this component is indivisible if spouses lack sufficient cash collateral to buy out the other partner or to qualify for a mortgage by themselves. Selling the family home may therefore be required in order to divide this asset (Lersch & Vidal, 2014). Whereas the housing sale incurs direct costs, such as real estate fees and taxes, it may also be

associated with indirect costs of wealth depreciation if the property needs to be sold under time-pressure and in a market unfavourable to the seller (Fethke, 1989). Property may then be sold in preparation for the divorce proceeding, particularly if a reconciliation of the marriage seems unlikely and if neither spouse can afford to remain in the family home.

In line with my theoretical ideas, I expect to find a substantial decline in personal wealth during separation compared to marriage *(Separation Penalty Hypothesis)*. Given the relevance of housing equity in wealth portfolios of many couples and the economic burden it poses for either spouse during separation, I expect substantial housing wealth declines during separation *(Housing Decline Hypothesis)*. It is, however, also possible that some couples only sell their property during the divorce proceeding in an attempt to maintain homeownership and its advantages as long as possible, or because they cannot come to an agreement about the property sale during separation.

4.2.3 Stage 3: Legal termination of the marriage

Couples who start the process to legally dissolve their marriage incur substantial administrative costs, such as court fees, solicitors' fees, or fees for counselling and mediation. For example, in the United States these divorce costs can easily exceed the yearly household income of the former couple (Henry, Fieldstone, Thompson, & Treharne, 2011). In Germany administrative divorce costs (i.e. court fees and solicitor fees) are legally stipulated and can start from under €1,000 for childless spouses who mutually agree to the divorce and whose value in dispute is below €3,000. Solicitors' fees are not capped, however, and court fees increase with the complexity of the case and the level of financial value of goods and property in dispute. Consequently, administrative divorce costs can be substantial, which may increase the necessity to resort to savings. The timing of these costs varies as first instalments are often required to commence the divorce proceeding at a court. Final instalments are amortised in the months after legal divorce is finalised. Overall, I expect that the divorce proceeding is associated with a sizeable additional wealth penalty compared to separation *(Divorce Penalty Hypothesis)*.

4.2.4 Stage 4: financial adjustment post-divorce

Once divorce is settled and final administrative instalments are covered, there may be no further one-off payments associated with marital dissolution and any financial gains will no longer have to be shared with the ex-spouse. At this point in the marital dissolution process, I expect divorcees to commence financial recovery with the aim of re-establishing financial security and move back onto their initial wealth trajectory through two main channels: financial transfers and income savings.

With regard to financial transfers, Leopold and Schneider (2011a) showed that although financial transfers from parents to their adult children are likely to take place in the year of legal divorce – potentially to aid cover of administrative divorce costs – the authors did not find evidence of further considerable financial transfers in the years following divorce. Thus, financial transfers seem unlikely to contribute to wealth substantial improvements over time. For income, several studies illustrated rising per capita income levels post-divorce due to labour market adjustments or re-partnering (e.g. Andreß et al., 2006; Bayaz-Ozturk et al., 2018; Jansen et al., 2009). As income recovery may also stimulate wealth accumulation, I expect to see increasing personal wealth in the years after divorce *(Post-Divorce Coping Hypothesis)*.

Nevertheless, it should be emphasised that wealth is not a direct function of income (Killewald et al., 2017). Rising income after divorce may not necessarily lead to parallel improvements in wealth levels. Due to lower economies of scale and higher dwelling costs than during marriage (Andreß et al., 2003; Sørensen, 1994), per capita expenses may stay elevated after divorce, particularly if divorcees remain un-partnered. Thus, increased income may partially or fully be used to cover these costs, which dampens wealth accumulation. Previous research focused solely on un-partnered divorcees and found no substantial effect for time since divorce on per capita wealth controlling for natural age-related wealth increases (Zagorsky, 2005). As the likelihood to remarry is the highest within the first five years after separation, and 50 percent of divorcees are remarried after six years (Jaschinski, 2011), these results may have neglected a large proportion of remarried divorcees. However, even within remarriage, resources are more likely to be managed independently and marital premiums are lower than during the first marriage (Burgoyne & Morison, 1997).

4.2.5 Gender differences over the marital dissolution process

Previous research showed that German married women hold less personal wealth than their male partners predominantly due to pre-marital wealth differences that stay stable during marriage (Kapelle & Lersch, 2020). Within-couple wealth differences are commonly cited to be due to age differences (i.e. men are on average older than their female partners) and gender wage inequalities (Grabka et al., 2015). Thus, men have more time and resources to accumulate wealth prior to marriage entry.

Although differences in the potential to generate income and accumulate wealth likely persist during marriage (and may even be exacerbated through parenthood) economic inequalities are partially compensated through financial transfers between husband and wife (Eickmeyer et al., 2019). Once spouses separate, formerly voluntary income pooling can be reinforced through legally mandatory

spousal maintenance (*alimony pendente lite*) and child support payments meant to preserve marital living standards. Due to women's lower average income and their higher likelihood of residing with children, women are commonly the beneficiary of support payments. In practice, support payments have regularly been considered insufficient, with under-payment and non-payment commonplace. In Germany, only 28 percent of entitled women receive full and regular spousal maintenance payments during separation (Andreß et al., 2003).

To secure economic well-being after separation, women may re-enter the labour market or increase working hours (Tamborini, Couch, & Reznik, 2015). However, in light of substantial gender wage gaps, employment restrictions due to women's child care responsibilities and insufficient support payments, women experience greater and more lasting income declines than men (Bayaz-Ozturk et al., 2018; Bröckel & Andreß, 2015). As men's careers are less disrupted than women's, men's marital dissolution-related income losses are minimal, with some studies even illustrating income improvements (e.g. Andreß et al., 2006; Bayaz-Ozturk et al., 2018). In return, slower income recovery of women and irregular support payments may substantially inhibit separated women's savings potential and increase their reliance on personal savings compared to men.

Legally, marital wealth gains including wealth accumulated during separation are divided equally. Research by Bessière (2019), however, showed that despite the *de jure* equal division of marital property, *de facto* division can reproduce gender inequalities and thus disadvantages women. Overall, I therefore expect that personal wealth declines during separation and the divorce proceeding are larger for women than for men *(Gendered Wealth Decline Hypothesis).*

Once divorce is settled, support payments (particularly alimony – if paid in the first place) tend to diminish in the years after legal divorce, further reducing the equalisation of income disparities between ex-spouses (Fine & Fine, 1994). This leads to increasing economic pressure for women, while it additionally eases men's financial obligations and increases the level of available resources they may save. Additionally, men are likely to hold more absolute wealth immediately after a divorce which can be invested, as pre-marital wealth differences are not considered in the division of property and thus maintained. Although re-marriage has been shown to be a viable strategy to increase available income after divorce (Jansen et al., 2009) and to partially recover wealth (Wilmoth & Koso, 2002), men are more likely to re-partner than women, particularly if women reside with children (Di Nallo, 2018). Thus, I anticipate wealth accumulation to be lower for women than men in the post-divorce years, leading to men's quicker recovery of wealth losses than women *(Gendered Recovery Hypothesis).* Previous US research that focused on per capita wealth partially supported the idea of

growing gender wealth inequalities after divorce. Zagorsky (2005) and Yamokoski and Keister (2006) indicated that economic disadvantage following divorce is slightly larger for women than for men, although differences were not statistically significant.

4.3 Data and method

4.3.1 Data and analytical sample

To examine the associations between the marital dissolution process and measures of personal wealth, I used longitudinal, individual-level data from the German Socio-Economic Panel Study (SOEP) (doi:10.5684/soep.v34; see Chapter 3 for a detailed elaboration on the data). Next to the already mentioned advantages of the SOEP data for the present thesis, the present chapter benefited particularly from detailed information on respondents' marital pathways including information on the date of separation and divorce to allow an analysis of the marital dissolution process.

In my analysis, I built on SOEP wealth data that were edited and imputed by the SOEP survey team (see Grabka & Westermeier, 2015) and additionally imputed missing data with chained equations for all analytical variables using Stata's mi procedure (Version 16). A technical description of the imputation process was provided in Chapter 3. To enhance the quality of my imputations, a range of relevant auxiliary variables, such as migration background or the number of siblings, were included. A detailed list of the entire set of variables used in the imputation process, including all auxiliary variables, can be found in Table A.1 in Appendix A. The table additionally provides the share of missing values addressed through imputation. Multiple imputed estimates from the proceeding steps of my analyses were combined using Rubin's rules (Rubin, 1987).

For the analytical sample, I selected successfully interviewed individuals aged 18 years and older living in private households if they were either continuously first-time married or if they experienced a separation or legal divorce from their first marriage between 2002 and 2017. Respondents who experienced a first marital dissolution were considered part of the sample if they experienced the entire dissolution process (i.e. from married to separated to divorced) between 2002 and 2017 or only stages of it (i.e. married to separated, or separated to divorced) as some stages of the dissolution process may had occurred before 2002 or after 2017.[32] To minimise distortion of results due to

[32] I conduced sensitivity analyses, which included separating and divorcing respondents only if they were at least observed as married once in any of the wealth waves prior to marital dissolution (i.e. excluding respondents that I only observe transitioning from separation to divorce). Although this reduced the sample and statistical power of the analysis, results stayed consistent compared to results presented within this thesis.

selection bias, separated and divorced respondents who lived alone or with a new partner after marital dissolution were included. While all survey waves were used to create the explanatory variable and other covariates, the analytical sample was restricted to survey years 2002, 2007, 2012, and 2017, as wealth data were collected in these years. Based on these criteria the sample contained 7,952 women (7,342 continuously married and 612 experiencing a marital dissolution) and 7,628 men (7,166 continuously married and 462 experiencing a marital dissolution).

I applied two final restrictions to this sample: First, I excluded 39 sample respondents (17 men and 22 women) who lived with their (ex)spouse in the same household for at least two years or more at any time after their initial separation, potentially indicating a reconciliation of the marriage. Second, due to analytical requirements of the fixed-effects model, 729 continuously married respondents (341 men and 363 women) and 25 respondents with a marital dissolution (11 men and 14 women) were excluded who were not successfully interviewed in at least two of the possible four wealth waves.

In total, the final analytical sample comprised 7,555 women with 20,300 individual-year observations and 7,259 men with 19,639 individual year observations. Analyses were thus based on an unbalanced panel with a minimum of two (41 percent of the sample) and maximum of four (37 percent) observations per respondent. The sample included 222 marital separations for women and 173 separations for men. Additionally, 380 transitions into divorce for women and 276 for men were observed. Considering sample respondents for whom divorce was observed between 2002 and 2017, I found that respondents were separated on average for two-and-a-half years before their legal divorce. On average, sample respondents were married for 15 years before they separated (see Table A.2 in Appendix A for a descriptive overview).

4.3.2 Measurements

Outcome variables. The main outcome measure of *personal net wealth* was defined as the sum of all personally owned assets minus personally owned liabilities. Asset and liability components that have been included in the SOEP data as well as the data collection practice of the SOEP team, were discussed in detail in thesis Chapter 3.

Personal net wealth was adjusted for inflation and top- and bottom-coded at the 0.1% level. Following these adjustments, the overall personal net wealth measure was disaggregated into personal housing wealth and personal financial wealth. Whereas housing wealth referred to the primary property including potential mortgage debt, personal financial wealth referred to the remaining, more liquid resources (Spilerman, 2000). As liabilities were subtracted from assets, respondents may hold

negative net wealth. To maintain negative values while adjusting for the right-skewness of the data, an inverse hyperbolic sine (IHS) transformation was deployed for all three measures (Friedline et al., 2015).

Main explanatory variable. The main explanatory variable was a categorical indicator of the marital dissolution process in six categories: (1) married and at least four years prior to separation (reference), (2) married and between one to three years prior to separation, (3) separated and not undergoing legal divorce proceedings, (4) undergoing legal divorce proceedings, including up to one year after the legal divorce date, (5) two to five years after the legal divorce date, and (6) six to 15 years after the legal divorce date. Note that the second category focused specifically on up to four years prior to separation, as descriptive results from Zagorsky (2005) provided some indication that per capita wealth starts to decline within those years. It also aligned with previous research reporting a decline in marital satisfaction prior to separation (Chiriboga, 1982). As the majority of separations proceed to divorce within a relatively short timeframe, the years of separation were captured with a single category. In line with previous research (Symoens, Bastaits, Mortelmans, & Bracke, 2013), the last 12 months within the separation period were excluded from the separation category as this time likely reflects the span of the legal divorce proceeding, which commonly takes up to one year in Germany. As any outstanding solicitor or court fees need to be settled in months after a divorce is finalised, up to 12 months after legal divorce were additionally covered in this first divorce category. As I was able to cover up to 15 years after legal divorce in my sample, the post-divorce coping process was addressed in two categories to investigate variations in wealth recovery over time. Cell sizes across the categories are provided in Table 4.1.

Control variables. I estimated fixed-effects regression models with a set of time-variant control variables. Respondents' age and age as a quadratic term were added to capture maturation effects and thus general age-related wealth accumulation processes. I also included year dummies for the survey years 2002 and 2007 to account for potential under-reporting of personal wealth in the first wealth waves, as previously shown for income measures within panel surveys (Fisher, 2019). Next, I added a continuous measure for marital duration to capture time-dependent marriage wealth premiums. The duration measure was mean-centred and set to zero for observational years in which respondents were separated or divorced. Finally, a dummy was included to flag imputed wealth data.

Table 4.1 Cell sizes across categories of the main explanatory variable

Sample	Marital status/Marital dissolution process	Men	Women	Total
Continuously married respondents	Continuously married	18,372	18,682	37,054
Respondents that experience marital dissolution	Married, >3 years prior to separation	258	324	582
	Married, 1-3 years prior to separation	228	301	529
	Separated	284	322	606
	Divorce proceeding	94	157	251
	Divorced, 2-5 years after the legal divorce date	208	282	490
	Divorced, 6-15 years after the legal divorce date	195	232	427
Total		19,639	20,300	39,939

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017)

As the association between the marital dissolution process and personal wealth can be expected to work partially through mechanisms such as re-partnering, living arrangements (e.g. living with family or friends, children in the household) or family support, as well as employment and associated income adjustments, I decided against adding those potentially mediating variables into the main analysis.[33]

4.3.3 Analytical strategy

To provide a first indication of the development of personal wealth throughout the marital dissolution process, IHS-transformed personal wealth levels at different stages of the marital dissolution process were calculated separately for men and women (see Table 4.2).

I next proceeded to multivariate regression analyses using a fixed-effects regressions approach. To ease the readability of the results, results are plotted and presented in graphic form within the main text of this thesis (coefficients from the regression models are presented in Table A.5 in Appendix A). I used fixed-effects regression models as they make exclusive use of the within-individual variation in the explanatory and outcome variables over time, and more appropriately address selection effects (e.g. individuals who experienced a parental divorce are more likely to separate or divorce (Amato & DeBoer, 2001)) (Allison, 2009). Thus, time-invariant observed or unobserved factors (e.g. family background, parental education, or ethnicity) did not bias my fixed-effects

[33] Adding a remarriage dummy and respondents' employment status (full-time [reference], part-time, not in employment) to my regression models did not substantially change the results.

analyses, thereby reducing omitted variable bias. As time-constant variables of interest, such as gender, drop out of the fixed-effects model, my categorical marital dissolution measure were interacted with gender. This allowed an assessment of the gendered effects in a straightforward manner. For all regression models, standard errors were corrected for clustering of observations within individuals. Wald tests were used to establish whether potential differences between marital dissolution stages are statistically significant.

As I used imputed data for our entire analyses, it should be highlighted that stochastically imputed values differ across the series of *m* imputed dataset to reflect the uncertainty regarding the missing data mechanisms. This avoids overly precise inferences, but naturally results in larger confidence intervals and a potential lack of statistical significance despite substantial effects.

4.4 Results

4.4.1 Bivariate results

Table 4.2 provides weighted descriptive results on the relationship between marital dissolution and imputed IHS-transformed personal wealth for men and women who experienced a marital dissolution. Overall, descriptive results illustrated a stepwise decline of personal wealth for both men and women that surprisingly continued in the years after legal divorce. In line with previous research on the within-couple wealth gap (Grabka et al., 2015), women held substantially less IHS-transformed personal wealth during marriage than men. These gender differences stayed relatively constant through the dissolution process. Supplementary descriptive results for untransformed wealth levels (mean and median) can be found in Appendix A (Table A.3).

Table 4.2 Personal wealth (IHS) levels for men and women across the marital dissolution process

	Women	Men
Married, >3 years prior to separation	6.33	7.38
Married, 1-3 years prior to separation	5.22	7.42
Separated	4.97	6.05
Divorce proceeding	3.91	5.90
Divorced, 2-5 years after legal divorce	4.99	4.27
Divorced, 6-15 years after legal divorce	3.64	4.04

Notes: This table displays wealth levels solely for respondents who experience a marital dissolution. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, and 2017), imputed and weighted.

4.4.2 Wealth changes over the dissolution process

Due to observed and unobserved compositional differences between respondents who experienced a marital dissolution, as well as other idiosyncratic changes that may occur across time, I proceeded to formal tests of my hypotheses using a fixed-effects regression approach.

Before I assessed wealth changes across the previously identified marital dissolution process stages, I conducted a fixed-effects model with a simple dummy indicator of divorce in line with previous US research by Zagorsky (2005) (full model results are reported in Table A.4 in Appendix A). Men and women were found to hold 66 percent and 62 percent less personal wealth after divorce, respectively, which was substantially below the divorce penalty found by Zagorsky (2005). It should be acknowledged, that the total value of administrative divorce costs likely varies in the two countries – Germany and the US – as outlined previously. Additionally, I argue that wealth may decline prior to divorce (i.e. during separation). This is important as Germany requires a more substantial separation period before legal divorce, whereas separation is rather short or not mandatory in the majority of US states. Using a divorce dummy, wealth levels during separation and marriage were grouped together within the reference category, which could have biased results particularly for Germany. I therefore proceeded to my more detailed analyses of wealth changes over the marital dissolution process, including time prior to separation and after legal divorce.

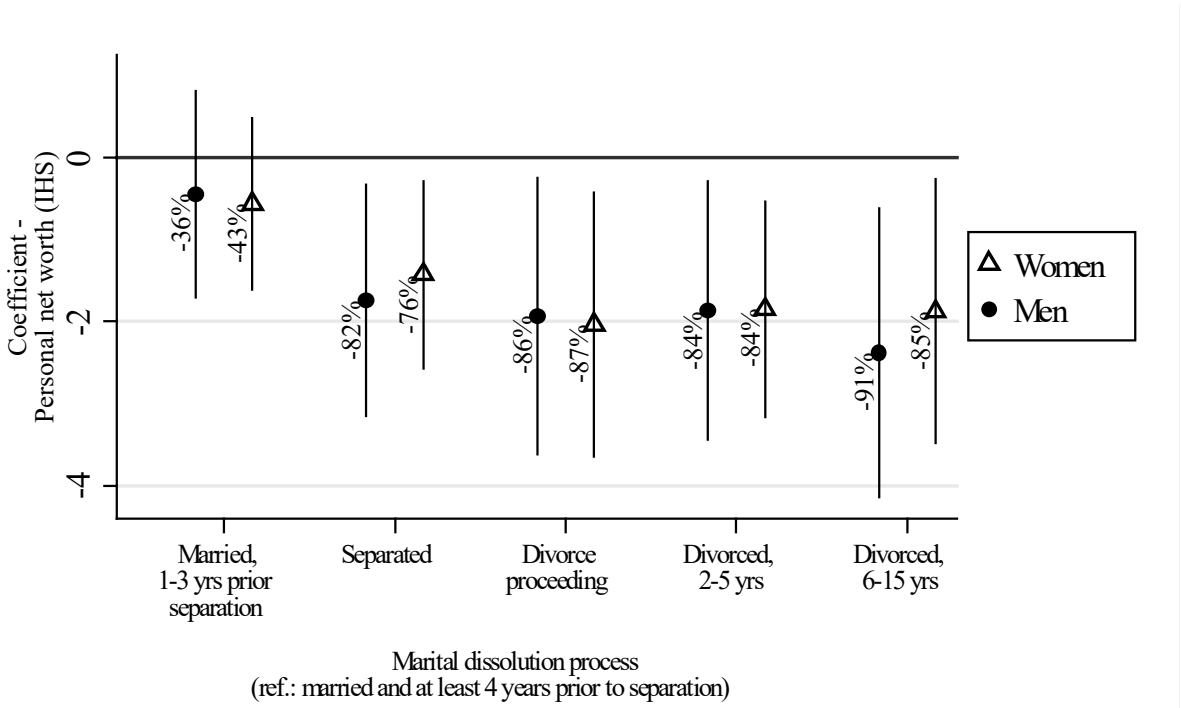
Regression results for personal wealth changes are depicted in Figure 4.2 (full model results are reported in Table A.5 in Appendix A). Results are also reported by type of wealth, namely personal housing wealth and financial wealth, in Figure 4.3 (see also Table A.5 in Appendix A). As indicated in the bivariate results and by previous research (Kapelle & Lersch, 2020), it should be noted that the baseline wealth levels for men and women differed, with men owning substantially more personal wealth during marriage than women.

Stage 1: Separation plans. First, I hypothesised that individuals would decrease their personal wealth prior to separation as a cause or consequence of separation plans (*Pre-Separation Declines Hypothesis*). For both men and women the results indicated low to moderate (but statistically non-significant) personal wealth declines of 36 and 43 percent respectively.

Stage 2: Separation of the marital household into two households. Second, I expected substantial separation penalties for overall personal wealth due to relocation costs, higher per capita expenses,

or potential unfavourable liquidation of assets (*Separation Penalty Hypothesis*). For both men and women regression results illustrated substantial and statistically significant separation penalties of 82 and 76 percent, respectively, compared to personal wealth during marriage and at least four years prior to separation. In contrast to the suggestion of larger declines for women, I found only marginal and statistically non-significant gender differences.

Figure 4.2 Fixed-effects regression coefficients for personal wealth (IHS-transformed).



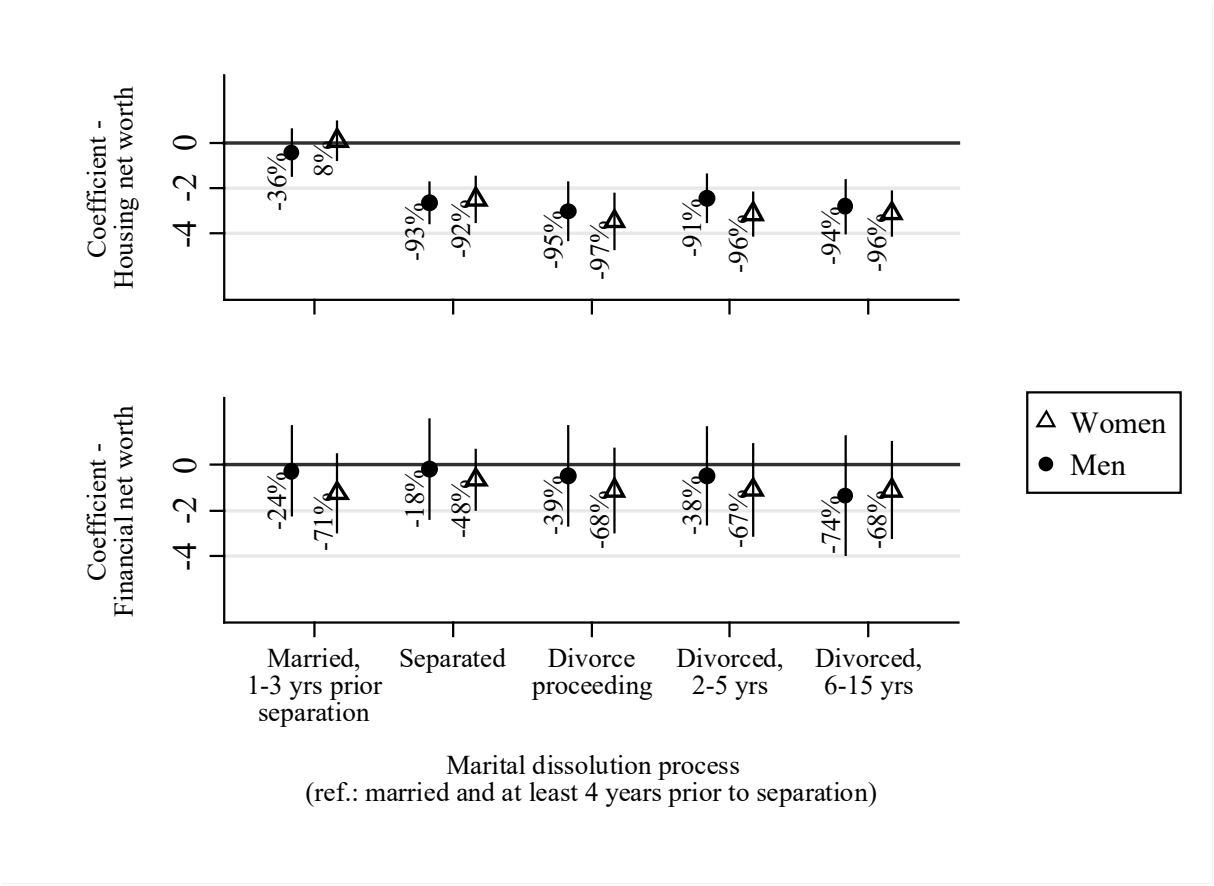
Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Models include control variables for age, age^2, survey years 2002 and 2007, marital duration, and imputed wealth data. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed). Full model results in Table A.5 in Appendix A.

The association between separation and housing wealth was also examined, as housing property is likely accumulated jointly during marriage and often constitutes the main wealth component (Thomas & Mulder, 2016). Financial constraints may force separated individuals to sell their property (Lersch & Vidal, 2014) leading to substantial declines in personal housing wealth during separation (*Housing Decline Hypothesis*). As depicted in Figure 4.3, the results confirmed major penalties for housing wealth of 92 and 93 percent for women and men, respectively. Simultaneously, coefficient effects

sizes for financial wealth indicated only negligible changes compared to marital levels. This may highlight that profits from the housing sale were not simply transferred into liquid wealth but were potentially used up to cover outstanding mortgage debts and other separation-related costs.

Stage 3: Legal divorce proceedings. Third, I expected to observe a sizable additional decline of personal wealth during the divorce proceeding due to administrative costs (*Divorce Penalty Hypothesis*). As illustrated in Figure 4.2, men and women held 86 and 87 percent less personal wealth respectively during the divorce proceeding compared to during marriage and at least four years prior to separation. Comparing separation and the divorce proceeding, men's and women's personal wealth did not decline further in contrast to my expectations. I found only marginal gender differences in relative wealth declines during the divorce proceeding, which were statistically non-significant as illustrated by gender interactions.

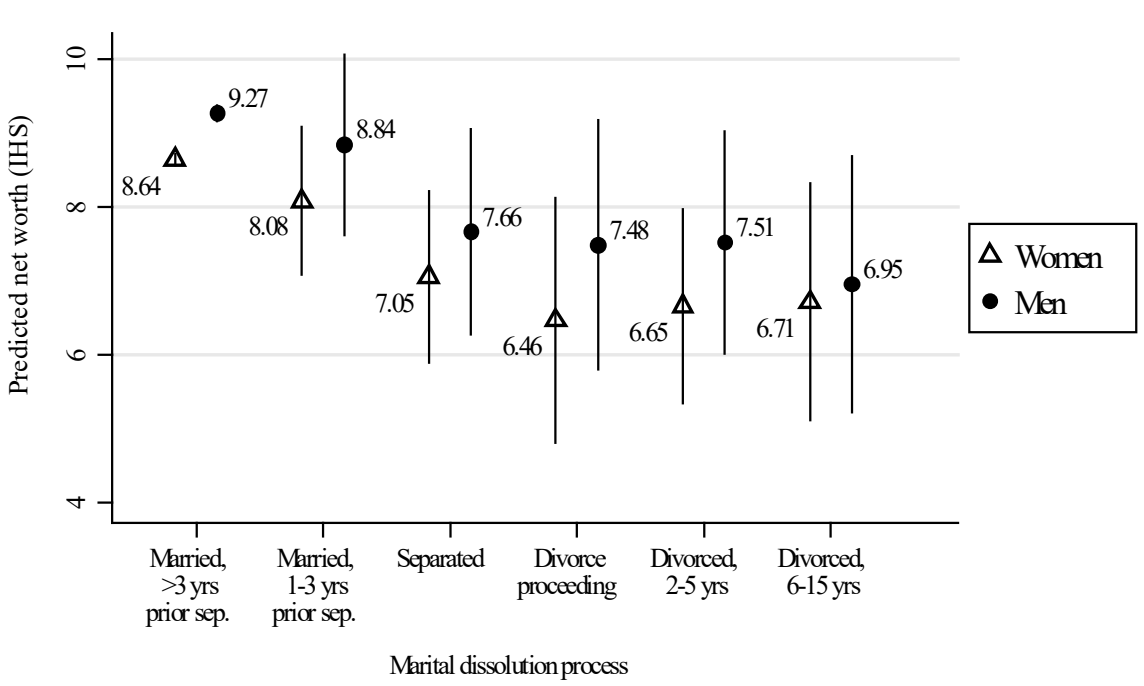
Figure 4.3 Fixed-effects regression coefficients for housing wealth and financial wealth (IHS-transformed).



Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Models include control variables for age, age^2, survey years 2002 and 2007, marital duration, and imputed wealth data. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed). Full model results in Table A.5 in Appendix A.

Stage 4: Financial Adjustment Post-Divorce. Finally, I anticipated that personal wealth would be recovered after divorce once divorce costs were largely settled (*Post-Divorce Coping Hypothesis*), with men expected to experience steeper post-divorce wealth accumulation compared to women (*Gendered Recovery Hypothesis*). Contrary to my expectations, the regression results did not highlight substantial wealth recovery for either men or women in the years after divorce in models that controlled for age, survey year, marital duration, and imputed wealth data. Rather, personal wealth, but particularly housing wealth, stayed at levels found during the divorce proceeding and thus substantially and significantly below those found during first marriage. For financial wealth, estimates were more imprecise, but indicated that both men and women held less financial wealth in the years after divorce compared to during marriage. It should be highlighted that general age-related accumulation trends were accounted for in the analyses.[34]

Figure 4.4 Predicted IHS-transformed personal wealth of men and women over the marital dissolution process.



Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Models include control variables for age, age^2, survey years 2002 and 2007, marital duration, and imputed wealth data. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed).

[34] Note, that once age was not account for (see Figure A.1 *Fixed-effects regression coefficients for personal net wealth (IHS-transformed) not controlling for age.*
and **Fehler! Verweisquelle konnte nicht gefunden werden.** in Appendix A), results showed wealth increases for men and women in later years after divorce although the overall lasting effect of marital dissolution on wealth was still visible.

As reference wealth levels were lower for women than for men based on within-couple wealth differences, I scrutinised gender differences further. Although percentage declines were similar for men and women over the entire dissolution process, absolute wealth levels were likely higher for men than for women as already indicated by my descriptive results. This trend was overall confirmed by predicted IHS-transformed wealth levels based on my fixed-effects regression results (see Figure 4.4). Predicted level differences between men and women were, however, statistically insignificant potentially due to natural uncertainty introduced by the multiple imputation and the restricted sample size.

4.4.3 Robustness analyses

A range of additional analyses were conducted to further assess the robustness of my results. First, I validated whether time spent in separation biased my results. While longer separations may provide time for wealth recovery, they alternatively signal particularly complex wealth portfolios or custody battles, and therefore place greater strains on financial resources. The fixed-effects regression analyses were re-run without respondents that were separated for more than five years (Figure A.3 and Figure A.4 in Appendix A). Although sample sizes were reduced, these results were in line with main results.

Second, I examined whether the imputation of SOEP data or my own imputations of additional analytical variables impacted my results. Thus, I first conducted my analyses without SOEP imputed wealth data and in a second step, used listwise deletion to maintain only non-imputed values for all analytical variables (Figure A.5 to Figure A.8 in Appendix A). Although these analyses used substantially smaller samples, which reduced the power of my analyses, the results reflected my main models.

Finally, I examined whether there was evidence for informative censoring (i.e. participants attrition is due to reasons related to the study) in my data by predicting attrition using wealth and a dummy for marital dissolution. I found that less wealthy men and women were statistically more likely to attrite. Although effect sizes for marital dissolution were comparable to those of wealth, marital dissolution was not a statistically significant predictor of attrition. Previous studies highlighted that attrition is predominantly due to participants' relocations and changes in interviewers whereas other characteristics are only of minor importance. These studies further showed that attrition rarely biases main analyses (e.g. Behr, Bellgardt, & Rendtel, 2005).

4.5 Discussion and conclusion

In light of historically high divorce rates and increasing importance of private wealth accumulation, the association of wealth and marital dissolution is a central issue within family research. In the present thesis chapter, I examined personal wealth changes of men and women over the marital dissolution process. My theoretical expectations were informed by the idea that marital dissolution is not a single point-in-time event but involves a number of stages both prior to and after legal divorce. I argued that each stage is associated with potentially unique challenges and behavioural adjustments with implications for overall wealth and specific wealth components at each stage. Furthermore, building on previous evidence on gendered marital dissolution-related income declines and evidence of substantial within-couple wealth disparities, I also expected marital dissolution to have gender-specific consequences for personal wealth. Fixed-effects regression models using German SOEP data were examined to test my hypotheses.

Consistent with previous research on per capita wealth by Zagorsky (2005), I found that divorce was associated with substantial declines in personal wealth for both men and women. However, my results advance current knowledge about this divorce penalty in important ways. In line with my *Pre-Separation Declines Hypothesis* and *Separation Penalty Hypothesis*, my results suggested that personal wealth of men and women started to decline in the years immediately prior to separation (i.e. during marriage) and dropped dramatically during separation. The legal divorce proceeding itself was, however, not related to substantial additional penalties in contrast to my *Divorce Penalty Hypothesis*. Personal wealth levels during the divorce proceeding were rather comparable to levels during separation for both men and women. Although divorce costs are likely substantial, these costs are comparatively low in Germany and can generally be covered within several smaller instalments. Divorcing individuals may therefore be able to cover instalments with monthly income instead of drawing on their already critically reduced personal wealth reserves. Legal aid or *inter vivos* transfers from parents to their divorcing children may further help to cover administrative divorce costs (Leopold & Schneider, 2011a).

Contrary to my *Post-Divorce Coping Hypothesis* and previous research on post-divorce income recovery (e.g. Andreß et al., 2006; Bayaz-Ozturk et al., 2018), I did not find any substantial recovery in personal wealth for either men or women in the years after legal divorce when general age-related accumulation processes where controlled for. This potentially highlights the fundamental differences between income and wealth measures. Income measures the current flow of money, which can easily be enhanced through increases in working hours or job changes and promotions. Wealth, as a stock

measure, is less responsive to such adjustments and not a direct function of income, as aspects such as consumption or financial transfers additionally influence wealth accumulation (Killewald et al., 2017). This is important, as consumption costs likely remain elevated after divorce (Andreß et al., 2003; Sørensen, 1994). Wealth recovery after divorce, beyond natural age-related wealth increases, may thus require more than "simple" income increases.

Dividing personal wealth into financial and housing wealth illustrated that separation penalties were predominantly driven by housing wealth losses in line with my *Housing Decline Hypothesis*. Both men and women forfeited on average 92 to 93 percent of their housing wealth during separation indicating that the large majority of couples lost their homeownership status as previously suggested by Lersch and Vidal (2014). Results for housing and financial wealth further highlighted that persistently low wealth after separation, including years after divorce, were due to a lack of housing wealth recovery. Even when age-related wealth accumulation effects were not controlled for, housing wealth stayed persistently below pre-dissolution levels in years after divorce. Results are supported by recent research from Mikolai, Kulu, Vidal, van der Wiel, and Mulder (2019) who showed that residential change following separation was more often linked to a move into a rental home rather than homeownership. The lack of housing wealth recovery is likely amplified by a deficiency of financial wealth that could be used as a deposit. In Germany, homeownership is often seen as a once-in-a-life time opportunity as property acquisition in the prudential German mortgage system requires substantial deposits and income security (Voigtländer, 2014). The strong rental housing market with high-quality social housing nevertheless provides a viable alternative to homeownership, albeit one that does not encourage property-related wealth accumulation. This finding is particularly critical as homeownership is gaining increasing importance as a means to secure living standards throughout the life course, and particularly during retirement. Overall, marital dissolution thus seems to contribute to wealth inequality predominantly through the loss of housing wealth and the lack of financial collateral in the years after divorce to re-enter homeownership, which likely intersects with a low perceived need of homeownership within the German housing system.

I also advanced previous literature by scrutinising potential gender differences. As indicated by the *Gendered Wealth Decline Hypothesis*, I expected that women experience larger wealth declines during separation and at divorce than men due to a possibly gendered division of marital property and men's higher pre-marital wealth, which is *de jure* not divided during marital dissolution. Furthermore, I expected that men would accumulate wealth at higher rates after divorce based on their higher wealth accumulation potential, which I defined in my *Gendered Recovery Hypothesis*. Overall, I found no support for these expectations and my results rather showed that men and women experienced similar

relative wealth declines throughout the marital dissolution process. One explanation for non-substantial gender differences could be based on the concentration of couples' wealth in housing property, which is commonly acquired jointly during the marriage (Thomas & Mulder, 2016). To finance homeownership, spouses may use some of their personal non-marital wealth (i.e. pre-marital wealth), blurring the lines between marital and non-marital wealth. The distinction between marital and non-marital wealth could be further aggravated by a lack of legally sound documentation of each spouses' finances prior to and during the marriage. Alternatively, non-marital wealth may only account for a small portion of overall wealth as the majority of wealth accumulation likely occurs during marriage (Kapelle & Lersch, 2020).

My findings show that the effects of marital dissolution on wealth have important consequences for both men and women, and by implication, their children. Nevertheless, predicted wealth levels for men and women across the marital dissolution process illustrated that women overall held less wealth than men at any time. As women also experience more precarious income situations during separation and after divorce compared to men (e.g. Bayaz-Ozturk et al., 2018), marital dissolution likely constitutes a life course transition that increases women's economic vulnerability to a larger extent than men.

With regard to gender differences, I should acknowledge that bias might be introduced by self-reported personal wealth data. I relied on the respondents' judgment about their share of jointly owned assets. It is unclear whether perceived and legal ownership of wealth overlap, and which aspect drives responses (Ambler, Doss, Kieran, & Passarelli, 2019). If respondents' reports were inaccurate, I may have over- or under-estimated the wealth consequences of marital dissolution for both men and women. Moreover, reporting differences may have varied by gender. For example, women may be less involved in managing finances and less aware of wealth assets while married, whereas men may over-estimate their personal share based on higher income contributions. As the research on wealth inequalities grows, wealth data from other sources including administrative data may become available to further verify reports of personal wealth of men and women.

To conclude, my study provided new evidence on how marital dissolution may contribute to wealth inequalities between households. Marital dissolution is linked to wealth inequalities between first-time divorcees and those continuously married through the loss of housing wealth mainly during separation, which divorcees do not manage to make up for in years following divorce. A lack of housing wealth recovery was likely amplified by a lack of sufficient financial wealth as collateral for a deposit. As the relevance of housing property to secure living standards in old age increases, my

results highlight potentially lasting inequalities. Partially based on the high relevance of housing property within the wealth portfolio during marriage and the joint acquisition of housing property, both men and women experienced similarly dramatic relative declines in their personal wealth. As men are, however, more likely to hold more absolute wealth, financial vulnerability during marital dissolution and thereafter is likely higher for women.

5. Chapter – Diversity in family life course patterns and intra-cohort wealth disparities in late working age

An amended version of this chapter has been published as a working paper in the SOEPpapers and is currently under review at the European Journal of Population.

Kapelle, N., & Vidal, S. (2020). Diversity in family life course patterns and intra-cohort wealth disparities in late working age. SOEPpapers, No. 1092. Berlin, Germany: DIW.

As required by policy of The University of Queensland, the following table provides an overview of each author's contributions to the working paper publication and journal submission:

Contributor	Statement of contribution	%
Nicole Kapelle	writing of text	80
	proof-reading	50
	theoretical derivations	80
	data management	100
	numerical calculations	75
	preparation of figures	80
	initial concept	90
Sergi Vidal	writing of text	20
	proof-reading	50
	theoretical derivations	20
	numerical calculations	25
	preparation of figures	20
	initial concept	10
	supervision, guidance	100

5.1 Introduction

In light of a rising emphasis on privately managed economic provision during older age (Ebbinghaus, 2015), personal savings and other private sources of wealth are increasingly relevant to the future living standards of the contemporary workforce. This standings in contrast to soaring wealth inequalities in older age in most wealthy nations (OECD, 2013), which highlights drastically that individuals differ markedly in the rate at which they accumulate wealth over their working lives. In the longer term, widening wealth disparities at older ages will increase reliance on welfare, hinder social cohesion, and contribute to rising economic inequality through the unequal intergenerational transmission of resources and opportunities (Pfeffer & Killewald, 2017; Pfeffer & Schoeni, 2016).

When examining potential sources of wealth inequalities, research and policy has commonly focused on the role of labour market position and social background (e.g. Bernardi, Boertien, & Geven, 2018; Ponomarenko, 2017). Only recently have family roles – and transitions across these roles – over the life course been recognised as relevant to socio-economic stratification and wealth inequality (e.g. Halpern-Manners et al., 2015; Hurd, 2002; McLanahan & Percheski, 2008; Zissimopoulos et al., 2015). Studies along these lines have argued that the pervasive changes in the family realm over recent decades – including declines in and postponement of marriage and childbearing, and the emergence of new family arrangements such as unmarried couples with children, lone parents or step- and blended families – have exacerbated socio-economic disadvantages.

The new diversity in contemporary family life courses is often deemed economically inferior or less favourable than a "standard" family life course featuring a stable marriage with (on average, two) children. On one hand, cultural and institutional support for the standard family pattern have meant that substantial economic benefits are associated with its long-term enactment, while departures were often sanctioned (Lersch, 2017). One the other hand, economic prerequisites for marriage (i.e. the 'marriage bar') and family formation have constrained the access to the standard family pattern, which meant that disadvantaged individuals and social groups who perceive these prerequisites as unachievable have often been excluded from marital benefits (Gibson-Davis et al., 2005). Either way, the increasing diversity in family roles and divergence from the standard family trajectory is found to broaden individual differentials in wealth accumulation and can contribute to growing wealth inequality at older ages. Whether and how the latter occurs, however, remains an empirical question.

To close these gaps in our knowledge, within the present thesis chapter I examine whether increasingly diverse family trajectories in early and mid-adulthood relate to soaring wealth disparities at older ages amongst the West German baby boomer cohort. In line with the thesis topic, marital

dissolution is considered as one possible event within those trajectories. I establish the *diversity* in family trajectories for the cohort of interest and assess the extent to which overall *departures* from a *standard* family pathway are associated with lower wealth at older ages, as a potential result of breaking with the associated mechanisms of wealth accumulation or due to stratified access to different family pathways. I additionally assess what *type of trajectory patterns* matters and can further help to understand disparities in wealth accumulation at older ages. I consider the extent to which all these associations vary by gender, as wealth accumulation potentials have been shown to differ between men and women (Bessière, 2019; Sierminska et al., 2010), which was discussed in more detail in Chapter 2.

The present study extends existing research in three important ways. First, I adopt a holistic life course approach to assess life courses as long-term trajectories. Previous research relied on blunt summary indicators of past point-in-time family outcomes (e.g. being ever divorced, currently married, divorced twice) to classify entire family life courses, which has obscured the diversity in pathways leading to similar family outcomes but different economic wellbeing in older age (Halpern-Manners et al., 2015). My approach enables me to explicitly acknowledge that an aggregate of time-dependent processes featuring the occurrences, timings, and ordering of family transitions are (directly or indirectly) related to the life-long accumulation of economic resources and thus contributes to intra-cohort wealth inequality.

Second, I examine marital *and* fertility histories simultaneously, which acknowledges increasingly complex interdependencies between marital and fertility choices over the life course. Previous research has almost exclusively focused on marital status, although both fertility and marital histories can be expected to be closely intertwined with wealth accumulation processes across the life course.

Third, while most research on the role of family dynamics for economic wellbeing inspected household-level wealth I examine the personal wealth of household members as an under-researched dimension of economic wellbeing that may provide additional evidence of potentially gendered effects. As for the previous empirical chapter, I define personal net wealth as personally owned assets – solely owned or the personal share of joint assets – minus personal liabilities. Although joint money management has been shown to be particularly likely within traditional stable marriages with children, previous research has highlighted substantial within-couple wealth inequalities and particularly individualised money management approaches in more complex families, for example, following remarriage (Amuedo-Dorantes, Bonke, & Grossbard, 2011; Burgoyne & Morison, 1997; Grabka et al., 2015).

Empirically, I deployed longitudinal data from the West German sample of the German Socio-Economic Panel Study (SOEP, v34, waves 2002-2017). To identify typical family trajectory patterns, I used multichannel sequence analysis and cluster analysis of childbearing and marital histories spanning ages 16 through 50. To this end, I used retrospective life history information for men and women born between 1943 and 1966 who were aged 50 to 59 between 2002 and 2017. Building on the identified set of family patterns, I predicted disparities in personal wealth ranks at pre-retirement age (measured at ages 51 to 59) using OLS regression (N=6,400).

5.2 Previous research

Incipient previous research on disparities in *household*-level wealth by marital status unequivocally found that, compared to ever experiencing a divorce, a continuous marriage is associated with higher wealth levels between ages 51 and 61 (Ulker, 2008; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015).[35] While being remarried at older ages was found to have partially restored household wealth compared to respondents who stayed divorced until old age, serial union dissolution severely penalised wealth in old age (Ulker, 2008; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015).

By focusing solely on household-level wealth, previous studies may have underestimated gender inequalities within and between different family types as they assumed that all household resources are shared equally. Grabka et al. (2015), however, illustrated substantial within-couple wealth inequalities that question the approach of previous research. Novel research by Lersch (2017) examined German panel data to scrutinise personal-level and household-level wealth differences across currently married, remarried and divorced respondents between ages 51 and 75. Results showed that while continuously married respondents have the highest personal and per capita wealth, men benefit more from continuous marriage than women with regard to their personal wealth levels at older ages. Although gender differences were statistically non-significant for remarried respondents, coefficients indicated that men may benefit slightly more from remarriage than women, compared to never married men and women. Across all wealth measures, Lersch (2017) found that currently divorced respondents have the lowest levels of wealth in older age. Being divorced at older ages was thereby associated with marginally lower wealth for women than men.

The presence and number of dependent children is closely interlinked with parents' marital status, but such intersections across family domains have only been partially addressed in wealth research

[35] As widowhood is a rather uncommon event prior to retirement and thus also an uncommon occurrence in my cohort of interest (Statistisches Bundesamt, 2018c), I focus on divorce as the reason for marital dissolution in the literature review.

by Ulker (2008). For the US, he found that unmarried women's, and married men's and women's per capita wealth at older age was negatively associated with the number of living children they had, while the number of living children did not have a substantial effect on unmarried men's per capita wealth. Despite addressing key intersections between fertility and marital status, the fact that these family statuses were measured in older age ignores the heterogeneous pathways that lead to the same marital status and final descent. Being unmarried at older ages may reflect a diverse range of marital histories from lifelong singlehood to highly disrupted marital patterns. Similarly, in the research by Ulker (2008), it was unclear whether married couples were in a first-time or higher order marriage.

The analysis of intersections between fertility and marital histories (which consist of all previous transitions between family statuses) is critical to the understanding of the association between family life courses and wealth at older ages. This claim is supported by previous research that has illustrated that relevant variation in household-level wealth exists across a range of marital status and fertility transitions during early and mid-adulthood (e.g. Lersch et al., 2017; Lusardi, Cossa, & Krupka, 2001). Whether these early wealth inequalities widen or narrow over time as children get older and form independent households is, however, unclear.

5.3 Theoretical framework

In line with arguments about the origin and development of intra-cohort inequalities that were discussed in more detail in Chapter 2, disparities in wealth at older ages can be understood as an outcome of age differentiation (Dannefer, 2003): for a given birth cohort, the capacities and resources that contribute to the accumulation of wealth progressively differ among individuals as they age. According to the life course approach (Mayer, 2004), the rate of differentiation can be explained, *inter alia*, by (1) transitions, roles, and experiences in multiple life domains (e.g. employment, family, etc.), (2) the linked experiences of others (e.g. contact with and support from family), and (3) the opportunities and constraints embedded in the socio-historical contexts of individuals' lives.

Along these lines, the current paper explores how marital and parental roles enacted over the life course are associated with older-age wealth inequalities of a West German baby boomer birth cohort. In the West German context, a nuclear family arrangement (i.e. husband and wife and their biological children) was demographically dominant at mid-adulthood, and has been considered an economically-enhancing and socially-idealised family setting (Trappe et al., 2015).[36] The absence of

[36] The dominance of the standard family life course (i.e. continuous marriage with two children) was also reflected within the analytical sample of the present thesis chapter, as it was the most common pattern.

such a family arrangement throughout or over a large span of an individual's life course has been deemed less beneficial or even a hindrance to the achievement of subjective and objective wellbeing including financial prosperity. The present thesis chapter is one of the first studies to confirm whether marital and parental roles and transitions from early adulthood until pre-retirement age are associated with economic wellbeing, empirically assessing wealth levels in older age as a potential outcome. Although it is not my aim to test the concrete mechanisms, I acknowledge that several complementary explanations would support the potential associations between family trajectories and wealth levels in older ages, which I further elaborate on in the following.

5.3.1 Wealth benefits and penalties associated with family states and transitions

As discussed in detail in thesis Chapter 2, a stable first marriage has been associated with a range of wealth-enhancing mechanisms commonly denoted the marriage wealth premium (Lersch, 2017). Departure from a stable marriage either through marital dissolution or refraining from marriage would result in a partial or full loss or lack of marital premiums. It is also worth noting that marital dissolution is often associated with substantial immediate wealth losses due to the costs of separation and divorce, as theoretically discussed and empirical illustrated in the previous empirical chapter (Chapter 4). While marital premiums may be restored during an eventual remarriage, such premiums are expected to be lower due to the greater financial independence of individuals in higher order marriages and potential financial commitments to ex-spouses (Burgoyne & Morison, 1997).

In addition, marriage entries and exits are socially stratified and vary across wealth levels and relevant characteristics including labour market income, employment status, education, or families' socio-economic origins (Eads & Tach, 2016; Gibson-Davis et al., 2005; Schneider, 2011). On average, those who married tend to have wider access to social and economic resources than those who did not, and thus, financial prosperity would have arguably been higher for the married even in the absence of marriage.

Parenthood is associated with a range of direct and indirect costs, and the responsibility to cover them largely rests on parents, which can limit their potential to accumulate wealth. Direct costs relate to expenses for daily living (e.g. food, rent), and fees for child care and education (Bradbury, 2011). Indirect financial costs of childrearing particularly emerge for women due to related career breaks (Budig & England, 2001), which restrict women's current and future income and thus wealth accumulation potential (Lersch et al., 2017). The latter follows from a culturally-persistent and

institutionally-supported male breadwinner model, where men are meant to provide economic resources for the household while women are the main caregivers.

For an average family size, direct childbearing costs can be offset, to a large extent, in the context of a stable parental marriage. First, married parents often fulfil some economic prerequisites for childbearing, particularly fathers. To provide financial security for mother and child while also ensuring an ideal setting for child socialisation, it was commonly thought that childbirth ought to take place within marriage and preferably only after men achieved a consolidated position in the labour market (Oppenheimer, 1988). Second, actual or anticipated childbearing generates long-term savings incentives to cover child-related costs, which continue even after children are no longer dependent on parents (Lusardi et al., 2001). Third, married parents often benefit from intergenerational financial transfers as a form of social support (Leopold & Schneider, 2011a), which can additionally increase wealth levels.

However, child-related costs can also outweigh benefits if the number of children exceeds a financially manageable threshold for a particular household. To fully understand the child-related economic costs, it is relevant to additionally consider fertility levels alongside marital status. Manageable thresholds can be expected to be rather low for single parents as child-related direct and indirect costs are not fully covered jointly by both parents. In contrast, thresholds are higher for married parents due to the associated benefits of marriage.

In my study context, marriage was the normative family environment for childbearing[37] (Le Goff, 2002), and desire for children influenced marital transitions and their timing (Baizán, Aassve, & Billari, 2004). In contrast, due to the social stigma of out-of-wedlock parenthood, long-term cohabitation of parents was uncommon and often ended either in marriage or single parenthood (Le Goff, 2002). The likelihood of either pathway is socially stratified, with economically more advantaged parents transitioning to marriage, and younger parents with an incomplete education and lower income separating (Upchurch, Lillard, & Panis, 2002). Among married parents, divorce is also more likely among financially stressed individuals highlighting selection out of marriage (Eads & Tach, 2016). Divorce itself is likely associated with a range of wealth-depleting expenses as illustrated in Chapter 4. Overall, single parents – either due to divorce or to out-of-wedlock births – lack or lose the economic advantages of marriage, including financial transfers between parents and across generations (Eickmeyer et al., 2019; Manning, Stewart, & Smock, 2003). As children

[37] Although the social acceptance of childbirth within cohabitation has increased, for the cohorts of interest in this study and the social context of West Germany, cohabitation was commonly seen as an undesirable family form for childbearing. Thus, transitions to parenthood commonly took place within marriage (Le Goff, 2002).

commonly reside with mothers, single parenthood often restricts women's economic potential, as they bear a larger share of the direct child costs and they incur indirect costs of employment restrictions related to taking care of children. Child alimony paid by the non-residential fathers is relatively low and does not affect poverty risks for fathers (Hakovirta, Meyer, & Skinner, 2019). Nevertheless, regular child alimony payments may have the potential to reduce surplus income and thus savings for men.

5.3.2 Study objectives

Consistent with the *cumulative advantage/disadvantage theory* embedded in the life course framework (O'Rand, 1996), I extend the above-mentioned arguments about wealth-advantageous and wealth-penalising family states and transitions to explain differential wealth outcomes in older age. I argue that wealth disparities between individuals at older ages can be a function of individuals' wealth advantages and penalties, accumulated through their family behaviour at younger ages. Additionally, wealth disparities can be the result of socio-economically stratified family behaviour, where individuals with higher potential to accumulate wealth are disproportionately more likely to transition into (and less likely to transition out of) specific beneficial family roles. In particular, departure from the culturally and institutionally supported *standard* trajectory of continuous marriage combined with moderate fertility may lead to lower rates of wealth accumulation and to increasing wealth disparities because wealth-enhancing mechanisms are either disrupted or absent. With regard to my empirical analysis, I expect that *having enacted a standard family trajectory is associated with greater wealth at ages 51 to 59, while having departed from the standard family trajectory can be expected to be linked to less wealth-enhancing structures and thus lower wealth at these ages*.

Non-standard family trajectories are, however, diverse and heterogeneous with regard to the type of departure from the standard trajectory. Some trajectories might only deviate slightly from the standard trajectory, regarding the occurrence, timing or sequencing of family transitions that conform to the standard. This may be, for example, due to the postponement of marriage or the decision to have one child less than the average. One can expect small to trivial wealth disparities when trajectories depart only moderately from the standard, because most wealth enhancement mechanisms will still be in place and only small, if any, wealth penalties will be incurred. Some other trajectories might feature substantial deviations, ranging from the complete absence of family transitions to a highly complex set of transitions that often include non-typical, disadvantaged family arrangements such as single parenthood and patchwork families. One can expect larger wealth disparities when trajectories depart substantially from the standard, because wealth-enhancing mechanisms associated with the

enactment of the standard trajectory are absent or disrupted and additional wealth penalties will be incurred and may accumulate, depending on the complexity of family transitions (e.g. repeated divorce, childbearing with multiple partners). I thus expect that *wealth levels will vary substantially between groups of non-standard family trajectories with larger deviations from the standard pathway associated with higher wealth penalties and smaller deviations associated with substantially lower wealth penalties*.

Due to the hegemonic position of marriage within the baby boomer cohort, I expect life courses that are characterised by the departure from or absence of a continuous marriage to be highly deviating life courses. Despite the disruption of a prior marriage, life courses that feature stable remarriage may be seen as an attempt to re-establish the traditional pathway, or be more likely among those who are economically well-off. Even within life courses featuring stable marriage, deviation may increase, for instance, with an increasing number of children or with childlessness. As I empirically derive major family patterns in my study context through sequence and cluster analysis, I refrain from proposing elaborate hypotheses on specific family pathways and their association with wealth at ages 51 to 59 at this stage.

Finally, wealth accumulation potentials likely differ for men and women over their life courses as outlined in the previous theoretical discussion on the gender wealth gap (see Chapter 2). Gender wage inequalities and access to employment-related wealth building tools have been cited as the main drivers of these disparities (Sierminska et al., 2010). While penalties partially emerge based on occupational segregation and an undervaluing of female-dominated industries (Hakim, 1992; Perales, 2013), family roles enacted over the life course also matter. Women's wealth accumulation potential is substantially inhibited by parenthood-related career breaks (Lersch et al., 2017). The degree to which these potential disadvantages develop into lasting penalties likely differs according to the availability and consistency of their partner's (financial) support.

5.4 Data and method

5.4.1 Data

I used longitudinal survey data from the German Socio-Economic Panel study (SOEP; doi: 10.5684/soep.v34 (Goebel et al., 2019)). The data were particularly suitable for the research purposes of the current thesis chapter, as they contain retrospective information on detailed marital and childbearing histories from late teen ages to date in addition to the comprehensive, personal-level

wealth data. Building on the imputed wealth data (Grabka & Westermeier, 2015), I additionally addressed item nonresponse in relevant analytical variables – except for marital and fertility history data – through multiple imputation using Stata's *mi* procedure (version 16). While sequence data were not imputed, family cluster membership was used as an auxiliary variable in the imputation process. Table B.1 in Appendix B gives an overview of variables used in the imputation processes and provides information on the number and share of missing data.

5.4.2 Sample

In a first step, I restricted the sample to respondents who were aged 50 to 59 between 2002 and 2017 and who provided complete retrospective marital and fertility histories from ages 16 to 50. I decided to focus on respondents in their 50s as wealth penalties and advantages accumulate over the life course and are thus particularly visible at older age (Hurd, 2002). Furthermore, wealth levels can be expected to peak around this time in preparation for retirement (Spilerman, 2000). As wealth accumulation slows down during retirement and wealth may be consumed, I restricted the inclusion of retirees by focusing on respondents up to the age of 59. Although the legal retirement age for the cohort of interest is 65 to 67, actual retirement entry often occurs earlier (Deutsche Rentenversicherung Bund, 2018). Based on these criteria, my sample contained 10,057 respondents with 5,751 women and 4,306 men. As men's retrospective fertility data have only been collected for men who entered the SOEP in 2000 or later, my sample included fewer men than women.[38] Overall, this sample was, however, largely representative of German baby boomer birth cohorts born between 1943 and 1966 and was used to assess the diversity of family life courses.

For the multivariate analyses I further restricted the sample to respondents aged 51 to 59 in any of the wealth survey years 2002, 2007, 2012, and 2017. This excluded 2,812 respondents (1,336 men and 1,476 women). I also excluded observations of years with missing personal interviews. This led to the complete-case exclusion of 299 men and 335 women. Finally, observations for respondents in years without a wealth questionnaire were excluded.[39] Thus, an additional 93 men and 118 women were excluded. After these exclusions, my final regression sample consisted of 6,400 respondents with 8,320 individual-year observation: 2,578 men with 3,292 individual-year observations and 3,822 women with 5,028 individual-year observations.

[38] For men who entered the panel before 2000, fertility histories have been reconstructed using men's female partners' histories. I re-ran my sequence analysis and cluster analysis including that information. While the emerging family patterns were consistent with my main analysis, I argue that fertility cluster membership cannot properly be determined, particularly for non-stably partnered men.
[39] This applied to SOEP refreshment samples that did not administer a wealth questionnaire in all years.

5.4.3 Measurements

5.4.3.1 Wealth measures

My outcome measure, *total personal net wealth,* was defined as the sum of all personally owned assets including the personal share of jointly owned assets. As wealth data are highly right-skewed, I followed suggestions by Killewald et al. (2017). First, I top-and-bottom coded the extreme 0.1% of reported wealth values. Second, I transformed total personal net wealth by ranking individuals by their personal net wealth separately for each wealth survey year but jointly by gender. The final rank measure provided a straightforward indication of individuals' positions within the wealth distribution at the point of interest. Ranging from 0 to 1, the rank measure indicated the proportion of respondents that have less (or more) wealth than the individual considered.

As previous research has almost exclusively relied on household-level wealth data in the analysis of wealth at older ages, I re-ran my analyses using total per capita net wealth. To generate this measure, I used household-level wealth data, which in the SOEP were personal-level wealth data aggregated to the household. I divided household-level wealth by the number of adults living in the household to obtain the per capita measure. Results of this supplementary analysis are provided in Figure B.1 and Figure B.2 in Appendix B. Although the general directions of the association of interest were in line with my main results, due to the nature of the measure and the neglect of within-couple wealth differences, gender differences were substantially reduced for the per capita measure. This highlights the importance to consider personal-level wealth data for more gender-sensitive analyses.

5.4.3.2 Family trajectory patterns

My main explanatory variable was a categorical measurement of major family life course trajectories. I defined the family trajectory as a sequence or succession of family states over time and built a typology of family trajectories deploying sequence analysis as discussed in the methodological chapter of this thesis (Chapter 3).

To compile respondents' family sequences, I used biographical information on respondents' marital status and childbearing status between ages 16 and 50. This information has been collected prospectively and retrospectively for life periods pre-dating panel entry. I built one sequence of yearly marital states and one sequence of yearly childbearing states per respondent. The marital sequence captured four relevant partnership situations: "Single, never married", "Married", "Previously married", and "Remarried". The "Single, never married" state included episodes of pre-marital

singlehood as well as of pre-marital cohabitation. The "Married" state referred to the first marital episode. "Remarried" referred to higher-order marital episodes, though most of them were second order. "Previously married" consisted mostly of separated – from a marriage – or divorced individuals[40], who may have been living in a single-headed household or cohabiting with a partner. Despite the increasing focus on non-marital cohabitation in recent studies, this information is not available retrospectively in the SOEP. Additionally, long-term cohabitation only gained acceptance in more recent cohorts than those included in the study and was commonly not recorded in West Germany due to its negligible role in the life courses of the cohorts of interest (Le Goff, 2002).

The childbearing sequence consisted of five categories capturing number of children: "Childless", "1 child", "2 children", "3 children", and "4+ children". Each category indicated the reported number of the respondents' ever born or adopted children at a given age. Since no information on household composition is available in the biographical questionnaire, states in the childbearing sequence did not consider whether or for how long children lived in the household. Despite this, the childbearing sequence is illustrative of whether individuals followed a normative sequence regarding the quantum and tempo of childbearing.

5.4.3.3 Other measures

A range of baseline confounders were included as control variables in the regression analyses, as they partially predicted both selection into certain family pathways and base-level wealth. These included: a dummy for migration background to indicate whether respondents or their parents had immigrated to Germany; a categorical measure of the number of siblings (none [ref.], 1 sibling, 2 siblings, 3 or more siblings); a continuous measure of parents' occupational status defined by the Standard International Occupational Prestige Scale (SIOPS); and a categorical measure of parents' highest education level (low [ref.], intermediate, high).[41] Additionally, the regression models controlled for respondents' ages as a continuous measure to capture maturation effects and account for age related wealth differences within my sample; respondents' birth cohorts (1943-1950 [ref.], 1951-1958, 1959-1966) to consider cohort effects; and marital status changes between ages 50 and 59 (depending on age at last observation) by including three dummy variables that captured the entry into marriage, or marital dissolution either through separation and divorce or through widowhood.

[40] Less than two percent of respondents in this group were widows or widowers.
[41] Another relevant background characteristic could have been parental separation. Unfortunately, this is only measured insufficiently within the SOEP und could not be included.

While the study did not aim to explain the specific mechanisms of wealth accumulation associated with different family trajectories, I partially addressed the resource accumulation potential of major family trajectories within my descriptive analyses. For this, I used the following human capital trajectory measures separately for men and women: respondents' highest level of education (low, intermediate, high), number of years of employment, number of unemployment episodes, and the mode of the Standard International Occupational Prestige Scale (SIOPS) score.

5.4.4 Analytical strategy

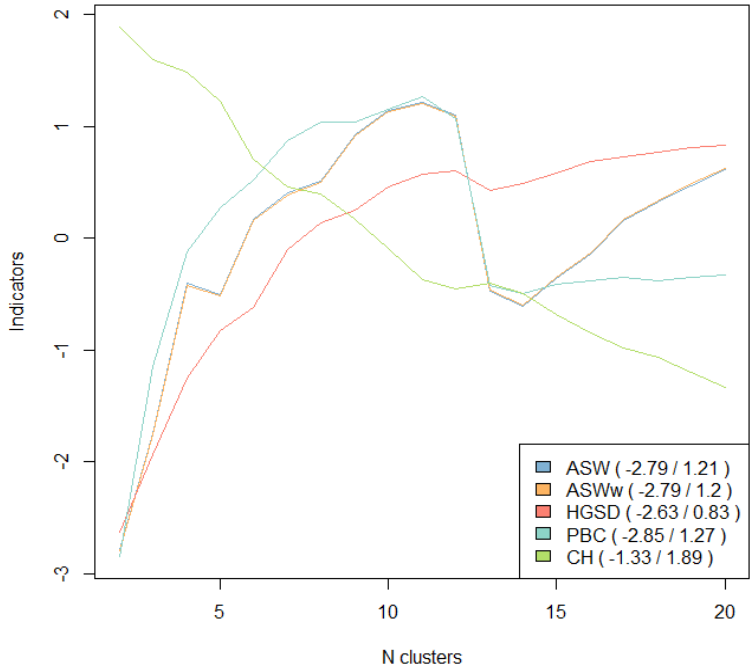
To address my hypotheses, I first used methods for the analysis of sequence data to establish major family life course patterns. Next, I deployed regression analyses to assess the association between the diversity in family patterns and wealth ranks in later life.

To establish the relevant diversity in family life courses, I used multi-channel sequence analysis (MCSA) (Gauthier et al., 2010) in the *TraMineR* package (Gabadinho, Ritschard, Studer, & Müller, 2008) of the software R (version 3.3.3) using the above-mentioned state sequences for the marital and childbearing trajectories as the units of analysis. Using an Optimal Matching (OM) algorithm[42] an empirical cost structure was established to calculate pairwise distances based on transition rates across states, where same state transitions occurring at about the same time equal smaller distances between two sequences. This cost structure was consistent with theoretical ideas of de-standardisation of family life courses based on departures in the type and timing of family transitions from the standard sequence.

Building on the distance matrix resulting from the MCSA, I identified the specific family patterns that are relevant in the population to address the significance of the standard trajectory, and to identify consistent patterns that deviate from each other and assess the specific aspects of deviance. To this end, I employed cluster analysis on the matrix of pairwise distances to cluster sequences in groups and generate a typology. I used a Ward link to generate internally consistent and fairly equally sized cluster types. The decision on the number of cluster types was based on empirical fit measures using cluster stopping rules visualised in Figure 5.1.

[42] I note that results did not vary substantively using alternative algorithms (e.g. constant cost of substitution equal to 2, and a cost of insertion and deletion equal to half of the cost of substitution, which rendered shorter distances across sequences with similar occurrence and ordering of events).

Figure 5.1 Cluster cut-off criteria



Notes: ASW-Average silhouette width; ASWw-Average silhouette width (weighted); HGSD-Hubert's Sommers´ D; PBC-Point Biserial Correlation; CH-Calinski-Harabasz index (see Studer (2013) for definitions).

Prior to my regression analyses, I assessed key differences across major family patterns regarding family transitions and socio-economic compositions within a descriptive analysis. I additionally provide untransformed mean personal wealth levels across cluster types as a first indication of my association of interest. I then formally predicted the association between specific family life course patterns and wealth ranks using gender-specific OLS regressions with cluster-robust standard errors. As previously mentioned, I used imputed data, and thus estimation results from five imputed data sets were combined using Rubin's rule (Rubin, 1987). All estimates were adjusted for the above-mentioned control variables. Regression analysis was performed using the statistical software Stata (version 16).

5.5 Results

5.5.1 Diversity in family trajectories

I describe the diverse family trajectories of German baby-boomer cohorts by clustering individual sequences in major family life course pathways. Eleven major family pathways were supported by multiple cluster cut-off criteria (see Figure 5.1). Sample sizes across those clusters are provided in

Table 5.1. The 11-cluster solution reflects the substantial diversity of family life courses for the German baby boomer cohort. Figure 5.2 and Figure 5.3 provide a visual illustration of these pathways.[43] Pathways were ordered based on expected divergence from the standard family life course, starting with patterns that feature stable marriage and descending to patterns that feature marital instability or lack of marriage. I additionally sorted by the similarity of fertility behaviour to the standard trajectory. To provide a thorough understanding of these eleven major pathways, along with the description of the sequence structure of family events, I assessed their average socio-demographic and occupational compositions (see Table 5.2).

The *Standard* pattern (reference pathway; 26.5 percent of the sample) consisted of long, uninterrupted marriage trajectories with two children. On average, marriage entry occurred at age 25.2 and was closely followed by first childbirth at age 25.9. The *Standard* pattern further featured the traditional male breadwinner model: men in this pattern showed substantially higher human capital and occupational achievements than women.

Five other family patterns were largely characterised by stable marriage, but they departed from the standard pattern on fertility levels and timing of marriage and fertility. In combination, these patterns garnered almost half of the respondents' sample (47.7 percent). The *Late standard* pattern (10.5 percent) featured relatively late marriage entry and first birth (age 33.4 and 34.3, respectively). In line with the increasing postponement of family formation over the decades, this pattern was particularly common amongst younger cohorts. It also featured high proportions of men and of respondents with the highest level of education and occupational prestige across patterns. Next, two patterns diverged slightly from the standard pattern's fertility behaviour: *Low fertility marriage* (12.9 percent) and *High fertility marriage* (10.7 percent). It is worth noting that marriage entry and first birth took place earlier in the latter pattern (with three children), compared to the former pattern (with one child). While the human capital achievement for men in the two groups were comparable, the three-child pattern featured substantially lower human capital attainments for women than the one-child pattern. Last, two patterns presented fertility behaviour that contrasted with the standard pattern: the *Childless marriage* (7.3 percent) and the *Very high fertility marriage* (6.2 percent). Beyond no fertility, respondents within the *Childless marriage* pathway were also characterised by late marriage (age 27.8) and high levels of human capital for both men and women. The latter high fertility pattern

[43] For the visualisation I used relative frequency sequence plots (Fasang & Liao, 2014) and display one hundred (medoid) sequences sorted by the similarity of each cluster, which are representative of about every 3 to 7 sample sequences (right plot in the figures). To visually assess homogeneity across sequences in different regions of the cluster, the distance of the represented sequences to the representative (or medoid) sequence is also presented (left plot in the cluster); the larger the distance, the higher the heterogeneity across sequences.

consisted of trajectories with four or more children, and children often born out-of-wedlock. This pattern was common amongst respondents with a migration background and those from larger families themselves. It was also associated with below-average human capital for women and men, despite largely uninterrupted careers for the latter. Overall, all continuously married patterns – except the patterns with three or more children – displayed above-average personal wealth levels.

Table 5.1 Case numbers across the eleven family pathways.

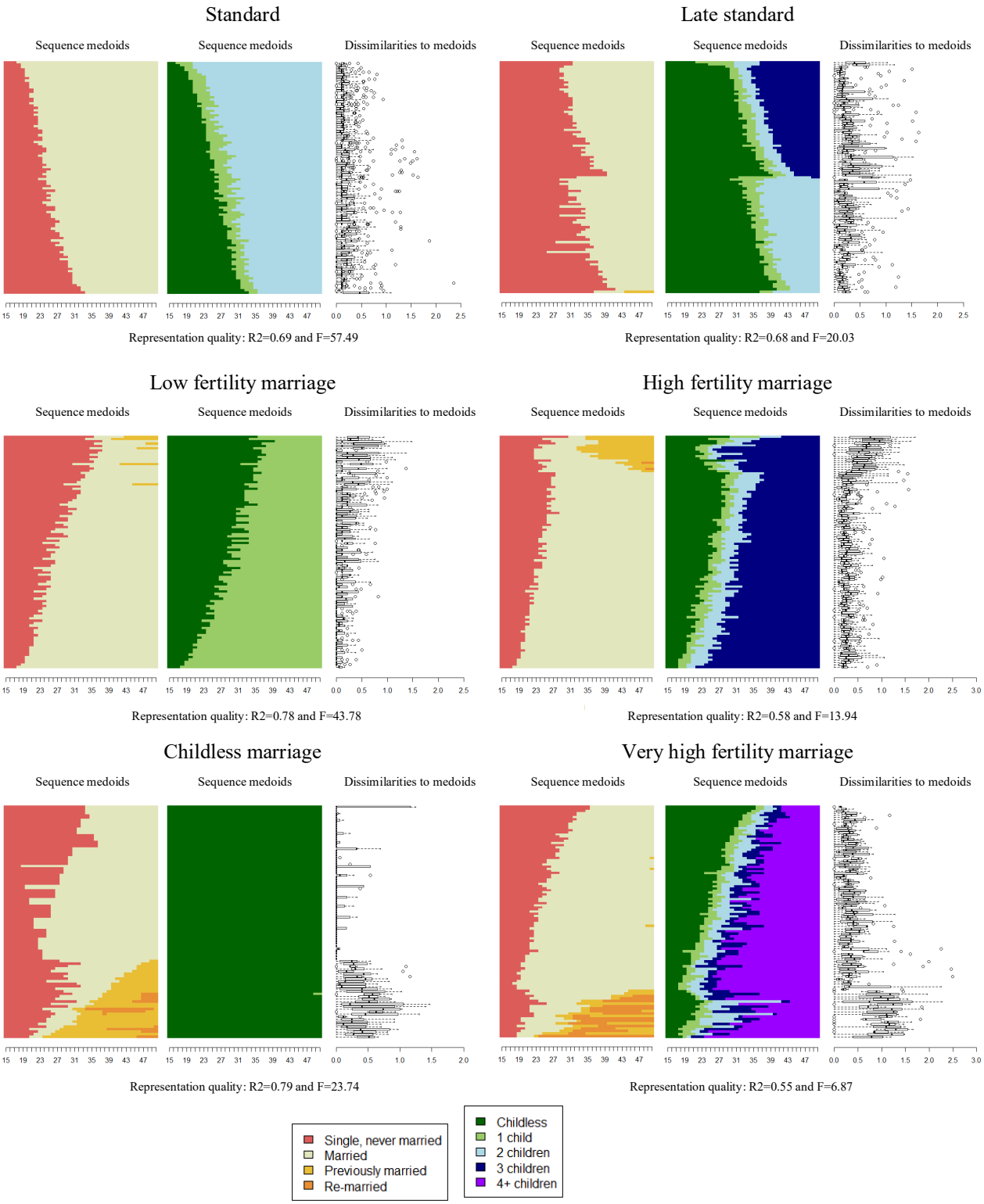
Family patterns	**Men**		**Women**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
Standard pattern	587	22.77	1,108	28.99	1,695	26.48
Late standard pattern	443	17.18	231	6.04	674	10.53
Stable marriage w/ 1 child	307	11.91	521	13.63	828	12.94
Stable marriage w/ 3 children	212	8.22	475	12.43	687	10.73
Childless stable marriage	182	7.06	285	7.46	467	7.30
Stable marriage w/ 4+ children	146	5.66	253	6.62	399	6.23
Remarriage	71	2.75	98	2.56	169	2.64
Early marital instability w/ low fertility	88	3.41	175	4.58	263	4.11
Late marital instability w/ moderate fertility	94	3.65	219	5.73	313	4.89
Unmarried childbearing	90	3.49	196	5.13	286	4.47
No family formation	358	13.89	261	6.83	619	9.67
Total	**2,578**	**100**	**3,822**	**100**	**6,400**	**100**

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017)

The next three patterns (11.6 percent) featured marital instability and therefore discontinuity of marital premiums over the life course: *Remarriage* (2.6 percent), *Early instability with low fertility* (4.1 percent) and *Late instability with moderate fertility* (4.9 percent). Early marriage, early childbearing, and out-of-wedlock childbearing were common in all of them. The *Remarriage* pattern additionally featured high levels of multi-partner fertility. The other two patterns differed in the timing of marital dissolution, but generally featured lower levels of remarriage. The *Early instability with low fertility* pattern was characterised by a shorter time in first marriage and only one child, whereas the *Late instability with moderate fertility* pattern featured longer first marriages with, on average, two children. Men in the three clusters exhibited slightly below-average levels of human capital. Women's attachment to full-time employment was above average in the patterns that lack remarriage and particularly high in the pattern of early instability. Nevertheless, trajectories of marital instability without remarriage were characterised by substantially below-average levels of wealth.

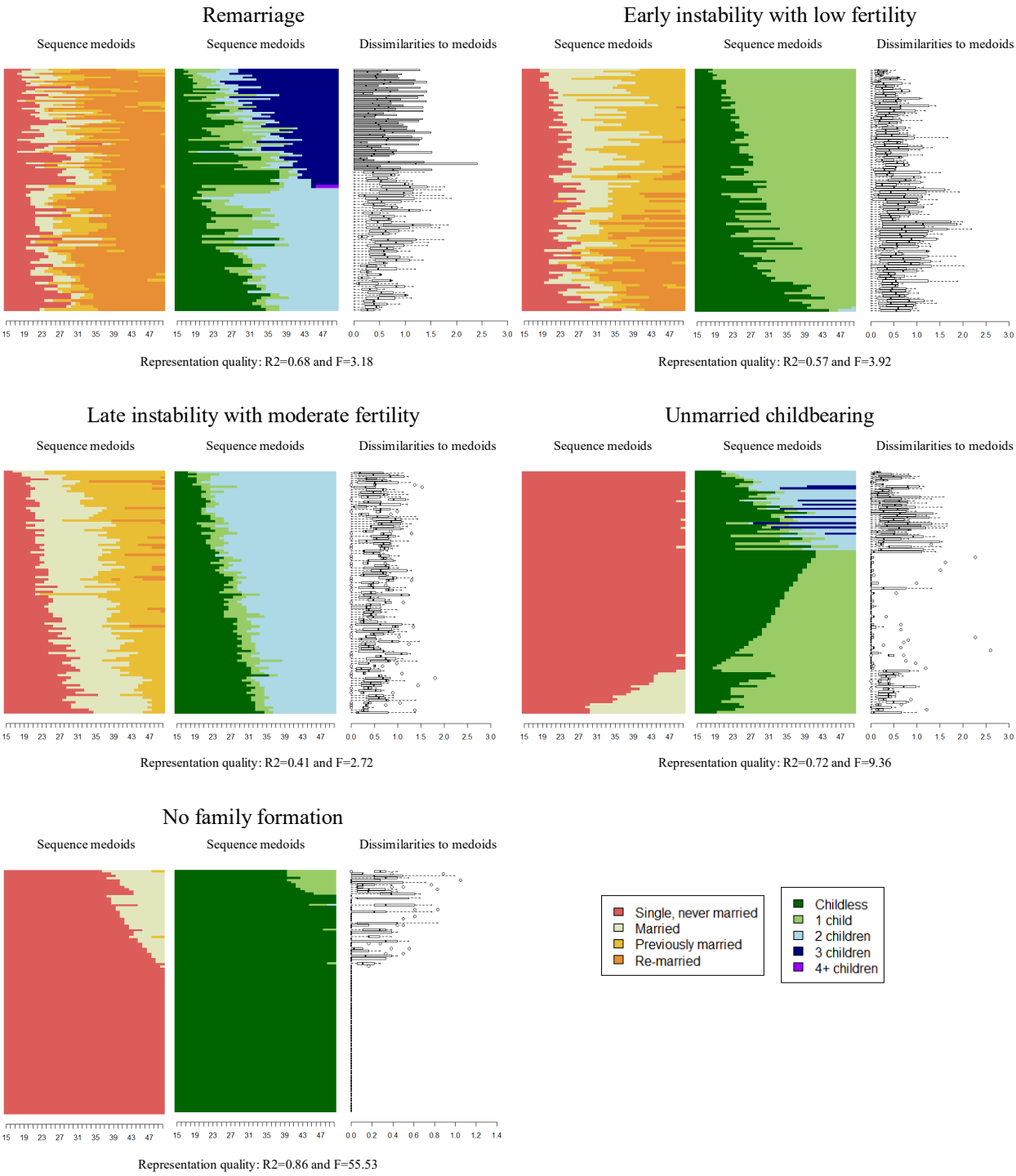
The last two patterns (14.1 percent) deviated from the standard pattern as they largely lacked marriage entry. Additionally, the two patterns differed in terms of fertility behaviour. The *Unmarried childbearing* (4.5 percent) pattern featured childbearing at above-average age (first childbirth on average at 30.1 years). It was more common among women and associated with average levels of human capital for women, but below-average levels for men. Respondents in this pattern held the lowest levels of wealth overall. The pattern of *No family formation* (9.7 percent) featured trivial fertility levels. It was more common amongst men, for whom it was associated with below-average human capital. Women in this cluster showed comparatively high levels of human capital. Overall wealth levels were only slightly below the average for this last pattern.

Figure 5.2 Relative frequency sequence plots of the identified major family patters



Notes: Retrospective data on marital and fertility histories are from the Socio-Economic Panel Survey v34 (2002 - 2017; non-imputed).

Figure 5.3 Relative frequency sequence plots of the identified major family patters (cont.)



Notes: Retrospective data on marital and fertility histories are from the Socio-Economic Panel Survey v34 (2002 - 2017; non-imputed).

Table 5.2 Summary indicators of major family patterns using non-imputed data

	Family patterns											Total
	Stable marriage						Marital instability			No marriage		
	Standard	**Late standard**	**Low fertility marriage**	**High fertility marriage**	**Childless marriage**	**Very high fertility marriage**	**Re-marriage**	**Early instability w/ low fertility**	**Late instability w/ mode-rate fertility**	**Un-married child-bearing**	**No family formation**	
	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)	mean/(SE)
Wealth levels												
Personal net wealth	185.92 (304.08)	258.52 (451.54)	190.61 (323.16)	151.58 (297.88)	187.61 (295.51)	141.69 (345.05)	176.12 (453.34)	134.87 (224.50)	131.69 (244.17)	94.00 (233.48)	168.46 (375.35)	175.98 (330.58)
Basic demographics												
Female	0.66	0.34	0.64	0.70	0.61	0.63	0.59	0.67	0.70	0.69	0.43	0.60
Migration background	0.13	0.09	0.09	0.14	0.07	0.20	0.06	0.11	0.08	0.09	0.07	0.11
Cohort												
1943-1950	0.33	0.14	0.34	0.27	0.27	0.21	0.25	0.29	0.23	0.10	0.17	0.26
1951-1958	0.37	0.28	0.36	0.37	0.40	0.39	0.36	0.45	0.35	0.22	0.36	0.36
1959-1966	0.30	0.57	0.30	0.36	0.33	0.40	0.39	0.26	0.42	0.68	0.47	0.38
Number of siblings	2.11 (1.79)	2.07 (1.78)	1.86 (1.59)	2.30 (1.88)	1.69 (1.64)	3.06 (2.35)	2.20 (1.88)	2.00 (1.92)	2.02 (1.70)	2.20 (1.75)	1.96 (1.64)	2.10 (1.82)
Parental education												
Low	0.20	0.12	0.16	0.22	0.14	0.27	0.21	0.19	0.18	0.17	0.11	0.18
Middle	0.72	0.70	0.77	0.68	0.74	0.62	0.69	0.76	0.71	0.73	0.76	0.72
High	0.08	0.18	0.07	0.10	0.11	0.12	0.10	0.05	0.11	0.10	0.13	0.10
Parental occupational prestige	40.42 (11.57)	44.37 (13.21)	40.90 (11.67)	41.24 (12.57)	42.47 (13.07)	40.67 (12.79)	40.45 (10.54)	39.46 (11.31)	41.70 (11.78)	41.38 (12.96)	43.27 (13.05)	41.47 (12.30)
Family pattern up to age 50												
Age at first birth	25.87 (4.00)	34.25 (3.61)	29.59 (5.47)	24.22 (3.79)	44.77 (3.47)	24.69 (5.02)	26.94 (6.07)	27.29 (6.91)	26.11 (4.61)	30.06 (6.66)	43.08 (2.81)	27.88 (6.03)
Number of children	2.01 (0.10)	2.54 (0.58)	1.01 (0.11)	3.00 (0.05)	0.04 (0.28)	4.57 (0.96)	2.53 (0.52)	1.03 (0.24)	2.06 (0.27)	1.49 (0.93)	0.23 (0.56)	1.84 (1.21)
Unmarried childbearing	0.21	0.31	0.16	0.32	0.01	0.43	0.55	0.33	0.40	1.00	0.06	0.27
Multi-partner childbearing	0.00	0.01	0.00	0.04	0.00	0.15	0.53	0.01	0.14	0.00	0.00	0.04
Age at first marriage	25.15 (4.00)	33.39 (4.42)	27.09 (5.05)	23.90 (3.40)	27.83 (4.75)	24.71 (4.47)	23.50 (3.64)	23.49 (3.38)	25.22 (4.22)	41.33 (6.75)	42.59 (3.74)	27.20 (6.26)

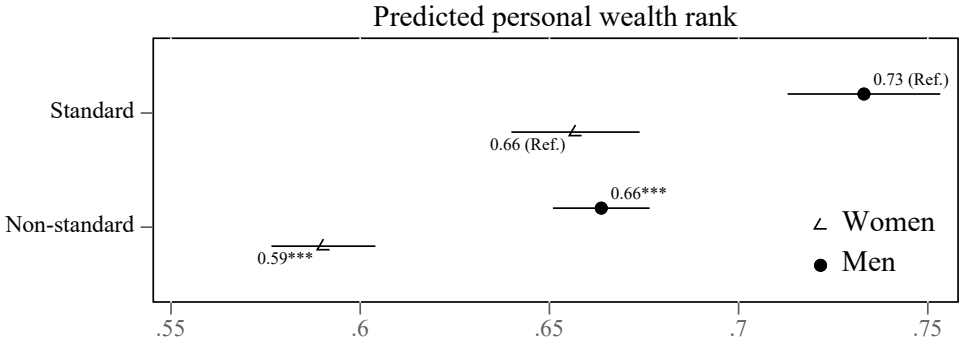
Ever married	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.28	0.42	0.91
Ever divorced	0.06	0.05	0.14	0.20	0.32	0.22	0.96	0.94	0.88	0.04	0.06	0.21
Ever remarried	0.01	0.01	0.03	0.06	0.14	0.15	1.00	0.60	0.35	0.01	0.01	0.10
Human capital - men												
Education												
Low	0.03	0.04	0.04	0.09	0.04	0.10	0.04	0.03	0.03	0.07	0.07	0.05
Middle	0.54	0.35	0.54	0.43	0.48	0.40	0.63	0.63	0.58	0.62	0.51	0.49
High	0.43	0.61	0.41	0.48	0.48	0.49	0.33	0.35	0.39	0.32	0.42	0.46
Full-time employment years	31.43 (5.70)	28.31 (6.62)	31.06 (6.23)	30.51 (6.80)	30.34 (6.33)	29.00 (7.01)	28.59 (7.47)	31.08 (6.83)	30.92 (5.30)	28.67 (7.66)	27.20 (8.25)	29.79 (6.84)
Non-/Un-employment episodes	0.34 (0.73)	0.49 (0.88)	0.51 (0.89)	0.49 (0.87)	0.55 (0.94)	0.64 (1.06)	0.66 (1.20)	0.81 (1.17)	0.72 (1.07)	0.87 (1.22)	0.77 (1.12)	0.55 (0.95)
Occupational prestige (mode)	48.29	51.97	48.33	46.70	49.42	48.21	46.09	48.03	45.97	43.50	46.60	48.32
Human capital - women												
Education												
Low	0.13	0.04	0.06	0.18	0.08	0.28	0.13	0.10	0.13	0.11	0.07	0.12
Middle	0.64	0.40	0.72	0.56	0.54	0.44	0.69	0.66	0.66	0.58	0.51	0.60
High	0.23	0.56	0.21	0.26	0.38	0.28	0.18	0.24	0.22	0.30	0.43	0.28
Full-time employment years	11.68 (9.70)	12.79 (7.45)	16.16 (10.80)	9.92 (9.04)	24.84 (10.49)	7.14 (7.87)	14.04 (9.79)	19.89 (10.58)	15.77 (9.25)	17.19 (10.21)	25.52 (9.81)	14.70 (10.97)
Non-/Un-employment episodes	2.01 (1.35)	2.28 (1.28)	1.65 (1.31)	2.16 (1.35)	1.26 (1.33)	2.35 (1.42)	2.32 (1.33)	2.28 (1.42)	2.44 (1.37)	2.22 (1.39)	1.26 (1.37)	1.97 (1.40)
Occupational prestige (mode)	41.99	49.41	44.02	41.20	47.13	39.75	42.31	44.03	42.64	43.95	48.86	43.53
Observations	2243	842	1082	893	617	522	224	352	414	345	786	8320
Individuals	1695	674	828	687	467	399	169	263	313	286	619	6400
% respondents	26.48	10.53	12.94	10.73	7.30	6.23	2.64	4.11	4.89	4.47	9.67	100.00

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017); non-imputed, unweighted.

5.5.2 Wealth across major family patterns

After the description of family patterns, I moved on to multivariate OLS regressions, which allowed me to obtain better estimates of the study associations by adjusting for confounders while also clustering standard errors at the household level. As a first step, I examined differences in men's and women's wealth ranks between the *Standard* pattern and *Non-standard* patterns (i.e. a combination of all patterns other than the *Standard* pattern). Figure 5.4 shows predicted personal wealth ranks for men and women in each pattern, which also provides a straightforward illustration of gender differences in wealth levels. Regression results illustrated substantially and statistically significantly lower personal wealth ranks for respondents who followed *Non-standard* patterns. As expected, women held lower average wealth ranks than men with substantial gender gaps in both the *Standard pattern* and the *Non-standard* patterns.

Figure 5.4 Predicted personal wealth rank of men and women aged 51 to 59 in the standard family pattern and the non-standard family pattern based on multivariable OLS regression models.



Notes: Whiskers indicate 95% confidence intervals. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed). Models include control variables for age, migration background, birth cohort, number of siblings, parental education, parental occupational prestige, marital events after the age of 50 (marriage, divorce, widowhood). Full model results in Table B.2 in Appendix B. * p<.05, ** p<.01, *** p<.001 indicate whether coefficient is significantly different to reference (Standard) in regression.

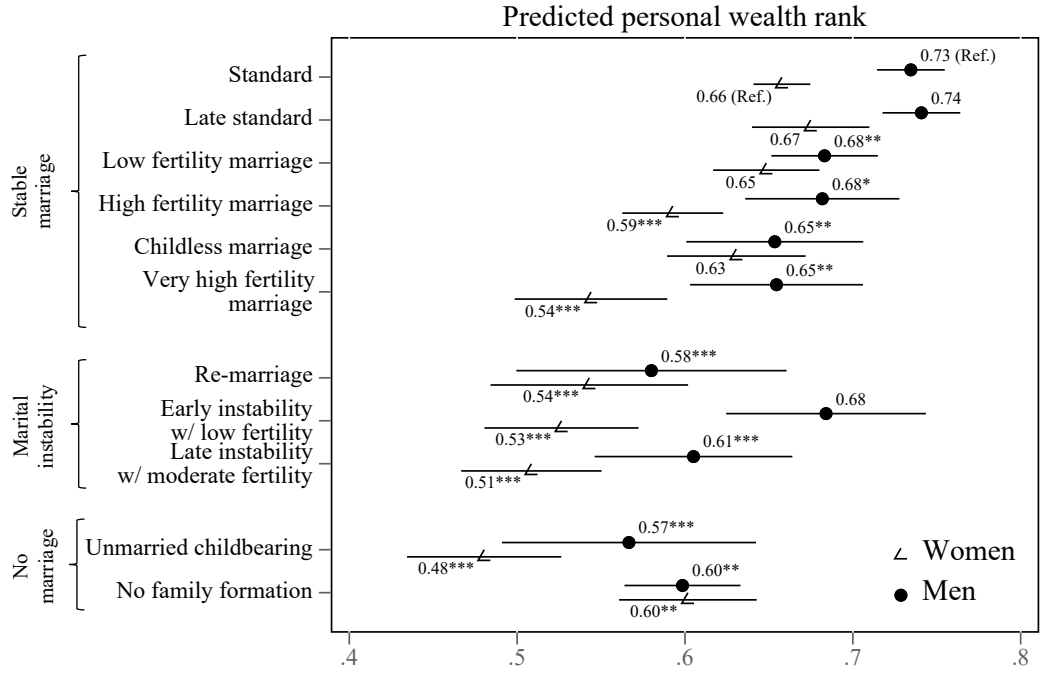
While these results were in line with my expectation that deviance from the *Standard pattern* is associated with wealth penalties, I also anticipated substantial variation in wealth across specific *Non-standard* patterns whereby increasing deviation was expected to be associated with increasing wealth penalties. To address this, Figure 5.5 shows predicted wealth ranks across the *Standard* pattern and specific *Non-standard* patterns for men and women.

In addition to the *Standard* pattern, I had identified five family patterns that also featured a continuous marriage but depart from the *Standard* patterns on fertility levels and timing of marriage and fertility. These patterns are displayed at the top of Figure 5.5, below predictions for men and women in the *Standard* pattern. In line with my thesis of lower penalties for smaller deviations from a standard life course, for women, I found that the majority of patterns featuring smaller deviations were associated with a similar rank in the wealth distribution compared to the *Standard* pattern. Only the patterns with high and very high fertility levels were associated with substantially and significantly less wealth; 6 and 11 ranks lower, respectively, compared to women in the *Standard* pattern. For men, deviation from the *Standard* pattern was associated with more substantial penalties. Only the *Late standard* pattern exhibited similar personal wealth ranks compared to the *Standard* pattern. Men in the remaining patterns of stable marriage ranked statistically below men in the *Standard* pattern, although only by 5 to 9 ranks. I found that, compared to men, women's personal wealth ranks were penalised more by above-average fertility patterns.

Next, I moved to the three family patterns that featured marital instability and thus higher deviation from the *Standard* pattern. I found that all of those patterns were associated with substantially lower personal wealth ranks for women; 13 to 16 lower ranks than the *Standard* pattern. Women in these patterns, however, ranked only slightly below married women that had four or more children. For men I found similar results to those of women; ranks 12 to 15 points below the *Standard pattern* for personal wealth. As an exception, men in the *Early instability with low fertility* pattern achieved wealth ranks similar to those associated with the *Standard pattern*. Unlike women, men in the other two patterns of marital instability ranked lower than men in the *Very high fertility marriage* pattern. With the exception of the *Remarriage* pattern, women's personal wealth ranks within the patterns featuring marital instability were substantially below those of men.

The last two patterns featured unmarried family trajectories. In the personal wealth distribution, both men and women within the *Unmarried childbearing* pattern ranked the lowest overall, compared to the *Standard* pattern; 19 and 18 ranks lower, respectively. Women's ranks across all family patterns were the lowest in the *Unmarried childbearing* pattern. However, ranks were not statistically different to most of the marital instability patterns or the stable marriage with high fertility pattern. The pattern of *No family formation* was associated with substantially lower ranks than the *Standard* pattern for both men and women, although it was more detrimental for men. For women, wealth penalties associated with the *No family formation* pattern were comparable to those of the *High fertility marriage* pattern. For men, wealth penalties associated with the *No family formation* pattern were comparable to those of the *Remarriage* and *Late instability with moderate fertility* patterns.

Figure 5.5 Predicted personal wealth rank of men and women aged 51 to 59 across the diversity of family patterns based on multivariable OLS regression models



Notes: Whiskers indicate 95% confidence intervals. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed). Models include control variables for age, migration background, birth cohort, number of siblings, parental education, parental occupational prestige, marital events after the age of 50 (marriage, divorce, widowhood). Full model results in Table B.2 in Appendix B. * p<.05, ** p<.01, *** p<.001 indicate whether coefficient is significantly different to reference (Standard) in regression.

5.6 Conclusion

This empirical chapter adopted an innovative long-term approach to examine the extent to which the family life course is associated with wealth disparities at pre-retirement age (between ages 51 and 59) of baby boomer birth cohorts in West Germany. Against the backdrop of increasingly diverse family life courses and their relevance for the dynamics of social stratification, I proposed that departures from (or the stratified access to) a culturally and institutionally supported family pattern of a stable marriage with (on average, two) children is associated with lower wealth at older age. I also proposed that the type of departure (regarding the occurrences, timings and ordering of typical family transitions) matters for explaining wealth disparities at older age. Gender differences were also expected, given traditional gendered divisions in work and family roles. I tested these expectations using data from the German Socio-Economic Panel, and deployed sequence analysis to identify major family pathways. OLS regressions were used to predict respondents' wealth ranks at ages 51 to 59.

My results indicated that departure from the standard family trajectory was associated with substantially lower personal wealth for both men and women, after controlling for childhood characteristics that partly predict selection into family patterns and baseline wealth. However, women's wealth ranks were substantially lower than those of men, in line with previous research on the gender wealth gap and the within-couple wealth gap (Grabka et al., 2015; Sierminska et al., 2010). In most cases, my results also supported my arguments about higher wealth penalties for greater deviation and lower penalties for moderate deviation from the standard pattern. A range of relevant empirical associations support this claim. First, low fertility or the absence of fertility within marriage was associated with only negligible differences in personal wealth for women, and small declines for men. On one hand, lower fertility can be the result of meagre economic capacity among men. On the other hand, childbearing results in greater opportunity costs for women than men, and thus fewer child-related career breaks taken by women with few or no children. The longer women can spend in the labour market, the higher their wealth accumulation potential. Second, high fertility (with three, but particularly, four or more children) was associated with substantial wealth penalties for both continuously married men and women. Despite potentially high saving incentives and access to marital wealth premiums, the economic burdens of large families seem to accumulate over time. Third, patterns of marital instability were associated with low wealth ranks for men and women, reflecting the immediate costs and long-term wealth penalties of partnership dissolution. In addition, selection of financially disadvantaged couples into divorce likely mattered. However, wealth was not lower for men who divorced early and did not remarry. While women experienced lasting disadvantages, potentially due childcare responsibilities, men may have had a substantial amount of time to recover financially, especially given the fact that child support from non-residential fathers is capped in Germany and adjusted according to the father's income and child's age. Fourth, while the absence of marriage and childbearing over the life course can be considered a substantial deviation from the standard life course, this pattern was associated with only moderately though statistically significantly lower wealth for women. The fact that childless women do not incur child-related career disruptions might explain the small wealth difference.

Several of my study's limitations are noteworthy. First, due to the mandatory nature of the German pay-as-you-go pension system, public pension entitlements are not collected in the SOEP. As already discussed in previous chapters, such entitlements should, however, be seen as an extension of working age income rather than wealth as German pension points cannot be liquidised, used as collateral or passed on to next of kin (Sierminska et al., 2010). Second, and as already indicated for the previous empirical chapter, survey questions about personal shares of jointly owned wealth may be ambiguous

to respondents in terms of perceived or legal ownership. This may particularly be true for continuously married respondents. Third, information on the time children spent in their parents' household or with which parent they resided after divorce was not available retrospectively within the SOEP. Nevertheless, I argue that my approach provided crucial information on the relationship between parenthood and wealth, in intersection with marital histories. Even if children do not reside in the same household as parents, child-related costs such as child allowance or financial transfers can influence economic decisions and saving incentives.

Despite these limitations, my study makes substantial contributions to the literature that addresses the links between family dynamics and economic wellbeing. I addressed entire family trajectories, from early adulthood to pre-retirement age, to extend and nuance the knowledge of the association between earlier family behaviour and later economic wellbeing. While previous research has predominantly focused on marital histories and excluded the role of parenthood, my empirical exercise proved useful, combining marital and childbearing histories to highlight important and substantial disparities within groups of currently unmarried (i.e. ever divorced or never married) and currently married individuals depending on childbearing behaviours over the life course. Particularly for continuous marriage, I showed relevant economic variation in older age depending on the number of children, which was masked by previous research that focused solely on marital histories. Using comprehensive personal-level wealth data additionally provided a more thorough analysis of gender differences. Using per capita wealth – based on household-level wealth – obscures the fact that full financial access to all household resources is not always given. While income pooling and sharing has been shown to be less likely within childless marriages and remarriage (Amuedo-Dorantes et al., 2011; Burgoyne & Morison, 1997), looking at personal wealth levels, my results showed substantial gender wealth differences across continuously married and unmarried respondents at older ages. As gender differences were particularly prominent in groups characterised by above-average fertility within marriage or single parenthood, the degree to which fathers and support systems fully compensate for the child-related depletion of women's wealth accumulation is questionable.

Although I controlled for childhood characteristics that partly predict the stratified selection into family roles, I acknowledge that selection might also be due to socio-economic advantage achieved at later life stages. Therefore, empirical tests that elucidate the relevance of exposure to family roles and stratified selection into family roles for wealth disparities in older age are needed once more longitudinal wealth data become available. As the standard family pattern is increasingly being displaced by alternative patterns that include non-traditional family arrangements such as stepfamilies or unmarried parents, we can expect increasing social acceptance and political support for the latter

in the near future. Given that, it is reasonable to expect that their association with wealth accumulation will also change. Nevertheless, some family pathways may remain or become more vulnerable. Researchers should therefore continue monitoring the economic standing of diverse families.

6. Chapter – Why time cannot heal all wounds

6.1 Introduction

Historically high divorce rates across OECD countries, including Germany, and recent empirical evidence on substantial immediate wealth penalties associated with marital dissolution – as also shown in Chapter 4 – have raised concerns about long-term economic consequences of marital disruptions (Eurostat, 2018; PORDATA, 2020; Zagorsky, 2005). Underlying those concerns are theoretical notions from the life course framework and cumulative advantage and disadvantage (CAD) theory that postulate that wealth penalties earlier in the life, for instance due to marital dissolution, have distant, long-term consequences for individuals' wealth levels and accumulation potentials. Following these notions, a small body of US-based wealth research predicted wealth levels in late working age (respondents aged 51 to 61) using respondents' current marital status and information on the occurrence of earlier marital dissolution experiences. These studies unequivocally found that earlier marital dissolution experiences are associated with substantially lower household wealth levels in late working age compared to continuous marriage (Addo & Lichter, 2013; Holden & Kuo, 1996; Ulker, 2008; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015). Amongst ever-divorced individuals, women were found to be more wealth-disadvantaged than men (e.g. Lersch, 2017; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015), highlighting women's more precarious financial situation as they approach retirement (Gornick, Munzi, Sierminska, & Smeeding, 2009; Gornick, Sierminska, & Smeeding, 2009; Hartmann & English, 2009).

Empirical limitations of previous research hamper our understanding of the apparent lack of wealth recovery after marital dissolution until late working age. From a theoretical standpoint, previous studies argue that cumulative processes magnify differences between divorcees and the continuously married over time, making it difficult for divorcees to catch up and recover from marital dissolution induced penalties. However, data limitations and a cross-sectional approach inhibited researchers to empirically test these ideas. Research, for instance, was unable to account for relevant time-dependent processes – such as the time since divorce – in their predictions of wealth at late working age. Scholars were thus unable to distinguish between potential reasons for the lack of recovery. More precisely, it is unclear to what degree immediate wealth penalties around marital dissolution and inhibited wealth accumulation after divorce can explain wealth disparities in older age. This has also hampered the understanding of the origin of gender differences amongst ever-divorced, late working age individuals. Next to a limited empirical acknowledgement of theoretical notions of cumulative disadvantage, research designs of previous studies commonly disregarded selection biases as another

potential driver of wealth differences between ever-divorced and continuously married respondents. This is problematic, as the likelihood to experience a divorce is not randomly distributed amongst the married but partially predicted by wealth-relevant characteristics (Amato, 2010; Dew, 2011; Dew et al., 2012; Eads & Tach, 2016).

In the present chapter, I aim to fill these gaps in previous research by *(1) exploring how the synergy between the initial wealth shock and potentially deteriorated wealth accumulation potentials after divorce explains the apparent lack of wealth recovery for divorcees until late working age compared to continuously married individuals once selection is accounted for.* It further seems relevant to explore whether gender matters within this synergy in light of gender differences found in wealth-levels of ever-divorced individuals (e.g. Lersch, 2017; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015). I thus additionally aim to *(2) understand how wealth trajectory of divorcees are gendered.*

To address these research aims, I compared personal wealth trajectories of divorcees (i.e. treatment sample) and continuously first-time married individuals (i.e. control sample) under consideration of selection into marital dissolution. To this end, I utilised personal-level wealth data from the German Socio-Economic Panel Study (SOEP; wealth waves: 2002, 2007, 2012 and 2017) and applied a doubly robust estimation approach (Funk et al., 2011; Stuart, 2010). This approach allowed me to provide new and more compelling evidence through the combination of matching and regression. In a first step, I matched control respondents to treatment respondents in a year of marriage (i.e. prior to actual divorce) and assigned control respondents their subsequent matched respondents' divorce year. In a second step, I used a count of time since (assigned) first divorce up to 30 years after divorce and predicted initial wealth levels and growth rates for the treatment and control group using random-effects growth models. Thus, these models provided evidence on the synergy between immediate wealth penalties experienced around divorce and potentially deteriorated wealth accumulation rates after divorce in explaining later life wealth outcomes. Furthermore, estimations are improved by the doubly robust approach, which reduces endogeneity and selection bias under the assumption of correct specification. These biases were only insufficiently addressed in previous research. Relying on *personal-level* wealth measures rather than household-level wealth measures, my study also more appropriately examined gender differences in wealth trajectories after (assigned) divorce without making assumptions about the division of wealth at divorce and within (re)marriage. This acknowledged recent studies on the economic individualisation in marriage and wealth inequalities between spouses (Frémeaux & Leturcq, 2020; Kapelle & Lersch, 2020).

A thorough understanding of the drivers of the apparent lack of wealth recovery after marital dissolution is relevant to policymakers. This is in order to establish targeted interventions to improve divorcees' capabilities of economic recovery. The re-establishment of a sufficient wealth buffer after marital dissolution is imperative; it is closely linked to individuals' life changes and economic wellbeing throughout the working life and particularly during retirement (Ebbinghaus, 2015; Seeleib-Kaiser, 2016; Spilerman, 2000).

6.2 Background

6.2.1 The accumulation of wealth over the life course

Wealth can provide a private safety net that can be drawn from in order to smooth expected and unexpected earning shocks such as unemployment, ill health, care-related employment breaks, or retirement (Wolff & Zacharias, 2009). Thus, individuals are generally assumed to consciously, or based on learned habits or routines, make financial decisions that are oriented towards the maintenance or establishment of this private safety net. A particular focus on individuals' savings motives has been given to retirement. The transition to retirement is rather predictable and poses substantial consequences for an individual's economic wellbeing, with a shift from labour market earnings and benefits to a strong reliance on resources accumulated during working age. Thus, taking a life course perspective, wealth accumulation can be considered a lifelong process with wealth levels commonly low after completion of education, but rising throughout the working life in preparation for retirement (Keister & Moller, 2000; Spilerman, 2000).

6.2.2 Why and how does marital dissolution affect wealth accumulation trajectories?

Wealth trajectories naturally differ between individuals based on unique opportunity structures and constraints of financial decision-making, such as based on educational achievements, available income, or family of origin characteristics (Dannefer, 2003; O'Rand, 1996). On the other hand, the anticipated wealth trajectory (i.e. rising wealth levels throughout the working life) may be substantially disrupted through certain life course events, often denoted *turning points* (Bernardi et al., 2019). Marital dissolution may be considered such an event, or shock, that drastically changes not only the wealth levels immediately around the event, but also the conditions of gaining or maintaining wealth in the future (Dannefer, 2003). This has been suggested to lead to the previously found wealth inequalities in late working age between ever-divorced and continuously married individuals (Addo

& Lichter, 2013; Holden & Kuo, 1996; Ulker, 2008; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015).

6.2.2.1 Initial level effect: Immediate wealth gaps associated with marital dissolution

In line with ideas from Chapter 4 and other previous research (Zagorsky, 2005), marital dissolution is likely associated with distinct changes in wealth levels due to increased financial demand and a range of wealth-relevant burdens that occur around this life course event (e.g. Amato, 2000).

Firstly, the direct expenses of the divorce proceedings are, for instance, associated with administrative divorce costs for lawyers and family court proceedings which commonly increase with the complexity of the divorce case and value in dispute. To cover these costs, individuals may have to rely on their savings. Secondly, legal divorce requires the division of marital assets between spouses. While some assets may be easily divided, such as savings in a bank account, other assets can be indivisible and liquidation may be necessary (i.e. the selling of these assets). This is particularly likely for the family home, which is predominantly jointly owned and often constitutes the main share of the marital wealth portfolio (Thomas & Mulder, 2016). As a result, spouses regularly lack sufficient cash collateral to buy out the other partner or are unable to qualify for a mortgage by themselves, ultimately forcing spouses to sell their property (Lersch & Vidal, 2014). Housing sales incur direct costs such as notary and real estate fees, or bank penalties for premature terminations of mortgage contracts. In Germany, a premature sale of a property may also incur speculation taxes (i.e. taxes if the property is sold less than 10 years after its acquisition) depending on whether or not the property was owner-occupied in the two years prior to the sale. Additionally, property sales – but also sales of other assets such as shares – may be associated with indirect costs of wealth depreciation if the assets need to be sold under time pressure and in a market unfavorable to the seller (Fethke, 1989). Thirdly, spouses commonly relocate leading up to legal divorce as part of the separation process. Separation not only generates additional costs, but it also restricts access to the other partner's resources and reduces the available household income – particularly for women (Andreß et al., 2006; Bröckel & Andreß, 2015).

Although divorcing spouses are likely to receive financial support from their parents, if they are financially capable to help (Leopold & Schneider, 2011a), *inter vivos* transfers in combination with personal incomes are unlikely to fully compensate all divorce-related costs and wealth declines. Indeed, previous research, including results from Chapter 4, showed that marital dissolution is associated with a relatively abrupt and substantial decline in wealth levels compared to levels associated with marriage (Zagorsky, 2005). As continuously married individuals do not experience

similar financial burdens, marital dissolution likely ends with a substantial and immediate gap between the married and divorced.

6.2.2.2 Long-term development of wealth after divorce

The unfavourable wealth position of divorcees right after divorce compared to the position of continuously married individuals may pose a relative disadvantage to divorcees. This, in turn, becomes a detriment that theoretically produces further disadvantage for divorcees and leads to a systematic divergence in divorcees' wealth accumulation trajectory over time (DiPrete & Eirich, 2006).

Immediate wealth differences generated around divorce may be an important source of wealth accumulation differences between divorcees and the continuously married. Wealth generates exponentially more wealth over time through market appreciation and if returns of investments are re-invested. As divorcees likely have lower wealth levels right after divorce compared to similar but continuously married respondents, divorcees benefit less from compounded interest effects or wealth appreciation over time. DiPrete and Eirich (2006) refer to this as 'strict cumulative advantage', which should theoretically lead to a growth of the initial gap between divorcees and the married over time.

Furthermore, divorce may lead to restricted exposure to certain advantages, which in turn inhibits divorcees' wealth accumulation rates over time (DiPrete & Eirich, 2006). While married couples benefit from marital wealth premiums, including economies of scale, tax benefits, or joint saving incentives (Lersch, 2017), divorcees largely lack those benefits of first marriage particularly if they stay un-partnered after divorce. As the majority of divorcees eventually re-partner (Wilson & Clarke, 1992; Xu et al., 2006), at least some of the marital wealth benefits can be recovered. Increased economies of scale during the new partnership can reduce per capita expenses while the presence of two potential earners likely increases household income stimulating savings. As tax splitting is only available to married couples in Germany, remarried but not re-partnered divorcees can also re-benefit from tax advantages. Despite a potential re-establishment of some wealth advantages, financial ties to the ex-spouse (e.g. child and spousal alimony) and weaker beliefs about the longevity of higher order relationships may lead to a higher degree of financial independence within these relationships. In turn, this decreases the likelihood of joint investments of re-partnered divorcees (Burgoyne & Morison, 1997; Kan & Laurie, 2014; Lauer & Yodanis, 2011). Thus, even if divorcees re-partner, it is unlikely that these higher-order relationships reach the same economic benefits as those associated with first marriage.

Overall, this means that divorcees may accumulate wealth at lower rates over time compared to the married, leading to a growing gap between the two groups. The first empirical support for this idea was provided by Zagorsky (2005), who found that US un-partnered divorcees have lower yearly saving rates compared to continuously married respondents – 14 and 16 percent respectively. Considering only un-partnered divorcees' wealth accumulation rates, his study relied on a selective sample and it remains unclear to what degree his results are also applicable for a wider population of divorcees.

6.2.2.3 Gender differences in initial-levels differences and growth rates

Gender may be an important status variable to consider when scrutinising the wealth of divorcees. While both men and women have been found to experience substantial and immediate wealth penalties around marital dissolution, in Chapter 4 I highlighted that women own less wealth than men after divorce. In Germany and other European countries, not all wealth is considered in the division of property at divorce. Pre-marital wealth or personal inheritances and gifts received during the marriage remain (largely) untouched in the equalisation process. This is critical, as within-couple wealth inequalities largely stem from disparities in pre-marital wealth (Kapelle & Lersch, 2020). Additionally, men generally have a higher likelihood to receive *inter vivos* transfers and receive higher transfers than women (Deindl & Isengard, 2011; Leopold & Schneider, 2011b). Bessière (2019) also emphasised that, despite a legally equal division of marital wealth, *de facto* practices may disadvantage women due a perceived entitlement of men to a larger share of marital wealth.

Women are not only likely to hold less personal wealth right after divorce than men, but may also differ in their wealth growth rates. Gender differences in wealth accumulation rates are not necessarily a direct result of marital dissolution. However, it should be acknowledged that women commonly have a lower wealth accumulation potential regardless of their marital status. As main drivers for these lower potentials, researchers frequently quote the gender wage gap and women's restricted access to employment-related wealth building tools due to, *inter alia*, occupational segregation and an undervaluing of female-dominated industries (e.g. Bessière, 2019; Chang, 2010; Hakim, 1992; Perales, 2013). Within marriage, traditional arrangements and parenthood may further amplify gender disparities in economic potentials over time (Budig & England, 2001; Cheng, 2016; Killewald, 2013; Killewald & Gough, 2013; Killewald & Lundberg, 2017). Thus, wives, but particularly mothers, earn substantially less than their husbands. This reduces women's exposure to wealth, enhancing fringe benefits and adversely impacting their wealth building potential (Dotti Sani, 2015; Trappe & Sørensen, 2006; Van Bavel & Klesment, 2017).

Widening differences in husbands' and wives' wealth accumulation potential may not necessarily lead to actual growing within-couple wealth inequalities (Kapelle & Lersch, 2020). The majority of married spouses – and particularly married parents – pool and share a substantial proportion of their resources (Amuedo-Dorantes et al., 2011). After divorce, voluntary financial cooperation between ex-spouses likely ceases and disparities in wealth accumulation potentials are no longer compensated. Although post-divorce alimony is supposed to cover some of the economic disadvantages generated during the marriage, under-payment or non-payment are common issues (Bröckel & Andreß, 2015). Additionally, spousal alimony may not be considered a long-term panacea in all countries. The award and duration of alimony is increasingly restricted in a range of countries, including Germany, to emphasise the financial independence of spouses after divorce (Bredtmann & Vonnahme, 2019).

Post-divorce living arrangements regarding dependent children can also be expected to matter for men's and women's wealth accumulation. The residential parent's household carries the majority of child-related direct costs (e.g. food, housing, household utilities) and child support from the non-residential parent – if paid at all – is generally considered insufficient (Bröckel & Andreß, 2015). In return, Hakovirta et al. (2019) illustrate that child-support payments are unlikely to have detrimental effects on the economic standing of the non-residential parent. Additionally, childrearing carries a range of indirect opportunity costs for the residential parent through forgone career advancements, earnings, and fringe benefits based on challenges around the compatibility of work and family responsibilities (e.g. limited access to flexible, full-time childcare, restricted flexibility with regard to working hours, etc.) (Kreyenfeld & Hank, 2000; Ruppanner, Lee, & Huffman, 2018; Zagel, 2013). The presence of children has also been shown to limit residential parents' likelihood to re-partner and speed of re-partnering. Single parents thus benefit less or only at a later stage from the potential economic benefits of a new relationship (de Graaf & Kalmijn, 2003; Di Nallo, 2018; Pasteels & Mortelmans, 2017; Wu & Schimmele, 2005).

Although only every second divorce in Germany is to parents with dependent children (i.e. children under the age of 18 years) (Statistisches Bundesamt, 2018a), these children commonly reside with their mothers after divorce; only about seven percent live with their fathers (Geisler, Köppen, Kreyenfeld, Trappe, & Pollmann-Schult, 2018; Statistisches Bundesamt, 2018a).[44] Thus, child-related costs over-proportionally affect divorced women whose wealth accumulation potential had

[44] Only about 10 percent of German marriages stay childless (Dorbritz, Panova, & Passet-Wittig, 2015). Thus, it can be assumed that for the majority of divorces without dependent children, children have already left the family home and/or are older than 17 years of age.

likely already been devalued during the marriage, leading to potentially lower wealth accumulation rates of divorced women compared to divorced men.

6.2.3 Hypotheses

Based on the previous elaborations, I formulate a range of hypotheses on the initial-level effects – that is, wealth levels in the year of divorce – and time gradients – that is, how wealth changes over time after divorce. In line with previous research and the outlined wealth penalties associated with marital dissolution (Zagorsky, 2005), I expect that *divorcees hold substantially less personal wealth in the year of divorce when compared to continuously married spouses (Initial gap hypothesis).* As these initial disadvantages likely produce relative wealth accumulation disadvantages in the years after divorce, I further expect that *divorcees have lower wealth growth rates compared to the rates of continuously married respondents (Gradient hypothesis)*. If this is the case, the initial gap can be expected to grow over time. Thus, previously found wealth differences between continuously married and ever-divorced individuals in late working age (Addo & Lichter, 2013; Holden & Kuo, 1996; Ulker, 2008; Wilmoth & Koso, 2002; Zissimopoulos et al., 2015) would be a result of the synergy between initial-level effects and different growth rates.

Based on gender differences in wealth levels and accumulation potentials prior to, during, and after marriage, I further expect to find relevant gender differences in the initial gap and growth rates over time. More precisely, I expect that *divorced women hold less wealth immediately at divorce compared to divorced men (Gendered initial gap hypothesis),* as within-couple wealth differences that stem from pre-marital wealth differences or unequal receipt of gifts and inheritances during the marriage are maintained. In line with ideas from Bessière (2019), gender differences in the initial gap may – to some degree – also be rooted in gendered division practices due to perceived higher wealth entitlements for husbands than wives. Due to the potentially higher expenses of divorced women's households if children are present, as well as the lack of compensation for women's lower wealth accumulation potential, I further expect that *divorced men have higher wealth accumulation rates than divorced women in the years after divorce (Gendered gradient hypothesis)*. As German married men and women have been shown to accumulate wealth at similar rates during the first marriage (Kapelle & Lersch, 2020), gender disparities in growth rates of divorcees also mean that *the gap in wealth growth rates between married and divorced men should be narrower than the gap between married and divorced women (Gendered over-time gap hypothesis)*.

6.3 Data and Methods

The analytical approach proceeded in a two-step process. Firstly, divorcees and continuously married respondents were matched on pre-divorce covariates using a propensity score and exact matching. Married respondents were assigned the divorce date of their match. Thus, respondents that experienced a marital dissolution and respondents that were continuously married during the panel participation could be assigned a common time count – time since (hypothetical) divorce – to assess the differences in initial wealth levels at time point 0 and wealth growth rates thereafter. As the likelihood to experience a divorce is not randomly distributed amongst the married (Amato, 2010; Dew, 2011; Dew et al., 2012; Eads & Tach, 2016), the matching approach had the additional advantage that wealth-relevant pre-divorce differences between the sample of divorced respondents and the selected continuously married respondents were reduced. Secondly, the two sample groups were used within multivariate growth models to test the posed hypotheses. In total, the growth model relied on 1,127 divorcees and 4,443 continuously married respondents.

6.3.1 Data

As for the other empirical thesis chapters, I used longitudinal panel data from the German Socio-Economic Panel (SOEP; v34). Due to its longitudinal nature, the SOEP data have a hierarchical structure with repeated yearly observations at level 1 which are nested within individuals at level 2. The data were well suited for the analysis of personal wealth trajectories of divorcees, as they include (a) retrospective marital biographies that are updated yearly with prospective data and (b) comprehensive measures of *personal* wealth in four survey waves – 2002, 2007, 2012, and 2017.

Around 39 percent of wealth data have been edited and/or imputed by the SOEP survey team using a multi-step process including the logical and computational imputation of missing values (Grabka & Westermeier, 2015). To deal with missing values on other relevant variables, I additionally multiply imputed analytical variables and auxiliary variables using Stata's mi command. Compared to wealth data, the percentage share of missing values on relevant non-wealth variables was rather low and ranged between 0 to 3 percent for the majority of variables. Only parental education and partner's parental education had a comparatively high share of missing values, 9 to 10 percent respectively. Overall, at least one value had to be imputed for 21 percent of respondents. Table C.1 in Appendix C provides a full list of imputed variables, including the number and percentage share of imputed cases for each variable. The imputation process resulted in five imputation sets which were combined using Rubin's rule (Rubin, 1987).

6.3.2 Sample selection for matching

In the first step of the sample selection process, I selected respondents for the matching process. Given the focus of my study, the sample contained two sub-samples: the divorce sample (i.e. respondents experiencing a divorce; treatment sample) and the control sample (i.e. continuously first-time married respondents). For the divorce sample, respondents were selected if they experienced a divorce from their first marriage during panel participation, were observed as being married in at least one survey year before their divorce with valid partner information, and provided a valid questionnaire in at least one wealth survey year (i.e. 2002, 2007, 2012, 2017) after their divorce. In years after first divorce, respondents may be partnered or un-partnered. The control sample included respondents that were observed as continuously first-time married during their panel participation and provided valid information in at least one wealth-relevant survey year. Respondents of both groups might have already been married when first observed within the SOEP or could have entered their first marriage during the panel. Information for the year of first marriage and divorce were based on self-reported annual prospective and retrospective information. Sample respondents were no longer followed once they were aged 61 years or older, as wealth accumulation processes change through retirement entry (Keister, 2000). The age restriction was also relevant in connection to previous studies that focused on wealth of ever-divorced individuals in late working age (e.g. Addo & Lichter, 2013; Zissimopoulos et al., 2015). Additionally, respondents were no longer followed once they experienced the death of their spouse, as widowhood has a profound impact on the financial standing of the surviving spouse (Zick & Holden, 2000). These sample selection criteria resulted in a divorce sample of 1,127 individuals (492 men and 635 women) and a control sample of 19,604 individuals (9,447 men and 10,157 women).

6.3.3 Propensity score matching and the regression sample

To assign a hypothetical divorce date to the control group in preparation for the outcome regression, I generated a suitable pseudo control group using nearest neighbour propensity score matching with exact matching on the year of marriage[45], age bracket[46], and gender. To this end, I firstly conducted the matching and secondly assigned the divorce date of the treatment respondent to their control group matches.

[45] While a sufficient number of respondents in the divorce sample got married between 1978 and 2009, divorcees that entered their marriage prior to 1977 or after 2009 had to be grouped together systematically due to low sample sizes: 1963-1969, 1970-1971, 1972-1973, 1974-1975, 1976-1977, 2008-2009, 2010-2011 and 2012-2016.

[46] Age was aggregated, as follows: (1) aged 34 and younger; (2) aged 35 to 41; (3) aged 42 to 49; (4) aged 50 and older.

Table 6.1 List of covariates used for propensity score and exact matching

Basic demographics	- Female [yes/no]+ - Age [continuous for propensity score, categorical for exact matching]+ - Cohorts [<1946, 1946-1955, 1956-1965, 1966-1975, >1976] - Migration background [yes/no]
Family of origin	- Number of siblings [continuous] - Parental education [low, intermediate, high]
Marital status	- Year of marriage [categorical]+
Living arrangements	- Number of household members aged 0 to 17 years [continuous]* - Number of household members aged 18 years and over [continuous]* - Currently living in Eastern German federal state [yes/no]*
Health status	- Someone in the household needs care/assistance on a constant basis due to age, sickness, or medical treatment [yes/no]*
Human capital and financial situation	- Educational achievement [low, intermediate, high] - Personal earnings (log) [continuous] - Equalized household post-government income (log) [continuous]* - Employment status [full-time, part-time, not in employment] - Full-time labour market experience since entry into labour market [continuous] - Satisfaction with household income [10 point Likert scale] - Worries about own financial situation [very concerned, somewhat concerned, no financial concerns]
Wealth	- Homeownership [yes/no]* - Savings account ownership [yes/no]* - Ownership of business assets [yes/no]* - Holding building loan [yes/no]* - Life insurance [yes/no]* - Ownership of shares [yes/no]* - Capital gains [none, under 250 Euro, 250 to under 1000 Euro, 1000 and more]*
Partner-level characteristics	- Age [continuous] - Migration background [yes/no] - Number of siblings [continuous] - Parental education [low, intermediate, high] - Educational achievement [low, intermediate, high] - Employment status [full-time, part-time, not in employment] - Full-time labour market experience since entry into labour market [continuous] - Satisfaction with household income [10 point Likert scale] - Worries about own financial situation [very concerned, somewhat concerned, no financial concerns]

Notes: *Variables measured at the household level. + Variables used for exact matching

As a first step within the matching process, I estimated a propensity score for each respondent. This means that the likelihood to experience a divorce was calculated by regressing 33 covariates on the binary treatment variable 'divorce'. The predictors of divorce captured respondents' basic demographics, family of origin characteristics, household living arrangements and health status of members, the financial situation of respondents, and respondents' partner characteristics (see Table

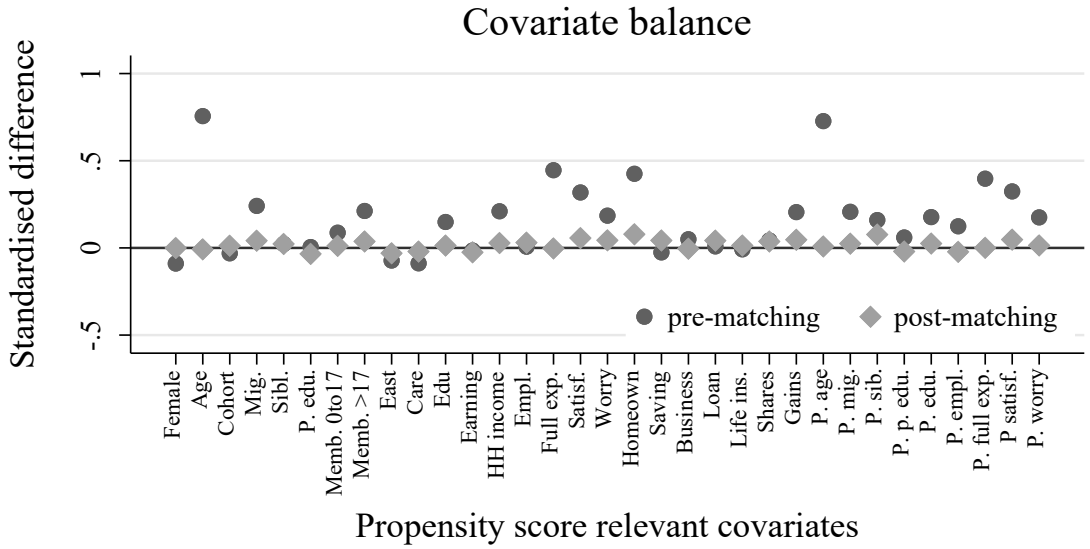
6.1 for the full list of measures). As the value of personal wealth has not been measured on a yearly basis within the SOEP, I included a range of annually collected wealth ownership indicators and a categorical indicator of the value of capital gains – all measured at the household level – as predictors of divorce.

In the second step of the matching process, I matched each divorcee to the five best matches (i.e. nearest neighbour algorithm) in the control group based on divorced and married respondents' propensity scores with exact matching on the above mentioned covariates (Thoemmes & Kim, 2011). Nearest neighbour matching was conducted with replacement, meaning that respondents in the control sample were allowed to be included more than once. This guaranteed that each divorcee could be matched to the most appropriate nearest controls, even if these control respondents were already included in a previous match (Dehejia & Wahba, 2002). As multiple imputed data were used, I followed the suggestions by Mitra and Reiter (2016) and averaged the *m* propensity scores for each respondent across the completed datasets, then performed the matching with these averaged scores. In total, the 1,127 divorcees were matched to 5,633 individuals from the control sample (2,459 men and 3,174 women). Based on the matching with replacement, 2,682 control respondents were matched to one divorcee, 1,578 were matched to two divorcees, 702 were matched to three divorcees, and 671 were matched to four or more divorcees.

As matching was conducted on years where divorcees were still married (i.e. prior to divorce), observed baseline differences between the treatment and control group that could have confounded the outcome regression were adjusted for. Under the assumption that the propensity score was correctly specified, this reduced the treatment selection bias for the outcome regression. It should, however, be acknowledged that only observable characteristics measured on a yearly basis within the SOEP could be considered in the matching process. Thus, unobserved factors such as parental separation could have still biased the study.

To provide an indication of the quality of the matching, Figure 6.1 provides the standardised mean differences (Cohens' *d*) between the treatment and control group before the matching and after the matching for all variables used to generate the propensity score (see Table C.2 in Appendix C for a detailed overview). Standardised differences ranged between .01 and .76 before the propensity score matching and between .00 and .08 after the matching. This indicates that the balance of observable characteristics was improved by the applied matching procedure. Additionally, the matching improved the overlap of the distribution of propensity scores between the treatment and control group, as graphically illustrated in Figure 6.2.

Figure 6.1 Absolute standardised means differences before and after matching comparing propensity score-relevant covariate values between treatment and control groups.



Notes: Data are from the Socio-Economic Panel Survey v34 (unweighted; multiply imputed).

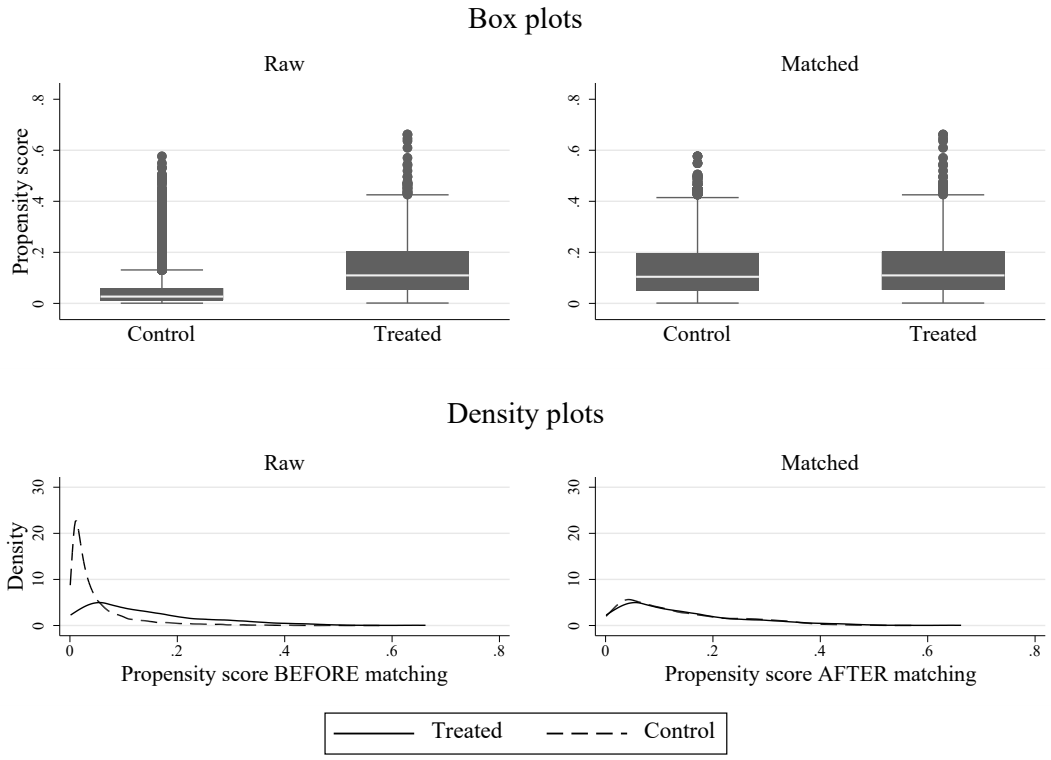
For the subsequent growth model, respondents in the control group were assigned the divorce date of their match. Using this assigned divorce date for the control group and the actual divorce date of treatment respondents, I generated a continuous variable that tracked years since divorce. Years prior to first (assigned) divorce were dropped, as the subsequent outcome analysis focused on wealth trajectories after divorce. Additionally, the matched sample had to be restricted to survey years that contained wealth information; 2002, 2007, 2012, and 2017. In some cases, the assigned divorce date was after the last wealth observation or the last valid panel observation, which resulted in a loss of 1190 control respondents. Overall, the regression sample consisted of 1,127 divorcees (492 men and 635 women) with 2,067 individual-year observations and 4,443 (1,940 men and 2,503 women) control respondents with 8,823 individual-year observations. The regression sample was unbalanced, with 51.29 percent of respondents providing valid information in at least two out of the possible four wealth waves (27.24 percent of respondents were observed twice, 15.97 percent three times, and 8.07 percent four times).

6.3.4 Outcome regression measurements

Outcome variables. The main outcome measure of *personal net wealth* was defined as the sum of all personally owned assets minus personally owned liabilities. As SOEP respondents have been asked

about their personal share of any wealth components that may be held jointly, the personal wealth measure explicitly included the personal share of any assets and liabilities that were owned with other individuals. The outcome measure was adjusted for inflation using the consumer price index. Furthermore, the extreme 0.1 percent of reported wealth measures were top- and bottom-coded (Killewald et al., 2017).

Figure 6.2 Distribution of propensity scores in treatment and control group before (raw) and after matching (matched).



Notes: Data are from the Socio-Economic Panel Survey v34 (unweighted; multiply imputed).

Wealth is highly skewed and commonly transformed prior to the inclusion into a regression model. As highlighted in Chapter 3, the two commonly used transformations for wealth data are the inverse hyperbolic sine (IHS) transformation and ranking individuals or households according to their position within the wealth distribution (Friedline et al., 2015; Killewald et al., 2017). In the present thesis chapter, I deployed a rank-based measure as it efficiently accounts for periodic changes[47]; this

[47] Within the present study, periodic changes, for instance, relate to the economic financial crises of 2007/2008.

was relevant for the time-related focus of the current study. The rank measure was calculated separately for each survey year, but jointly for men and women and ranged from 0 to 1.[48]

Previous research showed that housing wealth (i.e. homeownership) is more likely to be shared equally than other wealth components within marriage and constitutes the main share of a couples wealth portfolio (Joseph & Rowlingson, 2012; Thomas & Mulder, 2016). As a result, marital dissolution is associated with a substantial loss of housing wealth and decline in homeownership rates. As marital dissolution penalties may be particularly driven by housing wealth, I also report results disaggregated by housing wealth and financial wealth.

Explanatory variables. To model wealth growth trajectories over time after divorce, I first generated a continuous variable to measure *time since divorce*. This variables started with 0, representing the year of divorce, and increased by 1 for each year since first divorce. For the control group, this variable represented an artificial count since their assigned divorce date. Time since divorce covered until 30 years after the divorce year, although the sample size was reduced during later years after divorce.[49] For the regression analyses, time since divorce was included as a linear term; a deceleration of wealth accumulation rates through retirement entry was not included in the present study due to the focus until late working age.[50] To distinguish wealth growth rates between control and treatment groups, as well as test differences between those groups, I generated a dummy variable to tag respondents with and without an actual *divorce experience* (0 = control, 1 = treated). For the assessment of potential gender differences, I additionally generated a gender dummy (0 = male, 1 = female).

Control variables. The multivariate regression models were controlled for two time-changing covariates. To account for potential under-reporting of personal wealth in the first observed wealth wave (see Fisher (2019) for a discussion on under-reporting of income measures), I included a flag for the respondent's first wealth observation. Additionally, I flagged imputed wealth data using a dummy variable.

[48] As a robustness check, I conducted the analyses using an IHS-transformed wealth measure. Overall results did not change compared to rank-based results.
[49] As single outliers in later years with only few sample respondents in those years could have influenced regression results, I conducted robustness checks by excluding post-divorce years larger than 20 and larger than 15 from the analyses. Results stayed consistent between the different analyses.
[50] Including a quadratic term for time since (hypothetical) divorce did not improve the model fit or change results.

6.3.5 Multivariate random-effects growth model

After the selection of an appropriate control and treatment group, I empirically examined my hypotheses. To this end, I used random-effects growth models with random intercept and random slope to predict initial-level wealth ranks and rank-based growth rates over time for both the control and treatment group (Singer & Willett, 2003). These models were most suitable as they can deal with the nested structure of the data, but can also handle unbalanced data and unequal spacing or numbering of measurements across respondents (Singer & Willett, 2003, p. 140ff).

I specified the following model:

$$WEALTH_{it} = [\gamma_{00} + \gamma_{10} DIVTIME_{it} + \gamma_{01} DIV_i + \gamma_{11}(DIV_i * DIVTIME_{it}) + \gamma_{0k} C_{it}\,] + [\zeta_{0i} + \zeta_{1i} DIVTIME_{it} + \varepsilon_{it}]$$

The first parenthesis contains the structural component of the model, while the stochastic component is represented within the second parenthesis. $WEALTH_{it}$ is the personal wealth rank of respondent i at time t. The average intercept is captured by γ_{00} with the random component ζ_{0i}. The random component represents individual-specific variation in the intercept that is unexplained due to unobserved characteristics of individuals. $DIVTIME_{it}$ represents the years since (assigned) divorce. The related average growth slope over time is denoted γ_{10}, which may vary across individuals and is captured by ζ_{1i}. I allowed the random components, ζ_{0i} and ζ_{1i}, to be correlated. This means that time-constant respondents' characteristics may simultaneously modify the intercept (i.e. initial level) and slope (i.e. growth rate) of personal wealth ranks. I further included a dummy, DIV, that identifies whether respondents belong to the control group (i.e. continuously married) or the treatment group (i.e. divorced) with the corresponding coefficient γ_{01}. This means that the term γ_{00} relates to the average intercept of the control group, whereas γ_{01} describes the treatment group's variation from the average intercept. This was used to test my *Initial gap hypothesis*. Additionally, I included an interaction between years since divorce and the treatment dummy, $DIV_i * DIVTIME_{it}$, with the corresponding coefficient γ_{11}; this subsequently relates to the treatment group's slope variation from the control group's intercept, γ_{10}. The inclusion of the interaction thus allowed me to test my *Gradient hypothesis.* Finally, C_{it} is the set of k control variables.

I conducted the described model on a pooled sample of men and women to predict overall wealth trajectory differences between the control and treatment group. In a next step, I conducted analyses separately for men and women to address my gender-related hypotheses on the initial level

differences and growth rates. To assess whether coefficients differ between men and women, I included gender interactions into the initial model.

6.4 Multivariate Results

6.4.1 Initial wealth disparities and differences in wealth accumulation rates

Table 6.2 shows the main results from the random-effects growth curve model, predicting initial personal wealth ranks at divorce and personal wealth rank growth rates after divorce. Without the consideration of gender differences, I hypothesised that marital dissolution is associated with substantially depleted personal wealth for divorcees in the year of divorce compared to wealth of married individuals (*Initial gap hypothesis*). Furthermore, I expected that divorcees accumulate wealth at lower rates compared to their continuously married counterparts in years after divorce (*Gradient hypothesis*). This would lead to a growing gap between the two groups over time.

In line with expectations of the *Initial gap hypothesis*, I found that divorcees had a substantially and statistically significant lower average wealth rank in the year of divorce compared to matched continuously married respondents. More precisely, divorcees ranked 11 points lower in the wealth distribution than the married, who had an average initial wealth rank of 47.

Contrary to my *Gradient hypothesis*, I found that the divorce and control group did not differ in their wealth accumulation rate over time. On average, both the married and divorcees increased their wealth rank per year by 0.6 rank points, which was a statistically significant yearly increase. Thus, average differences in older age seem to be predominantly driven by wealth shocks that emerge right at marital dissolution, rather than differences in wealth accumulation after divorce. It should be noted that this applies only to matched married individuals (i.e. married individuals that are similar to divorcees in a wide range of pre-divorce covariates).

6.4.2 Gender-specific effects

As marital dissolution experiences and their economic impact have been shown to differ for men and women (e.g. Andreß et al., 2006), I further expected that divorced women would have lower initial personal wealth levels than divorced men *(Gendered initial gap hypothesis)* and accumulate wealth at lower rates after divorce *(Gendered gradient hypothesis)*. Under the assumption of a relatively stable within-couple wealth gap for married men and women, I further expected that the gap between divorced women and continuously married women would widen more than the gap between divorced

men and continuously married men *(Gendered over-time gap hypothesis)*. Table 6.2 provides gender-specific regression results, with the last table column indicating whether coefficients differ significantly between men and women.

Table 6.2 Linear random-effects growth curve models of personal wealth ranks

Variable	Overall b(SE)	Men b(SE)	Women b(SE)	Gender difference
Divorce duration in years	.006*** (.00)	.007*** (.00)	.006*** (.00)	n.s.
Divorced	-.107*** (.01)	-.095*** (.02)	-.116*** (.01)	n.s.
Divorced X divorce duration	-.000 (.00)	-.002 (.00)	.001 (.00)	n.s.
Intercept	.467*** (.01)	.499*** (.01)	.461*** (.01)	***
Variance components				
Slope	.008 (.00)	.010 (.00)	.006 (.00)	
Intercept	.239 (.00)	.247 (.01)	.229 (.01)	
Covariance	-.353 (.05)	-.424 (.05)	-.256 (.10)	
Residuals	.139 (.00)	.140 (.00)	.139 (.00)	
Observations	10,890	4,863	6,027	
Individuals	5,570	2,432	3,138	

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017), imputed and unweighted. All linear random-effects models include the following control variables: a dummy to indicate whether wealth data was imputed and a dummy for the first observed wealth survey year. * p<.05, ** p<.01, *** p<.001

Consistent with results for the overall model, I found that both divorced men and women showed substantially and statistically lower initial personal wealth levels than continuously married men and women. For divorced men and women, these initial wealth level differences amounted to 10 and 12 rank points, respectively. To fully grasp the results, it needs to be acknowledged that continuously married women held substantially less personal wealth than continuously married men at 4 rank points lower, in line with previous research on the within-couple wealth gap (Grabka et al., 2015; Kapelle & Lersch, 2020). Thus, reference levels for men were higher than those for women, meaning that divorced women held substantially less wealth – 6 rank points lower, which was a statistically

significant difference – in the divorce year than divorced men. This is in line with my *Gendered initial gap hypothesis*.

Contrary to my expectations about gendered growth rates after divorce *(Gendered gradient hypothesis)*, regression results indicated no substantial or statistically significant differences between divorced men's and women's wealth growth rates after divorce. They also showed no substantial differences in their growth rates compared to continuously married men and women. Overall, results therefore indicated that, on average, neither divorced men nor divorced women manage to close or substantially narrow down the initial gap to continuously married men or women over time *(Gendered over-time gap hypothesis)*.

6.4.3 Wealth trajectories in housing and financial wealth

As a major share of married couples' wealth is likely held in housing wealth, making it indivisible at divorce (Thomas & Mulder, 2016), I examined housing and financial personal wealth in addition to overall personal wealth. I found that the initial penalty was substantially more pronounced for housing wealth than financial wealth (see Table C.3 in Appendix C). On average, divorcees ranked 12 points lower in personal housing wealth than continuously married respondents in the year of divorce. For financial wealth, the gap between divorcees and the married was 6 rank points. Despite lower initial gaps in financial wealth than in housing wealth, initial level differences for both measures were statistically significant. As for the main results, average wealth growth rates for continuously married respondents were substantial and significant for both housing wealth ranks and financial wealth ranks, with slightly higher growth rates for housing wealth. Divorcees showed similar growth patterns with negligible and statistically non-significantly differences in growth rates compared to continuously married respondents.

Gender-sensitive analyses demonstrated relevant differences in men's and women's initial level ranks between housing and financial wealth, but not the growth rates of the two wealth measures. In the year of divorce, divorced men and women held similar housing wealth ranks with an average rank of 38. For financial wealth, divorced women, however, ranked substantially and statistically significantly lower than divorced men in the year of divorce, with a difference of 9 rank points between men and women. Thus, my results confirmed my *Gendered initial gap hypothesis* for financial wealth, but not for housing wealth. This is in line with the notions of Joseph and Rowlingson (2012) and Kapelle and Lersch (2020): housing wealth is commonly owned jointly in marriage and

there are more prevalent within-couple wealth differences in financial wealth that seem to be maintained.

6.4.4 The influence of selection bias for wealth trajectories

To more thoroughly assess to what degree selection into marital dissolution mattered for the comparison of wealth trajectories of continuously married and divorced respondents, I re-ran the matching procedure without propensity score matching; this involved solely extract matching on the year of marriage, age bracket, and gender. While I previously choose the five nearest neighbours based on the propensity score, I now randomly selected five exactly matched control respondents for each divorcee to generate the control group. I re-ran my analyses with the original treatment group and the adjusted control group that did not account for selection effects (see Table C.4 in Appendix C). Comparing these supplementary results with the main analysis, it became apparent that the adjustment for selection on a wide range of relevant covariates did not change the results for personal wealth growth rates after divorce. Differences, however, were visible in the initial gap. Within the supplementary results, initial gaps were substantially higher than in the main results for the non-gender specific model, as continuously married respondents had higher wealth ranks when adjustments had not been made for selection. Separate analyses for men and women showed that selection mattered particularly for men's initial gap, but less for the gap between divorced and married women. Thus, adjustment for pre-divorce differences seem important for the initial gap in personal wealth ranks, particularly for men, but not the overall growth trajectory after divorce.

6.5 Discussion and conclusion

Based on a rising relevance of personal wealth for individuals' economic wellbeing during retirement, the question of how permanently marital dissolution disrupts an individual's wealth accumulation is central for policymakers and researchers alike. In the present thesis chapter, I examined personal net wealth levels and accumulation rates of divorced men and women in comparison to continuously married men and women. Overall, my theoretical ideas scrutinised wealth disparities between ever-divorced individuals and continuously married individuals as a result of both immediate wealth declines associated with divorce – including changes immediately prior to divorce (i.e. during separation) – and potentially deteriorated wealth accumulation potentials of divorcees compared to the married over time. Building on previous evidence around overall gender wealth differences (Sierminska et al., 2010), I expected gender to be a relevant mediator.

To test my expectations, I used a doubly robust estimation approach with data from the German SOEP. Through propensity score and exact matching, as a first step within the estimation approach, I was able to assign a hypothetical divorce date to the married and address a wide range of pre-existing differences between the married and divorced that may have confounded the association of interest. The assignment of a hypothetical divorce date enabled an examination of the research questions using multivariate growth models with time since (assigned) divorce as the predictor.

Consistent with results from Chapter 4 and previous research (Zagorsky, 2005), I found that marital dissolution constituted an immediate wealth shock associated with substantial wealth differences between divorcees and continuously married in the year of (assigned) divorce. Results thus confirmed my *Initial gap hypothesis.* Women in both groups were found to rank substantially lower in the overall personal wealth distribution than men in the corresponding group. For married spouses, this result supports previously found within-couple wealth differences (Kapelle & Lersch, 2020). For divorcees, results highlighted that the common assumption of an equal division of *all* available resources at divorce (Wippermann, Borgstedt, & Möller-Slawinski, 2014; Zagorsky, 2005) is unlikely to hold. Thus, personal-level wealth measures revealed gender-specific effects in the immediate personal wealth penalty associated with marital dissolution. However, it needs to be acknowledged that previous research – which assumed equality in the division of all household wealth (Zagorsky, 2005) – predominantly referred to the US context, where an equal division of wealth is often desirable and the future needs of spouses is regularly considered in the property division. In this context, judges have more discretion in divorce cases than in any other field of private law. This may indeed lead to lower gender inequalities in post-divorce wealth in the US than in Germany.

Disaggregating personal wealth into housing wealth and financial wealth confirmed that immediate marital dissolution-related wealth shocks were, to a large degree, the result of a decline in housing wealth rather than a loss of more liquid financial personal wealth. As housing wealth is commonly equally owned between spouses within marriage and, thus, equally lost around marital dissolution, my results highlight that divorced men and women end up at a similar housing wealth rank in the year of divorce. The gender differences between divorced men and women found for overall personal wealth – in line with ideas from the *Gendered initial gap hypothesis* – are thus rooted in differences in financial wealth.

With regard to wealth growth after divorce, my results indicated that divorcees and the married accumulate personal wealth at similar rates, in contrast to my *Gradient hypothesis*. Similarly, my results also failed to confirm my expectations of the *Gendered gradient hypothesis,* meaning that men

and women of both groups (i.e. married or divorced) accumulate wealth at similar rates. These results stayed consistent even when personal wealth was disaggregated into housing wealth and financial wealth. Thus, the initial gap between the married and the divorced stays rather persistent over time. This suggests that previously found average wealth disparities between divorced and married men and women, as well as between divorced men and women in late working age, may mainly be associated with wealth penalties experienced immediately around divorce rather than differences in the rate at which personal wealth is accumulated in years after divorce. My results therefore contrast notions from cumulative advantage/disadvantage theory.

To hypothesise about reasons why marital dissolution does not scar wealth accumulation efforts of men and women, several possibilities can be discussed. Firstly, marriage is commonly selective of more financially successful individuals with higher saving potentials or savings skills (e.g. financial literacy, strong savings aspirations, etc.). Although marital dissolution itself is related to financial hardship in years before the separation of the couples, the experience of a marital dissolution may not change the overall higher savings potential of ever-married individuals. Marital dissolution may even make divorcees more aware of their financial situation, leading to more cautious saving efforts to continue saving habits from "better times" during the previous marriage. Secondly, to benefit from compounded interest effects, individuals need to have a substantial amount of wealth invested in, for instance, rental property or shares. This may not be the case for the majority of married or divorced individuals, as only a small share of Germans hold wealth in these types of assets (Eymann & Börsch-Supan, 2002; Grabka & Westermeier, 2014). Thus, it is possible that the "average" divorced and married individuals may not have substantially different access to the benefits of a compounded interest effect. Finally, continuously married individuals are more likely to hold personal wealth in housing wealth, which has often been associated with wealth building advantages for other wealth components. Nevertheless, Lersch and Dewilde (2018) show that although Germans increase their financial wealth substantially leading up to the entry into homeownership (i.e. goal-oriented saving to be able to access the housing market), once they are homeowners they reduce their probability to save and the rate at which they save. Thus, higher homeownership amongst the married is not necessarily associated with higher saving rates.

It should be emphasised that my results from this thesis chapter relied on a random-effects approach rather than a fixed-effects approach, which can more appropriately account for the effect of any time-constant covariates than the applied random-effects approach. This methodological approach was, however, necessary due to the limited number of wealth waves – and marital dissolution experienced during these waves – currently available. Overall, my study may thus be biased through unobserved

variables that could not be considered in the matching process or outcome regression. For instance, the SOEP data only insufficiently cover the prevalence of a parental divorce, which has however been shown to be an important predictor for adult children's divorce. It likely also influences adult children's wealth or the financial support they receive after divorce (Amato & DeBoer, 2001; Lersch & Baxter, 2020). My analyses share a further limitation with the previous empirical chapters; the reliance on self-reported personal wealth requires respondents to make judgment about their share of jointly owned assets. Nevertheless, I expect my results for initial-level wealth ranks for divorced men and women to be estimated rather precisely, as newly divorced individuals are more likely to live in a single-headed household – or if they are already re-partnered, to manage their finances largely independently from their new partner (Burgoyne & Morison, 1997). As time in the new relationship progresses – and particularly if divorcees remarry and have children with the new spouses – it can be expected that the distinction between personal and joint wealth blurs. Thus, inaccurate reporting might bias self-reported wealth in later years after divorce. Robustness checks that excluded later years after divorce in a step-wise manner, however, showed stable results compared to main results.

Overall, results illustrate that wealth penalties experienced immediately at divorce are substantial and likely shape the inequality experienced by ever-divorced men and women in years after divorce and until older age. Wealth accumulation rates after divorce do not seem to differ from those of continuously married respondents for either men or women. This means that while the financial shock associated with marital dissolution is wide reaching, marital dissolution may not scar wealth accumulation efforts and, thus, wealth growth rates. Nevertheless, divorcees are also not capably to increase wealth accumulation rates to make up for the initial wealth loss. Interventions and support networks for divorcees should focus particularly on assistance immediately around marital dissolution, but may also encourage higher savings rates after divorce to enable a reduction of the disadvantages over time. Furthermore, couples' awareness of the substantial immediate wealth penalties should be raised to ensure that spouses can make financially sound decisions during their marriage.

7. Chapter – Conclusion, discussion, and future research

7.1 Overview of motivation and aims of thesis

Access to sufficient wealth offers a range of benefits including the provision of a real and psychological financial safety net. This means that sufficient wealth enables individuals to buffer expected and unexpected income shocks associated, for instance, with retirement, ill health, or care-related employment interruptions (Spilerman, 2000). Additionally, access to wealth can generate more life choices and freedom and positively contribute to the overall wellbeing (Wilmoth & Koso, 2002). However, individuals differ greatly in their ability to generate and maintain a wealth buffer (Keister & Moller, 2000; Killewald et al., 2017; Pfeffer & Schoeni, 2016). The lack of such a buffer is becoming progressively more problematic as Western countries, including Germany, have increasingly emphasised personal responsibility and more market-based solutions to ensure individuals' and their dependents' economic wellbeing throughout the course of their lives (Ebbinghaus, 2015; Seeleib-Kaiser, 2016). Thus, it is of tremendous interest to governments and societies to understand what factors may challenge or disrupt private wealth accumulation.

Although family dynamics have been discussed as an important factor of stratification (Keister & Moller, 2000; McLanahan & Percheski, 2008), marital dissolution, which has become a prevalent feature of modern family life (Stevenson & Wolfers, 2007; Van Winkle, 2018), has received scant attention within wealth stratification research. Whereas an incipient body of research has provided the first indications of the association between marital dissolution and wealth (e.g. Addo & Lichter, 2013; Lupton & Smith, 2003; Zagorsky, 2005; Zissimopoulos et al., 2015), previous studies are characterised by a longstanding overreliance on cross-sectional data and theory which do not account for changes over time. This is limiting as the processes linking marital dissolution and wealth accumulation are likely dynamic, with important wealth-related processes taking place both before a divorce and in the years after.

Furthermore, household surveys have commonly collected wealth data at the household level (Killewald et al., 2017). This has restricted the analysis of potential gender-based heterogeneity in wealth across and within family types and resulted in a lack of gender-sensitive analyses of wealth changes around marital dissolution. To predict wealth-related consequences of marital dissolution for men and women based on household-level wealth data, previous research assumed that all available household resources are simply divided equally during marriage and at divorce (Zagorsky, 2005). Thus, researchers disregarded within-couple wealth differences and legal divorce regulations that

specify more complex wealth division procedures (Bessière, 2019; Grabka et al., 2015; Kapelle & Lersch, 2020).

A more thorough analysis of potential gender differences in the association between marital dissolution and wealth seems particularly relevant as income studies persistently highlighted larger income repercussions for women than men immediately at marital dissolution and in the years after (Andreß et al., 2006; Bayaz-Ozturk et al., 2018). As income and wealth measures cover different aspects of economic wellbeing and are only weakly correlated (Keister & Moller, 2000; Killewald et al., 2017), evidence from income-based studies cannot be used to fully understand how marital dissolution and wealth are associated and whether wealth changes differ for men and women around marital dissolution.

To address these shortcomings, my thesis aims were to:

1. *Explain how marital dissolution affects individuals' wealth levels and wealth accumulation, including immediate and long-term outcomes.*
2. *Explore how, and to what degree, the association between marital dissolution and wealth is gendered.*

My thesis was therefore guided by the following overarching research questions:

> *Do wealth levels and wealth accumulation rates of German men and women change in relation to marital dissolution? If so, how do they change, how can we explain the observed changes?*

In my thesis, I argued that marital dissolution and wealth are connected in dynamic ways that have immediate effects on wealth and also shape wealth accumulation after marital dissolution. I drew on the life course framework that perceives the individual actor at the centre of every life course and individual behaviour as shaped by the access to resources, opportunities, and constraints over time embedded in the social, cultural, and historical context (Bernardi et al., 2019; Elder & Giele, 2009; Mayer, 2004; Settersten, 2003b). To methodologically approach the association between marital dissolution and wealth of men and women with a more dynamic perspective and examine gender differences, I utilised personal-level, longitudinal wealth data from the German Socio-Economic Panel (SOEP). I examined the immediate and long-term economic consequences of marital dissolution for men and women within three empirical chapters.

7.2 Summary of key findings

Within my thesis, I identified several key findings that address my overarching research questions and aims:

I. Marital dissolution was associated with an immediate personal wealth penalty mainly based on the decline in wealth during marital separation.

Results presented in Chapters 4 and 6, showed that marital dissolution was associated with a substantial immediate personal wealth penalty for both men and women compared to their pre-dissolution wealth levels but also compared to wealth levels of continuously married respondents. To further explore the point where the majority of wealth is lost, I defined marital dissolution as a process. Specifically, I argued in Chapter 4 that four broad stages of the marital dissolution process can be identified based on legal regulations and previous sociological and psychological research (e.g. Amato, 2000; Pledge, 1992): (1) Separation plans while still living in the marital household, which also refers to the anticipation of marital dissolution and its consequences, (2) separation of spouses and the associated dissolution of the marital household into two independent households, (3) the legal divorce proceedings at a family court, and (4) post-divorce adjustments.

Although previous wealth research has focused predominantly on legal divorce as the critical event for wealth changes (Zagorsky, 2005), by defining marital dissolution as a process I showed that personal wealth of men and women started to decline in the years immediately before separation (i.e. during marriage) and dropped dramatically during marital separation. The legal divorce proceeding itself was not related to substantial additional penalties – at least within the German context. One possible explanation for the lack of additional wealth penalties associated with the divorce proceeding could be the comparatively small administrative divorce costs in Germany while previous research commonly focused on the USA where administrative costs are particularly high (Zagorsky, 2005). Additionally, administrative divorce costs can be paid off in several smaller instalments in Germany meaning that individuals might be better able to plan for these costs and use, for instance, their income rather than savings to pay for them.

II. Immediate personal wealth penalties during separation were largely driven by a decline in housing wealth.

To further explore my results about an immediate wealth penalty that occurred mainly during marital separation and thus before the legal divorce proceedings, I divided personal wealth into personal financial and housing wealth. Results in Chapter 4 illustrated that separation penalties were

predominantly driven by housing wealth losses. On average, both men and women forfeited over 90 percent of their housing wealth during separation. This is likely a result of married spouses joint ownership of housing wealth and the fact that this wealth component regularly constitutes the main share of the marital wealth portfolio (Thomas & Mulder, 2016). Thus housing wealth is often indivisible as spouses lack sufficient cash collateral to buy out the other partner or to qualify for a mortgage themselves within the conservative German lending system (Voigtländer, 2016). In line with previous research by Lersch and Vidal (2014), my thesis results indicate that the large majority of couples lose their homeownership status during the equalisation of marital wealth gains in preparation for a legal divorce.

Furthermore, my results showed that the decline in housing wealth, and thus housing sales, was not associated with increases in more liquid financial wealth. This may indicate that potential housing sale profits – if any at all – are used to cover, for instance, outstanding mortgage debts, taxes, or other costs associated with the sale. Profits may also be used to cover other expenses including costs for the relocation and establishment of a new household. As property sale profits do not seem to translate into financial wealth increases, divorcees likely lack financial collateral to re-enter the housing market in the years after divorce (Mikolai et al., 2019). Alternatively, renting may also be seen as a viable alternative within the strong German rental market, which reduced the need to accumulate financial wealth and build up a deposit to become a homeowner (again).

III. Both men and women experienced substantial immediate wealth penalties, but women persistently held fewer resources making their economic situation more fragile than men's.

In contrast to income studies that have highlighted a larger immediate decline in income for women and – depending on the study – even income improvements for men at marital dissolution (e.g. Andreß et al., 2006), evidence from thesis Chapter 4 and 6 indicated that both men and women experienced substantial wealth penalties immediately around marital dissolution. Nevertheless, it needs to be acknowledged that my results also highlighted that women held fewer resources immediately at marital dissolution compared to men. This is likely a result of within-couples wealth inequalities (i.e. women owning less personal wealth during the marriage compared to their husband), which partially stems from pre-marital wealth differences (Grabka et al., 2015; Kapelle & Lersch, 2020). Thus, my thesis highlights that marital dissolution does not equalise *all* within-couple wealth differences – as assumed by a wide share of the German population (Wippermann et al., 2014) – but rather maintains them in line with *de jure* regulations (i.e. pre-marital wealth and personal inheritances and gifts received during the marriage are not considered marital wealth). Whereas Bessière (2019) identified

that *marital* wealth is often divided unequally in France despite *de jure* equal division of it, my results did not provide evidence for similarly strong practices within the German context as marital dissolution did not seem widen the within couple wealth gaps. However, a more thorough analysis of the *de facto* practices at German courts, for instance, based on ethnographic observations as done by Bessière (2019) would be required to fully understand the differences between the French and German systems.

Disaggregating personal wealth into housing wealth and financial wealth, results from Chapter 6 also showed that while overall wealth declines around marital dissolution were largely driven by losses of housing wealth, gender differences were particularly visible in financial wealth. This seems logical based on the commonly joint ownership of housing property within marriage, which leads to an equal loss of housing wealth for men and women. In comparison, financial wealth is more likely to be owned independently within marriage and may have partially been accumulated before entry into marriage (Joseph & Rowlingson, 2012; Kapelle & Lersch, 2020). Thus, (some) within-couple wealth differences in financial wealth seem to be preserved throughout marital dissolution.

Overall, my gender-sensitive analysis of the immediate wealth changes around marital dissolution highlighted that both men and women experienced critical wealth penalties. However, the maintenance of the within-couple wealth gap – particularly in financial wealth – throughout marital dissolution and women's more precarious income situations during separation and after divorce compared to men (e.g. Bayaz-Ozturk et al., 2018) means that marital dissolution still constitutes a life course transition that increases women's economic vulnerability more than might be the case for men.

IV. Family trajectories that featured marital dissolution were associated with lower personal wealth levels in late working age compared to the traditional family trajectory.

Within the present thesis, I have also considered the long-term consequences of marital dissolution for the personal wealth of men and women as previous life course events can have distant, long-term consequences (Dannefer, 2003; O'Rand, 1996). Therefore, in Chapter 5, I examined how differences in family life-courses (between the age of 16 and 50) including both marital and childbearing histories can predict wealth level disparities of Western German baby boomers aged 51 to 59 years. Overall, the results showed that life course trajectories that featured a marital dissolution were generally associated with lower personal wealth ranks at late working age compared to the "traditional" life course (i.e. continuous marriage with, on average, two children). These results highlight wealth-relevant institutionalised privileges and normative, social support for the "traditional" life course (Le Goff, 2002; Lersch, 2017), but also substantial, lasting disadvantages for individuals that experience

a marital dissolution during their working life. Results may, however, be partially driven by social stratification at marriage entry and exit. Wealth-relevant characteristics including labour market income, employment status, education, or families' socio-economic origin are predictors of marriage and marital dissolution (Eads & Tach, 2016; Gibson-Davis et al., 2005; Schneider, 2011).

In reference to my thesis aims to explore the long-term consequences of marital dissolution for wealth, results from Chapter 5 suggest that the majority of ever-divorced individuals are unable to attain wealth levels comparable to continuously married respondents until late working age as a potential result of breaking with the associated mechanisms of wealth accumulation or due to stratified (continuous) access to beneficial pathways. Thus, marital dissolution predicts individuals' economic standing within the late working age population and may contribute to wealth inequalities found within this age group (Bernheim, Skinner, & Weinberg, 2001; De Nardi & Yang, 2014). While marital dissolution threatens the economic wellbeing of ever-divorced individuals during retirement, it also means that divorcees have fewer resources that they can transmit to their own children contributing to inequalities for future generations (Lersch & Baxter, 2020).

V. *Women with disrupted family trajectories held less personal wealth at late working age than men.*

Based on the focus on personal rather than household wealth, the analyses of late working age wealth levels across diverse family patterns in Chapter 5 additionally showed relevant findings regarding gender. Being ever-divorced at late working age was associated with substantially less personal wealth for women than men regardless of when the divorce took place or whether men and women remarried. This finding links to results from the other empirical chapters that showed that women held less wealth during separation and at legal divorce although both men and women experienced a substantial decline in their personal wealth. Lower wealth levels at late working age amongst ever-divorced women than men put women in a more precarious financial situation throughout older age including retirement. Marital dissolution may thus contribute to women's higher asset-poverty rates during old age compared to men (Gornick, Munzi, et al., 2009; Gornick, Sierminska, et al., 2009; Hartmann & English, 2009), which is particularly critical in light of women's longer life expectancy.

VI. *The timing of previous marital dissolution and the presence of children were relevant for late working age wealth levels of men and women with disrupted family trajectories.*

Particularly large gender differences in late working age wealth were visible between men and women that divorced early and did not remarry. Results from Chapter 5 showed that Western German baby

boomer men in this cluster had wealth levels similar to men in the reference group (i.e. continuously married men with two children) and were the only group of ever-divorced respondents that seemed to catch-up to the continuously married men and recover from previous marital dissolution. In comparison, women that divorced early and did not remarry experienced lasting disadvantages comparable to other ever-divorced women (e.g. clusters that featured divorce at a later age or remarriage).

Large wealth discrepancies in late working age between men and women with an early marital dissolution may be explained through the timing of divorce and the presence of children, but particularly young children, at divorce. As children commonly stay with mothers after divorce (Statistisches Bundesamt, 2018b; Walper, 2018), women are likely to experience lasting opportunity costs based on their childcare responsibilities (Chang, 2010). This is particularly relevant considering my focus on West German baby boomers, as Western Germany provided only very limited access to flexible and full-time childcare (Kreyenfeld & Hank, 2000). Thus, while divorced women's wealth accumulation potential may have been substantially inhibited through the presence of young children, careers of baby boomer men – as the non-residential parents – were affected only marginally by child-related costs (e.g. child alimony) (Hakovirta et al., 2019).

The less detrimental effect of early marital dissolution for men's wealth in late working age may also be explained through the timing of this life course event, which likely took place after a rather short duration within the first marriage. Early marital dissolution potentially coincided with naturally lower wealth levels at a younger age (i.e. less wealth that could have been lost), a less diversified wealth portfolio within marriage, and potentially high financial independence between partners compared to marriages that lasted longer (i.e. less diversified *joint* wealth that would have been divided at a loss). Wealth losses for men may have been rather small at a young age and a substantial time within the labour market after divorce would have allowed them to recover financially until late working age.

Overall, the disruption of the wealth accumulation trajectory through marital dissolution during early life were associated with less detrimental effects than a disruption during later life for Western German baby boomer men. This was not found to be the case for women. Women's results could indicate that childcare-related career breaks and care responsibilities for young children after an early marital dissolution potentially restricted wealth accumulation capabilities despite the long time these women had for recovery until late working age. Overall, this highlights that the timing of marital dissolution and the presence of dependent children may matter for men's and women's experiences of marital dissolution – at least within the Western German baby boomer cohort.

VII. Remarriage was no panacea for wealth recovery.

Income studies have commonly understood remarriage to be an efficient recovery mechanism particularly for women's per capita income (Jansen et al., 2009; Wu & Schimmele, 2005). This is based on the notion that the income of the new partner improves the per capita income of ever-divorced women. Although remarriage likely poses some advantages for the wealth accumulation of individuals, as I highlighted within section 2.3.2 of Chapter 2, it seems unlikely that remarriage re-establishes all wealth benefits associated with the first marriage.

In support of this idea, I found in Chapter 5 that remarriage was not associated with full wealth recovery of ever-divorced men's and women's personal wealth. Western German baby boomers who followed a family life course pattern that featured remarriage were not substantially better off than divorcees that did not remarry until late working age. However, it needs to be emphasised that remarried and un-married ever-divorced baby boomers differed substantially in other relevant characteristics. Remarried baby boomers, for instance, showed high fertility rates and a high prevalence of multi-partner fertility. It is thus likely that the lack of recovery in the remarriage cluster is based on child-related costs that reduced the available surplus income that could be saved rather than on remarriage itself.

VIII. The lack of wealth recovery until late working age was mainly driven by the immediate marital dissolution-related wealth penalties rather than deteriorated wealth accumulation potentials after divorce.

Empirical results from Chapter 5 highlighted that the experience of marital dissolution during working age was associated with lower personal wealth in late working age compared to wealth levels of Western German baby boomers that were continuously married. These wealth disparities in late working age may have several reasons: Firstly, disparities may be a direct result of the immediate decline of wealth experienced around marital dissolution – and more precisely during the months before the divorce proceeding (i.e. marital separation) – as highlighted in thesis Chapter 4. Secondly, individuals may also have lower wealth accumulation rates after divorce compared to continuously married respondents based, *inter alia*, on the loss of marital wealth benefits or reduced profits from compounded interest effects due to lower wealth levels right after divorce relative to the married. Finally, wealth disparities may be a result of selection effects meaning that financially less advantaged individuals with naturally lower wealth levels and accumulation rates are more likely to experience a marital dissolution (Dew, 2011; Eads & Tach, 2016).

Accounting for selection effects, empirical evidence from Chapter 6 showed a substantial wealth gap between divorcees and the married in the year of divorce whereas wealth accumulation rates of the two groups were rather similar. Thus, wealth differences in older age are mainly a result of the immediate wealth set-backs associated with first-time marital dissolution rather than deteriorated wealth accumulation after divorce.

IX. *Selection into marital dissolution mattered for the size of men's immediate wealth penalties around marital dissolution, but not for their wealth growth rates after divorce. Adjustment for selection did not affect results for divorced women's wealth trajectories.*

As mentioned within the previous section, the selection of financially stressed individuals into marital dissolution may partially explain the apparent lack of wealth recovery of ever-divorced individuals until late working age. To understand to what degree selection mattered, I compared wealth trajectories between divorcees and the continuously married first accounting for selection bias through propensity score matching and second without the consideration of relevant baseline differences between the two groups. Results indicated that selection effects matter for the magnitude of the observed immediate wealth shock at divorce but not for growth rates after divorce. Gender-specific analyses showed that this was mainly the case for men, but not women. Overall, this means that the stratified experience of marital dissolution partially explains wealth differences between ever-divorced men and continuously married men. Failure to empirically account for – or at least theoretically acknowledge – these selection processes would lead to an over-estimation of the actual marital dissolution-related wealth gap between ever-divorced and married men, but also between divorced men and women.

7.3 Implications

Based on findings from my thesis, a range of implications can be highlighted that are relevant for researchers and policymakers concerned with the economic consequences of marital dissolution. More broadly, my thesis also highlights implications for the access to and collection of wealth data.

7.3.1 Theory and literature

As outlined within the introduction to my thesis, income and wealth capture different aspects of economic wellbeing with income being more volatile to sudden economic shocks while access to sufficient wealth can buffer those shocks (Wolff & Zacharias, 2009). While previous research highlighted that marital dissolution-related income decline can be recovered in years after a divorce

(e.g. Fisher & Low, 2016), I showed that marital dissolution commonly leads to a substantial immediate decline in personal wealth that lasts until old age. Based on the fundamental differences between income and wealth as well as findings from my thesis compared to the income literature, it is insufficient if discussions about the economic consequences of marital dissolution for men and women continue to focus (almost) solely on income-based measures. As highlighted within the current thesis, wealth should be seen as a relevant dimension in the economic wellbeing of divorcees throughout their life course.

Furthermore, I showed that the focus on divorce as a discrete event within previous research and theory is often too simplistic. Wealth-relevant decisions and changes occur before a legal divorce, for instance, during the separation of the couples into two households. As highlighted within the life course framework, even the anticipation of marital dissolution matters for financial decision-making and by implication wealth or income. Although a detailed analysis of the heterogeneity of wealth trajectories after divorce – for instance based on latent class models – was beyond the scope of the current thesis and results refer to the average trajectory for divorced men and women, financial decisions after legal divorce may also matter for the wealth of divorcees. Marital dissolution should thus be considered a process that is embedded within the life course rather than a single point-in-time event. For wealth research, this seems particularly critical as individuals' wealth levels and inequalities between them at a certain time have to be understood as the accumulation of advantage and disadvantage until that point as well as individuals' economic aspirations for the future. Notions from the life course framework about the importance of time, timing, and long-term patterns of stability and change as well as longitudinal data and methods seem to provide a relevant foundation for the study of wealth and family patterns.

7.3.2 Policy

A range of policy interventions seems feasible in light of the thesis findings. The most straightforward policy intervention would thereby refer to greater education about the available marital property regimes and their consequences for the wealth division if the marriage breaks down. This also includes raising awareness for the wealth-related consequences of a traditional division of labour within marriage and other couple-level financial decisions in case of divorce. The majority of couples are not aware of the legal framework around marriage and divorce as was evident in research commissioned by the German Federal Ministry for Family Affairs, Senior Citizens, Women, and Youth. Wippermann et al. (2014) surveyed a representative sample of Germans aged 18 to 60 years about their knowledge of the legal regulations concerning family law and their obligations if the

marriage breaks down. Amongst married respondents, 54 percent said that they had never heard of the community of accrued gains (*Zugewinngemeinschaft*), the default regime in Germany, or at least did not know what it meant. Younger married respondents were generally less informed than older married respondents potentially due to older respondents increased experience of taxes or divorce over their life courses. Surprisingly factors such as educational level, gender, or region (i.e. Eastern vs Western Germany) were not correlated with respondents' knowledge. Amongst married respondents, that claimed to live under the community of accrued gains regime, 65 percent believed that all wealth *per se* belongs to both partners, while, in fact, rightful ownership stays untouched during the marriage and personally owned resources do not automatically become joint resources. More women than men were under this false impression of a total joint ownership of all resources, 69 percent and 62 percent respectively. The dramatic discrepancies between the *de jure* property regulations within family law and the respondents' beliefs about them likely leads to financial surprises in case of a marital breakdown.

The lack of knowledge and understanding about marital property regimes and their consequences is further fuelled by a general social taboo to overtly discuss financial matters between partners and to draw up a marital contract (Atwood, 2012). Despite a rising awareness and acceptance of marital dissolution and individualisation within marriage (Cherlin, 2009; Lauer & Yodanis, 2011; Mills, 2007), contracts are often perceived as a sign of mistrust or doubt about the longevity of the marriage. It is also commonly believed that a marital contract is only for the rich without realising the potential benefits for the "average" couple (e.g. protection of some assets, clarity of how to proceed with joint assets, etc.). As a result, only five to ten percent of German couples draw up a marital contract (Dutta, 2012; Stach, 1988).[51] But even if spouses did sign a marital contract before their marriage or at an early stage, they should re-assess these contracts throughout their partnership as circumstances might change (e.g. one partner starts a business, one spouse takes longer career breaks than anticipated for care-related reasons, etc.). Overall, society and policy, not just in Germany, has to do more to educate men and women about family law and its consequences, and reduce the stigma attached to marital contracts or support open discussions about financial arrangements within marriage.

Education about couples' arrangements seems particularly critical for women, or the main carer for children. In Germany, the discrepancy between the strong institutional and normative support for a rather traditional division of labour within marriage stands in stark contrast to the rising emphasis on

[51] Similarly low numbers of marital contracts are found for the US (Mahar, 2003), while the prevalence of marital contracts is slightly higher in Germany's neighbouring countries. About 25 percent of Dutch couples and 18 percent of French couples have a marital contact that regulates economic arrangements in the event of divorce (Frémeaux & Leturcq, 2018; Rainer, 2007).

financial self-reliance after divorce and drastic temporal restrictions of spousal maintenance payments since the 2008 alimony reform. As highlighted by Wippermann et al. (2014) couples are commonly not aware of the wealth-related consequences of a traditional division of labour within marriage and in case the marriage breaks down. Individuals too often believe in the "good" and generosity of the more advantaged ex-spouse to support the less advantaged spouse in case of separation and divorce. Education about the consequences of couples' arrangements, mainly regarding women's care-related career breaks, needs to go hand in hand with revised family policies that reduce gendered household arrangements and support gender equality. For instance, policy makers should consider whether Germany's family tax splitting is still applicable to contemporary family arrangements and aspirations of gender equality within the German population. Policies should also establish extensive parental leave options for men and incentivise their uptake, which would result in shorter career breaks for women. Currently high part-time employment rates amongst mothers are also critical, as they limit women's access to wealth-building tools and the accumulation of pension points. Policies should thus further strengthen the compatibility of family and work. Simultaneously, workplaces need to become more flexible to cater for the needs of parents. Even if spouses wish to follow more traditional household arrangements, they should be aware that the economic wellbeing of women can be secured, for instance, within a marital contract.

More broadly, my thesis suggests that governments should provide structures that assist divorcees in the re-establishment of sufficient wealth. Welfare states thus have to create conditions that are conducive to wealth accumulation and independent living for all. Although this should not be limited to the acquisition of housing property, my thesis highlighted that marital dissolution-related wealth penalties are predominantly driven by the loss of housing wealth as the main wealth component within the wealth portfolio of the majority of first-time married couples (Thomas & Mulder, 2016). Therefore, it seems particularly relevant for interventions to encourage and ease the (re-)entry into homeownership after divorce while avoiding the risk of generating a mortgage bubble as has been seen in the US (Kuhn & Grabka, 2018). For low-income households, Gründling and Grabka (2019), for instance, highlighted the benefits of state-supported lease-purchase models. However, the authors only see this as *one* possible avenue to encourage homeownership. Additionally, a reduction of the land transfer tax for the primary property may be an additional way to lower homeownership entry barriers.

7.3.3 Data

More broadly, the present thesis highlights the importance of access to comprehensive, longitudinal wealth data, and particularly personal wealth data, to understand the underlying phenomena of wealth stratification. As the pool of longitudinal wealth data grows, researchers will be able to more thoroughly identify adverse wealth consequences of a variety of life course events or ascribed traits while considering, for instance, selection effects. In collaboration with policymakers, research findings will then provide important impulses for increasingly targeted interventions for the alleviation of wealth repercussions. This can contribute to increasing financial security, even of vulnerable groups, which ultimately improves life choices and social participation for all, and reduces welfare expenditure for governments.

As a consequence, this also means that household panel studies need to continue to collect comprehensive data on a wide range of life course aspects to be able to detect experiences or traits that contribute to an economic advantage for some but are a disadvantage for others. With the rising prevalence of "alternative" family patterns such as cohabitation, living-apart together, or step-families, there is growing interest in covering these important nuances of family life in panel data to be able to explore how they matter for economic wellbeing.

To cover the full spectrum of family diversity and the individualisation of wealth within households, the use of administrative data and also the linkage of administrative data to household panel studies should provide an exciting avenue for future research. Administrative records provide detailed data on wealth components of entire populations that register wealth relevant information, for instance, for fiscal purposes. This enables an examination of groups under-represented in the majority of household panel studies (e.g. single fathers after a divorce or widowhood) due to the coverage of the full population – assuming that family arrangements are covered within the specific administrative data or that the data can be linked to survey-based data. Administrative wealth data are also highly accurate, which can help to verify and complement self-reported survey-based wealth data.[52]

[52] The accuracy of administrative wealth data is limited to wealth held within the country that collects those data as offshore wealth is commonly not covered. It can be assumed that offshore investments are only relevant for the top wealth holders and play less of a role for the majority of the population (Alstadsæter, Johannesen, & Zucman, 2018).

7.4 Limitations and directions for future research

7.4.1 Methodological limitations of the present thesis

Two main limitations of the present thesis should be acknowledged. First, the statistical analyses of the present thesis were restricted to four wealth waves. Whereas income is commonly recorded on a yearly, and sometimes even monthly, basis within the majority of household panel studies, the collection of comprehensive, longitudinal wealth data has only recently gained traction. This has limited the analyses and theoretical developments for the current thesis in several ways based on a limited sample of divorcees. Larger sample sizes would have been required for an exploration of underlying heterogeneities. As a result, the study focused on differences by gender as the most evident dimension by which the economic marital dissolution experiences could differ. The consequences of marital dissolution for the personal wealth of men and women may additionally differ by aspects such as region (i.e. Eastern vs. Western Germany), migration background, educational level, or socio-economic background.

Although the availability of four waves is currently unique for personal-level survey data, it restricts the time dimension that can be covered in the analyses. On one hand, it inhibits the comparison of different cohorts and on the other hand, it only allows researchers to follow divorcees up to a certain number of years after their divorce and restricts the timeframe that can also be considered before divorce (e.g. wealth levels at marriage entry are not available). Also, the restricted sample of respondents that experience a divorce during the wealth observation timeframe within the SOEP data confines the application of fixed-effects regression approaches. Fixed-effects approaches are better suited to account for time-constant unobserved heterogeneity and selection compared to random-effects approaches.

Second, self-reported wealth – and particularly the share of personal wealth within couples – may be prone to misreporting. The desire for social conformity has been shown to lead survey respondents to over-report socially favourable behaviour and under-report less favourable ones (DeMaio, 1985; Krumpal, 2013). Although women made substantial gains in their educational achievements and economic independence, social norms still emphasise the traditional male-breadwinner marriage (MacInnis & Buliga, 2020). For the reporting of income within couples, recent working papers by Roth and Slotwinski (2020) and Murray-Close and Heggeness (2019) compared the self-reported income of spouses with individuals' income reports in administrative data or matched administrative data. The authors found that when wives out-earn their husbands, respondents reduced this social

norm violation by inflating the earnings of the husband and deflating the earnings of the wife. As wealth is socially expected to be shared and pooled within couples with potentially higher entitlements for men based on male-breadwinner ideologies (i.e. men supposedly earn more and therefore "deserve" a larger share of wealth), couples may be inclined to over-report the share of personal wealth that is equally owned within the couple or may be prone to over-report a man's personal wealth. Next to socially desirable reporting, it should also be emphasised that it is unclear whether respondents report their perceived ownership or legal ownership of *personal*-wealth within a partnership and to what degree the two overlap (Joseph & Rowlingson, 2012). Even if the survey questions on personal wealth clearly ask for the legal share of personal wealth, it could not be assumed that respondents are fully aware of the legal status of all wealth components, particularly for the ones that are jointly owned as also highlighted by the previously mentioned findings by Wippermann et al. (2014). Despite these potential limitations of the SOEP personal-level wealth data, it needs to be acknowledged that the data are currently unique in their separate provision of wealth for all adult household members over four panel waves. As access to individual-level administrative wealth data is limited, no research has compared self-reported personal wealth levels within marriage to the individuals' wealth according to administrative data yet. Thus, the SOEP data remain the most reliable source of comprehensive personal-level wealth over several survey waves.

7.4.2 Future research avenues

Several directions for future research can be identified from the current thesis in addition to the already emphasised need to verify personal reports of wealth within couples using, for instance, administrative data. To fully comprehend the economic consequences of marital dissolution for wealth, it seems particularly relevant for future research to further assess underlying within and across country heterogeneity and mechanisms. Getting a clearer picture of the diversity of divorcees and their experiences can help to establish more targeted interventions and inform future policy amendments and interventions.

First, with a sufficient sample of divorcees and timeframe of longitudinal wealth data, future research could identify salient groups of divorcees that differ in wealth trajectories reaching from the years before marital dissolution to the years after using latent class growth analyses. Describing the identified groups, researchers could provide relevant evidence on factors that associate with divorcees' resilience or risks of lasting disadvantage. The theoretically and heuristically driven selection of relevant aspects could also advance the theoretical notion around the association between marital dissolution and wealth. Possible relevant aspects may be the prevalence of marital contracts,

levels of economic individualisation and gender egalitarian behaviour within marriage, the level of mutual agreement about the dissolution decision, and family support or mental health after divorce. Relevant mechanisms could also be identified through qualitative research before a quantitative test of these aspects. The analysis of potential recovery mechanisms seems particularly relevant to identify how divorcees can best overcome marital dissolution-related wealth penalties.

Second, it would be valuable to assess how marital dissolution is experienced across the wealth and income distribution, for instance, using quantile regressions or fixed-effects regressions (i.e. separately by different wealth or income groups). For income, Fisher and Low (2016) have already provided a study that analysed equalised household income dynamics around separation across low, middle, and high income couples. Applying such a strategy to the economic consequences for wealth could provide a more in-depth understanding of the experience of marital dissolution by risk groups (i.e. low income and/or low wealth) compared to the more privileged or middle class. It needs to be acknowledged though that very rich individuals and couples are generally under-represented within the survey and administrative data (Alstadsæter et al., 2018; Schröder et al., 2019). As the aspiration and focus may not necessarily lie on the top one percent, but rather the assessment of wealth consequences of marital dissolution at the bottom of the distribution, the lack of data for the very affluent should not be seen as a limitation. Analyses across the wealth distribution may be further expanded with thorough analyses of the consequences of marital dissolution on wealth portfolios and indebtedness.

Third, with the rising numbers of grey divorces (i.e. divorce in older age commonly after a long marriage) across countries (Brown & Lin, 2012; Brown & Wright, 2017; Weiskopf, Rester, & Seeberger, 2012), these divorcees may be a notable risk group as they cannot – or to a very limited degree – recover or improve economically from marital dissolution through saving of their labour market income before they retire. Although the present thesis partially addressed differences in the association between marital dissolution and wealth across the life course, for instance through the sequence analysis in thesis Chapter 5, which identified clusters that featured early divorce and mid-life divorce, none of the thesis chapters explicitly considered divorces in older age. This was due to sample restrictions of the survey data with insufficient coverage of grey divorces. Thus, the consequences of marital dissolution in older age may currently best be examined based on administrative data or within survey data that focuses on the older population.

Fourth, life course research emphasises the interconnectedness of different life course domains. Although Chapter 5 focused on the diversity in family life course patterns including both marital and

childbearing histories, future research should also consider the intersection with other life course domains such as employment, education, health, or housing. Furthermore, the linkage between subsequent partners' family life course trajectories may be relevant as previous experiences of one partner likely influence the other partner's saving goals and the level of connectedness of wealth accumulation.

Fifth, as the life course framework also highlights the importance of cohort differences based on the embeddedness of life courses within historical time, it seems relevant to continue monitoring the association of marital dissolution and wealth to better understand how cohort-specific differences matter. For instance, in more recent cohorts, couples have become more gender egalitarian with growing parental leave options for fathers. Additionally, cohabitation has become a common feature of family life courses and may be relevant in the wealth accumulation of couples before marriage or instead of marriage, but also if the relationship breaks down.

Sixth, research on the association between marital dissolution and wealth would benefit from cross-country comparisons to further explore how different legal regulations and practices on the division of property within marriage and divorce, as well as other policy differences matter for the wealth of divorced men and women. For instance, in a range of countries such as the US or Australia future needs of spouses and children are considered in the division process. In these countries, aspects such as age, health, financial resources and future economic potential, childcare contribution and related career breaks during the marriage, and the wellbeing of children are considered when dividing the couples' wealth. This is in contrast to the German marital property regime where future needs are (mostly) disregarded and family law emphasises financial self-sufficiency of spouses after divorce largely disregarding their labour divisions within marriage. Countries also differ with regard to their welfare generosity or wealth accumulation incentives and constraints, which may lead to different outcomes for divorcees in different countries. Cross-country comparisons have the potential to identify regimes in which divorce has the least and most adverse effects on divorcees' wealth, which can help to identify particularly beneficial or adverse structures.

Finally, one aspect that was only mentioned in the empirical Chapter 4, is the anticipation of separation and associated wealth-relevant behaviour. Although a handful of previous studies have started to predict households' savings behaviour before divorce (Finke & Pierce, 2006; Pericoli & Ventura, 2012), results have been inconclusive and potentially affected by the focus on divorce rather than separation. To further understand wealth dynamics around marital dissolution, a thorough

analysis of the financial anticipation – potentially in combination with information on the initiator status of marital dissolution and economic inequalities between partners – would be desirable.

7.5 Concluding remarks

Increasing pressures for economic self-reliance are posing great concerns for the wellbeing of households and their members as well as entire societies. Within the present thesis, I showed that marital dissolution is a life course event that substantially reduces personal wealth levels and thus disrupts wealth accumulation with lasting repercussions. In contrast to income research that has persistently shown large marital dissolution-related repercussions for women's income and – depending on the study – only marginal consequences for men's income (e.g. Andreß et al., 2006; Bayaz-Ozturk et al., 2018), the consequences for wealth are substantial for the majority of men *and* women. However, my thesis also highlighted that women hold fewer resources throughout marital dissolution than men putting women in a financially more volatile position particularly in combination with their higher income losses through marital dissolution. By implication, the substantial wealth penalties for both men and women also have economic consequences for children as depleted parental resources may limit opportunities parents can generate for their children or the level of economic resources they can directly transfer to children through *inter vivos* transfers and inheritances (e.g. Lersch & Baxter, 2020).

Although my thesis contributes to the large body of research that has emphasised the negative repercussions of marital dissolution particularly for the economic wellbeing of divorcees and their children, it needs to be highlighted that marital dissolution can have a range of positive outcomes that may equalise those adverse economic consequences. Marital dissolution may, for instance, help some spouses to emancipate themselves from an unhappy marriage. This is particularly critical if one spouse experiences marriage as constricting or even toxic (Amato & Hohmann-Marriott, 2007; Kalmijn & Monden, 2006). Marital dissolution can thus lead to improved subjective wellbeing or opportunity for personal growth for some, which in turn may outweigh the economic costs.

Thus, within a progressively diverse society, it cannot be the aim to reduce the rate of marital dissolution, but societies need to raise awareness of the economic consequences of marital dissolution to enable married spouses to make informed financial decisions at marriage entry and during the marriage. Furthermore, policies should provide targeted support for all citizens to allow them to accumulate a sufficient financial and psychological safety net even after a substantial shock such as marital dissolution.

Although this thesis provides an important first step towards a more thorough and gender-sensitive analysis of the economic consequences of marital dissolution for wealth, more research is needed to fully explicate within and across country heterogeneity of the association between marital dissolution and wealth, and the wealth accumulation of divorcees. As comprehensive wealth data grow – either through the continuous, regular inclusion of wealth questions in household panel surveys or through access to administrative wealth data including their linkage to panel survey data – research will be able to provide more in-depth evidence for increasingly targeted policy interventions and reforms.

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Appendix A Supplementary material for Chapter 4

Table A.1 Overview of variables used for the imputation process in thesis Chapter 4 including number and share of missing values in each survey wave

Variable type	Variable	2002		2007		2012		2017	
		Missing values	Share of missing values	Missing values	Share of missing values	Missing values	Share of missing values	Missing values	Share of missing values
Basic demographics and socio-economic background	Gender*					none			
	Age*					none			
	Cohort					none			
	Migration background					none			
	In East Germany in 1989	8	0.09	9	0.08	12	0.11	11	0.13
	Number of siblings	0	0.00	3	0.03	8	0.07	6	0.07
	Parents' highest education	842	9.05	884	8.33	574	5.10	354	4.03
	SOEP sample					none			
Household characteristics	Federal state					none			
	Living area	0	0.00	223	2.10	180	1.60	92	1.05
	Number of children in household					none			
Human Capital	Highest education	5	0.05	6	0.06	9	0.08	10	0.11
	Full-time work exp. (years)	6	0.06	6	0.06	4	0.04	29	0.33
	Individual earnings (log)	none (SOEP imputed data used)[53]							

[53] In our imputation models, we include labour market income and personal net worth measures that were edited and imputed by the SOEP team. The SOEP team imputed labour market income data for under 10 percent of respondents (Frick & Grabka, 2014). As personal net worth includes a range of measures, the amount of missing values differ between the different wealth components. Overall, incidences of item non-response are rather low and vary between zero percent for debts measures on other property (i.e. property other than the primary home) to about 14 percent for information on private insurance (Grabka & Westermeier, 2015).

Partnership	Detailed marital status*					none			
	Duration married (years) for continuously married*					none			
	Duration married (years) prior to separation*	23	0.25	38	0.36	46	0.41	43	0.49
	Duration separated (months)					none			
	Remarried	0	0.00	8	0.08	5	0.04	1	0.01
Wealth	Net worth (IHS)*	none (SOEP edited and imputed data used)							
	Housing net worth (IHS)*	none (SOEP edited and imputed data used)							

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017)
*Variables used in regression analyses

Table A.2 Descriptive statistics of Chapter 4

	Non-imputed data				Imputed data			
	Continuously married subsample		Marital dissolution subsample		Continuously married subsample		Marital dissolution subsample	
	Men mean/(SE)	Women mean/(SE)	Men mean/(SE)	Women mean/(SE)	Men mean/(SE)	Women mean/(SE)	Men mean/(SE)	Women mean/(SE)
Personal net worth (in 1'000 EUR)	150.51	106.58	93.82	57.57	147.30	112.97	95.38	64.32
	(298.87)	(195.76)	(219.54)	(169.87)	(285.48)	(210.27)	(253.75)	(196.14)
Personal housing net worth (in	74.34	62.79	39.89	29.36	75.71	65.67	43.01	32.23
1'000 EUR)	(106.42)	(94.32)	(82.87)	(74.78)	(106.90)	(96.80)	(93.01)	(82.54)
Personal financial net worth (in	76.17	43.79	53.93	28.21	71.59	47.30	52.37	32.09
1'000 EUR)	(253.92)	(148.96)	(183.21)	(135.87)	(250.76)	(179.04)	(232.60)	(171.51)
Married	1.00	1.00	0.37	0.39	1.00	1.00	0.38	0.39
Marital duration for continuously	28.47	28.33			27.66	27.40		
married respondents in years	(15.68)	(15.70)			(15.66)	(15.54)		
Separated			0.25	0.21			0.24	0.22
Divorced			0.38	0.41			0.38	0.39
Separation length of first			31.88	28.15			32.34	27.40
separation in months			(30.49)	(28.78)			(33.04)	(27.98)
Marital duration of previous first			16.45	14.69			15.72	14.65
marriage in years			(10.41)	(8.96)			(9.97)	(8.95)
Age in years	55.74	52.74	46.36	42.08	54.99	51.91	45.92	42.18
	(14.13)	(14.14)	(10.28)	(9.31)	(14.11)	(13.89)	(10.21)	(9.39)
HH members age 0-17	0.70	0.72	0.68	1.14	0.76	0.78	0.71	1.12
	(1.07)	(1.09)	(1.02)	(1.14)	(1.09)	(1.10)	(1.03)	(1.13)
Migration background	0.16	0.18	0.13	0.17	0.15	0.16	0.11	0.15
Currently in eastern Germany	0.25	0.24	0.24	0.25	0.24	0.24	0.25	0.24
In East Germany in 1989	0.25	0.24	0.25	0.27	0.24	0.24	0.26	0.27
Educational level (based on ISCED97)								
low	0.06	0.14	0.06	0.11	0.06	0.12	0.06	0.09

intermediate	0.50	0.57	0.51	0.57	0.51	0.58	0.52	0.60
high	0.44	0.29	0.42	0.32	0.43	0.30	0.42	0.31
Full-time labor market experience	28.30	13.03	21.46	9.43	27.95	12.85	21.42	9.83
	(11.43)	(11.81)	(10.20)	(8.45)	(11.41)	(11.54)	(10.19)	(8.56)
Number of siblings	2.16	2.13	1.80	1.89	2.10	2.07	1.76	1.84
	(1.93)	(1.82)	(1.47)	(1.68)	(1.88)	(1.77)	(1.44)	(1.58)
Parents' educational level (based on ISCED97)								
low	0.18	0.17	0.15	0.15	0.22	0.20	0.17	0.17
intermediate	0.63	0.64	0.67	0.60	0.67	0.68	0.70	0.66
high	0.11	0.12	0.10	0.16	0.12	0.13	0.13	0.17
Cohort								
-1945	0.33	0.26	0.05	0.00	0.31	0.24	0.04	0.01
1946-1955	0.20	0.21	0.16	0.09	0.19	0.20	0.15	0.09
1956-1961	0.14	0.13	0.17	0.14	0.14	0.13	0.18	0.14
1962-1975	0.28	0.29	0.54	0.57	0.30	0.32	0.55	0.57
born after 1975	0.06	0.11	0.09	0.20	0.06	0.11	0.08	0.19
N Observations	12282	12179	821	1027	18372	18682	1267	1618
N Individuals	5804	5892	354	483	6825	6979	434	576

Data: Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted)

Table A.3 IHS-transformed personal net wealth and untransformed (mean and median) personal net wealth (in 1'000 EUR) over the marital dissolution process

	Women			Men		
	Transf. IHS	Untransf. Mean	Untransf. Median	Transf. IHS	Untransf. Mean	Untransf. Median
Married, >3 years prior separation	6.33	64.10	9.50	7.38	102.97	25.40
Married, 1-3 years prior separation	5.22	52.67	5.17	7.42	102.01	29.80
Separated	4.97	75.15	3.91	6.05	71.75	11.42
Divorce proceeding	3.91	19.37	2.31	5.90	44.90	12.61
Divorced, 2-5 years	4.99	50.57	5.41	4.27	60.52	3.63
Divorced, 6-15 years	3.64	48.36	0.08	4.04	64.88	3.26

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017), imputed and weighted. Differences between absolute and IHS-transformed net worth were due to the functional form of the IHS transformation which is approximately linear close to zero and approximately logarithmic for large values (Friedline et al., 2015). Thus, similar absolute growth in untransformed net worth led to decreasing relative growth in IHS-transformed net worth. We display both mean and median absolute net worth levels as wealth data are highly skewed and few wealthy respondents can affect mean levels. Thus median net worth can provide important additional information.

Table A.4 Fixed-effects models of personal wealth (IHS transformed) using a divorce dummy

	Personal net worth B/(SE)
Dummy: divorce	-1.10*
	(0.50)
Interaction: Divorce X female	0.13
	(0.63)
Age	0.40***
	(0.03)
Age squared	-0.00***
	(0.00)
Mean centered marital duration	-0.01***
	(0.00)
Dummy: Year 2002	0.40*
	(0.17)
Dummy: Year 2007	0.13
	(0.12)
Dummy: Wealth flag	-0.11
	(0.07)
N Observations	39939
N Individuals	14814

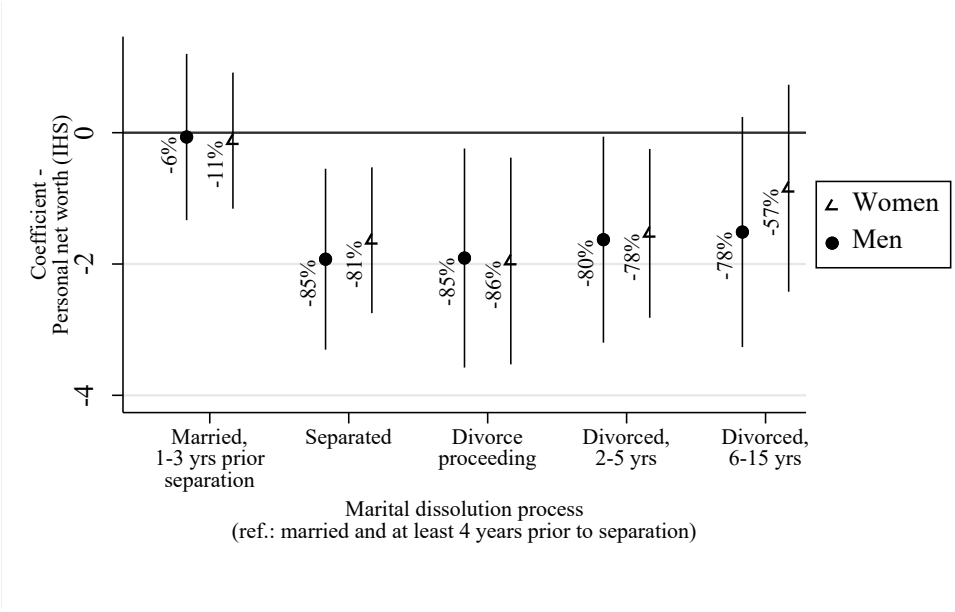
Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017), imputed and unweighted data.
* p<.05, ** p<.01, *** p<.001

Table A.5 Fixed-effects models of personal wealth including models for personal financial wealth and housing wealth (IHS transformed)

	Personal net worth B/(SE)	Housing net worth B/(SE)	Financial net worth B/(SE)
Marital dissolution process (ref.: married, >3 years prior separation)			
Married, 1-3 years prior separation	-0.44	-0.44	-0.28
	(0.64)	(0.51)	(1.00)
Separated	-1.74*	-2.64***	-0.20
	(0.72)	(0.45)	(1.10)
Divorce proceeding	-1.93*	-3.02***	-0.50
	(0.86)	(0.64)	(1.11)
Divorced, 2-5 years	-1.86*	-2.44***	-0.48
	(0.80)	(0.54)	(1.08)
Divorced, 6-15 years	-2.38*	-2.81***	-1.35
	(0.90)	(0.60)	(1.32)
Interactions: marital dissolution process X female			
Married, 1-3 years prior separation	0.12	0.52	-0.97
X female	(0.82)	(0.60)	(1.31)
Separated X female	0.32	0.14	-0.46
	(0.91)	(0.62)	(1.17)
Divorce proceeding X female	-0.10	-0.44	-0.64
	(1.22)	(0.84)	(1.43)
Divorced, 2-5 years X female	0.02	-0.70	-0.61
	(1.10)	(0.65)	(1.70)
Divorced, 6-15 years X female	0.51	-0.31	0.22
	(1.17)	(0.75)	(1.56)
Age	0.37***	0.57***	0.04
	(0.04)	(0.03)	(0.05)
Age squared	-0.00***	-0.00***	-0.00
	(0.00)	(0.00)	(0.00)
Marital duration (mean centered)	-0.00	0.00*	-0.01*
	(0.00)	(0.00)	(0.00)
Dummy: Year 2002	0.40*	0.70***	-0.58
	(0.17)	(0.12)	(0.33)
Dummy: Year 2007	0.12	0.29***	-0.50
	(0.13)	(0.08)	(0.24)
Dummy: Wealth flag	-0.11		
	(0.07)		
Dummy: Housing wealth flag		-0.38**	
		(0.09)	
Dummy: Financial wealth flag			-3.16***
			(0.14)
N Observations	39939	39939	39939
N Individuals	14814	14814	14814

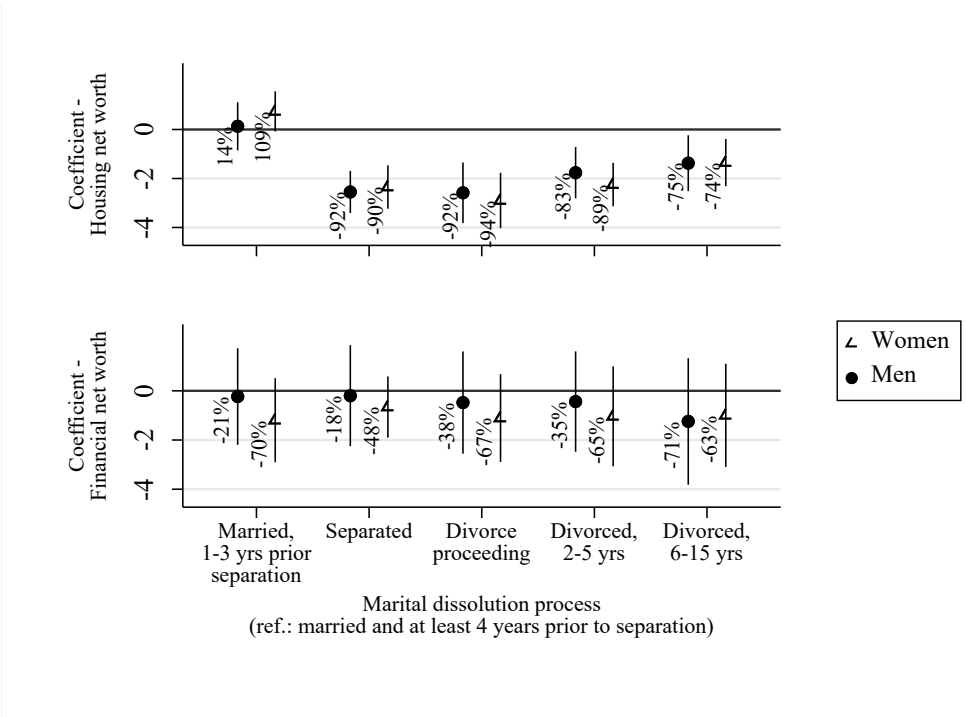
Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017), imputed and unweighted.
* p<.05, ** p<.01, *** p<.001

Figure A.1 Fixed-effects regression coefficients for personal net wealth (IHS-transformed) not controlling for age.



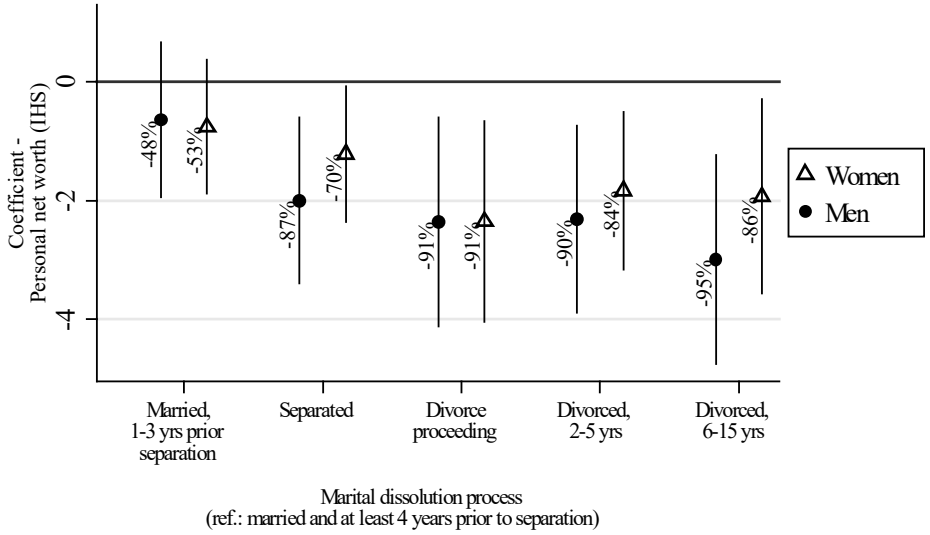
Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed).

Figure A.2 Fixed-effects regression coefficients for personal housing wealth and financial wealth (IHS-transformed) not controlling for age.



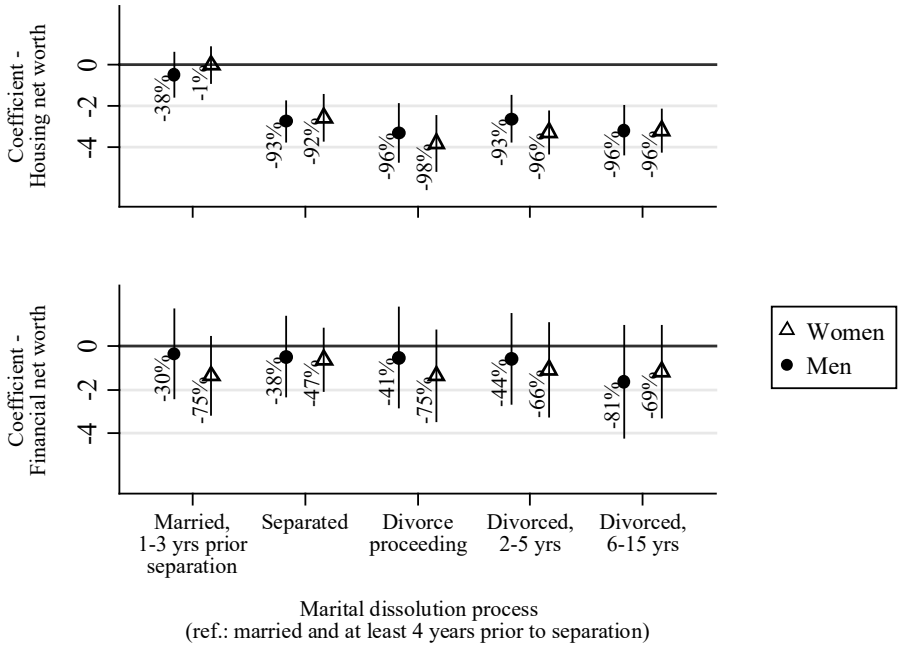
Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed).

Figure A.3 Fixed-effects regression coefficients for personal net wealth (IHS-transformed) excluding respondents that stayed separated for more than 5 years prior to divorce.



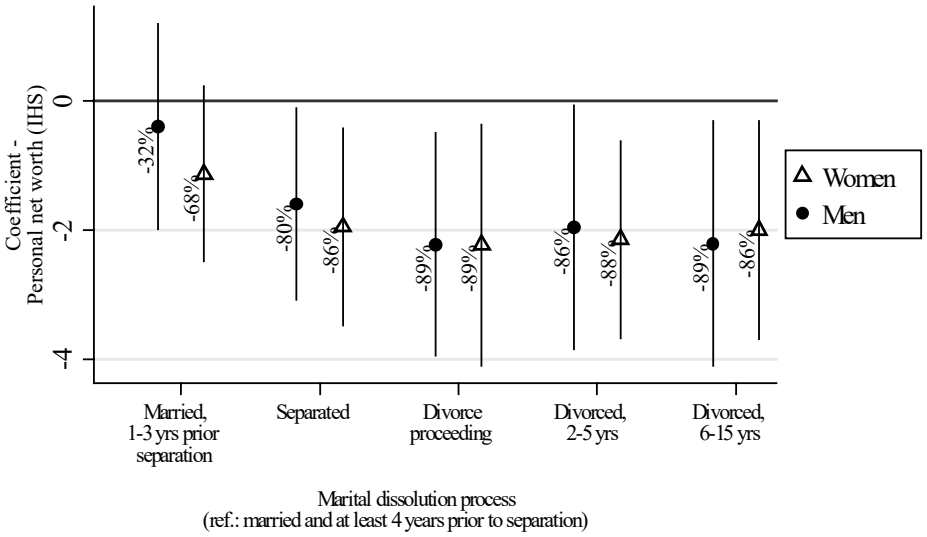
Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed).

Figure A.4 Fixed-effects regression coefficients for personal housing net wealth and financial net wealth (IHS-transformed) excluding respondents that stayed separated for more than 5 years prior to divorce.



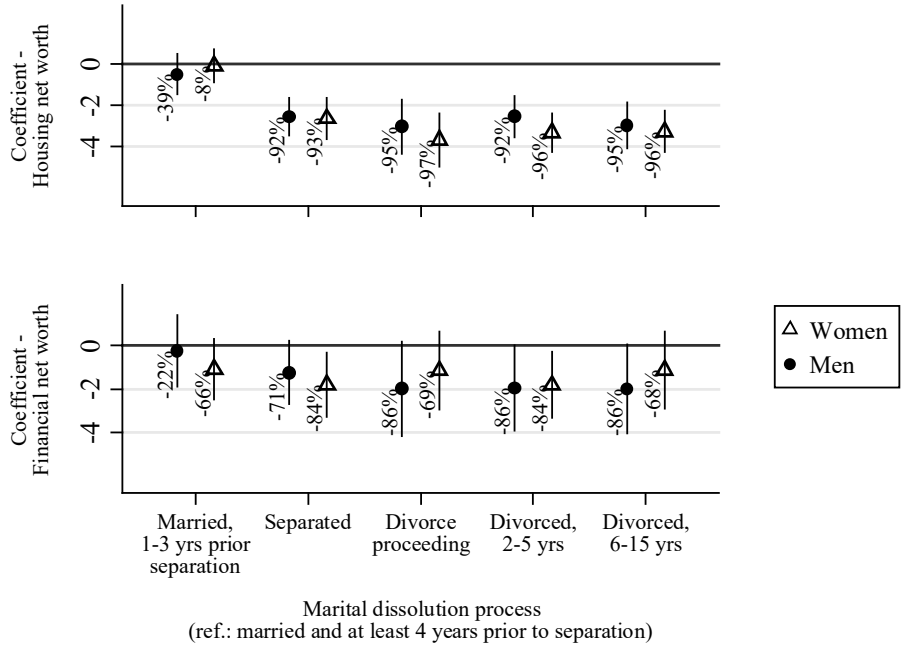
Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed).

Figure A.5 Fixed-effects regression coefficients for personal net wealth (IHS-transformed) excluding imputed wealth data.



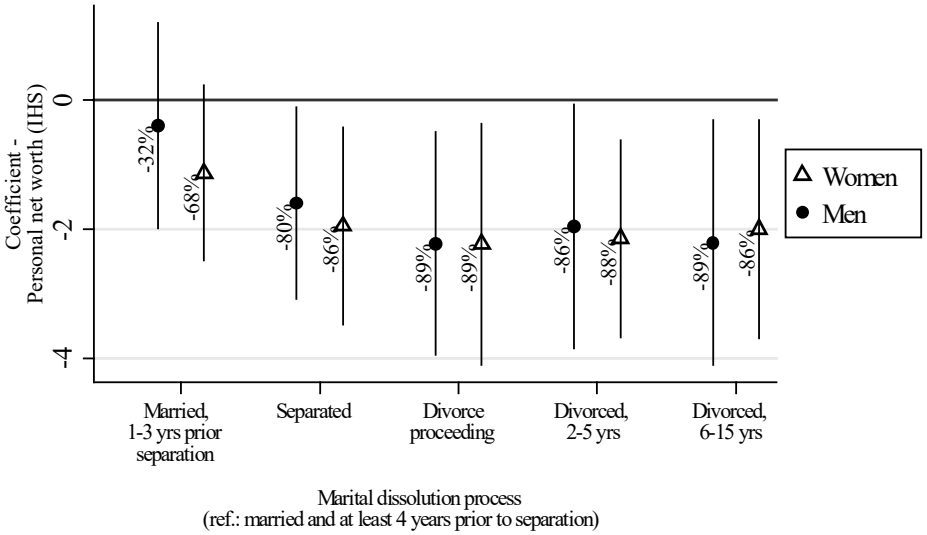
Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted).

Figure A.6 Fixed effects regression coefficients for personal housing wealth and financial wealth (IHS-transformed) excluding imputed wealth data.



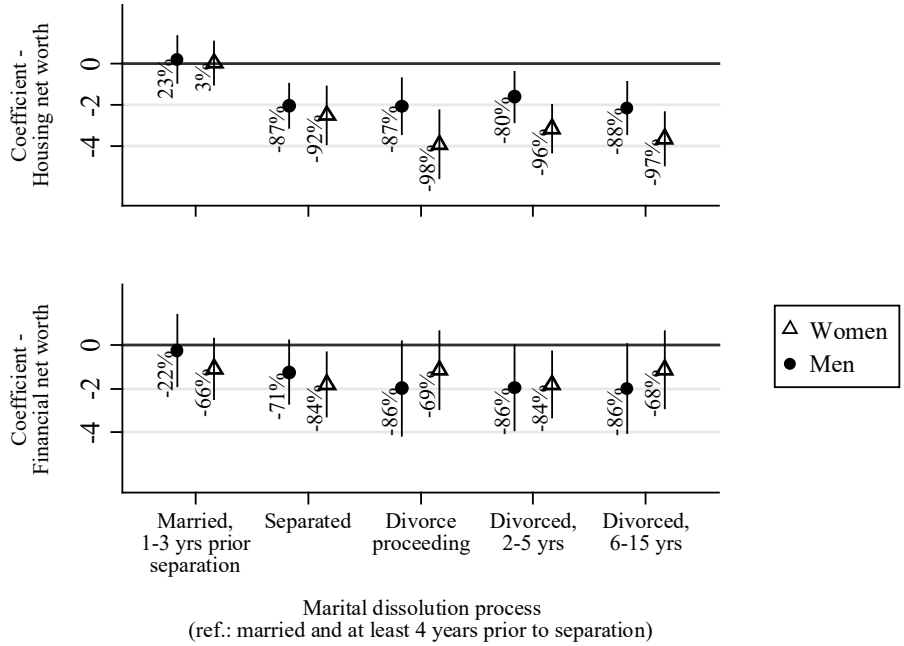
Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted).

Figure A.7 Fixed-effects regression coefficients for personal wealth (IHS-transformed) addressing missing values through listwise deletion.



Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted).

Figure A.8 Fixed-effects regression coefficients for personal housing wealth and financial wealth (IHS-transformed) addressing missing values through listwise deletion.



Notes: Whiskers indicate 95% confidence intervals. Percentages indicate retransformed coefficients (= 100 × [exp(b) – 1]). Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted).

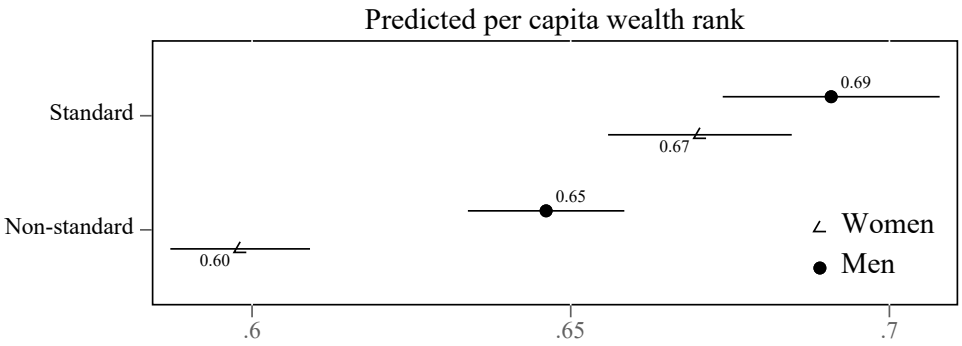
Appendix B Supplementary material for Chapter 5

Table B.1 Overview of variables used for the multiple imputation in Chapter 5 including number and share of missing values in each survey wave

Variable category	Variable	2002		2007		2012		2017	
		Missing values	Share of missing values	Missing values	Share of missing values	Missing values	Share of missing values	Missing values	Share of missing values
Wealth	Personal net wealth (rank)*	none (SOEP imputed data used)							
Basic demographics	Gender*	none							
	Age*	none							
	Migration background*	none							
	SOEP sample	none							
	Federal state	none							
	Living area	0	0.00	39	2.16	34	1.59	20	0.78
Family	Family typology*	none							
	Divorce after age 50*	none							
	Marriage after age 50*	none							
	Widowhood after age 50*	none							
Family of origin	Parental education*	134	7.44	125	6.91	78	3.66	88	3.41
	Parental SIOPS*	318	17.67	277	15.32	223	10.45	212	8.22
	Number of siblings*	0	0.00	0	0.00	1	0.05	16	0.62
Human capital	Full-time employment experience	1	0.06	1	0.06	1	0.05	4	0.16
	Number of unemployment spells	none							
	SIOPS mode	332	18.44	216	11.95	209	9.79	179	6.94
	Highest level of education	1	0.06	4	0.22	3	0.14	8	0.31

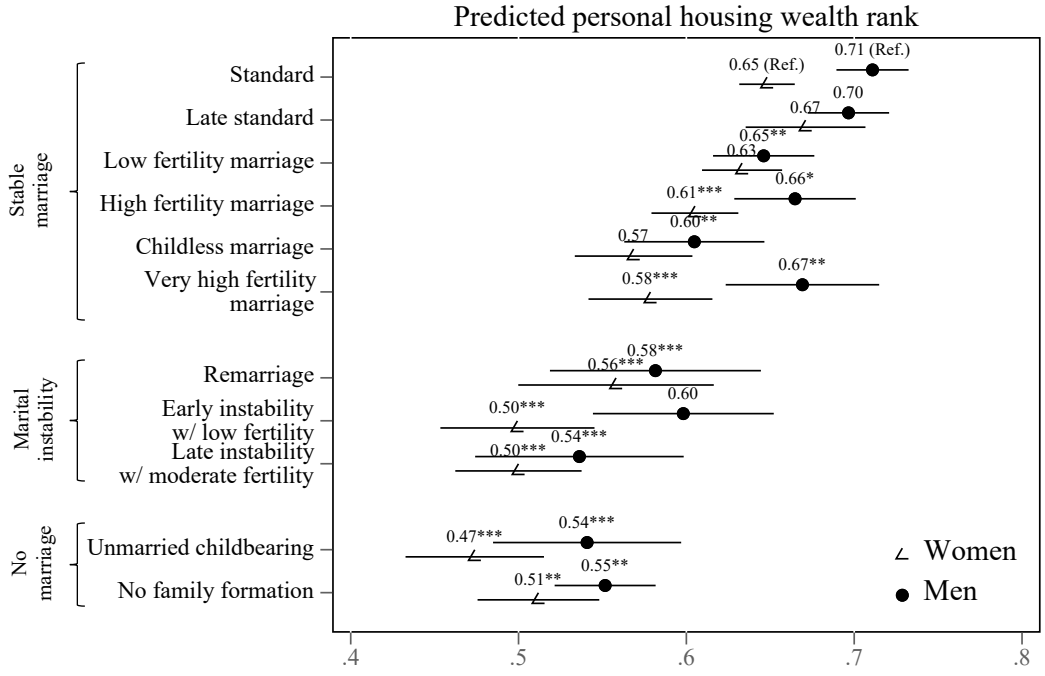
Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017)
*Variables used in regression analyses

Figure B.1 Predicted per capita wealth rank of men and women aged 51 to 59 in the standard family pattern and the non-standard family pattern based on multivariable OLS regression models.



Notes: Whiskers indicate 95% confidence intervals. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed). Models include control variables for age, migration background, birth cohort, number of siblings, parental education, parental occupational prestige, marital events after the age of 50 (marriage, divorce, widowhood).

Figure B.2 Predicted per capita wealth rank of men and women aged 51 to 59 across the diversity of family patterns based on multivariable OLS regression models.



Notes: Whiskers indicate 95% confidence intervals. Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017; unweighted; multiply imputed). Models include control variables for age, migration background, birth cohort, number of siblings, parental education, parental occupational prestige, marital events after the age of 50 (marriage, divorce, widowhood).

Table B.2 Multivariate regression models of personal net wealth (rank transformed) separately for men and women

	Dummy (Standard vs Non-standard)		Family diversity	
	Women B/(SE)	Men B/(SE)	Women B/(SE)	Men B/(SE)
Non-standard (Ref.: Standard pattern)	-0.07***	-0.07***		
	(0.01)	(0.01)		
Family patterns (Ref.: Standard pattern)				
Late standard			0.02	0.01
			(0.02)	(0.02)
Low fertility marriage			-0.01	-0.05**
			(0.02)	(0.02)
High fertility marriage			-0.07***	-0.05*
			(0.02)	(0.03)
Childless marriage			-0.03	-0.08**
			(0.02)	(0.03)
Very high fertility marriage			-0.11***	-0.08**
			(0.02)	(0.03)
Remarriage			-0.11***	-0.15***
			(0.03)	(0.04)
Instability w/ low fertility			-0.13***	-0.05
			(0.03)	(0.03)
Late instability w/ moderate fertility			-0.15***	-0.13***
			(0.02)	(0.03)
Unmarried childbearing			-0.18***	-0.17***
			(0.03)	(0.04)
No family formation			-0.06**	-0.14***
			(0.02)	(0.02)
Age	0.00*	0.00*	0.00*	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Migration background	-0.12***	-0.17***	-0.12***	-0.17***
	(0.02)	(0.02)	(0.02)	(0.02)
Birth cohort (Ref.: 1943-1950)				
1951-1958	0.00	-0.02	0.00	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
1959-1966	-0.03*	-0.04**	-0.03	-0.04*
	(0.02)	(0.02)	(0.02)	(0.02)
Number of siblings (Ref.: None)				
1	-0.01	0.01	-0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)
2	-0.03	-0.04	-0.03	-0.04*
	(0.02)	(0.02)	(0.02)	(0.02)
3 or more	-0.08***	-0.07***	-0.07***	-0.07***
	(0.02)	(0.02)	(0.02)	(0.02)
Parental educational level (Ref.: Low)				
Intermediate	0.06***	0.04*	0.05**	0.04*
	(0.02)	(0.02)	(0.02)	(0.02)
High	0.11***	0.06*	0.10***	0.06*
	(0.02)	(0.03)	(0.02)	(0.03)

Parental occupational prestige	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Ever married between age 50 and 59	-0.05	-0.06*	-0.02	-0.03
	(0.03)	(0.03)	(0.03)	(0.03)
Ever divorced between age 50 and 59	-0.08*	-0.12***	-0.09*	-0.13***
	(0.03)	(0.03)	(0.03)	(0.03)
Ever widowed between age 50 and 59	-0.08*	-0.03	-0.08*	-0.04
	(0.03)	(0.05)	(0.03)	(0.05)
Constant	0.35***	0.42***	0.37***	0.41***
	(0.09)	(0.11)	(0.09)	(0.11)
N Observations	5028	3292	5028	3292
N Individuals	3828	2583	3822	2578

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017); non-imputed and unweighted.
* p<.05, ** p<.01, *** p<.001

Appendix C Supplementary material for Chapter 6

Table C.1 Overview of variables used for the multiple imputation in Chapter 6 including number and share of missing values

		Number of missing values	Percentage
Basic demographics	Gender	0	0.00
	Age	0	0.00
	Cohort	0	0.00
	SOEP sample	0	0.00
	Migration background	0	0.00
Family of origin	Number of siblings	475	0.17
	Parents' highest education	25100	8.93
Living arrangements	Marital status	0	0.00
	Number of children in household	59	0.02
	Number of adults in household	69	0.02
	Living in Eastern Germany	0	0.00
	Residential area	3366	1.20
Health status	Household member needs assistance	331	0.12
Human capital	Education	2466	0.88
	Household income (log)	2867	1.02
	Household income (log)	3010	1.07
	Employment status	4	0.00
	Full-time work exp. (yrs)	524	0.19
	Satisfaction with household income	1800	0.64
	Financial concerns	1252	0.45
	Homeowner	131	0.05
	Savings account	6477	2.30
	Business assets	6477	2.30
	Building loan	7861	2.80
	Life insurance	6477	2.30
	Shares	6477	2.30
	Capital gains	7028	2.50
Partner characteristics (first marriage only)	Partner's age	4980	1.77
	Partner's migration background	4980	1.77
	Partner's siblings	5747	2.05
	Partner's parents' education	28576	10.17
	Partner's education	8491	3.02
	Partner's earnings	7779	2.77
	Partner's employment status	6307	2.24
	Partner's full-time work exp.	7013	2.50
	Partner's HH income sat.	7968	2.84
	Partner's financial concerns	7459	2.65

Notes: Although imputations were conducted separately for each of the 34 available survey years, the table displays pooled results to provide a general overview of missing data.

Table C.2 Means and standard deviation of covariates measured in the matching year of the divorce sample and the control sample. Before and after matching

Covariates	Divorce sample (n = 1127)		Unmatched control sample (n = 19604)		Standardised difference in means	Matched control sample incl. duplicates (n = 5633)		Standardised difference in means
	M	*SD*	*M*	*SD*	(Cohen's *d*)	*M*	*SD*	(Cohen's *d*)
Female	0.56	0.50	0.51	0.50	-0.09	0.56	0.50	0.00
Age	32.32	7.97	39.82	10.02	0.76	32.26	8.05	-0.01
Cohort	2.35	1.00	2.31	1.26	-0.03	2.36	0.95	0.01
Migration background	0.16	0.36	0.26	0.44	0.24	0.17	0.38	0.04
Number of siblings	1.90	1.88	1.94	1.87	0.02	1.94	1.78	0.02
Parents' highest level of education	0.94	0.55	0.94	0.58	0.01	0.92	0.54	-0.03
Number of household members aged 0 to 17 years	1.09	1.05	1.19	1.15	0.09	1.10	1.06	0.01
Number of household members aged 18 years and over	2.14	0.45	2.26	0.57	0.21	2.16	0.47	0.04
Currently living in Eastern German federal state	0.23	0.42	0.20	0.40	-0.09	0.22	0.41	-0.02
Household member needs care/assistance	1.99	0.10	1.98	0.15	-0.07	1.99	0.11	-0.03
Educational level	1.09	0.59	1.18	0.64	0.15	1.10	0.59	0.01
Personal earnings (log)	8.22	3.77	8.16	4.01	-0.01	8.13	3.88	-0.02
Equalized household post-government income (log)	9.89	0.48	9.99	0.51	0.21	9.90	0.44	0.03
Employment status	0.73	0.91	0.74	0.89	0.01	0.76	0.92	0.03
Number of years in full-time work	8.42	7.46	13.06	10.54	0.45	8.40	7.44	0.00
Satisfaction with household income	6.01	2.52	6.74	2.27	0.32	6.15	2.36	0.06
Worries about own financial situation	0.97	0.70	1.10	0.70	0.19	1.00	0.70	0.04
Homeownership	0.27	0.45	0.48	0.50	0.43	0.31	0.46	0.08
Savings account ownership	0.74	0.44	0.73	0.44	-0.03	0.76	0.43	0.04
Ownership of business assets	0.06	0.23	0.07	0.26	0.05	0.06	0.23	0.00
Holding building loan	0.51	0.50	0.51	0.50	0.01	0.53	0.50	0.04
Life insurance	0.65	0.48	0.65	0.48	-0.01	0.66	0.47	0.01

Ownership of shares	0.16	0.37	0.18	0.38	0.04	0.17	0.38	0.04
Capital gains	1.00	0.86	1.20	0.97	0.21	1.05	0.87	0.05
Partner's age	32.76	8.22	40.29	10.46	0.73	32.83	8.34	0.01
Partner's migration background	0.17	0.38	0.26	0.44	0.21	0.18	0.38	0.02
Partner's number of siblings	1.63	1.84	1.92	1.87	0.16	1.75	1.60	0.08
Partner's parents' highest level of education	0.91	0.56	0.94	0.57	0.06	0.90	0.56	-0.02
Partner's educational level	1.07	0.58	1.18	0.64	0.18	1.09	0.59	0.03
Partner's employment status	0.63	0.89	0.74	0.90	0.12	0.61	0.88	-0.02
Partner's number of years in full-time work	9.41	8.08	13.78	11.14	0.40	9.42	8.03	0.00
Partner's satisfaction with household income	5.98	2.47	6.72	2.27	0.32	6.09	2.36	0.05
Partner's worries about own financial situation	0.98	0.69	1.10	0.70	0.18	0.99	0.68	0.01

Notes: Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017), imputed and unweighted data.

Table C.3 Linear random-effects growth curve models of personal housing and financial wealth ranks

	Personal housing wealth				Personal financial wealth			
Variable	Overall b(SE)	Men b(SE)	Women b(SE)	Gender difference	Overall b(SE)	Men b(SE)	Women b(SE)	Gender difference
Divorce duration in years	.007*** (.00)	.007*** (.00)	.006*** (.00)	n.s.	.004*** (.00)	.003*** (.00)	.004*** (.00)	n.s.
Divorced	-.122*** (.01)	-.135*** (.01)	-.113*** (.01)	n.s.	-.060*** (.01)	-.051** (.02)	-.068*** (.01)	n.s.
Divorced X divorce duration	.001 (.00)	.002 (.00)	.000 (.00)	n.s.	-.000 (.00)	-.002 (.00)	.001 (.00)	n.s.
Intercept	.506*** (.01)	.517*** (.01)	.498*** (.01)	***	.463*** (.01)	.503*** (.01)	.435*** (.01)	***
Variance components								
Slope	.009 (.00)	.009 (.00)	.009 (.00)		.009 (.00)	.013 (.00)	.003 (.01)	
Intercept	.219 (.00)	.225 (.01)	.213 (.01)		.212 (.01)	.226 (.01)	.196 (.01)	
Covariance	-.330 (.04)	-.369 (.05)	-.296 (.07)		-.329 (.06)	-.404 (.07)	-.242 (.24)	
Residuals	.133 (.00)	.127 (.00)	.138 (.07)		.187 (.00)	.192 (.00)	.182 (.00)	
N Observations	10,890	4,863	6,027		10,890	4,863	6,027	
N Individuals	5,570	2,432	3,138		5,570	2,432	3,138	

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017), imputed and unweighted. All linear random-effects models include the following control variables: a dummy to indicate whether wealth data was imputed and a dummy for the survey year 2002. * p<.05, ** p<.01, *** p<.001

Table C.4 Linear random-effects growth curve models of personal wealth ranks with exactly matched sample and random selection of five control group respondents for each matched treatment respondent

Variable	Overall b(SE)	Men b(SE)	Women b(SE)	Gender diff
Divorce duration in years	.006***	.005***	.006***	n.s.
	(.00)	(.00)	(.00)	
Divorced	-.115***	-.111***	-.117***	n.s.
	(.01)	(.02)	(.01)	
Divorced X divorce duration	.000	.000	.002	n.s.
	(.00)	(.02)	(.01)	
Intercept	.481***	.521***	.455***	***
	(.00)	(.01)	(.01)	
Variance components				
Slope	.007	.006	.007	
	(.00)	(.00)	(.00)	
Intercept	.236	.244	.227	
	(.00)	(.01)	(.01)	
Covariance	-.364	-.417	-.321	
	(.05)	(.09)	(.08)	
Residuals	.149	.156	.143	
	(.00)	(.00)	(.00)	
N Observations	10663	4823	5840	
N Individuals	5599	2463	3136	

Notes: Data are from the Socio-Economic Panel Survey v34 (2002, 2007, 2012, 2017), imputed and unweighted. All linear random-effects models include the following control variables: a dummy to indicate whether wealth data was imputed and a dummy for the survey year 2002. * p<.05, ** p<.01, *** p<.001

Appendix D Ethics information

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

27 July 2020

Prof Janeen Baxter
Institute for Social Science Research

Human Ethics Research Office
Cumbrae-Stewart Building #72
The University of Queensland
St Lucia, QLD 4072

CRICOS PROVIDER NUMBER 00025B

Dear Prof Baxter,

2020001771:
Project Title: *May your wealth be easily divisible by two: Marital dissolution and personal wealth of German men and women over the life course.*

This project has been reviewed by the Office of Research Ethics and is deemed to be exempt from ethics review under the National Statement on Ethical Conduct in Human Research and University of Queensland policy.

1. Research that uses only existing collections of data that contain only non-identifiable data about human beings **AND** is of negligible risk, and is exempt from review (National Statement §5.1.22).
2. Audit or Quality Assurance activity

Chief Investigator	Prof Janeen Baxter
Associate Investigators	Ms Nicole Kapelle, (ISSR); Dr Sergi Vidal (Universitat Autonoma de Barcelona); Associate Prof Philipp Lersch (Humboldt-Universität zu Berlin)
Data Source	German Socio-Economic Panel Study (SOEP) (doi:10.5684/soep.v34) available from the German Institute for Economic Research (DIW Berlin) https://www.diw.de/en/diw_01.c.615977.en/soep.v34.html
Completion Date	31/03/2021

Please keep a copy of this document for your records.

Yours sincerely

Chris Rose'Meyer
Governance Officer