The Fall of the Aspirations Wall: Educational Aspirations, Achievement and Societal Change

Ghazala Azmat Katja M. Kaufmann

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Abstract

This paper studies how an exogenous change in the economic and political environment affects individuals' aspirations and, subsequently, their future outcomes. We analyze whether, and how quickly, individuals' educational aspirations adapt to an important change in economic opportunities and the extent to which this relates to changes in beliefs, preferences and constraints. We then measure how changes in aspirations impact long-term educational outcomes. We use the natural experiment of the German Reunification in October 1990 to study a change in regime on youth aspirations. Through Reunification, East Germany transitioned from a socialist regime with a planned economy to the capitalist and democratic regime of West Germany. Using differences across cohorts induced by the timing of Reunification, we show that shortly after the change in regime, educational aspirations among young high school-aged students in East Germany increase substantially and, eventually, translate into a sizable increase in their likelihood of completing their university entrance certificate four years later. By exploring different mechanisms, we find that changes in perceived returns to education, psychological well-being, and economic preferences ("consumerism") and socio-political attitudes ("individualism") adapt relatively quickly and their changes are directly linked to changes in aspirations, while the relaxation of potential constraints does not seem to be important.

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*Ghazala Azmat, Science Po and Centre for Economic Performance (LSE). Email: ghazala.azmat@sciencespo.fr ; Katja M. Kaufmann, Mannheim University and briq. Email: katja.kaufmann@gmail.com. Ghazala Azmat gratefully acknowledges funding from the Agence Nationale de la Recherche (ANR). Katja Kaufmann gratefully acknowledges funding by the German Research Foundation (DFG) through CRC TR 224 (Project C01).

1 Introduction

Since aspirations early in life shape one's behavior and investment choices, they are likely to have important consequences for future outcomes. Despite their importance, little is known about how aspirations are formed and how quickly they adjust to new circumstances, such as changes to one's environment or new opportunities. Similarly, it is not clear how aspirations depend on beliefs, preferences and constraints or how important they are for actual long-run outcomes. Given their potential role in economic success later in life, it is crucial to shed light on the source and impact of aspirations as a means to understanding the creation and persistence of inequality.

The seminal work on models of aspiration adaptation (Simon, 1957; Selten, 1998; Karandikar et al., 1998) and aspiration formation (Ray, 1998; Ray, 2006; Genicot and Ray, 2017) highlights the importance of resource constraints and reference groups. Aspirations can be depressed due to existing (resource and internal) constraints but also due to "aspiration gaps", if the social distance between an individual's characteristics and the characteristics of her reference group is too large. The environment in which one's aspirations are formed and to which they adjust is, however, typically endogenous to the individual's characteristics, making it difficult to disentangle its effect on aspirations.

In this paper, we study how an exogenous change in the political and economic environment affects youths' educational aspirations and – importantly - how this impacts their future educational investments. To shed light on the mechanism behind aspiration adaptation, we explore the role played by changes in beliefs, preferences and constraints. We use the natural experiment of German Reunification in October 1990 to study a change in regime on youth aspirations. Through Reunification, Germany witnessed some of the most important structural changes in recent history, which implied a convergence for East Germany to the existing regime in the West (see Hunt, 2002, and Krueger and Pischke, 1995, for a detailed overview). In particular, East Germany transitioned from a socialist system with a planned economy to the capitalistic and democratic system of West Germany.

We estimate the causal influence of a regime change on student aspirations and subsequent outcomes by using unique data on two cohorts of adolescents in East Germany. The students were interviewed annually for several years - before and after Reunification - when they were aged 9 to 20. By the end of grade 10, when students are approximately 16 years old, they make important decisions regarding their further educational career – in particular, whether they plan to take the "Abitur", which is the entrance certificate to university education. We use variation in the timing of Reunification for different cohorts of students who have a three-year age gap to identify its effect on the aspiration to pursue an "Abitur" certificate in the future. We then link early aspirations on later actual "Abitur" take-up. In particular, we analyze the change in aspirations for the younger cohort

between early 1990 (i.e., before Reunification) and early 1991 (i.e., soon after Reunification), using as the counterfactual trend the evolution of the older cohort's aspirations between the same grades (before Reunification).

We show that the change in the political and economic environment had large and important effects on educational aspirations already in the very short run. In particular, shortly after Reunification in 1991 (compared with shortly before), the likelihood of wishing to take the "Abitur" increases by 22 percentage points. Importantly, this change in very short-run aspirations translates strongly into longer-run outcomes: aspirations strongly predict attainment and the increase in educational aspirations does indeed lead to a strong increase in the likelihood of completing the "Abitur" five years later.

We supplement our analysis to study, more broadly, the causal impact of Reunification on longer-run educational outcomes. Using (less-detailed) data that cover several cohorts of students in East and West Germany, we show that the aggregate trends in these data are consistent with one of our main findings – an increase in educational attainment following the change in regime. Moreover, we are able to establish a persistent and stable gap in Abitur completion between East and West Germans prior to Reunification (almost a 50 percent difference) that closes completely after Reunification for younger cohorts studying under the new regime. We document that East German cohorts that experience Reunification at the end of high school, but before completion of the Abitur, do not fully adjust their educational decisions to the new economic environment. That is, students with some possibility to adjust their Abitur take-up to the new economic conditions do not do so, in line with their prior aspirations. This highlights that the timing of macro events can be crucial for one's lifetime outcomes.

Why do educational aspirations and long-run outcomes change? A standard education model would suggest that there are four (main) important components that drive educational decisions: (1) the expected returns to education, (2) economic preferences, (3) perceived uncertainty related to labor market outcomes, and (4) constraints. It is often difficult to understand the importance of these different components, given that information of this kind is not readily available. In our study, we are able to separately examine these components to help shed light on the mechanisms behind the main findings. We analyze the impact of Reunification on youths' expected returns to education, their economic, social and political preferences, and psychological measures, which proxy for perceived uncertainty and internal constraints (such as low self-confidence). Additionally, we provide evidence on the roles of other constraints, such as constraints on access to (higher) education, in terms of the quality and content of education and in terms of access to different fields of study.

Reunification implied a sizable increase in the returns to education for East Germans.[1] While

[1]For instance, the average net income of individuals with a university degree in the East was only 15 percent higher

a change in expected returns is often an important driver of changes in educational investments, it can be difficult to measure whether, and how quickly, this information becomes salient to those that are likely to be affected. We show that Reunification did, indeed, increase students' expected returns to education, and this change occurred relatively quickly after Reunification. In particular, the stated importance of education for future earnings increased substantially (by 0.45 of a standard deviation).

We also find important changes in terms of economic, social and political preferences following Reunification. Consumption and economic preferences ("desire for luxury" and "enjoying life") increased sizably (by 0.12 and 0.35 of a standard deviation, respectively). Additionally, the change in terms of social and political preferences suggests a move towards more "individualism". The importance of doing deeds that "help many people", of the "judgement of peers" and the importance of "studying because it is a duty as a student" all decreased (by 0.19, 0.17 and 0.11 of a standard deviation, respectively). Similarly, the importance of being part of a collective and of supporting socialism decreased substantially (by 0.51 and 0.86 of a standard deviation, respectively). When linking the change in aspirations to the changes in these different factors, we find that aspirations increase the most among those whose perceived that returns to education increased to a greater extent. This suggests that changes in expected returns were an important driver of the increase in educational aspirations, which eventually impacted long-run educational outcomes. We also show that aspirations increased more among those whose social preferences became more individualistic – those whose values converged more with those of the West.

With respect to perceived uncertainty, we proxy for it using psychological well-being measures (anxiety, anger and self-confidence). We find that anger and anxiety increased (by 0.40 and 0.42 of a standard deviation, respectively), while self-confidence fell (by 0.40 of a standard deviation) shortly after Reunification. The results suggest that perceived uncertainty increased substantially, consistent with this being a period of unrest and change (see historical background Section 2). An increase in perceived uncertainty could also be a potential driver of increased educational aspirations. For example, education is often perceived as insurance against the downside of increased uncertainty (a higher likelihood of unemployment), and it also helps to benefit from the upside (higher returns). By linking the change in aspirations to changes in these measures, we find that increased anger and anxiety and decreased self-confidence are positively related to increased aspirations.

Finally, we investigate the importance of constraints (or the relaxation thereof) in explaining changes in aspirations resulting from Reunification. For instance, we examine the role of changes in access to higher education (overall, and for certain groups who were facing constraints due to the socialist regime), in access to certain fields (due to a relative focus on STEM fields under the

than that of blue-collar workers, compared to 70 percent in the West (see, e.g., Alesina and Fuchs-Schündeln (2007)).

previous regime), and changes in educational quality or content. Overall, we find little evidence for these explanations.

Our study contributes to our understanding of aspiration formation and adaption in several important ways. First, we link aspirations during childhood and adolescence to longer-run outcomes, allowing us to investigate how predictive aspirations are for later decisions. Second, we link the evolution of educational aspirations during childhood/youth to the evolution of youths' perceived educational returns, preferences, constraints and psychological measures, as well as to more standard individual and family characteristics. This enables us to investigate the determinants of youths' aspirations and how they are formed. Third, we identify whether and how quickly youths' aspirations adapt to a change in one's environment, which imply important changes in the labor market and consumption opportunities.

Our study is linked to several strands of the literature. In education, some recent studies analyze the effect of interventions or educational programs on the educational aspirations of children from disadvantaged backgrounds. For instance, studies have considered children from lower socio-economic status groups or from immigrant families (Heckman et al., 2013; Carlana et al., 2017; Guyon and Hulliary, 2019; Rizzica, 2019) and often in the context of developing countries (Beaman et al. 2012; Chiapa et al., 2012; Macours and Vakis, 2019).[2] Our study complements this evidence on educational interventions by showing the importance of large socio-economic changes in the formation and adaption of aspirations and by shedding light on the mechanisms behind these effects. Moreover, since we can track students over several years, it allows us to study the longer-run implications of changes to educational aspirations on acquired educational degrees.

More broadly, our paper relates to the education literature studying the responses in the education of school-aged children to changes in environment and (perceived) educational returns. For example, Abramitzky and Lavy (2014) exploit the shift of several Israeli kibbutzim away from equal sharing to productivity-based wages, finding that the implied change in the rate of return to education leads to important increases in educational investment by school-aged students. Jensen (2010) uses a randomized experiment among school-aged children in the Dominican Republic whose perceptions of returns to secondary school are extremely low and shows that providing them with information on actual returns increases educational attainment.

There is a growing body of literature showing that culture and one's environment more generally affect preferences and can be persistent (Fernandez and Fogli, 2006, 2009; Fernandez, 2007; Figlio et al, 2018). Alesina and Fuchs-Schündeln (2007), using German Reunification as an experiment, show that political regime change influences preferences for redistribution.[3] Interestingly,

[2]Aspiration adaptation has been empirically considered in other contexts, such as housing. Galiani et al., 2018 examine the effect of a slum housing intervention on the housing aspirations of non-beneficiary neighbors.

[3]Other papers have also used German Reunification as a natural experiment to investigate issues such as saving behavior (Fuchs-Schündeln, and Schündeln, 2005; Fuchs-Schündeln, 2008), consumption behavior (Bursztyn and

although they find differences between East and West Germans on these preferences, they find a convergence, albeit slow, to West German views when comparing different cohorts. We show that in the case of young individuals, economic, social and political preferences adapt quite rapidly in response to the change in regime. In particular, we find that preferences for consumption increase following Reunification, converging to the tastes of the more capitalist society. Similarly, social values shift towards being more individualistic, and political preferences move away from socialism/communism. A likely contributing factor to why preferences change after Reunification is the change in the reference group and a convergence to that new group (Genicot and Ray, 2017). Moreover, our findings suggest that these changes in preferences have a quantitatively important impact on economic outcomes – in our case, educational outcomes. Our findings also relate to recent evidence demonstrating the role of a change in one's environment, particularly exposure to markets, in shaping social values and political preferences. In a field experiment, Margalit and Shayo (2017) show that an exogenous increase in terms of engagement in financial markets led subjects to adopt a more right-leaning social outlook on issues of fairness and deservingness, redistribution, and the role of luck vs merit in explaining individual success. Relatedly, Jha and Shayo (2019) show that increased exposure to the financial market led individuals to vote and support choices that promoted peace.

Finally, there is growing evidence that psychological phenomena affect economic decisions and have important implications for welfare outcomes (see, for instance, Bertrand et al., 2004; Mullainathan, 2005). In the context of poverty, internal constraints, such as low self-confidence and stress, are linked to lower aspirations (Duflo, 2012). We show that Reunification does affect youth psyche – the level of anxiety and anger increase and self-confidence decreases. Furthermore, in the context of aspirations, we demonstrate the importance of internal constraints.

The effects we find have important policy implications. It has been well established that early investments in children are critical for long-run economic success (see the seminal papers by Cunha and Heckman (2008) and Cunha, Heckman and Schennach (2010) and the line of literature following those papers). It is, therefore, important to understand whether such investments depend on parents or youths' aspirations early in life, as well as whether, and to what extent, aspirations are malleable and can adjust to new circumstances. More generally, it is crucial to shed light on how aspirations are formed and how they depend on family background, skills, beliefs, preferences and constraints to understand their role in the creation and persistence of different types of inequalities (Lundberg, 2015).

Cantoni, 2012), the economic impact of market access and networks (Redding and Sturm, 2008; Burchardi and Hassan, 2013) and the educational attainment of children born during the period (Chavalier and Marie, 2017).

2 Background

Historic events

Until 1945, East and West Germany were united as a single country. When separation occurred after Germany's defeat in the Second World War, it was exogenously imposed by the winning Allies. In 1989, change swept through Eastern Europe and culminated in the fall of the Berlin Wall in November 1989 and the collapse of communist regimes throughout the region. Interestingly, East Germany and former German Democratic Republic (GDR), instead of experiencing a change of government within its borders or newfound independence like other countries in this area, ceased to exist as a separate state. On October 3, 1990, East Germany joined the Federal Republic of Germany (FRG), creating a sovereign unified German state ("Reunification"). In this process, East Germany changed from state socialism to liberal-democratic capitalism in a short period of time and without a gradual transition (as detailed below).

The Peaceful Revolution, a series of protests by East Germans, led to the removal of the Berlin Wall in November 1989. A few weeks after the fall of the Berlin Wall, West German Chancellor Helmut Kohl announced a 10-point program calling for the two Germanies to expand their co-operation.During the March election, the former Socialist Unity Party of Germany was heavily defeated. A grand coalition was formed under Lothar de Maizière, leader of the East German wing of Kohl's Christian Democratic Union. On 18 May 1990, the two German states signed a treaty agreeing on monetary, economic and social union, which came into force on 1 July 1990, with the West German Deutsche Mark replacing the East German Mark as the official currency of East Germany. On 23 August 1990, the parliament of East Germany (Volkskammer) passed a resolution declaring the accession (Beitritt) of the German Democratic Republic to the Federal Republic of Germany effective 3 October 1990. The East German Declaration of Accession (Beitrittserklrung) to the Federal Republic was formally presented by its President to the President of the West German Bundestag by means of a letter dated 25 August 1990. In the wake of that resolution of accession, the "German reunification treaty" (Einigungsvertrag), which had been negotiated between the two German states since 2 July 1990, was signed by representatives of the two Governments on 31 August 1990 and was approved by large majorities in the legislative chambers of both countries in September 1990.

There was a great deal of uncertainty late in the process as to whether Reunification would take place, as well as what it would mean. There was also little international support for Reunification. For example, briefly before the fall of the Berlin Wall, British Prime Minister Margaret Thatcher told Soviet General Secretary Mikhail Gorbachev that neither the United Kingdom nor Western Europe desired the reunification of Germany. Thatcher also clarified that she wanted the Soviet

leader to do what he could to stop it, telling Gorbachev "We do not want a united Germany".[4] Although she gradually softened her opposition, as late as March 1990, Thatcher summoned historians and diplomats to a seminar at Chequers to ask "How dangerous are the Germans? ".[5] The pace of events also surprised the French, whose Foreign Ministry had concluded in October 1989 that reunification "does not appear realistic at this moment".[6] Ultimately, the key ally was the United States. Although some top American officials opposed rapid unification, Secretary of State James A. Baker and President George H. W. Bush provided strong and decisive support for Kohl's proposals.

Education structure before and after Reunification

The East and West German educational systems grew from the same educational roots and shared a common language, but during the forty years (1949-1990) of separation, they were characterized by different educational and political philosophies. However, similar elements always remained or came to the fore in various periods of reform. One key feature of the secondary school system that remained the same in West and East Germany before and after Reunification was the selective university-preparatory education and the Abitur as the "entrance ticket" to university. Therefore, the "aspiration of obtaining the Abitur" and the actual "Abitur attainment" remained consistent over time. [7]

East Germany had a unified school system in which there was one common school, which almost every East German student attended from grades one through ten, the polytechnical school ("Polytechnische Oberschule", POS). Students were taught in heterogeneous core groups, tracking was not permitted, and electives were few. After the tenth grade, most students continued with vocational training, implying three years of apprenticeship in a business and part-time study in vocational schools. A minority of the students entered the university track, "Abitur," spending two additional years in extended secondary schools ("Erweiterte Oberschule", EOS), to complete the university entrance certificate. These students were selected on the basis of grades and political attitudes (see Baske (1990)).[8]

[4]Michael Binyon (11 September 2009). "Thatcher told Gorbachev Britain did not want German reunification". The Times. London.

[5]See Kundnani, Hans (28 October 2009). "Margaret Thatcher's German war". The Times. See also Volkery, Carsten (9 November 2009). "The Iron Lady's Views on German Reunification/'The Germans Are Back!"'. Der Spiegel.

[6]Knight, Ben (8 November 2009). "Germany's neighbors try to redeem their 1989 negativity". Deutsche Welle.

[7]See the survey on the development of the East and West German education system before and after Reunification by Mintrop and Weiler (1994) and the comparison of the education system of the FRG and GDR by Anweiler et al. (1990).

[8]We will investigate whether the relaxation of such constraints led to (or contributed to) the change in educational aspirations and attainment.

East Germany's unified school system only began to be aligned with the West German system, with some minor modifications, in the 1991/92 school year.[9] The three-track system, consisted of a college-preparatory Gymnasium (grammar school), a technical-clerical oriented Realschule and a manual labor oriented Hauptschule (vocational secondary schools). Despite these changes within a short period, the transition was marked by relatively high continuity (see Weishaupt and Zedler (1994) and Mintrop and Weiler (1994)). Schools retained most of their personnel (only approximately 10 percent of the teaching force lost their jobs in the years after Reunification) and proceeded to operate without much interruption.

Until shortly before Reunification, there were sizable differences in educational attainment between East and West Germany. In the West, approximately 30 percent of school-aged students completed the Abitur; in the East, less than 20 percent did (Below et al., 2013). However, after Reunification, East German Abitur completion rates began to converge to West German rates, as we will show below and discuss in more detail (see Section 5).

3 Data

3.1 Longitudinal Study of Students in East Germany

The data used in the following analysis come from the Longitudinal Study of Students (1985-1995).[10] The study follows students in two parallel cohorts in East Germany. In each cohort, approximately 1,600 children are followed from 1985-1995. Students in the younger cohort were surveyed between grade 3 in 1986 and grade 12 in 1995 (i.e., between ages 9 and 18), while students in the older cohort were surveyed between grade 6 (in 1985) and up to three years after grade 12 in 1995 (i.e., between ages 12 and 21).[11]

The goal of the study was to understand the determinants of the development of cognitive abilities as well as of the values, goals and attitudes of children and teenagers and was continued after German Reunification. The data are ideal for our purpose in that the survey followed the same individuals from before to after Reunification, covering a wide range of topics, including educational achievement and attainment, as well as values and goals, family development, social relations and psychological well-being measures. Importantly, it asks students about their educational aspirations at several points in time and follows them over time, allowing us to study how well these

[9] In our analysis of the short-run effects of Reunification, the data allow us to analyze the change in aspirations just before Reunification (early 1990) and after Reunification (early 1991) but before the change in the schooling system took place.

[10] The data are available at the Central Archive for Empirical Social Research (University Cologne). A description of the Longitudinal Study of Students can be found in the survey on "Youth studies in the East" ("Jugend im Osten") (see Kuhnke (1997)).

[11] As an exception, the "older" cohort was not surveyed in 1991, and neither cohort was surveyed in 1994.

measures translate into actual outcomes.

Variable description and summary statistics

In Table 1 (a), we present summary statistics for the main variables used in our analysis. Our main outcome variable of interest is the aspiration to acquire the "Abitur", which is the university entrance certificate necessary for admission to university.

To better understand the potential mechanisms behind the short-run changes in Abitur aspirations following the regime change, we examine the different components of an educational production function, exploring the perceived returns to study, economic (consumption) preferences (such as the desire to "afford luxury" and "enjoy life"), social and political attitudes (such as the importance of "socialism" and the "collective" and doing "good deeds"). We further consider changes in short-run psychological and psycho-nerval measures such as anxiety, anger and self-confidence. The summary statistics also present information on students' cognitive skills (GPA).

With respect to perceived returns, students are asked, on a scale from one to four, the importance of education for later earnings (where 1 is "not very important" and 4 is "very important"). The same scale is used in the questions for all other measures discussed below. Since these measures do not have a natural unit, we standardize them, i.e., subtract the mean and divide by the standard deviation to be able to interpret regression coefficients in terms of standard deviation changes.

In terms of preferences, we investigate the role of the following measures. With respect to economic goals, students are asked about how important it is to "enjoy life" and to consume "luxury goods" (again expressed on a scale from one to four; see above). To proxy for social attitudes and preferences, we use questions on the importance of doing "good deeds", of "being valued by peers" and the importance of "duty as a student" for an individual's study motivation. Finally, political preferences and values are measured via the importance of "supporting socialism" and "being part of a collective".

To understand the role of perceived uncertainty, we explore psychological measures such as anxiety, anger and self-confidence. Youths are asked several questions/items related to the different psychological measures, in particular whether they agree with different statements. Possible answers for each item are 4 "very strongly" to 1 "not at all". We use factor analysis to combine the different items in the case of anxiety and anger, where there is more than one variable.[12] We

[12]In terms of the measure "anger", individuals are asked whether they agree with the following statements: "It happened that I have destroyed things out of anger. "; "When provoked, I lose my temper. "; "I can become so angry that I do not recognize myself."). In terms of the measure for "anxiety", individuals are asked whether they agree with the following statements: "Sometimes I am too nervous to speak in class." and "I am afraid of being laughed at by my classmates". Finally, to measure "self-confidence", individuals are asked if they agree with the statement "I struggle with low self-confidence." To interpret higher values as higher self-confidence, while in the raw data higher-value

express all psychological measures in terms of standard deviations from the mean (as discussed above). In Table 1 (b), we present survey questions and summary statistics of the variables used in the heterogeneity analysis to shed light on the importance of different types of constraints. In particular, we examine constraints related to (relative) academic ability, interests and regime constraints.

In terms of academic ability and interests, we measure whether an individual's relative strength or interest is in the mathematical (technical) area or in the non-mathematical (verbal) area. We measure "relative objective performance" in terms of relative grades in German versus Math (the grading scale is from one to five, where one is the best grade). "Relative subjective performance" is measured in terms of the ratio of one's own evaluation of one's performance in German and Math (on the scale for the absolute measures, 1 is "very good" and 4 is "bad"). "Relative academic interest" is the ratio of the measures of interest in topics related to German versus Math (with the scale of the absolute measures ranging from 1 for "strongly interested" to 4 for "not at all interested").

The regime-relevant variables are whether an individual was an "FDJ member", i.e., a member of the communist youth organization "Free German Youth" ("Freie Deutsche Jugend (FDJ)"), which was asked under the socialist regime (before Reunification) and whether the individual was an "FDJ member with function", i.e., a member of the communist youth organization with a leading role (such as "FDJ secretary" of the group, of the school, or at the municipal or higher level). Finally, we also split the sample by whether an individual's mother has an Abitur certificate. Although eventually abolished and not relevant for the cohorts in our study, the declared goals of the socialist regime (at least at its origins) were to promote children from less-privileged families, i.e., with less-educated parents, with parents who were workers or farmers, or other such statuses.

3.2 German Socio-Economic Panel (GSOEP)

We supplement our analysis on the causal effect of Reunification on Abitur completion using a well-known and widely used dataset, the German Socio-Economic Panel (GSOEP). The data do not contain information on Abitur aspirations around Reunification necessary for the main part of our analysis, but they do provide us with information on completed educational attainment for more cohorts in East Germany, as well as information on West Germany. GSOEP is an annual household panel, started in West Germany in 1984, while from 1990 on, it also covers the territory of the former German Democratic Republic. The GSOEP is one of the main tools for social science and economic research in Germany and was used –among other examples– by Alesina and Fuchs-Schündeln (2007) in their analysis of the effect of Reunification on redistribution prefer-

answers about the statement imply lower self-confidence, we revert the scale.

ences.[13] Some of the many topics include household composition, educational and occupational biographies, employment, earnings, health and satisfaction indicators.

We use the original sample established in 1984, and the sub-sample covering the territory of the former GDR that began in 1990. Our analysis is based on individuals born between 1969 and 1980, i.e., individuals who were between 10 and 21 years old at the time of Reunification, and thus were differentially able to respond to the event of Reunification in terms of educational decisions. For the purpose of our study, we are interested in measuring the completed schooling level and whether they obtained the university entrance certificate, the Abitur.

4 Empirical Methodology

4.1 Short-Run Effects of Reunification on Aspirations

Students' cohort of birth and the timing of Reunification jointly determine exposure to the change in regime. We use this variation to identify the effect of regime change on various outcomes – starting with educational aspirations. In particular, we analyze the change in aspirations of the younger cohort before and after Reunification, using as the counterfactual trend the evolution of the older cohort's aspirations between the same academic years (grades) (before Reunification).

The students are asked repeatedly – in most grades – about their educational goals. In particular, they are asked whether they aspire to obtain the university entrance certificate, the "Abitur". The data allow us to see how students' aspirations evolve over their "educational" lifecycle (i.e., across grades). The data follow two cohorts - one being three years older than the other cohort. We exploit the structure of the data and comparability across cohorts to identify the effect of regime change on student outcomes and choices. The "treatment" of interest is the that of regime change on educational aspirations of the younger cohort. The older cohort serves as the "control" group, capturing how aspirations would have changed if there had been no Reunification. For instance, the older cohort when in grade 8 (in 1987, aged 14) is in the pre-Reunification period, while the younger cohort when in grade 8 (in 1991, aged 14) is in the post-Reunification period.

We estimate the change in aspirations for the younger cohort, in the short period before and after Reunification, using the older cohort as a control for the (counterfactual) trend across grades for the younger cohort. The treatment effect is how the regime change affects educational aspirations of the younger cohort while controlling for the counterfactual trend of aspirations, i.e., how the aspirations of the young would have changed if there had been no Reunification.

The empirical design is such that we focus closely on the grades directly pre- and post-Reunification for the younger cohort (i.e., when in grades 7 and 8), which allows us to identify the short-run

[13] For an overview of the data, sampling, topics and so forth, see, e.g., Goebel et al (2018).

effects of Reunification and helps compute the correct standard errors (Bertrand, Duflo, Mullainathan, 2003). More generally, we estimate the following equations:

$$A_{icg} = \beta_0 + \beta_1 C_i + \beta_2 G_{ic} + \beta_3 (C_i G_{ic}) + X_{ic}\delta + \epsilon_{icg} \quad (1)$$

$$A_{icg} = \beta_0 + \beta_1 C_i + \beta_2 G_{ic} + \beta_3 (C_i G_{ic}) + D_i + \epsilon_{icg} \quad (2)$$

where A_{icg} is the educational aspiration of student i in cohort c in grade g. C_i is a dummy indicating whether the individual belongs to the younger cohort, and G_{ic} represents the student's academic grade. Since we restrict the analysis to grades 7 and 8, G_{ic} is a dummy variable that takes value one if the academic grade is 8 (where grade 7 is the excluded category). The variable of interest is $(C_i G_{ic})$, which interacts cohort and academic grade and measures the effect of a change in regime. It takes value one if a student is from the younger cohort and in grade 8, which is in the post-Reunification period for the young cohort. X_{ic} is a vector of pre-determined, individual-specific characteristics. Additionally, we include individual fixed effects D_i (see equation (2)).

In a later section, to investigate potential mechanisms behind the effect of Reunification on aspirations, we estimate –in a first step– the same equations (1) and (2) with different outcome variables, such as "perceived returns to education", and different measures of "economic, social and political preferences" and "psychological measures" proxying for the degree of perceived uncertainty. In a second step, we link changes in those measures to changes in aspirations.

One possible way to apply the Differences-in-Differences approach is to compare the young and old cohorts in the same years before and after Reunification. However, the older cohort is also likely to be directly affected by Reunification. In turn, we might expect a potential response by the "control" group. Using different grades (but the same calendar years), is also less reliable when aspiration trends are non-linear. In our application of the Differences-in-Differences approach, we compare the younger and older cohorts in the same grade (but different years). In this way, the older cohort is not affected by Reunification since the relevant grades are all before Reunification. We, therefore, use the change in the educational aspirations of the control group over the same grades, which controls for how the younger cohorts outcomes would have changed without Reunification. Moreover, the key outcome variable "Abitur aspirations" is very similar in levels across cohorts in the pre-treatment period, such that we employ a "Matched" Difference-in-Differences design. While this is not a necessary condition for using a DID approach since time-constant differences across cohorts are "differenced out", it is evidence in favor of the necessary "parallel trends" assumption being satisfied.[14] We explicitly test for the "parallel trends" assumption in Section 5.1, showing that the pre-trends of the two cohorts are indeed parallel.

[14]Matched-DID is often used when examining variables that are bounded from above or below because the (pre-)trends in such variables are unlikely to be the same if the pre-treatment outcome levels are very different. See, for instance, Galiani et al (2005), who analyze the effect of water privatization on child mortality.

4.2 Linking Aspirations to Long-run Educational Attainment

Does the increase in educational aspirations in response to the regime change translate into higher educational attainment in the longer run? In this section, we study the link between educational aspirations and educational attainment. We measure whether educational aspirations – and changes in educational aspirations – impact students likelihood of completing the university entrance certification at age 18 (in grade 12), several years after they are asked about their educational aspirations (in grades 7 and 8).

We test three main hypotheses. First, aspirations predict attainment (and aspirations in grade 8 are better predictors than those in grade 7). If aspirations measure something meaningful, they should predict longer-run educational attainment. Moreover, grade 8 aspirations should generally be better at predicting later attainment than grade 7 aspirations if aspirations change as students progress through grades. Second, the relationship between aspirations and later attainment is stronger for the young cohort. The younger cohort is exposed to Reunification by grade 8, which, as shown in the previous section, leads to an increase in aspirations. The younger cohort has already received fundamentally new information about the structural break of Reunification, which the older cohort only received it by grade 11 – the time when Abitur decisions are made. Third, the grade 8 aspirations of the younger cohort fully incorporate the information on the structural break of Reunification, which explains all of the cross-cohort differences.

We begin by estimating the following:

$$E_{ic} = \gamma_0 + \gamma_1 A_{icg} + \gamma_2 C_i + \epsilon_{icg} \tag{3}$$

where E_{ic} takes value 1 if individual i in cohort c undertakes a degree that provides college access (i.e., the "Abitur"). We are primarily interested in γ_1, which measures the relationship between academic aspirations, A_{icg}, and ultimate educational attainment. We consider both educational aspirations in grade 7 (before Reunification for both cohorts) and grade 8 (after Reunification for the younger cohort but still before Reunification for the older cohort). Controlling for cohort, C_i, allows us to determine whether there are important cohort differences in educational attainment after controlling for students aspirations and how this depends on whether we use grade 7 or grade 8 aspirations.

With this specification, we test the following: (a1) $\gamma_1 > 0$ and $\gamma_1(grade8) > {}_1(grade7)$, and (a2) $\gamma_2 > 0$. For prediction (a1), it follows simply that as students advance through their educational trajectory, their educational aspirations are more closely linked to their actual educational choice. Figure 1 shows how the trend in aspirations evolve over students time in school. As such, early aspirations may not fully translate into later achievements related to those aspirations. This might be, for example, because they have more information about the complementarity of their

skills to university education and have a more accurate projection of whether they will obtain the grades needed to access university. For prediction (a2), we expect the younger cohort to have a higher likelihood of undertaking the Abitur for various reasons, such as an increase in returns to schooling following Reunification, which we will explore in the next section. We would expect these aspects to be - at least partially - incorporated into their grade 8 aspirations. However, since in equation (3), we do not allow aspirations to vary by cohort, and the grade 8 aspirations of the older cohort do not contain the information about the structural break, the cohort dummy is likely to be significant given the findings from the previous sections. To further explore the role of differences by cohort, we investigate below whether the level differences between cohorts disappear once we allow the effect of aspirations on attainment to vary by cohort. If they do, the grade 8 aspirations of the younger cohort will fully incorporate the information on the structural changes induced by Reunification. We therefore estimate the following:

$$E_{ic} = \gamma_0 + \gamma_1 A_{icg} + \gamma_2 C_i + \gamma_3 (A_{ic} C_i) + \epsilon_{icg} \tag{4}$$

In regression (4), we estimate the differential effect of educational goals by cohort ($A_{ic}C_i$). In this case, γ_3 will measure whether the link between educational aspirations and attainment differs by cohort. We test three main hypotheses: (b1) $\gamma_3 > 0$ (i.e., aspirations are more strongly tied to outcomes for the younger cohort since they have more information about structural change). (b2) $\gamma_3(grade8) > \gamma_3(grade7)$, since students in the younger cohort have relatively more information in grade 8. (b3) $\gamma_2(grade8) = 0$. This would imply that the effect of Reunification on educational attainment is fully captured by its effect on the younger cohort's aspirations in grade 8 (after Reunification).

4.3 External Validity and Long-Run Effects of Reunification on Educational Outcomes

In this section, we supplement our analysis by investigating the causal effect of Reunification on longer-run educational outcomes using the GSOEP data. Although it lacks information on youths' aspirations, it allows us to measure the impact of Reunification on higher education attainment on more cohorts of East German students, as well as to use cohorts of West German students as the counterfactual.

We apply a Difference-in-Differences approach, comparing, across different cohorts, the Abitur completion rates of East German students to those of West German students. In particular, we compare the completion rates for individuals aged between 10 and 21 at the time of Reunification. This allows for variation in the point at which they were impacted, during their academic lifecycle, by the regime change. Within these cohorts, we have our "older" and "younger" cohorts, as well

as cohorts that were even older (educational completion, and therefore decision to enter Abitur, occurred before Reunification) and even younger (education completion occurred later, with more exposure to the new regime). We use West German cohorts as the counterfactual group. Since the political and economic regime and the school system remained unchanged in West Germany, while East Germany adopted the West German regime, it seems plausible that West Germans were (relatively) unaffected in their educational decisions by the event of Reunification.

We estimate the following equation:

$$Ab_{icr} = \beta_0 + \beta_1 C_i + \beta_2 R_{ic} + \beta_3 (C_i R_{ic}) + X_{ic}\delta + \epsilon_{icr} \tag{5}$$

where Ab_{icr} is the decision to complete the Abitur of student i in cohort c in region r (i.e., East or West Germany). C_i is a dummy indicating whether the individual belongs to the younger cohort (i.e., individuals aged 13 to 15 as opposed to 16 to 18), and R_{ic} represents the student's region, i.e., whether she attended school in East or West Germany. The variable of interest is $(C_i R_{ic})$, which interacts cohort and region (East/West) and measures the effect of the change in regime. It takes value one if a student is from the younger cohort and East Germany. X_{ic} is a vector of pre-determined, individual-specific characteristics. To provide evidence in support of the parallel trends assumption, we also use the cohort of individuals aged 19 to 21 to compare it to the Abitur attainment of individuals aged 16 to 18 and analyze whether the difference between the two cohorts is the same in East and West Germany. Finally, we also use the cohort of individuals aged 10 to 12 to shed further light on the rate of convergence.

5 Results

In this section, we identify and quantify the effect of Reunification on educational aspirations. We proceed to analyze the effects of regime change on longer-run educational outcomes (Abitur completion) and directly explore the relevance of youths' aspirations for their actual longer-run decisions. In the following section, we shed light on the mechanisms through which Reunification affected educational aspirations and decisions. In particular, we investigate the role of youths' expected returns to education, economic, social, and political preferences, the role of psychological well-being, and the importance of potential constraints, all of which we link to changes in aspirations.

5.1 Short-Run Effects of Reunification on Educational Aspirations

5.1.1 Graphical Representation of Educational Aspirations

We begin by graphically exploring the effect of Reunification on youths' aspirations. The graphs provide insight into the identification strategy we use for the regression analysis later and highlight the plausibility of the necessary parallel trends assumption by testing for the equality of pre-trends between the two cohorts. Students are asked repeatedly about their educational goals – in particular, whether they aspire to complete the Abitur. Figures 1 to 3 plot - across different academic years/grades - the means and confidence intervals of the educational aspirations of the older cohort, the younger cohort, and both cohorts together, respectively.

Figure 1 shows the evolution of educational aspirations for the older cohort between grades 6 and 10. By grade 10, students would have decided on their pursuit of Abitur. Importantly, all grades we observe for the older cohort are before Reunification (October 1990). We see that for this cohort, educational aspirations fall –and at an increasing rate– as the date to choose approaches. One likely explanation for this pattern is that as students progress through the grades, they update their match with respect to Abitur and become more realistic (see Stinebrickner and Stinebrickner, 2014, on learning about one's ability and college dropout).

Figure 2 plots the educational aspirations of the younger cohort. For this cohort, we observe the evolution of educational aspirations across grades before and after Reunification. The tight band around Reunification is when the younger cohort is in grade 7 (just before Reunification) and when they are in grade 8 (just after Reunification). Similar to the older cohort, we see a fall in aspirations in the period prior to the regime change. However, in the post-regime period, there is a striking break in this trend, and aspirations increase substantially.

In Figure 3, we superimpose, by academic grade, the educational aspirations of the older cohort on to those of the younger cohort, showing that in the pre-Reunification period, there is no significant difference in educational aspirations. However, in grade 8, which is pre-Reunification for the older cohort and post-Reunification for the younger cohort, the aspirations of younger and older cohorts are sizably and significantly different. The likelihood of aspiring to complete the Abitur is 55 percent for the younger cohort (who just experienced Reunification) versus only 35 percent for the older cohort in grade 8 (who had not (yet) experienced Reunification). In the previous academic grade (grade 7), which is pre-Reunification for both cohorts, this was almost identical, at approximately 38 percent.

In support of the parallel trends assumption, Figure 3 shows that the pre-trends are not only close to parallel but also nearly overlapping, suggesting that the cohorts are closely "matched" in the pre-period. The figures show that - in addition to similar levels in terms of aspirations of the two cohorts in grade 7 (i.e., before treatment) - the pre-trends between the two cohorts are also the

same. We will test this formally in the following subsection.

5.1.2 Quantifying the Effect on Educational Aspirations

We now proceed to quantify the effect of Reunification on educational aspirations. We begin with a Difference-in-Differences estimation strategy, as described in Section 4.1, in which we compare the educational aspirations of different cohorts across grades. We then combine this with a fixed effects model.

We estimate the effect of regime change, focusing only on the grade before (grade 7) and the grade after (grade 8) Reunification for the young cohort. The older cohort, considered in the same grades, controls for the (counterfactual) trend - i.e., the way in which the aspirations of the younger cohort would have evolved between grades 7 and 8 had Reunification not taken place.

In Table 2, columns (1) and (2), we report the results from this estimation using two different specifications: Differences-in-Differences (DID) and fixed effects (FE), respectively. The two specifications suggest similar effects. In particular, comparing the (short) period prior to Reunification with the (short) period afterwards, the likelihood of aspiring to complete the "Abitur" increases substantially by 19 percentage points without fixed effects and 22 percentage points when fixed effects are included. In Table 2, columns (3) and (4), we test whether the pre-trends in aspirations were similar for the two cohorts. We estimate a Differences-in-Differences specification (without and with fixed effects, respectively) comparing the evolution of youths aspirations before grade 7. We show that the parallel trends assumption holds since pre-trends are not significantly different and, in fact, are extremely similar (the estimated coefficient is close to zero).

We have shown that Reunification had a sizable effect on youths' educational aspirations. We find that aspirations can adapt very quickly to large shocks (the post-period is within months after Reunification). In the following sections, we show that aspiration adaptation has significant implications for longer-run educational decisions. This highlights the importance of the politico-economic environment in which one forms educational aspirations and, subsequently, decides on educational investments and attainment.

The regime change implied a move to a system in which educational investments are more highly rewarded, which could have prompted students to aspire more for college education. However, beyond the changes in returns, educational investments could have changed because of uncertainty, changes in economic preferences or changes in constraints after Reunification. In Section 6, we provide an extensive analysis of possible mechanisms making use of information on students' perceived returns, their economic, political social preferences, and psychological well-being. All of these factors are then linked directly to the students' change in aspiration.

5.2 Long-Run Effects of Reunification on Educational Outcomes and Links to Aspirations

5.2.1 Link between Aspirations and Educational Outcomes

In this section, we study the direct link between educational aspirations and longer-run educational attainment. We measure whether educational aspirations – and changes in educational aspirations – impact students' likelihood of obtaining the university entrance certificate at age 18 (in grade 12), several years after they were asked about their educational aspirations (in grades 7 and 8).

As discussed in Section 4.2, we test three main hypotheses. First, aspirations predict attainment, and grade 8 aspirations are better at predicting outcomes than grade 7 aspirations. Second, the relationship between aspirations and later attainment is stronger for the younger cohort. The younger cohort is exposed to Reunification by grade 8, which as shown in the previous section, led to a substantial increase in aspirations. Thus, the younger cohort already received fundamentally new information about the structural break of Reunification, which the older cohort had only received such information in grade 11 – when Abitur decisions are made. Third, the grade 8 aspirations of the younger cohort fully incorporate the information on the structural break of Reunification, which explains all of the cross-cohort differences.

Table 3 provides evidence for all three hypotheses. First, educational aspirations are a strong predictor of achieving the Abitur, and grade 8 aspirations better predict attainment than grade 7 aspirations. Those aspiring to obtain the Abitur in grade 7 have a 47 percentage-point higher chance of actually doing so (column 1), while those aspiring to obtain the Abitur in grade 8 have a 64 percentage-point higher chance of doing so (column 2). Second, more students from the younger cohort obtain the Abitur. Columns (3) and (4) show that the links between aspirations and actual achievement remain similarly strong once we control for a cohort dummy. The coefficients on the young cohort are significantly positive as expected, and conditional on grade 7 (grade 8) aspirations, students from the young cohort are 30 (17) percentage points more likely to acquire the Abitur. Third, the link between aspirations and attainment became stronger after Reunification, explaining all of the cross-cohort differences. In particular, in columns (5) and (6), we add interaction terms between aspirations and cohort for grade 7 and grade 8 aspirations, respectively. The coefficient on the interaction term is positive and significant, suggesting that aspirations are more strongly linked to actual educational attainment for the younger cohort. Moreover, this link is stronger for grade 8 aspirations, as expected, because for the young cohort, grade 8 aspirations are measured directly after Reunification. Interestingly, once we allow for heterogeneous effects of grade 8 aspirations on attainment by cohort, the cohort dummy is no longer significant. In other words, the grade 8 aspirations of the younger cohort fully incorporate the information on the structural break of Reunification and explain all cross-cohort differences ($\gamma_2 = 0$). This highlights

the relevance of aspirations, such that they fully absorb the differential effect of all the structural changes on longer-run outcomes.

5.2.2 External Validity and the Effect of Reunification on Educational Outcomes

Here, we present the results related to the analysis described in Section 4.3. Using the GSOEP data, we causally identify and quantify the effect of Reunification on the likelihood of Abitur completion for several cohorts of East German students using West German students as a control group.

Figure 4 displays the fraction of Abitur completion for four different cohorts. These include two younger cohorts who were, at the time of Reunification, aged 10 to 12 and 13 to 15. In addition, the two older cohorts were aged 16 to 18 and 19 to 21. The solid line represents the Abitur completion rates of individuals from East Germany (the "treatment group"), while the dashed line represents individuals from West Germany (the "control group"). The gray bars represent 95% confidence intervals.

Comparing Abitur completion rates of the cohort aged 19 to 21 with that aged 16 to 18 in East and West Germany, Figure 4 supports the parallel trends assumption necessary for credible identification based on a Difference-in-Differences approach. Moreover, one can see that the Abitur completion rate of East Germans is substantially (and significantly) below that of West Germans. For those in the oldest cohort (19 to 21), who would have completed education at the time of Reunification, the completion rate is almost 50 percent lower for East Germans than West Germans. The 16- to 18-year-old cohort, which represents a similar age group to the "older" cohort in our analysis with the longitudinal data, is at a stage where, although education is not completed, they would have already made a decision (or the relevant investments) to pursue the Abitur. Comparing this cohort to the 13- to 15-year-old cohort (similar to our "younger" cohort), we see that there is a sizable jump in Abitur completion and there is clear convergence. While the difference between East and West Germany is 13 percentage points for the older cohort, the difference is only 4 percentage points for the younger cohort and no longer significant, suggesting a causal effect of Reunification of approximately 9 percentage points. The youngest cohort (aged 10 to 12 at Reunification) shows complete convergence in that East and West German rates of Abitur completion, which are both approximately 32 percent.

Table 4 presents the coefficients from estimating the Difference-in-Differences regression, that is, equation 5. According to column (1), the coefficient on the interaction of "East x Younger Cohort" is 0.09, suggesting that Reunification significantly increased the likelihood of Abitur completion by 9 percentage points. Column (2) presents results from a placebo test and shows that the pre-trends in Abitur completion rates are very similar in East and West Germany (with an insignificant coefficient of 0.03), underlining the validity of our approach.

This section highlights several important findings. First, it provides robustness to one of our

main findings, which is that educational attainment increases among those who have time, in terms of educational choices, to adjust to a change in regime. Second, using the data on West Germany, we document that the gap in educational attainment closes completely within a few years of Reunification. Third, more generally, the analysis highlights that the timing of macro events can be crucial for one's lifetime outcomes. This has been shown in other contexts, such as graduating during a recession (see, for instance, the seminal paper by Baker et al. (1994) and, more recently, among others, by Oreopoulos et al. (2012)).

6 Mechanisms

In this section, we explore the mechanisms behind the effect of Reunification on educational aspirations and, consequently, on longer-run educational decisions. A standard education model includes four (main) components that drive educational decisions: first, the expected returns to education; second, (economic) preferences; third, perceived uncertainty related to educational decisions; and fourth, constraints. Empirically, due to data limitations, it is often difficult to identify the importance of the various components. A recent literature has focused on eliciting people's subjective expectations about returns to schooling – see, for example, the seminal papers by Dominitz and Manski (1997) and Jensen (2010). A different literature has investigated the role of economic preferences in (educational) decisions such as altruism and trust in addition to time and risk preferences (see Falk et al., 2018). However, there is relatively little overlap in terms of data sources that permit the exploration of both expected returns and preferences.

In what follows, we relate changes in (perceived) returns to education and economic preferences to students' educational goals. Beyond economic preferences, we study whether changes in social and political preferences that might reflect a convergence to the West German culture (e.g., being more individualistic and less likely to be part of a collective) play a role. To better understand the role of the third component in the educational model (the perceived uncertainty related to educational decisions), we study changes in psychological well-being following Reunification. Psychological measures, such as self-confidence and anxiety, proxy for perceived uncertainty and the likelihood of being able to complete college, allowing us to measure whether individuals are subject to psychological (or internal) constraints when making educational decisions.

For all the analyses in the section, we employ the same identification strategy as in Section 5.1 to causally estimate the effect of regime change on each of the components. We measure the change for the younger cohort using the older cohort as the counterfactual trend. We then link all factors directly to changes in educational aspirations to better understand their relevance in the process that subsequently changed educational choice. Once again, an important feature of the analysis is that we can measure the changes in a narrow period just before and after Reunification.

At the end of the section, we explore the importance of the relaxation of constraints and a number of alternative mechanisms.

6.1 Perceived Returns to Education

Studies have shown that education is highly responsive to changes in redistribution schemes that increase the rate of return to education (Abramitzky and Lavy, 2014). Reunification implied an increase in the returns to a college degree. A convergence to the West suggested an increase in earning disparity linked to educational levels. The average net income of individuals with university degrees in the East was only 15 percent higher than that of blue-collar workers, compared to 70 percent in the West (Alesina and Fuchs-Schündeln, 2007). Since a change in actual returns does not necessarily imply an (immediate) change in perceived returns, we make use of repeated information in our survey on how important youths perceive education to be for later earnings. We explore how this perception evolves over time and, in particular, how it changes after Reunification.

In Panel A of Table 5, columns (1) and (2), we show that in the narrow period before and after Reunification, there is a dramatic change in perceived returns (see Section 3 for variable definitions and summary statistics). We show that the importance of schooling for earnings increased substantially by 0.45 (without fixed effects) and 0.47 (with fixed effects) of a standard deviation, respectively.

As we further discuss below and show in Table 6, the increase in perceived returns is strongly linked to an increase in youths' aspirations. Those who most changed their perceived importance of schooling for later earnings are those who also most increased their educational aspirations. This highlights the importance of changes in perceived returns to education in contributing to the increase in educational aspirations and, ultimately, longer-run educational attainment. However, it is important to consider other components of the educational production function. In the next section, we turn our attention to changes in economic, social and political preferences contributing to the change in education.

6.2 Economic, Social and Political Preferences

There is a growing body of literature that seeks to understand the role of culture in preference formation (Fernandez and Fogli, 2006, 2009). While cultural values have been shown to be persistent, they have also been shown to converge and adapt to a new status quo over time (Alesina and Fuchs-Schündeln, 2007). In this section, we examine economic, social and political preferences in the narrow period before and after the regime change to understand the rate at which they adapt and the importance of such changes, as reflected by actual (educational) decisions.

Causally estimating the impact of culture on preferences is often complicated by reverse causality concerns. The unanticipated Fall of the Berlin Wall allows us to examine this. Following a similar identification strategy to that presented in Section 4.1, we consider the impact of Reunification on students' economic, social and political preferences. At several points in time, students are asked about their preferences – for instance, their goals in life. We explore how these goals evolve over time and, in particular, how they change after Reunification (for the younger cohort relative to the older cohort).

In Panel A of Table 5 (columns (3) to (6)), we show that there is a dramatic change in economic preferences following Reunification. The importance of consuming "luxury goods" and of "enjoying life" increased substantially. In columns (3) and (5), we show that (without fixed effects), relative to being under the communist regime, the desire for these outcomes increased by 0.12 and 0.34 of a standard deviation, respectively. The results in columns (4) and (6), in which we include fixed effects, are very similar. These results suggest a rapid convergence in terms of individuals' economic preferences to the more capitalist regime.

With respect to social preferences, we see that students reduce the importance they place on their role with respect to others. One goal or value that we consider is the importance of performing good deeds that "help people" in addition to the importance of being "valued by peers" or the importance of "studying because it is a duty as a student." From Panel B of Table 5, we see that all decrease (by -0.19, -0.17, and -0.11 of a standard deviation, respectively), although "duty as a student" does not decrease significantly. It is often discussed whether capitalist societies foster more individualistic traits. Our findings are consistent with the hypothesis that they do.

With respect to political preferences, we observe a convergence to the more democratic regime. When asked about the importance of supporting socialism (or the GDR) and supporting, or being part of, a collective, there is a sharp decline just after Reunification. In the short period following Reunification, these decrease by 0.51 and 0.86 of a standard deviation, respectively (see Table 5, Panel C).

In Table 6, we link the change in aspirations to the change in perceived returns and in economic, social and political preferences. We find that the perceived return to schooling is of particular importance, as are changes in social and political preferences. We find that educational aspirations increase more among those who believed education had become more important for future earnings, suggesting that a change in perceived returns to schooling was an important driver for the increase in educational aspirations and investments. Similarly, aspirations increase more among those whose social preferences became more individualistic.

This section highlights that the politico-economic regime change led to an important adjustment in perceptions of returns and preferences, and for these young individuals, adaptation occurred soon thereafter. Our results are consistent with these changes being a contributing factor

for why educational aspirations increase (and are later translated into increased attainment). There is a convergence in behavior and tastes to the more capitalist society, which may, in part, reflect differences in labor market returns and the availability of certain goods and services.

6.3 Psychological Well-being

Can changes in one's "external" environment affect an individual's "internal constraints"? Do these internal constraints play a role in educational aspiration adaption? While evidence in economics remains limited, there is growing evidence that psychological phenomena affect economic decisions, which has important implications for welfare outcomes (see, for instance, Bertrand, Mullainathan, and Shafir, 2004). Duflo (2012) shows that in the context of poverty, internal constraints, such as low self-confidence and stress, are linked to lower aspirations. In this section, we examine changes in students' anger, anxiety and self-confidence shortly before and after the regime change. We then, as in the previous section, link changes in psychological well-being to aspiration adaption.

Students are repeatedly asked (before and after Reunification) about their psychological well-being with respect to anger, anxiety and self-confidence (see Section 3 for variable definitions and summary statistics). Using a similar identification strategy to that in the previous section, we show, in Table 7, that comparing the period prior to Reunification with the period afterwards, and using the older cohort as a counterfactual trend for the younger cohort, Reunification impacted students' internal constraints. In the baseline, there was no difference across cohorts. After Reunification, students became angrier (0.40 standard deviation) and more anxious (0.42 standard deviation), while self-confidence fell (-0.39 standard deviation). Furthermore, in Table 8, we demonstrate, in the context of aspirations, the importance of changes in internal constraints. In particular, changes in educational aspirations are significantly higher among those who become angrier and more anxious and among those who become less self-confident.

6.4 Constraints

Beyond changes in economic expectations, preferences and uncertainty, constraints (or the relaxation thereof) might have contributed to changes in educational aspirations, for instance, changes in access to university, changes in educational quality, or changes in educational content. Overall, we find little evidence for these factors.

Changes in access to university - or a change in the expected supply of university places - might explain a change in educational aspirations. To understand this, we focus on potentially "constrained" individuals. While the actual supply of university places did not change in the very short run, changes in the expected supply, especially among those who were more constrained under the Socialist regime, could potentially feed into one's aspirations. We might expect a change

in aspirations among these individuals following a(n) (expected) increase in the supply of education. We focus on several forms of constraints in two broad categories: (c1) ability and academic interests and (c2) regime constraints. In Table 9, we report the heterogeneity of aspiration change following Reunification, depending on whether individuals are likely to be "constrained" or "unconstrained".

Under the GDR, access to university was based on academic performance (in addition to political ties, as we will discuss later). We might expect that low-ability students will not aspire to go to college if they do not expect to be able to attend due to constraints (even if they truly desire to go). In such a case, we would expect college aspirations to only increase among these students (or to increase by more than among high ability students). We classify individuals as "high" versus "low" ability based on their academic grades (GPA) before the regime change. Similarly, given the focus on more technical subjects at university under the GDR, we might expect that those with a stronger interest (or better performance) in non-math courses relative to math courses might increase their educational aspirations with the expectation that more non-math courses would be available.[15] In columns (1) to (4) of Table 9, we report the heterogeneity analysis and show that there is no differential effect of Reunification on educational aspirations of the "constrained" and "unconstrained".

In Table 9, columns (5) to (7), we examine how two other potential regime constraints could differentially impact students' aspirations. First, colleges gave priority access to those with strong political ties and commitment. Thus, we might expect a greater increase in aspirations among the non-party members. However, we do not find evidence for this (see Table 9, columns (5) and (6)). Since the majority of students were members of the youth organization, we also split the sample into those with (leading) functions in the youth organization (who account for less than half of the sample but who are likely to have stronger political ties) versus those without functions and find very similar changes in aspirations. Finally, although long abolished, the GDR had initially given priority in university access to individuals from less-educated families. To assess whether this still held some potential constraint, we classify students based on whether their mother obtained the Abitur. In column (7), we show that aspirations did not change differentially among these students either.

Finally, educational content or quality might have changed, leading (or contributing) to an increase in educational aspirations. While educational content becomes less focused on socialism

[15]For example, Fuchs-Schündeln and Masella (2016) highlight that the teaching of mathematics was of similar importance in East and West. However, GDR schools devoted significantly more time to natural sciences, while FRG schools devoted more time to "softer" subjects, such as foreign languages, arts and music. Ammermueller and Weber (2005) compare the distribution of subjects in tertiary education in East and West Germany and find that the main difference is the share of graduates in engineering, which is approximately 30 percent in the East compared to 22 percent in the West.

(Fuchs-Schündeln and Masella, 2016; Cantoni et al., 2017), the timing of our analysis shows that –in our context– differences in years of socialism are not responsible for changes in (short-run) educational aspirations. In our study, the pre-period that measures educational aspirations for the younger cohort was in early 1990, i.e., after the fall of the Berlin Wall (but before Reunification). Socialist teaching had already been discontinued by then.

In Section 2, we discussed that the period between the fall of the Wall and Reunification was characterized by relative continuity in terms of schooling context, in that less than 10% of teachers were dismissed and teaching material continued to be used (except for lessons and material on socialism, as discussed above). The more substantial change in terms of school system took place only with the start of the 1991/92 school year. However, our post-Reunification variables are measured in early 1991, i.e., before the change in school system. To provide further evidence on the role of changes in content or education quality for the observed (short-run) changes in aspirations, we investigate the effect of Reunification on students' grades relying on a DID approach as discussed in Section 4.1. Table 10 shows that Reunification did not have an effect on short-run GPA (and there are no differential pre-trends for the old and young cohorts). These results suggest that there were no noticeable improvements in content or quality that could explain the increase in students' aspirations in response to Reunification.

7 Conclusion

Recent political turbulence in the US and Europe has raised a number of policy-relevant questions about inequality and globalization at the macro, as well as micro, level. Increased economic uncertainty at the international level coupled with changes in leadership are expected to influence policy preferences and direction. How do political regimes shape individuals' aspirations? Does the political environment influence attitudes? Do these attitudes feed back into the choices made by an individual? Analyzing changes in political regimes is typically complicated by the endogeneity of the process.

In this paper, we show that early educational aspirations matter and are linked to future outcomes. Using the natural experiment of German Reunification, we provide causal evidence that a change in political and economic regime can have an important effect on educational aspirations and that these have a lasting impact on students' outcomes. While it is often difficult to understand the importance of the different components that enter into educational investment decisions, our study allows for a detailed investigation into a wide spectrum of factors. To understand why educational aspirations changed so dramatically soon after the regime change, we explore various channels: changes in expected returns to education, economic, social and political preferences, perceived uncertainty in outcomes and changes in constraints.

Convergence to the West implied an increase in the returns to education. We show that students in grade 8 at the time of Reunification very quickly understood the increased importance of a university degree for future earnings. This change in perceived returns was strongly linked to changes in educational aspirations, which ultimately led to an increase in longer-run educational investments. Beyond the changes in returns, we identify changes in educational aspirations that are linked to changes in economic, social and political preferences. While it is typically difficult to measure preferences and values, especially in the short periods around a regime change, our paper sheds light on how these evolve and adapt to those of the capitalist and democratic West, as well as their links to changes in aspirations. Finally, by proxying for uncertainty using psychological measures, we show that "internal" constraints are strongly linked to one's "external" environment. We find that the regime change had a substantial impact on individuals' levels of anxiety, anger and self-confidence, which in turn affected their aspirations. Overall, the results highlight the importance of perceived returns as well as preferences and psychological measures (internal constraints), thereby shedding light on the educational decision-making process.

More generally, our study highlights how a political landscape influences educational and professional decisions, especially of the young, with long-lasting and irreversible consequences. It identifies the long-term effects of politics and policies that politicians may not incorporate into their decisions, suggesting implications that are delayed by many years.

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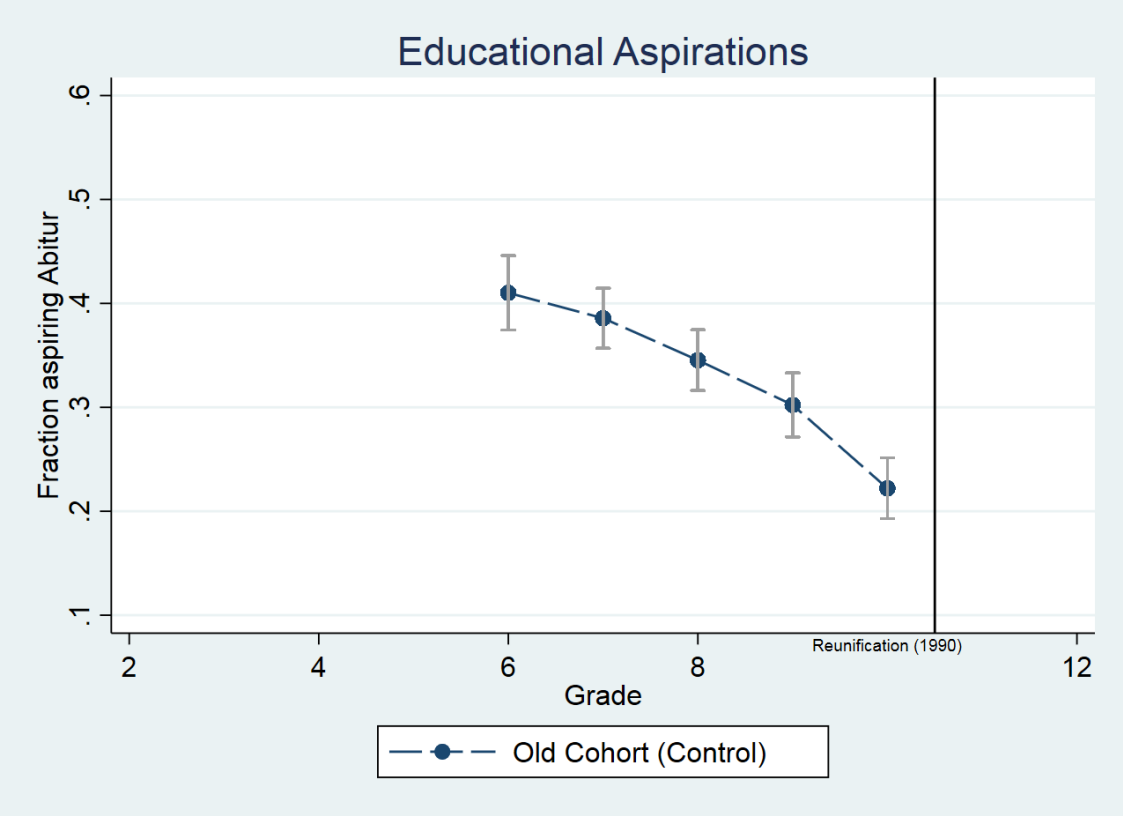
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Appendix

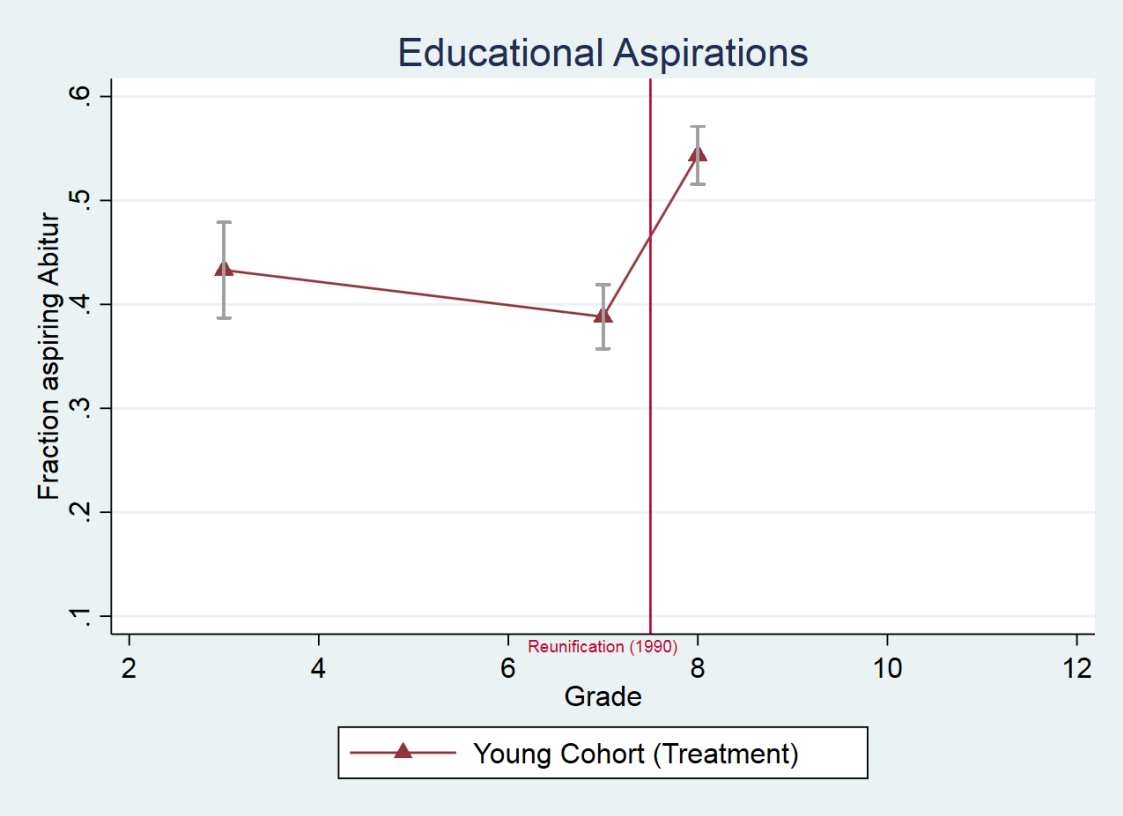
Figures and Tables

Figure 1: Evolution of Aspirations: Older Cohort



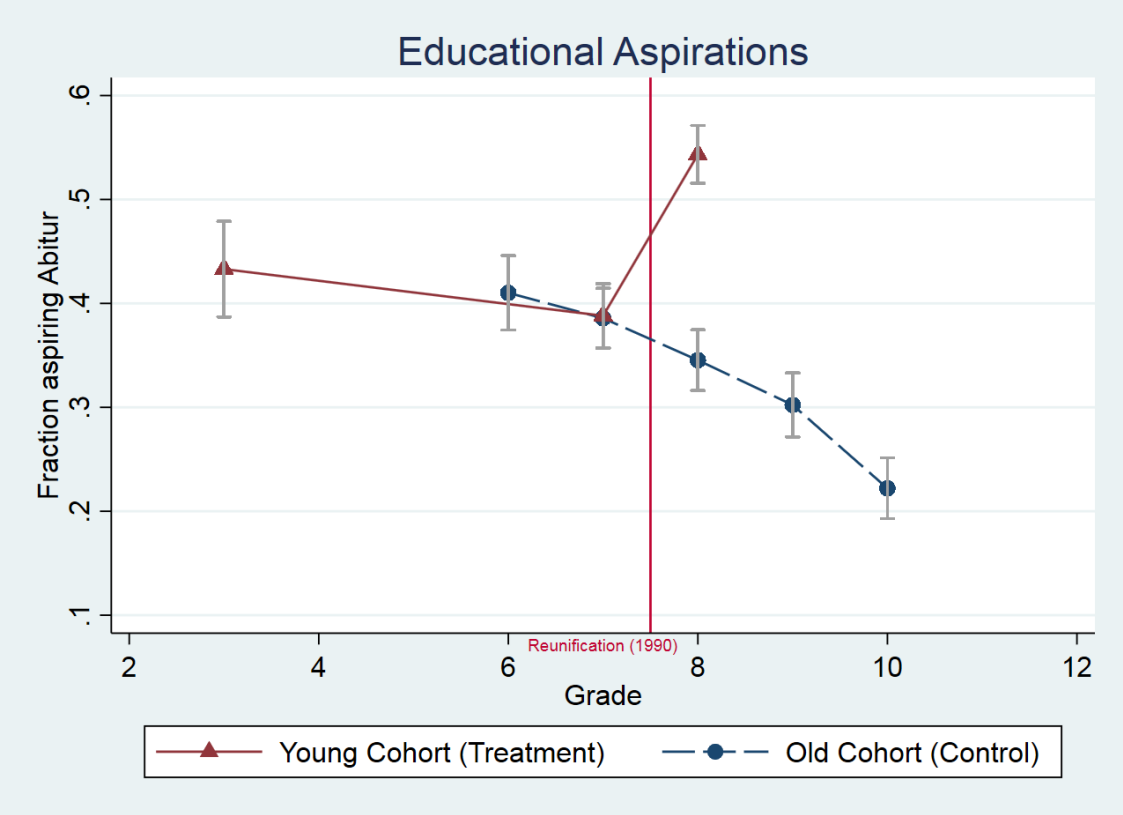
Notes: The figure displays the older cohort's aspirations to acquire the Abitur degree (college entrance certificate) and how they evolve over time, i.e. when youths are in different grades. The dots represent the average fraction of youths aspiring the Abitur in the different grades and the gray bars represent the 95% confidence intervals. Reunification took place in October 1990, when youths of the old cohort had just started grade 11.

Figure 2: Evolution of Aspirations: Younger Cohort



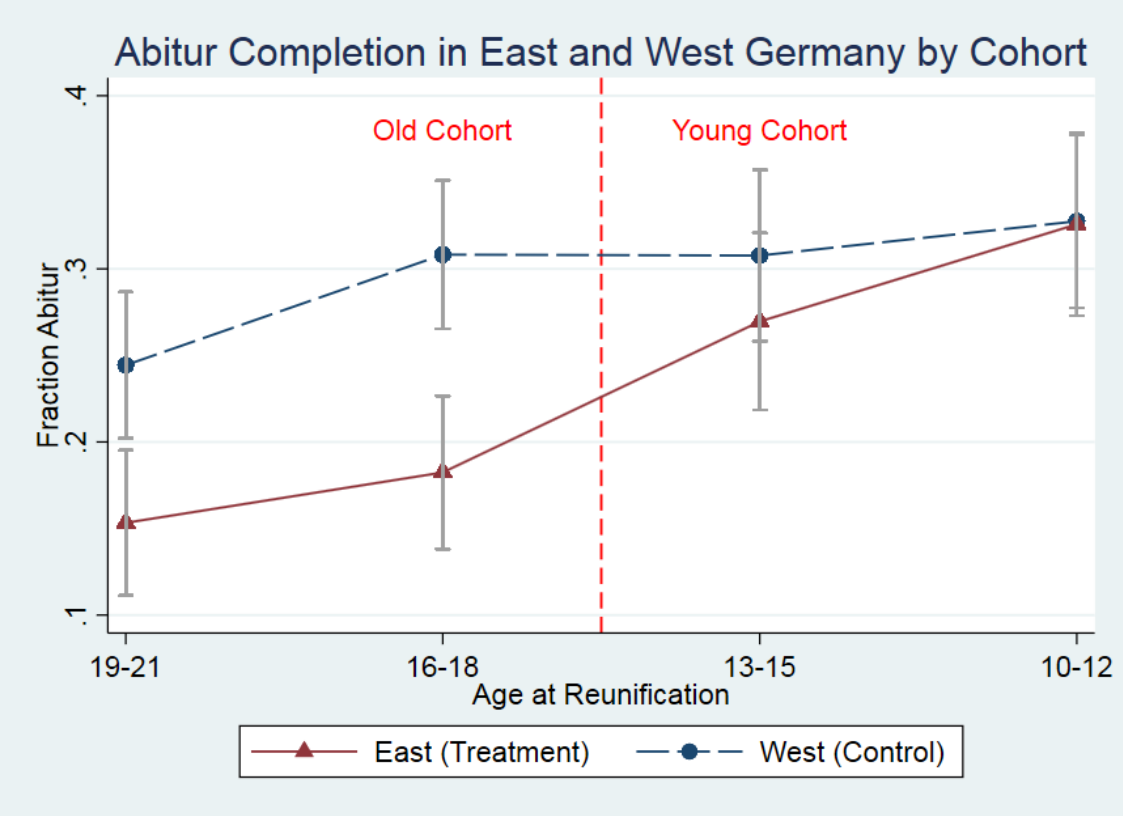
Notes: The figure displays the younger cohort's aspirations to acquire the Abitur degree (college entrance certificate) and how they evolve over time, i.e. when youths are in different grades. The dots represent the average fraction of youths aspiring the Abitur in the different grades and the gray bars represent the 95% confidence intervals. Reunification took place in October 1990, when youths of the young cohort had just started grade 8.

Figure 3: The Effect of Reunification on Aspirations



Notes: The figure displays how the older and younger cohort's aspirations to acquire the Abitur degree evolve over different grades. The dots represent the average fraction of youths aspiring the Abitur in the different grades and the gray bars represent the 95% confidence intervals. Reunification took place in October 1990, when youths of the young cohort had just started grade 8, while the older cohort experience Reunification when in grade 11. The evolution of the older cohort's aspirations are used as counterfactual for how the young cohort's aspirations would have evolved over the same grades, if they had not experienced Reunification.

Figure 4: The Effect of Reunification on Longer-run Educational Outcomes



Notes: The figure displays the evolution of the likelihood of Abitur completion across different cohorts in West and East Germany. The dots represent the average fraction of individuals with completed Abitur for different cohorts (by age at Reunification) in West and East Germany and the gray bars represent the 95% confidence intervals. Reunification took place in October 1990. At that point individuals in the East below age 16 (i.e. in grade 10 or below) still had the opportunity to adjust their educational decision to the regime change implied by Reunification and continue schooling to complete the Abitur. Individuals aged 16 and above on the other hand, had either already decided to continue in the Abitur track or to stop school, thereby making it more difficult to adjust to the "Reunification shock". The fraction Abitur completed for different cohorts in the West serves as the counterfactual for how the likelihood of Abitur completion would have evolved across cohorts had they not experienced Reunification. The figure shows that pre-trends are very similar in West and East Germany.

Table 1: Descriptive Statistics

(a) Variables - Main Analysis

	Question	Answers	Mean	Std.Dev.	N.Ind.
Educ. Aspirations	Do you aspire to obtain the Abitur?	0 1	0.4231	0.4941	2893
Perceived Returns	How important is education for later earnings?	1 4	3.1071	0.8123	3134
Economic Prefs.					
Afford Luxury	How important is it to be able to afford some luxury?	1 4	3.0398	0.8309	3134
Enjoy life	How important is it to enjoy life as much as possible?	1 4	3.0860	0.8045	3134
Social Prefs.					
Good Deed	How important is it to do good/important deeds?	1 4	2.9547	0.7985	3134
Valued by Peers	How important is it to be valued by peers?	1 4	2.4576	0.8134	3134
Duty as Student	Motivation for studying: duty as a student.	1 4	2.8349	0.8586	3134
Political Prefs.					
Socialism	How important is it to support socialism?	1 4	2.4898	0.8886	3134
Collective	How important is it to support/be part of the collective?	1 4	3.2280	0.6687	3134
Psych. Measures					
Anger	Combined score.		-0.0013	1.3777	3106
Anxiety	Combined score.		-0.0045	1.7508	3106
Self-Confidence	Question on self-confidence.	1 4	3.3008	0.7669	3106
Acad. Performance	GPA of Math and German.	1 5	3.6773	0.8436	2660

(b) Variables - Heterogeneity Analysis

	Question	Answers	Mean	Std.Dev.	N.Ind.
Academic Ability/Interests					
Relative Obj. Performance	Relative grades German/Math		0.9398	0.3481	1909
Relative Subj. Performance	Own evaluation of relative performance German/Math		1.1224	0.4832	1909
Relative Acad. Interest	Relative interest German/Math		1.3671	0.7314	1909
Regime-Relevant Variables					
FDJ Member	Member of youth organization of communist party	0 1	0.9648	0.1843	1929
FDJ Member with func.	Member with function	0 1	0.4434	0.4969	1929
Abitur Mother	Mother completed Abitur	0 1	0.1817	0.3857	1125

Notes: The psychological measures anger and anxiety are created using factor analysis based on different items ranging from 1 to 4 (for further details see Section 3). In the analysis all categorical variables that are not binary are used as standardized scores.

Table 2: The Effect of the Reunification on Youths' Educational Aspirations

	Educational Aspirations			
	Main		Placebo Test (Pre-Trend)	
	[1]	[2]	[3]	[4]
Cohort x Grade (Reunification)	0.193***	0.221***	-0.010	0.005
	[0.022]	[0.023]	[0.029]	[0.031]
Cohort	0.005		0.015	
	[0.022]		[0.027]	
Grade	-0.040***	-0.045***	-0.021	0.049***
	[0.014]	[0.013]	[0.018]	[0.018]
Constant	0.386***	0.383***	0.407***	0.368***
	[0.015]	[0.006]	[0.018]	[0.009]
N Observations	4309	4309	3413	3413
N Individuals	2893	2893	2362	2362
Individual FE	NO	YES	NO	YES
R-squared	0.025	0.071	0.001	0.011

Notes: Standard errors in brackets. "Cohort" takes value one if in the younger cohort and value zero if in the older cohort. "Grade" takes value one if in academic grade 8 (1987 for older and early 1991 for younger) and value zero if in academic year 7 (1986 for older and early 1990 for younger cohort). "Cohort x Grade" is the "Reunication treatment", which indicates how the outcome variable has changed for the younger cohort after versus before Reunication (in early 1991 versus early 1990). The placebo test compares the trends in aspirations prior to grade 7.

Table 3: Longer-Run Educational Outcome: Abitur Completion and Educational Aspirations

	Abitur Completion					
	[1]	[2]	[3]	[4]	[5]	[6]
Cohort			0.331***	0.170***	0.250***	0.019
			[0.025]	[0.024]	[0.033]	[0.025]
Aspiration in Grade 7	0.471***		0.476***		0.394***	
	[0.027]		[0.025]		[0.035]	
Asp. Grade 7*Cohort					0.169***	
					[0.050]	
Aspiration in Grade 8		0.653***		0.614***		0.445***
		[0.021]		[0.022]		[0.038]
Asp. Grade 8*Cohort						0.297***
						[0.046]
Constant	0.204***	0.095***	0.041**	0.017	0.081***	0.086***
	[0.017]	[0.012]	[0.017]	[0.016]	[0.017]	[0.016]
N Observations	1027	1220	1027	1220	1027	1220
N Individuals	1027	1220	1027	1220	1027	1220
R-squared	0.226	0.427	0.338	0.454	0.345	0.475

Notes: Standard errors are in brackets. Educational Aspirations are measured in grades 7 and 8, as indicated in the table, while Abitur completion is measured at age 18 (i.e. in 1992 for the older and 1995 for the younger cohort).

Table 4: The Effect of the Reunification on Youths' Abitur Completion

	Abitur Completion	
	Main	Placebo Test (Pre-Trend)
	[1]	[2]
Cohort x East (Reunification)	0.088*	-0.035
	[0.048]	[0.045]
East Germany	-0.126***	-0.091***
	[0.033]	[0.032]
Cohort	-0.001	0.064**
	[0.032]	[0.029]
Constant	0.308***	0.244***
	[0.021]	[0.021]
N Observations	1378	1435
N Individuals	1378	1435
R-squared	0.012	0.020

Notes: Standard errors in brackets. "Cohort" takes value one if in the younger cohort (i.e. youths ages 13 to 15 at Reunification for the main specification and youths ages 16 to 18 for the placebo test) and value zero if in the older cohort (i.e. youths ages 16 to 18 at Reunification for the main specification and youths ages 19 to 21 for the placebo test). "East" takes value one if individuals attend school in East Germany and value zero if they attend school in West Germany. "Cohort x East" is the "Reunication treatment", which indicates how the outcome variable has changed for the younger cohort versus the older cohort in East Germany controlling for the difference in Abitur completion between the same cohorts in West Germany.

Table 5: Mechanisms: The Effect of Reunification on Perceived Returns and Preferences

Panel A	**Perceived Returns**		**Economic Preferences**			
	Earn a Lot		Afford Luxury		Enjoy Life	
	[1]	[2]	[3]	[4]	[5]	[6]
Cohort x Grade	0.448***	0.469***	0.125**	0.121*	0.342***	0.334***
(Reunification)	[0.053]	[0.062]	[0.053]	[0.065]	[0.055]	[0.069]
Cohort	-0.174***		-0.144***		-0.148***	
	[0.045]		[0.046]		[0.045]	
Grade	-0.116***	-0.103***	0.200***	0.161***	-0.086**	-0.120***
	[0.038]	[0.040]	[0.039]	[0.041]	[0.040]	[0.044]
N Observations	4500	4500	4500	4500	4500	4500
N Individuals	3134	3134	3134	3134	3134	3134
Individual FE	NO	YES	NO	YES	NO	YES
R-squared	0.017	0.042	0.020	0.032	0.010	0.016
Panel B	**Social Preferences**					
	Good/Important Deed		Valued by Peers		Duty as Student	
	[1]	[2]	[3]	[4]	[5]	[6]
Cohort x Grade	-0.028	-0.189***	-0.141***	-0.174***	-0.086	-0.114
(Reunification)	[0.054]	[0.065]	[0.053]	[0.064]	[0.055]	[0.070]
Cohort	0.012		-0.156***		-0.209***	
	[0.044]		[0.044]		[0.042]	
Grade	-0.351***	-0.339***	-0.184***	-0.164***	-0.364***	-0.349***
	[0.040]	[0.043]	[0.037]	[0.040]	[0.040]	[0.044]
N Observations	4500	4500	4500	4500	4500	4500
N Individuals	3134	3134	3134	3134	3134	3134
Individual FE	NO	YES	NO	YES	NO	YES
R-squared	0.034	0.108	0.031	0.042	0.059	0.090
Panel C	**Political Preferences**			
	Collective		Socialism	
	[1]	[2]	[3]	[4]
Cohort x Grade	-0.525***	-0.509***	-0.949***	-0.863***
(Reunification)	[0.055]	[0.070]	[0.050]	[0.064]
Cohort	0.095**		-0.018	
	[0.045]		[0.042]	
Grade	0.076*	0.073*	0.014	0.012
	[0.040]	[0.043]	[0.036]	[0.039]
N Observations	4500	4500	4500	4500
N Individuals	3134	3134	3134	3134
Individual FE	NO	YES	NO	YES
R-squared	0.035	0.045	0.179	0.172

Notes: Standard errors are in brackets. "Cohort" takes value one if in the younger cohort and value zero if in the older cohort. "Grade" takes value one if in academic grade 8 (1987 for older and early 1991 for younger) and value zero if in academic year 6 (1985 for older and 1989 for younger cohort). "Cohort x Grade" is the "Reunication treatment", which indicates how the outcome variable has changed for the younger cohort after versus before Reunication (in early 1991 versus 1989) controlling for how the older cohort has evolved over the same grades (i.e. from grade 6 to grade 8) before Reunification.

Table 6: Link between Change in Aspirations and Changes in Returns and Preferences

	Change in Educational Aspirations							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Changes in								
Perc. Returns	0.076***							
	[0.028]							
Afford Luxury		0.011						
		[0.031]						
Enjoy life			0.036					
			[0.029]					
Good Deed				0.011				
				[0.030]				
Valued by Peers					-0.021			
					[0.030]			
Duty as Student						-0.068**		
						[0.029]		
Collective							-0.093***	
							[0.030]	
Socialism								-0.138***
								[0.030]
N Observations	1133	1133	1133	1133	1133	1133	1133	1133
N Individuals	1133	1133	1133	1133	1133	1133	1133	1133
R-squared	0.006	0.000	0.001	0.000	0.000	0.005	0.008	0.018

Notes: Standard errors in brackets. The table relates the changes in educational aspirations between grade 7 and grade 8 (for younger and older cohort) with the changes in perceived returns and in terms of economic, social and political preferences.

Table 7: Mechanisms: The Effect of Reunification on Psychological Measures

	Psychological Measures					
	Anger		Anxiety		Self-Confidence	
	[1]	[2]	[3]	[4]	[5]	[6]
Cohort x Grade	0.433***	0.403***	0.436***	0.418***	-0.430***	-0.394***
(Reunification)	[0.050]	[0.059]	[0.050]	[0.057]	[0.052]	[0.061]
Cohort	-0.076*		-0.048		0.021	
	[0.042]		[0.044]		[0.041]	
Grade	-0.128***	-0.121***	-0.201***	-0.185***	0.027	0.006
	[0.033]	[0.034]	[0.034]	[0.034]	[0.035]	[0.036]
Constant	-0.019	-0.055***	-0.000	-0.028*	0.097***	0.108***
	[0.029]	[0.015]	[0.030]	[0.015]	[0.028]	[0.016]
N Observations	4564	4564	4564	4564	4564	4564
N Individuals	3106	3106	3106	3106	3106	3106
Individual FE	NO	YES	NO	YES	NO	YES
R-squared	0.019	0.034	0.019	0.037	0.032	0.045

Notes: Standard errors are in brackets. "Cohort" takes value one if in the younger cohort and value zero if in the older cohort. "Grade" takes value one if in academic grade 8 (1987 for older and early 1991 for younger) and value zero if in academic year 6 (1985 for older and 1989 for younger cohort). "Cohort x Grade" is the "Reunication treatment", which indicates how the outcome variable has changed for the younger cohort after versus before Reunication (in early 1991 versus 1989) controlling for how the older cohort has evolved over the same grades (i.e. from grade 6 to grade 8) before Reunification.

Table 8: Link between Changes in Aspirations and Changes in Psychological Measures

	Change in Educational Aspirations		
	[1]	[2]	[3]
Changes in			
Anger	0.092***		
	[0.032]		
Anxiety		0.054*	
		[0.031]	
Self-Confidence			-0.072**
			[0.032]
N Observations	1133	1133	1133
N Individuals	1133	1133	1133
R-squared	0.007	0.003	0.005

Notes: Standard errors are in brackets. The table relates the changes in educational aspirations between grade 7 and grade 8 (for younger and older cohort) with the changes in the psychological measures: anger, anxiety and self-confidence.

Table 9: Heterogeneous Effects of Reunification on Educational Aspirations: Constraints

	Educational Aspirations						
	By Ability/Interest Constraints				**By Regime Constraints**		
	GPA	Relative Performance		Rel.	Membership of		Mother
		objective	subjective	Interest	youth organization		Abitur
		German	German	German	of communist party		
		vs. Math	vs. Math	vs. Math			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Triple Interactions: Cohort x Grade							
x GPA above Median	-0.064						
	[0.055]						
x Relative Obj. Perf. ab. Med.		0.020					
		[0.090]					
x Relative Subj. Perf. ab. Med.			-0.024				
			[0.057]				
x Rel. Acad. Interests ab. Med.				0.033			
				[0.055]			
x FDJ Member					0.259		
					[0.160]		
x FDJ Member with func.						-0.014	
						[0.054]	
x Abitur Mother							-0.096
							[0.093]
Cohort x Grade (Reunification)	0.247***	0.209**	0.242***	0.209***	-0.017	0.235***	0.200***
	[0.034]	[0.086]	[0.045]	[0.040]	[0.157]	[0.037]	[0.040]
N Observations	3771	3009	3009	3009	3040	3040	1794
N Individual	2660	1909	1909	1909	1929	1929	1125
Individual FE	YES	YES	YES	YES	YES	YES	YES
R-squared	0.073	0.070	0.071	0.071	0.079	0.071	0.059

Notes: Standard errors are in brackets. “Cohort” takes value one if in the younger cohort and value zero if in the older cohort. “Grade” takes value one if in academic grade 8 (1987 for older and early 1991 for younger) and value zero if in academic year 7 (1986 for older and early 1990 for younger cohort). “Cohort x Grade” is the “Reunication treatment”, which indicates how the outcome variable has changed for the younger cohort after versus before Reunication (in early 1991 versus early 1990).

Table 10: The Effect of Reunification on Academic Performance

	GPA (Math and German)			
	Pre-Trend		Main	
	[1]	[2]	[3]	[4]
Cohort x Grade (Reunification)	0.018	0.028	-0.041	-0.003
	[0.032]	[0.022]	[0.047]	[0.038]
Cohort	0.001		0.038	
	[0.040]		[0.047]	
Grade	-0.094***	-0.099***	-0.144***	-0.188***
	[0.021]	[0.015]	[0.029]	[0.021]
Constant	0.044	0.046***	0.122***	0.154***
	[0.028]	[0.005]	[0.032]	[0.011]
N Observations	4607	4607	3771	3771
N Individuals	2645	2645	2660	2660
Individual FE	NO	YES	NO	YES
R-squared	0.002	0.032	0.007	0.094

Notes: Standard errors are in brackets. "Cohort" takes value one if in the younger cohort and value zero if in the older cohort. "Grade" takes value one if in academic grade 8 (1987 for older and early 1991 for younger) and value zero if in academic year 6 (1985 for older and 1989 for younger cohort). "Cohort x Grade" is the "Reunication treatment", which indicates how the outcome variable has changed for the younger cohort after versus before Reunication (in early 1991 versus 1989) controlling for how the older cohort has evolved over the same grades (i.e. from grade 6 to grade 8) before Reunification.