

Adapting to Capitalism: Private Health Insurance Uptake Among Former East Germans

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I study the differential reaction of former East and West Germans to a series of health care reforms that started in 1997. Along with the gradual decrease in coverage under the public health insurance system, former East Germans were significantly less likely to sign complementary health insurance contracts in the private market. I show that the differential uptake rates of additional private insurance after the reforms are consistent with a model in which agents optimize their individual insurance status only if they are aware of the organizational form of the health care system (or more generally the welfare state), and in which East Germans are initially less likely to have the correct beliefs, but learn over time that institutions have changed and they are now responsible for optimizing their insurance coverage. While it is widely recognized that the development of new institutions in transition economies takes time, people's adjustment to them has received little attention. This study provides evidence for the existence of a substantial transition period in the individual adaptation to new institutions.

1 Introduction

When transitioning from socialism to a free-market economy, do people adapt to the new circumstances immediately? Undoubtedly, major shifts in the political system do not escape people's notice. They often follow extended demonstrations, spectacular coups, or even violent uprising. However, the institutional changes that go along with this transition, although fundamental, may not be apparent immediately.

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For instance, an all-encompassing welfare state with an extreme level of redistribution is a core idea of socialism. Confronted with a capitalist system, do people understand their new individual responsibility immediately, or do they adapt their decision making over time? Economic transition consists of both the development of new institutions and people's adaptation to them. While it is now widely recognized that the former takes time, the latter has received little attention so far. Using data on uptake rates of private health insurance of former East and West Germans, I find that the individual adjustment period can be substantial.

The case of Germany presents a unique opportunity to study the question. The reunification of the socialist East with the capitalist West in 1990 came after 40 years of separation². While in the past two decades many Eastern European countries have started to transition from communism to western-oriented democracies, two characteristics of the German case make it especially suitable to study people's reaction to institutional change. First, the influence of socialism can be interpreted as an exogenous shock. The division of Germany was not a choice of the German people, but imposed by the Allied Forces, and the new border determined by where the forces were standing at the end of World War II. During the time of separation, migration was minimal³. Reunification then came rather surprisingly. The large protest that led to the Fall of the Berlin Wall in November 1989 had started only two months earlier. Reunification of the two German states was finalized a mere year later. Former West Germans thus constitute a credible control group for former East Germans. Second, with the Unification Treaty (1990), East Germany implemented the political and economic system of the FRG in its pre-existing form. New institutions did therefore not need to be developed; they were already well-functioning and rapidly imposed onto the East German population. Any observed adaptation process can thus be interpreted as people adjusting to the new institutions rather than the parallel development of these institutions.

I study the differential reaction of former East and West Germans to a series of health care reforms that started in 1997. Before 1990, both German health care systems had provided almost universal coverage. Their organization however differed: While in East Germany all health care provision had been state owned and health care free to citizens, West Germany has had a market for health services, and a public health insurance - funded out of payroll taxes - had provided extensive coverage to the vast majority of the population. With reunification, the market-based

²Political separation of the two German states lasted for 40 years. After World War II, Germany had been divided by the allied forces into four occupation zones, i.e. a British zone in the North West, a French zone in the South West, a U.S. zone in the South, and a Soviet zone in the East of Germany. Due to the aggravating political situation among the Soviet Union and the three Western powers, the American and British zone were merged in 1946 and were joined by the French zone in 1947. In May 1949, the Federal Republic of Germany (FRG) was founded on this territory, while in October 1949 the Eastern zone became the German Democratic Republic (GDR). However, only the erection of the Berlin Wall in August 1961 completed the physical separation.

³Until the fall of the Wall in 1989, migration was minimal in either direction due to violent military border protection in the GDR coupled with a rigorous restriction of the number of GDR citizens officially allowed to travel (Küsters and Hofmann (1998)), and very little migration from prospering West Germany to the East (Münz and Ulrich (1997)).

system was implemented in East Germany. However, since coverage remained de facto the same, the institutional change may not have been immediately apparent to East Germans at the time. It was not until 1997 that more than the organizational details of the health insurance system changed. I find that following the reform shocks, along with the decrease in coverage under the public health insurance system, former East Germans were significantly less likely to sign complementary health insurance contracts in the private market than former West Germans. Such differences could be driven by demographic factors, differences in risk attitudes, or aggregate economic effects that differ between the Eastern and Western parts of Germany. However, the different reaction to the decrease in coverage could also be attributed to East Germans being less aware of the fact that they are now responsible for their own insurance status, and are able to buy private insurance. After living in a socialist regime, they only adapt over time to the capitalist institutions of the unified Germany. The goal of this paper is to isolate this effect, while controlling for the others.

In particular, I show that the uptake rates of additional private insurance after the reforms are consistent with a model in which agents optimize their individual insurance status only if they are aware of the organizational form of the health care system (or more generally the welfare state). East Germans are initially less likely to have the correct beliefs, but learn over time that institutions have changed and they are now responsible for optimizing their insurance coverage. Moreover, I show that older East Germans, i.e. those who have lived with the socialist institutions longer, are even less likely to have correct beliefs than their younger equivalents. Thus, this study provides evidence for a transition period in people's adaptation to new institutions.

Related Literature

Since the fall of Communism in Central and Eastern Europe, the interest in what determines the speed and success of the transition process has been strong. Two decades after the transition started, varying experiences of the reforming economies inspire a growing literature to highlight the impact of institutions on the transition path. Murrell (2008) provides an overview. Investigations on how institutions develop in economies following major political change have considered many factors that might determine the success of the transition, for example international assistance (Cochrane (2007)). Yet, little notice has been taken of how people's reaction influences this process. Arguably, the success and speed of transition hinge critically on how well the people living in transition economies are able to adapt to institutional change. This paper aims at providing evidence for the existence of a substantial transition period in this adaptation process.

Only a few studies have analyzed behavioral differences between former East and West Germans. Bucher-Koenen and Lusardi (2011) report that in 2009, financial literacy was lower among people living in the eastern states of Germany, a fact that they interpret as former citizens of the GDR having not yet caught up to West Germans in terms of financial education. The authors then link financial literacy

to retirement planning decisions. Sauter (2009) analyzes participation rates in security markets among East Germans. He finds habit persistence to be a strong explanatory factor for the low participation. Fuchs-Schündeln (2008) focuses on the differential savings behavior of East and West Germans after reunification and finds that they are consistent with a life-cycle consumption model with precautionary savings. Differential behavior could also stem from differences in preferences. Alesina and Fuchs-Schündeln (2007) analyze the effect of Communism on an individual's taste for public social policy. They find that former East Germans are more likely to favor a high state responsibility, pointing to a possible feedback effect of political regimes on policy preferences. From a different perspective, sociologists have developed a literature on social capital formation in the transition economies of Eastern Europe. The emphasis here has been on the establishment of informal networks, and the formation of trust after the centrally planned and controlled systems broke down (see Keefer and Knack (2005) for a survey).

The strategic management literature has explored how firms adapt to a new market-oriented economy. Apart from the challenges of privatization (Uhlenbruck and de Castro (2000)), and organizational restructuring (Filatotchev et al. (2000)), also a learning process has been documented: Kriauciunas and Kale (2006) find that while the so-called imprinting effect of the socialist environment adversely affects firms' ability to change their operating knowledge, firms that search for new knowledge from distant sources (i.e. non-socialist countries) are able to successfully change their knowledge to meet the demands of the new market-oriented economy. Murrell (2005) presents related literature, Djankov and Murrell (2002) survey empirical evidence.

The remainder of the paper is organized as follows: Section 2 provides an institutional background about the German health insurance system before and after 1990. Section 3 outlines a simple model of exogenous learning to frame the subsequent data analysis. In Section 4 I describe the data set used; section 5 reports the results of the empirical analysis. Specific emphasis is placed on differences across age groups (section 5.1), risk taking and risk aversion (section 5.2) as well as the role of preferences for a bigger welfare state (section 5.3). Last, I analyze potential regional aggregate effects (section 5.4). Section 6 concludes.

2 Health Insurance in Germany

Public health insurance has a long tradition in Germany. Introduced in 1883, and initially for workers of certain industries only (miners, guilds, factory workers), it represents one of the first national social insurance systems in the world. In the following decades, public health insurance coverage was gradually extended to cover larger parts of the population (10% in 1885, 51% in 1925). Its core elements of being mandatory, pay-as-you-go, financed by both employers and employees, and being managed by so-called sickness funds persist to date (Busse and Riesberg (2004)).

After the country's political separation that followed the end of World War II, along

with the divergent political systems, the health care system developed quite differently in the two new states. In the FRG, the national health insurance system was continued in a market-based format in which health insurance was mandatory but could be obtained through the public system or from private insurers. Public health insurance was the overall dominant form, with 83% of the population being covered by 1960 and 88% by 1987. Financing was organized through equal contributions from employers and employees (6% of income in 1950; 12.6% in 1987). Co-payments for benefits were only nominal (WHO (2000)). Publicly insured individuals could also purchase complementary private coverage for select cases, but only a very small fraction of the population actually did⁴. Only for state employees and self-employed, often wealthier, individuals private insurance was required.

In the GDR, the social insurance was maintained in principle with a health insurance system that was universally mandatory. Nearly 100% coverage rate was provided by only two large managing bodies (“sickness funds”): One for employees, workers, and their families (covering 89% of population), and one for professionals, members of agricultural cooperatives, artists and self-employed and their families (covering 11% of population). De facto, however, the importance of the social insurance system was only very limited as the majority of health care providers and facilities were state employed and owned, so that health care was free of cost to citizens and supplemental health insurance was not needed (Busse and Riesberg (2004)).

With the German reunification, the GDR introduced the health insurance law and system of the FRG (Article 21, Unification Treaty (1990)), integrating 17 million former East German citizens into the existing system of the FRG. Health insurance continued to be mandatory in the unified Germany, with public health insurance being the predominant form of provision⁵. The extensive benefits of the public health insurance included coverage of almost all health care as well as benefit payments to compensate for salary loss during recovery⁶.

⁴According to the Association of Private Health Insurers, less than 3% of people had any sort of private health insurance contract, including travel insurance.

⁵88% of the German population was covered under the public health insurance system in 1997 and in 2003. 10% of the population were covered by private health insurance, including nearly 4% civil servants with free governmental care and complementary private insurance. 2% of the population were covered by other governmental plans (e.g. military, social welfare) and another 0.2% (mainly self-employed) have no prepaid coverage for health care. Individuals who buy full, i.e. not only complementary, private health insurance opt out of public health insurance system and its financing (WHO (2000)).

⁶Coverage benefits are described in the Social Code Book V, and generally include prevention of disease and health promotion at the workplace, screening for disease, treatment of disease (including inpatient and outpatient care, dental care, medication, medical devices, rehabilitation, etc.), and emergency care. Benefit payments are managed by sickness funds, paying their employed insured individuals 70% of the last gross salary (max. 90% of net salary) for from week 7 up to week 78 of certified illness, while employers continue to pay 100% of the salary during the first 6 weeks of sickness (WHO (2000)).

2.1 Health Care Reforms

Even before 1990, both health care systems had suffered from financial problems. In the GDR, severe under-financing, personnel shortages, and lack of modern medical equipment and supplies led to the erosion of quality of care in the 1970s and 80s. Public health indicators fell behind Western standards, e.g. regarding infant mortality and life expectancy, so that in 1989 a national health conference decided extensive health care reform - but with the fall of the Berlin Wall the GDR ceased to exist that year. In the FRG, an era of cost-containment had already started in 1977 with the introduction of the Health Insurance Cost-Containment Act to ensure stability in contribution rates, and aimed at increasing technical and allocative efficiency (Busse and Riesberg (2004)).

After the health insurance system of the FRG was implemented in the former GDR, aggravating demographic trends, price increases in medical supplies, increasing wages, and a trend of high income individuals to opt for private insurance further increased the cost pressure on the public health insurance system. As a result, a long series of reforms set in. While initially focused on cost-containment through increased efficiency, measures shifted towards cutting benefits, and increasing co-payments as well as contribution rates in the mid 1990s. Three reform acts in 1997 increased the co-payments for medication, hospital stays, and dentures. The reimbursement for glasses were eliminated, and allowances for preventive and rehabilitative care substantially decreased. From 1998 to 2000, under a new government, some of these measures were revoked, but re-introduced and expanded in smaller reforms in 2002 and 2003, and in the Public Health Insurance Modernization Act of 2004 (Steffen (2011)).

As a result, an increasing number of publicly insured individuals sought complementary private health insurance for benefits previously covered by the public health insurance. While in 1990 less than 3% had additional private health insurance, this number rose to 9.3% in 2002⁷. According to the Association of Private Health Insurers (2004), the most commonly bought private insurance policies cover dental benefits, specialty medication, procedures by chief physicians, and hospital accommodation in private rooms. However, the trend towards additional coverage is not uniform across the German population. This paper documents that former East Germans are less likely to sign a complementary health insurance contract than West Germans.

3 A Simple Model With Exogenous Learning

Suppose an economy is populated by a continuum of agents who potentially differ along many dimensions. Let $x_{i,t}$ denote a vector of individual characteristics that

⁷Estimates by the Association of Private Health Insurers (2004). The official German micro census does not make it mandatory to answer questions about private insurance contracts. Private insurers do publish summary statistics of the number of insurance contracts signed. However, these are an overestimate of people with additional health insurance, since they include double counting of people with more than one contract and also include e.g. private travel health insurance contracts.

contains all information about agent i 's socio-economic situation in period t , his risk preferences, as well as any other attributes that may influence his choice of insuring against health risks. The government of this economy influences an agent's insurance status through public provision of health insurance, financed by taxes. Thus, the public health insurance system is part of a solidarily financed welfare state. I denote the government's choice of public health insurance contracts in period t with \mathbb{G}_t .

The private market offers a set of insurance contracts \mathbb{I}_t that complement public health insurance. I assume that private insurers do not offer an actuarially fair contract for each individual agent, so that some agents in the population are better off not signing any complementary health insurance. Various kinds of market restrictions or imperfections may cause this incompleteness. For example, insurers might not be allowed to discriminate along all possible dimensions, even if the relevant characteristics of an agent are verifiable. In Germany, private health insurance carriers are not allowed to discriminate individuals based on their origin (e.g. former East vs. former West), and are also prohibited from extensive health screenings (e.g. for cancer) before approving applicants to private health insurance (Busse and Riesberg (2004)). Bolton and Dewatripont (2005) discuss Akerlof's 1970 incomplete contracts setting in an insurance framework. When principals are constrained to offer only one insurance contract to a heterogeneous group of agents, some low risk agents might prefer not to be insured over pooling in an insurance contract where they subsidize higher risk types.

3.1 Heterogeneous Beliefs about Institutions

Agents have heterogeneous beliefs about the institutional goal of public health insurance. Some agents correctly believe that the scope of the welfare state reflects political and aggregate economic constraints. They are aware that the specific coverage under the public health insurance might not necessarily be enough for them individually. Other agents wrongly believe that the welfare state is all-encompassing and health related costs are completely nationalized as under a socialist regime. These agents think that public health insurance provides the necessary coverage for all agents and that there is no need for them to consider complementing their individual health insurance with a private policy.

Let $b_{i,t} \in \{0, 1\}$ denote agent i 's belief in period t . In period $t = 0$ a fraction α of the population has the wrong belief ($b_{i,0} = 0$) about the scope of the welfare state. Every period a fraction x of the population learns the true type of the government. This exogenous learning shock is idiosyncratic and independent of agents' individual characteristics $x_{i,t}$ and beliefs $b_{i,t}$. If an agent with the correct belief $b_{i,t} = 1$ receives the shock, nothing changes. An agent with the wrong belief, however, changes his views and thus possibly his behavior, now realizing that he should optimize his insurance status by himself.

Agents can perfectly observe \mathbb{G}_t and \mathbb{I}_t . They choose to sign a contract in the private insurance market if it maximizes their expected utility, given their beliefs. Let $y_i \in \{0, 1\}$ denote agent i 's decision to sign a complementary health insurance

contract with a private insurer. Then

$$y_{i,t} = 1 \quad \text{if} \quad w_{i,t} = b_{i,t} * y_{i,t}^* > 0 \quad (1)$$

$$b_{i,t} \in \{0, 1\} \quad (2)$$

$$y_{i,t}^* = \mathbb{E}[U(y_{i,t} = 1) | x_{i,t}, \mathbb{G}_t, \mathbb{I}_t] - \mathbb{E}[U(y_{i,t} = 0) | x_{i,t}, \mathbb{G}_t, \mathbb{I}_t] \quad (3)$$

3.2 Comparing Two Populations

The purpose of this paper is to compare two populations, former East and West Germans (denoted with superscript $j = E, W$ respectively). They now live in the same economy and share the government as well as the private insurance market, so that \mathbb{G}_t and \mathbb{I}_t are the same for both populations. The two populations possibly differ in demographic make up. Most importantly, however, different shares of these populations initially have the wrong beliefs about the welfare state. In particular, I assume that among the former East Germans the wrong beliefs are initially more prevalent, i.e. $\alpha^E > \alpha^W$.

From an aggregate point of view, a fraction Y_t^j of agents in each population signs a complementary health insurance contract. Given \mathbb{G}_t and \mathbb{I}_t , these aggregate insurance levels depend on the agents' beliefs as well as the demographic characteristics of the respective population:

$$Y_t^j = Y_t^{j*} * (1 - \alpha^j + \alpha^j x \sum_{n=0}^{t-1} (1 - x)^n) \quad (4)$$

Since the populations of former East and West Germans potentially have different demographic characteristics, there is no reason to believe that $Y^E = Y^W$ in any period. The *optimal* levels Y_t^{j*} , however, are unobservable, so that observed differences in the *actual* aggregate levels of complementary health insurance Y_t^j do not allow conclusions about differences in beliefs.

The probability for any individual agent to take up complementary health insurance is

$$Pr(y_{i,t} = 1) = Pr(b_{i,t} = 1) * Pr(y_{i,t}^* > 0) \quad (5)$$

Being East or West German only influences the probability of having the right beliefs about the welfare state. By setup, the probability of getting insurance once the agent realizes he has to optimize, is independent from him being a member of either population. Thus, a regression with individual level data, that includes a dummy for being East German, as well as controls for individual characteristics $x_{i,t}$, yields a coefficient

$$\beta_t^E = Pr(y_{i,t} = 1 | x_{i,t}, East) - Pr(y_{i,t} = 1 | x_{i,t}, West) \quad (6)$$

Since only the decision for or against additional insurance, $y_{i,t}$, is observable, and the latent variable $y_{i,t}^*$ is not, β^E is only identified off individuals who would sign an insurance if they had the right beliefs, i.e.

$$\beta_t^E = Pr(y_{i,t} = 1 | y_{i,t}^* > 0, East) - Pr(y_{i,t} = 1 | y_{i,t}^* > 0, West) \quad (7)$$

$$= Pr(b_{i,t} = 1 | East) - Pr(b_{i,t} = 1 | West) \quad (8)$$

$$= (\alpha^W - \alpha^E) \left(1 - x \sum_{n=0}^{t-1} (1-x)^n\right) \quad (9)$$

Since $\alpha^W < \alpha^E$, and $0 < x < 1$:

$$\beta_t^E < 0 \quad \text{and} \quad \beta_t^E < \beta_{t+1}^E \quad \forall t \quad (10)$$

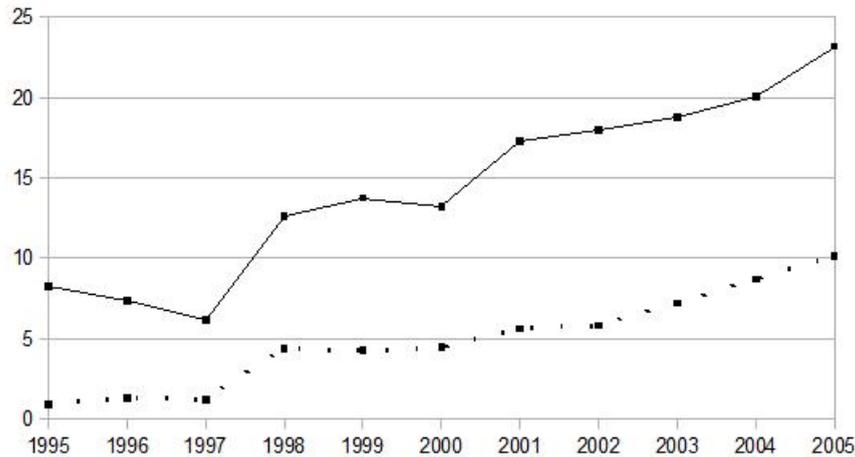
East Germans in this model are less likely to buy additional health insurance at any point in time because of their lower probability to have the correct beliefs. However, as they learn over time, this effect decreases, and converges zero. This simple model is intended to frame the following data analysis. While it cannot be concluded that this particular structure is the true underlying process, the data does provide evidence for the presence of a learning or adaptation process.

4 Data

I use data from the German Socio-Economic Panel (GSOEP (2007)). Since 1984, the German Institute of Economic Research “DIW” conducts a yearly survey of households and their members, representative of the population in the FRG. Since 1990, the study also represents the population in the “new” German states, the regions formerly belonging to the GDR. The GSOEP survey mainly covers basic information on population demographics, education, training, and qualification, labor market and occupational dynamics, earnings, income and social security, health and household production. Moreover, the survey has an emphasis on aspects of basic political orientation, preferences, values and satisfaction in life (Haisken-DeNew and Frick (2005)).

The original sample of the panel included only West-Germans. After 1990, a sample representative of the former GDR was added. In 2002, the sample was supplemented by a high-income group, so that since then the survey is representative of the German population without a truncation on income. The sample used in this paper includes only participants who were born in either part of Germany before reunification in 1990. Moreover, I restrict attention to people covered under the public health insurance system. The dependent variable is a dummy indicating whether the respondent has signed a complementary health insurance contract with a private insurer. This information is only available starting in 1995 up to 2005. The so restricted data set leaves a total of 126,346 observations for the analysis out of which 43,513 are responses of former East Germans, and 82,833 of former West Germans.

Figure 1: Population Shares with Complementary Health Insurance



This figure shows the shares of former East (dashed) and West (continuous) Germans in the sample who had a complementary health insurance contract in the respective year.

Figure 1 reports the fractions of East and West Germans with complementary health insurance in the sample. Notice that the population shares with additional health insurance do not seem to converge over time. However, recall that the model only predicts aggregate convergence *conditional* on all characteristics of the population. The two German populations, though, are very different. The age structure differs between East and West Germans: East Germans are younger on average. Birth rates in East Germany were much higher than in West Germany. In 1980, the average number of births per woman was 1.9 in the GDR, but only 1.3 in the FRG (Pöttsch (2007)). Moreover, health care was worse in East Germany, resulting in lower life-expectancy, and so contributing to a younger population (Busse and Riesberg (2004)). An even more striking difference exists in terms of income. At the beginning of the sample, in 1995, former East Germans on average have 23% less income than West Germans. More importantly, this gap widens over time, and is 35% in 2005. Fuchs-Schündeln et al. (2010) have recently documented this divergence. There is also a difference in home ownership, which can be interpreted as a proxy for wealth: 31% (25%) less East Germans than West Germans own a home in 1995 (2005). Among East Germans, despite the age structure, both unemployment and retirement rates are higher - a trend that increased over time as well⁸. Given these differences, it is to be expected that the population share with additional insurance is higher (and possibly increasing much faster) among West Germans than among East Germans. On the other hand, East Germans are slightly more likely to have a high school and college degree, a factor that might work in the opposite direction.

⁸In 1995 (2005), the unemployment rate was 8.1% (9.9%) in the West German states but 13.9% (18.7%) in the former East German territories (Statistik der Bundesagentur für Arbeit (2011)). After reunification, the German government promoted early retirement by not cutting retirement benefits too much, which led to a higher retirement rate among East Germans.

Yet, the education under the socialist regime likely did not increase knowledge about financial planning and private insurance. Moreover, the model implies that a reform shock has a stronger impact on the number of private insurance contracts the more people are actually optimizing (i.e. have the right beliefs). After the first health care reform in 1997, the increase in additional coverage is much stronger among the West Germans than East Germans. Following later reforms, the trends are much more equal (and in the last 5 years of the they are almost exactly the same). This pattern is consistent with the two populations converging to the same fraction of people with the correct beliefs over time. While these factors might explain why the insurance uptake rates have not converged, it is impossible to conclude from the aggregate numbers whether the proposed learning mechanism is at work. The remainder of the paper is thus concerned with an individual level analysis.

The main explanatory variables in the analysis are a dummy that takes on the value one if the respondent lived in East Germany before reunification, and interactions of the East dummy with year dummies. These variables capture the effect of being East German on the probability that the individual has complementary health insurance separately for each year the survey was taken, and so allow conclusions about the effect of being used to a different welfare state, and how it evolves over time. To control for each individual's socio-economic situation, I use three sets of controls in all regressions. The first set contains relevant socio-demographic information on age, marital status, the individual's perceived health status, as well as his satisfaction with health. The second set includes information about the level of education and the current employment status of the respondent. The third set of controls covers income and wealth data: gross and net income as well as asset income on the household level, and a dummy variable for homeownership. Table 10 in the appendix reports summary statistics for all variables.

The GSOEP study periodically covers special topics: In 1996 and 2001, respondents were asked about their preferences regarding the scope of the welfare state. In particular, it was asked: "Who should be responsible for financial security in case of illness?" I generate a dummy variable indicating that the answer was "only the state" or "mostly the state", as opposed to "both the state and private forces", "mostly private forces", or "only private forces". In 2003, questions about risk taking behavior and risk aversion were included in the study. Respondents were asked to indicate on a scale from 0 to 10 how willing they were to take risks. Moreover, people were asked to indicate how much of a hypothetical lottery win they would be prepared to invest in a financially risky, yet lucrative investment. I use these special topic controls in sections 5.2 and 5.3.

5 Results

Table 1 reports the results from the baseline probit regression⁹. It includes the East dummy and the three sets of basic controls. The dependent variable is an indicator for whether the respondent has signed a complementary health insurance contract in the private market. As a robustness check, I also estimate the linear probability model (see table 11 in the appendix). While the OLS coefficients confirm the general results, naturally the size of the coefficients is very different in these two regressions.

The most important explanatory variable is the East dummy. An East German respondent is significantly less likely to purchase complementary health insurance in the private market. To establish a learning effect, however, one needs to analyze how the effect of being from East Germany changes over time. Consider table 2, which reports the results of the same basic regression, with the set of explanatory variables expanded by year dummies and East-year interactions. While the coefficient on East in table 1 measured the average effect of being East German over all eleven years included in the sample, it now corresponds to the same effect specifically in 1995. As in the basic regression, in 1995, East Germans were significantly less likely to buy additional health insurance. However, this effect vanishes over time. The coefficients on all East-year interactions are positive and significant. Thus, in every year, the East effect is less strong than in 1995. Table 3 reports the results of the one-sided hypothesis tests that the coefficients on the East-year interactions are indeed increasing over time. Except for 1999, 2001, and 2005, the East effect did shrink significantly in every year. Even for the three years it did not, the decrease was small. In any given year, the effect of having lived in the GDR on the probability to sign a complementary health insurance contract is the sum of the coefficients on East and the respective East-year interaction. It increases from -0.978 in 1995 to -0.434 in 2005, a fifty percent reduction within the eleven years of the sample.

The coefficients in table 2 measure the increase in the probability of signing a private insurance contract since the base year 1995. Recall from equation (5) that according to the learning model introduced, this probability is determined by two independent effects: It stems both from the change in the latent variable $y_{i,t}^*$, influenced by policy reforms, and the learning effect. The coefficients on the year dummies document that the likelihood for West Germans to buy additional health insurance also increases every year, starting in 1998, after the first big health care reform. However, notice that in each year, the east-year interaction coefficient is larger than the one on the year dummy. The probability of buying additional health insurance increases faster among East Germans than among West Germans. This is in line with the predictions of the model: While the change due to reforms is the same for all Germans, the learning effect is stronger for East Germans, simply because they started with a larger fraction of people with the wrong beliefs ($\alpha^E > \alpha^W$). While these results are evidence for a stronger learning effect among East Germans, one cannot conclude much about the speed of convergence. Reforms to the public health in-

⁹All tables report total coefficients. Most interpretations rest on the sign or relative size of coefficients. Marginal effects are only reported in the text, whenever the absolute size of an effect is of interest.

Table 1: Basic Regression

Dependent Variable:			
Complementary Health Insurance [†]	Coefficients (Standard Errors)		Coefficients (Standard Errors)
East [†]	-0.517*** (0.008)		
Age	-0.022* (0.010)	High school degree [†]	0.334*** (0.051)
Age squared *10 ⁻³	0.591 (0.338)	Vocational training [†]	0.197*** (0.059)
Age cubed *10 ⁻⁵	-0.399 (0.259)	Completed college degree [†]	0.239* (0.119)
Female [†]	0.116*** (0.033)	Full or part time employed [†]	0.071* (0.036)
Married [†]	-0.083 (0.052)	Unemployed [†]	-0.076 (0.050)
Married but separated [†]	0.231 (0.139)	Retired [†]	-0.019*** (0.003)
Divorced [†]	0.070 (0.038)	Log (household income)	0.041*** (0.007)
Widowed [†]	-0.148*** (0.023)	Log (household net income)	0.244*** (0.017)
Health status	-0.012*** (0.002)	Log (household asset income)	0.055*** (0.006)
Satisfaction with health	0.005 (0.004)	Homeowner [†]	0.034*** (0.007)
Constant	-4.473*** (0.234)		
Observations	126,346		
Log likelihood	-41,341		

Probit regression. Omitted categories are male, single, intermediate schooling, not employed. The variable “Health status” ranges from 1 (very good) to 5 (bad). The variable “Health satisfaction” ranges from 0 (low) to 10 (high). Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

insurance system change the baseline probability of any individual to seek additional coverage almost every year since 1997. Only if $\alpha^W = 0$, i.e. all West Germans are assumed to have the correct beliefs (so that their learning effect is zero), would the difference between East and West Germans in any given year correspond only to a learning effect among the former East German population.

The effects of the remaining controls are as expected. Among the socio-demographic controls shown in the first column of table 1, only the female and widowed dummies are significant. Women are significantly more likely to buy additional health insurance. They might face higher health risks, at least for the types of circumstances not covered under the public health insurance system, or be more risk-averse than men

Table 2: Basic Regression with East-Year Interactions

Dependent Variable:			
Complementary Health Insurance [†]	Coefficients (Standard Errors)		Coefficients (Standard Errors)
East [†]	-0.978*** (0.012)		
East * 1996 [†]	0.230*** (0.006)	1996 [†]	-0.095*** (0.007)
East * 1997 [†]	0.269*** (0.004)	1997 [†]	-0.198*** (0.013)
East * 1998 [†]	0.470*** (0.001)	1998 [†]	0.245*** (0.001)
East * 1999 [†]	0.403*** (0.008)	1999 [†]	0.271*** (0.012)
East * 2000 [†]	0.458*** (0.008)	2000 [†]	0.258*** (0.014)
East * 2001 [†]	0.444*** (0.015)	2001 [†]	0.353*** (0.023)
East * 2002 [†]	0.460*** (0.012)	2002 [†]	0.365*** (0.026)
East * 2003 [†]	0.512*** (0.014)	2003 [†]	0.406*** (0.027)
East * 2004 [†]	0.548*** (0.008)	2004 [†]	0.453*** (0.028)
East * 2005 [†]	0.544*** (0.007)	2005 [†]	0.564*** (0.032)
Observations	126,346		
Log likelihood	-40,414		

Probit regression. Omitted categories are 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East. Table continued in the appendix (table 12).

*** Significant at 1%, ** significant at 5%, * significant at 10%. [†] Dummy variable.

(Borghans et al. (2009) document such gender differences in risk aversion.). Moreover, the better a respondent perceives his own health, the more likely he is to have a complementary health insurance¹⁰. The interpretation of this effect is complicated by a potential endogeneity problem: Health could be positively correlated with risk aversion, resulting in healthier people to be more likely to buy insurance. However, the reverse might also be true: People with more coverage could be healthier because they use the benefits of the insurance and see a doctor more often, or take advantage of the many preventive measures usually reimbursed and heavily advertised by insurance companies.

Surprisingly, a respondent's age has only a small and barely significant effect on his likelihood to buy insurance. Since health risks typically increase with age, this

¹⁰The variable "Health status" ranges from 1 (very good) to 5 (bad).

Table 3: Changing East-Year Interactions - Test Statistics

$H_0 :$	Test statistic	p-value
$0 \geq \text{East}^*1996$	1376.47	0.000
$\text{East}^*1996 \geq \text{East}^*1997$	308.93	0.000
$\text{East}^*1997 \geq \text{East}^*1998$	5690.13	$1.87 * e^{-69}$
$\text{East}^*1998 \geq \text{East}^*1999$	92.98	1
$\text{East}^*1999 \geq \text{East}^*2000$	$1.2 * e^5$	0.000
$\text{East}^*2000 \geq \text{East}^*2001$	4.54	0.9834
$\text{East}^*2001 \geq \text{East}^*2002$	42.92	$2.85 * e^{-11}$
$\text{East}^*2002 \geq \text{East}^*2003$	2194.76	0
$\text{East}^*2003 \geq \text{East}^*2004$	37.56	$4.42 * e^{-10}$
$\text{East}^*2004 \geq \text{East}^*2005$	19.41	0.9999

This table reports χ^2 test statistics and p-values for the one-sided hypothesis tests that the East-year coefficients of the basic regression (table 2) are increasing over time.

coefficient should naturally be positive. However, one has to keep in mind that the age coefficient in this basic regression might capture a variety of effects: Older people might be more likely to need insurance, but also more prone to the wrong beliefs about the welfare state, especially if they lived in the GDR. Section 5.1 is aimed at decomposing these effects.

Higher educated respondents are more likely to buy health insurance. They might be better able to understand their own risk structure or the offers in the private market. Such an argument has been made for other areas of economic decision making. Lusardi and Mitchell (2009), for example, link the level of education obtained to financial literacy and document a positive causal effect from financial literacy to retirement planning efforts. All income and wealth variables have positive and significant coefficients. One might interpret this result along the same lines as the education effect: wealthier individuals tend to be more financially literate. It could also be the case that complementary health insurance is seen as a luxury good. A low-income individual might for example choose to neither spend any money on artificial dentition, nor on an insurance policy that would cover such costs. All severe health risks are covered under the public health insurance. Except for being retired, which has a negative effect on the likelihood to purchase additional insurance, the employment status of an individual seems to not play a significant role - the

coefficient on full or part time employed is only significant at the 10% level.

5.1 Age and Cohort Effects

In terms of health risks, age is an important factor. The health care reforms have cut benefits for artificial dentition and glasses, and so have a particularly strong impact on older people. Moreover, the number of drugs regularly prescribed on average increases with age, so that a higher co-pay affects the older population more. Given the higher risk they face, older people should be more likely to have additional coverage. Yet, age did not turn out to be a highly significant driving factor in the baseline regression. In this specification, however, age might absorb two opposing effects. While older people in general might be more likely to buy additional health insurance, they were also exposed to the respective political regime the longest. It might be the case that at least among former East Germans older people are more likely to have the wrong beliefs about the welfare state, and are therefore *less* likely to buy private insurance contracts than their younger countrymen. To disentangle these effects, I run a regression that includes an East-age interaction, as well as age-year and East-age-year interactions. To ease the interpretation, I do not include age squared or cubed as regressors. Table 4 reports the results.

Consider the second column of table 4. The effect of age among West Germans in any specific year is measured by the sum of the coefficients on age and the particular age-year interaction. Notice that for all years this sum is positive. Thus, older people are indeed more likely to buy insurance. However, this effects gets smaller over time. The coefficient on every age-year interaction is negative, indicating that age has less and less impact over time. Considering the reforms to the public health insurance system, this is only natural: ever decreasing coverage makes it increasingly necessary also for younger individuals to buy additional insurance, so that the age gap is shrinking over time.

The striking result of this regression is that among East Germans, older respondents are actually *less* likely to buy insurance. The obvious interpretation is that older East Germans have lived longer under the socialist regime and its all-encompassing welfare state, so that they are less likely to have the right beliefs than younger East Germans. This negative effect more than compensates the positive effect of age on the likelihood to buy additional insurance. The positive coefficients on the East-age-year interactions confirm this view: Over time, the probability of having the right belief converges across age groups, and the positive age effect becomes more dominant - a pattern consistent with the exogenous learning model.

To further substantiate the claim that older East Germans are even less likely to have the right beliefs than younger East Germans, I look at separate regressions for different groups of cohorts. I divide the sample into 5 groups: those born between 1975 and 1989, those born between 1965 and 1974, those born between 1955 and 1964, those born between 1945 and 1954, and those born before 1945. East Germans in the youngest group have spent only their childhood in a socialist regime. For them, the effect of being from East Germany should be the least pronounced.

Table 4: Age Regression

Dependent Variable:			
Complementary health insurance [†]	Coefficients (Standard errors)		Coefficients (Standard errors)
East [†]	0.0259 (0.023)		
East * Age	-0.026*** (0.001)	Age	0.006*** (0.0002)
East * Age * 1996	-0.008*** (0.0001)	Age * 1996	0.005*** (0.00003)
East * Age * 1997	0.007*** (0.0003)	Age * 1997	0.005*** (0.000002)
East * Age * 1998	0.011*** (0.0003)	Age * 1998	-0.003*** (0.00005)
East * Age * 1999	0.008*** (0.0003)	Age * 1999	-0.0002*** (0.00002)
East * Age * 2000	0.006*** (0.0003)	Age * 2000	-0.002*** (0.000006)
East * Age * 2001	0.006*** (0.0002)	Age * 2001	-0.0009*** (0.00004)
East * Age * 2002	0.006*** (0.0003)	Age * 2002	-0.001*** (0.0001)
East * Age * 2003	0.010*** (0.0003)	Age * 2003	-0.001*** (0.0001)
East * Age * 2004	0.010*** (0.0003)	Age * 2004	-0.002*** (0.0001)
East * Age * 2005	0.0129*** (0.0003)	Age * 2005	-0.003*** (0.0002)
Observations	126,346		
Log likelihood	-40,139		

Probit regression. Omitted categories are 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East. Table continued in the appendix (table 13).

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

In the model, this corresponds to a smaller share of people with the wrong beliefs, i.e. a smaller α . However, the change over time should be slower for them. Since I assumed that the same fraction of the population receives the iid learning shock every period, there should be convergence in the share of the population with the correct beliefs.

Table 5 reports the results of the baseline regressions by age group. Notice that for the youngest group, the sample does not include any respondents with complementary health insurance in 1995, 1996, or 1997 (when they were between 6 and 22 years old)¹¹. Since the respective East-year interactions for this group were omitted, the remaining coefficients on the interaction terms do not directly compare to those

¹¹Moreover, none of the young respondents were widowed or retired during the time of the survey.

Table 5: Basic Regression For Different Age Groups

Dependent Variable:					
Complementary Health Insurance [†]	Born 1975-1989	Born 1965-1974	Born 1955-1964	Born 1945-1954	Born before 1945
East [†]	-0.332*** (0.022)	-0.579*** (0.001)	-0.808*** (0.016)	-1.195*** (0.030)	-1.594*** (0.055)
East * 1996 [†]		0.276*** (0.001)	0.204*** (0.007)	-0.016 (0.013)	0.003 (0.010)
East * 1997 [†]		0.383*** (0.002)	0.282*** (0.019)	0.153*** (0.017)	0.346*** (0.006)
East * 1998 [†]	0.179*** (0.014)	0.139*** (0.004)	0.359*** (0.007)	0.549*** (0.022)	0.761*** (0.014)
East * 1999 [†]	0.117*** (0.016)	0.159*** (0.003)	0.338*** (0.017)	0.561*** (0.024)	0.537*** (0.003)
East * 2000 [†]	0.272*** (0.012)	0.212*** (0.004)	0.334*** (0.013)	0.590*** (0.023)	0.508*** (0.003)
East * 2001 [†]	0.194*** (0.006)	0.152*** (0.006)	0.405*** (0.023)	0.495*** (0.040)	0.536*** (0.008)
East * 2002 [†]	0.227*** (0.001)	0.161*** (0.009)	0.418*** (0.024)	0.432*** (0.026)	0.556*** (0.006)
East * 2003 [†]	0.091*** (0.004)	0.299*** (0.005)	0.501*** (0.026)	0.567*** (0.031)	0.584*** (0.006)
East * 2004 [†]	0.184*** (0.016)	0.284*** (0.005)	0.443*** (0.016)	0.679*** (0.024)	0.646*** (0.009)
East * 2005 [†]	0.110*** (0.014)	0.316*** (0.00001)	0.381*** (0.022)	0.698*** (0.020)	0.712*** (0.013)
Observations	17,368	22,149	26,882	18,859	41,088
Log likelihood	-5,510	-7,784	-9,262	-6,607	-10,476

Probit regression. Omitted categories are 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East. Table continued in the appendix (table 14).

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

of the older age groups. Focusing on the remaining 4 age groups, one can see a clear pattern consistent with the exogenous learning model: The effect of being from East Germany in 1995 is stronger the older the respondents are. This corresponds to a larger share α of people with the wrong beliefs initially. After the first big reforms (i.e. starting in 1998), the East effect decreases over time *within* each age group: The coefficients on the East-year interactions are positive and increasing from year to year. This learning effect, however, is stronger for older respondents. Comparing the interaction coefficients *across* different age groups for any given year, one can see the convergence pattern. The coefficients are smaller for younger respondents, older individuals learn at a faster pace.

Table 6: Risk Regression

Dependent Variable:	
Complementary health insurance [†]	Coefficients (Standard errors)
East [†]	-0.782*** (0.011)
Risk taking	0.03*** (0.002)
East * Risk taking	0.03*** (0.003)
Risk aversion	0.011*** (0.001)
East * Risk aversion	0.037*** (0.002)
Observations	4877
Log likelihood	-1,891

Probit regression. Omitted categories are male, single, intermediate schooling, not employed. Risk taking ranges from 0 (low) to 10 (high). Risk aversion ranges from 1 (low) to 6 (high). Standard errors are clustered by East. Table continued in the appendix (table 17).

*** Significant at 1%, ** significant at 5%, * significant at 10%. [†] Dummy variable.

5.2 Risk Taking and Risk Aversion

Living in an all-encompassing welfare state might influence people’s risk taking behavior or even their risk-aversion. If East Germans are either less risk averse or simply take less risks, these differences in behavior or preferences would make them less likely to buy additional health insurance. To determine whether the differences in the probability of taking up private health insurance is due to differences in beliefs or preferences, I include measures of risk aversion and risk taking behavior in the analysis. In 2003, the survey included the following questions: “How would you rate your willingness to take risks on a scale from 0 (low) to 10 (high)?” and “What share of a lottery winning would you be prepared to invest in a financially risky, yet lucrative investment?”¹² The answer to the first question serves as a measure for a respondent’s risk taking behavior, while the second question provides an estimate of the respondent’s risk aversion.

¹²The full question on the survey read: Please consider what you would do in the following situation: Imagine you had won 100,000 Euros in the lottery. Almost immediately after you collect the winnings, you receive the following financial offer from a reputable bank, the conditions of which are as follows: There is a chance to double the money within two years. It is equally possible that you could lose half of the amount invested. You have the opportunity to invest the amount, part of the amount or reject the offer. What share of your lottery winnings would you be prepared to invest in this financially risky, yet lucrative investment? The answer categories were: 100,000 Euros (1), 80,000 Euros (2), 60,000 Euros (3), 40,000 Euros (4), 20,000 Euros (5), or “Nothing, I would decline the offer” (6).

First, I analyze whether a respondent's willingness to take risks or his risk aversion influence his likelihood to buy additional health insurance, and how this differs between former East and West Germans. Table 6 reports the results of the baseline regression augmented by the risk variables as well as their interactions with the East dummy. Since this regression only includes observations from one year of the survey, the coefficients do not directly compare to the basic regression results. Notice however that the coefficient on the East dummy is still significantly negative. The main conclusion is not changed: East Germans are significantly less likely to have complementary health insurance, a difference that can be explained by them having the wrong beliefs about the welfare state with a higher probability than West Germans.

The coefficients on risk taking and risk aversion are as expected: The more willing a respondent is to take risks, the more likely he is to buy additional insurance. Most likely, insurance contracts can not control for these attitudes towards risk taking, so that this effect could be evidence for adverse selection or moral hazard. Naturally, the more risk averse a respondent reports he is, the more likely he is to have insurance. Interestingly, these effects are very similar for East and West Germans. For risk taking, the coefficients are almost exactly the same, while risk aversion is a little bit more influential among East Germans than it is among West Germans.

Second, I ask whether risk taking behavior or risk aversion is determined in part by which regime the respondent lived under before reunification. If that was the case, then the results in table 6 would have to be questioned. Consider table 7. It reports the results of ordinary least square regressions of the risk variables on the East dummy and the baseline controls (the full results are reported in the appendix). Former East Germans seem a little more willing to take risks than West Germans. If anything, this should make them *more* likely to buy additional insurance, but the effect is only significant at the 10% level. For risk aversion, the East dummy is not significant at all. These results make it safe to reject the hypothesis that the differences in the probability to take up complementary health insurance between East and West Germans is due to differences in risk taking behavior or risk aversion.

5.3 Preferences For a Larger Welfare State

Alesina and Fuchs-Schündeln (2007) use the same data set employed in this paper to document that living under a socialist regime influences preferences about public social policies. They show that former East Germans are more likely to prefer the state to be responsible for providing social services, insurance, and redistribution. Observing former East Germans to be less likely to seek additional insurance beyond the coverage of the public health insurance could be a consequence of or at least correlated with them having a stronger preference for state intervention. If, for example, an agent thinks that the contracts offered in the private market are unfair, he might have a stronger preference for the state to intervene *and* be less likely to buy private insurance.

Table 7: Risk Regression

Dependent Variable:	Risk taking	Risk aversion
East [†]	0.121* (0.009)	0.245 (0.023)
Observations	4960	4962
R squared	0.0397	0.0914

Omitted categories are male, single, intermediate schooling, not employed. Standard errors are clustered by East. Risk taking ranges from 0 (low) to 10 (high). Risk aversion ranges from 1 (low) to 6 (high). Table continued in the appendix (table 17).

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

To investigate this potential relationship, I include the same measure of preferences for a bigger welfare state that Alesina and Fuchs-Schündeln (2007) used in their analysis. In the surveys of 1996 and 2001, it was asked: “Who should be responsible for financial security in case of illness?” I generate a dummy variable indicating that the answer was “only the state” or “mostly the state”, as opposed to “both the state and private forces”, “mostly private forces”, or “only private forces”, and include it in the baseline regression. Table 8 reports the results. Again, since this regression only includes two of the years included in the baseline sample, the size of the coefficients is not necessarily comparable. Again, however, the effect of having lived under the socialist regime on the likelihood to complement insurance coverage with a private contract remains significantly negative. Even controlling for preferences about the welfare state, former East Germans are less likely to buy private health insurance.

Interestingly, the effect of the preferences for state responsibilities are quite different among former East and West Germans. While a stronger preference for state intervention makes respondents significantly less likely to purchase additional insurance among West Germans, there is no significant effect among the former East German population.

5.4 Aggregate Effects: Regional Differences

An agent’s decision to obtain additional insurance coverage might be influenced by factors not captured as an individual characteristic, but rather inherent in his environment. Living in a big city, for example, might make it much easier to access the private insurance market. Insurance agencies are probably rare to find in more rural areas. Health services might be cheaper in some areas, which could make agents living there less likely to have a complementary health insurance. In short, the aggregate economic and demographic situation of the region an agent lives in might greatly influence his likelihood to obtain additional insurance coverage in the private market. If former East Germans mostly live in areas that have a negative

Table 8: Preference Regression

Dependent Variable:	
Complementary health insurance [†]	Coefficients (Standard errors)
East [†]	-0.727*** (0.001)
Preference [†]	-0.208*** (0.020)
East * Preference [†]	0.024 (0.039)
Observations	21,836
Log likelihood	-6,180

Probit regression. Preference is a variable that contains the answer to the question of who should be responsible for the financial security in case of illness. It takes on the value 1 if the answer was “only the state” or “mostly the state”, and 0 for “both state and private forces”, “mostly private forces”, or “only private forces”. Omitted categories are 1996, the interaction of East and 1996, male, single, intermediate schooling, not employed. Standard errors are clustered by East. Table continued in the appendix (table 16).

*** Significant at 1%, ** significant at 5%, * significant at 10%. [†] Dummy variable.

impact on the insurance decision, the observed differences might not be attributable to differences in beliefs.

The GSOEP data set does allow me to identify in which state the respondent lived in each year of the survey¹³. I include dummies for all states as well as East-state interactions. The omitted category is the state Hamburg. Since 1991, Hamburg has consistently had the largest GDP per capita (Statistisches Bundesamt (2010)). It is also a city state with a dense population and urban infrastructure. The coefficients measure the difference between Hamburg and the respective state. Table 9 reports the results.

Consider first the coefficient on the East dummy. In Hamburg, former East Germans are significantly less likely to have additional health insurance than their fellow West German citizens. All coefficients on the East-state interactions are negative, while all coefficients on the state dummies are positive (with the exception of Berlin, where the East interaction is not significant, and the state dummy is negative). Two things follow from this. First, in every state, former East Germans are less likely to have complementary health insurance, confirming the results of the basic regression.

¹³The dataset does not distinguish the states Rheinland-Pfalz and Saarland. Thus, there are only 15 states to control for, even though Germany has 16 Länder.

Table 9: Regression with State Controls

Dependent Variable: Complementary health insurance [†]		Coefficients (Standard errors)	Coefficients (Standard errors)
East [†]		-0.501*** (0.0478)	
East * Schleswig-Holstein [†]		-0.758*** (0.033)	Schleswig-Holstein [†] 0.001 (0.009)
East * Niedersachsen [†]		-0.176*** (0.021)	Niedersachsen [†] 0.150*** (0.023)
East * Bremen [†]		-0.163** (0.061)	Bremen [†] 0.083*** (0.001)
East * Nordrhein-Westfalen [†]		-0.653*** (0.037)	Nordrhein-Westfalen [†] 0.353*** (0.018)
East * Hessen [†]		-0.485*** (0.033)	Hessen [†] 0.061*** (0.01)
East * Rheinland-Pfalz, Saarland [†]		-0.277*** (0.027)	Rheinland-Pfalz, Saarland [†] 0.08** (0.029)
East * Baden-Württemberg [†]		-0.338*** (0.0145)	Baden-Württemberg [†] 0.271*** (0.023)
East * Bayern [†]		-0.378*** (0.023)	Bayern [†] 0.274*** (0.026)
East * Berlin [†]		0.008 (0.069)	Berlin [†] -0.056*** (0.005)
East * Mecklenburg-Vorpommern [†]		-1.082*** (0.079)	Mecklenburg-Vorpommern [†] 0.694*** (0.039)
East * Brandenburg [†]		-0.371*** (0.041)	Brandenburg [†] 0.124*** (0.019)
East * Sachsen-Anhalt [†]		-0.301** (0.104)	Sachsen-Anhalt [†] -0.019 (0.053)
East * Thüringen [†]		-0.979*** (0.086)	Thüringen [†] 0.636*** (0.053)
East * Sachsen [†]		-0.479*** (0.087)	Sachsen [†] 0.286*** (0.047)
Observations		126,331	
Log likelihood		-40,126	

Probit regression. Omitted categories are Hamburg, the interaction of East and Hamburg, 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East. Table continued in the appendix (table 18).

*** Significant at 1%, ** significant at 5%, * significant at 10%. [†] Dummy variable.

Second, not surprisingly, where a respondent lives does have a significant effect on him purchasing insurance, since almost all coefficients are significant. Interestingly, though, this effect is opposite for former East and West Germans. While West Germans in almost all states are more likely to buy additional insurance than those living in Hamburg, for East Germans the opposite is true. This means that in every state, the effect of being East German is stronger than in among people living in Hamburg. One possible explanation could be that East Germans who migrated to

Hamburg (an international harbor, and home to the headquarters of many large companies) are especially likely to have the correct beliefs about the welfare state. Either a selection effect (more pro-capitalism people moved to Hamburg) or a treatment effect (the environment made them learn faster) could be responsible for such a difference in the average beliefs of East Germans in Hamburg and elsewhere.

6 Discussion

This paper analyzes the question whether people adapt to new institutions immediately, or learn only over time how to adjust their economic decisions. Germany presents a unique opportunity to study this question. Since at reunification the well-established economic and political system of West Germany was imposed onto East Germany, any observed adaptation process is rather due to people learning than to institutions developing. Moreover, former West Germans can serve as a meaningful control group. To identify a learning process among former East Germans, I analyze the economic decision of buying private health insurance.

In the spirit of a “reverse” difference-in-difference approach, where the treatment (socialism) occurred in the pre-period, and the shock (health care reform) is the same for treatment and control group, I study the differential reaction of former East and West Germans to a series of health care reforms that started in 1997. Along with the gradual decrease in coverage under the public health insurance system, former East Germans were significantly less likely to sign complementary health insurance contracts in the private market. I show that this difference can be interpreted as East Germans having not yet fully adapted to the new capitalist institutions. In particular, I show that the uptake rates of additional private insurance after the reforms are consistent with a model in which agents learn about institutions through an exogenous shock and optimize their individual insurance status only if they are aware of the organizational form of the health care system (or more generally the welfare state). East Germans are initially less likely to have the correct beliefs, but learn over time how institutions have changed and that they are now responsible for optimizing their insurance coverage.

An age decomposition of the regression analysis substantiated the convergence hypothesis of the learning model. The effect of being from the East is more pronounced but vanishes faster among older Germans. This is consistent with older East Germans, who lived under the socialist regime longer, being less likely to have the correct beliefs about the welfare state initially, but receiving an exogenous learning shock with the same probability as their younger equivalents. The purpose of this exercise is not to claim that the simple exogenous learning model is the true underlying process of East Germans adapting to capitalism; most likely, the true learning process is more complex. Rather, this study provides evidence for the existence of a substantial transition period in people’s adaptation to new institutions. Taking into account that people need time to adjust is critical for predicting the success and speed of an economy’s transition from socialism to capitalism.

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A Appendix

Table 10: Summary Statistics

Variable	Total	West	East
	Mean (Standard deviation)	Mean (Standard deviation)	Mean (Standard deviation)
East [†]	0.344 (0.475)		
Age	46.352 (17.523)	46.793 (17.578)	45.512 (17.389)
Female [†]	0.538 (0.499)	0.541 (0.498)	0.533 (0.499)
Married [†]	0.626 (0.484)	0.634 (0.482)	0.611 (0.488)
Married but separated [†]	0.013 (0.111)	0.012 (0.111)	0.013 (0.112)
Divorced [†]	0.054 (0.226)	0.050 (0.219)	0.061 (0.238)
Widowed [†]	0.071 (0.257)	0.074 (0.262)	0.065 (0.247)
Health status	2.619 (0.935)	2.607 (0.949)	2.640 (0.909)
Satisfaction with health	6.608 (2.192)	6.717 (2.209)	6.401 (2.146)
High school degree [†]	0.158 (0.365)	0.151 (0.359)	0.171 (0.377)
Vocational training [†]	0.702 (0.458)	0.687 (0.464)	0.729 (0.444)
Completed college degree [†]	0.158 (0.364)	0.118 (0.322)	0.234 (0.423)
Full or part time employed [†]	0.499 (0.500)	0.500 (0.500)	0.497 (0.500)
Unemployed [†]	0.089 (0.285)	0.054 (0.225)	0.156 (0.363)
Retired [†]	0.261 (0.439)	0.257 (0.437)	0.269 (0.444)
Household income	38506.300 (38610.730)	42824.850 (42331.280)	30285.340 (28538.540)
Household net income	33754.600 (23946.050)	36341.160 (27128.080)	28830.710 (15068.640)
Household asset income	2137.444 (12949.270)	2806.130 (15771.740)	864.508 (3301.101)
Homeowner [†]	0.516 (0.500)	0.568 (0.495)	0.417 (0.493)
Observations	126,346	82,833	43,513

Summary statistics for the explanatory variables included in all regression. Income variables in Euro. [†] Dummy variable.

Table 11: Basic Regression - Linear Probability Model

Dependent Variable: Complementary Health Insurance [†]			
	Coefficients (Standard Errors)		Coefficients (Standard Errors)
East [†]	-0.083**		
	(0.001)		
Age	-0.0038	High school degree [†]	0.074
	(0.004)		(0.028)
Age squared *10 ⁻³	0.109	Vocational training [†]	0.031
	(0.114)		(0.017)
Age cubed *10 ⁻⁵	-0.076	Completed college degree [†]	0.045
	(0.077)		(0.044)
Female [†]	0.02	Full or part time employed [†]	0.001
	(0.011)		(0.003)
Married [†]	-0.016	Unemployed [†]	0.056
	(0.009)		(0.008)
Married but separated [†]	0.049	Retired [†]	0.013
	(0.041)		(0.004)
Divorced [†]	0.014*	Log (household income)	0.006
	(0.001)		(0.003)
Widowed [†]	-0.02***	Log (household net income)	0.013
	(0.00001)		(0.003)
Health status	-0.003	Log (household asset income)	-0.007
	(0.001)		(0.007)
Satisfaction with health	0.001	Homeowner [†]	-0.011
	(0.0002)		(0.003)
Constant	-0.539		
	(0.134)		
Observations	126,346		

OLS regression. Omitted categories are male, single, intermediate schooling, not employed. The variable “Health status” ranges from 1 (very good) to 5 (bad). The variable “Health satisfaction” ranges from 0 (low) to 10 (high). Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

Table 12: Basic Regression with East-Year Interactions - continued from table 2

Dependent Variable: Complementary Health Insurance [†]			
	Coefficients (Standard Errors)		Coefficients (Standard Errors)
Age	-0.028*** (0.007)	High school degree [†]	0.322*** (0.057)
Age squared *10 ⁻³	0.650* (0.312)	Vocational training [†]	0.182** (0.058)
Age cubed *10 ⁻⁵	-0.430 (0.253)	Completed college degree [†]	0.253* (0.105)
Female [†]	0.108** (0.036)	Log (household income)	0.050*** (0.012)
Married [†]	-0.030 (0.022)	Log (household net income)	0.177*** (0.035)
Married but separated [†]	0.246 (0.134)	Log (household asset income)	0.059*** (0.005)
Divorced [†]	0.077 (0.055)	Homeowner [†]	0.011 (0.019)
Widowed [†]	-0.103*** (0.002)	Full or part time employed [†]	0.084* (0.040)
Health status	-0.016*** (0.002)	Unemployed [†]	-0.084 (0.054)
Satisfaction with health	0.002 (0.004)	Retired [†]	0.006 (0.010)
Constant	-4.059*** (0.400)		
Observations	126,346		
Log likelihood	-40,414		

Probit regression. Omitted categories are 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

Table 13: Age Regression - continued from table 4

Dependent Variable:			
Complementary Health Insurance [†]	Coefficients (Standard Errors)		Coefficients (Standard Errors)
East * 1996 [†]	0.560*** (0.005)	1996 [†]	-0.328*** (0.004)
East * 1997 [†]	0.089*** (0.008)	1997 [†]	-0.423*** (0.006)
East * 1998 [†]	0.083*** (0.008)	1998 [†]	0.363*** (0.005)
East * 1999 [†]	0.162*** (0.005)	1999 [†]	0.272*** (0.005)
East * 2000 [†]	0.288*** (0.004)	2000 [†]	0.353*** (0.005)
East * 2001 [†]	0.281*** (0.002)	2001 [†]	0.385*** (0.009)
East * 2002 [†]	0.294*** (0.0005)	2002 [†]	0.416*** (0.008)
East * 2003 [†]	0.230*** (0.002)	2003 [†]	0.453*** (0.006)
East * 2004 [†]	0.253*** (0.003)	2004 [†]	0.515*** (0.004)
East * 2005 [†]	0.140*** (0.003)	2005 [†]	0.692*** (0.0001)
Female [†]	0.103** (0.039)	Vocational training [†]	0.191*** (0.041)
Married [†]	-0.014*** (0.0001)	Completed college degree [†]	0.301*** (0.063)
Married but separated [†]	0.256* (0.122)	Log (household income)	0.037*** (0.004)
Divorced [†]	0.095 (0.075)	Log (household net income)	0.200*** (0.012)
Widowed [†]	-0.125*** (0.024)	Log (household asset income)	0.060*** (0.006)
Health status	-0.017*** (0.001)	Homeowner [†]	-0.002 (0.037)
Satisfaction with health	0.001 (0.001)	Full or part time employed [†]	0.077 (0.049)
High school degree [†]	0.305*** (0.053)	Unemployed [†]	-0.098* (0.044)
Constant	-4.737*** (0.240)	Retired [†]	-0.001 (0.003)
Observations	126,346		
Log likelihood	-40,139		

Probit regression. Omitted categories are 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. [†] Dummy variable.

Table 14: Basic Regression For Different Age Groups - continued from table 5

Dependent Variable:					
Complementary Health Insurance [†]	Born 1975-1989	Born 1965-1974	Born 1955-1964	Born 1945-1954	Born before 1945
1996 [†]		0.032 (0.017)	-0.029 (0.019)	-0.115*** (0.010)	-0.069*** (0.009)
1997 [†]		-0.081** (0.030)	-0.140*** (0.034)	-0.283*** (0.013)	-0.172*** (0.013)
1998 [†]	0.517*** (0.015)	0.534*** (0.041)	0.323*** (0.034)	0.096** (0.031)	0.218*** (0.002)
1999 [†]	0.445*** (0.006)	0.579*** (0.056)	0.330*** (0.051)	0.132*** (0.029)	0.263*** (0.006)
2000 [†]	0.400*** (0.001)	0.650*** (0.073)	0.379*** (0.056)	0.097*** (0.028)	0.193*** (0.011)
2001 [†]	0.565*** (0.008)	0.751*** (0.089)	0.383*** (0.065)	0.254*** (0.014)	0.304*** (0.019)
2002 [†]	0.558*** (0.015)	0.790*** (0.105)	0.447*** (0.067)	0.211*** (0.005)	0.316*** (0.025)
2003 [†]	0.671*** (0.018)	0.808*** (0.118)	0.449*** (0.069)	0.295*** (0.0004)	0.377*** (0.026)
2004 [†]	0.671*** (0.022)	0.921*** (0.134)	0.512*** (0.068)	0.292*** (0.009)	0.426*** (0.026)
2005 [†]	0.797*** (0.028)	1.039*** (0.144)	0.635*** (0.073)	0.424*** (0.019)	0.511*** (0.028)
Age	0.248 (0.306)	-0.355* (0.142)	1.413** (0.449)	-0.809 (0.627)	0.145** (0.052)
Age squared *10 ⁻³	-12.58 (13.84)	11.83* (4.939)	-36.05*** (10.53)	15.95 (11.53)	-1.757*** (0.526)
Age cubed *10 ⁻⁵	20.93 (19.70)	-13.37** (5.135)	30.22*** (8.228)	-10.38 (6.957)	0.657*** (0.166)
Female [†]	0.085** (0.027)	0.086*** (0.021)	0.037 (0.093)	0.208*** (0.020)	0.167* (0.078)
Married [†]	-0.020 (0.029)	0.110*** (0.025)	-0.079 (0.116)	-0.007 (0.004)	-0.337*** (0.008)
Married but separated [†]	0.197 (0.694)	0.070 (0.056)	0.319 (0.294)	0.436*** (0.066)	-0.090*** (0.020)
Divorced [†]	-0.152 (0.190)	0.091 (0.129)	-0.004 (0.027)	0.297** (0.098)	-0.161*** (0.004)
Widowed [†]		0.606* (0.306)	0.049 (0.205)	-0.108 (0.060)	-0.315*** (0.015)
Health status	0.041*** (0.0003)	0.030*** (0.003)	-0.010 (0.036)	0.001 (0.004)	-0.096*** (0.014)
Satisfaction with health	-0.004 (0.004)	0.008** (0.003)	-0.002 (0.011)	-0.012 (0.014)	-0.002 (0.008)
Observations	17,368	22,149	26,882	18,859	41,088
Log likelihood	-5,510	-7,784	-9,262	-6,607	-10,476

Probit regression. Omitted categories are 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East. Table continued on the next page.

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

Table 15: Regression by cohort - continued from table 14

Dependent Variable:					
Complementary Health Insurance [†]	Born 1975-1989	Born 1965-1974	Born 1955-1964	Born 1945-1954	Born before 1945
High school degree [†]	0.306*** (0.010)	0.217*** (0.011)	0.252*** (0.045)	0.449 (0.290)	0.425* (0.167)
Vocational training [†]	0.124*** (0.022)	0.017 (0.021)	0.152** (0.053)	0.124 (0.089)	0.286*** (0.076)
Completed college degree [†]	0.191 (0.127)	0.117 (0.066)	0.153*** (0.040)	0.298*** (0.063)	0.476*** (0.095)
Log (household income)	0.089*** (0.004)	0.083 (0.046)	0.022 (0.027)	-0.038*** (0.009)	-0.003 (0.010)
Log (household net income)	0.005* (0.002)	-0.00002 (0.051)	0.316*** (0.031)	0.386*** (0.019)	0.395*** (0.019)
Log (household asset income)	0.047*** (0.006)	0.054*** (0.010)	0.045*** (0.008)	0.046*** (0.013)	0.090*** (0.009)
Homeowner [†]	-0.030 (0.063)	-0.060 (0.048)	-0.025 (0.030)	0.039 (0.047)	0.121*** (0.011)
Full or part time employed [†]	0.097 (0.105)	0.121*** (0.014)	0.087* (0.036)	0.151** (0.056)	-0.007 (0.014)
Unemployed [†]	-0.134 (0.129)	-0.117 (0.107)	-0.130*** (0.025)	-0.158*** (0.036)	-0.018 (0.028)
Retired [†]		-0.276* (0.112)	-0.164*** (0.032)	0.019 (0.032)	-0.066*** (0.015)
Constant	-4.856* (2.153)	0.355 (1.272)	-23.56*** (6.801)	8.062 (11.02)	-9.514*** (1.578)
Observations	17,368	22,149	26,882	18,859	41,088
Log likelihood	-5,510	-7,784	-9,262	-6,607	-10,476

Probit regression. Omitted categories are 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. [†] Dummy variable.

Table 16: Preference Regression - continued from table 8

Dependent Variable: Complementary Health Insurance [†]			
	Coefficients (Standard errors)		Coefficients (Standard errors)
2001 [†]	0.452*** (0.013)	High school degree [†]	0.364*** (0.042)
East * 2001 [†]	0.198*** (0.009)	Vocational training [†]	0.180 (0.093)
Age	-0.036*** (0.007)	Completed college degree [†]	0.275 (0.149)
Age squared *10 ⁻³	0.829*** (0.075)	Log (household income)	0.041* (0.017)
Age cubed *10 ⁻⁵	-0.507** (0.158)	Log (household net income)	0.230*** (0.023)
Female [†]	0.089*** (0.024)	Log (household asset income)	0.052*** (0.011)
Married [†]	0.002 (0.029)	Homeowner [†]	0.039*** (0.003)
Married but separated [†]	0.340 (0.223)	Full or part time employed [†]	0.117 (0.109)
Divorced [†]	0.097 (0.064)	Unemployed [†]	-0.102 (0.088)
Widowed [†]	-0.069 (0.080)	Retired [†]	-0.037 (0.023)
Health status	-0.049*** (0.006)	Constant	-4.391*** (0.402)
Satisfaction with health	0.002 (0.013)	Observations	21836
		Log likelihood	-6,180

Probit regression. Preference is a variable that contains the answer to the question of who should be responsible for the financial security in case of illness. It takes on the value 1 if the answer was “only the state” or “mostly the state”, and 0 for “both state and private forces”, “mostly private forces”, or “only private forces”. Omitted categories are 1996, the interaction of East and 1996, male, single, intermediate schooling, not employed. Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

Table 17: Risk Regression - continued from tables 6 and 7

Dependent Variable:	Complementary health insurance [†]	Risk taking	Risk aversion
Age	0.035 (0.035)	0.047 (0.012)	-0.187 (0.054)
Age squared *10 ⁻³	-0.880 (0.964)	-0.898 (0.312)	3.568 (0.899)
Age cubed *10 ⁻⁵	0.699 (0.772)	0.612 (0.204)	-2.335 (0.525)
Female [†]	0.068*** (0.007)	0.213 (0.087)	-0.761* (0.057)
Married [†]	0.048 (0.052)	0.161 (0.05)	-0.410 (0.087)
Married but separated [†]	0.548* (0.255)	0.085 (0.06)	-0.16* (0.011)
Divorced [†]	0.29* (0.12)	0.115 (0.048)	0.25* (0.01)
Widowed [†]	-0.114* (0.052)	0.123 (0.025)	-0.212 (0.284)
Number of kids under 16 in the household	-0.071* (0.029)	-0.023 (0.024)	-0.082 (0.059)
Number of adults in the household	-0.038 (0.028)	0.068 (0.027)	-0.041 (0.035)
Health status	0.069*** (0.019)		
Satisfaction with health	0.017* (0.007)		
High school degree [†]	0.188*** (0.041)	-0.152 (0.035)	0.112 (0.036)
Vocational training [†]	0.16*** (0.026)	-0.009 (0.02)	0.091 (0.251)
Completed college degree [†]	0.270*** (0.014)	-0.076 (0.099)	0.300 (0.188)
Log (household income)	0.052 (0.068)	-0.010 (0.018)	-0.016 (0.035)
Log (household net income)	0.127 (0.115)	-0.024 (0.070)	0.187 (0.090)
Log (household asset income)	0.084*** (0.004)	-0.025 (0.008)	-0.023 (0.014)
Homeowner [†]	-0.111 (0.084)	-0.016 (0.009)	0.060 (0.075)
Full or part time employed [†]	0.049 (0.043)	-0.041 (0.038)	0.202 (0.026)
Unemployed [†]	-0.251*** (0.002)	0.023 (0.009)	0.160 (0.197)
Retired [†]	-0.279*** (0.048)	0.021 (0.038)	-0.364 (0.188)
Constant	-4.282*** (0.026)	4.658* (0.358)	6.745* (0.381)
Observations	4877	4960	4962
Log likelihood / R squared	-1,891	0.0397	0.0914

Probit regression in the first column. Omitted categories are male, single, intermediate schooling, not employed. Risk taking ranges from 0 (low) to 10 (high). Risk aversion ranges from 1 (low) to 6 (high). Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.

Table 18: Regression with State Controls- continued from table 9

Dependent Variable:			
Complementary health insurance [†]	Coefficients (Standard errors)		Coefficients (Standard errors)
East * 1996 [†]	0.232*** (0.006)	1996 [†]	-0.097*** (0.007)
East * 1997 [†]	0.268*** (0.003)	1997 [†]	-0.201*** (0.013)
East * 1998 [†]	0.471*** (0.002)	1998 [†]	0.246*** (0.002)
East * 1999 [†]	0.403*** (0.009)	1999 [†]	0.269*** (0.01)
East * 2000 [†]	0.452*** (0.009)	2000 [†]	0.259*** (0.012)
East * 2001 [†]	0.439*** (0.015)	2001 [†]	0.354*** (0.022)
East * 2002 [†]	0.454*** (0.013)	2002 [†]	0.367*** (0.024)
East * 2003 [†]	0.506*** (0.013)	2003 [†]	0.405*** (0.026)
East * 2004 [†]	0.542*** (0.007)	2004 [†]	0.455*** (0.026)
East * 2005 [†]	0.539*** (0.007)	2005 [†]	0.566*** (0.032)
Age	-0.029*** (0.007)	High school degree [†]	0.327*** (0.063)
Age squared *10 ⁻³	0.696* (0.321)	Vocational training [†]	0.184** (0.058)
Age cubed *10 ⁻⁵	-0.461 (0.26)	Completed college degree [†]	0.25* (0.108)
Female [†]	0.109** (0.037)	Log (household income)	0.05*** (0.011)
Married [†]	-0.029 (0.02)	Log (household net income)	0.173*** (0.034)
Married but separated [†]	0.247 (0.142)	Log (household asset income)	0.059*** (0.006)
Divorced [†]	0.086 (0.054)	Homeowner [†]	0.02*** (0.003)
Widowed [†]	-0.099*** (0.005)	Full or part time employed [†]	0.089* (0.041)
Health status	-0.019*** (0.002)	Unemployed [†]	-0.077 (0.053)
Satisfaction with health	0.001 (0.003)	Retired [†]	0.01 (0.011)
Observations	126,331	Constant	-4.217*** (0.423)
Log likelihood	-40,126		

Probit regression. Omitted categories are Hamburg, the interaction of East and Hamburg, 1995, the interaction of East and 1995, male, single, intermediate schooling, not employed. Standard errors are clustered by East.

*** Significant at 1%, ** significant at 5%, * significant at 10%. † Dummy variable.