Firm Entry Regulation, Labor Supply Shocks and Labor Market Outcomes

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Abstract

Does the degree of product market regulation determine how labor supply shocks affect labor market outcomes? We answer this question using the fall of the Berlin Wall and the resulting immigration of people from the former German Democratic Republic to the West German labor market as a supply shock. Within three years after the fall of the Berlin Wall in 1989, more than 1.3 million Germans from East Germany migrated to West Germany. We find that product market regulation plays an important role when it comes to the question of how labor supply shocks affect wages and employment. Product markets with firm entry barriers shield the insiders from wage competition by outsiders, whereas native West Germans in product markets without entry barriers experience a decline in wage growth. In markets with firm entry barriers insider employment growth decreases owing to the supply shock, in the market without barriers to firm entry the finding is less pronounced.

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1. Introduction

The causes of the differential evolution of labor market outcomes in the United States and in continental Europe continue to elude us. While previous work has focused on labor market rigidities and adverse demand shocks as possible explanations, there is now a consensus that these factors explain only part of the heterogeneity across countries that we observe. As a result, a growing literature has shifted attention away from labor market rigidities towards the role of differential product market regulation – another important dimension in which the United States and continental Europe differ.

Empirical research in this body of the literature has focused on cross-country analyses. These studies are typically subject to the criticism that the results reflect unobserved differences across countries that are correlated with product market constraints and therefore drive the results. To circumvent this problem, we look at two types of markets within the same country: West Germany. Both markets are subject to the same labor market rigidities but they differ in terms of product market regulation. In one market, product market regulation measured in terms of restrictions to firm entry is low, while in the other market, barriers to firm entry are high. Using a large individual-level data set, we analyze how the two markets react in terms of wages and employment to a large labor supply shock. The shock we use is the immigration by East Germans to the West German labor market after the fall of the Berlin Wall in 1989.

The fall of the Berlin Wall provides the opportunity of a quasi-experiment that we can exploit. The opening to the East was unexpected and triggered massive immigration by Germans of the former German Democratic Republic to West Germany. Within three years after the fall of the Berlin Wall in 1989, more than 1.3 million Germans from East Germany migrated to West Germany and the West German labor force increased by 3.5 percent.

East Germans who have migrated to the West after reunification are distinct from "traditional" immigrants in a number of dimensions. They are Germans with full political and economic rights who have free access to the West German labor market any time. In contrast, traditional migrants in Germany instead often only have restricted work permits or a potential employer has to prove that there is no German worker who could do the job. East Germans do not face language barriers. Since the German Democratic Republic (GDR) had a vocational training system with several similarities to the West German system dating back to the common history of both parts of Germany before World War II migrants from East to West Germany are relatively well educated. In addition, the reunification contract acknowledged all training degrees from the former GDR. In all these respects immigrants from East Germany

are similar and, thus, potentially close substitutes to native workers in West Germany that grew up in the West.

As with any study that investigates the impact of migration on a receiving country, our analysis is subject to potential biases owing to, for example, native workers' responses to the inflow of labor or immigrants' self-selection. The quasi-experimental nature of the fall of the Berlin Wall provides us with instruments that allow us to overcome these endogeneity problems.

Our major focus is on changes between the pre-unification situation (1986, given our data source) and the situation shortly after unification (1992), so right after the main migration wave of East Germans to the West German labor market; however, we also present evidence for the time period from 1992 to 1999, when net inflow rates were modest.

As immigration by East Germans had the largest labor supply effect on West German employees with a medium level of education, we focus our analysis on this group of employees. In addition, this group represents close to 80 percent of all employees in Germany. However, we also present evidence on how the labor supply shock to the group of medium-educated employees affects low-skilled West German employees (who do not have a vocational training degree) for two reasons. First, to test for complementarities in production and secondly, because it is not clear whether the human capital acquired by East Germans through the education system of the former GDR were fully transferable to the West German labor market.

We find the differences across markets with different product market regulation to be striking, in particular, for the 1986/1992-period and medium-educated workers. In markets without barriers to firm entry, the inflow of medium-educated East Germans had a negative impact on medium-educated West Germans' wages. In markets with barriers to firm entry, medium-educated West Germans experience the opposite: a considerable increase in wage growth owing to the inflow of medium-educated East Germans. The finding of an accompanying decrease in employment growth is much more substantial and stable in these regulated markets than what we find for the markets without entry barriers.

We structured this paper as follows. Section 2 reviews the relevant literature. Section 3 first describes the firm entry regulation in crafts occupations that defines our sector with high barriers to firm entry. It then includes a discussion of the facts about German reunification that are most pertinent to our study, such as the extent of migration between East and West Germany. Section 4 presents the data set and first descriptive evidence. The definition of our variables of main interest, the empirical specification we are interested in, and a discussion of

our instrumental variables can be found in section 5. Section 6 presents the results of our empirical analysis, and Section 7 concludes.

2. Literature Review

While continental European countries have been plagued by sluggish job creation and increases in unemployment in recent decades, the U.S. evolution of employment is often characterized as an "employment miracle". A common explanation for this phenomenon is that the U.S. has a more flexible labor market, which allows the market to better adjust to both labor supply and demand shocks. In continental Europe, in contrast, wages are downwardly rigid which hinders the adaptation to shocks and creates (involuntary) unemployment.[1] This hypothesis is supported by the differential evolution of observed wages and unemployment in the U.S. and continental Europe.[2] For illustration see Figure 2.

However, taking a closer look, the labor market inflexibility hypothesis is less compelling than it first appears. Nickell and Bell (1995, 1996) recognize that there is only scant evidence that the declining demand for the low-skilled had larger unemployment effects in countries in which the evolution of wages were more stable. In addition, the rise in unemployment was not concentrated among the low-skilled. In a similar vein, Card, Kramarz and Lemieux (1999) do not find that negative demand shocks in Canada and France, where wages remained stable in recent decades relative to the U.S., had larger negative employment effects for the affected groups of workers; a finding corroborated by Krueger and Pischke (1998) using data for the U.S. and Germany.

A longer term perspective makes the hypothesis even less appealing. If labor market rigidities are so crucial, why has European unemployment been lower than that in the U.S. before the 1980s? As Krueger and Pischke (1998) point out, three reconciliations are possible: First, European labor markets have become more rigid; second, labor market rigidities didn't matter much in the past because there were no adverse demand shocks; third, rigidities take a long time to take effect after an adverse shock. When taking a closer look at these explanations, none of them seems fully satisfying. For example, most labor market regulations in

[1] Labor market rigidities can have several forms including minimum wage laws, collective bargaining arrangements, high payroll taxes, high employment protection, and generous social security systems (see, for example, Blau and Kahn (1998). See Nickell (1997) for a criticism of the view that European countries are treated as homogenous with respect to their labor markets and of the generalization that summarizes different labor market institutions under the heading of "rigidities".

[2] This view was, for example, expressed in the OECD Jobs Study (1994).

European countries pre-date the rise in unemployment and, although there are exceptions, most countries seem to have become more employer-friendly in recent decades. In addition, even if we believe that adverse demand shocks only occurred after 1960, the demand shocks thereafter did not differ enough across countries to explain the cross-country variation in the rise of unemployment (Blanchard and Wolfers, 2000). Given this criticism of the simple "unemployment and labor market rigidity" explanation the literature has taken two paths: the first focuses on the interaction of adverse shocks and labor market institutions (e.g. Nickell, 1997; Blanchard and Wolfers, 2000), the second looks at rigidities outside the labor market, in particular, product market regulation.

In this study, we follow the second path. The second path shifts focus away from labor market institutions towards product market regulation. Krueger and Pischke (1997) were among the first to present empirical evidence showing that product market constraints are a prime factor that influences labor demand. From the literature we know that imperfectly competitive industries generate monopoly rents, which can translate into higher wages through rent sharing (e.g. Rose, 1987, Card 1996, Revenga 1992, Borjas and Ramey 1995, Black and Brainerd 2004, Black and Strahan 2001).[3]

Bertrand and Kramarz (2002) show how firm entry regulation of the French retail trade sector slows down employment growth by increasing retailer concentration. Burda and Weil (2005) show how restrictive shop opening hours reduce employment both inside and outside the retail sector.

Another strand of literature we build on is the one that investigates the effects of labor supply shocks, most of these papers exploit migration waves in the United States or other countries (see Friedberg and Hunt, 1995, for a review of earlier studies). Friedberg (2001) investigates the impact of mass immigration from the former Soviet Union to the Israeli labor market. Our study is similar to this one because both the migration of East Germans to West Germany and the migration of Russians to Israel were triggered by the fall of the communist regimes in Eastern Europe. In addition, we use variation across occupations and design one of our instruments as in Friedberg (2001). Her results suggest no adverse effect of immigrants on natives' labor market outcomes. Our study is also similar to Hunt (1992) who investigates the

[3] On the macro level, Blanchard and Giavazzi (2003) analyze the short- and long-term labor market effects of product and labor market deregulation. Koeniger and Prat (2006) show interactions between labor and product market regulation working through firm selection. . Ebell and Haefke (2006) explain the divergent trends in unemployment in the U.S. and continental Europe with interactions of product market regulations and differences in the wage bargaining regime in the two regions. On the effects of product market regulation on investment, productivity, innovation and growth see, among others, Aghion et al (2005), Alesina et al. (2005) and Griffith et al. (2006). Aghion et al. (2006) provide empirical evidence on how changes in product market regulation interact with different labor market regimes in India. Griffith et al. (2007) provide a cross-country analysis for European countries.

labor market impact of the inflow of Algerians with European origin to France upon Algeria's independence in 1962. Like East Germans, and in contrast to traditional migrants, the repatriates from Algeria were well-educated. Her results suggest that repatriates increase unemployment among non-repatriates. A recent study by Glitz (2006) investigates immigration effects on native labor market outcomes in West German local labor markets making use of the fact that the legislation regarding the immigration of ethnic Germans (not East Germans) changed mid of the 1990s.[4]

As East Germans have characteristics that allow them to be close substitutes for West Germans, our study is also related to the body of literature that investigates the effect of changing cohort size on labor market outcomes (for example, Welch, 1979, and Card and Lemieux, 2001).

Angrist and Kugler (2003) is the only study we are aware of that takes labor and product market regulation into account when investigating how immigration effects employment chances among natives. They use panel data for European countries and exploit instrumental variation coming from the quasi-experimental war-time in Yugoslavia during the 1990s. Their most relevant result in our context is a negative effect of the immigrant share in the labor force on the employment-to-population ratio of natives that is more pronounced in countries where an index of barriers to entrepreneurship taken from Nicoletti et al. (2000) indicates higher barriers. Results are similar using indices designed to reflect labor market regulation and the authors note that their framework and data does not allow for separating out the specific effects of different labor and product market regulation. In contrast to this cross-country study using derivative indices to capture regulatory differences, we focus on one country and investigate the impact of immigration on native wages and employment in two types of markets - both types face the same labor market regulations, but one has a quite distinct and severe firm entry regulation.

[4] See also, among others, De New and Zimmermann (1994), Pischke and Velling (1997) or Bonin (2005) for further analyses of immigration effects on natives' labor market outcomes in West Germany.

3. Background

3.1 Firm entry regulation

Since 1953, the Trade and Crafts Code (Handwerksordnung) has restricted the start up of a business in various occupations to people with a master certificate (Meisterbrief).[5] The law lists all occupations that fall under its regulation. See Appendix Table 1 for a list of occupations that are considered in this analysis and an indication of those occupations to which the firm entry restriction applies. The occupations come from various fields such as building and interior finishing trades; electrical and metalworking trades; woodcrafts and plastic trades; clothing, textiles and leather crafts and trades; food crafts and trades; health and body care trades; the chemical and cleaning sector; and graphic design.

The first steps towards a master certificate are a vocational training degree in one of the regulated craft occupations (in general, a 3 year apprenticeship) followed by several years of work in that occupation. The path that then leads to the master certificate includes 4 parts: two parts that are identical for all occupations and two parts that are occupation specific. The general parts include courses in business (e.g. book-keeping, controlling, HRM), legal (e.g. labor, craft and trade law) and commercialization (e.g. marketing) as well as pedagogical courses for the vocational education and training tasks the masters are supposed to engage in. The specific parts include theoretical courses and practical applications related to the specific occupational field. The courses are offered by private institutions, can be taken either part-time or full-time and have non-negligible direct and high opportunity costs.

Each of the 4 parts has to be certified by a regional committee consisting of 5 members (including a chairperson), who belong to the committee for a maximum of 5 years.[6] Three members have to hold a master certificate from the same occupation as the applicant and the chairperson should hold a master certificate from another occupational field. The examination is not public.

It is important to note that this form of firm entry regulation generates substantial costs in addition to those typically focused on in the literature. The costs usually considered are the number of procedures an entrepreneur has to complete to formally set up a firm, the time required to complete the procedures, and the official fees that have to be paid (see, for example,

[5] Wilhelm II set the basis for this law in 1897, when he commanded that, in order to represent their interests, the crafts occupations were to found the Chambers of Crafts and Guilds. At first, the master certificate was a prerequisite only for the training of apprentices (kleiner Befähigungsnachweis). In the 1930s, its relevancy was extended by a legislation that declared it as a requirement for the opening of a business (großer Befähigungsnachweis). During World War II, the Nazis used the structure of the Chambers of Crafts and Guilds for their purpose. As a result, after the end of the war, the structure had to be rebuilt. The law that is in effect today has its origin in the Trade and Crafts Code from 1953.

[6] See Handwerksordnung mit Ergänzenden Vorschriften, 2006.

Fonseca et al. 2001; Djankov et al. 2002). Typically and that is the case for Germany, these costs apply to all sectors in the economy. According to Djankov et al. (2002), in 1999, entrepreneurs around the world had – on average – to complete about 10 procedures to start up a "standardized" firm, which took them about 47 business days and cost them about 47 percent of annual per capita income. Similar to the world average, start ups in Germany had to complete 10 procedures in order to obtain a legal status in 1999 (it took about 42 business days and cost about 15 percent of the annual per capita income). In contrast, starting up a firm in the U.S. only requires 4 procedures, a task that can be done in 4 days and that costs only about 0.5 percent of the annual per capita income.

In addition, the master craftsmen degree is also different to occupational licensing (Kleiner, 2000). Occupational licensing regulates the entry into an occupation by setting standards of practice and minimum qualification requirements. It is illegal to perform the task without the relevant license. The master craftsmen degree, in contrast, regulates the opening of new businesses. Entry into the occupation is not regulated per se. Table 1 shows the educational distribution of employment in the two sectors we look at. In markets with barriers to firm entry cover about 10 (8) percent of all workers in West Germany in 1992 or 1999 with West (East) German origin have only low education, that is, no vocational training. In markets without barriers the shares of low-educated workers are not substantially different: the respective numbers are 13 (8) in 1992 and 11 (10) in 1999. The apprenticeship system in Germany is a system of certification, not an occupational licensing system. Those who have a degree from the dual system of apprenticeship are certified, but other person could also perform the task. New businesses, however, need to include at least one person with a master craftsmen degree.

3.2 Reunification of East and West Germany

The division of Germany after World War II separated a "homogenous" population artificially for 45 years. After the fall of the Berlin Wall on November 9, 1989, the political forces made every endeavor to reunify the two parts of Germany as quickly as possible. On July 1, 1990, the economic and currency union was established, followed by the legal reunification of the eastern and western parts of Germany on October 3rd.

One of the most oppressive concerns of the political leaders was massive migration from East to West Germany, resulting in political measures to rapidly adjust East German wages and pensions to West German levels. East-West migration was said to be harmful for both parts of Germany. Common fears were that the increased supply of labor in the western

part of Germany would put downward pressure on westerners' wages and empolment chances, and that emigration from the East would result in a "brain-drain" or "youth-drain", which would reduce the possibilities for economic development in eastern states. See Burda and Hunt (2001) and Hunt (2006) for an analysis of the determinants for migration from East to West Germany.

Figure 1 shows the pattern of migration between East and West Germany between 1985 and 1999. In the years up to 1988 the number of immigrants from East to West Germany remained below 45,000 people per year due to the severe restrictions imposed in the German Democratic Republic.[7] The fall of the wall on November 9, 1989 changed the situation dramatically: close to 400,000 people left the East for the West in 1989, 400,000 more in 1990, and 250,000 in 1991. The massive inflow between 1989 and 1991 increased the West German labor force by about 3.5 percent. Then immigration from the East to the West declined steadily until 1994 and emigration from the West to the East rose. Between 1994 and 1999 the gross flows were relatively stable and net immigration from East to West Germany stayed below 50,000 people per year.

[7] In the years before 1988 the annual number was well below 30,000. The higher number of 43,000 immigrants in 1988 reflects the fact that several Central and Eastern European countries neighboring the GDR lifted travel restrictions already in that year which helped an increasing number of East Germany to flee their home country and reach West Germany (in most cases via Hungary and Austria).

4. Data and Descriptives

4.1 Data source

For our empirical analysis we use the "Qualification and Career Survey", which is carried out by the German Federal Institute for Vocational Training (Bundesinstitut fur Berufsbildung, BIBB) and the Research Institute of the Federal Employment Service (Institut für Arbeitsmarkt- und Berufsforschung, IAB). Four independent cross-sections of the survey are available. These were launched in West Germany in 1979 and 1986 and in Germany (East and West) after reunification in 1992 and 1999. Each wave covers about 30,000 individuals, both men and women.[8] For further details on the data set, see the Appendix.

This data source is particularly well-suited for our purposes for a number of reasons. Most important, information on where survey participants grew up is recorded and both the occupation in which employees work as well as the one in which they were trained. The answers survey participants give to the question "Where did you spend most of your youth?" and information on the federal state where the current place of residence is located allow us to distinguish between East and West Germans in the West German labor market and East Germans in the East German labor market. East Germans in the West German labor market are all those that lived in West Germany when surveyed and had spent most of their youth in the former GDR.[9] Note that information on citizenship or nationality as it is available in many datasets used for other immigration studies would not be helpful here - East and West Germans simply have the same German nationality due to German reunification. The detailed information about the occupation in which employees work and about the occupation in which they were trained is crucial for our instrumentation strategy explained further below.

Survey participants are classified into education groups based on their occupational training:[10] (1) People with low levels of education are those with no occupational training; (2) people with a medium level of education have an occupational training, i.e. they might have either completed an apprenticeship or graduated from a vocational college; (3) people with a high level of education are those holding a degree from a university or technical college.

In our empirical analysis, we mainly focus on employees with a medium level of education. The reason is fourfold: First, medium-educated employees account for the largest fraction of employees in both groups of occupations we are looking at. Second, the group of high-educated employees is not only small, but high-educated people basically never work in one

[8] DiNardo and Pischke (1997) were among the first to use this data set.
[9] Other answer categories are: in West Germany, in former German territories in Eastern Europe, in a country that belonged to the EU in the year of the survey, in an Eastern European country, or "else".
[10] School qualifications are not considered, that is, it is not important which of the three different school streams (Hauptschule, Realschule or Gymnasium) an individual attended.

of the occupations with firm entry barriers. Therefore we will not include them in our analysis.[11] Third, the labor supply shock owing to the inflow of East Germans to the West German labor market was largest for the group with medium education. Fourth, as will be explained in detail in the next section, one of our instruments relies on information about the occupation in which employees were trained — information we don't have for employees with low level of education.

Having said that, we will nevertheless analyze how the inflow of medium-educated East Germans affected the labor market outcome of low-educated West Germans. The reason is that although the largest part of East Germans who came to West Germany had vocational training, it is not ex ante clear to what extent the human capital and skills acquired through the East German apprenticeship system were transferable and therefore valuable in the West German labor market. It could very well be that medium-educated East Germans are closer substitutes for low-educated West Germans than for medium-educated West Germans.

We focus on effects of immigration on labor market outcomes for native West Germans in the West German labor market and on how these vary across markets with different product market regulation, but with the same labor market regulation. Accordingly we restrict the analysis of immigration effects to the region of the former FRG while using data for the area of the former GDR for instrument construction.

Our main level of analysis is the occupation-age level per education group.[12] The occupation classification that we use is partly equivalent to the 2-digit level of the 1988 official occupation classification and partly to a grouped 3-digit level. This is because this classification is best suited to separate between occupations with or without firm entry regulation which is crucial for our paper.[13] As age classes we consider the following six: 25-29, 30-34, 35-39, 40-44, 45-49, and 50-55. The core assumptions underlying approaches using education-occupation-age cells is that individuals within education-occupation-age cells are perfect substitutes, but imperfect substitutes across education-occupation-age cells.

The outcome variable employment is measured by the number of employees per occupation-age cell in each education group and survey cross-section. Wage data are deflated to 1991 values using the consumer price index. For our analysis we use the 1986, 1992 and 1999 waves, i.e. the survey years 1986 and 1992 that are adjacent to the inflow of East Germans to

[11] In 1992, for example, they account for less than 1 percent of employees in the sector with firm entry regulation.
[12] Appendix Table 1 includes a list of occupations considered.
[13] See the appendix for details.

West Germany after reunification in 1989 and 1999 that should capture the medium- to long-term perspective.

4.2 Descriptive Statistics

The educational distribution of East and West Germans living in West Germany across the two education groups of interest is shown in Table 1 as already mentioned in Section 3.1. The numbers indicate that the by far largest group is the one we focus on - the one with medium education. The first part of the table focuses on the sector with barriers to firm entry in which about 90 percent of the employees with West German origin in West Germany have a medium level of education in 1992 and 1999; the respective figures for East Germans in West Germany is 92 percent. In the sector without barriers to entrepreneurship about 86 (89) percent of West Germans have a medium level of education in 1992 (1999), and about 92 (90) percent of East Germans have a medium level of education. Among East Germans there are less formally low-educated people than among West Germans in West Germany in 1992 and 1999: the shares are between 8 and 10 percent in both sectors. The respective shares among West Germany are between 10 and 14 percent in both sectors.

Table 2 gives an idea about the importance of East Germans in the West German labor market. On average, East Germans with a medium level of education accounted for about 7 (5) percent of medium-educated employees in West Germany in 1992 (1999) in the market with barriers to firm entry (see Table 2, columns 1 and 2). East Germans with a low level of education accounted for 4.6 (4) percent of low-educated employees in West Germany in 1992 (1999) in this group of occupations. Note that the respective figures are quite similar for occupations without barriers to firm entry (see Table 2, columns 3 and 4). This is interesting since it shows that the size of the immigration flows into both these types of markets is similar.

In both educational groups real hourly wages of East Germans in West Germany are lower than those of the West Germans in 1992 and 1999 according to Table 3. The East-West difference is diminishing over time in three of four groups considered and remains about constant among low educated workers in occupations with barriers to firm entry.

5. Estimation Strategy

The central empirical relations that we want to explore in this paper are those from a labor supply shock through migration to wages and employment of workers originating in the receiving region. Our focus is on investigating how these relations vary across markets with different product market regulation, but with the same labor market regulation.

5.1 Specification of the wage equation

Our first dependent variable is the logarithm of the average real hourly wages of West German employees that grew up in West Germany (called West Germans below) per occupation (j)-age (g) cell and year t: $ln(w_{jgt})^e$. The superscript e refers to education groups since we estimate separate regressions for medium and low educated employees. A basic specification common to the literature on immigration and estimable on occupation-age data coming from (at least) two survey years:

$$\text{(E 1)} \qquad \ln(w_{jgt})^e - \ln(w_{jg(t-\tau)})^e = \alpha^e + \beta^e (r_{jgt} - r_{jg(t-\tau)}) + O_j^e + A_g^e + \eta_{jgt}^e ,$$

where the growth of average real hourly wages of West Germans between t and t-τ is regressed on the respective inflow of migrants that grew up in East Germany and now live in West Germany (called East Germans below). O_j is a set of occupation dummies that account for occupation-specific wage changes over time and A_g is a set of dummies that indicate the age category, so they account for age-specific wage changes over time. The error term is denoted by η_{jgt}. In each regression specific to an education group the coefficient of the immigration measure, β^e, is identified by variation of the inflow of East Germans with medium level of education across occupation-age cells.

The size of the labor supply shock in year t to an occupation-age cell jg in the West German labor market is the ratio of employees in this cell that grew up in the East over all employees working in West Germany, i.e.

$$\text{(E 2)} \qquad r_{jgt} = \frac{E_{jgt}}{N_{jgt}} ,$$

where E_{jgt} is the number of employees in cell jg in year t that grew up in the East and now work in West Germany, and N_{jgt} is the total number of employees in cell jg in year t in West Germany. As explained in the previous subsection, this measure is calculated for medium-educated employees. For the year that we observe before German reunification (1986) we set E_{jg1986} and r_{jg1986} equal to zero.

As we are primarily interested in how the effects of the labor supply shock on labor market outcomes depend on product market regulation, we augment this basic specification and estimate:

$$\text{(E 1)} \qquad \ln(w_{jgt})^e - \ln(w_{jg(t-\tau)})^e = \alpha^e + \beta_1^e \Delta M_{jgt} NR_j + \beta_2^e \Delta M_{jgt} R_j + O_j^e + A_g^e + \eta_{jgt}^e,$$

where $\Delta M_{jgt} = r_{jgt} - r_{jg(t-\tau)}$. Occupations subject to product market regulation through firm entry restrictions are indicated by R_j, those not subject to such restrictions by NR_j. All other variables and parameters are defined as before. We estimate this specification separately for education groups (as mentioned above) and also separately for two different time periods: At first we present regressions explaining labor outcome changes between 1986 and 1992, i.e. the period covering the large initial labor supply shock after German reunification in 1989 (see Figure 1). Then we discuss regressions explaining labor outcome changes between 1992 and 1999 where the net inflow rates were relatively modest.

5.2 Potential endogeneities and instrumentation

As any study that investigates the impact of migration on labor market outcomes in a receiving region, our analysis is subject to several sources of potential bias. First, native workers may respond to the inflow of labor from outside. Second, immigrants are probably no random sample from the population in the source region and on arrival in the receiving region immigrants may self-select themselves into certain occupations.

To mitigate influences coming from potentially endogenous responses of native workers we perform the analysis on the occupation-age level. While natives can move relative easily between local labor markets, it is less likely that they switch occupation. The decision as to which occupation one gets trained in is done early in life. Moving out of the occupation in which one was trained is relatively costly in Germany as one is usually considered an unskilled worker in other occupations.

The other potential source of bias concerns the endogenous choice of migrants. To the extend that self-selection of immigrants is based on time-constant heterogeneity in wage levels across occupations and age classes, specification (E 1) already addresses this by differencing out fixed observable and unobservable differences in wage levels. In addition, dummies for occupations and age classes, as included in equation (E 1), control for time-invariant observable and unobservable heterogeneity in wage growth across occupations and age classes. However, time-varying occupation- and age class-specific changes to wages are also likely to

affect migration decisions. For example, workers that grew up in East Germany may prefer West-German occupations for which they expect a positive demand shock and corresponding future wage growth in the age-class relevant to them. In that case, OLS estimates of β^e in equation E3 would be upward biased, that is, for example a negative impact of East German immigrants on wages of West German natives would be underestimated in absolute terms. We follow an instrumental variable strategy to deal with this endogeneity issue.

We use instrumental variation coming from the quasi-experimental nature of the fall of the Berlin Wall and German reunification. For the first instrument we use information on occupational training that the East German immigrants had received in the GDR. This is likely to be correlated with the distribution of East German immigrants across occupations in West Germany (note that the reunification contract acknowledged all vocational degrees obtained in the GDR). We believe that it is uncorrelated with unobserved factors influencing West German wage changes after the breakdown of the GDR for the following reasons. First, it is widely know that the fall of the wall and German reunification came very unexpectedly and that migration to West Germany was effectively impossible during GDR times. We can doubtlessly assume that East Germans didn't take into account the earnings potential in occupations in West Germany when deciding on their vocational training in the GDR system. Second, the planned economy system in the German Democratic Republic restricted individuals' choice of their training occupation. The constitution of the GDR established that everybody has not only the right but also the duty to get a vocational degree either through vocational training system or through university or technical college. As for education in general, one of the political aims of vocational training in the GDR was to increase societal equality. Children and parents, for example, should not have the same occupation. In addition, which occupations would be needed and therefore what training young people should get was determined by the central planning system.[14] Altogether, East Germans were often prevented from choosing a vocational training in line with their preferences and future developments in West Germany were irrelevant to these training decisions in the GDR.

Specifically, we use the following ratio for instrumentation of r_{jgt} (see equation (E.2)):

$$I^1_{jgt} = \frac{A_{jgt}}{N_{jg1986}}, \tag{E 2}$$

[14] In the GDR state secretaries for vocational training determined the number of training positions in occupations and the major aim was to fulfill the respective 5-year production plan. In contrast, school leavers in West Germany search individually for a training contract with a company and companies decide freely on how many training positions they want to offer.

where A_{jgt} denotes the number of East Germans who did their vocational training in the former GDR in occupation *j*, who migrated to West Germany after reunification and who belong to age-group *g* in year *t*. As denominator we choose the respective West German employment before reunification, denoted by N_{jg1986}, since N_{jgt} could be endogenous as well. We calculate I^1_{jgt} for employees with a medium level of education, as it is the case for r_{jgt}. Since equation (E.3) contains interactions of the change in r_{jgt} over time *t* with indicators for regulated and non-regulated product markets, we interact the change in the instrument accordingly: $(I^1_{jgt} - I^1_{jg(t-\tau)}) * R_j$ and $(I^1_{jgt} - I^1_{jg(t-\tau)}) * NR_j$.

Our second instrument also relies on the quasi-experimental nature of the fall of the Berlin Wall and the fact that it reunified two regions that previously had different education systems and industry structures. Specifically, we use the pool of people at risk to migrate into a specific occupation-age cell *jg* in West Germany in year *t* as additional instrument:

(E 3) $$I^2_{jgt} = \ln(B_{jgt})$$

where B_{jgt} is the number of German workers in East Germany in age class *g* in year *t* with a vocational training in occupation *j*. This instrument reflects the push factor for immigration into occupation-age cell *jg* in West Germany, i.e. the stock of German workers in East Germany with a high potential of entering that occupation-age cell and we use this instrument lagged.[15] Variation in this instrumental variable is determined by the education system and the industry structure in East Germany which evolved independently from the West German economy.

As will be discussed later, the instruments have a significant effect in the first stage regression, weak instrument tests indicate no problems and overidentifying restrictions are not rejected.

[15] In regressions for the time span 1992-1999 we use the lagged "push factor"-instrument based on information from the 1992 wave. Since information on East Germany is missing in the 1986 wave we proceed as follows using information from 1992: To proxy the number of East German workers in age class *g* in year 1986 with a vocational training in occupation *j* we proceed as follows: we sum over all East German workers that work in East OR West Germany in 1992 (since it can be assumed that these worked in East Germany before the breakdown of the wall), that have a vocational training in occupation *j* and that belonged to age class *g* in 1986 (considering their age in 1992 minus 7 years).

5.3 Specification of the employment equation

In addition to the wage equation, we analyze whether the labor supply shock through immigration from East Germany affected differently the employment of workers originating in West Germany in West German occupation-age cells with and without barriers to firm entry. Basically, we estimate equation (E 1) but use changes in log employment as dependent variable:

$$(\text{E } 4)\ \ln(emp_{jgt})^e - \ln(emp_{jg(t-\tau)})^e = \alpha + \beta_1^e \Delta M_{jgt} NR_j + \beta_2^e \Delta M_{jgt} R_j + O_j^e + A_g^e + \eta_{jgt}^e ,$$

where $ln(emp_{jgt})^e$ is the logarithm of the number of West Germans in occupation-age cell (jg) at time t. Again, we run regressions separately for each education group *e* and for the time spans 1986-1992 and 1992-1999. We follow the same instrumentation strategy for this equation as for the wage equation.

6. Results

In this section we discuss our regression results for the wage and employment equations estimated for the two time periods (1986-1992, 1992-1999) and for medium- and low-educated West Germans. In all these regressions the occupation age-level observations are weighted by the cell size used to construct the dependent variables.

Table 7 shows the results of estimating the wage and employment equations (E 1) and (E 4) for medium-educated employees in the first phase of immigration until 1992. The first two columns show the results for changes in log mean real hourly wages in occupation-age cells, and the 3rd and 4th column show the results for changes in log employment in occupation-age cells. In each column, the dependent variable is regressed on the change of the fraction of East Germans in occupation-age groups interacted with a dummy for occupations without firm entry barriers (row 1) and interacted with a dummy variable indicating occupations with firm entry regulation (row 2). The specifications additionally include full sets of occupation and age dummies, so identification is through variation in inflows across occupation-age groups.

The first column shows the results of an OLS wage regression. For the group of occupations without firm entry regulation the results indicate a negative but insignificant relationship between the change in log mean wages of medium-educated West Germans in occupa-

tion-age cells between 1986 and 1992 and the change in the inflow of medium-educated East Germans into these cells (row 1), and a significantly positive coefficient for the group of occupations with barriers to firm entry in row (2).

As outlined in the previous section, the OLS estimates are likely to be biased owing to the endogenous choices of East Germans. In particular, if East Germans chose to work in thriving occupations, the OLS results are biased towards finding zero (or even positive) wage effects. Based on this discussion, we expect the coefficient in row (1) to decrease (which means to increase in absolute terms) since that coefficient is negative) and the coefficient in row (2) to also decrease when an instrumental variable approach is used instead of OLS.

The next column shows the results of the instrumental variables (IV) regressions that use changes in the fraction of East Germans with a vocational training degree in the occupation as the instrument for changes in the fraction of East Germans in an occupation (ΔI^1). In addition, the lagged log size of the group with a vocational training degree in the occupation in East Germany is also used as an instrument (I^2). Since we are interested in investigating the differences across the two occupation groups, we interact the excluded instruments with a dummy for occupations without barriers to firm entry (ΔI^1*NR, I^2*NR) and with a dummy for occupations with barriers to firm entry (ΔI^1*R, I^2*R). As discussed in section 5.2, owing to the quasi-experimental nature of the fall of the Berlin Wall, our instruments are exogenous to the potential sources of biases in the OLS estimates. The bottom part of Table 7 shows a summary of the first stage results. The excluded instruments have significant effects in line with expectations. Results for the overidentification test of all instruments (Hansen J statistic) indicate that the null of overidentifying restrictions is not rejected, neither in the wage nor the employment IV regression. The details of the first stage regressions can be found in Table 8.

The IV estimates are statistically significant for both the effects on wages – the one in occupations without firm entry barriers in row (1) as well as for the one in occupations with firm entry barriers (row 2). As would be expected by standard theory, the inflow of East Germans in occupation-age cells has a negative impact on wages of West Germans in row 1. However, this effect is positive for occupations with barriers to firm entry. The coefficients in row (1) and in row (2) increase in absolute terms owing to the instrumentation. This result is in line with our expectations about the direction of the bias for the market without barriers to firm entry. In case of the occupations with entry barriers we observe a small move in the opposite direction, that is upwards and away from zero. One explanation for this could be attenuation bias in the OLS regression result, caused by measurement error.

In addition to wages, it is also interesting to know how employment of West Germans was affected by the inflow of East Germans. Column 3 shows the results for the OLS employment estimates. The relationship between the inflow of East Germans and employment changes of West Germans is significantly negative for the market without barriers to firm entry, and even more so for the market with entry restrictions. The IV estimates in column 4 corroborate the OLS results: the inflow of East Germans had a now insignificantly negative effect on the employment opportunities of West Germans in occupations without firm entry barriers. For occupations with firm entry regulation we find again a significantly negative effect.

Our interpretation of these findings is that product market regulation in the form of firm entry regulation is the reason for observing wage reactions that are in line with standard theory only in case of no firm entry regulation and weak employment reactions that are also in line with standard theory.

One competing explanation we need to consider is the following one: Wage increases triggered by positive demand shocks might not only obscure the negative impact of East German immigrants on West Germans' wages, it might also explain why we observe different results in the wage equations for our two groups of occupations. It could, for example, be that the price elasticity of product demand is higher in the market with firm entry barriers than in the market without. A reduction in product prices (owing to the declining price of labor) would then *ceteris paribus* lead to differential increases in product demand and, in turn, to differential increases in wages. In addition, the reunification boom which could have triggered differential demand changes for products and services in these two groups of occupations might also be important in this respect.

Note, however, that this explanation is well at odds with our empirical findings: If it were the case that the differential wage coefficients of the two groups in column (1) were driven by differential changes in the demand for the products and services produced in these two markets, the employment coefficient in column (3), row (2), should be positive or at least larger than the one in row (1). According to our regression results it is smaller and even negative.

To be continued.

7. Conclusion

Current research suggests that not only labor market rigidities have contributed to slow employment growth in Continental European economies in recent decades but also product market regulation. While we do seem to understand the mechanisms theoretically, there is still scant empirical evidence. This is particularly true when it comes to the wage and employment consequences of labor supply shocks in markets with different degrees of firm entry regulation.

In this paper, we analyze how two markets that face the same labor market regulations, but differ with respect to product market regulation, react to a large labor supply shock. The labor supply shock we consider is the inflow of East Germans to the West German labor market after the fall of the Berlin Wall in 1989. We exploit the fact that the supply shock has not been evenly balanced across occupation and age groups. Moreover, the quasi-experimental nature of the event in 1989 provides us with the instrumental variation that we exploit. Our major interest is in the time period 1986 to 1992 when the net inflow of East Germans to the West German labor market was huge; however, we also present evidence for the time period 1992 to 1999, when net inflow rates were modest. As immigration by East Germans had the largest labor supply effect on West German employees with a medium level of education, we focus our analysis on this group of employees. Moreover, this group represents close to 80 percent of all employees in Germany. We also present evidence for low-skilled employees, first, to test for complementarities in production; and secondly, because it is not clear whether the human capital acquired by East Germans through the education system of the former GDR were transferable to the West German labor market.

We find the differences across markets with different product market regulation to be striking, in particular, for the 1986/1992-period and medium-educated workers. In markets without barriers to firm entry, the inflow of medium-educated East Germans had a negative impact on medium-educated West Germans' wages. In markets with barriers to firm entry, medium-educated West Germans experience the opposite: a considerable increase in wage growth owing to the inflow of medium-educated East Germans. The finding of an accompanying decrease in employment growth is much more substantial and stable in these regulated markets than what we find for the markets without entry barriers.

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Tables and Figures

Table 1: Educational Distribution of West and East Germans in West Germany

	With Barriers to Firm Entry			
	West Germans		East Germans	
	1992	**1999**	**1992**	**1999**
Medium level of education	89.07	89.93	92.36	91.84
Low level of education	10.93	10.07	7.64	8.16
	Without Barriers to Firm Entry			
	West Germans		East Germans	
	1992	**1999**	**1992**	**1999**
Medium level of education	86.03	88.61	92.15	89.69
Low level of education	13.97	11.39	7.85	10.31

Note: Sample includes men and women aged 25-55, working full-time, living in West Germany, and having German nationality.

Table 2: Share of East Germans in the West German Labor Market

	With Barriers to Firm Entry		Without Barriers to Firm Entry	
Education Level…	**1992**	**1999**	**1992**	**1999**
Medium	6.60	4.99	7.51	4.24
Low	4.55	4.00	4.08	3.81

Note: The Table indicates the share of East Germans of all employees in West Germany. Sample includes men and women aged 25-55, working full-time, and living in West Germany.

Table 3: Wages of West and East Germans' in West Germany

	Mean of Real Hourly Wages in 1991-Euro (Standard Deviation)					$\ln(wage_{East}/wage_{West})$		
	West Germans			East Germans				
Medium-Educated	**1986**	**1992**	**1999**	**1992**	**1999**	**1992**	**1999**	**Δ**
With Barriers to Firm Entry	9.32 (2.59)	10.75 (2.92)	10.94 (3.57)	8.96 (3.25	10.00 (4.23)	-.181	-.089	.092
Without Barriers to Firm Entry	10.06 (3.89)	11.56 (4.01)	11.12 (4.09)	8.37 (3.71)	9.51 (2.91)	-.299	-.149	.149
Low-Educated								
With Barriers to Firm Entry	7.77 (2.44)	8.60 (2.76)	8.93 (3.24)	6.80 (2.72)	6.99 (2.13)	-.235	-.244	-.009
Without Barriers to Firm Entry	8.46 (3.17)	9.23 (3.17)	9.49 (4.05)	7.65 (2.89)	9.04 (3.43)	-.196	-.047	.148

Note: Sample includes men and women aged 25-55, working full-time, living in West Germany, and having German nationality.

Table 4: Distribution of Firm Size

	With Barriers to Firm Entry		Without Barriers to Firm Entry	
	Percent	Cumulated	Percent	Cumulated
Less than 5 employees	6.81	6.81	6.44	6.44
5-9	16.81	23.63	10.63	17.07
10-49	30.97	54.60	24.91	41.98
50-99	11.10	65.70	12.40	54.38
100-499	17.10	82.80	23.04	77.42
500-999	5.19	87.99	7.17	84.59
More than 999	12.01	100.00	15.41	100.00

Note: Sample includes men and women aged 25-55, working full-time, living in West Germany, and having German nationality.

Table 5: West and East German's Age Distribution

(West Germany, 1992 and 1999)

	West Germans		East Germans	
	1992	**1999**	**1992**	**1999**
25-29	22.23	16.37	17.39	18.66
30-34	20.31	22.48	19.42	21.77
35-39	16.44	19.79	17.97	20.33
40-44	15.39	17.10	13.48	13.88
45-49	11.79	14.16	13.62	14.11
50-55	13.84	10.09	18.12	11.24

Note: Sample includes men and women aged 25-55, working full-time, living in West Germany, and having German nationality.

Table 6: Distribution of East Germans across Occupations

5 Occupations with… **…highest share of East Germans**	**Percent of East Germans in 1992**	**Percent of East Germans in 1999**	**Percent East Germans of all employees in 1992**
With Barriers to Firm Entry			
Building construction worker[#] (44)	4.27	2.49	8.91
Electrician[#] (31)	3.90	4.98	5.48
Building cleaner[#] (93)	2.60	1.25	14.14
Sheet metal and construction worker[#] (26)	1.86	4.05	5.99
Painter/varnisher[#] (51)	1.86	.62	7.09
Without Barriers to Firm Entry			
Office clerk (78)	13.54	8.72	5.59
Sales representative (68)	9.09	1.25	5.74
Land traffic operator (71)	7.42	7.17	9.37
Computer scientist/accountant (77)	6.68	2.80	10.43
Medical service worker (85)	5.94	9.66	6.87
…lowest share of East Germans	**Percent of East Germans in 1992**	**Percent of East Germans in 1999**	
With Barriers to Firm Entry			
Construction Material Manufacturer[#] (11)	.00	.00	
Butcher[#] (40)	.00	.31	
Textile producer[#] (34)	.00	.00	
Wood and textile worker[#] (18)	.00	.00	
Leather and fur processing worker[#] (37)	.00	.00	
Without Barriers to Firm Entry			
Worker in plastics production (15)	.00	1.24	
Mineral processing worker (8)	.00	.00	
Water and air traffic operator (72)	.00	.62	
Librarian/translator/publicist (81)	.00	.00	
Textile refinement worker (36)	.00	.31	

Table 7: **Effect of Immigration on West Germans' Labor Market Outcome, 1986-1992: Occupation-Age-Level-Analysis, Medium-Educated**

	Dependent Variables:			
	Change in log mean real hourly wages of medium-educated		Change in log employment of medium-educated	
	OLS	IV	OLS	IV
(1) Change in fraction of medium-educated East Germans*sector without barriers	-0.178	**-0.626**	**-0.990**	-1.043
	(0.132)	(0.255)	(0.449)	(0.745)
(2) Change in fraction of medium-educated East Germans* sector with barriers	**0.296**	**0.329**	**-1.596**	**-1.978**
	(0.162)	(0.195)	(0.845)	(0.943)
First stage equation (1)				
R^2		0.733		0.733
F-Test of excluded instruments (p-value)		0.000		0.000
First stage equation (2)				
R^2		0.863		0.863
F-Test of excluded instruments (p-value)		0.000		0.000
χ^2 overidentification (p-value)		0.503		0.489
Occupation and age indicators	yes	yes	Yes	yes
Number of observations	295	295	295	295

Note: Sample includes men and women aged 25-55 who work full-time, live in West Germany and have German nationality. Observations are collapsed into occupation-age cells. Each regression includes a full set of occupation and age dummies. Regressions are weighted by the number of observations within occupation-age cells. Standard errors are in parentheses. Bold figures indicate that the coefficients are significant at least at the 10 percent level. Data: Qualification and Career Survey.

Table 8: First Stages (Table 7)

	Dependent Variables:	
	Change in fraction of medium-educated East Germans*NR	Change in fraction of medium-educated East Germans*R
	(1)	(2)
Change in I^1*NR	**0.659**	-0.029
	(0.218)	(0.019)
Change in I^1*R	-0.020	**0.852**
	(0.022)	(0.084)
I^2*NR	**0.007**	-0.004
	(.002)	(0.003)
I^2*R	0.001	**0.009**
	(0.003)	(.004)
R^2	0.733	0.863
F-Test of excluded instruments (p-value)	0.000	0.000
Occupation and age indicators	yes	yes
Number of observations	295	295

Note: Sample includes men and women aged 25-55 who work full-time, live in West Germany and have German nationality. Observations are collapsed into occupation-age cells. Each regression includes a full set of occupation and age dummies. Regressions are weighted by the number of observations within occupation-age cells. Standard errors are in parentheses. Bold figures indicate that the coefficients are significant at least at the 10 percent level. Data: Qualification and Career Survey.

Figure 1: **Migration Pattern between East and West Germany, 1985-1999**

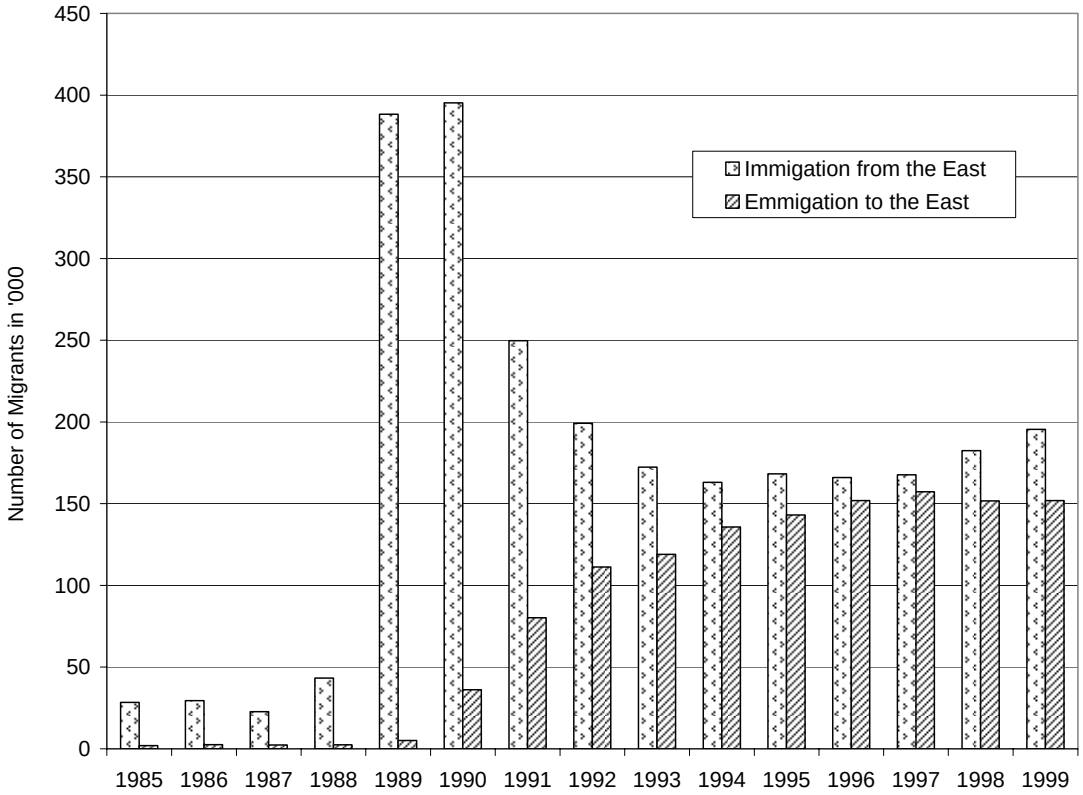
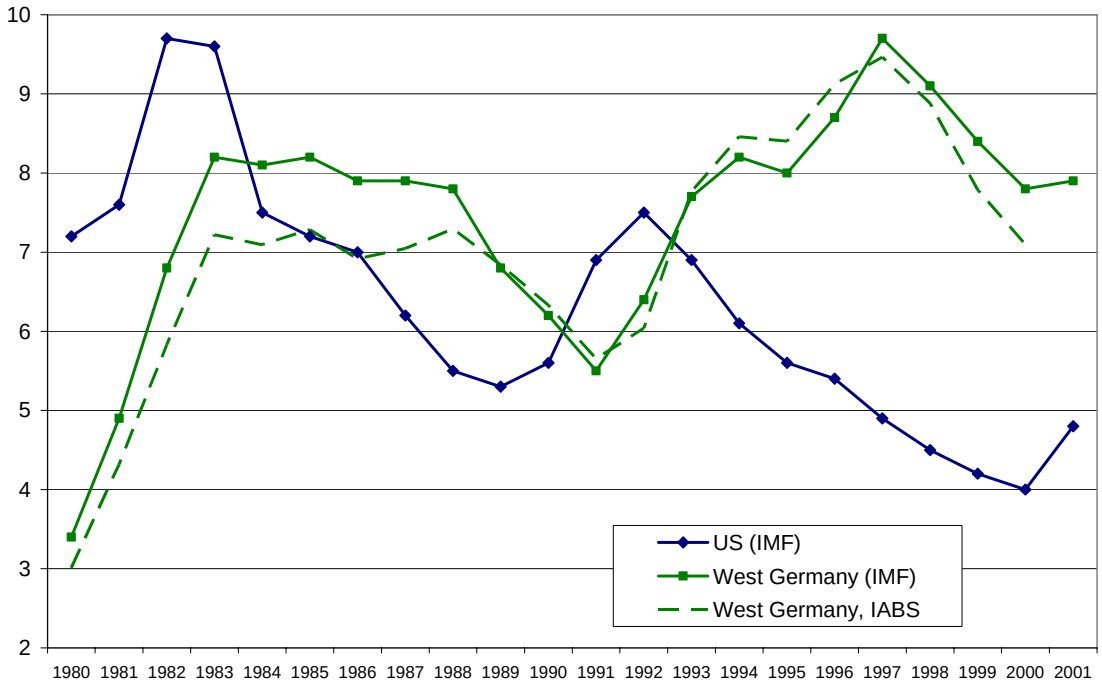


Figure 2: **US and West German Unemployment Rates, 1980-2002**



Appendix

Patterns of migration in Germany

In 1950, the share of foreigners in West Germany was about 1 percent (about 500,000 persons). Immigration occurred in basically three phases thereafter: First, between 1955 and 1974, most immigration occurred because of recruitment agreements that the German government signed with different countries in order to meet the domestic demand for labor.[16] In 1973, when the Federal Cabinet ordered a stop to further recruitment of foreign labor, the share of foreigners in employment was 11.9 percent.

Second, between 1974 and 1985, the largest part of immigration occurred because family members rejoined those already living in West Germany.

Third, starting with the fall of the communist regimes in Eastern Europe at the end of the 1980s, the number of immigrants increased again. Germans from the former GDR came to West Germany. But there were also a growing number of asylum seekers and the repatriation of ethnical Germans grew enormously.

Ethnic German repatriates – that is, ethnic Germans from the former Soviet Union and Eastern bloc countries – are a special group of immigrants to West Germany. After the end of World War II, ethnic Germans in these areas faced persecution or discrimination. Persons who continue to face such discrimination today, along with family members who are not ethnic Germans, are eligible to relocate to Germany under special rules. By law, they acquire German citizenship when issued a repatriates certificate. Up to December 31, 1991, it was assumed that all ethnic Germans living in these areas had personally suffered discrimination due to their ethnicity. The same still applies to applicants from the territory of the former Soviet Union. All other applicants must demonstrate evidence of individual discrimination.

Since the mid-1990s, the number of ethnic Germans arriving under this program has shrunk steadily relative to that of their non-ethnic German spouses, children or other eligible family members (currently only about 20 percent annually). As a result, the proportion of ethnic Germans who do not speak German has grown. Their lack of German language skills has made it more difficult for members of this group to become integrated in Germany, which in turn has increased social concerns and reduced public acceptance for taking in additional ethnic Germans from Eastern Europe and the former Soviet Union.

[16] Specifically, the recruitment treaties were signed with Italy in 1955, Spain and Greece in 1960, Turkey in 1961, Morocco in 1963, Portugal in 1964, Tunisia in 1965 and Yugoslavia in 1968.

Vocational Education and the Master Degree in the GDR

As for education in general, the political aim for vocational education in the GDR was to increase social equality.[17] Between 1945 and 1949, a uniform general school system was established including an elementary school (duration: 8 years) and a secondary school (duration: 4 years; it led pupils to the "Abitur"). In 1959, a polytechnic school (polytechnische Oberschule) with a 10-year attendance was declared compulsory for all children. The GDR's constitution established that everybody who leaves this school (typically at age 16) has not only the right but also the duty to train for a vocational degree either through the vocational training system or by continuing school and sitting the "Abitur" examinations which then allows people to enter universities or technical colleges. The majority of a cohort received a vocational degree through the vocational training system.

Similar to the dual system of apprenticeship in the FRG, vocational training was occupation specific. In addition, the vocational training system also included a theoretical, more general part held in schools and a practice oriented, occupation-specific part held in companies.[18] The training programs generally took two years. At the end, the apprentice had to pass an exam. The successful completion of the training program allowed the person to work in the occupation at which the program was targeted.

The largest difference to the West German system was in the allocation of school leavers to training occupations. In West Germany, the allocation of school leavers to training occupations is through the market. School leavers search individually for a training contract with a company that freely decides to provide the practice oriented part of the training in the occupation. In the GDR, in contrast, the state secretary for vocational training determined the number of positions that had to be filled in each training occupation over a fixed period. This procedure had the major aim of ensuring that the 5-year production plans could be met; hence, the allocation of school leavers to training occupations was controlled pursuant to the (planned) demand of the economy.

As in West Germany, the vocational training system also had an institutionalized system of further professional training. In particular, it also knew the degree of the master. The training program for the master degree took two years and it was open to particularly reliable workers. The major assignment of the masters was to head the socialistic teams of workers (Arbeitskollektive) within the socialistic production facilities and to locally organize the pro-

[17] This Section is a synopsis of Günther et al. (1989).
[18] The saying "smart head and golden hands" was used in order to characterize the major aim of this feature of the vocational training system.

duction process. In West Germany, in contrast, the major aim of the master degree is to qualify workers to open their own business.