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# Does Product Familiarity Matter for Participation?

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## Non-Technical Summary

Financial innovation continually adds to the array of products available for generating wealth, smoothing consumption, and managing risks, thus creating the need for households to familiarize themselves with new and often complicated financial instruments. The potential for impulsive purchases by customers unfamiliar with the financial product has led regulators recently to require tests of familiarity (e.g., under MIFID), or even to ban sales of complicated financial products (e.g., structured products in Belgium).

Banning or restricting access to innovative financial products imposes costs and can be discriminatory and even counterproductive, as it rules out gaining familiarity through use. Presumably, familiarity-based access regulation is based on the assumption that lack of familiarity leads to excessive use, at least initially, and that this cannot be mitigated by a financial sector that is both familiar with the products on sale and well-incentivized to guide customers unfamiliar with them. Yet, this is not the kind of logic that we apply to other potentially harmful activities. Driving a car is dangerous, both for the driver and for others around that driver, but we provide opportunities for learning and we issue permits to those who pass the driving competence test, for different classes of vehicles. Should financial regulation also recognize the presence of learning possibilities and redirect attention from excluding the unfamiliar to making sure that they receive adequate guidance so as to become familiar?

Before we restrict or encourage access on the basis of (lack of) familiarity, we need to understand the nature of the link between familiarity and participation in the presence of a financial sector that is both familiar with the products and unwilling to take advantage of unfamiliar consumers. This is the central objective of the present study.

Linking familiarity with a product causally to participation is not straightforward. Supposing that information on familiarity is available for a reasonably diverse cross-section of the population, we might consider regressing participation on familiarity, controlling for an array of other relevant characteristics of households. Such a regression, however, could be subject to biases resulting from unobserved heterogeneity or reverse causality. As mentioned above, familiarity could contribute to participation but it can also be acquired through participation.

A more promising way to uncover the role of familiarity in participation decisions is to conduct a field experiment: provide (exogenously) the same participation opportunities to people who are either (exogenously) familiar or not familiar with particular financial instruments and compare the extent to which the two groups choose to participate, controlling for other relevant characteristics. The exogenous separation of Germany into East and West Germany, the consequent deprivation of East Germans from 'capitalist' products, such as stocks and consumer debt, and the exogenous opening up of similar opportunities to both groups following reunification, seem to fit quite closely the desiderata of such a large-scale 'experiment'. Importantly, the presence of a West German financial sector that was itself familiar with the capitalist products and also not intent on taking advantage of those who joined from the East, provides a rare opportunity to study what happens when unfamiliar consumers are matched with such a well-functioning financial sector.

This paper uses household-level data from the German Socioeconomic Panel (GSOEP) to compare the participation of former East and West Germans in various financial products following reunification of Germany. We consider both 'capitalist' financial products not available in East Germany (stocks, bonds, and consumer credit) and products that were available (savings accounts and life insurance). We study cohorts with different length of exposure to socialism and capitalism prior to the separation, including a cohort that had no exposure to capitalism prior to reunification. We also trace the evolution of East-West differences in participation behavior as familiarity with 'capitalist' products grew.

We find some striking results. After controlling for observable characteristics, the tendency of East Germans to participate in securities is the same as that of West Germans, right from the start after reunification: lack of familiarity with stocks does not prevent East Germans from plunging in to the same extent as their West German counterparts with similar characteristics in the presence of a knowledgeable and well-incentivized financial sector. Indeed, their tendency to participate in consumer credit is actually greater than that of their West German counterparts and does not diminish over the period we consider. We study the contribution of peer comparisons, and the relevance of willingness to take risks, trust, and sociability for these results.

Our finding that previous familiarity with the product class is not significant for the participation decision in the presence of a well-functioning financial sector does not contradict the importance of measures to promote awareness or financial literacy. Our paper, however, casts doubt on the idea that previous familiarity with a financial instrument should be decisive for predicting its use or for regulating access (e.g., under MIFID) and redirects regulatory attention from unfamiliar consumers to unfamiliar and poorly incentivized financial practitioners.

# **Does Product Familiarity Matter for Participation?<sup>#</sup>**

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## *Abstract*

Household access to financial products is often conditioned on previous use. However, banning access when learning is possible may be discriminatory or counter-productive. The ‘experiment’ of German reunification (exogenously) offered to East Germans unconditional access to (exogenously) unfamiliar capitalist products. Controlling for characteristics, East Germans participated immediately, were as likely to use unfamiliar risky securities as West Germans, and more likely to use consumer debt, without signs of regret. Our results suggest that mistakes of unfamiliar households can be prevented by a knowledgeable and well-incentivized financial sector and by interaction with familiar peers. This implies that regulation should refocus on the financial sector rather than on prohibiting individuals to gain familiarity with financial products.

*Keywords:* Household finance, familiarity, regulation, investor protection, financial literacy, stockholding, household debt, consumer credit, social interactions, counterfactual analysis, German reunification.

JEL Classifications: G11, E21

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## 1. Introduction

A wide and continuously expanding array of modern financial products, both assets and loans, provide opportunities for households to smooth consumption, manage risks, and plan for retirement. Financial innovation continually adds to this array, at the same time creating the need for households to familiarize themselves with new and often complicated financial instruments.<sup>1</sup>

Faced with the risk of mis-selling to uninformed customers and the potential for impulsive purchases by customers unfamiliar with the financial products they consider to acquire, regulators have recently decided to make familiarity with an instrument a prerequisite for participation in it. Familiarity tests are stipulated, for example, in the MIFID directives.<sup>2</sup> The merits of this requirement are usually evaluated in the context of highly complex or rapidly evolving new products, unfamiliar even to the financial sector at large, and where complexity is associated with larger hidden markups (see Celerier and Vallee, 2014). A valid question, however, is whether the force of the argument comes from the lack of familiarity of investors or from the lack of knowledge and poor incentives of the financial sector itself. The answer could have dramatic implications, not only for financial regulation but also for economic well-being and wealth inequality.

One would not apply a familiarity requirement to checking accounts, for example.

If use requires familiarity but familiarity can only be developed through use, a

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<sup>1</sup> The potential for complicated financial products to lead to investment mistakes and to suboptimal debt behavior, especially among the financially less literate or cognitively less gifted segments of the population, has been stressed by a number of authors. These include Campbell (2006), Calvet et al (2007), Lusardi and Mitchell (2007), Lusardi and Tufano (2009), Christelis et al (2010), Choi et al (2011), Grinblatt et al (2011), Hastings et al. (2013), van Rooij et al (2011) and van Rooij et al (2012).

<sup>2</sup> The risk of mis-selling to customers, the conflicts of interest confronting financial advisors, and shortcomings in financial advice have been the subject of a growing literature on financial advice and its effects on financial behavior of households with different observable characteristics. Early contributions to this work are Inderst and Ottaviani (2009), Hackethal et al (2012), Mullainathan et al (2012), and Bhattacharya et al (2013),

regulation based exclusively on familiarity of the potential user with the product is not only paternalistic but may also be counterproductive and discriminatory. It actually prevents novices from acquiring the necessary knowledge and familiarity of the products, so that they too can pass the access test in the future. Indeed, this logic applies to many other risky activities subject to learning. What would have happened if only those who knew how to drive were allowed to sit in the driver's seat? Yet, driving a car is one of the most risky activities an individual performs and can have lethal consequences.

This line of argument suggests moving away from requiring previous use and towards a "driver's license" for financial products with considerable risk for the individual and possibly for dependents, provided that such a license can be acquired under the guidance of knowledgeable and reliable "instructors". Access bans would then result from the lack of such instructors rather than from failing a familiarity requirement.

Unlike in the case of driving, very few in the financial sector (let alone among peers) understand complex financial products, and those who do may have an incentive to maintain or boost their complexity. However, in the more policy-relevant case of financial products that are quite risky for an inexperienced individual acting alone, but happen to be well understood by the financial sector at large and used by a considerable fraction of peers, familiarity-based restrictions may be counterproductive and also discriminatory.<sup>3</sup>

The focus on familiarity tests is not a second-order issue in regulatory design, but one that can have profound implications for wealth inequality and the ability of households to manage their own risks through appropriate financial instruments.

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<sup>3</sup> The potential benefits and risks from access to, but also lack of use of, new financial products were recently explored in Haliassos (2012) and the contributions therein.

Indeed, Kenneth Arrow (1987) argued persuasively that increased access to assets bearing an expected return premium (such as stocks offering an equity premium) can have important effects on reducing wealth inequality. This paper asks whether, for risky financial products, lack of familiarity is sufficient to lead to overuse and regret, and thus needs to provide the basis for access regulation; or rather that the regulatory focus on familiarity is misplaced and should be redirected at the poor knowledge and incentives of the financial sector to “train” and support unfamiliar households.

There is a well-developed literature establishing a role of familiarity in investment (see the seminal papers of Feldstein and Horioka, 1980; Coval and Moskowitz, 2001; Huberman, 2001); and work by Guiso and Jappelli (2005) on product awareness. The familiarity in investment literature shows that households are drawn to assets that are more familiar to them (“familiarity breeds investment”). Guiso and Jappelli (2005), who take the angle of product awareness, use Italian survey data and show that households who are aware of financial products, either through financial sector signals or through social interactions, are significantly more likely to invest in these products compared to those who are not aware, for given household characteristics. On the side of support through social interactions, another recent literature has shown that such interactions play a significant role in financial decisions, regarding both assets and debts (Duflo and Saez, 2002; Hong, Kubik, and Stein, 2004; Kaustia and Knüpfer, 2012; Georgarakos, Haliassos, and Pasini, 2014). Our research question in this paper, however, requires study of a case where all forces (lack of familiarity, good knowledge and healthy incentives of the financial sector, as well as interaction with knowledgeable peers) are combined, in the absence of familiarity tests.

To this end, this paper utilizes the ‘natural experiment’ of German reunification, as a case where awareness and familiarity with “capitalist” financial products vary

exogenously, their effect on participation can be assessed, and post-entry behavior can be observed. Such behavior occurred in an environment with no familiarity tests, knowledgeable new peers (former West Germans), and a knowledgeable (West German) financial sector that had clear incentives to build long-term relationships with its new (East German) customers and large reputation costs if it chose to mislead them. In this setup, one can study the link between product familiarity and participation in securities (stocks and bonds) and consumer credit, all “capitalist” products unavailable in the East; and in products that were also available in the East.

This natural experiment has several attractive features, which help overcome standard econometric issues in linking familiarity with a product causally to participation in it.<sup>4</sup> First, familiarity indicators for particular financial products are typically not readily available for a large, representative sample (but see Guiso and Jappelli, 2005, for an awareness indicator). Second, supposing that information on familiarity is available for a reasonably diverse cross-section of the population, we might consider regressing participation on familiarity, controlling for an array of other relevant characteristics of households. Such a regression, however, could be subject to biases resulting from unobserved heterogeneity or reverse causality. There may well be unobserved factors that lead households both to become familiar with advanced financial products and to participate in them, without a direct link between familiarity and participation. Moreover, familiarity could contribute to participation but it can also be acquired through participation. Suitable instruments would need to be found,

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<sup>4</sup>This large-scale natural experiment has been used to analyze other economic phenomena. Fuchs-Schündeln (2008) examines the effect of reunification on saving rates, while Fuchs-Schündeln and Schündeln (2005) use the ‘experiment’ to assess the importance of self-selection into occupations as a partial substitute for precautionary wealth holdings. Redding and Sturm (2008) and Burchardi and Hassan (2013) analyze the cost of remoteness and the economic impact of social ties, respectively, based on this experiment. Gebhardt (2013) uses this experiment to test the proposition that allocations of asset ownership that expose a party to ex-post expropriation reduce this party’s ex-ante relationship-specific investments.



which would affect participation only through familiarity and not through any other factors. Typical approaches, such as going back in time or resorting to regional characteristics, could be tried, but it is often the case that early-life events or regional characteristics tend to influence participation in financial markets through a number of different channels. Exploiting this setup also avoids challenges and limitations of controlled experiments in labs with small groups, limited variation of characteristics, artificial financial instruments, and small stakes.<sup>5</sup>

Methodologically, we first document differences in asset and debt participation patterns between East and West Germans following reunification. To understand whether these are driven by differences in familiarity with the assets or by differences in other household characteristics relevant for financial behavior, we decompose econometrically these differences into a “covariate effect” and a “coefficient effect”. The covariate effect captures differences in observable characteristics between East and West Germans, while the coefficient effect documents differences in behavior controlling for characteristics.

Once we do this, we find some striking results. After controlling for observable characteristics, the tendency of East Germans to participate in securities is the same as that of West Germans, right from the start after reunification: lack of familiarity with stocks does not prevent East Germans from plunging in to the same extent as their West German counterparts with similar characteristics. Their tendency to participate in consumer credit is actually greater than that of their West German counterparts and

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<sup>5</sup> Since our data do not include direct questions on familiarity with certain specific products, we base our analysis on the assumption that households living in a capitalist country were more likely to be familiar with securities (bonds and stocks) and consumer credit than those living in the Eastern block where such assets and debts did not exist at all. While we cannot exploit any variation of familiarity within the group of East or West Germans, the main advantage of our approach is that our measure of familiarity varies exogenously across population groups and over time. This exogenous variation allows us to avoid the potential for reverse causality or unobserved heterogeneity creating a positive correlation between familiarity and participation.

does not diminish over the period we consider.<sup>6</sup> While it may be tempting to conclude that lack of familiarity induced East Germans to undertake excessive participation in loans, our finding that they continue to do so even after they become familiar with loans through use suggests that there may be systematic factors at work other than familiarity that contribute to this greater tendency to take out loans. We investigate comparison to the new set of peers as a potential such factor.

For products that were familiar to both East and West Germans prior to reunification, we find initially higher participation rates for East Germans, followed by convergence to and drop below those of West Germans, whether we control for household characteristics or not. This is consistent with gradual portfolio adjustment of assets that did not become newly available at reunification.

Section 2 describes the data and Section 3 provides descriptive statistics on participation following reunification. Section 4 presents results of decompositions of East-West differences in participation over time. Section 5 provides further perspectives on what might lie behind these differences. Section 5.1 introduces average income of the new peer group that includes both East and West Germans, while Section 5.2 controls for risk attitudes, trust, and sociability differences between East and West Germans. Section 6 offers concluding remarks.

## **2. The Data**

The German Socioeconomic Panel (GSOEP) is a longitudinal survey of private households, established in West Germany in 1984 and carried out annually.<sup>7</sup>

The GSOEP consists of two questionnaires: one is at the household level, and the

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<sup>6</sup> Average behavior in the two subsamples does mask some cohort-based variation: for certain cohorts of East Germans, we find signs of initial experimentation with stocks, and a subsequent retreat relative to their West German counterparts who were more familiar with such products.

<sup>7</sup> A detailed description of the survey can be found in Wagner et al. (2007).

other one collects information on each member of the household. In the spring of 1990, a sample of East Germans was added to the survey. Additionally, new households from both East and West Germany were added in subsequent refreshment samples. We include all subsamples into our final sample with the exception of the high income subsample.<sup>8</sup>

The GSOEP includes a question on where individuals lived before reunification in 1989. We identify individuals as East Germans if they indicate that they lived in East Germany (GDR), including East Berlin, in 1989. Similarly, we identify individuals as West Germans if they indicate West Germany (FRG) including West Berlin as their residence in 1989. All other observations are dropped; in particular, all households whose household head was born after 1989 are not part of the final sample.

The asset participation data in the survey are recorded at the level of the household. The questionnaire asks which assets the respondent or any other person in the household possessed last year. The list of possible answers includes: savings account (*Sparbuch/Spargirokonto*), building-savings contract (*Bausparvertrag*), life insurance (*Lebensversicherung*), bonds (*Festverzinsliche Wertpapiere*), stocks (*andere Wertpapiere*), company assets (*Betriebsvermögen*), and none of the listed.<sup>9</sup> However, it is only since 2000 that stocks and bonds are separately listed.<sup>10</sup> Before that year, both asset types were included under the common header securities (*Wertpapiere*). Note that this change in the question coincides with a jump in the participation rate for securities, i.e. stocks and bonds, from 31 (23) percent in 1999 to

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<sup>8</sup> The high income sample (Sample G of the GSOEP) is unique in that it does not have an analogous benchmark in any other major survey, be it panel or cross-section. This is why this sample is not included in the overall standard weighting scheme of GSOEP (for further details see <http://www.diw.de/documents/dokumentenarchiv/17/38951/dtc.354256.pdf>)

<sup>9</sup> We do not investigate building-savings contracts and company assets, as both home and business ownership rates differed widely between East and West before reunification.

<sup>10</sup> The change occurs in the questionnaire 2001, i.e. refers to participation in the year 2000.

39 (31) percent in 2000 for West Germans (East Germans). This might well be due to the more detailed design of the question. The consumer debt data are recorded at the household level as well, starting only in 1997. The question reads (with slight changes over time): “Do you have to use a certain amount of your income for paying back loans that you took out for major purchases or other expenses?”<sup>11</sup>

We carry out our analysis at the household level including individual characteristics, e.g. gender, from the household head’s individual questionnaire. The head of the household is defined as the person who knows best about the general conditions under which the household acts and is supposed to answer the household questionnaire in each given year.

## **2.1. Transformations**

Most questions refer to the situation in the respective survey year; however, some questions refer to previous years, in particular the asset participation question. Therefore, we require households to participate in the survey for two consecutive years, in order to have a complete picture of the situation in a particular year. All statistics use weights, provided by GSOEP, to account for panel attrition and the sampling scheme. All nominal variables are in € and are adjusted to represent purchasing power in 2000. In accordance with the residence in the observation year, inflation rates are taken from the CPI in East or West Germany until the year 1999, and from a common CPI from 2000 on.

Peer income is constructed in the following way: All household heads (both East and West Germans) are grouped in four age groups (25-35, 36-45, 46-65, and above 65) and three educational groups. We construct the educational groups

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<sup>11</sup> Mortgage payments are explicitly excluded in this question.

according to the International Standard classification of Education (ISCED-1997).<sup>12</sup> All individuals in the first group have completed general elementary schooling (*Haupt-/Realschulabschluss*) at most. Individuals in the second group have higher educational attainment in the form of a high school diploma (*Abitur / Fachhochschulreife*), vocational training, or kindred. The third group represents individuals with a tertiary education degree, i.e. completed college education (*Fachhochschule, Universität, Promotion*). Average income is computed for each possible combination of age and education groups. Finally, an individual's "peer income" is then set to the average income of the respective age and education group (excluding the individual's own income).

## 2.2. Sample Size

We use 1991, the first full year after reunification, as our starting date.<sup>13</sup> The final sample consists of 158,000 observations for the years 1991 to 2009, namely 112,000 observations for West Germans and 46,000 observations for East Germans. Yearly observations vary between 6,000 and 7,000 in the 1990s, and amount to around 10,000 in the 2000s. East Germans represent around 2,000 of those yearly observations in the 1990s and around 3,000 in the 2000s. When we include income growth expectations, the sample size is further restricted, since we need at least three consecutive observations to observe the full set of covariates.

## 3. Evolution of Participation in East and West

In this section, we document the evolution of participation in various financial instruments for two groups of households, based on whether the head of household

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<sup>12</sup> A detailed description can be found in the GSOEP documentation: [http://www.diw.de/en/diw\\_02.c.238110.en/generated\\_variables.html](http://www.diw.de/en/diw_02.c.238110.en/generated_variables.html)

<sup>13</sup> German reunification happened on October 3, 1990. Also, for the years 1990 and 1989 we do not have information on asset income, which we use as a proxy for wealth in a robustness check.

reports being born in East or in West Germany. Participation rates are computed using survey weights and are reported for all periods in our sample for which they are available.

### **3.1. Unfamiliar: Consumer Credit**

In Figure 1, we report participation rates for consumer debt in the period 1997 to 2009. We observe that participation rates are uniformly greater for East German households than for West German ones and that they evolve in similar fashion across the two groups, with the distance between them not showing any tendency to disappear.<sup>14</sup>

Figure 2 decomposes the household groups further, distinguishing between cohorts born in different periods. As always, the West sample is indicated by solid lines, and the East sample by dashed lines. The oldest cohort group, born before 1930, has the darkest color, and the youngest cohort group, born after 1971, the lightest one. The figure reveals that participation rates in consumer debt are very similar for the oldest West and East German households in our sample, namely those born before 1930, for whom consumer debt is not important, but persistent differences are present for all younger cohorts.

In Figure 3, we distinguish households according to the level of educational attainment of the household head (the darker the line, the higher the educational achievement). We find greater similarities, and even some ranking reversals, in participation rates of the least educated, but a clear pattern of much greater and

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<sup>14</sup> For both East and West Germans, participation rates rise between 1998 and 1999, and fall between 2003 and 2004. The only noticeable difference in the wording of the question between these years is that in 2005 (i.e. relating to participation in 2004), the exclusion of mortgage payments from the question is explicitly stated not only at the end, but additionally at the beginning of the question.

persistent differences in participation of the two more educated groups as regards consumer credit.

All in all, while the period after 2004 tends to exhibit somewhat smaller differences in participation among East and West households compared to the earlier period for which we have data on consumer debt (starting in 1997), we observe East Germans participating consistently more than West Germans, at least for the two more educated groups and for the cohorts that did not spend their formative years prior to the division of Germany.

Greater tendency to participate in consumer debt should not be identified with greater financial fragility, at least as measured by debt service relative to income. Table 1 presents means and median ratios of monthly payments on consumer debt relative to household income (a measure of the debt service to income ratio) for individuals with positive consumer debt. Regardless of whether the average or the median is used, West German ratios were higher than East German ones until 2004, but the ranking gets reversed from 2005 on. So it seems that East Germans were quick to assume consumer debt but careful (or constrained) enough so as not to impose greater burden on their finances than the West German population of borrowers.

### **3.2. Unfamiliar: Securities**

The participation rate in securities (bonds and stocks taken together) reported by both household groups, East and West, exhibits an upward trend in the first period following reunification, namely until 1999, and then follows a mildly downward path (Figure 4). The sharp increase between 1999 and 2000 might be at least partly due to the change in the question, and should thus be interpreted carefully (we indicate this change in the question with a vertical line in the figure). The upward trend in the first period matches the international experience of increase in financial

risk taking and especially in stock market participation of households during the 1990s (see Guiso et al, 2001). Existing literature attributes the increase in financial risk taking that took place in Europe and in the US in the 1990s to a combination of good stock market performance, dropping transactions costs, and spread of equity culture resulting from growing realization that social security systems will be unable to provide pension benefits at previous levels as a result of the demographic transition.<sup>15</sup> The slight drop in participation following 2000 is likely to be due, at least in part, to the burst of the internet bubble and associated losses for stockholders.

It is clear from Figure 4 that West German households exhibit greater participation in stocks throughout our sample period, and the distance between West and East Germans narrows only towards the end of the worldwide stock market rally in the late 1990s.

We can compare participation rates separately for stocks and for bonds only after 2000, and the comparison is shown in Figures 5 and 6. We see that both East and West Germans reduce their participation in both instruments following 2000, more rapidly for bonds than for stocks, but West Germans exhibit a consistently greater tendency to participate in either financial instrument compared to East Germans.

A look at cohort behavior in Figure 7 shows that West Germans exhibit greater participation in securities regardless of cohort, with the largest participation differences found for the oldest group, namely individuals born before 1930. While members of that cohort are likely to have shared their formative years in a unified country, they are unlikely to have been taught about stocks during those early formative years. One might conjecture as a reason for this large difference that East

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<sup>15</sup> A German peculiarity in this time period was the initial public offering of Deutsche Telekom, the formerly public German telecommunication company, in late 1996, and additional equity issuance until 2000. Both were accompanied by mass advertisement and induced many Germans to invest in stocks for the first time in their life.



Germans are likely to have missed the discussion about stocks initiated by privatization experiments in other countries, notably Thatcher's experiments in the 1980s, and may have been at an age not so conducive to learning new financial instruments in the 1990s, following reunification. Yet Figures 8 and 9, where participation rates in bonds and stocks are shown separately, shows a slight convergence of East to West participation rates in stocks for this oldest cohort towards the end of the period, while for the middle aged cohorts we rather observe a divergence.<sup>16</sup> This is an issue investigated further below using statistical analysis.

When we compare participation rates in securities across groups with different educational attainment, we confirm a well-known result from the stock market participation literature, namely that more educated groups tend to exhibit higher participation rates, but we observe that it also holds for bonds (Figures 10 to 12). All participation rates are higher for West than for East Germans, regardless of the education group being examined.

### **3.3. Familiar: Life Insurance and Savings Accounts**

We next consider two types of assets that were quite familiar to both West and East Germans at reunification, as they were available in both countries: savings accounts and life insurance policies.<sup>17</sup> Figures 13 and 14 exhibit a picture that is very different from the ones above that referred to assets and debts relatively unfamiliar to East Germans. In both cases, participation in the familiar financial instrument starts off being greater among East than among West Germans and, while falling for both, it drops faster for East Germans and is eventually overtaken by West German participation. The greater early participation of East Germans is perhaps to be

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<sup>16</sup> Participation rates in bonds appear much more erratic in general.

<sup>17</sup> It should be noted that life insurance policies in the East tended to be smaller in value and more targeted towards covering funeral expenses compared to those typically held in the West.

expected as a remnant of a portfolio that was of necessity more restricted than those of Germans in the West. The faster drop in participation could also be seen as a gradual correction of this overrepresentation of familiar assets in the portfolio. More puzzling, however, is the observation that participation rates of East Germans do not simply converge to those of West Germans but fall, in both cases, below them.

#### **4. The Role of Product Familiarity: East versus West**

##### **4.1. Description of the Method**

Our descriptive analysis, based on observed participation rates in a range of assets and debts, has indicated that the participation behavior of East Germans differed widely from that of West Germans, and that the picture is much more complicated than the a priori plausible one of gradual convergence of East German to West German participation rates following reunification. .

In this section, we attempt to decompose the observed differences in participation rates into differences in household characteristics relevant for participation, as opposed to differences in behavior of similar households that happened to be separated following the war. The former, arising from differences in participation-relevant characteristics, is attributed to what are known in the literature as “covariate effects”; the latter, arising from different behavior of East and West households with similar characteristics, is attributed to “coefficient effects”. Both terms refer to a participation regression (in our case, a probit model) that makes the latent variable (utility differential between participation and non-participation) a function of observable characteristics (“covariates”) whose influence depends on the sign and magnitude of coefficients.

Specifically, the decomposition of the West-East difference in observed participation rates into “coefficient” and “covariate” effects is represented by the following equation:

$$pr^{West} - pr^{East} = \left\{ pr^{West} - \hat{p}^{Westb,EastX} \right\} + \left\{ \hat{p}^{Westb,EastX} - pr^{East} \right\} \quad (1)$$

The key here is the computation of the counterfactual participation rate,  $\hat{p}^{Westb,EastX}$ . This is the average participation rate that West Germans would exhibit if they related their participation decisions not to their own characteristics but to those of the East German pool (i.e. the coefficients  $b$  are taken from a participation regression run on the West German sample, but are applied to characteristics  $X$  of the East German sample). The first difference term on the right hand side arises from using East rather than West German characteristics, so it represents “covariate effects”. Both items in the second bracket refer to East German characteristics, but the counterfactual probability term uses West German coefficients. Since the difference is due to using different sets of coefficients, this second bracket represents “coefficient effects”.

From an economic point of view, the first bracket shows the part of the participation difference that is due to a different configuration of characteristics in the East versus the West population. For example, part of the explanation for lower stockholding rates among East rather than among West Germans arises from lower incomes in the East, and this is attributed to covariate effects. On the other hand, there are differences in participation behavior between West and East Germans, i.e. in the way that East Germans link their characteristics to their participation decision. Since the link is made through the coefficients on characteristics, it is referred to as “coefficient effect”.

Such coefficient effects refer to differences in behavior, but in general they could also arise from differential treatment of the two groups by the financial sector.

A case in point would be discrimination by the financial sector against one of the two groups. Such discrimination, based on the place of origin of German households living in unified Germany, is not only illegal but also unlikely, as it has not been documented. We will, therefore, assume that coefficient effects arise mainly from differential interplay between familiarity of the household with regard to a given financial instrument and the opportunity it provides for future wellbeing. In the case of stocks, the latter could refer to the opportunity for wealth generation based on the equity premium; in the case of consumer credit, to the potential it provides to East German households to catch up with their West German counterparts sharing similar characteristics. We will provide below some evidence consistent with the existence of this “catching up” effect, controlling for own household characteristics.

To construct the counterfactual participation probability and derive the decomposition, we first run a participation probit regression for the relevant asset or debt in the West German sample and obtain the coefficients for the West. We are able to control for a range of household characteristics. Specifically, we include as regressors a gender dummy, four age categories (20-34, 35-49, 50-65, and above 65), and marital status (single, married, and divorced). Furthermore, we control for household composition by including categorical variables for the number of adults (1, 2, and 3 and above) and children (0, 1-2, and 3 and above). The three categories "at most general schooling", "completed high school", and "completed college" describe the household head's educational attainment. We capture the labor force status and occupation of the household head, distinguishing between retired, unemployed, and not in labor force, and apprentice, self employed, blue collar, white collar in financial sector, white collar in non-financial sector, and civil servant. We also control for (the logarithm of) household monthly net income, and we proxy for wealth through a

dummy variable that indicates homeownership. Asset amounts (and, as a result, household wealth) are not regularly reported in GSOEP.<sup>18</sup> We have run specifications that control for asset income, either in levels or in categorical form. Since results using this proxy for wealth (available on request) were not materially different from those that did not include the proxy, and since asset income is endogenous to the participation decision, we report results from specifications that do not include a wealth proxy.<sup>19</sup> Finally, we add two proxies for consumer sentiment, namely whether the household head reports being concerned about the general economic development, and about the household's own economic situation.<sup>20</sup>

Once the probit coefficient estimates are obtained, we draw (randomly and with replacement) vectors of household characteristics from the East German population, thereby respecting any tendency of them to co-vary.<sup>21</sup> For each East German household drawn, we use the West German coefficient estimates to compute the probability of participation that this East German household would exhibit if it behaved like a household from the West. Once we compute these counterfactual probabilities for all East German households drawn, we average them to compute the counterfactual probability in question. We also compute confidence intervals by bootstrapping the sample of East Germans one hundred times, computing an entire set of coefficient estimates and covariate effects, and seeing whether zero lies in the 95% confidence interval of these estimated coefficient and covariate effects, in which case they are not statistically significant at the 5% level.

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<sup>18</sup> They are only reported in 2002 and 2007.

<sup>19</sup> In fact, given that our results (below) imply quick take-up of unfamiliar capitalist products by East Germans, not controlling fully for the typically higher wealth levels of West Germans works against us and makes our results stronger.

<sup>20</sup> The relevant question is: "What is your attitude towards the following areas – are you concerned about them? General economic development / Your own economic situation. There are three answer categories, namely "very concerned", "somewhat concerned", "not concerned at all". We transform these into a dummy variable that is equal to 1 if the respondent chooses "very concerned", and 0 otherwise.

<sup>21</sup> The number of draws corresponds exactly to the sample size.

## 4.2. Unfamiliar: Consumer Debt

Figure 1 showed that participation rates for consumer debt are consistently greater among East than among West Germans throughout the period for which debt is observed (1997-2009). Although one might conjecture that this is due to poorer economic conditions of East Germans, our decomposition analysis finds exactly the opposite: covariate effects are statistically insignificant throughout the period, and practically the entire observed difference in participation probabilities can be attributed to a greater tendency of East Germans to have consumer debt outstanding compared to their West German counterparts of similar observed characteristics (Figure 15).<sup>22</sup> It is also noteworthy that this greater tendency of East Germans to have consumer debt only diminishes very slowly, falling from a West-East difference of -9 percentage points in 1999 to -5 percentage points in 2009.

The next set of Figures (16-19) uncovers an interesting cohort pattern to these coefficient effects, while covariate effects are statistically insignificant throughout. While for the oldest cohort (born before 1930), coefficient effects are also insignificant or at best very small, these tend to increase as we progressively consider younger cohorts. While it is generally true that younger households are more likely to borrow than older ones of similar characteristics, here the result refers to a growing differential tendency of East Germans to borrow compared to their West German counterparts as we consider younger groups. In other words, East German cohorts that were younger when they were introduced to debt, following reunification, were likely to exceed their West German counterparts more in their tendency to borrow. To the extent that borrowing needs of the two groups are equally well captured by the observed characteristics included in the regression, this result raises the question of

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<sup>22</sup> Figure 15 and following present the results of the decomposition exercises. The solid line indicates the observed West-East difference in participation behavior, while the dark grey line shows the coefficient effect, and the light grey line the covariate effect, both with 95% confidence bands.

what leads to these differences. One possibility is that consumer debt was partly undertaken in order to emulate peers, and younger East Germans at the time of reunification were more likely than older East Germans to resort to consumer debt in order to emulate their peers, thus creating this cohort pattern. The role of peer comparisons in consumer debt will be explored further in Section 5.

Analysis of different cohorts allows us also to address another issue, namely that of making sure that the results are not driven by people who were exposed to capitalism prior to the split of Germany or those who managed to get exposed to these products during their formative years because they were children at the time of reunification. The cohort born in the period between 1949 and 1971 consists of people who were not exposed to these ‘capitalist’ products prior to reunification and were at least 18 years old at reunification, i.e. spent their formative years in the GDR. Figure 20 shows that the pattern of greater participation in consumer debt among East Germans that we found for the overall sample, namely insignificance of covariate effects, and coefficient effects in favor of East German participation and only slowly declining through time, is also found for this subsample which is affected by the experiment in the “cleanest” way.

The next set of figures (21-23) depicts differences for three different groups of educational attainment of the head. For the least educated, namely those with general schooling only, we find hardly noticeable observed differences in participation probabilities in consumer debt throughout the period. While our estimates indicate that this is the net effect of coefficient and covariate effects cancelling out, neither type of effect is statistically significant throughout the period. For the other two educational categories, however, not only do we find that East Germans are more likely to participate in consumer debt than West Germans, but also that this is fully

due to differences in debt behavior of households of comparable observed characteristics. If anything, estimates of coefficient effects are somewhat larger for the most educated group. This suggests that whatever drives these East-West differences does not diminish with literacy and information collection and processing ability, which are typically associated with higher educational attainment. This reinforces the conjecture that consumer debt, rather than being a sign of weakness or failure to cope with financial needs, is likely to be part of a focused plan to catch up with peers, either by consuming more or by releasing resources that can be invested profitably (e.g. in wealth-generating securities). We will be exploring this conjecture further in the next section.

### **4.3. Unfamiliar: Securities**

We now turn to participation in risky assets. First, we consider stocks and bonds together (“securities”), as we can observe these throughout the post-reunification period. An interesting reversal to the results on consumer debt occurs here. In our descriptive section, we saw that West Germans are more likely to participate in securities throughout the period, and this differential tendency does not seem to diminish with time. In Figure 24, we see that practically all of this difference is due to the fact that West Germans have observed characteristics that are more conducive to holding securities: comparable East and West Germans are equally likely to be holding risky securities right from the start, and this does not change throughout the post-reunification period.<sup>23</sup> This is despite the lack of familiarity of East Germans with risky securities due to the time spent under the communist regime. The picture

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<sup>23</sup> If anything, the coefficient effect increases slightly at the end of the sample period, but stays insignificant.



does not change when we focus on stocks and restrict attention to the period for which separate data on stocks exist (Figure 25).<sup>24</sup>

When we consider different age cohorts separately (Figures 26-29 for securities, Figures 30-33 for stocks), we find that all cohorts of West Germans exhibit greater participation in securities and specifically in stocks than East Germans throughout the period we consider. For the oldest cohort, born before 1930, the difference is split between coefficient and covariate effects, while for the other cohorts, it is mostly explained by West German characteristics being more conducive to stockholding than those of East Germans.

Interestingly, during the period following the crash of the internet bubble, young to middle-aged East German households (born between 1950 and 1970) were more likely to hold securities in general and stocks in particular than West Germans of comparable characteristics. This differential tendency to hold stocks disappeared in the later part of the decade and it is missed by looking at observed differences in participation, which continued to be in favor of West Germans throughout the period and only fell slightly during the aftermath of the crash of the internet bubble. This tendency to exhibit statistically significant coefficient effects following the crash is consistent either with delayed reaction of East Germans to the internet bubble crash or with a greater tendency to take advantage of the wealth generating opportunities arising from buying stocks at lower prices following the burst of the bubble.

Figures 34 and 35 show that our benchmark results hold also for the cohort group that is affected by the experiment in the “cleanest” way, i.e. which had not experienced capitalist products at least until the age of 18. The greater participation rates for West Germans are due entirely to characteristics that were more conducive to

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<sup>24</sup> When considering only stocks, the increase in the coefficient effect is slightly more pronounced, but the coefficient effect is only significant in the last survey year, 2009.

stockholding. Coefficient effects are not significantly different from zero, with the exception of 2000 to 2002, in which East Germans are estimated to be more likely to participate in the stock market than their West German counterparts, but their household characteristics push in the opposite direction and actually dominate, producing lower East German participation, as in the rest of the period.

In unreported results, we also examine separately the participation patterns in bonds and the corresponding coefficient and covariate effects. Looking at all age cohorts taken together, West Germans are seen to be more likely to participate in bonds throughout the period, with coefficient and covariate effects being significant and accounting almost equally for the difference in participation. Taking a closer look at different cohorts, we find that East and West Germans of similar characteristics tend to be equally likely to invest in bonds, with the exception of the oldest and youngest cohorts, where we see that West Germans dominate even controlling for their characteristics. Even for these two cohorts with significant coefficient effects, however, we do not observe a clear tendency of these effects to diminish over time, as familiarity of East Germans with bonds increases.

Securities in general, and stocks in particular, are considered information-intensive assets. Stock market participation studies have consistently pointed to a significant role of educational attainment in participation, which could be attributed to greater ease of more educated people to obtain and process relevant information, lowering their stock market entry and participation costs. An extension of these arguments to familiarity would also suggest that, among households less familiar with risky financial instruments, those with the lowest degree of educational attainment would have greater difficulty familiarizing themselves with the new instruments.

Yet the picture we obtain when we consider different education classes separately does not quite fit this conjecture (Figures 36 to 41). For securities, coefficient effects tend to be largely insignificant regardless of educational attainment, and this is more consistently so for stocks in particular (for the period in which we can observe them). Among the highest education group, we do find statistically significant coefficient effects towards the end of our sample (after 2005), both for securities overall and specifically for stocks, but they are in favor of West Germans: highly educated East Germans fall below their West German counterparts and are less likely to participate, despite the fact that they are the most capable to collect information and they have had plenty of time to do so, following reunification. It is hard to attribute this pattern of coefficient effects either to lack of familiarity of East Germans or to greater facility of their most educated members to familiarize themselves with risky assets as time goes by. If anything, these results are consistent with the idea that product familiarity differences did not translate into observed lower patterns of participation in securities among East Germans, and that the opportunity to participate was as much taken up by East Germans as it was by West Germans of similar household characteristics in an environment with a knowledgeable and well-incentivized financial sector, as well as peers familiar with securities.

#### **4.4. Familiar: Life Insurance and Savings Accounts**

Additional light on the role of product familiarity can be shed by contrasting our findings in the previous section to those for assets that were familiar to both East and West Germans prior to reunification. We consider two such assets here: savings accounts and life insurance policies. In both cases, observed participation rates of East Germans start out being higher than those of West Germans following reunification,

and then gradually come closer together as time elapses, even with a slight reversal in participation rankings towards the end of our sample period.

Our decompositions show that this pattern of evolution of observed participation differences is governed primarily by coefficient effects, whether we look at the overall sample or at the cohort 1949 to 1971 (Figures 42 to 45): East Germans start out being more likely to participate in savings accounts and life insurance policies than their West German counterparts with similar characteristics, but gradually they become no more likely than West Germans to participate. Figure 45 shows the striking participation pattern for life insurance policies among the cohort never exposed to capitalist products prior to reunification. Although characteristics of West Germans in that cohort are estimated to have been more conducive to ownership of life insurance policies, their influence was overwhelmed by the tendency of East Germans previously unfamiliar with capitalist products to participate in a familiar product. This resulted in initially greater participation by East Germans. The coefficient effects eventually converged to zero and the relative participation rates were dictated by the underlying household characteristics by the end of our estimation period. A similar picture arises for participation in savings accounts, as can be seen in Figure 43.

A possible interpretation of these patterns has to do with how opportunities evolved. In East Germany, given the limited opportunities to participate in wealth-generating assets, there was considerable participation in savings accounts and life insurance policies. Participation was not stopped when East Germans were given opportunities to participate also in riskier assets with return premia, even though East Germans jumped at these opportunities. The gradual easing of participation in assets familiar from the past is consistent with gradual portfolio adjustment of already

familiar assets, combined with a pattern of experimentation with newly available assets and debts.

## **5. Differences in East-West Financial Behavior: Probing Further**

### **5.1. The Role of Peers**

In previous sections, we employed counterfactual decompositions to uncover differences in financial behavior between East and West Germans following reunification. Estimation of coefficient effects still leaves open the question of what lies behind the differences in behavior. The patterns of coefficient effects that we found for assets and debts of different familiarity to East Germans suggested an interpretation in which lack of familiarity does not prevent East Germans to exploit new investment opportunities.

In this section, we analyze the role of peers in the decision to take up debt or invest in stocks. As mentioned in the introduction, peer effects have been shown to be important in financial decision making in the literature. Given the nature of the ‘experiment’ and of the data, we focus on the broader circle of peers, namely people of comparable age and education, which includes both East and West Germans following reunification. The influence of this broader circle is interesting, since reunification significantly changed the peer groups for both East and West Germans.

One hypothesis is that East Germans may be led to use credit and risky assets not only according to their own personal resources and characteristics, but also guided by the objective to catch up with their new peers from West Germany. A key factor in determining consumption and asset holding of peers, as well as describing labor market success, is income. We consider the possibility that, in addition to their own characteristics, households in the post-unification era were sensitive to average

incomes in their age/education peer group, which now included East and West Germans, when making choices of financial instruments. Specifically, we examine econometrically whether participation in consumer debt or in securities also responded to peer income, separately for East and for West Germans.<sup>25</sup>

Tables 2 and 3 present probit participation regressions for consumer debt, separately for West Germans in Table 2 and for East Germans in Table 3, with identical specifications and standard errors clustered at the household level.<sup>26</sup> The first column of marginal effects in each of the two tables refers to a model in which the usual set of determinants of participation in consumer debt are augmented by the average income of peers, defined as comprising people in the same age and education category as the respondent, regardless of whether they come from the East or from the West. We find that there is a positive marginal effect of peer income on consumer debt participation, both for respondents who originated in the East and in the West, with the estimate being considerably larger for East Germans. A unit increase in peer incomes, keeping all other characteristics at their actual level and averaging over all individuals, increases the probability that an East German participates in consumer debt by 25 percentage points but by only 13 percentage points for a West German.<sup>27</sup> There are two main reasons why the East German participation rate in consumer debt could be influenced more by peers than the West German one: first, East Germans are immersed in a pool with higher average incomes following reunification, and a

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<sup>25</sup> We prefer this approach to considering asset and debt holdings in the peer group directly, both because incomes determine such holdings and because forming perceptions about peer income tends to be easier than observing peer assets and (especially) debts.

<sup>26</sup> The sample in these regressions stops in the year 2007, since in the second column we include a measure of income growth over the next two periods. Thereby, the number of observations in columns 1 and 2 are kept identical.

<sup>27</sup> As separate regressions are run, this allows for different coefficients on all controls in the East and in the West sample, as well as for differences in the configuration of characteristics. Notice also that, in order to avoid the reflection problem, we remove the respondent's income when computing average incomes in the peer group.

greater number of them find themselves to be poorer than the (new) average; and second, they may be more responsive to changes in peer income than West Germans.

The former consideration is consistent with the findings of Georgarakos et al. (2014) based on a Dutch sample, namely that people who perceive themselves as being poorer than the average of their peers are more likely to participate in debt. The second point need not imply that East Germans are more conscious of relative status than West Germans are. It may well be related to the greater value derived by East Germans unfamiliar with financial products of interacting with richer peers, more likely to be knowledgeable regarding those products.

Estimation of peer effects is always challenging. First, how do we know who the peers of each household are? We obviously don't, but the usual practice of assuming that peers consist of all those in the same age and education group seems more warranted in our context: we are trying to capture peer effects induced by reunification rather than by one's own social activities. Second, how do we handle endogeneity of the peer group, namely the fact that each respondent chooses the peers? Here, we are focusing on a broad peer group, rather than a small social circle, which changed due to reunification, an event that was exogenous to individual respondents. Third, could it be that changes in average incomes of peers in the broad sense simply capture changes in macroeconomic conditions? In order to purge the effect from these macro-considerations, we have included year dummies in the regression.<sup>28</sup> Fourth, reunification brought with it not only an increase in average peer incomes for those coming from the East, but also expectations of higher future own incomes. To control for this expectation effect, we include a perfect foresight measure of income expectations, namely the ex-post realized income growth over the next two

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<sup>28</sup> We also include state fixed effects, referring to the 16 states of Germany.

years, in the second column of Tables 2 and 3. When we do this, we find that income expectations have a significant impact on the probability of participation in consumer debt in the West, but that the marginal effect of peer income continues to be statistically significant for both East and West and remains essentially unchanged quantitatively relative to the regression without income expectations.<sup>29</sup>

Tables 4 and 5 repeat the same exercise, but for securities instead of consumer debt. Our counterfactual decomposition analysis above showed essentially no coefficient effects in the average participation rate in securities. Our regression analysis in this section suggests that there is a differential response of East and West Germans to peer income when the latter is included in the regression. West Germans are estimated to have a statistically insignificant response to peer income when they decide their participation in securities, while East Germans exhibit a statistically significant, positive response. This is again net of macro effects, largely unaffected by controlling for expected income growth, and jointly significant with the latter when both variables are included (in the second column of Tables 4 and 5).<sup>30</sup>

## **5.2. The Role of Risk Attitudes, Trust, and Sociability**

The literature has documented some differences in risk aversion, trust, and sociability between East and West Germans (see e.g. Heinek and Süßmuth, 2013, Rainer and Siedler, 2009, Dohmen et al., 2011, Bauernschuster et al., 2011). These differences could matter in explaining different portfolio choices of East and West Germans. We analyze whether the East-West German differences in financial

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<sup>29</sup> Our perfect foresight proxy for income expectations obviously does not capture unfounded or over-optimistic expectations. It cannot be ruled out that some East Germans had unrealistic expectations about future incomes following reunification and that this exaggerated component contributed partly to their financial behavior.

<sup>30</sup> Including peer income as a covariate in the counterfactual decomposition does not affect the relative importance of covariate and coefficient effects.



behavior could be due to these differences in characteristics by introducing into the counterfactual analysis reported in Section 4 controls for risk attitudes and for social factors, such as trust and sociability. These variables could not be introduced to the full range of decompositions presented above, as they are only available for three years, namely 2003, 2004, and 2008. Tables 6 and 7 report estimates of coefficient and covariate effects when these additional controls are included in the participation probits for securities and for consumer debt, respectively. The grey columns marked “benchmark” repeat the relevant coefficient and covariate effects with the corresponding confidence bands from the figures in Section 4, while the white columns show the corresponding coefficient and covariate effects when we control for risk attitudes, trust, and/or sociability.

Specifically, we control for willingness to take risks in general and for readiness to assume financial risk. Trust is controlled through dummy variables indicating level of support for the standard generalized trust statement “on the whole, one can trust people”. Sociability is proxied by the self-reported number of close friends. For 2003, we have information on sociability and trust, for 2004 on financial risk preferences, and for 2008 for sociability, trust, and general risk preferences.

We find that inclusion of different combinations of these additional controls influences somewhat the estimated size of coefficient effects. However, in no case does it change the nature of our conclusions. In the case of securities, coefficient effects remain statistically insignificant even when we allow for East-West differences in willingness to take risks in general or financial risk in particular, and in trust or sociability. Similarly, East Germans continue to be more willing to participate in consumer credit, even after controlling for these additional factors that potentially differentiate them from West Germans.

All in all, our results on trying to sharpen the implications of the new opportunities for East Germans following reunification are consistent with the view that East Germans used both consumer credit and securities partly in response to the higher average incomes of their new peers. Moreover, our key findings on behavior with respect to securities and consumer debt are not attributable to the distribution of risk attitudes, trust or sociability in the East and West German population.

## **6. Concluding Remarks**

This paper employs the “experiment” of German reunification and several waves of GSOEP data to study the link between familiarity with and participation in financial products in an environment with a knowledgeable and well-incentivized financial sector and of peers familiar with the products. East-West differences in behavior are analyzed for instruments unfamiliar to East Germans (consumer debt and securities) and for familiar ones (bank accounts and life insurance). We document differences in observed participation rates and study econometrically whether these can be traced to differences in the configuration of household characteristics or in the behavior of people with similar characteristics, and how they evolve over time..

In raw data, East Germans exhibit higher participation in consumer debt and lower in securities than West Germans. The former is robust to controlling for characteristics of the two groups, while the latter is almost entirely explained by differential observable characteristics. Moreover, these relative tendencies of comparable East and West Germans to participate in debt and securities are quite persistent and not attributable to differences in the distribution of risk attitudes, trust, and sociability. Persistence is consistent with a secondary role for familiarity relative to a reliable financial sector and interaction with knowledgeable peers.

For assets familiar to East Germans, we find greater participation rates for East Germans in the raw data and relative to comparable West Germans, both initially and for a number of years following reunification. We also find gradual convergence to West German participation rates over time.

At reunification, East Germans were confronted with a new set of financial instruments, as well as one of peers, which now included West Germans with typically higher living standards. The living standards (as proxied by the average income level) of this enriched set of peers are found to be related to the decisions of East Germans to participate in “capitalist” instruments useful for generating wealth (stocks) and for financing higher levels of consumption (consumer debt).

Our findings have a number of policy implications. One expects, based on existing literature, that lack of familiarity would lead people to be either cautious and gradual in their adoption of financial products, or too quick to plunge in but also potentially to get out of unfamiliar products after they realize their mistake. Our findings that neither of these two possibilities materialized can be reconciled with existing literature if we recall that the West German financial sector satisfied two conditions: good knowledge of the instruments and great disincentives to mislead East Germans into buying them.

Our findings, however, do not contradict the importance of measures to promote awareness or financial literacy. Our paper, however, casts doubt on the idea that previous familiarity with a financial instrument should be decisive for preventing households from gaining access, developing familiarity, and benefitting from the attributes of these financial instruments. It seems that, in a world of financial innovation but also of multiplicity of risks, promoting responsible use is a more appropriate target than denying the possibility to learn and benefit.

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**TABLE 1: Consumer Debt Servicing Ratio (monthly)**

<b>Year</b>	<b>Mean</b>		<b>Median</b>	
	<b>West</b>	<b>East</b>	<b>West</b>	<b>East</b>
1997	0.1705	0.1475	0.1271	0.1191
1998	0.1715	0.1339	0.1250	0.1090
1999	0.1652	0.1467	0.1269	0.1178
2000	0.1685	0.1480	0.1316	0.1178
2001	0.1582	0.1449	0.1214	0.1194
2002	0.1550	0.1495	0.1244	0.1202
2003	0.1608	0.1496	0.1250	0.1200
2004	0.1671	0.1474	0.1294	0.1250
2005	0.1403	0.1548	0.1105	0.1167
2006	0.1307	0.1380	0.1064	0.1154
2007	0.1461	0.1406	0.1000	0.1129
2008	0.1384	0.1523	0.0962	0.1056
2009	0.1268	0.1347	0.0980	0.1066

Note: This table contains the ratio of consumer debt repayments to net household income (both at monthly frequency), conditional on having positive consumer debt. The first two columns show the mean by year over all West/East German households, the next two columns the median by year.

**TABLE 2: Consumer Debt Participation Regressions With Peer Income and Income Growth**

West Germans		
Dependent variable:	Consumer debt participation	
	(i)	(ii)
peer income (log)	0.1266 *** (0.0405)	0.1258 *** (0.0405)
income growth		0.0081 ** (0.0041)
income (log)	0.0599 ***	0.063 ***
male	0.0085	0.0083
age 35-49	-0.0548 ***	-0.0541 ***
age 50-65	-0.0997 ***	-0.0985 ***
age 66+	-0.1566 ***	-0.1554 ***
married	0.0092	0.0091
separated/divorced	0.0504 ***	0.0505 ***
2 adults	0.0146 *	0.0142 *
3+ adults	0.0212 **	0.0203 **
1-2 children	0.0207 ***	0.0206 ***
3+ children	0.04 ***	0.0398 ***
retired	-0.0932 ***	-0.0934 ***
unemployed	-0.0666 ***	-0.0668 ***
not in labor force	-0.0759 ***	-0.0767 ***
apprentice	-0.0432	-0.0448
self employed	-0.013	-0.0142
white collar in financial sector	-0.0326 *	-0.0336 *
white collar in non-financial sector	-0.0225 ***	-0.0233 ***
civil servant	-0.0004	-0.0015
completed high school	-0.0128	-0.0131
completed college	-0.1062 ***	-0.107 ***
own house	-0.0675 ***	-0.0678 ***
very concerned about general econ. development	0.0198 ***	0.0197 ***
very concerned about own econ. development	0.0533 ***	0.0556 ***
state fixed effects	yes	yes
year fixed effects	yes	yes
observations	62,500	62,500

Note: This table represents marginal coefficients from a probit regression of consumer debt participation on relevant characteristics, using the West German sample 1997-2007. Column (ii) adds income growth as an explanatory variable to the regression of column (i). Marginal effects are constructed keeping all other variables at their actual levels and averaging over all individuals. Peer income and income growth are constructed as described in the main text. Standard errors are clustered at the household level and reported in parentheses. \*\*\* indicates significance at the 1 percent significance level, \*\* at the 5 percent level, and \* at the 10 percent level.



**TABLE 3: Consumer Debt Participation Regressions With Peer Income and Income Growth**

		East Germans	
Dependent variable:	Consumer debt participation		
	(i)	(ii)	
peer income (log)	0.2489 *** (0.0824)	0.2485 *** (0.0823)	
income growth		0.0085 (0.0059)	
income (log)	0.069 ***	0.0724 ***	
male	0.0014	0.0012	
age 35-49	-0.0811 ***	-0.0802 ***	
age 50-65	-0.1273 ***	-0.126 ***	
age 66+	-0.18 ***	-0.1788 ***	
married	0.0484 ***	0.0481 ***	
separated/divorced	0.0523 ***	0.0525 ***	
2 adults	0.0437 ***	0.0431 ***	
3+ adults	0.0779 ***	0.0766 ***	
1-2 children	0.0275 **	0.0273 **	
3+ children	0.0329	0.0324	
retired	-0.1306 ***	-0.1304 ***	
unemployed	-0.1119 ***	-0.1117 ***	
not in labor force	-0.0903 ***	-0.091 ***	
apprentice	-0.0624 *	-0.0627 *	
self employed	-0.0587 ***	-0.0595 ***	
white collar in financial sector	0.0147	0.013	
white collar in non-financial sector	-0.0328 **	-0.0334 **	
civil servant	-0.0333	-0.035	
completed high school	-0.0309	-0.0312	
completed college	-0.1338 ***	-0.1345 ***	
own house	-0.0461 ***	-0.0464 ***	
very concerned about general econ. development	0.07	0.007	
very concerned about own econ. development	0.0593 ***	0.0597 ***	
state fixed effects	yes	yes	
year fixed effects	yes	yes	
observations	26,542	26,542	

Note: This table represents marginal coefficients from a probit regression of consumer debt participation on relevant characteristics, using the East German sample 1997-2007. Column (ii) adds income growth as an explanatory variable to the regression of column (i). Marginal effects are constructed keeping all other variables at their actual levels and averaging over all individuals. Peer income and income growth are constructed as described in the main text. Standard errors are clustered at the household level and reported in parentheses. \*\*\* indicates significance at the 1 percent significance level, \*\* at the 5 percent level, and \* at the 10 percent level.

**TABLE 4: Securities Participation Regressions With Peer Income and Income Growth**

<b>West Germans</b>		
Dependent variable:	<b>Securities participation</b>	
	(i)	(ii)
peer income (log)	-0.0386 (0.0386)	-0.0380 (0.0434)
income growth		0.0600 *** (0.0053)
income (log)	0.2074 ***	0.2289 ***
male	0.023 ***	0.0210 ***
age 35-49	-0.0114	-0.0088
age 50-65	-0.0214 *	-0.014
age 66+	-0.0397 ***	-0.0301 **
married	-0.0049	-0.0049
separated/divorced	-0.0655 ***	-0.0651 ***
2 adults	-0.0524 ***	-0.0557 ***
3+ adults	-0.1214 ***	-0.1277 ***
1-2 children	-0.0532 ***	-0.053 ***
3+ children	-0.1351 ***	-0.1356 ***
retired	0.0598 ***	0.0597 ***
unemployed	0.0276 **	0.0254 **
not in labor force	0.1166 ***	0.1096 ***
apprentice	0.0035	-0.011
self employed	0.0436 ***	0.036 ***
white collar in financial sector	0.2782 ***	0.271 ***
white collar in non-financial sector	0.0995 ***	0.0949 ***
civil servant	0.1027 ***	0.0955 ***
completed high school	0.0964 ***	0.0944 ***
completed college	0.1958 ***	0.1858 ***
own house	0.0896 ***	0.0869 ***
very concerned about general econ. development	-0.0021	-0.0026
very concerned about own econ. development	-0.0934 ***	-0.091 ***
state fixed effects	yes	yes
year fixed effects	yes	yes
observations	83,633	83,633

Note: This table represents marginal coefficients from a probit regression of securities market participation on relevant characteristics, using the West German sample 1991-2007. Column (ii) adds income growth as an explanatory variable to the regression of column (i). Marginal effects are constructed keeping all other variables at their actual levels and averaging over all individuals. Peer income and income growth are constructed as described in the main text. Standard errors are clustered at the household level and reported in parentheses. \*\*\* indicates significance at the 1 percent significance level, \*\* at the 5 percent level, and \* at the 10 percent level.

**TABLE 5: Securities Participation Regressions With Peer Income and Income Growth**

East Germans		
Dependent variable:	Securities participation	
	(i)	(ii)
peer income (log)	0.1654 ** (0.0727)	0.1669 ** (0.0720)
income growth		0.0638 *** (0.0158)
income (log)	0.2315 ***	0.2585 ***
male	0.0324 ***	0.0306 ***
age 35-49	-0.0721 ***	-0.068 ***
age 50-65	-0.0418 **	-0.0335 *
age 66+	-0.0775 ***	-0.0686 ***
married	-0.0184	-0.0191
separated/divorced	-0.0762 ***	-0.075 ***
2 adults	-0.0553 ***	-0.0612 ***
3+ adults	-0.0888 ***	-0.0992 ***
1-2 children	-0.0238 **	-0.0253 **
3+ children	-0.1429 ***	-0.144 ***
retired	0.0131	0.0139
unemployed	0.0226 *	0.0227 *
not in labor force	0.0721 ***	0.0661 ***
apprentice	0.0459	0.0414
self employed	0.0193	0.0126
white collar in financial sector	0.1425 ***	0.1306 ***
white collar in non-financial sector	0.0326 ***	0.0282 **
civil servant	-0.0344	-0.0442
completed high school	0.0685 ***	0.0663 ***
completed college	0.1118 ***	0.1035 ***
own house	0.0281 ***	0.0262 **
very concerned about general econ. development	-0.0095	-0.0094
very concerned about own econ. development	-0.062 ***	-0.0595 ***
state fixed effects	yes	yes
year fixed effects	yes	yes
observations	35.926	35.926

Note: This table represents marginal coefficients from a probit regression of securities market participation on relevant characteristics, using the East German sample 1991-2007. Column (ii) adds income growth as an explanatory variable to the regression of column (i). Marginal effects are constructed keeping all other variables at their actual levels and averaging over all individuals. Peer income and income growth are constructed as described in the main text. Standard errors are clustered at the household level and reported in parentheses. \*\*\* indicates significance at the 1 percent significance level, \*\* at the 5 percent level, and \* at the 10 percent level.

**TABLE 6: Coefficient and Covariate Effects with Additional Controls in Selected Years, Securities Participation**

	Year	coefficient effect	covariate effect
benchmark	2003	-0.9 (-2.6; 0.7)	8.1 (6.4; 9.7)
w/ sociability and trust	2003	-0.5 (-2.0; 1.2)	7.7 (5.9; 9.1)
benchmark	2004	-0.3 (-1.9; 1.5)	8.6 (6.8; 10.2)
w/ financial risk preferences	2004	0.3 (-1.4; 2.6)	8.0 (5.7; 9.7)
benchmark	2008	1.0 (-0.7; 2.7)	8.5 (6.8; 10.2)
w/ sociability, trust, and general risk preferences	2008	1.8 (-0.2; 4.1)	7.6 (5.4; 9.7)

Note: This table represents coefficient and covariate effects for selected years for the benchmark specification and specifications including controls for social capital, trust, and risk preferences. 95% confidence bands are bootstrapped and are shown in parentheses. The trust controls are comprised of a set of three categorical dummy variables that capture whether the respondent strongly agrees, agrees, disagrees, or strongly disagrees (with one omitted category) to the statement: “On the whole one can trust people”. The general risk attitude is measured as the answer on a scale from 0 to 10 to the question “Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? 0 means risk averse and 10 means fully prepared to take risk”. We convert the answers into 10 categorical dummy variables (with one omitted category). The financial risk variable is built correspondingly relating to the question: “How would you rate your willingness to take risks in financial matters?”. The sociability variable is a continuous variable that measures how many self-reported close friends a respondent has.

**TABLE 7: Coefficient and Covariate Effects with Additional Controls in Selected Years, Consumer Debt Participation**

	Year	coefficient effect	covariate effect
benchmark	2003	-5.8 (-7.1; -4.6)	-1.1 (-2.3; 0.1)
w/ sociability and trust	2003	-5.2 (-6.5; -3.4)	-1.8 (-3.6; -0.4)
benchmark	2004	-6.7 (-8.1; -5.2)	0.1 (-1.4; 1.6)
w/ financial risk preferences	2004	-6.3 (-7.8; -4.7)	-0.3 (-1.8; 1.2)
benchmark	2008	-6.0 (-7.2; -4.7)	-0.2 (-1.5; 1.0)
w/ sociability, trust, and general risk preferences	2008	-5.7 (-7.1; -4.3)	-0.6 (-1.9; 0.9)

Note: This table represents coefficient and covariate effects for selected years for the benchmark specification and specifications including controls for social capital, trust, and risk preferences. 95% confidence bands are bootstrapped and are shown in parentheses. The trust controls are comprised of a set of three categorical dummy variables that capture whether the respondent strongly agrees, agrees, disagrees, or strongly disagrees (with one omitted category) to the statement: “On the whole one can trust people”. The general risk attitude is measured as the answer on a scale from 0 to 10 to the question “Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? 0 means risk averse and 10 means fully prepared to take risk”. We convert the answers into 10 categorical dummy variables (with one omitted category). The financial risk variable is built correspondingly relating to the question: “How would you rate your willingness to take risks in financial matters?”. The sociability variable is a continuous variable that measures how many self-reported close friends a respondent has.

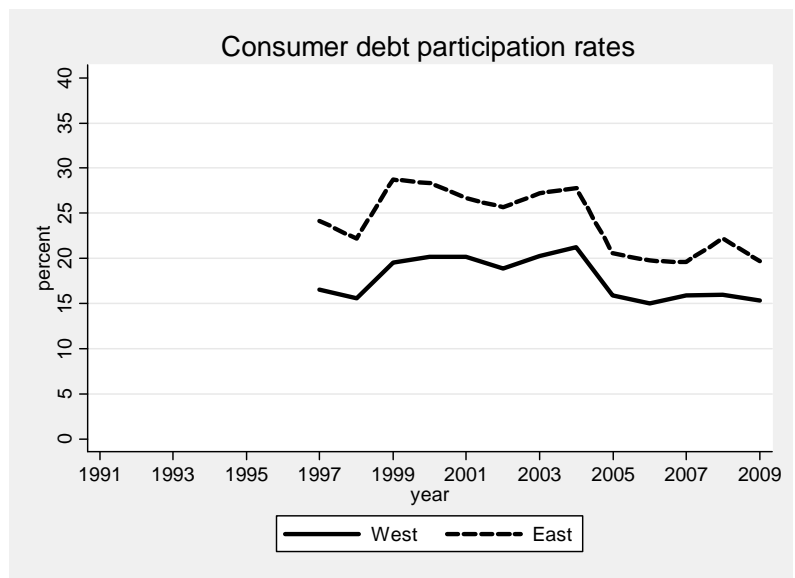


Figure 1

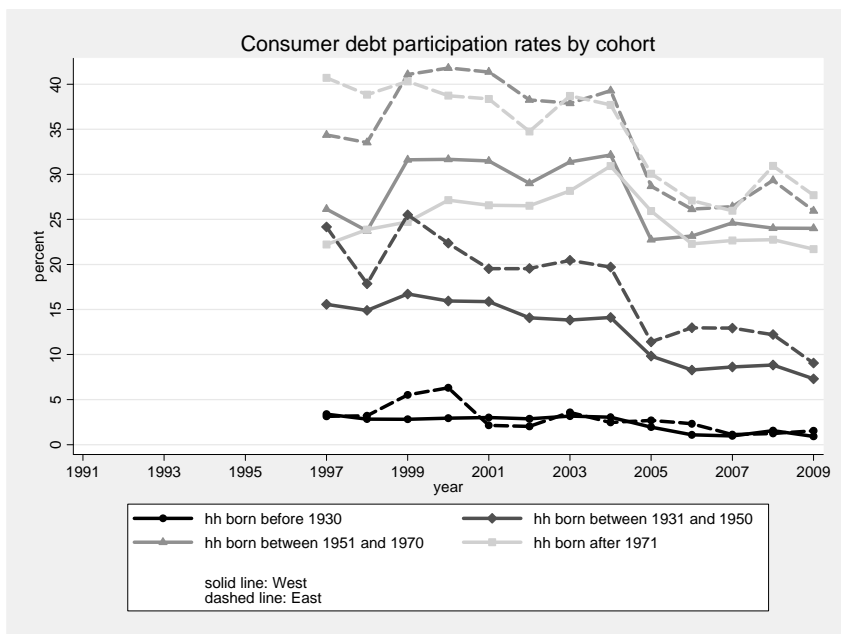


Figure 2

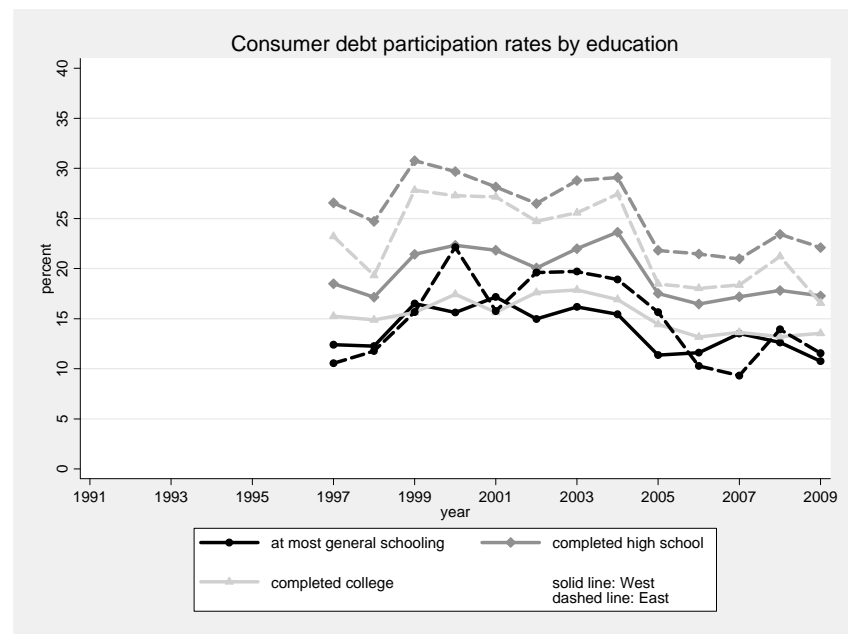


Figure 3

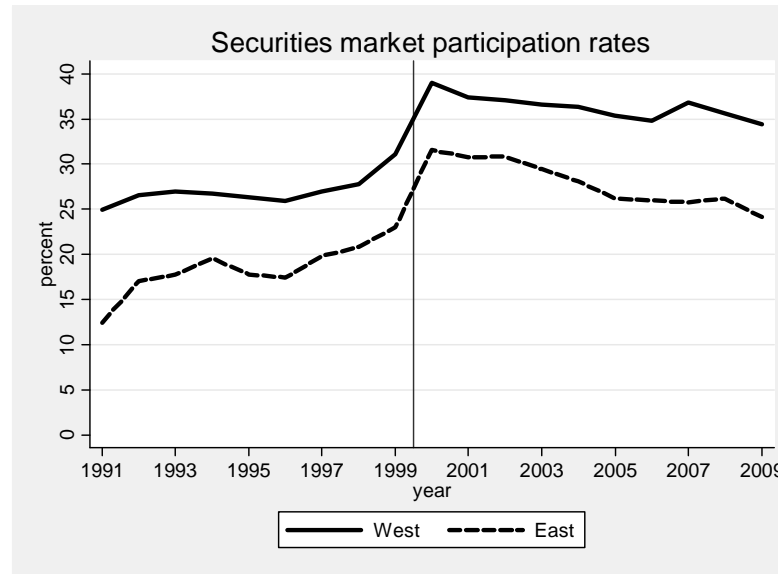


Figure 4

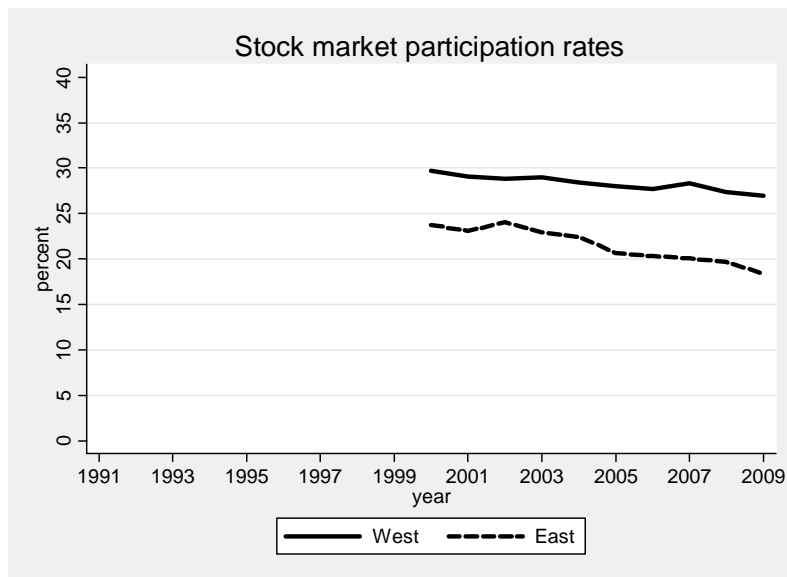


Figure 5

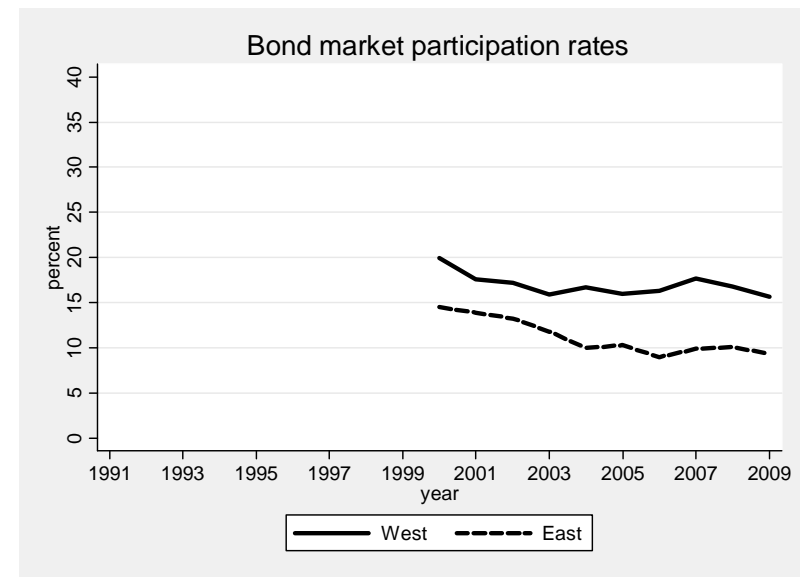


Figure 6

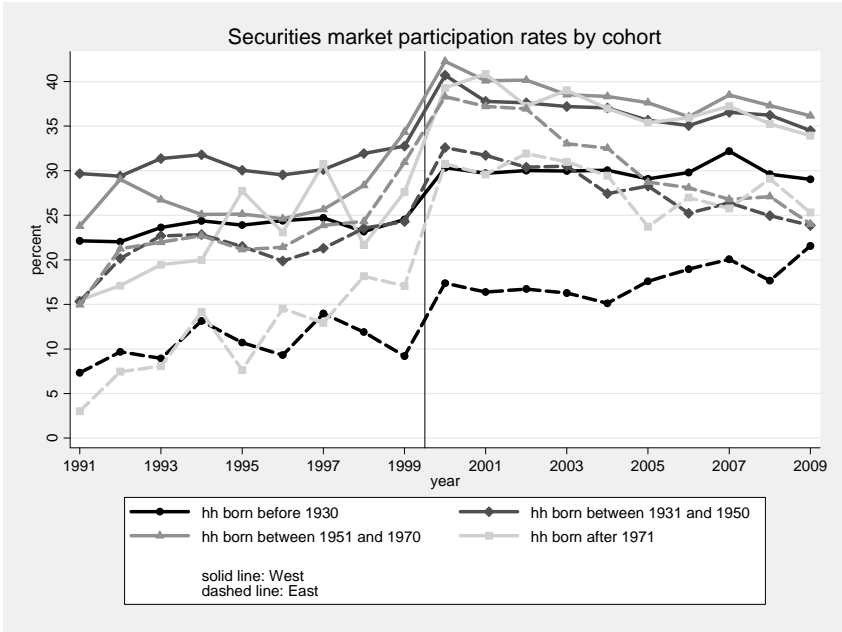


Figure 7

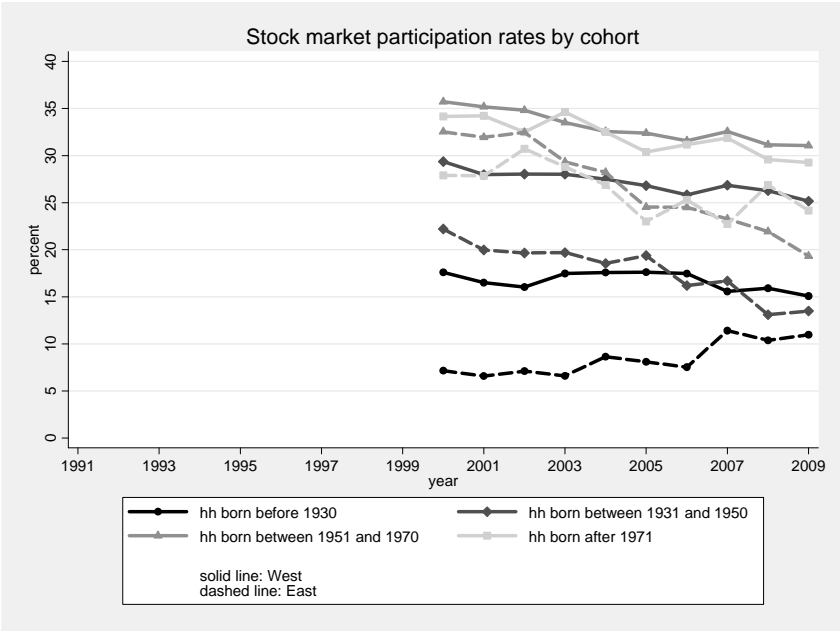


Figure 8

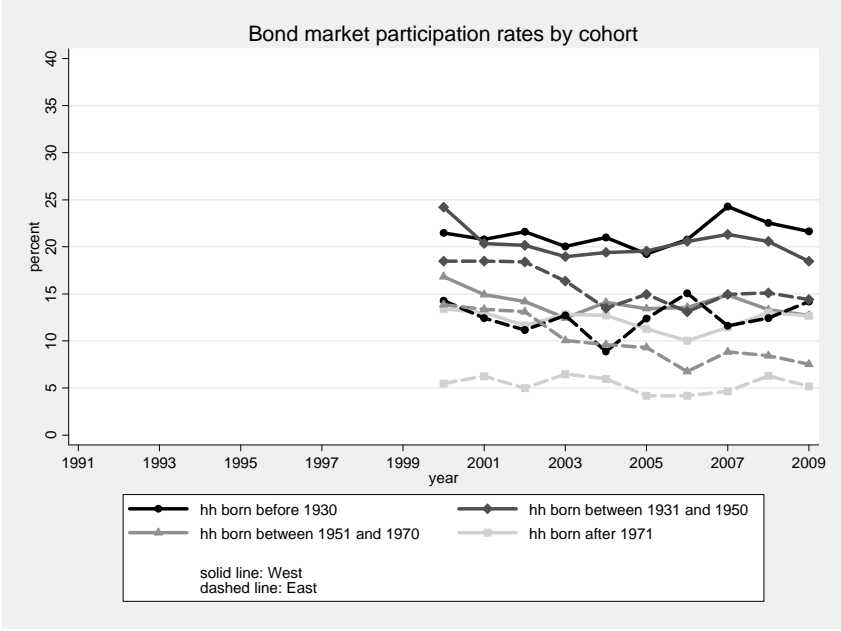


Figure 9



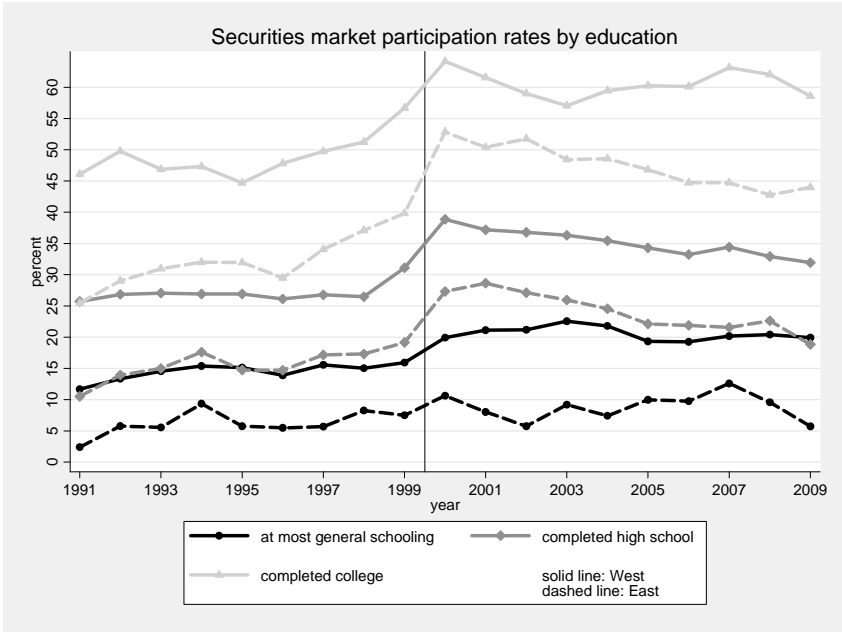


Figure 10

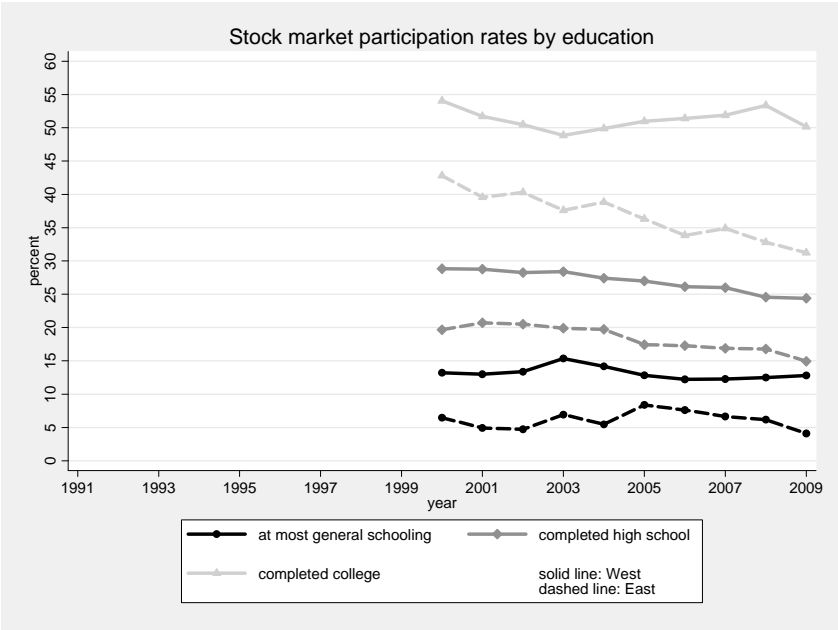


Figure 11

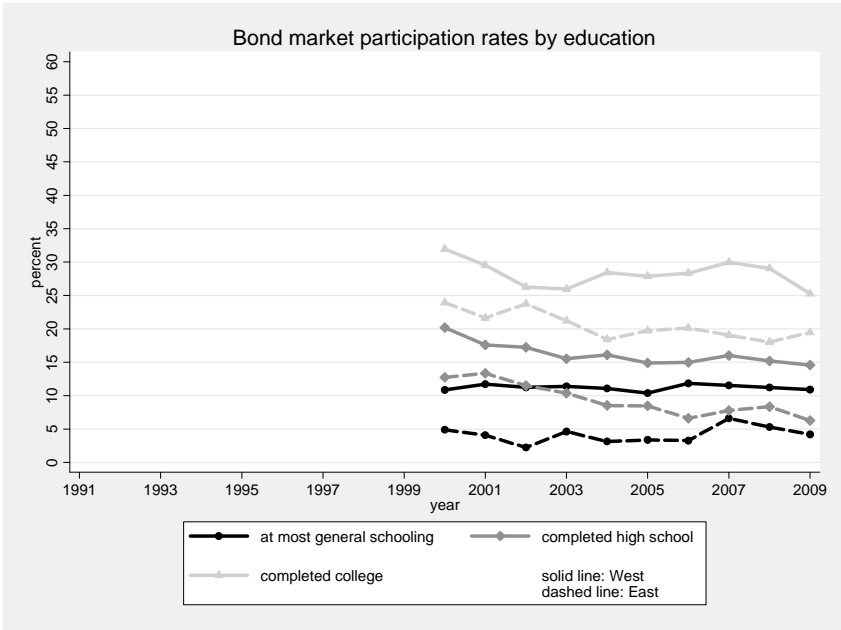


Figure 12

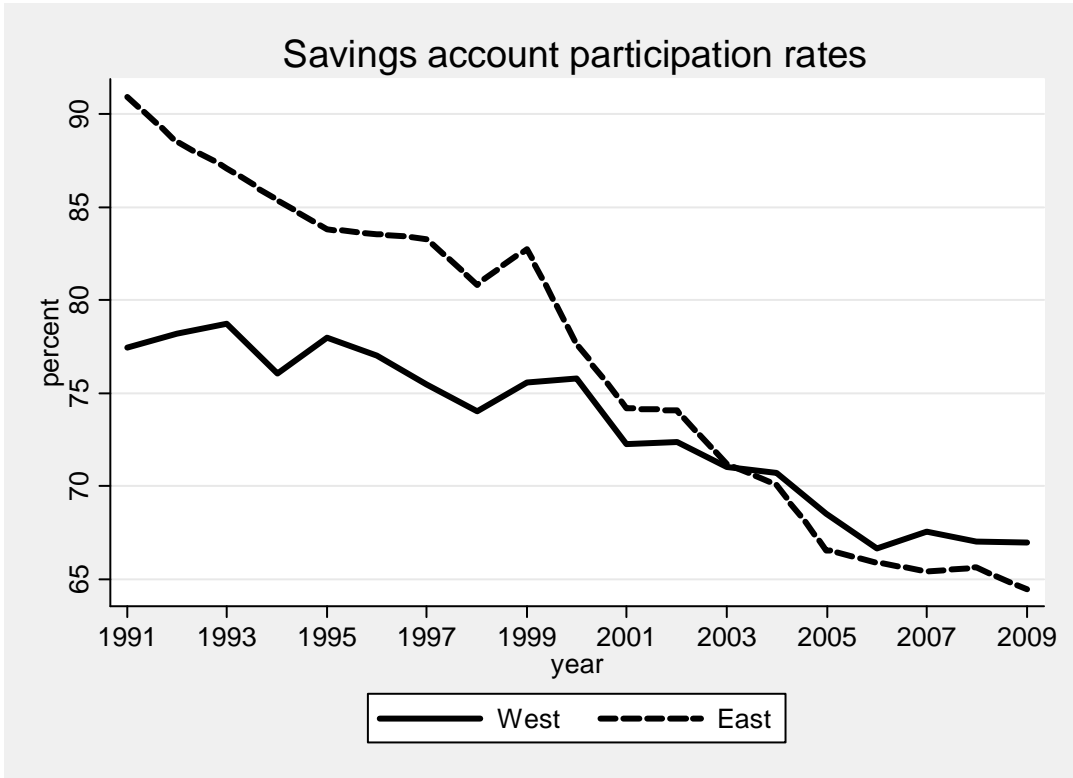


Figure 13

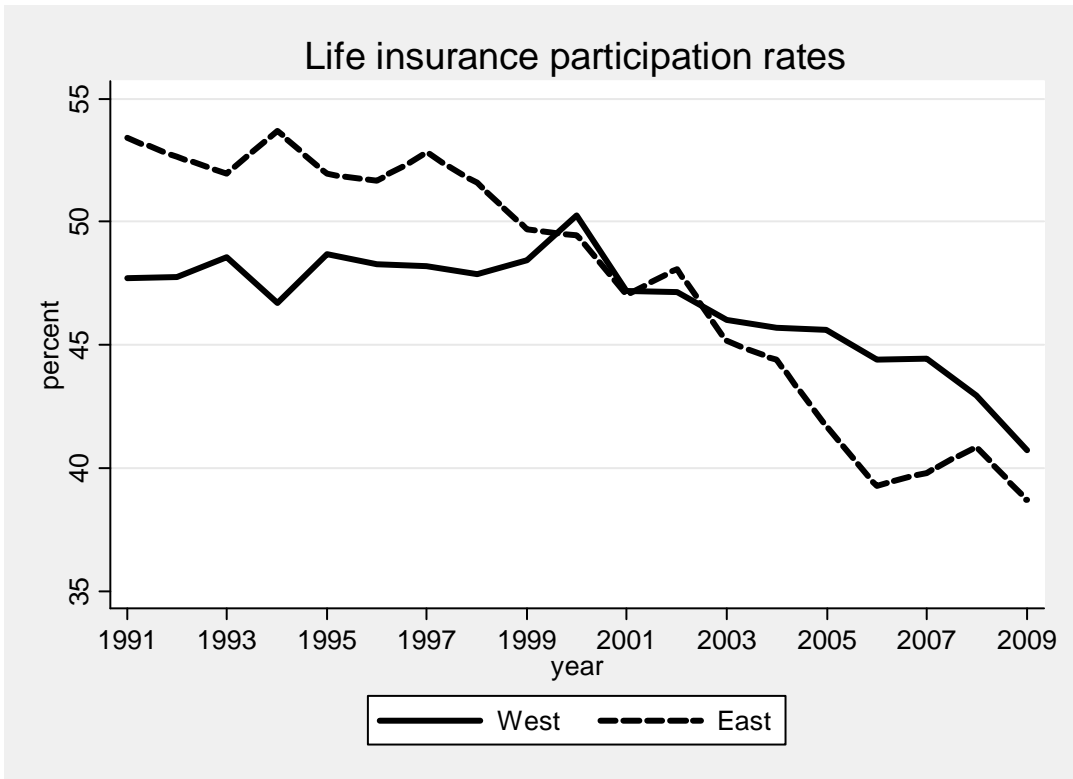


Figure 14

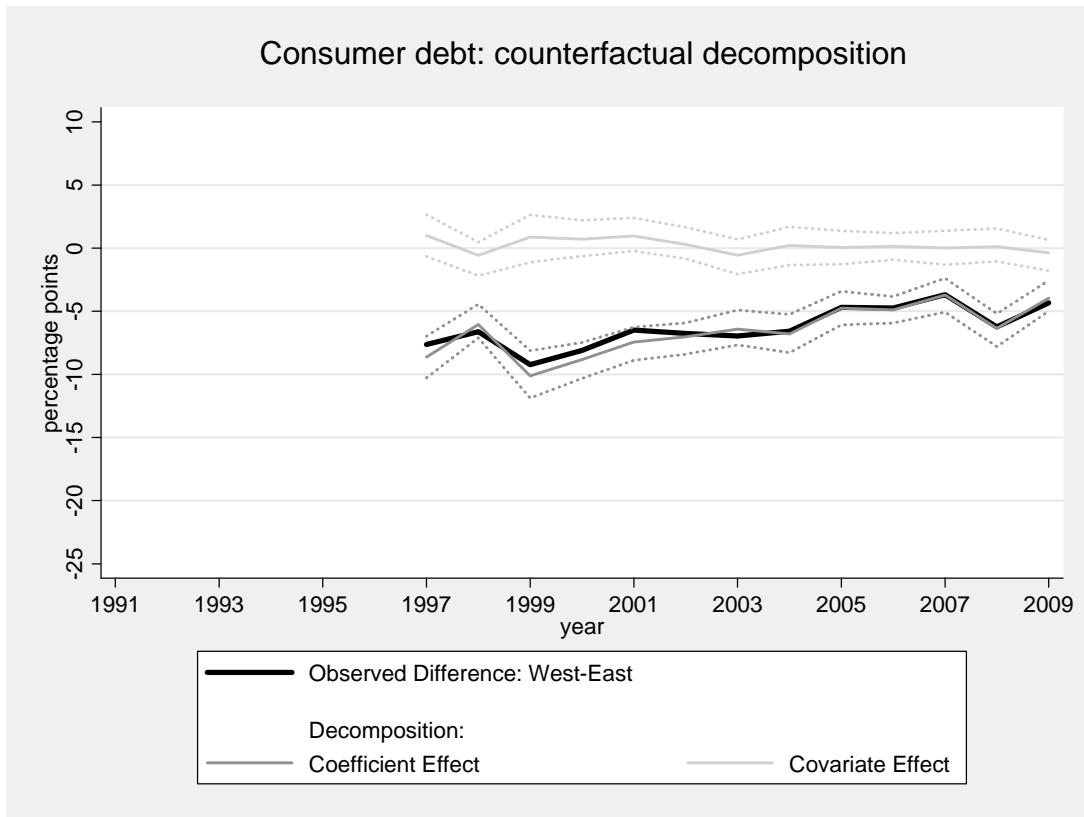


Figure 15

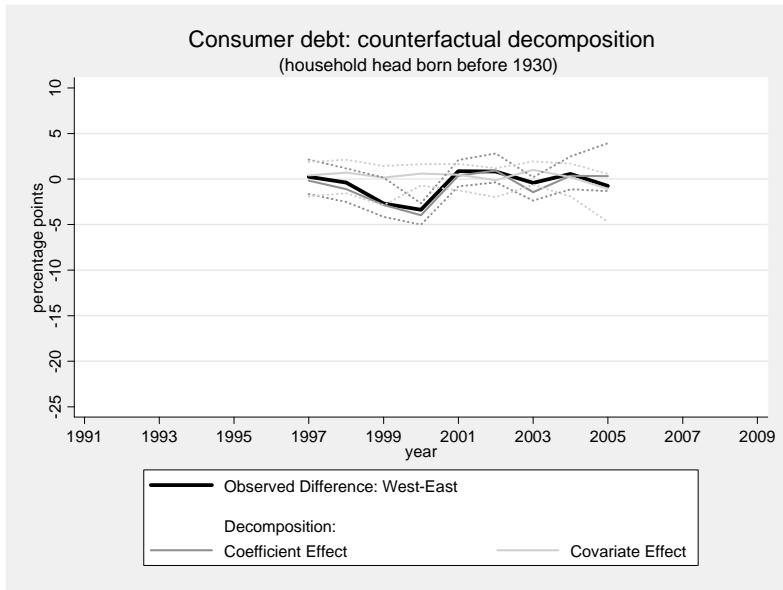


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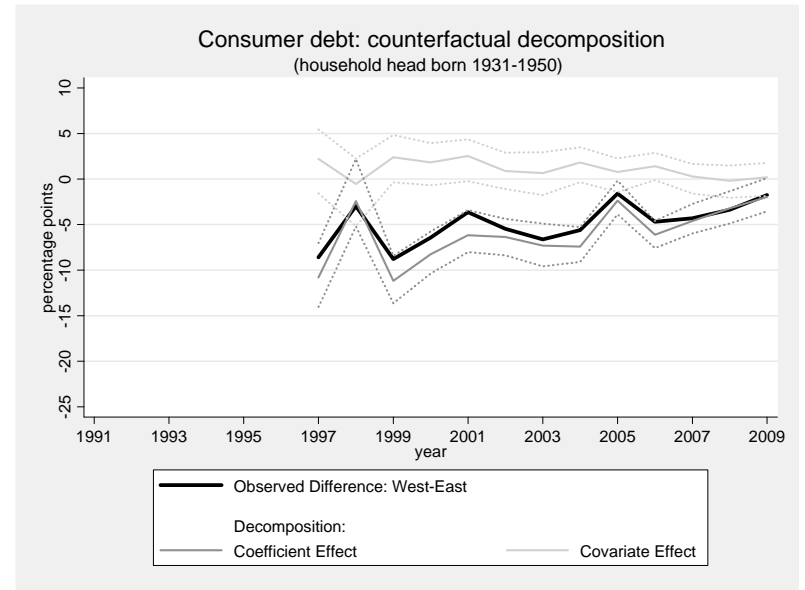


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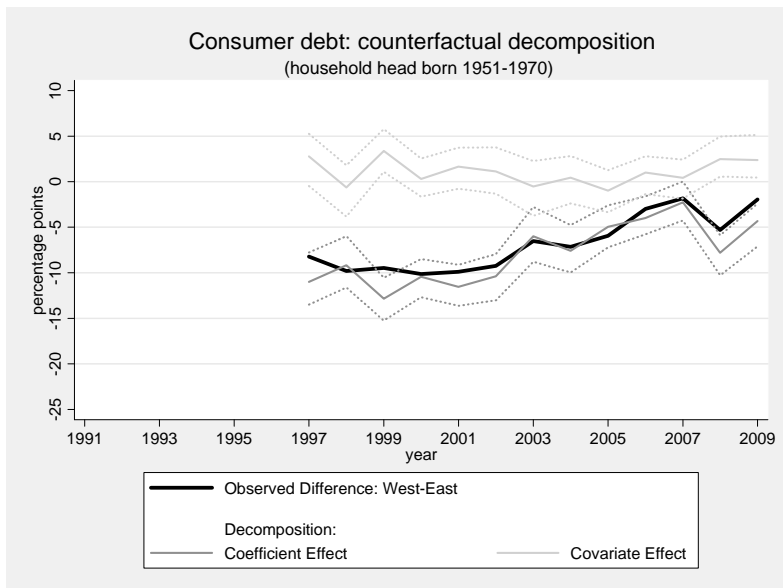


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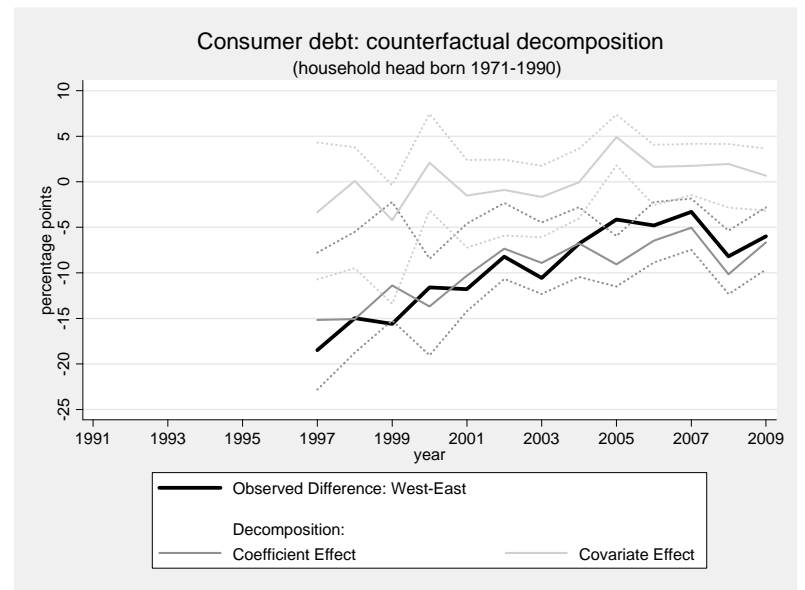


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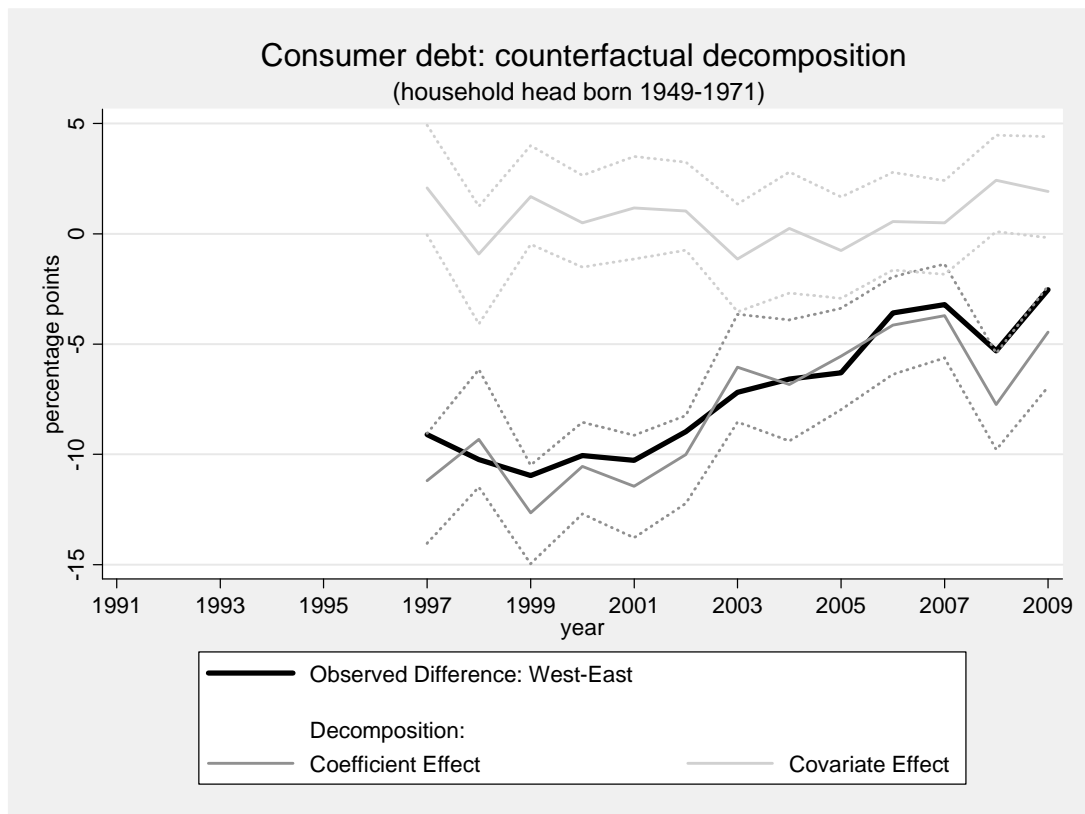


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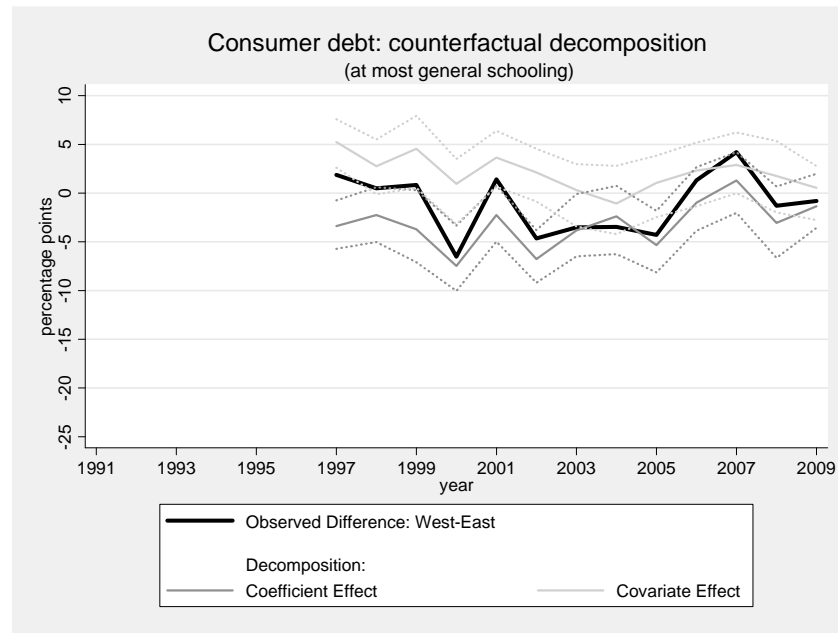


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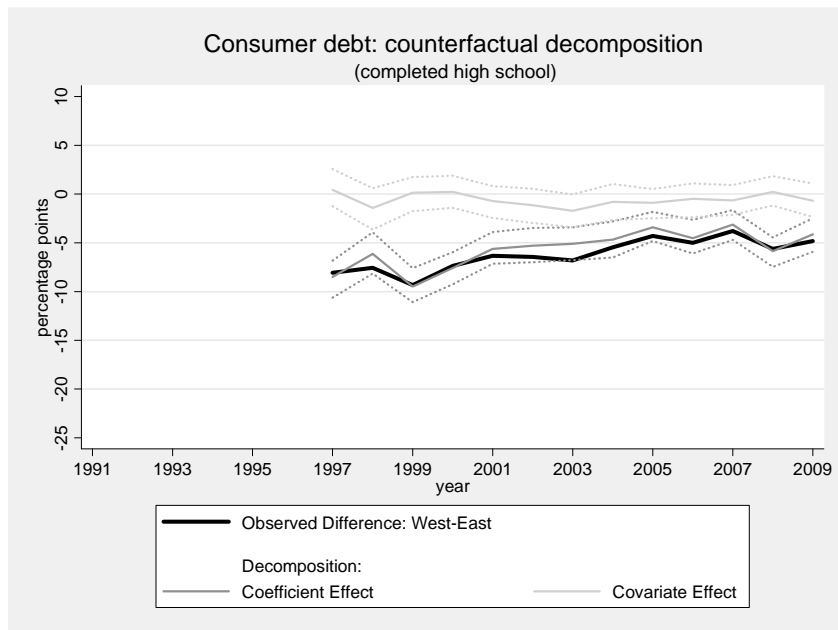


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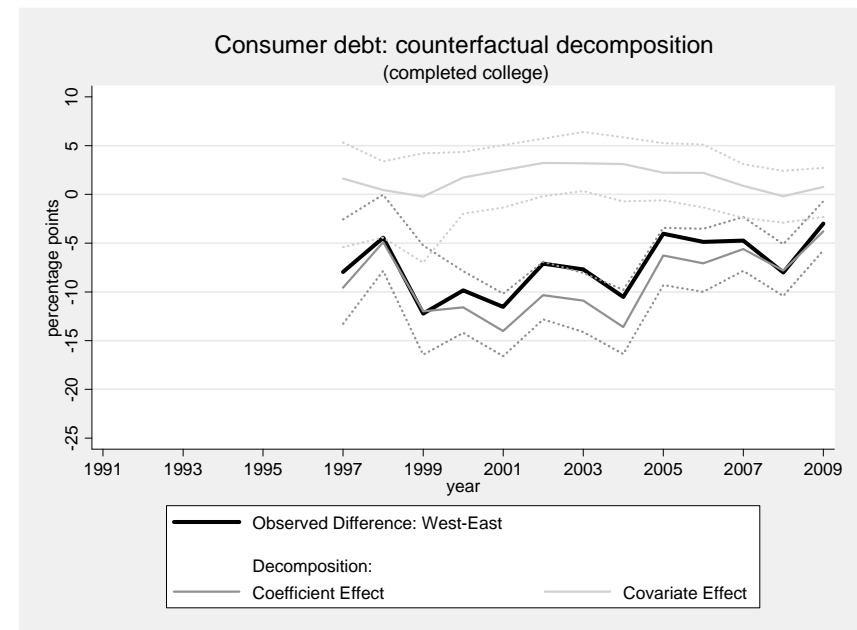


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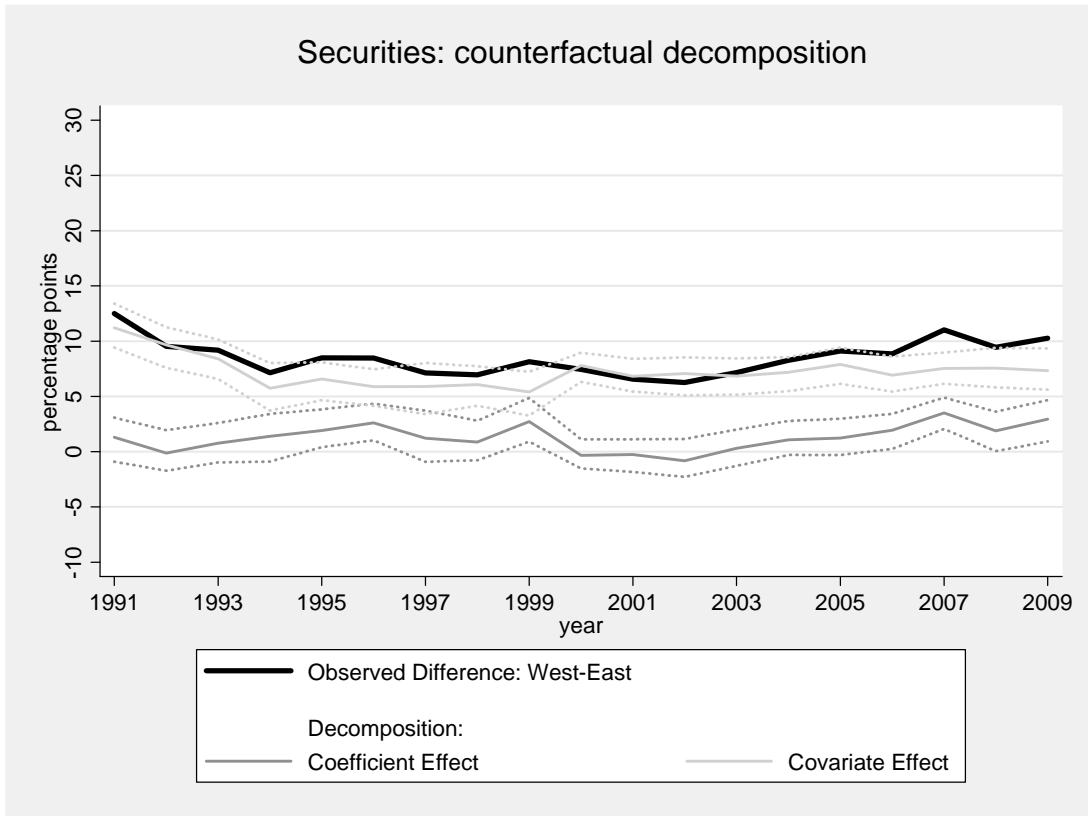


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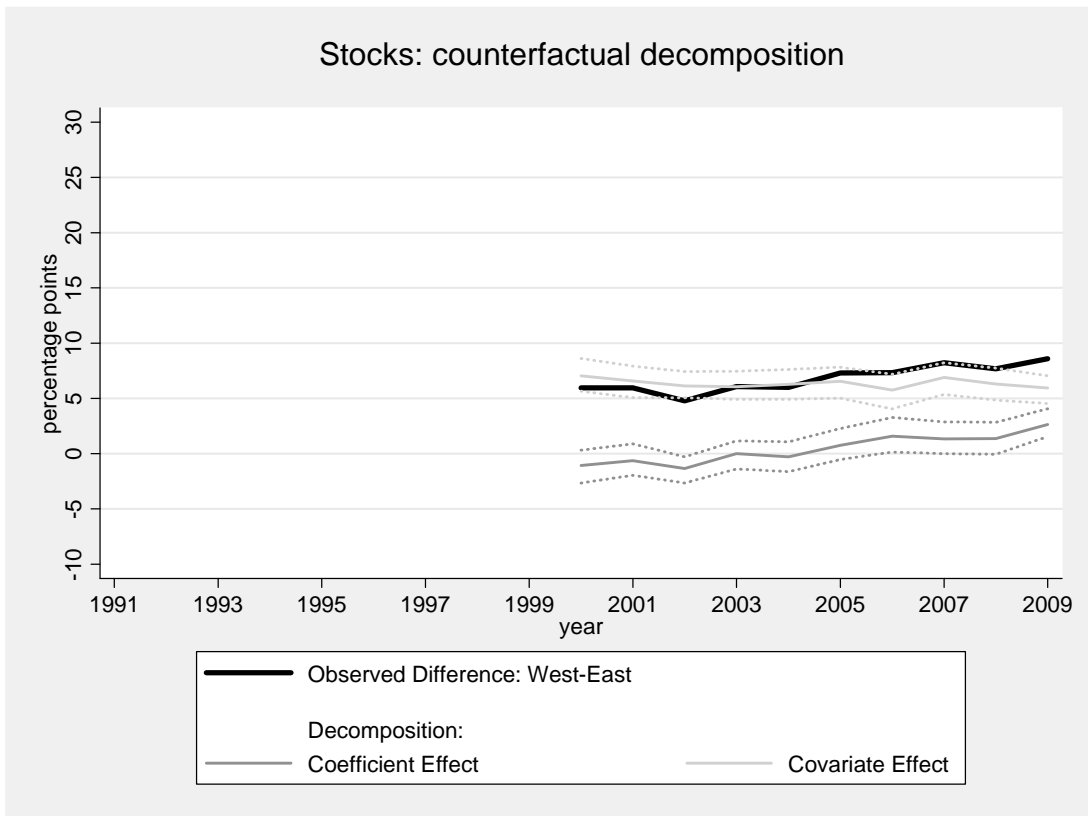


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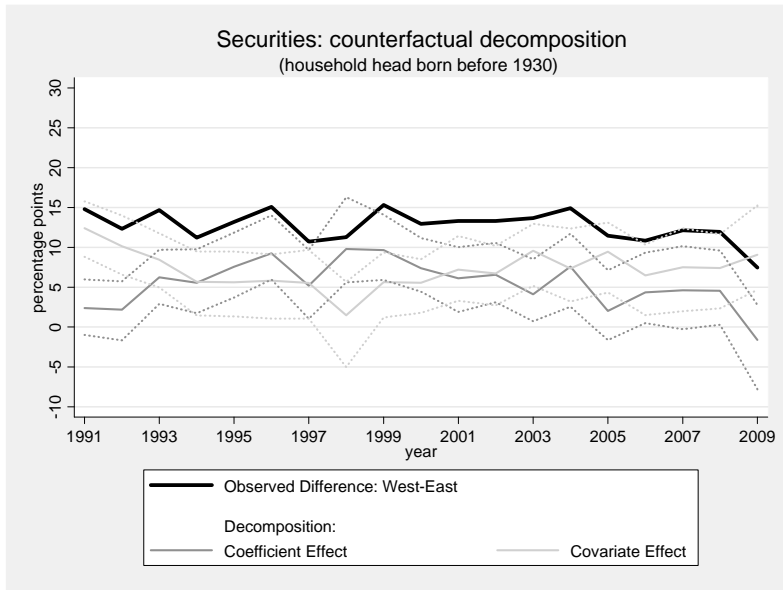


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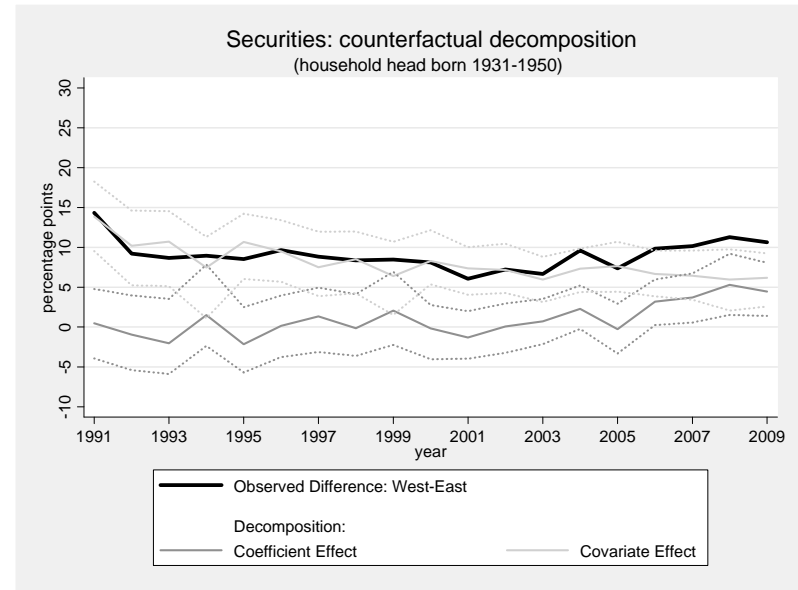


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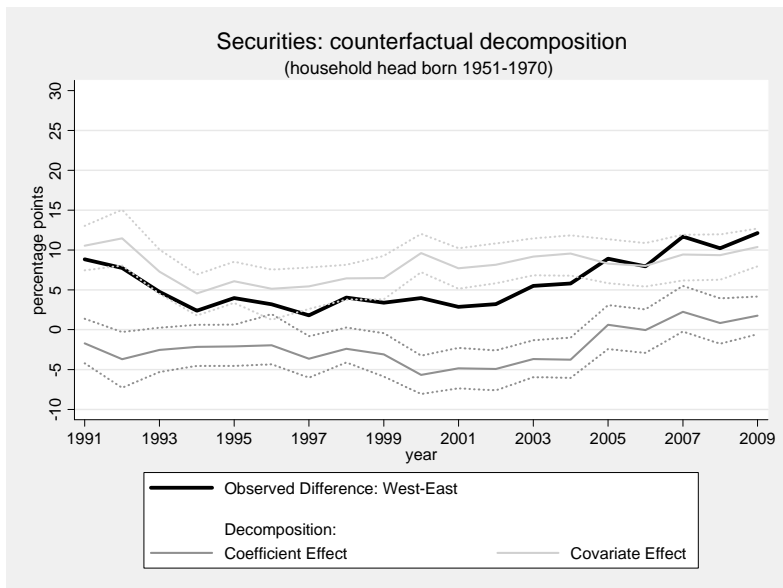


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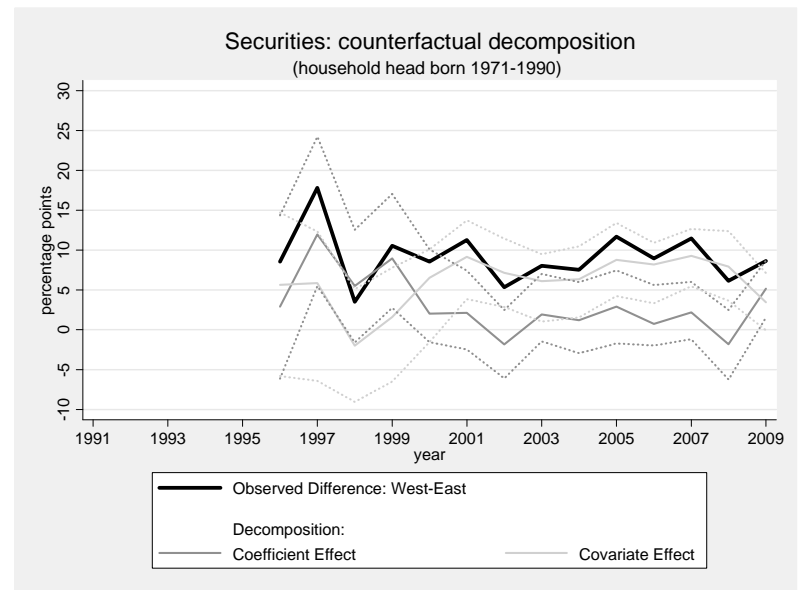


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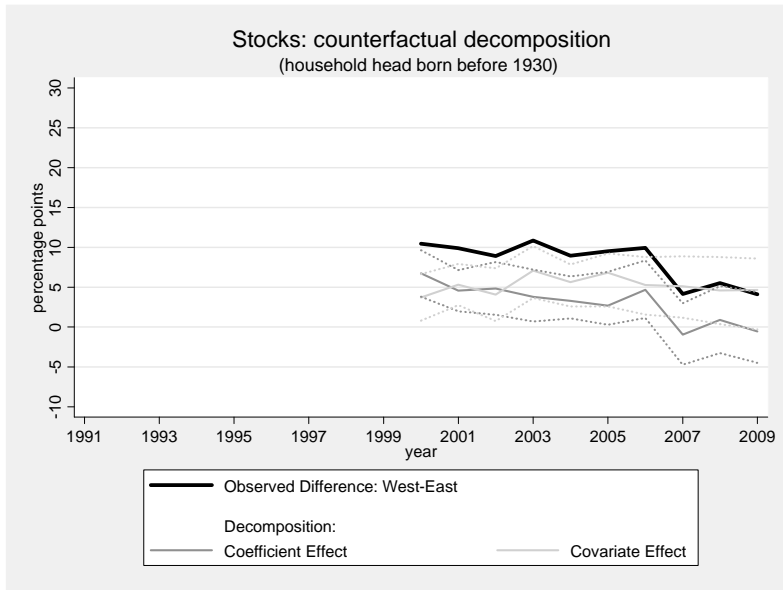


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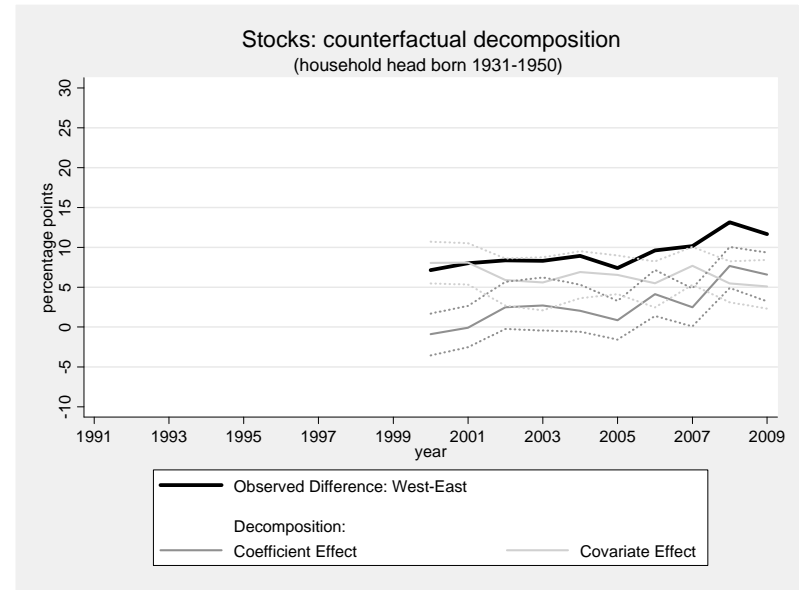


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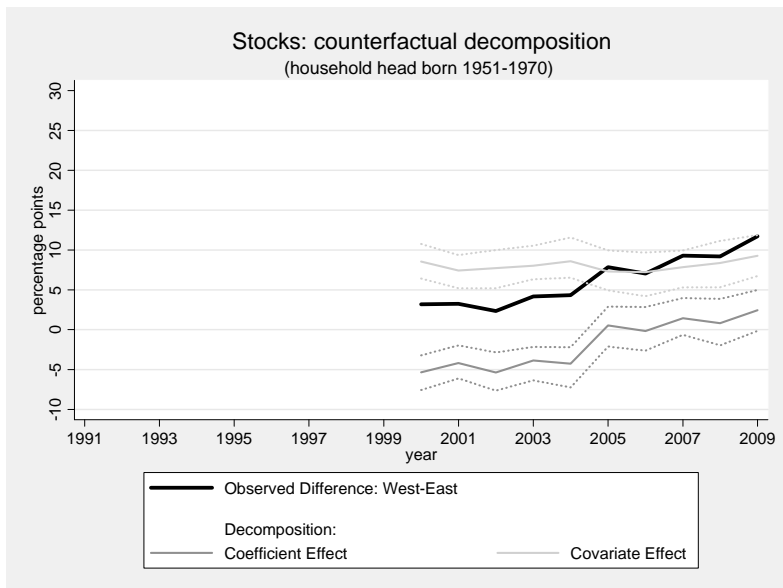


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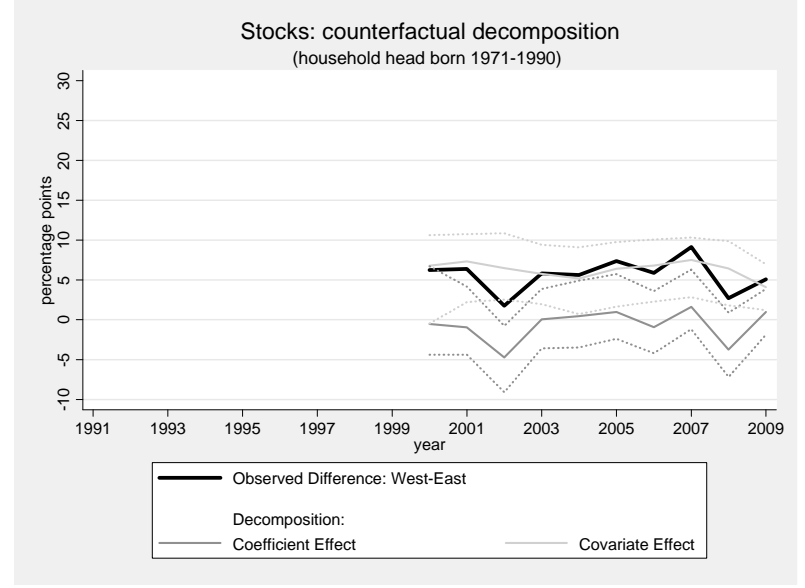


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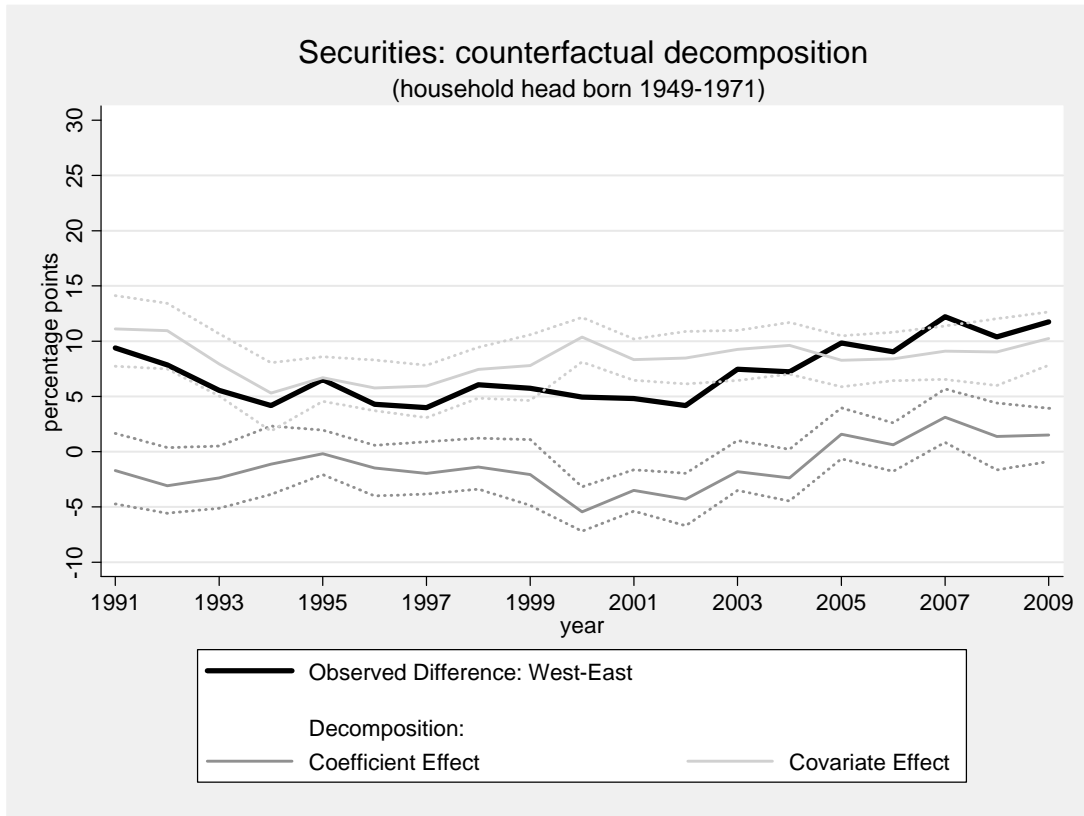


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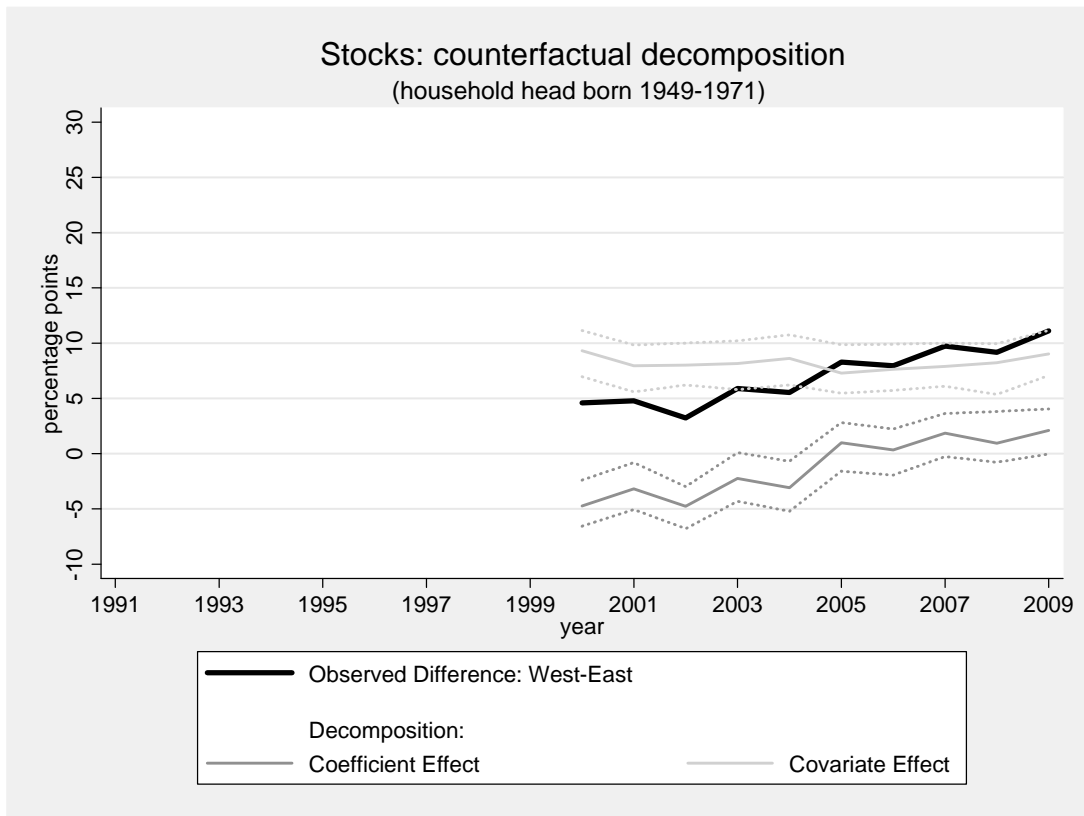


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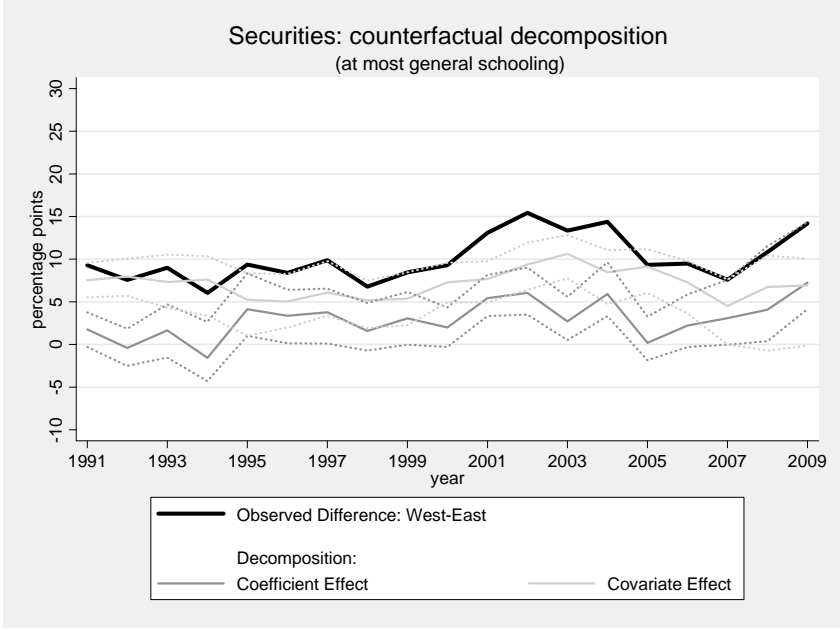


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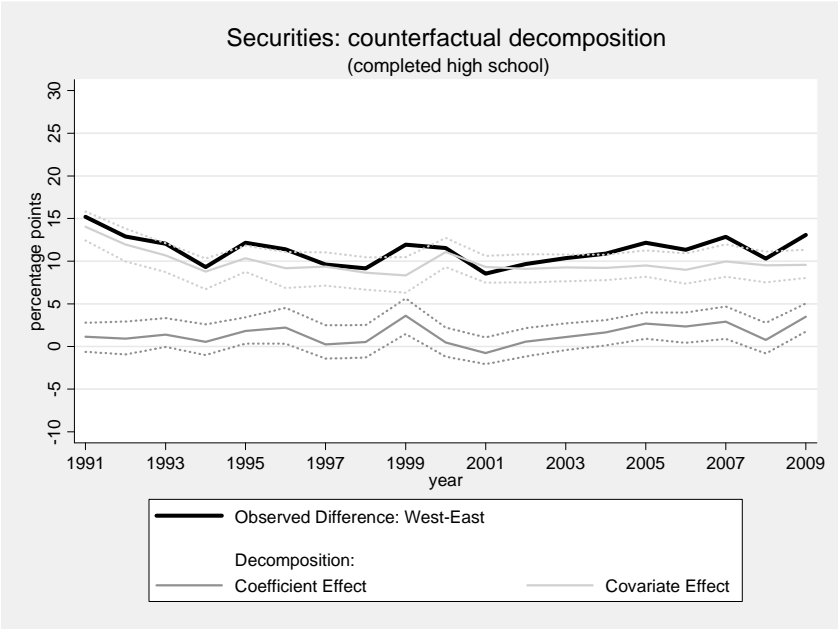


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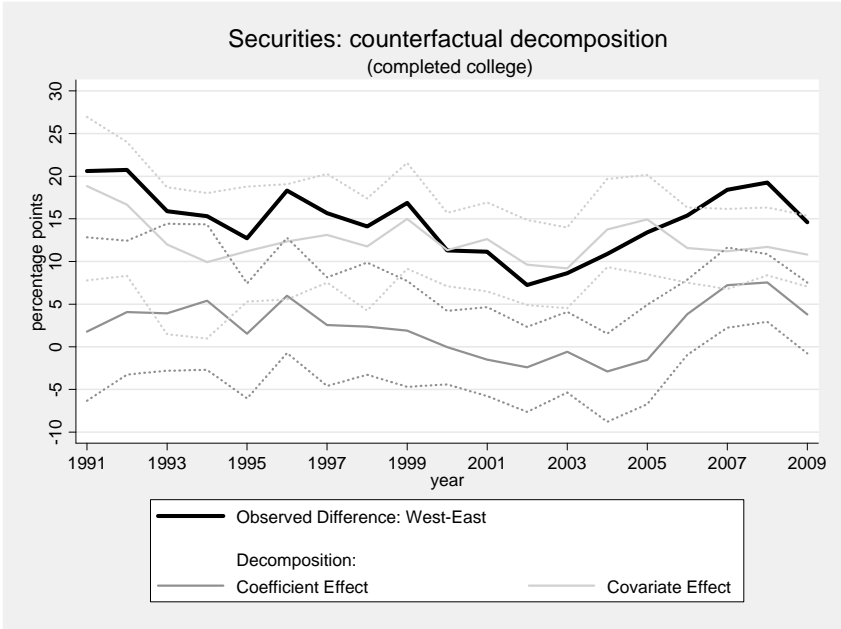


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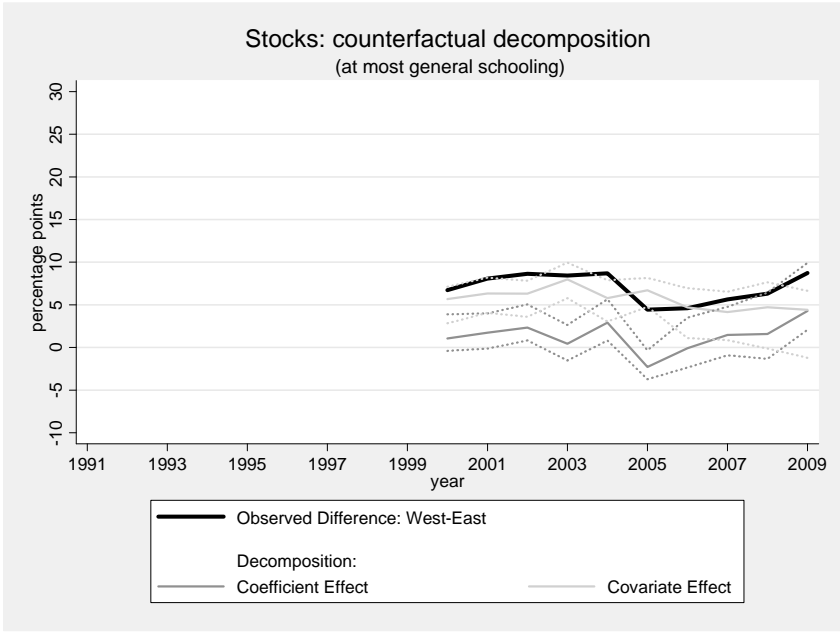


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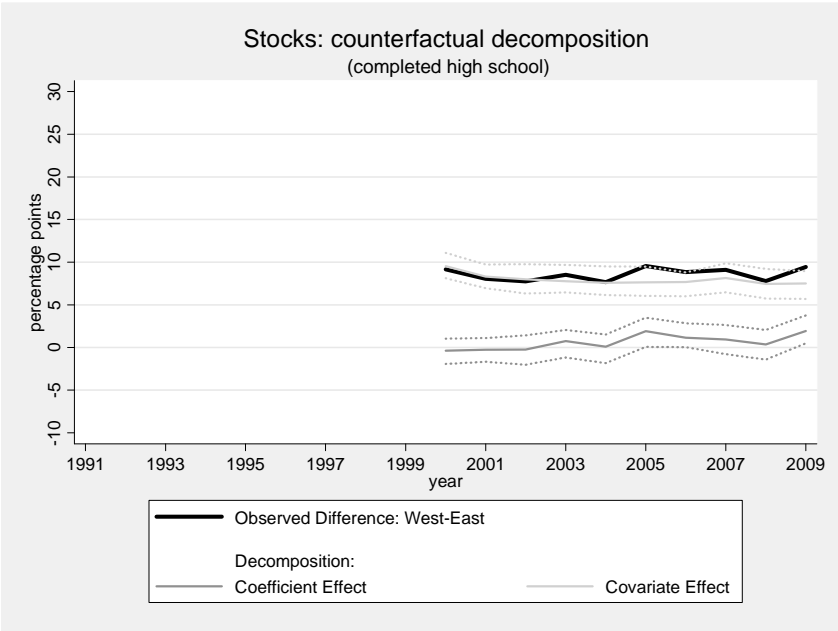


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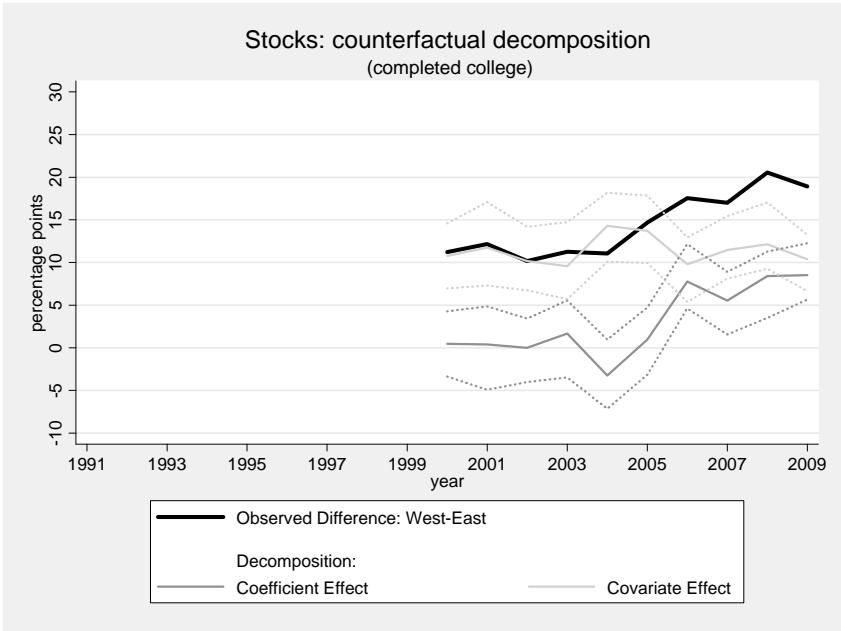


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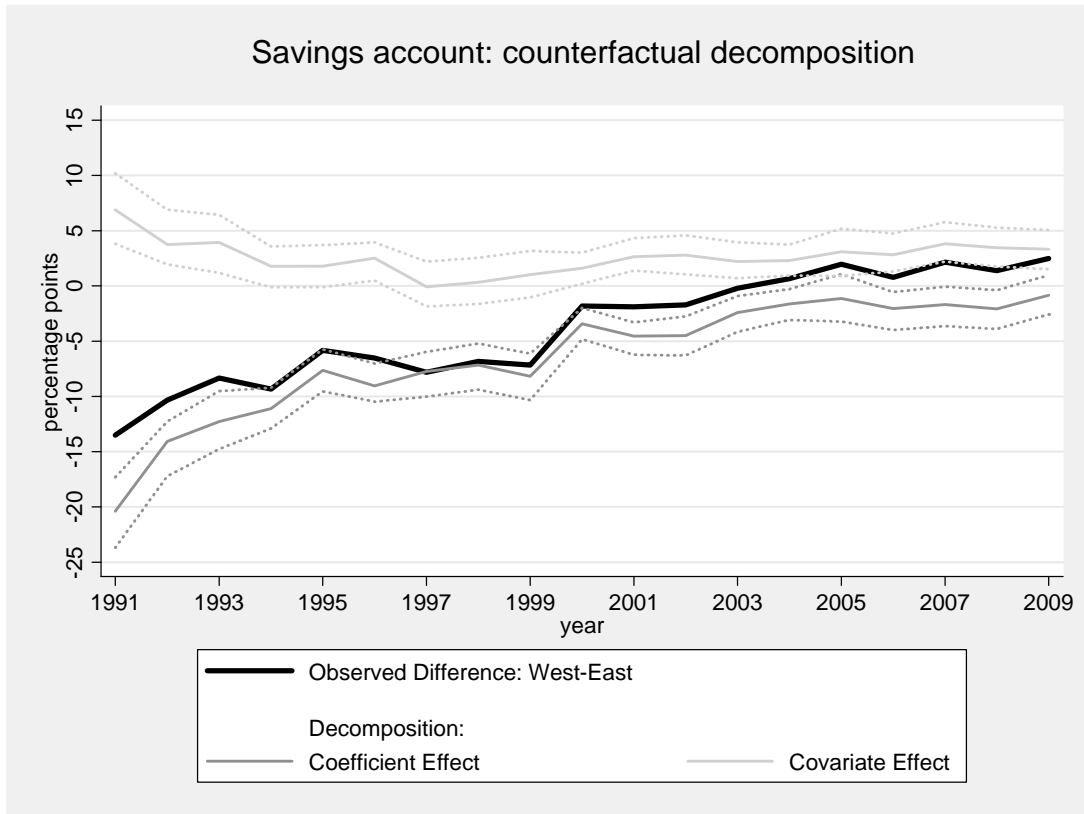


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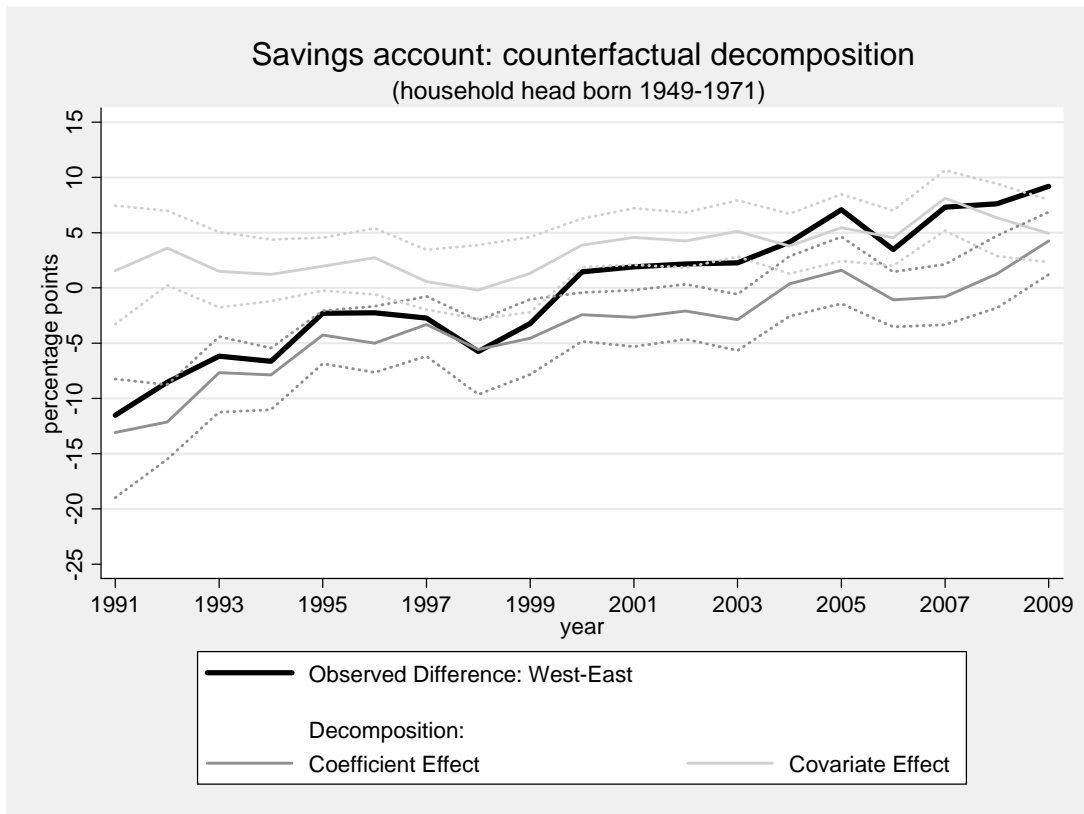


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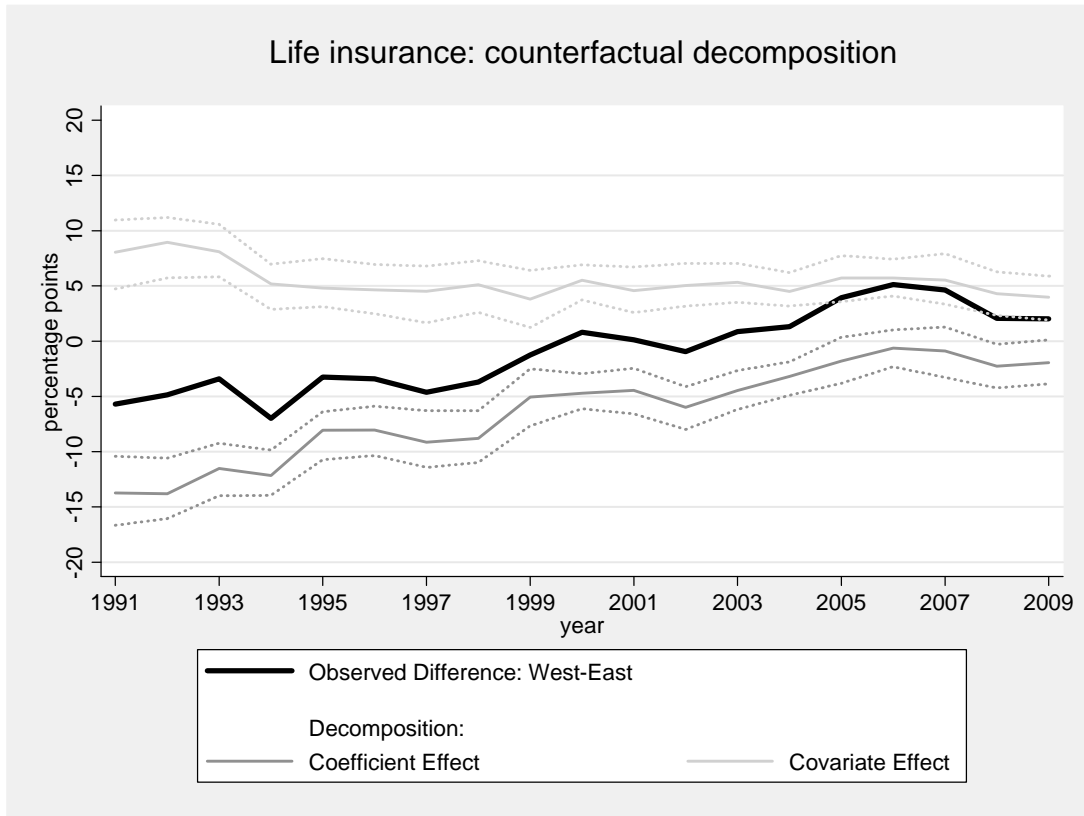


Figure 44

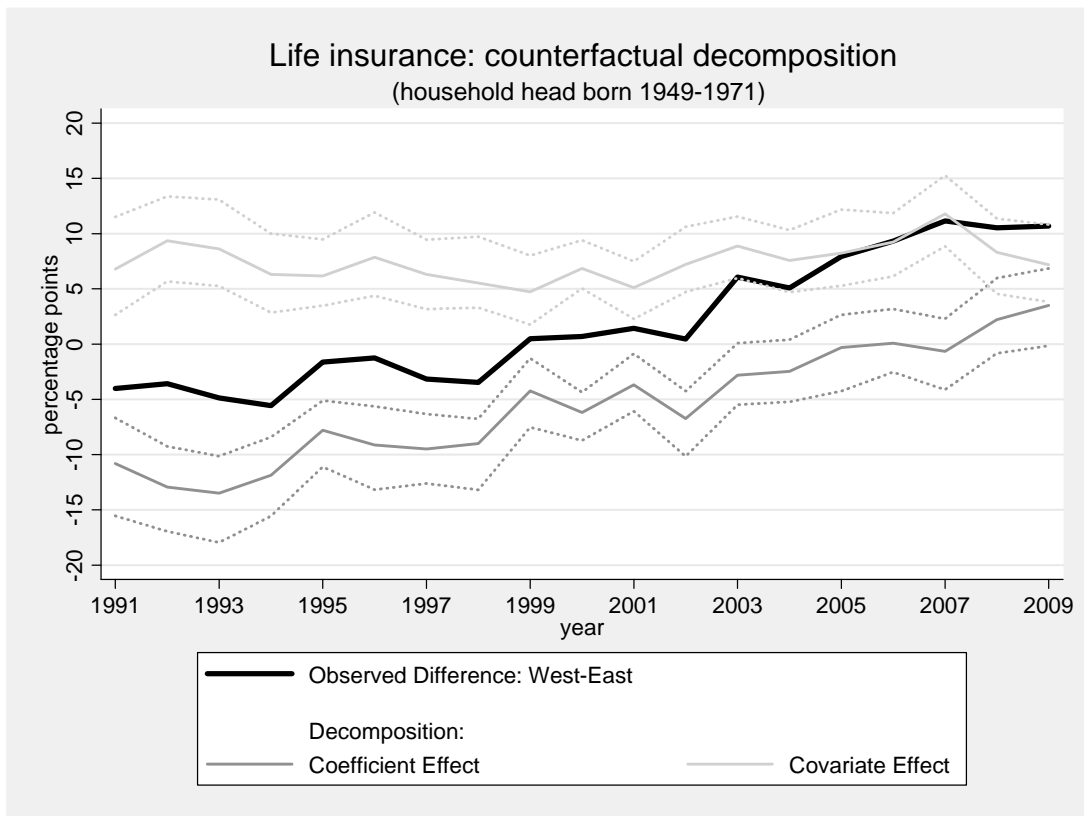


Figure 45

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