# Reunification: Unity, Justice, and Financial Freedom?

## Investigating the impact of the East German experience and gender institutions on portfolio choice in Germany

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# Table of Contents

**List of Figures** ..... iv
**List of Tables** ..... iv
**List of Abbreviations** ..... v
**1. Introduction** ..... 1
**2. The East German Experience** ..... 4
2.1 German-German Separation ..... 4
2.1.1 Competition of Systems ..... 5
2.1.2 Social and Gender Norms ..... 6
2.2 Reunified: (Non-) Convergence ..... 8
**3. Literature Review: Portfolio Choices, Gender, and the GDR** ..... 11
3.1 Portfolio Choice and Gender ..... 15
3.2 Portfolio Choice and the East German experience ..... 17
3.3 East German experience and Gender ..... 18
3.4 Missing Links ..... 19
**4. Empirical Analysis** ..... 22
4.1 Methodology ..... 22
4.2 Data ..... 24
4.3 Dependent Variables ..... 24
4.4 Independent Variables ..... 26
**5. Results and Discussion** ..... 31
5.1 Observations ..... 31
5.2 Real Asset: Primary Property ..... 32
5.3 Building Loans and Private Insurance ..... 36
5.4 Financial Assets ..... 38
**6. Limitations** ..... 42
**7. Conclusion** ..... 44
**Bibliography** ..... 47
**Appendix** ..... 54

# List of Figures

**Figure 1:** GDP per Capita in the GDR and FRG, 1950-1989 ..... 6

**Figure 2:** Convergence of new to old federal states, 1991-2021 ..... 10

**Figure 3:** Unemployment rates in new and old federal states, 1991-2023 ..... 10

**Figure 4:** Visualization of relevant literature ..... 15

# List of Tables

**Table 1:** Summary of the Regression Sample ..... 31

**Table 2:** Share of Primary Property, Key Variables ..... 32

**Table 3:** Share of Primary Property, Role of Marriage ..... 33

**Table 4:** Share of Primary Property, Control Variables ..... 35

**Table 5:** Share of Building Loans and Private Insurance, Key Variables ..... 36

**Table 6:** Share of Building Loans and Private Insurance, Control Variables ..... 37

**Table 7:** Share of Financial Assets, Reduced Sample ..... 40

**Table 8:** Share of Financial Assets, Role of Wealth ..... 41

# List of Abbreviations

| | |
|---|---|
| DiD | Difference-in-Difference |
| FDR | Federal Republic of Germany |
| GDP | Gross Domestic Product |
| GDR | German Democratic Republic |
| GNI | Gross National Income |
| GSOEP | German Socio-Economic Panel |
| SED | Socialist Unity Party |
| WWII | World War Two |

# 1. Introduction

For four decades, two different German nations existed simultaneously – the German Democratic Republic (GDR) and the Federal Republic of Germany (FRG) – dividing the German people into East Germans and West Germans since 1949.[1] On 9th November 1989, the Berlin Wall fell which led to a cascade of events including the end of the Cold War, the collapse of the Soviet Union, and reunification of the German people. The latter event, the German reunification, was concluded on 3rd October 1990 when the GDR ceased to exist, and five new federal states joined into the FRG and its political and economic system.[2]

The economic integration of the new federal states whose economic substance was founded on a socialist, planned economy proved to be complicated. Even though some key economic variables such as consumption, wages, and labor productivity rose strongly in the beginning (Burda 2006), the reunification became a period of huge economic shock for all of Germany, particularly in the new federal states. So, East Germans had to navigate an unknown capitalist market economy, witness the destruction of many GDR companies, deal with high unemployment and the absence of generational wealth. For many East Germans, reunification represented a major break in their biography that often disparaged their education and jobs – all while self-provided economic security mattered more than ever before.

This year, the fall of the Berlin Wall will mark its 35th anniversary, but even today these economic differences are still of feasible height. The gross domestic product (GDP) per capita, for instance, in the new federal states is about 77.3 % of old federal states, and disposable income per capita about 89.2 % (Statistische Ämter des Bundes und der Länder 2024). Considering that in five years Germany will be reunified as long as it was separated, the stark regional detachment is striking.

Apparently, the forty years of separation with the accumulation of distinct economic and social experiences had a deeper impact than many politicians, economists and

[1] In this paper, I will use 'East German' synonymously for citizens of the GDR and 'West German' synonymously for citizens of the FRG until the reunification in 1990. For the time period after reunification, these terms will be used to describe individuals' historic citizenship.

[2] Old federal states: Bavaria, Baden-Württemberg, Saarland, Rhineland-Palatinate, Hesse, North Rhine-Westphalia, Lower Saxony, Schleswig-Holstein, Bremen, Hamburg, and Berlin. New federal states: Mecklenburg-Vorpommern, Brandenburg, Saxony, Saxony-Anhalt, Thuringia, and East-Berlin joined FRG state Berlin.

pundits originally acknowledged. Since the end of the Cold War and the emergence of new Eastern European nations that introduced capitalism, research about the long-term impacts or 'stickiness' of experiencing an economic systems and social norms on the individual and its behavior has been conducted. The case of East and West Germany offers a scientifically even more singular situation. At the time the German-German separation began, both had similar educated populations with a shared language, culture, and history (Lippmann & Senik 2019). Then, four decades of strongly enforced differences parted the German people until the reunification – a rather unanticipated event.

While the amount of literature about the stickiness of the East German experience[3] is still rather small, an array of issues is discussed such as financial literacy (Davoli & Hou 2018), policy preferences (Alesina & Fuchs-Schündeln 2007; Bondar & Fuchs-Schündeln 2023), gender norms (Lippmann et al. 2020), and portfolio choice (Laudenbach et al. 2020). In general, much empirical research about portfolio choice and its determinants has been published, but the incorporation of experiences – including East Germany – is still very limited. Recently, economics has started to appreciate the influence of experiences on the individual's conscious and subconscious decision-making and recognized the knowledge from other academic disciplines such psychology and sociology. Nevertheless, economic literature about the influence of experience on the choice of portfolios is still quite small.

Moreover, if the role of experiences is investigated, the specific experiences of males and females must be considered. Germany offers an intriguing case because East and West Germans were subject to opposing social and gender norms. In the FRG, male breadwinner norms dominated the society, while the GDR structurally enforced gender equality including high women participation. With regards to portfolio choice, gendered differences in risk preferences are widely reported by existing literature, but the debate about the origin is still unfinished. Some literature argues social norms dictate risk attitudes and, therefore, portfolio choice (Baransinka & Schäfer 2018); other literature refers to 'natural' gender differences (Barasinska et al. 2012). Hence, an empirical analysis about the portfolio choices in Germany wherein paying attention

[3] Much literature refers to either 'Socialist' or 'Communist' experience when discussing the GDR (e.g. Fuchs-Schündeln & Schündeln 2020; Davoli & Hou 2018; Alesina & Fuchs-Schündeln 2007). I cannot participate in the differentiation between communism and socialism, but will refer more broadly to the 'East German experience' that includes experiences during the GDR and *after* the reunification.

to East German experiences and gender simultaneously might assist in the clarification of arguments, leading to the research question: *How do East German experience and gender institutions affect portfolio choice in Germany?*

Here, it should be noted that my research will use a binary definition of gender – as male and female. While I acknowledge the recent debates in economics and other fields of academia with regards to an extension of the gender definition by including other options, I will abstain from this due to availability of data that mostly includes a binary gender variable. Also, the comparability with existing literature is simplified.

An advanced understanding of portfolio choice in Germany is crucially important. If portfolios do indeed demonstrate substantial differences, politicians are enabled to design policies that address the East-West divide more efficiently by e.g. favoring specific asset types relative to others. This is particularly valuable as the economic divide in Germany is at least partly responsible for the overperformance of populist parties in the new federal states (Dorn et al. 2020). Similarly, monetary policy gains from advanced knowledge about asset ownership as asymmetric effects towards gender and wealth distribution have been established (Metzger & Young 2020).

Subsequently, this paper attempts to combine the issue of gender institutions and the East German experience in relation to the portfolio choices in Germany. No paper to my knowledge has looked into the – potentially important – role of gender in the case of portfolio choice in Germany with respect to former East German women and men. In addition, this paper will give an overview about the East German experience, while most research examining the lasting influence of the German-German separation does not incorporate an explanation about the distinct differences.

The remaining paper is structured as follows: Chapter 2 will provide a short summary about the two German nations and their economic and societal differences. In addition, I will give special attention to differences in gender norms and institutions. Ultimately, the status quo of economic reunification will be demonstrated by summarizing the convergence in key macroeconomic variables. In Chapter 3, literature will be reviewed drawing from three major pools of research: portfolio choice, gender institutions, and research on the lasting impact of the GDR. As the cross-sectional literature is particularly interesting, I will emphasize the research that combines the insights of two of these topics. In doing so, the state-of-research is clarified. At the end of Chapter 3, the key research gaps will be summarized to form my hypotheses. In the beginning of

Chapter 4, the empirical methodology will be outlined before introducing the data set, the dependent and independent variables. The results will be presented and discussed in Chapter 5. Penultimately, an honest discussion about the limitations this paper is provided in Chapter 6. Finally, the paper will be concluded in Chapter 7.

# 2. The East German Experience

The following chapter is not intended to be a broad analysis of ordinary life in the GDR or socialism, but a comprehensive comparison of the experiences of East Germans vis à vis West Germans before and after reunification. First, the historic comparison of the FRG and GDR is provided. Second, the developments from the reunification till today are outlined by a presentation of crucial macroeconomic variables to demonstrate the experiences post-reunification.

## 2.1 German-German Separation

When the Second World War (WWII) ended in 1945, the allied forces (USA, UK, France, and Soviet Union) had to decide about the remaining German territory and the German people. Without the common cause of war, however, the huge political differences between the capitalist allies – the USA, the UK, and France – and the communist Soviet Union became apparent (e.g. Benz 2005). As tensions rose, the ability to agree on common policies in occupied Germany diminished and a preliminary, de-facto intra-German border was established between the Soviet-occupied Eastern zone and the Western zone. In 1949, the German-German separation was formalized with the foundation of two different German nations: the Federal Republic of Germany and the German Democratic Republic.

When the Allied occupation of Germany began in 1945, the distribution of industrial capital stock was almost identical in the Eastern and Western territory (Blum 2013). Also, the employment structure and education of the people living in the respective territory were similar (Lippmann & Senik 2019). In contrast, the economic policies by the respective Allied power were dissimilar. The Soviets focused on reconstruction efforts at home and, therefore, dismantled many parts of industrial infrastructure in order to install them in the Soviet Union, and demanded reparations from East Germany (Blum 2019). On the contrary, the FRG was a huge beneficiary of the US's Marshall Plan that invested in the infrastructure and encouraged the economic boom

of the 1950s (Knapp et al. 1981). Hence, from the very beginning, the economic development of the two German nations started from different points (Blum 2019), but the economies diverged further over the decades.

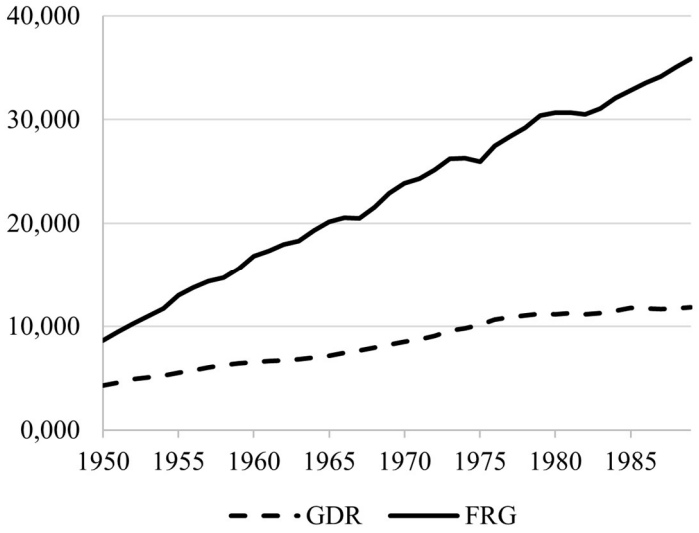
### 2.1.1 Competition of Systems

The FRG was integrated into international markets and is built on a social market economy. Even though the government's economic interference is limited, the FRG always hosted a strong social welfare state compared to other capitalist nations. Nonetheless, the usual mechanisms of a market economy are present, including the role of prices, rents, and wages as indicators of scarcity, and demand and supply forces. Firms are private and profit-seeking actors in West Germany, while the labor market determines the wages and unemployment level. In contrast, the GDR was a socialist, centrally planned economy that focused on the government as planner of economic activity and caretaker of its people. The ruling Socialist Unity Party (SED) decided upon production output in five-year plans. These production quotas had to be fulfilled by government-owned firms and collective agricultural cooperatives with prices, wages and rents being set according to governmental targets (Kandil 2001). Key promises by the SED were the right to work as well as an equal society, thus, the wage differential between higher and lower educated workers was about one fifth compared to West Germany (Alesina & Fuchs-Schündeln 2007).

Also, the role of money and credit was dissimilar. In West Germany, commercial banks were the provider of credit to firms and households as well as managers of deposits and savings accounts. Monetary policy was conducted by the central bank, the 'Bundesbank' which is independent from the federal government in its decision-making. In East Germany, the central bank 'Staatsbank' was integrated into the government (Dennig 1991). In 1989, the vast majority of credit volume (~80 %) in the GDR was operated by its central bank 'Staatsbank' – and credit to households and firms was only available for regulated reasons (ibid.). No commercial banks existed but only non-competing, state-owned ones. The largest bank in East Germany, the 'Sparkasse', focused on managing deposits and savings which were subject to a sector wide 3.25 % interest rate (ibid.). The other available portfolio option in the GDR was a private life insurance (Fuchs-Schündeln & Haliassos 2021), while private ownership of property was unusual (Hinrichs 2010). In West Germany, other asset included stock, bonds, funds, and insurances as well as the acquisition of property and real estate.

In consequence of the differences outlined above, the economic development diverged during the German-German separation. As depicted in Figure 3, the gap in GDP per capita in East and West Germany consistently expanded during 1950 and 1989.[4]

**Figure 1: GDP per Capita in the GDR and FRG, 1950-1989**




*Note: Data is presented in 'Deutsche Mark'*
*Own representation of data by Merkel & Wahl (2009).*

### 2.1.2 Social and Gender Norms

The previous chapter highlighted the drastic differences between the economic systems of East and West Germany. A further crucial characteristic of a nation and its society are the prevalent – and politically fostered – social norms. These social norms include gender norms that define the role of men and women in society. These gender norms "are embedded in formal and informal institutions" (Cislaghi & Heise 2020, p. 415) including legal and governmental support for specific relationship types such as marriage. Thereby, social norms determine "women and men's (often unequal) access to resources and freedoms, thus affecting their voice, power and sense of self" (Cislaghi & Heise 2020, p. 416). Hence, gender norms have an impact on the society and the experiences of women therein.

[4] Tracking the economic development in the GDR is problematic since official numbers were subject to political pressures (Blum 2013). Some researchers have reconstructed East German economic indicators with information made available after the reunification in order to conduct sensible comparisons and evaluations including Merkel & Wahl (2009).

Indeed, West and East German gender norms differed strongly. In the early decades, West German politics were dominated by the center-right, Christian democratic party that sustained conservative pre-WWII social and gender norms. While the basic law had enshrined the equality of men and women since 1949, gender roles continued to be dominated by traditional male breadwinner norms (Lippmann et al. 2019). In particular, the legal setup of marriage and corresponding tax code encouraged a separation into female domestic work and male single earners. The wife's responsibility for domestic tasks was even written down in the civil code until 1977 (Lippmann et al. 2019). Since then, a gradual progression in gender equality has been achieved.

In the GDR, on the other hand, female emancipation was an explicit goal by the SED. First and foremost, East German women were financially less dependent due to high levels of female employment (Lippmann & Senik 2019). Also, the decisions-making about family and children was eased up by free contraceptives, the legalization of abortions and the extensive network of low-price childcare (Dölling 1990). The importance of marriage was drastically reduced by allowing no-fault divorce (Lippmann & Senik 2019). Further policies to support mothers or parents were implemented such as a financial bonus after birth, parental leave after birth with compensation of income, and reduction of working hours until children reach the age of sixteen (Dölling 1990). All in all, the male breadwinner norm was replaced by a more emancipated view on societal roles in East Germany after WWII.

Nevertheless, the East German policies on gender should reviewed critically. First, a high female employment rate was an economic necessity in the GDR to keep the socialist economy running (Kranz 2005). Second, the role of mothers was in some ways identical in East and West Germany since domestic tasks and parental inputs were still expected mainly from women (ibid.). In the GDR, the parental leave after birth was only opened up to fathers in 1986 and the weekly reduction in working hours was introduced so that women were enabled to do domestic tasks (Dörring 1990).

All in all, East and West Germans collected vastly different experiences on gender norms and on gender institutions. These experiences became visible on the reunified labor market. In 1991, male labor market participation was approximately equal in new and old federal states with 84.2 % compared to 81.2 % (Holst & Wieber 2014). Female labor participation, however, differed strongly with 77.2 % in the new but only

60.7 % in the old federal states participated (ibid.). Thus, the GDR's gender norms still affect the economic dependence of the genders in reunified Germany.

## 2.2 Reunified: (Non-) Convergence

In the 1980s, the pressure on the SED increased. Externally, the Soviet Union cut its oil supply (Graf 2020). As a result, East Germany's ability to sell oil-products to the West and, thereby, to attain international liquidity faltered – drastically raising the indebtedness to Western countries (ibid.). Internally, civil movements had formed that eventually triggered a number of public demonstrations in favor of personal freedoms and democratic processes at the end of the decade (BPB 2019). Then, following a huge demonstration on 9th November 1989, the Berlin Wall fell. In order to determine the future of the GDR – including potential pathways for a reunification – elections were held in Spring 1990. A number of competing, political alliances were formed that represented different views on reunification. The winner of the election in Spring 1990 – the 'Allianz für Deutschland' – agreed with the West German Chancellor Helmut Kohl on a rapid German reunification under the terms of the FRG, meaning the GDR ceased to exist on 3rd October 1990, when five new federal states joined the FRG. [5]

While the reunification on 3rd October 1990 equalized the standards of political institutions and the legal system immediately, the economic integration was more tedious (Burder & Weder 2017), particularly the preparation of the new federal states for the integration into the market economy. Firms were at the very epicenter of the issue. As outlined in Chapter 2.1.1, the East German state-owned firms did not operate under the maxims of competition and efficiency but governmental production quotas and predetermined prices. By 1989, the West German manufacturing sector was 300 % more productive than their East German counterpart (Keller 2000). In 1990, approximately 8,000 state-owned firms employing around 4 million people had to be privatized (Kellermann 2021). The East German and the West German government decided to task a new governmental agency, the 'Treuhand', to restructure, sell, and if necessary close these firms. Mostly led by West German politicians and managers, the 'Treuhand' began its operation on 1st July 1990.

[5] While Chancellor Kohl initially called for a gradual reunification process, the high numbers of migration from East to West Germany as well as public interest in the West German currency changed his position on the matter (Brenke 2015).

The challenging situation of the East German economy was further intensified by the currency and social union. In spite of opposition by most economists, German policymakers decided to exchange the weak East German 'Ostmark' for the strong West German 'Deutsche Mark' mostly at a rate of 1:1 to minimize East German frustrations (Blum 2013).[6] Beginning on 1st July 1990, East Germans were able to exchange cash and savings; while prices, wages, pensions and rents automatically switched to the new currency. This overvaluation[7] is widely considered a major contributor in the economic downfall after reunification as it further contributed to the lack of competitiveness by East German firms (Akerlof et al. 1991; Sinn 2002; Blum 2013). The upward pressure on labor costs was additionally assisted by the social union that entitled East Germans to the full board of social security benefits. Besides, wage negotiations in East Germany had delivered relatively strong increases in wages.[8] Compared to the old federal states, unit labor costs in the new federal states are estimated to have been about 140 % in 1991 (Ragnitz 2019).

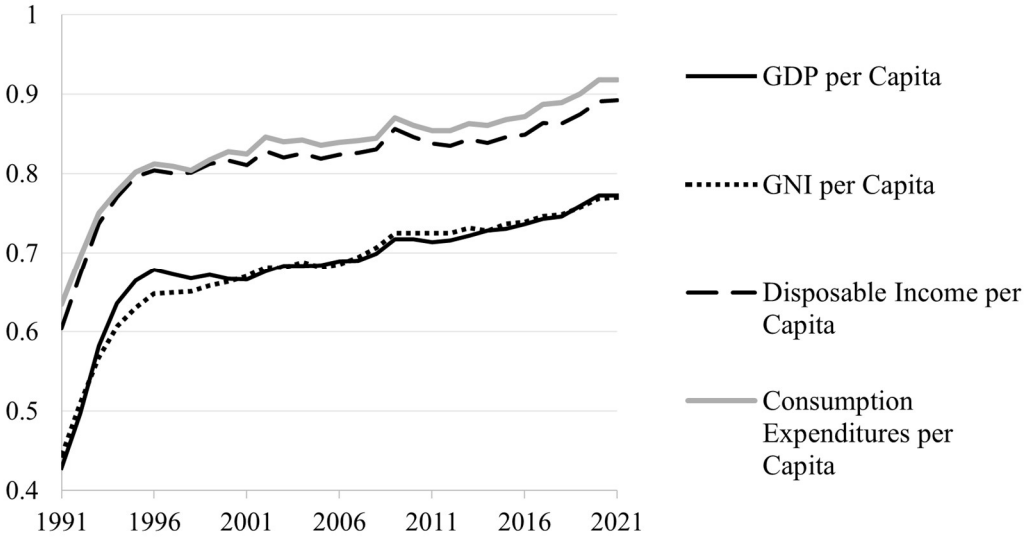
Moreover, the already tense macroeconomic environment was crushed by the 'Bundesbank' which introduced contractive monetary policies due to rising inflation rates that accompanied the reunification (Sinn 2002; Blum 2013). The cumulative result of the economic policies during the reunification process are visualized in Figure 2 and Figure 3. As demonstrated by Figure 2, the per capita values of GDP, gross national income (GNI), disposable income, and consumption expenditures states had strong rates of convergence in the early 1990s. Ever since, the new federal states only gradually closed in on the levels in the old federal states. The gap between production-related variables (GDP, GNI) and the consumption-related variables (disposable income, consumption expenditure) has been steady – indicating a continuation of spatial inequalities and financing patterns from old to new federal states.

[6] For savings and debts, the exchange rate 1:1 was only available up to a threshold that was dependent on the owners' age. Above the threshold, the exchange rate increased to 1 'Deutsche Mark' : 2 'Ostmark' (van Suntum 1990).

[7] The official exchange rate was about 1 'Deutsche Mark' : 3 'Ostmark' and the black market 1:6.5 around the fall of the wall (Blum 2013).

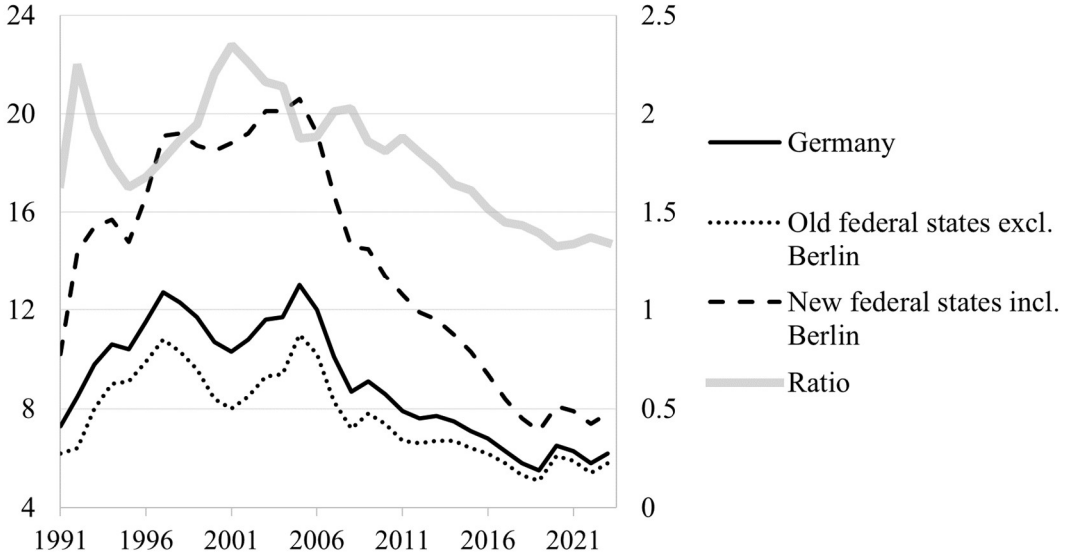
[8] The negotiations were led by West German unions that feared of even more migration into West Germany – potentially weakening labor's negotiation power there (Sinn 2002).

**Figure 2: Convergence of new to old federal states, 1991-2021**




*Note: The scale indicates the ratio of the variable from the average of the new federal states compared to the average of the old federal states. Own representation of data by Statistische Ämter des Bundes und der Länder (2024).*

**Figure 3: Unemployment rates in new and old federal states, 1991-2023**




*Note: Left-hand axis is the unemployment rate in %, right-hand axis is the ratio of unemployment in new federal states compared to the old federal states. Own representation of data by Statistische Ämter des Bundes und der Länder (2024).*

Figure 3 shows the troubling situation on the German labor market since 1991. At the end of 1990, the 'Treuhand' had to announce the closure of many firms – including some that were highly prestigious causing huge protests. A population that had never really experienced unemployment was now faced with tensions on the labor market. The unemployment rate in the new federal states rose dramatically during the 1990s and early 2000s, reaching numbers above 20 %. The new federal states experienced double the unemployment rate compared to old federal states until late 2000s, described by the ratio line in Figure 3. All in all, the economic divide between new and old federal states is still existent and of considerable height despite a multitude of financial assistance since the reunification.[9]

The brief summary contextualizes the tremendous economic shock that the reunification imposed on Germany but was most intimately felt by former East Germans and in the new federal states. The events following the fall of the Berlin Wall brought huge levels of uncertainty about the further course of their life as the only country and system they knew was stripped down. During the economic transition, many East Germans lost not only their jobs, but renowned firms had to close. This certainly introduced a feeling of betrayal and diminished trust in the system (Kellermann 2021). For the first time, huge economic and labor income insecurity was introduced into the lives of East Germans.

In the next chapter, the relation between portfolio choice and these pre- and post-reunification experiences as well as the different gender norms will be investigated.

# 3. Literature Review: Portfolio Choices, Gender, and the GDR

The research topic of this paper draws from three pools of economic literature, namely portfolio choice, gender, and the impact of socialist experience in particular East Germany. In the following paragraphs, I will give a brief description of the academic developments in these three topics and the respective status quo.

[9] Most prominently were Fonds Deutsche Einheit, Solidarpakt I, Aufbau Ost, Solidarpakt II with an aggregated value of approximately 344.2 billion Euro (BMWi 2020).

The topic of **portfolio choice** has been researched with great international attention for a long time, but the theoretical standpoint regarding portfolio choice has changed considerably. Along with the economic zeitgeist of the 1960s, portfolio choice assumed a rational economic agent – the homo economicus – that will maximize his[10] utility and, therefore, save in order to smooth consumption over his whole life (Daxhammer & Facsar 2017). Hence, the homo economicus will only consider expected profits when choosing his portfolio.[11] The still dominant portfolio models conclude that "investors should allocate their financial assets available in the market, leading to diversified portfolios" (Barasinska et al. 2012, p. 1).

In reality, however, empirical analyses have demonstrated that people do not invest as the case of homo economicus would dictate, but economic agents are often choosing portfolios that are not efficiently diversified (Barasinska et al. 2012). Most commonly, risk preferences are used to explain this disparity. Barasinska et al. (2012), for example, empirically demonstrate that self-reported risk aversity correlates with the choice of assets. The utilized data by the German Socio-Economic Panel (GSOEP) includes binary household level information whether a type of asset is owned or not. In order to relate this to individual information about risk attitudes, they only use observations for those who decide upon their own or the whole household's finances – in total about 2,500 individuals from 2004 to 2007. Barasinska et al. (2012) ascertain that a higher risk aversity is correlated with portfolios consisting purely out of safe assets. Still, the authors do not discuss where different risk attitudes might come from, or whether they are inherent. Besides, Barasinska et al. (2012) replicates the idea of a homo economicus benchmark in portfolio choice as others are referred to as "incomplete" (p.1) and "underdiversified" (p. 5).

Lately, knowledge from neuroscience and psychology was added to economic research stressing the importance of experience. Malmendier (2021), for example, elaborates on the impact of experiences on an individual's decision-making process arguing that the issue extends beyond information asymmetries ("input") and processing biases

[10] The choice to use male pronouns when referring to the homo economicus reflects its tradition as a male-oriented concept as Feminist economics criticizes (e.g. Nelson 1995).
[11] Ultimately, individuals are modeled to act and behave (or rather not behave) similar to firms with regards to intertemporal decisions. This theoretical convergence between individual and corporate decision-making explains the almost synonymous usage of the terms 'investment behavior' and 'portfolio choice' with regard to people in the reviewed literature (Thaler & Shefrin 1981).

("software") unto the brain's "hardware" (Malmendier 2021, p. 2861). All in all, research on portfolio choice has brought forward a range of theories which are often challenged by empirical studies, but more attention is paid to in-depth explanations including experiences and exposures by individuals.

Historically, the research of **gender** as an economic variable was limited and mostly superficial – treating gender as a control variable. Common models of economic theory do not include any influence (ceteris paribus) that being female, or male might have on the behavior of economic agents. In recent decades, however, the influence of gender and gender institutions has gained significantly among economic scholars. But, most economic papers do not provide a channel of influence from gender on the variable of interest, but (implicitly) suggest a 'natural' differentiation between the genders. This view on 'natural' differentiation is quite common with regards to risk preferences – which will be elaborated on in Chapter 3.2 – or with regards to policy preferences (Alesina & Fuchs-Schündeln 2007; Bondar & Fuchs-Schündeln 2023).

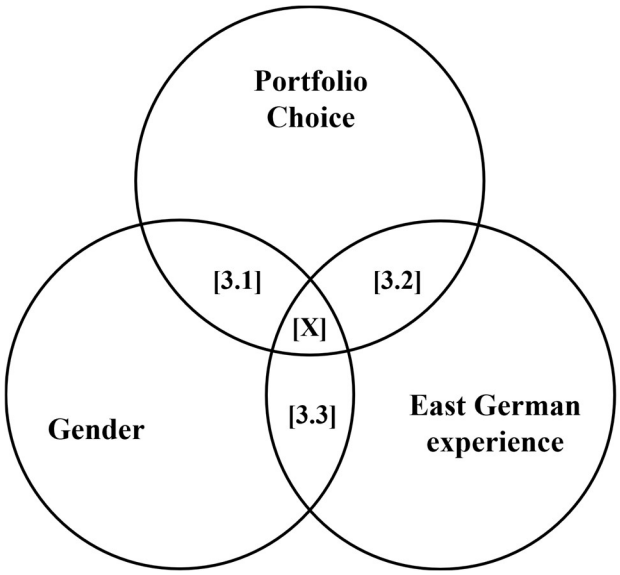
On the other hand, the knowledge from other academic areas such as sociology has caused a shift in attention to social channels of influence as drivers behind gendered gaps. Social norms produce a gender-specific set of experience and information that shape an individual's expectations. Much literature, for example, indicates that women are more pessimistic about inflation trends (Malmendier 2021). While some authors blame lacking financial understanding, empirics cannot unambiguously support this line of argument (ibid.). D'Acunto et al. (2021) include a control for who in a heterosexual couple buys grocery more often as an indicator for hidden exposure to prices and, subsequently, show that gender is no longer significant as an explanatory variable. Furthermore, due to conservative gender norms, women might be disincentivized to gain knowledge and training in fields that are considered 'male' like science, technical, engineering, and mechanics (STEM) or finance. Indeed, literature supports the importance of role models to break these barriers. Carrell et al. (2010), for example, ascertain that if natural sciences and math were taught by a woman, girls are more likely to achieve higher grades and to study STEM at university level. All in all, gender duly occupies more space in the economic deliberations which gradually acknowledge the importance of comprehending female and male specific experiences and their social origins in order to truly understand drivers of decision-making.

The third pool of literature is concerned with the influence of the **East German experience** which is used synonymous to have lived in a socialist system. This literature is highly related to empirical analyses of lasting effects of socialism and communism in other nations and regions such as the former-USSR (e.g. Libman & Popova 2022), but the case of East Germany is to some extent singular. First, the GDR was considered the economic powerhouse of the Eastern bloc by Western pundits (Blum 2013; Burda & Weder 2017). Second, the GDR was integrated into the existing legal, social and economic framework of the FRG, in contrast to other Eastern-bloc nations that had to build these from the ground up. Therefore, it is sound to treat the case of East German specifically.

The lasting effect of experiencing the GDR is researched in different circumstances. Alesina & Fuchs-Schündeln (2007) put the emphasis on the continuation of preferences that were formed in the socialist society. Their analysis ascertains that former GDR citizens are more likely to support a social welfare state than West Germans. The more time spent in the GDR, the higher the support. Bondar & Fuchs-Schündeln (2023) were able to reprise these results even with more recent data that includes younger cohorts – hinting at a certain 'passing down' of attitudes to the next generation. Davoli & Hou (2018) use the Panel Household Finances survey by the Deutsche Bundesbank to investigate the financial knowledge in 2010 and 2014 and ascertain substantial differences in the financial literacy between former East and West Germans. Interestingly, the difference is still prevalent (even though smaller) for younger cohorts which experienced only a few or no years of life in the GDR. Davoli & Hou's (2018) empirical result also points towards gender, education level and employment status as determinants for financial literacy. As reason, the authors name education in East Germany. Further, Fuchs-Schündeln & Masella (2016) assess the impact of education in the GDR on the performance after the reunification, namely the probability to complete tertiary education and to have a good labor status in terms of wage, hours worked, and employment. Their empirical analysis is able to identify differences between cohorts that completed all their education in the GDR (1971-73) and those who were still going to school when Germany reunified (1974-77) in comparison to their Western counterparts of the same birth cohorts. The more time spent in GDR's education system, the lower the chances to complete a degree and to have success on the labor market. To summarize, the pool of literature dealing with

the GDR experience is rather small but provides interesting insights about the stickiness thereof.

**Figure 4: Visualization of relevant literature**




*Note: Own representation of the literature review. Numbers in brackets relate to the Chapter in this paper that outlines the respective part of literature.*

After introducing the broad topics, the larger part of the literature review is dedicated to cross sectional perspectives and analyses. Figure 4 visualizes the following structure of literature review as well as this paper's position [x] in the existing literature. Next, the most extensive cross-sectional research – portfolio choice and gender – is introduced. Since a comprehensive overview thereof is beyond this paper's capacity, the review focuses on the central arguments with respect to my own research, namely risk preferences and social norms.

## 3.1 Portfolio Choice and Gender

Similar to the research on gender in other fields of economics, the role of gender in portfolio choices has long been neglected. Most empirical analyses of portfolio choices include gender as an additional control variable, but do not elaborate on the results. Gender is commonly treated as a proxy for other traits like risk preferences. Literature often suggests that women are inherently more risk-averse than men which then drives the differences in portfolio choices between men and women (e.g. Jianakoplos & Bernasek 1998; Dohmen et al. 20011). Empirical evidence, however, is more ambiguous than that, as Badunenko et al. (2009) point out. In their research about five European countries including Germany, Badunenko et al. (2009) assess the correlation

of holding risky assets, i.e. stocks, in their portfolio with gender and with self-proclaimed risk preference. After controlling for socioeconomic and demographic variables, women are less likely to hold stocks than men. Interestingly, these results are replicated if controls for risk preferences are included – implying that even at the same risk attitude, women are still less likely to hold stocks. Therefore, the preposition that risk preference is the only driver in portfolio differences between men and women cannot be verified. Badunenko et al. (2009) do not further debate this finding.

Also, the analysis by Badunenko et al. (2009) does not address the potential role of social norms. Barasinska & Schäfer (2018), for example, use the gender equality index of the World Economic Forum to evaluate a potential connection between social gender norms and stock market participation for Austria, Netherlands, Italy, and Spain. Indeed, in the least gender equal country, Italy, women are less likely to participate in the stock market than their counterparts in more egalitarian countries. In a similar vein, research about marriage – the key gender institution – on portfolio choice has been done but to ambiguous results. Bertocchi et al. (2011), for example, perceive marriage as a safe asset that allows married women to hold more risky assets than single peers. Using an Italian household survey with nine data waves from 1989 till 2006, the authors can verify that single women are less likely to own risky asset types compared to married women and men. In addition, their research indicates the importance of changing social norms as the gap between married and unmarried reduces over time – as did the importance of marriage in Italy. Nevertheless, marriage could also be considered a rather 'bad apple' than a safe asset by reinforcing the economic dependency of women. Nutz (2022) examines the joint and sole wealth in West German couples with wealth data by the GSOEP for 2002 to 2017. The results replicate the idea of the male breadwinner norms as married females partly or completely drop out of the labor force which significantly reduces their solely owned wealth. With less labor market experience, the dependence on jointly held marital assets steeply increases.

Remembering the differences between East and West German social norms and gender institutions as outlined in Chapter 2.1.2, the relevance for portfolio choice in Germany is prevalent. In the subsequent chapter, the literature about the lasting influence of GDR on portfolio choice in Germany is provided.

## 3.2 Portfolio Choice and the East German experience

While a broad body of empirical literature about determinants of portfolio choice using a multitude of data sets that cover a number of countries exists, virtually no profound investigations into the influence of the East German experience on the portfolio choice has been added. The majority of published analyses of portfolio choice in Germany does not address East and West Germany with two major and recent exceptions.

Firstly, Fuchs-Schündeln & Haliassos (2021) use GSOEP data from 1991 to 2009 to investigate the ownership of asset types that East German and West German household heads hold. In accordance with the portfolio inertia hypothesis, East Germans held on to previously available asset types (deposits and life insurance). Furthermore, the about 150,000 observations demonstrate a rapid expansion of consumer credit and securities (stocks and bonds) in East German households – the former even to higher levels than their West German counterparts. A similar distribution of asset types as in West Germany can be ascertained, though the data does include information about the value of each asset. Ultimately, the authors remain superficial insofar that they only focus on sudden access to financial markets – neglecting the specific experiences of East Germans.

Secondly, Laudenbach et al. (2020) examine potential effects of 'emotional-tagging' on the stock market participation in Germany's old and new federal states. The main argument by the authors is that a deviations of stock market participation after controlling for an extensive set of control variables – including income, wealth, knowledge, expectations about the stock market, risk tolerance, familiarity, trust, spatial inequalities – must be attributable to long-lasting effects of communism. For their empirical assessment, the authors have access to data of an unnamed German bank in the time span of 2004 and 2012. In total, the data set consists of approximately 193,000 clients. The initial analysis by Laudenbach et al. (2020) ascertains a lower investment volume of clients in the new federal states as well as a difference in the share of riskier assets which results in 'East Germans' owning less profitable and diversified stock portfolios. The results, however, are already complicated because place of residence at the time of questioning is used as a proxy for living in the GDR. This has to be criticized. Also, the data is questionable because it is sourced from online banking. While today online banking is certainly the norm, in the 2000s the

access to online banking might be correlated with more endowed and urban clients that have access to good internet connections and corresponding electronic devices.

Next, Laudenbach et al. (2020) present proxies for 'emotional-tagging' which might drive these differences in stock market participation. Negative emotions towards the GDR are represented through high dust levels, religiousness of the individual, and access to Western television. Ultimately, these should be positively correlated to stock market participation because they characterize a behavior in defiance of norms and teachings propagated in the GDR. Positive emotions, on the other hand, should be negatively correlated with stock market participation as positive emotions are expected to relate to a certain fondness of the GDR's positions. Laudenbach et al. (2020) proxy positive emotions through living in cities that received special attention by the GDR, relatively high number of non-official employees (Stasi) in the area, and living nearby an Olympic champion. Some of the presented proxies are more ambiguous than the authors present them like e.g. living near an Olympic champion. The empirical analysis can only partly support their hypothesis. While the proxies for negative emotions are positively correlated with stock market participation, only one proxy for positive proxy (Stasi) is yielding the expected, negative coefficient.

In reference to the former chapter, both outlined papers treat gender as a side note. Even though being-female is negatively correlated with stock market participation in Lauderbach et al. (2020), there is no indication of how the proposed channel of emotional-tagging might affect women differently. In the next chapter, the empirical assessment of East German experience and gender is presented.

## 3.3 East German experience and Gender

The cross-topical economic research on the role of gender and the lasting effect of the GDR is quite slim. Most papers are focused on descriptive analyses from a historical, sociological, or political perspective. Economic research has not yet fundamentally participated in this discussion.

Within the literature about the lasting effects of GDR in general – as outlined in the beginning of Chapter 3 – gender is usually used as a control variable and results are not explained. For instance, Davoli & Hou (2018) include a dummy variable for gender in their investigation of financial literacy by former East and West German households. Their regressions demonstrate that both groups of women have less

financial literacy than their respective male counterparts, but the gender gap is larger in East German households. No further explanation for these interesting results is provided by the authors. Similarly, Bodar & Fuchs-Schündeln (2023) do not only ascertain that East Germans in general are more supportive of a strong social welfare state, but East German women show the highest level of support. No discussion of these findings relating to gender is done.

Fuchs-Schündeln & Masella (2016), on the other hand, dedicate more time to observed differences between males and females in their analysis of how East German education affects higher education and labor market success after reunification. They subset their regression for males and females respectively in order to evaluate gender-specific trends. The work by Fuchs-Schündeln & Masella (2016) indicates that an additional year of socialist education negatively affects the chance of completing a tertiary degree for East German women and negatively affects the labor market success of East German men. The authors claim that all German women leave the labor market more regularly (e.g. childbirth) and, therefore, are less attached and stringent in their careers – devaluing the importance of education on their labor outcome.

Rarely, more in-depth analyses are done. One of these exceptions is by Bauernschuster & Rainer (2012) that investigate attitudes towards mothers and work, and women's role in the family by former East Germans and West Germans using data by 'Allgemeine Bevökerungsumfrage der Sozialwissenschaft' with six data waves from 1991 till 2008. Their binary probit model ascertains that East Germans have more egalitarian opinions. Also, over the research period, the gap between East and West Germans is not decreasing but partly even increasing. In a similar vein, Lippmann et al. (2020) evaluate the existence of traditional breadwinner norms in German couples. Using GSOEP data from 1991 to 2012, their analysis demonstrates that these norms are less prevalent in couples consisting of two former-GDR citizens than couples consisting of two West Germans. Subsequently, the authors argue that this is caused by the GDR's more gender equal institutions.

## 3.4 Missing Links

As the literature review has demonstrated, the specific evidence about the roles of gender institutions and the East German experience on the portfolio choice in Germany is quite limited. Only a handful of papers attempt to combine these topics – even

though they are closely related. In my opinion, two key arguments have to be added to the literature.

Firstly, as already briefly criticized in the beginning of Chapter 3, no sufficient distinction of pre- and post-reunification experiences is made in the literature. Most research about lasting effects of the GDR only discusses the socialist system to explain the observed gaps after reunification, neglecting the potential influence of experiences made during or *after* the reunification. For instance, Alesina & Fuchs-Schündeln (2007) connect the preference for welfare state policies by former East Germans to the socialist upbringing. Instead, the preference could also be traced back to experiences of the reunification shock. Literature supports the argument that the experience of economic shocks can have lasting effects on decision-making (i.e. portfolio choice) by economic agents. Malmendier & Nagel (2011), for instance, look into the stock market participation with American survey data spanning from 1964 to 2004. They establish a significant relationship between the age cohort and the participation level. So, age cohorts that experienced the Great Depression remain to abstain in total or invest less in stocks. The generation that early on experienced the stock market expansion in the early 1990s are overperforming other age cohorts in later years. If the experience of economic shocks indeed influences the risk preferences in the long term, this is crucial to understand potential differences between former East and West Germans. For East Germans, reunification presented the first real experience of market mechanisms and stock markets – potentially affecting the risk preferences in the long-term. Hence, my first hypothesis is that people with East German experience are more risk averse than West Germans.

Furthermore, acknowledging experiences calls for an incorporation of a gender perspective. Women have accumulated a special set of experiences not only before, but also after reunification; thereby, causing a deviation between male and female risk preferences and portfolio choice. Indeed, previous research has ascertained gendered differences in economic crises. While young uneducated men are usually the first victims of economic crisis (e.g. Hoynes et al. 2012), most governmental programs are targeting male-dominant sectors such as construction (Bonk & Simon 2022). This policy approach is also visible in Germany in the 1990s, when rising governmental spending led to an expanding construction sector in a period of economic downturn (Deutsche Bundesbank 1998). Furthermore, governments tend to support working

models that employ more men than women, e.g. favoring short time work instead of part-time work (Leschke & Jepsen 2011). In addition, the traditional male breadwinner norm has created gender asymmetries in the availability of social security benefits in Germany (Leschke 2007; Leschke & Jepsen 2011). Unemployment benefits, for example, are subject to the labor biography and dependent on working hours, income, and contribution periods - usually negatively affecting women. Married women are particularly disadvantaged because their partner's income is harming their own unemployment claims, thereby replicating financial dependencies in German marriages. Considering this evidence, the reunification shock was amplified for East German women that had to cope with job losses, fiscal policies aimed at male-dominated sectors, and conservative social norms that enforce marital codependence and cause issues with social security payments. Hence, my second hypothesis is that women have a higher risk aversity than men.

Whether East German women have a specific further difference in risk attitudes is less obvious. On the one hand, East German women once experienced a more egalitarian gender norm which might decrease the gap between them and their male counterparts and induce them to less risk averse attitudes compared to West German women. On the other hand, the economic and systemic shock was more pronounced for East German women relative to West German women which again could equalize the females' risk attitudes. My third hypothesis is that no gendered effect of the East German experience exists.

Secondly, the traditional explanations for portfolio choice have to be expanded by an East German perspective. The vast majority of literature on portfolio choice in Germany solely considers the socioeconomic and demographic situation of an individual.[12] These variables might already incorporate relevant information about differing portfolio choices by former East Germans compared to West Germans. The socioeconomic status – usually captured by income and labor status – is a main factor in income security and, therefore, ability to maintain consumption. Existing literature supports that the size of the financial portfolio and share of risky assets relate inversely to income risk (e.g. König & Longmuir 2021). Moreover, a higher socioeconomic

[12] Due to space constraints, I will refrain from detailed elaborations on socioeconomic and demographic variables. Additionally, these variables are usually controlled for, like in this paper. In Chapter 4, I elaborate on the expected influence by the control variables used in this empirical analysis.

status provides a financial cushion in times of economic downturns - 'allowing' those people a more optimistic outlook than others, which affects their portfolio choice (e.g. Kuhnen & Miu 2015; Das et al. 2017).

Besides these general influences, the socioeconomic status and demographic circumstances might relate to the East German experiences due to the systemic differences between GDR and FRG. First and foremost, the less pronounced social and economic classes in East Germany might have altered the relation between labor status and portfolio choice. This also lowered the marginal benefit of higher education in East Germany which demolishes the usual assumption that intelligence correlates with obtaining a degree. Thus, education influences portfolio choice by East and West Germans differently. Moreover, the relationship status might have differing effects on portfolio choice for East and West Germans due to differences in social norms as elaborated in Chapter 2.1.2. Hence, my fourth and final hypothesis is that socioeconomic status and demographic variables have different effects in the portfolio choice by East and West Germans.

# 4. Empirical Analysis

The insights of the literature review will be related to my empirical methodology in the subsequent Chapter. Ultimately, the empirical analysis is meant to test the proposed hypothesis and, thereby, answer the research question.

## 4.1 Methodology

The basis of my empirical analysis is similar to a Difference-in-Difference (DiD) strategy. The DiD ensures the comparability of the two groups of interest - East Germans vs. West Germans and Females vs. Males. The basic set-up of the multiple linear regression model that corresponds to my research is as follows:

$$Y = \beta_0 + \beta_1 East\ German\ experience + \beta_2 Female + \beta_3 East\ German\ experience * Female + \beta_j Control\ variables$$

The adequacy of the method is showcased by utilization in multiple analyses that study the lasting impact of the GDR. Most compare East and West German behavior in contrast to convergence trends over time (see Alesina & Fuchs-Schündeln 2007;

Bondar & Fuchs-Schündeln 2023). This represents the common usage of the DiD strategy to evaluate policy or treatment effects. Nonetheless, the basic set-up also allows us to distinguish between trends in subgroups. So, Lippmann et al. (2020) distinguish between four types of couples: Firstly, former East Germans vs former West Germans and, secondly, whether the woman earns more or not. My research endeavor justifies a similar definition of my two main independent variables: *East German experience* and *Female*. Therefore, the benchmark case is a West German man.

The regression equation shown above gives ordinary least squares estimators which can be interpreted as comparison of: West German men ($\beta_0$) and East German men ($\beta_0 + \beta_1$); West German men ($\beta_0$) and women ($\beta_0 + \beta_2$); East German men ($\beta_0 + \beta_1$) and women ($\beta_0 + \beta_1 + \beta_2 + \beta_3$); and West German women ($\beta_0 + \beta_2$) and East German women ($\beta_0 + \beta_1 + \beta_2 + \beta_3$). Hence, gaps between East and West Germans as well as the respective males and females can be assessed.

In accordance with my hypotheses in Chapter 3, I expect $\beta_1$ and $\beta_2$ to have positive coefficients for safe assets, therefore, indicating higher risk aversity through *East German experience* and being *Female*. Following my third hypothesis, I anticipate that East women do not have a structurally different risk aversity, hence that $\beta_3$ is zero. If $\beta_3$ is larger than zero for safe assets, East German women hold more safe assets than *East German experience* and being *Female* would predict. This stronger risk aversity might relate to the exposure and gendered experience of economic shocks (Malmendier 2021). If $\beta_3$ is smaller than 0 for safer assets, East German women are less risk averse potentially pointing to the egalitarian gender norms and institutions that they experienced (Laudenbach et al. 2020).

Moreover, I will divide the total sample into East German and West German subsamples in order to observe divergent impacts of socioeconomic and demographic variables according to my fourth hypothesis. Thereby, a comparison of each control variable's effect in the subsamples can be done (compare e.g. Davoli & Hou 2018). The control variables are outlined in Chapter 4.4, including potential differences between the East and West subsample.

## 4.2 Data

The data is part of the GSOEP. Running since 1984 on yearly basis, the GSOEP's main advantage is the extensive set of variables that can be used in empirical analysis – often not only on a household but also individual level. To address reunification, the GSOEP had altered its data set in multiple ways to incorporate the change. First of all, they extended their panel by persons and households that were living in the GDR in 1989. Furthermore, they included new attributes in data sets to capture the realities of East German biographies. For variables on educational background, for instance, new possible answers were added to address the GDR's education systems.

In 2002, the GSOEP introduced a questionnaire that covers wealth information of individuals. It is available in five-year-waves – 2002, 2007, 2012, 2017. Unfortunately, the latest wave covering 2022 is not yet available. The GSOEP's wealth data closed a crucial gap in the data landscape that lacked accessible information on wealth in Germany – particularly on a personal level (Frick et al. 2007). This data set includes the following assets and liabilities: Real estate (primary residence as well as other property), mortgage debt, financial assets, net business assets, tangible assets, building loans, and private insurance, and consumer credits.

Obviously, collecting data about wealth on an individual level, in comparison to household level, incorporates its own pitfalls. Therefore, the GSOEP has introduced guardrails that deal with potential issues like persons in the same households that report conflicting answers or partly fail to report (Grabka &Westermeier 2015).

## 4.3 Dependent Variables

While this paper's research aim is clear, the definition of an appropriate dependent variable is more complex. Some literature uses binary indicators stating whether an individual or a household owns a certain type of asset (e.g. Laudenbach et al. 2020). Then, control variables state how the probability to hold this asset changes with the given variable. This approach, however, does not account for the volume of an asset in the portfolio. Using wealth data by the GSOEP, the available information limits the applicability of a binary dependent variable. Especially, the GSOEP's definition of financial assets makes this empirical methodology unsuitable because it aggregates different types of assets (savings balance, bonds, shares, or investments) with varying riskiness. Hence, it is highly probable that everyone holds one unit in financial assets

which would give a binary variable low explanatory value and makes a different approach necessary.

After acknowledging this issue, it might be possible to assess the riskiness of financial assets comparatively with the other forms of assets – considering that the other available assets in the GSOEP data, real estate, and private pension and life insurance, are rather safe asset classes. Another study using the GSOEP's wealth data, König & Longmuir (2021), treats financial assets as a riskier asset. König & Longmuir (2021, p. 11) further argue that the wording of the questionnaire benefits this classification:

> "[I]t appears that the SOEP question on financial assets is formulated in a way to reduce the likelihood that individuals report wealth in sight accounts other non-risky investments. The questionnaire specifically asks for "Geldanlagen", i.e. financial investments, which suggests that these types of assets are at least to somewhat risky."

As a consequence, König & Longmuir (2021) use financial assets divided by gross wealth (primary property, other property, financial assets, building loans and private insurance, net business assets, tangible assets) as their dependent variable and judge it as a risky distribution of wealth. In recognition of the available data and my research question – and following the elaborations of König & Longmuir (2021) – I define my dependent variable as:

$$Share\ of\ Asset = \frac{Asset}{Gross\ Wealth} * 100$$

Three asset types will be evaluated: primary property, financial assets, and building loans and private insurance. The GSOEP also includes another type of real asset, other property, which includes a variety of property types (vacation homes, undeveloped land, multiple or single-family houses). But due to space constraints, I will abstain from analyzing this diverse asset.

Since primary property is comparatively safe type of asset, it should be correlated with more risk averse preferences. On the other hand, I expect that primary property is not equally throughout Germany and that West Germans hold more of their wealth therein. In West Germany, generational wealth including inheritable properties was accumulated for many decades, while East Germans were only enabled to so after the reunification. As a real asset, primary property is not easily liquefiable which complicates its role as a safe asset. Nevertheless, the assessment of determinants of primary property is highly relevant since it constitutes a principal type of wealth.

Moreover, the share of primary property can possibly illuminate differences in the role of marriage between East and West Germans because the ability to attain credit might favor dual income households.

The second dependent variable merges two types of assets, building loans and private insurances, and should be demanded by more risk averse portfolio holders as they are relatively safe asset types. The German government has courted building loans by offering state subsidies (BMWSB 2024). As former East Germans prefer governmental involvement in social security (Alesina & Fuchs-Schündeln 2007), they might turn towards stately advertised assets. Additionally, East Germans might favor private insurances because these were also available in the GDR (Fuchs-Schündeln & Haliassos 2021). The aggregation of these assets is caused by the GSOEP that had combined them in the initial 2002 questionnaire. Hence, a differentiation between buildings loans and private insurances was not made in the first wave 2002, but only for the following waves. To increase comparability with the other dependent variables, I will use the combined share of the building loans and private insurance.

Lastly, according to the elaborations above, the share of financial assets is expected to be larger for riskier individuals. Since the dependent variable reflects the asset's share in the gross wealth, the share of financial assets might have a convex distribution in relation to gross wealth. The lowest wealth classes might lack the financial stability to buy primary property or commit to building loans and private insurance – relying solely on financial assets. Meanwhile, primary property, and building loans and private insurances will most likely be most important in the gross wealth of middle-class individuals. The wealthiest individuals might again opt for more financial assets because primary property is a relatively smaller share of wealth and other options like mutual funds replace building loans and private insurances in the portfolio.

## 4.4 Independent Variables

First, the variable *East German experience* is capturing whether an individual does incorporate the specific set of experiences of the GDR and the reunification period. The GSOEP surveys where the respondent lived in 1989, offering three possible answers: East Germany, West Germany, abroad. Excluding abroad, I define a binary variable that is active for those who stated East Germany. Of course, for those born in 1989 or only slightly younger cohorts, the extent of memories of the GDR, and the

reunification will be limited. For these, however, it is certain that their parents had lived in the GDR - something that cannot be accounted for in later age cohorts. In accordance with my hypotheses and the elaborations in Chapter 4.1, I expect a negative effect of *East German experience* on the share of riskier assets, i.e. financial assets, and a positive effect on the safer assets, i.e. real estate, and building loans and life insurances.

The second binary variable is *Female* indicating whether the individual is female or male. As already discussed in Chapter 4.1, I expect that *Female* is negatively related to the share of riskier assets and positively to safer assets; while the interaction term (*Female*East*) is expected to be zero.

Further, I add a number of control variables that are in line with research on portfolio choice. First, I control for the individual's gross labor income, *log(income)*. The logarithm addresses the issue of scattered values in the data set; a method which is in accordance with other studies (e.g. Fuchs-Schündeln & Haliassos 2021; Barasinska et al. 2012). Higher income usually relates to a better socioeconomic standing and a more secure labor position, these individuals are probably enabled to commit to long-term payments into building loans and private insurances, and have a greater availability to attain credit to buy primary property. While safe assets could be acquired, higher socioeconomic status is correlated with higher risk preferences as the literature review indicated. Overall, I expect a positive effect of increasing income on the share of financial assets - the relatively risky asset type - in the portfolio.

Next, the individual's age will be controlled for with a linear variable *Age* as well as a quadratic $Age^2$ - in line with the empirical practice. Youth is often correlated with lower income and income security which reduces share of primary property and building loans and private insurance. Also, younger people are often assumed to be riskier as they have more time in the labor market left. Therefore, higher age should be negatively associated with the share of financial assets. In this sample, age has a further implication as it correlates with time spent in the GDR. Hence, older working East Germans might have particularly struggled to adapt in the new system, thereby increasing risk aversity. In contrast, younger cohorts adapted easily into the West German labor market and society because they knew them early on. This further decreases their risk aversity comparatively to older East Germans and increases their share of financial assets.

The first vector *E* accounts for the individual's highest level of education by a set of binary variables. For each individual, only one dummy variable is active. *Primary or Lower* is the lowest level of education and is defined as leaving school before the 10th grade is completed. The next higher level, *Lower Secondary*, is equivalent to completing the 10th grade at either a West German and modern school types[13] or the GDR school type.[14] Then, *Higher Secondary* is equal to obtaining qualification for studying either in general ('Abitur') or in specific areas ('Fachabitur') which is usually attained after 12th or 13th grade. I include *Vocational Degree* which is usually not featured in international studies - but in some research about Germany (e.g. Fuchs-Schündeln & Haliassos 2021). As a German peculiarity, vocational training is usually completed after secondary education and qualifies for specific professions. Lastly, if any type of college or university degree has been completed, the dummy variable *Tertiary* is active. In line with existing literature, I expect that higher education is related to higher shares in riskier assets because it is a crucial indicator for socioeconomic status. Since I use *Higher Secondary* as the benchmark, *Tertiary* should have a positive, while *Primary or Lower* and *Lower Secondary* a negative coefficient. The holders of *Vocational Degrees* are often not regarded as high as academics, but the completion offers a sound qualification and good position on the labor market. Hence, I expect a positive effect on the share of financial assets. Since the East German labor force was built on practical professions and, therefore, vocational degrees, I anticipate substantial differences between the regression on East and West subsamples.

Besides education, the labor position is a major determinant of the socioeconomic status which is accounted for in vector *L*. The GSOEP offers a substantial amount of information about the employment status and occupational position of individuals. For better comparability and unequivocal classification, I partly aggregate and sort the information into six categories and dummy variables. *Self-employed* incorporates self-employment in a wide array of fields of business and size of business. Due to the reliance on private efforts for old age income in most cases, I expect a particular influence on the share of private insurance in the gross wealth. Nevertheless, *Self-employed* offers many ambiguities due to missing indication of business success and, thereby, long-term income security and ability to pay monthly subsidies to the

[13] Gesamtschule, Hauptschule, Realschule, Sekundarschule, Gymnasium
[14] Polytechnische Oberschule

insurance. Next, I sort the employees into two further groups, those who work full-time, *Full-time employed*, and those who only work part-time, *Part-time employed*. More working hours are correlated with more income, and less precarious employment positions like part-time employees that are less secure in their positions than their full-time counterparts. Hence, *Part-time employed* should have a negative effect on the choice of risky assets in the portfolio compared to the benchmark case *Full-time employed*. The group of retired individuals, *Pensioner*, is an ambiguous one due to the sample's restriction of people aged 18 to 65. If someone retires before the age of 65 in Germany, they are either affluent enough to privately finance their retirement, or are physically or mentally not capable of working anymore and receive an 'early' pension. The former would indicate a person with a high-income labor biography that most likely would have allowed the financing of real estate. On the other hand, as their life horizon is more limited than for other labor classification, pensioners may also have a higher interest in liquidized assets to fulfill the consumption smoothing motive of portfolio theory – indicating a high share of financial assets. Next, I aggregate those who are currently in educational or vocational training but not employed as *In Training or Vocation.* I define those as *Not employed* as those unemployed that are neither marked as *Pensioner* nor *In Training or Vocation*. While I cannot verify that all individuals captured in this definition are available to the labor market, I confidently assume that most of those must still be in the labor force since they are within working age. Both, *In Training or Vocation* and *Not employed* receive minimal monthly income, therefore, their risk aversity should be comparatively high.

The vector *R* incorporates dummy variables that describe the relationship status of the individual. The benchmark case, *Married*, are individuals that are either in a marriage or a legal partnership. As the literature review revealed, marriage is an important gender institution that affects the genders differently and can be advantageous or disadvantageous to women. Since the dominance of traditional social norms is different in former East and West Germany, being married should yield differently strong effects in the subsamples. In a similar vein, singles are not subject to the gender norms of marriage, or the financial or legal dependencies that married individuals might face. On the other hand, singles cannot count on a partner's respective income to smooth expenditures if they lose their own – increasing their background risks. Hence, even though *Single* is slightly ambiguous, in total I expect that singles will invest less in risky assets than *Married*. Moreover, credit institutions that finance real

estate purchases might prefer dual income; therefore, *Single* should negatively correlate with the share of real estate. The two remaining dummies, *Divorced or Separated* and *Widowed*, can be somewhat compared to the situation of singles. Also, both groups were married once and might have benefited from dual incomes in the past. For *Divorced and Separated* most marital wealth had to be parted – likely decreasing their wealth. This loss in wealth and socioeconomic status might cause a higher risk aversity which decreases the share of risky assets. Moreover, divorces often force a liquidation of real estate, thereby, reducing the share of real estate in gross wealth. *Widowed*, however, do not encounter these problems as assets are passed along.

Additionally, I control for the number of children below 16 years that live in the individual's household and again formulate a vector, *C*. Three dummy variables in total: *No Child*, *One Child*, and *Two or More*. As children enforce high expenditures and most likely increase risk aversion, I expect that with increasing numbers of children the share of risky assets decreases.

Besides these socioeconomic and demographic variables, I include two control variables that describe aspects of the individual's economic situation. Namely, a binary indicator whether *Business assets* are owned and *log(consumer credit)* are incorporated which is in line with existing studies on wealth determinants in Germany (e.g. Schneebaum et al 2018). The GSOEP defines business assets as the net value of an owned or partly owned commercial enterprise. Hence, I anticipate this variable to be connected to the socioeconomic status of the individual and I conclude a positive effect on the share of financial assets and a negative one on the share of safer asset types. Second, *log(consumer credits)* is defined as debt other than mortgages or house-building loans. Individuals with high levels of consumer credits will most likely distribute larger shares of their gross wealth into safer asset types.

Lastly, I account for potential trends over time *t*. In subsequent research, the time series data could also be utilized in other ways, but since the historic change in the share of assets is not the focus of my study, using the time trend *t* is a sufficient approach.

# 5. Results and Discussion

## 5.1 Observations

Initially, I had to amend the available wealth data for all published years – 2002, 2007, 2012, and 2017 – that accounted to 106,170 observations in total. After clearing for those individuals that have all necessary personal information available, who were between 18 and 65 years of age at the time of the survey, and who lived in either East Germany or West Germany in 1989; the number of observations is reduced to 65,927. In the set-up of the dummy variables for the vectors, an additional 913 observations have to be excluded due to ambiguous information that prevents a classification into the proposed categories for education level, relationship status, and labor status.

**Table 1: Summary of the Regression Sample**

| | | 2002 | 2007 | 2012 | 2017 | Total |
|---|---|---|---|---|---|---|
| Total | | 13,535 | 11,663 | 13,269 | 11,296 | 49,763 |
| | Women | 6,809 | 6,007 | 7,243 | 6,110 | 26,169 |
| | Men | 6,726 | 5,656 | 6,026 | 5,186 | 23,594 |
| East | | 3,683 | 3,183 | 3,518 | 3,092 | 13,476 |
| | Women | 1,904 | 1,703 | 1,970 | 1,705 | 7,282 |
| | Men | 1,779 | 1,480 | 1,548 | 1,387 | 6,194 |
| West | | 9,852 | 8,480 | 9,751 | 8,204 | 36,287 |
| | Women | 4,905 | 4,304 | 5,273 | 4,405 | 18,887 |
| | Men | 4,947 | 4,176 | 4,478 | 3,799 | 17,400 |

*Notes*: GSOEP (2023), own representation.

Then, the remaining 65,014 are further subtracted by the individuals that have negative net wealth – liabilities exceed assets – which account to 15,251 individuals. Limiting the sample to positive net wealth smoothes the empirical analysis as potential debt-financed consumption and debt-financed ownership of assets are minimized. Nonetheless, I acknowledge that this restriction causes other issues and calls for additional attention to the limitations of the analysis presented here – as will be discussed in Chapter 6. In the end, the regression sample consists of 49,763 observations in total. As summarized in Table 1, 52.6 % of the sample are women, 27.1 % were in East Germany in 1989.

## 5.2 Real Asset: Primary Property

The regression results for the share of primary property in the individual's gross wealth are provided in Table 2. In the total regression sample, the coefficient for *Female* is positive suggesting that being female increases the share of primary property by about 1.5 %, while *East German experience* and the interaction term reduce the share of primary property by -2.1 % and -3.2 % respectively. The latter two coefficients are statistically significant to the 1 % level, and *Female* to the 5 % level, thereby signaling a strong correlation.

Turning to the interpretation of the coefficients according to the methodology, West German females apparently own the highest share of primary property in their gross wealth on average. They hold about 1.5 % more than West German males – the empirical benchmark. East German males, on the other hand, hold about 2.1 % less than West German males, while the interaction term implies East German women hold additional 3.2 % less in primary property than them – so the difference between East German women and West German men accounts to -3.8 % and between East German women and West German women to -5.3 %.

**Table 2: Share of Primary Property, Key Variables**

| | (1)<br>Total | (2)<br>East | (3)<br>West |
|---|---|---|---|
| *Female* | 1.506*<br>(0.630) | -0.707<br>(0.830) | 0.858<br>(0.695) |
| *East German experience* | -2.137**<br>(0.771) | | |
| *Female*East* | -3.190**<br>(1.051) | | |
| *Further Controls* | Yes | Yes | Yes |
| Multiple $R^2$ | 0.09938 | 0.1259 | 0.09149 |
| Observation | 49,763 | 13,476 | 36,287 |

*Notes*: Standard errors in parentheses. Data waves: 2002, 2007, 2012, 2017. (1) Benchmark is West German male. (2) East only includes former East Germans. (2) West only West Germans. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023).

Since West German women indeed hold the most in the safest property, this partly supports the notion of a gender-specific risk aversity of women – but the gender gap in East and West is estimated to be about the same magnitude but diametrical in the total sample. West German females hold approximately 1.3 % more than West German

males of their portfolio in primary property, while East German females hold 1.8 % less than their male counterparts.

The negative coefficient of *East German experience* – considering that primary property is a safe form to hold wealth – somewhat contradicts the hypothesis that specific experience of East Germans has increased their risk aversity and, therefore, preference for safer portfolio options. However, as debated in Chapter 4.3, primary property is a special case within assets due to a divide on generational wealth and the threshold to buy primary real estate through the ability to attain credit by a bank. The latter one might favor dual incomes in marriage for loan application. Considering the ambiguous effect of gender – the positive coefficient of *Female* in the total, and the diametrical effect of West and East subsamples – and remembering the argument about differentiating social norms and institutions, i.e. marriage, in the GDR and FRG, this is particularly interesting.

**Table 3: Share of Primary Property, Role of Marriage**

| | (1)<br>Total | (2)<br>East | (3)<br>West |
|---|---|---|---|
| *Female* | -4.183***<br>(0.913) | -5.181***<br>(1.300) | -5.102***<br>(1.071) |
| *East German experience* | -2.323**<br>(0.771) | | |
| *Female*East* | -2.897**<br>(1.051) | | |
| *Married* | 15.964***<br>(0.947) | 17.494***<br>(1.513) | 15.615***<br>(1.179) |
| *Female*Married* | 8.924***<br>(1.038) | 7.231***<br>(1.618) | 9.537***<br>(1.307) |
| *Further Controls* | Yes | Yes | Yes |
| Multiple $R^2$ | 0.1007 | 0.1272 | 0.09227 |
| Observation | 49,763 | 13,476 | 36,287 |

*Notes*: Standard errors in parentheses. Data waves: 2002, 2007, 2012, 2017. (1) Benchmark is West German single men. (2) East only includes former East Germans. (2) West only West Germans. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023).

In order to observe potentially different effects of marriage on the share of primary property in the gross wealth, I change the set-up of the regression in two ways. First, I change the benchmark for relationship status from *Married* to *Single*. Second, I include an additional interaction term between the dummy variables *Female* and *Married* to observe gendered specific effects of marriage. In Table 3, the slightly adapted regressions are summarized and indeed support the attention to marriage since *Married*

is positive and highly significant in all samples. Now, *Female* is negative and statistically significant at the 0.1 % level in all samples. *East German experience* and the interaction term between *Female* and *East German experience*, on the other hand, are about the same as in the former regression set-up.

Moreover, evidence for differentiating gender norms might be found in Table 3. The interaction term (*Female*Married*) is positive and significant in all samples indicating that marriage is particularly important for women's share of primary property. This gendered effect of marriage is smaller in the East subsample compared to West – the gender institution is less decisive for East German women. Nevertheless, marriage is a key determinant for the ownership of primary property.

Revisiting the original regression set-up, Table 4 demonstrates the control variables. As already discussed, relationship status and the family plans are most crucial. *Singles* (-20.6 %) and *Divorced or Separated* (-19.3 %) hold less of their gross wealth in primary property than *Married*. While *Widowed* is positive in the total sample, the effect is statistically insignificant. Interestingly, the effect of *Widowed* is opposite in the East and West sample. Among East Germans, it is highly negative and in West Germany positive with both coefficients being statistically significant. This could be traced to the less pronounced role of home ownership in the GDR. The link between share of primary property and family plans is visible as *No Child* is negative and *Two or More* positive in all samples. As marriage and family planning are highly connected, and the need for primary property increases with household size, this is not surprising.

The level of education and the labor status, on the other hand, are less decisive in the determination of the share of primary property. In the total sample, only *Primary or Lower* (-4.3 %) and *Vocational Degree* (1.4 %) are significant. But differences in the subsamples are apparent, since the former coefficient is driven by the West subsample, while the latter by the East sample. In terms of labor status, *Self-Employed* is the only variable that significant in the total sample (-2.1 %); in the subsample it is only significant in East (-3.0 %). The related *Business Asset*, on the other hand, is negative and highly significant in all samples. Other labor classifications are more heterogeneous. *Part-time employed* is significant in the West (1.5 %) and East (-2.8 %) subsample and with opposing effects. Also, *In Training or Vocation* is significant in East subsample but unexpectedly positive (-7.6 %).

**Table 4: Share of Primary Property, Control Variables**

| | (1)<br>Total | (2)<br>East | (3)<br>West |
|---|---|---|---|
| *log(income)* | -0.224 | -0.168 | –0.266 |
| | (0.247) | (0.429) | (0.298) |
| *Age* | 2.937*** | 3.842*** | 2.636*** |
| | (0.184) | (0.299) | (0.229) |
| *Age²* | -0.025*** | -0.037*** | -0.021*** |
| | (0.002) | (0.003) | (0.003) |
| ***Education*** | | | |
| *Primary or Lower* | -4.318* | 6.636 | -6.707** |
| | (2.036) | (4.413) | (2.326) |
| *Lower Secondary* | -0.755 | 0.454 | -1.296 |
| | (1.259) | (2.598) | (1.454) |
| *Vocational Degree* | 1.417’ | 2.785* | 1.027 |
| | (0.755) | (1.413) | (0.893) |
| *Tertiary* | -0.856 | 0.969 | -1.198 |
| | (0.818) | (1.519) | (0.971) |
| ***Labor Status*** | | | |
| *Self-employed* | -2.079’ | 1.399 | -2.956* |
| | (1.148) | (2.157) | (1.356) |
| *Part-time employed* | 0.330 | -2.844* | 1.540’ |
| | (0.738) | (1.197) | (0.915) |
| *In Training or Vocation* | 3.355 | 7.554* | 1.423 |
| | (2.270) | (3.384) | (2.924) |
| *Not employed* | -1.819 | -2.351 | -1.526 |
| | (2.066) | (3.479) | (2.530) |
| *Pensioner* | -1.636 | 0.261 | -1.880 |
| | (2.074) | (3.475) | (2.539) |
| ***Relationship Status*** | | | |
| *Single* | -20.611*** | -21.396*** | -20.480*** |
| | (0.778) | (1.237) | (0.973) |
| *Widowed* | 1.500 | -5.178* | 5.153* |
| | (1.639) | (2.414) | (2.110) |
| *Divorced or Separated* | -19.264*** | -19.887*** | -19.064*** |
| | (0.782) | (1.246) | (0.973) |
| ***Children*** | | | |
| *No Child* | -4.878*** | -3.641** | -5.083*** |
| | (0.691) | (1.112) | (0.859) |
| *Two or More* | 6.152*** | 6.310*** | 6.281*** |
| | (0.745) | (1.290) | (0.901) |
| *Business Assets* | -12.764*** | -14.384*** | -12.551*** |
| | (1.196) | (2.316) | (1.399) |
| *log(consumer debt)* | 0.624*** | 0.728*** | 0.571*** |
| | (0.074) | (0.118) | (0.092) |
| *t* | -0.041 | -0.019 | -0.042 |
| | (0.043) | (0.073) | (0.053) |
| *Intercept* | 53.39 | -8.696 | 60.974 |
| | (86.804) | (145.96) | (106.109) |
| Multiple $R^2$ | 0.09938 | 0.1259 | 0.09149 |
| Observation | 49,763 | 13,476 | 36,287 |

*Notes*: Standard errors in parentheses. (1) includes data waves: 2002, 2007, 2012, 2017. (2) East only includes former East Germans. (2) West only West Germans. Benchmark: Male, Higher Secondary, Full-time employed, Single, One Child, and for (1) West German. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level.

## 5.3 Building Loans and Private Insurance

The next asset class, building loans and private insurance, is also empirically analyzed according to Chapter 4.1. The results are presented in Table 5. In the total sample, *Female* is negatively correlated (-2.5 %), the *East German experience* has a positive coefficient (3.5 %) and the interaction term is comparatively large with approximately 4.6 %, and all are statistically significant at the 0.1 % level.

Hence, East Germans men hold 3.5 % and East German women even 5.6 % more than West German males, while West German females have even 2.5 % less in building loans and private insurance in their gross wealth than their male peers.

**Table 5: Share of Building Loans and Private Insurance, Key Variables**

| | (1)<br>Total | (2)<br>East | (3)<br>West |
|---|---|---|---|
| *Female* | -2.492***<br>(0.416) | 1.070<br>(0.693) | -1.632***<br>(0.423) |
| *East German experience* | 3.459***<br>(0.509) | | |
| *Female*East* | 4.559***<br>(0.694) | | |
| *Further Controls* | Yes | Yes | Yes |
| Multiple $R^2$ | 0.1133 | 0.1006 | 0.1114 |
| Observation | 49,763 | 13,476 | 36,287 |

*Notes*: Standard errors in parentheses. Data waves: 2002, 2007, 2012, 2017. (1) Benchmark is West German male. (2) East only includes former East Germans. (2) West only West Germans. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023).

The higher share of building loans and private insurances by East Germans is in line with the hypothesis that their experience caused lasting preferences for low-risk portfolios. The regression results for *Female*, on the other hand, apparently contradicts the hypothesis that women demand relatively safe assets. Also, the statistical significance of the interaction is defying the hypothesis that East German women do not structurally differ from the general East German and gender experience. It has to be remembered, however, that West German women hold a higher share in primary property, another safe asset, than East German women according to Table 2. Therefore, it might be that the risk preferences are similar, but the distribution of wealth into *types* of safe asset is differing.

## Table 6: Share of Building Loans and Private Insurance, Control Variables

| | (1) Total | (2) East | (3) West |
|---|---|---|---|
| *log(income)* | -0.490** | -0.897* | -0.374* |
| | (0.163) | (0.359) | (0.181) |
| *Age* | -0.877*** | -1.139*** | -0.820*** |
| | (0.122) | (0.249) | (0.139) |
| *Age²* | 0.003* | 0.008** | 0.002 |
| | (0.001) | (0.003) | (0.002) |
| ***Education*** | | | |
| *Primary or Lower* | -2.548' | -12.39*** | -0.378 |
| | (1.343) | (3.686) | (1.414) |
| *Lower Secondary* | 8.637*** | 4.460* | 9.701*** |
| | (0.831) | (2.170) | (0.884) |
| *Vocational Degree* | 3.652*** | 1.141 | 4.298*** |
| | (0.498) | (1.180) | (0.543) |
| *Tertiary* | -3.756*** | -5.989*** | -3.388*** |
| | (0.540) | (1.269) | (0.591) |
| ***Labor Status*** | | | |
| *Self-employed* | -2.366** | -1.215 | -2.544** |
| | (0.757) | (1.802) | (0.825) |
| *Part-time employed* | -2.399*** | -0.634 | -3.378*** |
| | (0.487) | (1.000) | (0.556) |
| *In Training or Vocation* | -0.459 | -0.424 | -0.720 |
| | (1.498) | (2.827) | (1.778) |
| *Not employed* | -7.244*** | -5.363' | -8.553*** |
| | (1.363) | (2.906) | (1.539) |
| *Pensioner* | -9.081*** | -13.27*** | -8.148*** |
| | (1.369) | (2.903) | (1.544) |
| ***Relationship Status*** | | | |
| *Single* | 9.727*** | 10.32*** | 9.562*** |
| | (0.513) | (1.033) | (0.592) |
| *Widowed* | 1.373 | 0.573 | 1.415 |
| | (1.081) | (2.017) | (1.283) |
| *Divorced or Separated* | 13.66*** | 15.09*** | 12.92*** |
| | (0.516) | (1.041) | (0.592) |
| ***Children*** | | | |
| *No Child* | -0.623 | 0.909 | -1.413** |
| | (0.456) | (0.930) | (0.522) |
| *Two or More* | -4.067*** | -3.577*** | -4.410*** |
| | (0.491) | (1.078) | (0.548) |
| *Business Assets* | -15.020*** | -20.33*** | -13.58*** |
| | (0.789) | (1.934) | (0.851) |
| *log(consumer debt)* | 0.165*** | -0.033 | 0.257*** |
| | (0.049) | (0.099) | (0.056) |
| *t* | 0.266*** | 0.194** | 0.297*** |
| | (0.029) | (0.061) | (0.032) |
| *Intercept* | -470.9*** | -314.8** | -532.9*** |
| | (57.25) | (122.0) | (64.52) |
| $R^2$ | 0.1133 | 0.1006 | 0.1114 |
| Observation | 49,763 | 13,476 | 36,287 |

*Notes*: Standard errors in parentheses. Data waves: 2002, 2007, 2012, 2017. (2) East only includes former East Germans. (2) West only West Germans. Benchmark: Male, Higher Secondary, Full-time employed, Married, One Child. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (') 10 % significance-level. Data source: GSOEP (2023).

In Table 6, the control variables provide an interesting picture. In the total sample, *Primary or Lower* (-2.5 %) as well as *Tertiary* (-3.8 %) have a negative and statistically significant effect on the share of buildings loans and private insurance compared to the benchmark *Higher Secondary* education. The coefficients for *Vocational Degree* (3.7 %) and *Lower Secondary* (8.6 %) are both positive and significant to the 0.1 % level in the total sample. Again, differences between the East and West subsamples can be ascertained, the negative effect of *Primary or Lower* in the total sample is mostly prevalent among East Germans. The positive effects of *Vocational Degree*, on the other hand, is driven by large and statistically significant impact in West Germany.

Moreover, the labor status is a crucial determinant for the share of building loans and private insurance but is more important in the West subsample. Apparently, preference for this safe but liquid asset is more related to labor status in West than East. Being *Self-employed*, *Part-time employed*, *Not employed* and *Pensioners* are negatively correlated at a 0.1 % significance in the total sample. Being *In Training or Vocation* might slightly decrease the share of building loans and private insurances but this coefficient is not statistically significant in either sample. Most likely, the results are driven by less secure or nonexistent labor income by all those labor categories compared to the benchmark *Full-time employed.*

Further, the regression results indicate that all relationship status – *Single*, *Widowed*, *Divorced or Separated* – have more of their gross wealth in building loans and private insurances than the benchmark *Married*. The coefficient for *Widowed* is not statistically significant, while the other two relationship status are statistically significant at the 0.1 % level in all samples. Regarding the role of children, the small negative effect of *No Child* in the total sample is mainly driven by the West sample wherein the coefficient is significant to the 1 % level. As expected, the coefficient of *Two or More* is negative and statistically significant in all samples.

## 5.4 Financial Assets

Lastly, the share of financial assets in gross wealth must be evaluated. The regression sample, however, had to be amended. The initial regression results were highly inconclusive and had low explanatory power (see appendix A1). In order to illuminate the issue and check for potential changes in the data waves, ran the regression with samples restricted to each individual year (see appendix A2). Since two waves, 2007

and 2017, demonstrated better results, i.e. explanatory power comparable to the empirical outcomes for the other asset types, I run the regressions for a reduced sample and subsamples that included only observations from 2007 and 2017. Of course, this procedure is debatable and will be addressed in Chapter 6 when discussing the limitations. Nevertheless, the generation of comparable results is the dominant concern.

As presented in Table 7, *East German experience* demonstrates a positive and significant correlation (1.7 %) with the share of financial assets in the gross wealth. *Female* and the interaction term are both not significant. The regression implies that East Germans hold relatively more of their wealth in the riskier asset compared to West Germans, while no difference between the genders can be statistically verified. This contradicts the hypotheses about the higher risk aversity through the East German and female experience. On the other hand, East German women cannot be identified to be different from West German women beyond their *East German experience* as hypothesized.

Again, educational status is an essential variable in the total sample, but mostly caused by the West subsample. *Lower Secondary* and *Vocational Degree* are negative in all samples, but statistically significant only in the total and the West subsample. Significant in all samples, *Primary or Lower* and *Tertiary* are positively correlated with the share of financial assets. I would argue that individuals with the lowest and highest degrees turn to financial assets for different reasons. While the lowest educated might have no feeble alternative because monthly payments to either mortgages or building loans and private insurance are not possible. Higher educated might have an overall higher wealth level that marginalizes the share of other assets in comparison. In the total sample, *Self-employed* (-1.7%), *In Training or Vocation* (-6.6 %), *Not employed* (3.7 %) and *Pensioner* (4.5 %) are significant. Interestingly, *Pensioner* is significant and positive in all samples supporting the demand for liquidized wealth in older age. The positive effect of *Not employed* is unanticipated and only replicated in the West subsample. *Self-employed*, on the other hand, is significant in the total and East sample.

## Table 7: Share of Financial Assets, Reduced Sample

| | (1) Total | (2) East | (3) West |
|---|---|---|---|
| *Female* | 0.712 | -0.024 | 0.481 |
| | (0.514) | (0.841) | (0.527) |
| *East German experience* | 1.744** | | |
| | (0.629) | | |
| *Female*East* | -0.787 | | |
| | (0.857) | | |
| *log(income)* | 0.111 | 0.359 | 0.074 |
| | (0.193) | (0.415) | (0.217) |
| *Age* | -2.387*** | -2.648*** | -2.286*** |
| | (0.150) | (0.299) | (0.174) |
| *Age²* | 0.024*** | 0.028*** | 0.023*** |
| | (0.002) | (0.003) | (0.002) |
| ***Education*** | | | |
| *Primary or Lower* | 6.120*** | 10.821* | 4.877** |
| | (1.646) | (4.216) | (1.768) |
| *Lower Secondary* | -6.004*** | -2.077 | -6.814*** |
| | (1.034) | (2.643) | (1.111) |
| *Vocational Degree* | -3.742*** | -1.971 | -4.123*** |
| | (0.604) | (1.387) | (0.667) |
| *Tertiary* | 2.240*** | 4.234** | 1.579* |
| | (0.648) | (1.483) | (0.717) |
| ***Labor Status*** | | | |
| *Self-employed* | -1.705’ | -3.674’ | -0.949 |
| | (0.922) | (2.115) | (1.018) |
| *Part-time employed* | 0.914 | 1.194 | 1.043 |
| | (0.586) | (1.166) | (0.679) |
| *In Training or Vocation* | -6.647*** | -8.509* | -5.784* |
| | (1.903) | (3.525) | (2.275) |
| *Not employed* | 3.746* | 2.172 | 4.934** |
| | (1.645) | (3.425) | (1.877) |
| *Pensioner* | 4.501** | 6.402’ | 4.038* |
| | (1.617) | (3.115) | (1.849) |
| ***Relationship Status*** | | | |
| *Single* | 11.815*** | 10.673*** | 12.623*** |
| | (0.623) | (1.222) | (0.728) |
| *Widowed* | 5.598*** | 5.211* | 5.885*** |
| | (1.354) | (2.439) | (1.636) |
| *Divorced or Separated* | 5.936*** | 5.192*** | 6.314*** |
| | (0.629) | (1.241) | (0.729) |
| ***Children*** | | | |
| *No Child* | 2.779*** | 3.980** | 2.147** |
| | (0.571) | (1.158) | (0.657) |
| *Two or More* | -2.292*** | -0.085 | -3.062*** |
| | (0.629) | (1.352) | (0.708) |
| *Business Assets* | -6.691*** | -7.378** | -6.468*** |
| | (0.975) | (2.298) | (1.066) |
| *log(consumer debt)* | -0.890*** | -0.940*** | -0.869*** |
| | (0.060) | (0.116) | (0.069) |
| *2017* | -0.931* | -1.373 | -0.790’ |
| | (0.401) | (0.845) | (0.455) |
| *Intercept* | 71.840*** | 73.822*** | 71.156*** |
| | (0.514) | (7.261) | (4.208) |
| Multiple $R^2$ | 0.1183 | 0.1040 | 0.1254 |
| Observation | 22,959 | 6,275 | 16,684 |

*Notes*: Standard errors in parentheses. Data waves: 2007, 2017. (2) East only includes former East Germans. (2) West only West Germans. Benchmark: Male, Higher Secondary, Full-time Employed, Married, One Child, 2002, and for (1) West German. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023).

As the high level of significance in all samples indicates, the relationship status is particularly important. Compared to *Married*, all other types of relationship have a higher share of financial assets. *Single* hold apparently the most wealth in financial assets which defies my expectations that singles should hold less risky asets because they cannot rely on a partner's income. Further, having *No Child* increases the share and *Two or More* decreases the share of financial assets compared to the benchmark *One Child*. Thus, the regressions show the anticipated effect of more children decreasing the choice of financial assets as parents opt for safer asset types.

While no time for extensive research remains, a short investigation of the role of the gross wealth percentile on the share of financial assets is provided. Calculated from the total sample as defined in Chapter 5.1, the upper-boundary for the bottom-25 % is 17,000 Euro (*Low Wealth*). The top-25 % begins at 200,000 Euro (*High Wealth*), while *Medium Wealth* is defined as the range within. In Table 8, regressions that include information about the role of wealth are summarized.

**Table 8: Share of Financial Assets, Role of Wealth**

| | (1)<br>Low | (2)<br>Medium | (3)<br>High | (4)<br>Total |
|---|---|---|---|---|
| *Female* | 1.563<br>(0.977) | 1.391**<br>(0.447) | 35.976<br>(103.047) | 13.335<br>(25.887) |
| *East German experience* | -2.520*<br>(1.152) | 0.384<br>(0.512) | -20.780<br>(161.511) | 7.108<br>(31.961) |
| *Female*East* | -1.619<br>(1.492) | -1.931**<br>(0.708) | 328.163<br>(235.758) | 20.328<br>(43.182) |
| *Low Wealth* | | | | 10.930<br>(25.646) |
| *High Wealth* | | | | 61.239*<br>(24.585) |
| *Further Controls* | Yes | Yes | Yes | Yes |
| $R^2$ | 0.0654 | 0.1367 | 0.000964 | 0.000358 |
| Observation | 12,545 | 24,778 | 12,440 | 49,763 |

*Notes*: Standard errors in parentheses. Data waves: 2002, 2007, 2012, 2017. (1) includes only low gross wealth. (2) includes medium gross wealth. (3) includes only high gross wealth. (4) Benchmark: Male, West German, and Medium Wealth. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023).

The first three columns are subsamples for the respective wealth group. For least wealthy, *East German experience* is negative and significant - which is in line with my first hypothesis. For the sample of medium wealthy, *Female* is positive (1.4 %) and the interaction term is negative (-1.9 %) and both significant at 1 % level. This

implies that East German women hold slightly less in financial assets than West German women that themselves hold more than males. This result does not replicate any of my hypotheses. In the wealthiest subsample, no key variable is significant and the $R^2$ is minimal. In the fourth column, the original regression set-up is expanded by binary control variables, *Low Wealth* and *High Wealth*. The results demonstrate that the top-25 % have a substantially higher share in financial assets than the benchmark *Medium Wealth*. The result supports the positive link between the socioeconomic status and share of risky assets that was debated in the literature review.

# 6. Limitations

The results of the empirical analysis – as presented in the previous chapter – have assisted in the clarification of the research question. While the analysis of risk preferences has been ambigious, the separation of the regression sample into East and West Germans has indeed disclosed sizable differences in the control variables. Nonetheless, the empirical analysis and the results are subject to limitations. Some were already mentioned in former elaborations, but in the following a concise discussion of the limitations is provided.

The first limitation is the small explanatory power of the model. Most multiple $R^2$ state that the regressions explain about 10 % of the observations. The highest $R^2$, 13.7 %, is found in Table 8 that outlines the role of wealth in the share of financial assets. As an acknowledged econometric indicator for the adequacy of an empirical method, these low $R^2$ values demonstrate the necessity to alter the methodology in order to find a more predictive model. Still, empirical work with personal information, and investigations of personal decision-making are likely to have rather high rates of disturbance due to the magnitude of influence on a person. Besides, the consistent significance of control variables stresses the fundamentally reasonable methodology.

The GSOEP data demands compromises about the possible empirical work. As already admitted and elaborated on, the GSOEP's definition of financial assets limits the analysis of risk attitudes sharply due to the aggregation of risky assets (e.g. stocks) with rather safe assets (e.g. savings balance). Therefore, the risk evaluation of the share of financial assets as put forward in this paper can be debated. Indeed, the regressions on the share of financial assets have demonstrated issues with regards to explanatory power which made decisive changes to the sample necessary. As briefly mentioned,

the data waves 2007 and 2017 offered regression results with substantially larger $R^2$ values. Therefore, the presented regressions on the share of financial assets were run on samples that only included those two waves. Unfortunately, it is not entirely clear why the data waves for 2002 and 2012 were less explanatory. Some evidence exists insofar that the GSOEP had adapted the questionnaire after the 2002 wave to no longer include a threshold of 2,500 Euro for financial assets. This inconsistency might skew the empirics. For 2012, however, no such evidence from the data base can be found. Considering the economic circumstances of the time, especially the European debt crisis, these might have structurally affected all or some of the financial assets which could be the origin of the observed outcome. This requires further investigations.

As done in most studies, the assessment of portfolio choice benefits from a detailed look into a wide array of common asset types including deposits, stocks, and bonds. The availability of data enforces tough decisions as the existing information on portfolio and wealth are mostly surveyed on household levels. The GSOEP, for example, does provide binary information about disaggregated financial assets, but only on a household level. If data on portfolio choice in Germany is needed, some surveys collect information on asset ownership (including the value) but only on household level. Hence, any analysis trying to investigate individual decisions is impaired. Since this paper specifically targets the influence of individual's experiences, the GSOEP's wealth data on a personal level was invaluable. A common and well reported issue with most available survey data is the undersampling of high-income households (Badunenko et al. 2009). While this is not as central to the analysis of this paper, further studies – particularly those targeting the inequality of wealth and income – must address that directly.

Another debatable choice was the exclusion of individuals with net negative wealth as elaborated on in Chapter 5.1. Obviously, the about 15,000 dropped observations might include relevant information about the status quo in Germany. Preliminary regressions with samples that include net negative wealth, however, did not show tremendously different results (see appendix A3). Nonetheless, future research must dedicate attention to the role indebtedness and potential differences between East and West Germans therein. Thereby, a more comprehensive picture about portfolio choice is achieved, and policies can be based on an even more realistic picture.

Most of these limitations relate to the limited scope of the paper. I have offered a small number of additional clarifying regressions but mentioned topics such as the role of the wealth deserve further attention. Also, it was beyond capacity to discuss all significant control variables like *Age*, *Business Assets* and *log(consumer debt)*, despite the interesting results. Nonetheless, this paper is still a valuable addition, and presents a good starting point for further necessary investigations.

## 7. Conclusion

Ever since 3rd October 1990, the status quo of German reunification has been assessed by politicians, citizens, as well as researchers from various fields of study including economics. Still, the number of in-depth analyses about the lasting effects of the German-German separation remains limited. Most elaborations stay superficial or operate in cliché driven sentiments – potentially caused by the dominance of West German voices in public life.

Today – almost four decades later – it is obvious that the complexity of unifying two populations with different experiences has been underestimated. Most East Germans had only ever lived in a socialist economy and society. After reunification, economic struggles and the privatization of East German industries led to mass unemployment. Again, public debates did not pay attention beyond the short-turn economic burden of the shock – failing to acknowledge the drastic, long-term impression this made on East Germans. Furthermore, when experience is recognized as central for decision-making, the gender perspective cannot be neglected. In the case of the Germany, the differences between the social norms and gender institutions in East Germany (egalitarian) and West Germany (male breadwinner norm) were stark. With reunification, East German women had to adapt to more conservative social norms and a labor market that is less focused on them. The amount of research investigating the effect of the East German experience and gender institutions remains limited.

This paper contributes to the literature in answering the research question: *How do East German experience and gender institutions affect portfolio choice in Germany?* For this purpose, an outline of the differences between the FRG and GDR was provided as well as an extensive literature review about portfolio choice, gender, and lasting effects of the East German experience.

Based on the reviewed literature, four hypotheses about the influence of East German experience and gender institutions on portfolio choice in Germany were formulated. Firstly, the specific East German experience has altered the risk preferences of East Germans. This experience incorporates the socialist life in the GDR as well as the economic shock after reunification. East Germans should prefer relatively less risky portfolios compared to West Germans. Secondly, women's preference for less risky portfolios is established in the literature. Both groups of women, East and West German, should prefer less risky assets compared to their male counterparts. Thirdly, it was argued that no gendered effect of East German experience should exist because positive effects on risk aversity (gendered experience of economic shock) and negative effects (exposure to egalitarian gender norms in the GDR) could balance each other out. Fourthly and lastly, the systemic differentiations between the FRG and the GDR should impact the relation between socioeconomic and demographic variables on the portfolio choice of East and West Germans comparatively.

The hypotheses were tested with an investigation of assets in German portfolios. Using wealth data by the German Socio-Economic Panel, the effects of East German experience and gender on the share of three assets – financial assets, primary property, and building loans and private insurance – in the individual's gross wealth are examined. For the evaluation of risk preferences, financial assets are classified as a relatively risky distribution of wealth compared to the other two assets. Further, a number of control variables is included, most importantly describing the education, labor position, and the relationship status. Each regression is run with the total sample as well as with subsamples for East and West Germans respectively.

The empirical results demonstrate sizable differences between former East and West Germans. Primary property is particularly important in the portfolios of West Germans, while the share of building loans and private insurance is larger in East Germans' gross wealth. In addition, East Germans own a larger share of financial assets. Further, the influence of gender on portfolio choice was ascertained. West German women hold the largest share in primary property, while East German women hold the least. For the share of building loans and private insurances, it is just the other way around. Only for financial asset, no significant effect of gender was found.

In context of risk preferences, the results only partially verify the hypotheses. Indeed, East Germans hold more in the safe asset building loans and private insurances, but they are also more involved with relative risky financial assets. On the other hand, East Germans hold less than West Germans in primary property – another type of safe asset. This, however, might relate to the unequal distribution of generational wealth between former East and West Germany. Regarding female risk aversity, East German women hold the largest share in building loans and private insurance and West German women hold the largest share in primary property – both safer types of assets. Both groups of women engage more in safe assets compared to their male counterparts – even if it is not the same type of asset. No significant differentiation between female and male shares of financial assets was found. Hence, the second hypothesis was partly confirmed. Since the interaction term was significant for primary property and building loans and private insurance, the third hypothesis was falsified. Lastly, the East and West German subsamples have demonstrated substantial differences in the influence of socioeconomic and demographics variables. In most instances, the East subsample proved to be more equal since differences in labor and education status were less significant compared to the West sample.

Furthermore, preliminary evidence for the lasting role of social norms was discovered through an additional analysis of primary property. Indeed, marriage is the decisive determinant for the share of primary property, but the gendered effect of marriage is slightly lower among East Germans. Also, a brief assessment of the role of wealth has revealed the relevance thereof in determining the share of financial assets which encourages further studies. In general, this thesis presents a fertile foundation for further investigations on the East German experience, gender institutions, and portfolio choice in Germany. Many related research questions demand attention by economists. These analyses, however, require extensive data of high quality – highlighting the need for more information about the biographies and sentiments of former East Germans and West Germans.

Pushing for an advanced comprehension is necessary in order to provide realistic insights for policymakers. This requires a more honest assessment of the reunification's economic policies and lasting misconceptions that are still in mind of many former East Germans. Only then, the pathway towards a truly unified nation can be completed.

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# Appendix

### Table A1: Share of Financial Assets, Key Variables

| | (1)<br>Total | (2)<br>East | (3)<br>West |
|---|---|---|---|
| *Female* | 11.911<br>(125.882) | 54.81<br>(45.00) | -0.640<br>(25.81) |
| *East German experience* | -2.495<br>(31.657) | | |
| *Female*East* | 21.459<br>(43.1698) | | |
| *Further Controls* | Yes | Yes | Yes |
| Multiple $R^2$ | 0,000233 | 0.000631 | 0.000264 |
| Observation | 49,763 | 13,476 | 36,287 |

*Notes*: Standard errors in parentheses. Data waves: 2002, 2007, 2012, 2017. (1) Benchmark is West German male. (2) East only includes former East Germans. (2) West only West Germans. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023)

### Table A2: Share of Financial Assets, Key Variables, Each Data Wave

| | (1)<br>2002 | (2)<br>2007 | (3)<br>2012 | (3)<br>2017 |
|---|---|---|---|---|
| *Female* | 30.046<br>(55.566) | 1.392’<br>(0.743) | 8.06<br>(79.875) | -0.035<br>(0.709) |
| *East German experience* | 8.881<br>(67.183) | 2.159*<br>(0.920) | -23.119<br>(98.678) | 1.373<br>(0.858) |
| *Female*East* | 125.538<br>(93.457) | -1.376<br>(1.260) | -41.260<br>(132.040) | -0.159<br>(1.159) |
| *Further Controls* | Yes | Yes | Yes | Yes |
| Multiple $R^2$ | 0.000899 | 0.1352 | 0.000653 | 0.09043 |
| Observation | 13,535 | 11,663 | 13,269 | 11,296 |

*Notes*: Standard errors in parentheses. (1) data wave 2002, (2) data wave 2007, (3) data wave 2012, (4) data wave 2017. Benchmark: West German male. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023).

## Table A3: Regression Results, Including Negative Net Wealth

| Dependent Variable: | Primary Property | Building Loans and Private Insurance | Financial Assets |
|---|---|---|---|
| *Female* | 2.081*** | 0.218 | 10.258 |
| | (0.508) | (0.366) | (19.529) |
| *East German experience* | -2.192*** | 2.305*** | -1.419 |
| | (0.622) | (0.448) | (23.946) |
| *Female*East* | -2.900*** | 2.348*** | 13.783 |
| | (0.842) | (0.607) | (32.407) |
| *log(income)* | 1.158*** | -0.597*** | -6.865 |
| | (0.203) | (0.146) | (7.793) |
| *Age* | 1.553*** | -0.0881 | 1.367 |
| | (0.203) | (0.100) | (5.348) |
| *Age²* | -0.010*** | -0.003** | -0.019 |
| | (0.002) | (0.001) | (0.061) |
| ***Education*** | | | |
| *Primary or Lower* | -13.762*** | -11.000*** | -1.434 |
| | (1.254) | (0.903) | (48.237) |
| *Lower Secondary* | -8.667*** | -3.454*** | -7.670 |
| | (0.894) | (0.644) | (34.383) |
| *Vocational Degree* | -0.928 | 1.153** | -3.554 |
| | (0.618) | (0.446) | (23.751) |
| *Tertiary* | 0.423 | -3.477*** | 45.574’ |
| | (0.691) | (0.498) | (26.585) |
| ***Labor Status*** | | | |
| *Self-employed* | -2.575** | -3.836*** | -20.434 |
| | (0.977) | (0.704) | (37.602) |
| *Part-time employed* | 0.146 | -4.120*** | 1.501 |
| | (0.606) | (0.436) | (23.301) |
| *In Training or Vocation* | 2.560’ | -7.959*** | -15.989 |
| | (1.544) | (1.112) | (59.411) |
| *Not employed* | 3.505’ | -6.238*** | -68.164 |
| | (1.666) | (1.200) | (64.091) |
| *Pensioner* | 2.909’ | -4.156*** | -54.058 |
| | (1.711) | (1.232) | (65.821) |
| ***Relationship Status*** | | | |
| *Single* | -19.611*** | 3.721*** | -8.892 |
| | (0.617) | (0.445) | (23.751) |
| *Widowed* | -1.433 | 0.943 | -10.419 |
| | (1.356) | (0.977) | (52.172) |
| *Divorced or Separated* | -21.373*** | 4.577 | -13.878 |
| | (0.597) | (0.430) | (22.978) |
| ***Children*** | | | |
| *No Child* | -3.937*** | -0.080 | 8.249 |
| | (0.551) | (0.397) | (21.218) |
| *Two or More* | 5.670*** | -3.092*** | 11.460 |
| | (0.603) | (0.435) | (23.206) |
| *Business Assets* | -6.577*** | -12.840*** | -8.675 |
| | (1.057) | (0.076) | (40.654) |
| *log(consumer debt)* | -0.361*** | 0.873*** | -2.090 |
| | (0.054) | (0.0387) | (2.069) |
| *t* | -0.154*** | 0.110*** | -0.777 |
| | (0.036) | (0.0257) | (1.373) |
| *Intercept* | 297.8*** | -188.4*** | 1610.1 |
| | (71.32) | (51.38) | (2744.13) |
| Multiple $R^2$ | 0.1108 | 0.06489 | 0.000218 |
| Observation | 65,014 | 65,014 | 65,014 |

*Notes*: Standard errors in parentheses. Data waves: 2002, 2007, 2012, 2017. Benchmark: Male, Higher Secondary, Full-time Employed, Married, One Child, and West German. (***) 0.1 % significance-level, (**) 1% significance-level, (*) 5 % significance-level, (‘) 10 % significance-level. Data source: GSOEP (2023).

# Sworn declaration

I hereby formally declare that I have written the submitted Master Thesis entirely by myself without anyone else's assistance. Whereever I have drawn on literature or other sources, either in direct quotes, or in paraphrasing such material, I have given the reference to the original author or authors and to the source where it appeared. I am aware that the use of quotations, or of close paraphrasing, from books, magazines, newspapers, the internet or other sources, which are not marked as such, will be considered as an attempt at deception, and that the thesis will be graded with a fail. I have informed the examiners and the board of examiners in the case that I have submitted the dissertation, entirely or partly, for other purposes of examination.

Berlin, 19.07.2024

place, date

Dorothea Ries