Does Deregulation Lead to Better Economic Performance Among Immigrants? The 2004 Reform of the German Trade and Crafts Code as a Natural Experiment.

Abstract:

Immigrants’ economic performance is a key aspect of (structural) integration. Yet, previous research shows that immigrants often perform poorly in the host country’s labor market e.g. they have larger unemployment rates and earn less than natives (Aguilera and Massey, 2003; Esser, 2009; Kalter and Kogan, 2014; Lancee, 2012; Portes and Sensenbrenner, 1993). I investigate how eliminating institutional barriers affects immigrants’ economic performance. Using the German micro-census and the 2004 reform of the German trade and crafts code as a natural experiment, I apply triple difference-in-differences estimators to identify the causal impact that occupational deregulation has on earnings in the German crafts and trades sector, particularly for immigrants. The 2004 reform of the German trade and crafts code abolished occupational licensing requirements in 53 of 94 occupations. I find that (i) the 2004 reform causally increases wages for dependent employed (non-self-employed) liberalized occupations; there is no significant change in the wages of independent employed (self-employed) liberalized occupations after the reform. Further analyses reveal that (ii) wages significantly increase for dependent employed individuals lacking a post-secondary degree (no vocational training or tertiary degree) and significantly decrease for all other education categories. There is no significant change in earnings for independent employed craftspeople when examining differing education levels after the reform. (iii) Earnings significantly increase for dependent employed native Germans working in one of the liberalized occupations after the reform but do not for any of the immigrant groups. Moreover, the reform does not significantly affect the earnings of individuals that were
unemployed the previous survey year or for those that changed their occupation within the last year. The results indicate that abolishing institutional barriers to labor market entry opens up formerly closed occupations to individuals lacking formal qualifications. Yet, and contrary to theoretical expectations, eliminating occupational closure strategies does not seem to positively affect immigrants’ earnings.

Intro

In recent years several empirical studies have analyzed the effect of occupational closure on labor market outcomes (Bol, 2014, Bol & Drange, 2017; Bol and Weeden, 2015; Weeden, 2002). These studies all find a positive effect of occupational closure on average earnings. Weeden (2002) in her seminal work identifies several different closure strategies that trigger mechanisms that link closure practices to rewards (for a detailed account see Weeden, 2002 p. 60). For example, she finds that occupational licensure and formal educational credentials have the strongest effect on occupational earnings by tangibly restricting the supply of labor into a profession. Examining the German crafts and trades sector, Bol and Weeden (2015) find that vocational credentialing and unionization have a high payoff in Germany, while tertiary credentialing and licensure have a particularly high payoff in the United Kingdom. In a recent study for Norway, Bol and Drange (2017) find that licensure and unionization have strong wage effects net of occupational skill requirements. These studies along with most others compare outcomes in licensed (or otherwise regulated) occupations to those that are not (or much less) regulated. I, however, utilize a major reform of the German crafts and trades sector in 2004 and investigate how abolishing licensure regulations affects occupational earnings for several different economic groups (Damelang et al., 2017; Rostam-Afschar, 2014; Runst, 2018).
In 2000 the European Court ruled that the German Trade and Crafts Code (Handwerksordnung <HwO>) was not compatible with the single European market (Monopolkommission, 2001). In response, entry regulations in the German crafts and trade sector were liberalized in 2004. Since then a master craftsman’s certificate is no longer a prerequisite to establish and operate a business in 53 out of 94 trades. Hence, making it easier for individuals to start their own business. Rostam-Afschar (2014) finds that the reform increases entry into self-employment among the deregulated occupations and that exits out of self-employment remain virtually unchanged. An increase in self-employment should lead to more jobs, which in turn should lead to an increase in average earnings. Entry restrictions make it almost impossible for individuals lacking the required qualifications to gain access to the closed occupations. Therefore, the reform should be particularly beneficial for individuals lacking formal qualifications. Utilizing the 2004 reform and implementing (triple) difference-in-differences estimators, I investigate how abolishing institutional barriers to occupational entry affects occupational earnings, particularly for immigrants and individuals with no post-secondary education. My contribution here is threefold: first, I analyze whether certain benefits of occupational closure like earnings premiums and restricted supply of labor erode after liberalization. Second, I directly confront the question to what extent and in what direction the deregulation reform changes the career opportunities of workers in the formerly closed craft professions. Third, I analyze how labor market liberalization affects the structural integration of immigrants.

**Occupational closure**

Occupational closure is a central mechanism to understand the rise of professions (Abbott, 1988, 2005; Hinz and Abraham, 2008). Successful professionalization implies that occupations are able to establish entry barriers to keep outsiders and competitors at bay,
establish the exclusiveness of their services, and secure benefits for occupational members (see e.g. Abraham et al., 2011; Weeden 2002). In his classic work on bureaucratic organizations, Weber (1978) already described these strategies as social closure. An illustrative historical example of professionalization is the emerging regulation of crafts through medieval guilds. Through the monopoly of trading privileges, the control of knowledge, and standardized apprenticeship systems, guilds became *particularized institutions* which used licensing to generate benefits for their members and deny them to non-members (Hillmann, 2013; Ogilvie, 2011). However, not all occupations succeed in this process as power relations between competing interest groups seem to play a significant role (Chua and Clegg, 1990; Macdonald, 1985). For example, for the USA Zhou shows that the granting of occupational licenses depends on state support as well as the position of and competition between influential interest groups (Zhou, 1993).

Beyond its role in the establishment of modern-day professions, occupational closure has long been considered as an institutionalized form of social closure that contributes to observed inequalities in the labor market (Collins, 1990; Murphy, 1988; Parkin, 1974; Roscigno, Hodson, and Lopez, 2009; Roscigno, et al., 2007; Weeden, 2002). According to Weeden (2002, p. 60) there are four mechanisms that link occupational closure to rewards: restricting the supply of practitioners, increasing diffuse demand for services, channeling demand to the occupation, and signaling quality of service. Existing studies analyzed the consequences of licensing as one form of occupational closure for wage differentials (see Pfeffer, 1974, for an important early contribution; Sorensen, 1996, for rents and inequality). Weeden (2002), shows that licensure and formal educational credentials increase earnings by restricting the supply of labor in the affected occupations. She also shows that the more restrictive the licensing requirements, the larger the monetary rewards are (see Bol, 2014 for a
related analysis for Germany; Bol and Drange, 2017 for Norway; Bol and Weeden, 2015 for Germany and the UK). Haupt (2012) studies the effects of licensing on wage inequality in the German labor market. He shows that wage differentials with respect to tenure, gender, or education are muted within regulated occupations. Yet, at the same time, social closure increases wage inequality between occupations by pushing up wages in licensed professions relative to those without licenses.

Entry Regulation and Occupational Licensing

A large literature in economics has analyzed barriers to (firm) entry, i.e. state regulations for opening up a new business (e.g. Aghion et al., 2008 for India; Bertrand and Kramarz, 2002 for France; Djankov et al., 2002 and Ciccone and Papaioannou, 2007 in a cross-country setting; Klapper et al., 2006 for European firms; Schaumans and Verboven, 2008 for Belgium; Schivardi and Viviano, 2011 for Italy). Most studies exploit changes in the regulatory environment of firm entry to identify causal effects on job creation, prices, and innovation. They find that liberalizing entry conditions increases employment, while stricter entry regulations reduce it. Entry regulations also seem to discourage entrepreneurship and reduce firm productivity and innovation. Bertrand and Kramarz (2002), for instance, evaluate commercial zoning regulations in French retailing. For identification, they use the introduction of regional zoning boards which had to approve the establishment of larger businesses in their area. The central finding is that impeding business entry through zoning boards reduces employment growth in the retail sector and increases retail prices.

The literature on entry restrictions in the labor market through licensing and certification requirements is much less developed (see Kleiner and Krueger, 2010; Kleiner, 2006 for surveys of the existing evidence). Licensing means that the government allows only those with the required level of competence (often demonstrated by a formal degree or other
credentials) to work in that occupation. In contrast to occupational licensing, certification
does not prohibit that individuals without the certification enter an occupation. Here,
consumers can choose between services from certified and uncertified practitioners
(Rottenberg, 1980). Since Friedman and Kuznets’s (1945) classic work, a small and relatively
recent literature has analyzed the economic consequences of occupational entry barriers.
Existing studies typically use cross-sectional variation within or across states to compare
certified to uncertified occupations (or licensed to unlicensed occupations) with respect to
prices, service quantity, or quality (e.g. Kleiner and Kudrle, 2000 on service quantity; Angrist
and Guryan, 2004; Law and Kim, 2005; or Kane, Rockoff, and Staiger 2008 on quality).

More recently, studies have also analyzed labor market outcomes like wages or
employment (e.g. Gittleman and Kleiner, 2013; Kleiner and Krueger, 2013; Kleiner and Park,
2010). Using cross-state variation in the stringency of regulation to become a dentist, for
example, Kleiner and Kudrle (2000) find that the hourly earnings of dentists in the most
regulated states are about 12% higher than those of dentists in less regulated states. Reduced-
form results in Angrist and Guryan (2004) indicate that state licensing requirements raise the
salaries of teachers with a BA by between 3% and 5%. The key challenge of these studies is
to isolate the causal effect of licensing or certification from confounding factors, like
unobserved heterogeneity (some factors unobserved are correlated with both entry barriers
and wages or employment) or simultaneity (an economic shock selectively hits the regulated
occupations). While these studies try to carefully control for observable differences and
simultaneity, they are unable to fully resolve them.

In contrast, I exploit changes in the regulatory environment that eliminated licensing
requirements for some occupations but not for others (see also Rostam-Afschar (2014) for a
First analysis. Second, I analyze a large-scale liberalization within a traditionally highly regulated labor market (see Brenke, 2008; Müller, 2006 for some descriptive evidence). Most existing studies in contrast, cover the United States where labor markets have traditionally been less regulated though certification and licensing requirements have increased over time. The effects of adopting or abolishing rules for licensing or certification need not be symmetric. For instance, after adopting the certification requirement, consumers might not be willing to pay more for a certified professional; at least initially. In contrast, abolishing a certification requirement might have little effect on prices or wages as consumers are used to hiring a certified professional. Lastly, most of the empirical literature has studied teaching or a few selected services in the medical or dental professions (Kleiner and Kudrle, 2000) I study the crafts sector with a broad set of medium-skilled occupations.

Reform

Liberalizing restrictions to labor market entry is one of the most advocated policies to improve economic performance, especially in the service sector. A substantial share of the service sector in Germany is employed in the 94 crafts and trades: almost 13% of all employees and almost one-third of all apprentices worked in that sector in 2012. Yet, Germany’s crafts and trades sector is one of the most heavily regulated within the European Union (see Monopolkommission, 1998 Table 4). Only individuals with a Master craftsman’s certificate (Meisterbrief) are allowed to open and run a business; and only a master craftsperson is permitted to train young apprentices. Yet, obtaining a master craftsman’s certificate is associated with substantial costs including long periods of training and monetary expenses (as specified in the Handwerksordnung). After finishing a 3-year apprenticeship and

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1 Prantl and Spitz-Oener (2009) compare entry into self-employment and occupational mobility out of licensed versus unlicensed (or certified) occupations in Germany. Using the East German transition as an exogenous shock to labor market reallocation (and West Germany as an additional control group), they find that self-employment and mobility are lower in licensed occupations.
passing the qualifying exam (Gesellenprüfung), a companion has to take advanced training for about two to three years in part-time before he or she can complete the comprehensive examination for the Master craftsman’s certificate. These entry requirements and training prerequisites are closely monitored by the local Chamber of crafts (Handwerkskammer). Every business in the crafts sector in Germany has to be listed by law in the register of qualified craftsmen (Handwerksrolle) which is maintained by the local Chamber of crafts (and in which every master craftsperson has to be a member). A craftsperson who opens up a business without registering or without fulfilling the prerequisites has to pay a fine of up to 10,000 Euros and may be prosecuted for illegal employment. Since 1994/1998 EU foreigners and individuals with closely related degrees are allowed to apply for a license, yet few exceptions were granted in practice by the local Chamber of crafts (see Table 3 in Monopolkommission, 1998).

In 2000, the European Court ruled that certain regulations in Germany’s Craft Code were not compatible with the concept of free rendering of services in a single European market (Monopolkommission, 2001). In response, Germany liberalized entry regulations in the crafts and trades sector in 2004 (with the „Drittes Gesetz zur Änderung der Handwerksordnung und anderer handwerksrechtlicher Vorschriften“). After 2004 a master craftsman’s certificate is no longer a prerequisite to establish and operate a business in 53 out of 94 trades. Yet, in the remaining 41 trades the master craftsman’s certificate remains the main requirement. Hence, the reform removes entry barriers to self-employment for these 53 crafts and trades. Recognition of other qualifications as the equivalent to a master craftsman’s certificate, especially from universities of applied sciences, is now also possible. In all crafts and trades, whether liberalized or not, young apprentices can only be trained under a master
craftsperson or a companion with work experience in the respective profession (Monopolkommission, 2006).

Labor market integration and self-employment

It is well documented that immigrants face labor market deficits as compared to natives (Kalter, 2006; Kalter and Granato, 2002; Kalter and Kogan, 2014; Kogan, 2004, 2006). The deficits originate in the lack of host country and labor market-specific resources. In order for labor market integration to be successful, immigrants need host country-specific capital (Lancee, 2012: 63), which includes language skills, knowledge of the local labor market and employment opportunities, social network ties, and accreditation of foreign credentials (for an overview see Lancee, 2012, Ch. 4). The longer an immigrant resides in a country, the more country-specific capital they acquire, and the better their outcomes on the receiving country labor market are (for Germany see: Bauer et al., 2005: 197-261; Kogan, 2011; for the USA see: Massey and Malone, 2002). Therefore, recent immigrants lacking host country-specific capital often use self-employment as an effective method of overcoming initial labor market deficits (Szarucki et al., 2016). Occupational deregulation such as the 2004 trade and crafts reform reduce entry barriers to self-employment. This offers immigrants a new opportunity to access the otherwise closed labor market and leads to more successful integration.

Although there are financial and social risks involved in self-employment, successful entrepreneurs are rewarded with economic benefits and social recognition (Baycan-Levent and Nijkamp, 2009; Goss, 2005; MacManus, 2001; Thornton, 1999). Self-employed immigrants often experience economic success and upward social mobility in their new

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2 At the same time, the entry restrictions in 35 (of the 41) trades that kept the master craftsman’s certificate as a licensing requirement also became less restrictive after 2004. A companion who had at least six years of work experience in a trade, of which four had to be in a leading position, also became eligible to register a business at the local Chamber of crafts (“reduced licensing requirements”). This rule (the so-called Altgesellenregel) did not extend to trades with a high-risk potential for the customer like chimney sweepers, opticians, hearing aid acousticians, orthopedic technicians including orthopedic shoe technicians and dental technicians (“not liberalized”).
country of residence (Leicht, 2005; Leicht et al., 2015; Portes, 1987; Portes and Jensen, 1989; Waldinger et al., 1990). Hence, they maximize their labor market returns (Borjas 1986, 1987). Immigrant entrepreneurs often outearn their wage-employed co-ethnics as well as contending with and sometimes even surpassing natives (Andrejuk, 2016; Clark and Drinkwater, 2000; Constant and Zimmermann, 2006; Portes and Zhou, 1996; Wilson and Portes, 1980). Furthermore, immigrant business owners often prefer hiring co-ethnic individuals since the costs are lower e.g. no language and cultural barriers (see Light, 1998 for ethnic economies and Portes 1987 for ethnic enclaves). Runst (2018) finds immigrants employment increases in the liberalized occupations after the reform. Therefore, the reform should create more jobs which in turn should increase the average group earnings.

Data

Natural Experiment Design

I causally test the effectiveness of occupational deregulation on occupational earnings and facilitating immigrants’ labor market integration by utilizing the 2004 reform as a natural experiment. Prior to the reform the two groups are subject to the same requirements, yet after the reform 53 crafts are deregulated and 41 are not. Hence, the reform acts as a treatment. The 53 deregulated crafts receive the treatment (treated) and the 41 still regulated do not (control). An allocated treatment with a control group allows me to analyze the causal impact of the reform on self-employment in the crafts and trades sector.

Observing both groups before and after the reform, I estimate difference-in-differences models, which isolate the effect of the treatment on the outcome (Gangl, 2010; Meyer, 1995). By using difference-in-differences estimators I assume that without the reform, all other things being equal, the self-employment activity of the two groups would have continued along similar lines as it had prior to 2004: parallel trends assumption (Gangl, 2010). To
estimate the causal effect of the treatment, I insert three binary independent variables: control/ treated, pre-reform/ post-reform, as well as the interaction of the two into the model. Since the main focus of this paper is the impact that the reform has on the earnings of immigrants and non-qualified individuals in Germany, I interact each of these three independent variables with each nationality and EU group in the model. This results in triple interactions: \( \text{nationality} \times \text{treatment} \times \text{post-reform} \). The outcome variable is the log of individuals’ monthly earnings. I estimate the difference-in-differences using linear probability models (LPM) with cluster-robust standard errors; clustered by occupations. I add fixed-effects for occupation, industrial sector, year, federal state, and the interaction of the two (\( \text{year} \times \text{federal state} \)) in order to control for any time trends. I also include several control variables in the model, see Table A1 in the appendix for a complete list.

I test several alternative explanations to assess the validity of the model parameters and the robustness of the results. I account for the heterogeneous structure of the various groups, occupations, and employment strategies by conducting several additional analyses in which I remove certain occupations and change the self-employment type. Furthermore, one crucial assumption of the difference-in-differences estimator is that no external factors besides the treatment of interest (policy reformation) affect the activity of the two groups (for a detailed account see Gangl, 2010). In order to examine this assumption, I implement placebo tests for the years 2003 and 2005. I do so by setting the year of treatment from 2004 to 2003 or 2005, in those models. This tests if the results are due to the changes that took place in 2004 or if they are due to some exogenous factor other than the reform.

Data

I use the German micro-census for my analyses. The German micro-census is an annually administered repeated cross-sectional survey consisting of a 1% representative...
random sample of all German households (official statistics). I use the Scientific Use File (SUF), which is an anonymized 70% subsample of the surveyed households. The micro-census has a large sample size as well as detailed information regarding both self-employment activity and occupational classification. Based on the 3-digit German occupational codes (Klassifikation der Berufe 1992 (KldB92)), I identify 80 craft and trade classifications: 44 in the deregulated crafts and trades (treatment) and 36 in the still regulated crafts and trades (control). Due to the semi-aggregated structure of the occupational codes, some occupations overlap within one code, however, all 94 crafts and trades are covered within the 80 identified classifications. Refer to table A2 in the appendix for a list of all the occupations.

The large sample size and detailed information regarding occupations make the micro-census a suitable data set for analyzing the 2004 crafts and trades reform. Nonetheless, the micro-census also has some shortcomings. Information regarding migration background is rather meager. I am only able to construct an individual’s country of origin by means of their current citizenship. Moreover, additional information which affects labor market integration such as parents’ country of origin, language skills, and social network ties is also unavailable. However, I attempt to minimize these shortcomings by restricting the main sample to those individuals who arrived after the age of 18 and in the last 12 years, as well as including information on relative group size of the individuals’ respective nationality group (see Kogan and Kalter, 2006 for an example). In doing so, I attempt to control for as much unobserved heterogeneity and any bias due to missing variables as possible (Arellano, 2003).

**Analysis sample**

The analysis sample consists of the years 1997 to 2012\(^3\) and includes all individuals aged 18-65 who work in one of the 94 crafts and trades in a given year. To avoid any issues

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\(^3\) At the time of data preparation, 2012 was the most recent year available for analysis.
concerning individuals who may still be in school or that have entered early retirement I restrict the sample to actively employed individuals between 18 and 65 years old. Actively employed individuals are self-employed (with or without employees), civil servant, or blue- or white-collar worker. They are not on parental or sick leave, apprentices, in the military, family workers, or marginally employed. This results in 359,692 observations in the overall sample. Since the reform should have the greatest impact on newcomers with foreign qualifications I restrict several parts of the analyses to first-generation immigrants who arrived at age 18 or older, native Germans serving as the reference group. Table A3 in the appendix includes a list of the different ethnic groups.

Results

In model 1, I estimate the impact of occupational deregulation on average occupational earnings. In model 1, I run a classical difference-in-differences estimator, not interacting a third category with the reform dummy. The results indicate that occupational deregulation significantly increases earnings for dependent employment (non-self-employed) in the liberalized occupations; there is no significant change in the earnings for independent employment (self-employed) in the liberalized occupations after the reform. The reform causally increases the earnings of craftspersons working in one of the liberalized occupations. Since occupational closure, functions has a barrier to occupational entry by keeping underqualified individuals from entering, the reform should increase the employment of non-qualified individuals.

Accordingly, model 2 estimates the impact of the reform on earnings for three different education categories: low (no post-secondary education), medium (vocational training but no tertiary education), and high (tertiary education). I find that earnings significantly increase for lowly educated dependent employed individuals and significantly
decrease for the other two education categories. Earnings do not significantly change for independent employed individuals for any education group. Occupational deregulation, abolishes formal requirements that kept those lacking the requirements at bay. Once these institutional barriers have been removed, individuals who previously were not allowed to work in those occupations do so. This increases the occupational earnings for non-qualified craftspeople in the liberalized occupations.

As a further analysis I estimate separate models for each of the three education groups. These are separate models for each of the three education groups i.e. the reference group respectively being the liberalized occupations’ control group educational counterpart. Results indicated that earnings significantly increase in dependent employment (non-self-employed) for all three education groups. However, earnings do not significantly change after the reform for independent employment (self-employed) for any of the education groups. These results indicate, that the reform has increased earnings in dependent employment for all education groups when compared only to that education group’s regulated counterpart and not to the other education categories.

Previous studies have shown that immigrants often lack necessary host country-specific capital which hinders them from entering the labor market. Furthermore, immigrants’ occupational qualifications are often mismatched or not fully recognized. Occupational deregulation, by abolishing institutional barriers, should aid immigrants in their labor market integration. In order to test this hypothesis, in model 3 I implement (triple) difference-in-differences estimators that test the causal impact of the 2004 crafts and trades reform on the occupational earnings for various immigrant groups in Germany. Contrary to the theoretical expectations, I find that after the reform earnings significantly increase for dependent employed native Germans employed in one of the liberalized occupations, however, there is
no significant change for any of the immigrant groups. To further investigate this, I implement additional analyses in which I keep only 1st generation immigrants. The results from model 3 do not change: none of the twelve immigrant groups’ earnings significantly change after the reform. In model 3b I estimate the effect of occupational deregulation on the earnings of independent employed immigrants. The estimations indicate that occupational earnings for independent employment has increased for immigrants from middle eastern countries. The results stay unchanged after keeping only 1st generation immigrants.

Rotsam-Afschar (2014) finds that the reform increases entry into self-employment among liberalized occupations and Runst (2018) finds that employment in the liberalized occupations increases among immigrant. Therefore, occupational deregulation may reduce unemployment by opening up employment opportunities to individuals who otherwise would be unemployed. In order to this hypothesis, I analysis the effect of the reform on the earnings of individuals who are currently employed but were unemployed in the previous year. The results of model 4a indicate that this is not the case. There is no significant change in earnings for individuals who were unemployed last year and are currently dependently employed in one of the liberalized occupations. However, the earnings of individuals that were employed last year and are currently dependently employed in a liberalized occupation significantly increases after the reform. Model 4b investigates if occupational deregulation opens up formerly closed markets to unemployed individuals through means of self-employment. Model 4b estimates the effect of the reform on occupational earnings for currently independent employed individuals who were unemployed in the previous year. The reform does not significantly change occupational earnings among individuals who were unemployed last year and are now independently employed.
Discussion and Conclusion
References


