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Rent Sharing and the Gender Bargaining Gap: Evidence from the Banking Sector

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Mit der Reihe „IAB-Discussion Paper“ will das Forschungsinstitut der Bundesagentur für Arbeit den Dialog mit der externen Wissenschaft intensivieren. Durch die rasche Verbreitung von Forschungsergebnissen über das Internet soll noch vor Drucklegung Kritik angeregt und Qualität gesichert werden.

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Contents

Abstract

We use the removal of public bank guarantees in Germany as a quasi-natural experiment to estimate the gender bargaining power gap. Using comprehensive wage data from the universe of banking employees, combined with bank-level financial information, we find that women have approximately two-thirds of the bargaining power of men. Our model-based analysis suggests that this gender bargaining gap alone accounts for 13 to 25 percent of the observed gender wage gap in the sector. These findings highlight an important driver of gender inequality: Changes in firm profitability can reduce the gender wage gap, even without improvements in structural gender equality. This effect has significant implications for high-rent, high-inequality industries such as finance, where rent-sharing mechanisms favor male employees.

Zusammenfassung

Wir nutzen den Wegfall staatlicher Bankgarantien in Deutschland als quasi-natürliches Experiment, um den Unterschied zwischen Männern und Frauen bei der Verhandlungsmacht abzuschätzen. Anhand umfassender Lohndaten von Bankangestellten, kombiniert mit Finanzinformationen auf Bankebene, stellen wir fest, dass Frauen etwa zwei Drittel der Verhandlungsmacht von Männern haben. Unsere modellbasierte Analyse legt nahe, dass diese geschlechtsspezifische Verhandlungsmacht allein 13 bis 25 Prozent der beobachteten geschlechtsspezifischen Lohnlücke in der Branche ausmacht. Die Ergebnisse zeigen eine wichtige Ursache der Lohnunterschiede zwischen Männern und Frauen: Eine Veränderung der Profitabilität von Firmen kannn die geschlechtsspezifische Lohnlücke verringern, ohne dass sich die Gleichstellung der Geschlechter strukturell verbessert. Dieser Effekt hat erhebliche Auswirkungen auf Branchen mit hohen Profiten und hoher Ungleichheit wie der Finanzbranche, in denen der Modus der Verteilung der Profite männliche Beschäftigte begünstigt.

JEL

G21, G28, J16, J31, J71

Keywords

Bank guarantees, rent sharing, gender gap, gender bargaining power gap, bargaining power, gender difference in rent sharing

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1 Introduction

Firm-specific premia have been a substantial driver of wage inequality (Card/Heining/Kline, 2013; Barth et al., 2016; Song et al., 2019) and an important source of gender differences in earnings over the last decades (Card/Cardoso/Kline, 2016; Bruns, 2019; Sorkin, 2017). The financial industry, in particular, has seen dramatic wage increases and higher profits compared to other sectors (Philippon/Reshef, 2012). While women's labor market outcomes have progressed significantly, the financial industry continues to exhibit substantial gender gaps in pay and career opportunities (Hospido/Laeven/Lamo, 2022; Lagaras et al., 2022; Ceccarelli/Herpfer/Ongena, 2023). A potential factor behind this disparity is gender discrimination in rent sharing (Black/Strahan, 2001), as the financial industry is characterized by opaque tasks that generate large agency rents.

In this paper, we leverage a unique setting and a policy reform in Germany to identify gender differences in rent sharing. Using the removal of public bank guarantees as an exogenous shock to profitability, we find that women in the German banking sector have approximately two-thirds of the bargaining power of men. This differential bargaining power explains between 13 and 25 percent of the observed gender wage gap. We highlight a hidden source of improvement for gender equality: the existence of unequal rent sharing.

In our framework, we exploit the fact that public bank guarantees affected only savings banks, and compare the wage outcomes of male and female bankers in savings banks with those in other financial institutions. We introduce a model in a Diamond-Mortensen-Pissarides (DMP henceforth) framework for local labor markets with worker (male and female) and bank heterogeneity (savings banks vs. other banks). We derive corresponding wage equations and demonstrate that, under reasonable assumptions, we can identify "gender bargaining power gap" for bankers by measuring the impact of the guarantee removal on overall rent sharing. This, in turn, allows us to infer the fraction of the gender wage gap explained by the gender bargaining power gap.

Our data includes labor market biographies of all workers/bankers in Germany, along with a large sample of bank-level balance sheets. Using wage data, we can identify the differences of the change in the gender wage gap among employees of savings banks affected by the removal of guarantees. From the bank balance sheet data, we can identify the difference of the change in bank profits due to the reform. Model driven Nash bargaining wage equation allows us to combine these two information to impute the "gender bargaining power gap". By comparing model driven gender wage gap stemming exclusively from the gender differences in bargaining power with the gender wage gap in the data, we infer the fraction of gender wage gap due to the bargaining power difference.

The advantages of our framework is three-fold. First, we use a unique setting for banking sector only, similar to Black/Strahan (2001) and additionally combine it with i) a rich set of time invariant individual and bank specific factors and their interaction, ii) profit information to quantify the gender bargaining power gap, similar to Böhm/Metzger/Strömberg (2023) and Mengano (2022). Second, differently from Mengano (2022), we use one occupation-type; "bankers", hence we can exempt from technological changes which changes the composition of workers and the effect of sorting behavior of workers. Third, we focus on the financial industry, where gender gaps are the largest, as documented by Lagaras et al. (2022), and show that the gender bargaining gap is a great contributor to the observed earnings gap.

Previous literature finds that the removal of government guarantees led to an increase in the borrowing costs of savings banks (Körner/Schnabel, 2013) and limited their credit supply (Gropp/Guettler/Saadi, 2020). We find that this has persistent consequences for wages of bankers in savings banks: After the removal, overall wages decline by around 5 percent. In particular, this decline is more pronounced for male bankers than for female bankers. We estimate that the differences of the change in the gender wage gap between savings banks other financial institutions ranges from 2.0 to 2.2 percent. Hence, following the removal of guarantees, we observe a smaller gender earnings gap in savings banks.

Next, we use bank-level profit data to estimate differential change in profits between savings banks and other types of banks after the reform. We find that savings banks' profitability declines around 9 to 10 percent. The wage equation, driven from the Nash bargaining surplus-sharing rule, allows us to combine these two estimates–"differential change gender earnings gap" and "differential change in profits"–to impute the "gender bargaining power gap". Based on this, we obtain a male bargaining power parameter ranging from 0.45 to 0.66, and a "gender bargaining power gap" ranging from 0.20 to 0.24. This suggests that women in the banking sector have between half and two-thirds of the bargaining power of men. These estimates are in line with Mengano (2022) and Nekby (2003).

Using our DMP framework, which allows for gender asymmetry only in the bargaining parameter and incorporates a range of other parameter values commonly used in the literature, we estimate the impact of a 0.24 percentage point difference in bargaining power on the gender wage gap. Our findings show that the gender bargaining power gap alone can create a 0.04 to 0.08 percentage point difference between the wages of men and women, depending on the parameterization. This finding is in line with the gender wage gap estimates of Caldwell/Haegele/Heining (2025), based on individuals involved in bargaining in Germany. By comparing these estimates with the observed gender wage gap in the banking sector (32%), we conclude that 13 to 25 percent of the gender wage gap in the banking sector can be explained by the "gender bargaining power gap".

The gender bargaining power gap alone suggests an increased gender wage gap, especially in high profit firms, as the literature suggests. Hence, our findings contribute to the broader discussion of gender wage inequality and the higher gender wage gaps observed at the upper end of the distribution. One should consider how much of the decline in the overall gender wage gap over time is due to factors such as higher labor market attachment of women, worker level composition effects, and reduced discrimination (Goldin, 2014; Hsieh et al., 2019), or decrease in overall bargaining power as Mengano (2022) suggests, or simply driven by the decrease in firm specific rents as we find in our setting.

As documented in Jäger et al. (2020), there is a wide range of estimates of worker bargaining power in the literature, and much less is known about gender differences. Black/Strahan (2001) use the staggered implementation of branching deregulation across states and find that wages in the banking sector decline following deregulation, with a larger decrease for men than for women, concluding that rents were primarily shared by men. Card/Cardoso/Kline (2016) find that women receive 90 percent of the firm-specific pay premiums earned by men in Portugal. Biasi/Sarsons (2022) find that women are less likely to negotiate wages, which contributes to the gender wage gap through rent sharing. Caldwell/Haegele/Heining (2025) find that in Germany, among workers whose wages are set by bargaining, there is a 4 to 5 percentage point gender wage gap. Mengano (2022) finds that in the manufacturing sector in France, men's bargaining share is twice as large as women's. Our paper contributes to this discussion by employing a clean identification strategy to estimate gender differences in rent sharing.

Our paper also contributes to the quasi-experimental studies of rent sharing in different labor market settings. Card et al. (2018) document that rent sharing elasticities derived from cross-sectional variation are substantially larger than those obtained through firm level changes in profitability. Studies that rely on plausibly exogenous (and sizable) shocks to profitability –such as firm innovation (Van Reenen, 1996), patent approvals (Kline et al., 2019), or export shocks (Garin/Silvério, 2024)– consistently find larger rent sharing effects. Our estimates of (gender differences in) rent sharing stem from a permanent change in profitability within an industry characterized by high profits and substantial (and rising) wage premia (Böhm/Metzger/Strömberg, 2023; Taskin/Yaman, 2023). Therefore, we argue that the pass-through of profitability to wages in our setting is expected to be strong.

Our findings have important policy implications for addressing gender inequality. Even if there is no change in gender-related structural issues; i.e. unchanged but nonzero gender bargaining power gap in our case, changes in firm profitability might reduce gender gaps. However, such reductions in the gender wage gap might be mistakenly interpreted as improvements in gender equality. This is particularly relevant in the financial industry, where regulation-induced rents and substantial gender earnings inequality persist. To address these disparities effectively, future research must uncover the underlying

mechanisms driving the gender wage gap.

2 Institutional Background

2.1 Banking System and Public Bank Guarantees in Germany

The German banking market consists of three different types of banks: public banks, cooperative banks ("Volks- und Raiffeisenbanken"), and privately owned commercial banks.[1] Commercial banks include large national and international players such as Deutsche Bank and Commerzbank, as well as smaller regional institutions. Public banks consist of federal state banks ("Landesbanken"), which operate nationally, and regionally focused savings banks ("Sparkassen"). Cooperative banks are owned by member firms, established to serve the interests of their members, who are also their customers. Savings and cooperative banks have similar business models (deposit-taking and lending) and are geographically restricted to serving their local administrative districts. In contrast, large commercial banks and, to a lesser extent, federal state banks offer a wide range of services, from loans to investment banking and insurance. For more details on these bank types and their development over time, see Behr/Schmidt (2016).

Savings banks are chartered and owned by local governments and are legally restricted to operate within their chartering municipalities, following the "regional principle". They do not compete with each other; instead, their mandate is to support the local economy by providing households and local businesses with convenient access to credit. Each savings bank is affiliated with a federal state bank, which in turn is linked to a (group of) state(s). Savings banks own a part of their federal state bank, which acts as a regional clearing house, receiving excess liquidity, and providing credit to savings banks with a liquidity shortage.[2]

Until 2001, the liabilities of the savings bank sector were protected by government guarantees ("Gewaehrtraegerhaftung"). This allowed savings banks to borrow at a lower cost, providing them with a competitive advantage over the rest of the banking sector. In 2000, commercial banks filed a complaint against this practice, arguing that the guarantee constituted state aid that violated EU competition rules. European Commission and the German government reached a swift agreement on July 17, 2001, which resulted in the removal of guarantees for savings banks and federal state banks in two steps. The

[1] This is often referred as "Three-Pillar- Banking-System". There are also other types of banks, including mortgage banks, building and loan associations, and special-purpose banks.
[2] Cooperative banks are also part of a similar network of affiliated institutions.

agreement stipulated a transition period until July 2005, during which savings banks could still borrow under government guarantees, provided the debt matured before December 31, 2015. The removal of guarantees took full effect on July 18, 2005: From that point onward, newly contracted debt obligations were no longer guaranteed.

We argue that the 2001 decision induced a funding shock to savings banks directly (through bonds and other debt instruments, Gropp/Gruendl/Guettler (2014)) and indirectly via borrowing through federal state banks (Körner/Schnabel, 2013). This suggests that, after the removal of guarantees, savings banks are expected to have lower profitability relative to the rest of the banking industry. Moreover, the savings banks' reaction to the removal of guarantees would imply further pressure on profitability. Gropp/Gruendl/Guettler (2014) find that the removal of guarantees prompted savings banks to move toward less (risky) lending. After 2001, savings banks cut back on lending especially to riskier and unproductive firms (Gropp/Guettler/Saadi, 2020). Therefore, the removal of guarantees constitutes a shock to the profitability of savings banks, both through the liability side (increase in borrowing costs) and the asset side (decrease in loan volume) of the balance sheet. The period around the removal of guarantees was without major financial system turmoil in Germany. Henceforth, the relative change in saving banks' employee compensation after the removal of guarantees can be directly attributed to profit sharing.

2.2 Collective Contracts in the Banking Sector

Germany is a country where wages are predominantly determined through collective bargaining, despite a decline in collective contract coverage over recent decades. A recent review of the wage-setting system in Germany is provided by Jäger/Noy/Schoefer (2022).

In the banking sector, the coverage of collective agreements is particularly high. In 2004, 90 percent of employees in credit and insurance companies in Western Germany and 80 percent in Eastern Germany were covered by collective contracts (Kohaut/Ellguth, 2005). Savings banks, as part of the public sector, are traditionally included in collective agreements. Consequently, nearly all savings banks adhere to collective wage contracts.

Even for firms covered by collective wage agreements, there is some flexibility in wage-setting policies. Companies are permitted to pay wages exceeding those stipulated in collective contracts. According to Jung/Schnabel (2011), approximately 40 percent of establishments pay wages above collectively negotiated levels, particularly when the establishment's profitability is higher. Moreover, firms have a certain degree of discretion in assigning workers to various wage groups. Firms willing to offer higher compensation can promote workers more rapidly to higher wage categories.

Collective agreements also influence the extent of rent sharing. Unions, through their stronger bargaining power, are better positioned to extract rents for employees. However, collective negotiations can lead to reduced wage flexibility. This aligns with findings in the literature: Hirsch/Mueller (2020) reports that firms covered by collective agreements pay higher levels of wage premia. Whereas Gürtzgen (2009) observes that wage premia in such firms are less responsive to increases in profitability. This means that collective bargaining limits the extent of rent sharing from yearly changing profits, possibly due to transitory factors. In our setting, we estimate the permanent effect of declining profitability on wage outcomes over the medium term. Therefore, the existence of collective agreements is expected to increase rent sharing as suggested by Hirsch/Mueller (2020).

3 Data and Motivating Facts

We use the entire population of individuals labor market biographies from the Beschaftigten-Historik (BeH) working in the financial sector. The BeH is derived from administrative records of the German social security system. It is an administrative data set of all workers covered by social security (excluding civil servants and the self-employed). It includes daily gross wages (base wage plus extra pay) for each job of a worker at a given establishment.[3] Moreover, it has information on employees' gender, age, education, occupation, employment type, and location. For each establishment, we have further information on location, employment size, and 5 digit industry classification. The industry classification allows us to distinguish establishments that belong to savings banks industry and the rest of the credit and financial institutions.

Our sample consists of employment spells of banking specialists (occupation code 691) who worked in the financial sector between 1995 and 2007. We keep the working-age population between the ages 21 and 65. We restrict our attention to full-time employment spells as we have no information on the working hours of part-time workers. In cases of parallel job spells, we choose the job with the highest daily wage. We further drop individuals working in central banks, federal state banks and clearing institutions for cooperative banks.[4] These restrictions leave us with 4,736,830 person-year observations of 609,537 employees in 20,297 establishments within the financial industry over 399 counties. During the period of interest, about 41 percent of individuals work in an establishment that belongs to the savings banks industry (Table 1). This is our treatment group. The rest of the sample is the

[3] Wages are censored at the upper earnings limit for social security contributions. For this group we impute wages following Gartner (2005).

[4] We drop federal state banks from the sample since they engaged in further risk taking during the transition period of the guarantee removal between 2001 and 2005 (Fischer et al., 2014)

control group and consists predominantly of bankers in commercial banks and cooperative banks.[5]

Table 1: Employment distribution of bankers within the financial industry

Financial industry	Employment share (percent)
Commercial banks	29.3
Savings banks	40.9
Cooperative banks	24.9
Rest of the financial institutions	4.8

Note: The industry classification is based on 5-digit WZ 2008 industries. Rest of the financial institutions include institutions such as mortgage banks, building and loan associations, special purpose credit institutions, and other financial services such as leasing, insurance etc.
Source: BeH.

Next, we report the average statistics for individuals who work in savings banks and the rest of the financial industry during the sample period. We split the sample period into three periods based on the timeline of guarantee removal: Before the removal of public bank guarantees (1995-2000), transition period (2001-2004), and the post removal of guarantees (2005-2007). In Table 2, we observe that the banking sector has experienced an increase in real wages during the early 2000s: Between the transition period and the guarantee period, real wages of savings bank employees increased by 6.5 percent and the rest of the financial institutions increased by 9.6 percent. After the removal of guarantees, wage increase in savings banks came to a halt while the rest of the banks experienced further wage gains. This observation highlights that after the removal of guarantees the wages of savings banks and the rest of the financial industry diverge.

During the same period, the developments of male and female wages in savings banks and the rest of the financial industry have further distinguishing properties. While male bankers in savings banks experienced a decline in wages after the removal of guarantees, the wages of female bankers remained unchanged. For the rest of the financial industry, male and female wages followed similar trends after the removal of guarantees, though increase in male wages was stronger. Moreover, the sample period also coincides with a significant change in workforce composition: The share of female bankers has been in steady decline for both treatment and control groups during this period.

To demonstrate the heterogeneity of (gender) wage developments over time, we split the sample into savings banks, cooperative banks, and the rest of the financial industry. Cooperative banks constitute a reasonable control group for savings banks as both follow a

[5] About 5 percent of the final sample includes other credit institutions such as mortgage banks, building and loan associations, special purpose banks, and a small share of bankers working in the rest of the financial industry including funds, leasing and insurance firms etc.

Table 2: Summary statistics on individual wages of bankers by gender and female employment share pre- and post-removal of public bank guarantees

	Time Period			Change	
	1995-2000 (1)	2001-2004 (2)	2005-2007 (3)	(2)-(1) (4)	(3)-(2) (5)
Treatment group: savings banks					
log wages	4.808	4.873	4.876	0.065	0.003
male log wages	4.966	5.018	5.006	0.053	-0.013
female log wages	4.665	4.728	4.731	0.062	0.003
gender gap	0.301	0.291	0.275	-0.010	-0.016
female share	0.525	0.501	0.473	-0.024	-0.028
observations	962,686	590,777	384,549		
Control group: financial institutions					
log wages	4.925	5.021	5.090	0.096	0.069
male log wages	5.070	5.170	5.246	0.100	0.076
female log wages	4.753	4.836	4.884	0.083	0.048
gender gap	0.317	0.335	0.362	0.017	0.027
female share	0.458	0.446	0.432	-0.011	-0.014
observations	1,352,065	875,618	571,135		

Note: Wages are defined deflated using the CPI index. Gender gap is defined as the difference between male and female log wages. Financial institutions include commercial banks, cooperative banks, other credit institutions, investment banks, insurance firms etc. 1995-2000 denotes the time period before the removal of guarantees. 2001-2004 denotes the transition period after the removal decision but before the removal takes effect. 2005-2007 denotes the time period after the removal of guarantees.
Source: BeH.

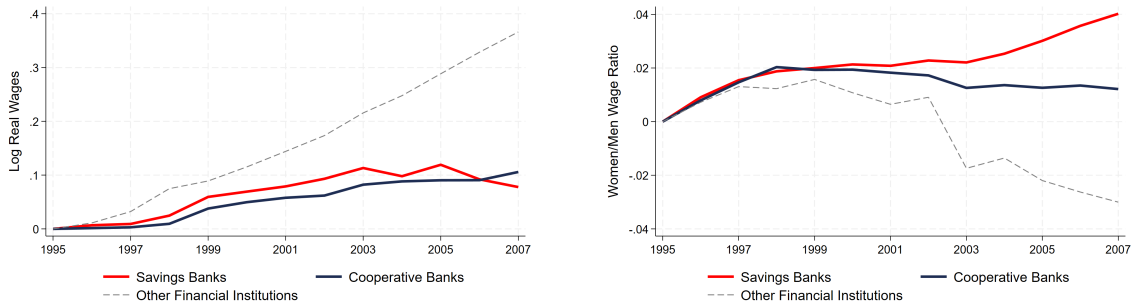
similar business model with a strict regional focus. Moreover, neither type of bank pursues profit maximization as its primary declared goal. Absent guarantees, the earnings trajectory in cooperative banks is expected to be comparable to that of savings banks. The rest of the financial industry is dominated by bankers in (large) commercial banks.

Figure 1 illustrates real wage developments and the ratio of female to male wages for these three groups over time. In Panel (a), we find that between 1995 and 2007 employees in all banks experienced an increase in wages. However, the increase was much stronger for commercial banks and other financial institutions. In contrast, wages of savings bank employees and cooperative bank employees exhibited similar trends until the removal of guarantees. As of 2003, the increase in savings bank wages came to a halt and even declined later. For cooperative banks, the trend continued as before.

The development of the gender wage gap within bankers also exhibits further heterogeneity during the sampling period. Between 1995 and 2000, the relative wages of female bankers increased in both savings banks and cooperative banks. Afterwards, this trend reversed for cooperative banks, and there was a significant decrease in the relative wages of women in

other banks and financial institutions. On the other hand, gender wage gap of savings bank employees shrank further after the removal of guarantees. These observations suggest that after the removal of guarantees, wages in savings banks decline relative to the rest of the financial industry and this decline predominantly come from male wages. This is consistent with the existence of rent sharing occurring mostly among men, as shown by Black/Strahan (2001).

Figure 1: Wage developments of German financial institutions



(a) Wages **(b) Female/Male Wage Ratio**

Note: Panel (a) plots the percent change in bankers' wages in German financial institutions, relative to the year 1995. Panel (b) plots the ratio of female wages to male wages, relative to the year 1995. Wages are deflated using the CPI index. Other financial institutions include commercial banks and the rest of the financial institutions listed in Table 1.
Source: BeH.

4 Model

We consider a standard DMP model with two types of workers (men and women) and two types of banks (savings and other). Our model is suitable for a regional labor market for bankers.[6] We assume that bankers only work in the banking sector of their region and randomly choose to work in savings vs. other types of banks. Hence, there is no mobility across regions, or across occupation types. The value of being employed is:

$$rW_{gbt} = w_{gbt} + \delta[U_{gt} - W_{gbt}] \tag{1}$$

where $g = \{m, f\}$ denotes gender, $b = \{s, o\}$ denotes the bank type and t is time. δ is an exogenous job destruction probability and w_{gbt} is the gender and bank specific log wage.

[6] In general equilibrium, there should be interactions between regions, however, we consider a time frame around 10 years on our estimation, and hence ignore these across-region interactions.

The value of being unemployed is:

$$rU_{gt} = b + \lambda f(\theta_t)[W_{gst} - U_{gt}] + (1-\lambda) f(\theta_t)[W_{got} - U_{gt}] \tag{2}$$

where λ is the fraction of savings banks and W_{gst} denotes the value of being employed in savings banks for gender g and W_{got} denotes the value of being employed in other banks for gender g. $f(\theta_t)$ denotes the job finding probability given labor market tightness θ and b is the outside option value of workers. Value of a job is given by the following equation:

$$rJ_{gbt} = y_{bt} - w_{gbt} + \delta[V_{bt} - J_{gbt}] \tag{3}$$

where y_{bt} denotes the bank specific log job surplus, and V_b the bank specific vacancy value. The vacancy value can be written as:

$$rV_{bt} = -c + \eta p(\theta_t)[J_{fbt} - V_{bt}] + (1-\eta) p(\theta_t)[J_{mbt} - V_{bt}] \tag{4}$$

where c is the vacancy cost, η the probability of facing a female worker and $p(\theta_t)$ is the job filling probability. Hence a bank faces a female (male) worker with an exogeneous probability (depending on the share of available female (male) workers in the market) and with an endogeneous probability $p(\theta_t)$ depending on the labor market tightness.[7] The Nash bargaining surplus sharing rule implies:

$$(1-\beta_g)[W_{gbt} - U_{gt}] = \beta_g[J_{gbt} - V_{bt}] \tag{5}$$

Using equations 1-5 for $g = \{m, f\}$ and $b = \{s, o\}$ and free-entry condition ($V_b = 0$ for $b = \{s, o\}$), we can write the wage equation as:[8]

$$w_{gbt} = \beta_g y_{bt} + (1-\beta_g) rU_{gt} \tag{6}$$

Hence gender g, receives a gender specific bargaining fraction, β_g, of profits of bank type b, y_{bt} and a fraction of gender specific unemployment value, U_{gt}. The wage equation does not have a fully explicit form but our identification relies on differences across bank and gender types, hence the term rU_{gt} disappears in differences.

Differentiating the equation by bank type per gender yields:

$$w_{fst} - w_{fot} = \beta_f (y_{st} - y_{ot})$$

$$w_{mst} - w_{mot} = \beta_m (y_{st} - y_{ot})$$

[7] We assume constant returns to scale matching function $m(v,u) = v^{1/2}u^{1/2}$. Without loss of generality $f(\theta_t) = \theta p(\theta_t)$ and $p(\theta_t) = m(1, 1/\theta)$

[8] Since our identification strategy relies on differences, second terms U_{gt} cancel out and we control for regional variation in empirical estimation.

Differentiating further across genders yields:

$$(w_{fst} - w_{fot}) - (w_{mst} - w_{mot}) = (\beta_f - \beta_m)(y_{st} - y_{ot})$$

Differentiating further over time yields:

$$\Delta(w_{fst} - w_{fot}) - \Delta(w_{mst} - w_{mot}) = (\beta_f - \beta_m)\Delta(y_{st} - y_{ot}) \tag{7}$$

Equation 7 indicates that, within a given regional labor market, the difference of the change in the gender wage gap between different types of banks is proportional to the difference in how bank profits change across those bank types, weighted by the gender difference in bargaining power.

5 Estimation Strategy

Our equations above are for a given regional labor market, and we assume that labor market tightness θ might differ across regions. However, in our empirical specification we use regional dimension as well. We assume that the change in job surplus has a regional and idiosyncratic component which is the same across bank types. Savings banks also experience a reform effect in their profitability. Hence:

$$\Delta y_s = \gamma_{reform} + \epsilon_{ct} + \epsilon_{bt}$$

$$\Delta y_o = \epsilon_{ct} + \epsilon_{bt}$$

Under these assumptions, the effect of the guarantee removal on bank profitability, γ, can be estimated using the following model:

$$y_{bt} = \gamma\ savings_b \times post\text{-}2000_t + \delta Z_{bt-1} + \epsilon_b + \epsilon_{ct} + \epsilon_{bt} \tag{8}$$

Here, y_{bt} measures the yearly bank level profits before taxes and employee compensation. We control for bank ϵ_b and county-time fixed effects ϵ_{ct} and a list of bank level variables Z_{bt-1} (log assets, log employment, equity, liquidity and deposits to assets ratio) related to firm profitability. γ identifies the additional change in profits that savings banks experience after the removal of guarantees, hence $\hat{\gamma} = \Delta(y_{st} - y_{ot})$.

Worker wages can be estimated in a similar fashion:

$$w_{ibt} = \alpha_1 \, savings_b \times post\text{-}2000_t + \alpha_2 \, savings_b \times female_i \times post\text{-}2000_t + \\ \delta_1 X_{it-1} + \delta_2 X_{bt-1} + \psi_{ib} + \psi_{ct} + \epsilon_{ibt} \tag{9}$$

Here, w_{ibt} denotes log daily wages for worker i at bank (branch) b at year t. Bank branch b identifies an establishment that belongs to a bank group such as savings banks. We include person-establishment fixed effect ψ_{ib} which controls for time invariant wage premia of workers, establishments and matching of person types with bank types. County-time fixed effects ψ_{ct} account for regional labor market conditions such as market tightness. We further control for a set of person (age, gender, education), X_{it-1}, and establishment (size), X_{bt-1}, characteristics that effect wage outcomes. To address changes in the composition of labor over time, we allow the effect of these characteristics to vary from year to year. α_1 identifies the change in wages of savings bank employees relative to the rest of the financial industry after the removal of guarantees. This is common for both genders. α_2 identifies the additional change in wages of female savings bank employees after the removal. Hence, $\hat{\alpha_2} = \Delta(w_{fst} - w_{fot}) - \Delta(w_{mst} - w_{mot})$ and $\hat{\alpha_1} = \Delta(w_{mst} - w_{mot})$.

We separately regress bank profitability and individual wage equations and estimate the effect of guarantee removal on bank profitability: $\hat{\gamma}$, and wage outcomes of savings bank employees: $\hat{\alpha_1}$ and $\hat{\alpha_2}$. Using our empirical estimates and equation 7 from our model, we can identify the bargaining parameter of males, β_m, and the gender difference in bargaining $\beta_f - \beta_m$ as:

$$\hat{\gamma}(\beta_m) = \hat{\alpha_1} \tag{10}$$

$$\hat{\gamma}(\beta_f - \beta_m) = \hat{\alpha_2} \tag{11}$$

6 Empirical Results

To demonstrate the effect of public bank guarantees on the wages of savings bank employees, we start with a model without distinguishing the additional effect of gender between employees in savings banks and in other financial institutions. We separately run wage regressions for the full sample (savings banks vs. all financial institutions) and local banks sample (savings banks vs. cooperative banks). Table 3 and A9 report the change in wages of savings bank employees after the removal of guarantees for the full sample and local banks sample respectively.

Table 3 column 1 suggests that average wages in savings banks decline by 3.6 percent after

Table 3: Wages after the removal of guarantees: savings banks vs. all financial institutions

Wages	baseline regression		de-trended regression	
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.036***	-0.019**	-0.023**	-0.009
	(0.011)	(0.007)	(0.010)	(0.007)
Savings × post-2004		-0.057**		-0.049**
		(0.021)		(0.020)
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,736,830	4,736,830	4,736,830	4,736,830

Note: The table shows regression coefficients of baseline wage estimation for the full sample of all bankers. Savings takes the value of 1 when the establishment is a savings bank. Pre (Post) guarantee time period includes 1995-2000 (2001-2007). The dependent variable is individual log daily wages. Fixed effects include person-establishment fixed effects and county-year fixed effects. Controls include interaction of gender, age, education, establishment size indicators with year dummies. Standard errors (in parentheses) are double clustered at the establishment and year level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively. Source: own calculations.

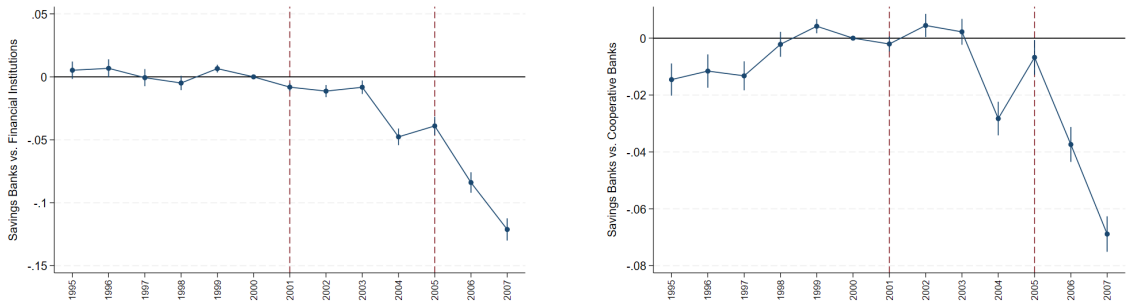
the removal of guarantees. In column 2, we further allow the effect of guarantee removal to occur in two steps: between 2000 and 2004 (transition period) and after 2004 (complete removal). We find that the effect becomes much stronger (5.7 percent) once the removal of guarantees is fully in place. Estimation using the local banks sample supports the qualitative conclusion: Wages in savings banks relative to wages in cooperative banks decline after the removal of guarantees (Table A9, column 1) and that the effect is stronger after 2004 (column 2). However, the results are statistically insignificant.

Next, we estimate a dynamic version of the same model above, separately for the full sample and the local banks sample. Figure 2 highlights notable deviations from parallel trends: The wages of savings bank employees have been slightly declining relative to the rest of the financial institutions before 2001. The reverse is true for the comparison between savings banks vs. cooperative banks.

To address the role of pre-trends, we separately estimate wage regressions for the years between 1995 and 2000 (the guarantee period) and interact a year trend with savings banks indicator.[9] The estimated trend is then subtracted from the observed wages of the entire sample period and de-trended wages are regressed against the same independent variables as before. The resulting coefficients are available in columns 3 and 4 in Table 3. As expected, part of the effect in the full sample was due to trend differences. Average effect of the removal of guarantees becomes 2.3 percent and additional effect after 2004 becomes 4.9

[9] As in the formal effect analysis, we include the full set of fixed effects and controls introduced in the previous section

Figure 2: Wages in savings banks relative to financial institutions over time



(a) Full sample **(b) Local banks sample**

Note: The figure shows regression coefficients using a dynamic version of baseline wage estimation separately for the full sample and the local banks sample. Panel (a) plots the change in wages of savings bank employees relative to all financial institutions. Panel (b) plots the change in wages of saving banks employees relative to cooperative banks. All regressions include the full set of fixed effects and controls as described in Section 5. Source: own calculations.

percent. Column 4 further indicates that the majority of the decline occurs after 2004, in the post-removal period. This means that while anticipation of the removal of guarantees might have already affected the lending behavior savings banks as in Gropp/Gruendl/Guettler (2014), the transmission of these changes to employee compensation primarily takes place once the removal takes effect.[10] Therefore, we argue that the effect of the removal on wages can range between 2.3 percent and 4.9 percent. While the former reflects the change in average compensation including anticipation of the guarantee removal, the latter captures the precise post-removal effect.

Finally, we repeat the same analysis using a local banks sample of savings banks and cooperative banks. In this case, the pre-trend works against the estimation of the effect (Figure 2). After de-trending, we find significant wage declines in savings banks compared to cooperative banks following the removal of guarantees takes effect. The average wage decline in savings banks is 2.2 percent (almost the exact figure as in the full sample) and the additional effect is 3.6 percent (Table A9).

[10] Later, we show that savings banks' profitability relative to that of other banks becomes significantly negative as early as 2001 and declines further on and after 2005.

6.1 Gender Wage Effects

Figure 1 reveals that estimated decline in wages of savings bank employees in Table 3 and A9 could mask considerable heterogenity with regard to gender. In this section, we estimate the full gender wage model as introduced in equation 9. As before, we estimate the baseline wage regressions and de-trended wage regressions for the full sample and local banks sample. Table 4 column 1 suggests that, while wages of male bankers in savings banks decline by 4.4 percent after 2000, female bankers in savings banks experience a 1.7 percent increase in wages relative to that of male bankers. As expected, the majority of the male and female wage divergence appear after 2004: 0.9 percent increase takes place during the transition period and 2.2 percent additional increase takes place after the removal. Since we use trend regression without gender interaction, it only corrects the base effect for both genders. Under this assumption, the decline in average male wages in savings banks is 3 percent (column 3) and the additional effect after the removal is 5.9 percent (column 4).

Table 4: Wages of males and females after the removal of guarantees: savings banks vs. financial institutions

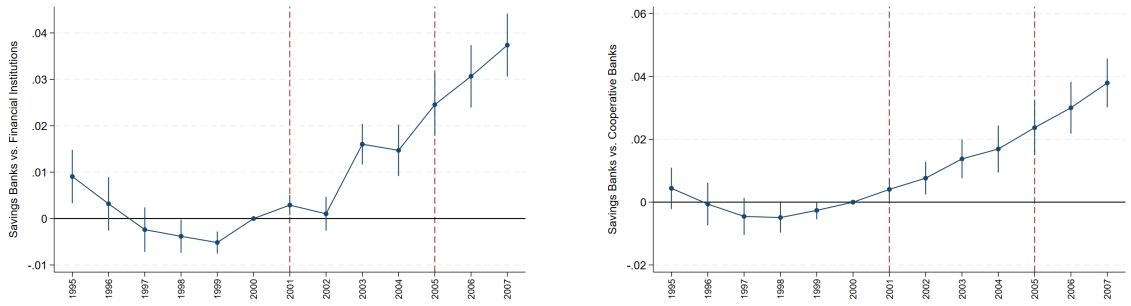
Wages	baseline regression		de-trended regression	
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.044***	-0.023**	-0.030**	-0.013
	(0.013)	(0.008)	(0.012)	(0.008)
Savings × female × post-2000	0.017**	0.009*	0.016**	0.008*
	(0.006)	(0.004)	(0.006)	(0.004)
Savings × post-2004		-0.067**		-0.059**
		(0.023)		(0.021)
Savings × female × post-2004		0.022***		0.022***
		(0.005)		(0.005)
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,736,830	4,736,830	4,736,830	4,736,830

Note: The table shows regression coefficients of baseline gender wage estimation for the full sample of all bankers. Savings takes the value of 1 when the establishment is a savings bank. Pre (Post) guarantee time period includes 1995-2000 (2001-2007). The dependent variable is individual log daily wages. Fixed effects include person-establishment fixed effects and county-year fixed effects. Controls include interaction of gender, age, education, establishment size indicators with year dummies. Standard errors (in parentheses) are double clustered at the establishment and year level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

Next, we estimate a dynamic version of the baseline gender wage model, separately for the full sample and the local banks sample. Panel (a) in Figure 3 plots the coefficient on the triple interaction term female-savings banks-year. The figure exhibits that female savings bank employees experience similar wage developments compared to employees in the rest

of the financial institutions before the removal of guarantees. After the removal decision, female wages start to increase and the relative change becomes close to 4 percent by 2007. Comparison between savings banks vs. cooperative banks yields quantitatively similar outcomes (Panel (b)). These findings suggest that while overall wages have been exhibiting different trends for savings banks and other banks and financial institutions, the ratio of female to male wages has not. In other words, the triple interaction coefficient provides an unbiased estimate of the effect of guarantee removal.

Figure 3: Female wages in savings banks relative to financial institutions over time



(a) Full sample **(b) Local banks sample**

Note: The figure shows regression coefficients from the triple interaction term of female-savings banks-year using a dynamic version of baseline wage estimation separately for the full sample and the local banks sample. Panel (a) plots the change in wages of female savings bank employees relative to all financial institutions. Panel (b) plots the change in wages of savings bank employees relative to cooperative banks. All regressions include the bank fixed effects and the same set of controls as described in Section 5.
Source: own calculations.

We repeat the same estimation using the local banks sample. In Table A10, we estimate that the average effect of guarantee removal on relative female wages in savings banks is 1.8 and 1.9 percent. As in the full sample, majority of the male and female wage divergence appears after 2004: 1.2 percent increase takes place during the transition period and 2.0 percent additional increase takes place after the removal. These coefficients are remarkably similar to the coefficients estimated using the full sample.

6.2 Bank Profitability

Our theory based wage regressions indicate that the decline in savings banks' wages after the removal of public bank guarantees is due to lower profitability. In addition, previous literature has shown that removal has caused higher funding costs for savings banks and led them to decrease risky lending activity. In this section, we investigate the extent to which

removal of guarantees induces a decline in profitability for savings banks. This allows us to recover bargaining parameters for males and females. For this, we use balance sheet and income statement information of banks in Germany from Bankscope. We use the regression model in Equation 8 to estimate the effect of the removal of guarantees on bank level profit per assets and log profit per employee.

Our sample includes savings banks, commercial banks, cooperative banks and few other privately owned financial intermediation institutions such as mortgage banks etc. We drop those institutions with zero assets, employment and employee compensation. Further, we restrict that each bank appears for three years both before and after the removal of guarantees between 1995 and 2007. Following the literature on rent sharing (Card et al., 2018; Böhm/Metzger/Strömberg, 2023), we use bank profits before taxes and employee compensation.[11] All variables in the sample are winsorized at the 1 percent level.

Results in Table 5 column 1 suggest that after the removal of guarantees savings banks profits to assets ratio decline by 0.2 percentage points. This is robust to a variety of specifications with further controls (column 2), with location X time fixed effects (Table A14, columns 1 and 2), using cooperative banks as a control group (Table A15, columns 1 and 2) Profit per employee, on the other hand, declines close 10 percent in certain specifications. This suggests that savings banks experience a strong decline in profitability after the removal of guarantees.

It is possible that the profitability of savings banks has already been experiencing different trends relative to the rest of the banking industry. This presents a challenge for identifying the effect of guarantee removal. To inspect this, we replace the bank profit regression in equation 8 with a dynamic model that interacts the savings banks indicator with year fixed effects. Figure 4 suggests that savings banks' profits relative to the rest of banking industry exhibited similar trends prior to the removal of the guarantees for both measures of profits to assets (Panel (a)) and log profits per employee (Panel (b)). After 2001, and especially after 2005, the profitability of savings banks starts to decline.

6.3 Robustness

Our rich set of effects and controls account for time invariant compositional differences between savings banks and other banks, as well as gender, age, education specific wage

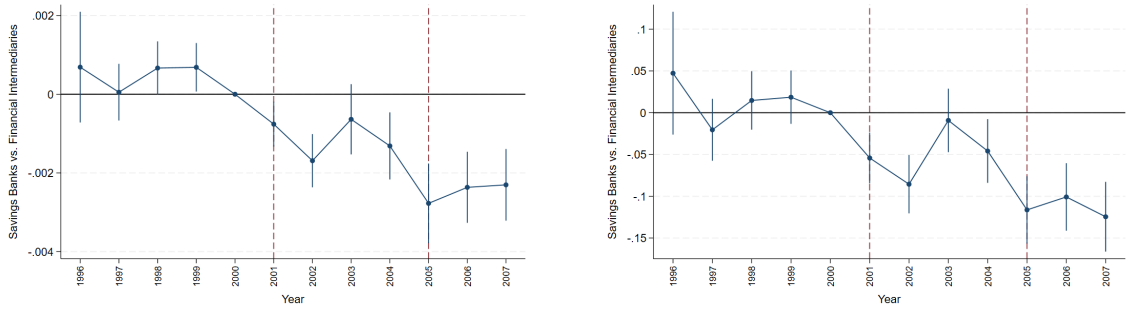
[11] Most common proxy of profitability for non-financial corporations is value added which is EBIDTA plus employee compensation. As pointed out by Böhm/Metzger/Strömberg (2023), value added for banks requires a different accounting: Unlike non-financial corporations, interest (and other financial) income and expenses constitute the core part of profits. Profits before taxes plus employee compensation provides the same notion of value added for banks.

Table 5: Profits after the removal of guarantees: Savings Banks vs. Financial Intermediaries

Profits	profit per assets		log profit per employee	
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.0023***	-0.0020***	-0.0514***	-0.0816***
	(0.0003)	(0.0003)	(0.0126)	(0.0125)
Bank Controls	No	Yes	No	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	9,719	9,719	9,666	9,666

Note: The table shows regression coefficients of baseline profit estimation for the full sample of banks. Savings takes the value of 1 when the bank is a savings bank. Pre (Post) guarantee time period includes 1996-2000 (2001-2006). The dependent variable is bank profits, defined as (log) profits before taxes and employment compensation to assets (employment). Bank controls include lagged log total assets, log employment, equity, liquid assets and deposits to assets. Fixed effects include bank and time fixed effects. All the variables are winsorized at the 1 percent level. Standard errors (in parentheses) are clustered at the bank level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

Figure 4: Savings banks' profits relative to rest of the financial intermediaries over time



(a) Profit per Assets **(b) Log Profit per Employment**

Note: The figure shows regression coefficients using a dynamic version of baseline profits estimation. Panel A shows coefficients for profits per assets, Panel B shows coefficients for log profits per employee. All regressions include the same set of fixed effects and controls as described in Section 5.
Source: own calculations.

developments over time. However, it is still possible that (female) wages in savings banks are affected by the re-allocation of worker types between financial institutions. To address these time-variant selection factors, we employ several estimation strategies.

First, we introduce a tighter specification with establishment-time fixed effects to control for bank-type specific wage trends over time (Table A11). This setting assumes a common trend factor for both males and females working in the same establishment. Accordingly, only the

relative female wages in savings banks after the removal of guarantees is identified. We find that average effect of the removal of guarantees on relative female wages is 1.8 percent for the full sample and 1.6 percent for the local banks sample. As before, the majority of the effect occurs after the complete removal, where we estimate coefficients that are remarkably similar to those estimated without establishment-time fixed effects.

Next, we split the sample into males and females and estimate the same model separately for each group. This strategy allows us to control for local labor market effects separately for each gender and to address gender-specific trend differences between savings banks and other financial institutions. Table A12 presents the results for the full sample. We find that baseline regression produces virtually the same results as those in Table 4 (columns 1 and 2). Trend regressions, however, imply a lower wage decline for females in savings banks after the removal decision.

Finally, we address the possibility that the change in composition of males and females may differ between savings banks and other financial institutions. Table 2 reveals that the share of female bankers has declined in the banking sector, with a sharper decline for savings banks. This observation persists even after controlling for other demographic and local labor market factors. Moreover, the decline in female workers resulted in a higher share of skilled females in savings banks net of other compositional factors.[12] To account for this compositional change, we focus on a balanced sample of bankers who appear in the dataset throughout the entire estimation period (1995-2007) and do not switch financial institutions. Estimates obtained using this sample are not biased the mobility of males and females into and out of savings banks over time. We find that relative female wages in savings banks increase by 1.5 (1.3) percent in the full balanced sample (local banks sample) (Table A13). The smaller coefficients compared to Table 4 and Table A10 imply that part of the effect may be driven by changes in compositional differences.

7 Quantitative Results

In this section, we first impute the gender bargaining power gap using our empirical estimates and model-driven equation 7. Second, we experiment with the model implied gender wage gap by using different parameterizations to quantify the effect of the gender gap in bargaining power, enabling us to make inference about what fraction of the gender wage gap is due to the differences gender bargaining power. Finally, we run a model exercise with a “productivity shock” to the savings banks, to observe the direct and indirect

[12] The results are available upon request.

effects on male and female wages and discuss potential spill-over effects.

7.1 Imputation

We use the effect of the removal of guarantees on savings banks' profitability ($\hat{\gamma}$ in equation 8) and on male and female wages in savings banks ($\hat{\alpha}_1$ and $\hat{\alpha}_2$ in equation 9) to impute the gender bargaining power gap, $\beta_f - \beta_m$, as outlined in equation 11.

How do we quantify the effect of guarantees on savings banks' profitability? Figures from dynamic estimation (Figure 4) suggest that profitability began to decline during the transition period and accelerated after the removal. Therefore, an average effect over the transition and removal periods (2001-2007) would provide a reliable estimate. We have two proxies for profitability: profit per assets and log profit per employee. The advantage of the latter is that it has a theoretical counterpart in the wage function that we introduce in Section 4. However, employment data from the bank balance sheets contains a considerable measurement error that also fluctuates over time. Moreover, the estimation period coincides with strong employment trends in the banking sector, as seen in our aggregate employment data. Accordingly, we obtain a range of estimates on the effect of the removal of guarantees based on available controls, fixed effects, and the estimation sample. The advantage of using profit per assets is that it is a stable measure across a range of business decisions over time. This is evident in the stability of the coefficients with different models. The disadvantage is that this measure does not account for the changes in productivity of the banking sector employees, as it relies instead on the size of the bank. Additionally, we need to transform the coefficient to semi-elasticity by using a measure of average profit per assets.

It turns out, while the measures have distinctive properties, the estimated elasticities are quite similar: Average effect of guarantees on profit per employees ranges between 8.3 percent (from the full sample) and 9.8 percent (from the local banks sample). If we use the estimate on profit per assets using the full sample (0.0020, Table 5 column 2) with an average of 1.9 percentage points profitability during the estimation period, we obtain the effect to be 10.5 percent (0.002/0.019). For the local banks sample, this effect is 13 percent (0.0025/0.0193).

Although savings banks' profits started to decline during the transition period (Figure 4), this is not immediately reflected in bankers' wages in savings banks (Figure 2). Guiso/Pistaferri/Schivardi (2005) demonstrate that firms insure their employees against transitory shocks to profitability. Moreover, labor institutions such as collective bargaining and work councils limit the reaction of wages to negative shocks. Inspection of the wages in

the savings banks during the transition period and after complete removal indicates that the majority of the effect occurs during the latter period (Table 3). Henceforth, we use the interaction coefficients from the variables $savings \times post\text{-}2004$ and $savings \times female \times post\text{-}2004$ as estimates of α_1 and α_2 respectively.

Table 6 reports our results for two sets of estimates that come from the estimation using the full sample (row 1) and a sample of local banks (row 2). The first column reports the estimated differential change in male wages, whereas the second column reports the estimated differential change in the gender wage gap. We use the estimates in column 4 from Table 4 and Table A10. The third column reports the estimated differential change in bank profits. We use 9 percent for the full sample and 10 percent for the local banks sample. Inserting these estimates into equations 10 and 11, gives us an imputed gender gap in bargaining power between 0.20 and 0.24.

Table 6: Imputed Gendered Bargaining Power

	Estimated			Imputed		
Specification	$\hat{\alpha}_1$	$\hat{\alpha}_2$	$\hat{\gamma}$	$\beta_f - \beta_m$	β_m	β_f
(1)	-0.059	0.022	0.09	-0.24	0.66	0.42
(2)	-0.045	0.020	0.10	-0.20	0.45	0.25

Source: own calculations.

How do our estimates of (gender) bargaining power compare to those in the rent sharing literature? Card et al. (2018) note that the elasticities of wages with respect to the value added per worker range between 0.05 and 0.15. In particular, Böhm/Metzger/Strömberg (2023) provide an estimate of 0.109 for financial firms in Sweden. Most of these findings are derived from yearly profit variations, which include transitory shocks and measurement errors. IV strategies that use variables correlated with persistent changes in profits tend to yield larger rent sharing effects (see Abowd/Lemieux (1993), Van Reenen (1996) and Kline et al. (2019)). Our identification strategy relies on a diff-in-diff comparison between savings banks and the rest of the financial institutions, covering up to seven years after the decision of the removal of guarantees. Therefore, our bargaining power estimates capture the impact of a permanent change in profitability on wages.

7.2 Model Implications

In this section, we estimate model-implied gender wage gap using standard parameters from the literature and our estimate of the "gender bargaining power gap": $\beta_f - \beta_m$. Since the only gender asymmetry in the model stems from differences in bargaining power, the

resulting gender wage gap is solely driven by these differences. Thus, by comparing model-implied gender wage gap to its data counterpart (which may include various other gender asymmetries), we can assess what fraction of the gender wage gap is driven by differences in bargaining power.

In the literature productivity ($y_s = y_o = 1$) is normalized to 1 and a wide range of values are used for workers' bargaining share β, outside option b, job destruction rate δ, discount rate r and labor market tightness θ.[13] For transparency, we experiment with parameter values from different sources and 1) report the implied gender wage gap, 2) analyze the effect of changing one parameter at a time on the gender wage gap. We assume $\beta_f = \beta - 0.12$ and $\beta_m = \beta + 0.12$ to impose 0.24 ppt gender bargaining power difference as imputed in the first row of Table 6. Here β is the value used in the literature and β_f and β_m are the gender specific bargaining parameters in our framework. The fraction of savings banks λ, estimated from the data, is 0.42.

Table 7: Parameters

Parameters	Definition	Shimer (2005)	Hagedorn Manovskii (2008)	Pissarides (2009)	Hochmuth et al. (2021)
θ	Tightness	0.9869	0.634	0.72	0.25
r	Discount rate	0.048	0.01	0.048	0.01
β	Bargaining power	0.72	0.15*	0.5	0.5
δ	Job Destruction	0.4	0.0972	0.432	0.016
b	Outside Option	0.4	0.85*	0.71	0.67
y_s	Productivity (savings)		1		
y_o	Productivity (other)		1		
β_f	Female bargaining power		β-0.12		
β_m	Male bargaining power		β+0.12		
λ	Fraction of savings banks		0.42		

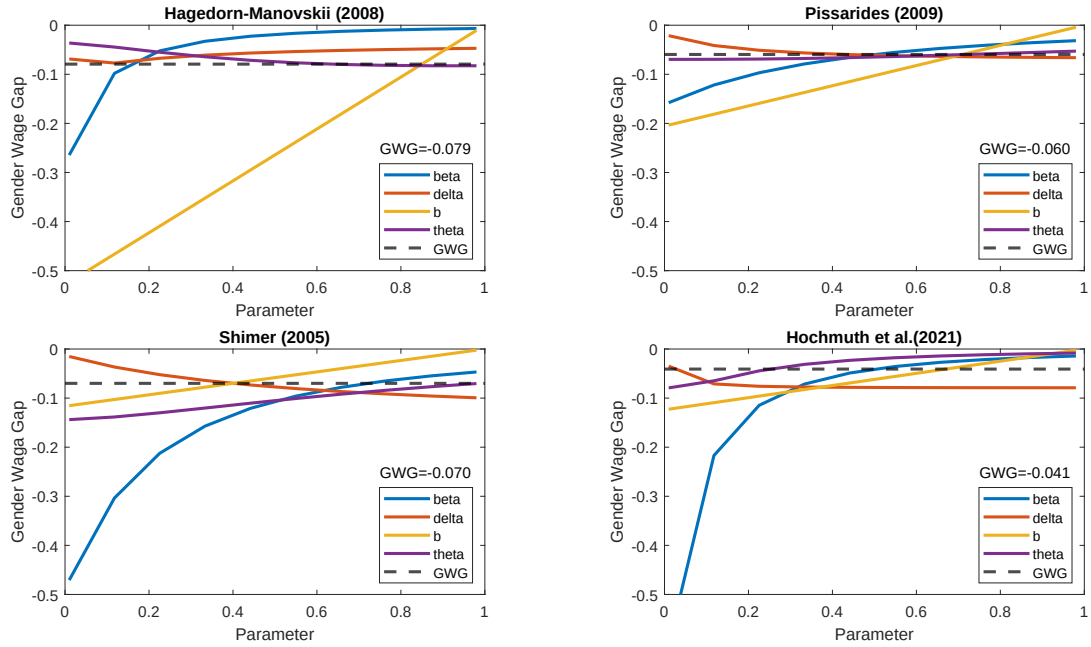
Note: Hagedorn and Manovskii (2008) assumes $\beta = 0.052$, which is too low for us to implement our gender bargaining difference of ± 0.12. Hence, we adjust this value slightly to be 0.15 that enables us to use gendered difference. Also, they assume unusually high outside option $b = 0.955$. Given our policy experiment of decreasing y_S to 0.91, there cannot be an interior solution as nobody will accept to work in savings banks. Hence we adjust b slightly to be 0.85, which enables us to run our experiments meaningfully. However, parameter values are still closer to Hagedorn and Manovskii (2008) then to other papers.
Source: own calculations.

We use parameter values from three main papers (Shimer, 2005; Hagedorn/Manovskii, 2008; Pissarides, 2009) as well as by Hochmuth et al. (2021) to use values better calibrated for Germany. Table 7 reports the parameter values used in the estimation. In every sub-panel of Figure 5, we report the gender wage gap (GWG) value under the set of parameter values from Table 7, as well as its variation if we were to assume different range of values. Outside

[13] We use a partial equilibrium framework and only use wage equations, hence take labor market tightness as exogenous. Since our experiment represents only a small subset of the whole economy, this is a reasonable assumption.

option b and average bargaining power β have a large impact on the gender wage gap. When we use the calibration parameters of each study, the implied gender wage gap ranges between 4.1 and 7.9 percent. This is the pure impact of 24 percent difference in gender bargaining power. It is important to emphasize that a recent study by Caldwell/Haegele/Heining (2025) find that in Germany, among workers whose wages are set by bargaining, a 4 to 5 percentage point gender wage gap exists, after controlling for various characteristics and hours worked. Our model's implications fall within this range of estimates. Observed gender wage gap in the banking sector was 32 percent prior to the reform. Hence, gender bargaining power gap can explain between 13 and 25 percent of the overall gender wage gap in the banking sector. Considering various other factors contributing to the gender wage gap, this is a substantial share.

Figure 5: Gender Wage Gap with Different Parameter Values



Note: Gender wage gap is defined as $log(w_f) - log(w_m)$. X-axis represents the value range of each parameter value. Reported GWG (gender wage gap) is the resulting value when same parameter values as in each of these studies are used, except the gender bargaining power gap.
Source: own calculations.

Finally, we conduct an additional exercise to observe the direct and indirect effects of changes in profitability on gender wage gap across different types of banks. In the symmetric scenario where both savings and other banks have the same productivity level, the gender wage gap is the same across different bank types. In order to simulate the policy change, we change the productivity level of savings banks and analyze the resulting gender wage gap. Table 8 shows how gender wage gap in different bank types responds to the change in y_s. For this exercise, we use the reference value of 9 percent decline as

documented in Table 6. Each column reports the initial gender wage gap, the impact of the policy (i.e., the change in the gender wage gap across different bank types), and the differential change across bank types, which is consistently 0.022.[14] In addition, each model specification (with different parameter values) provides different implications for changes in bank-specific gender wage gap.

It is straightforward to observe that in response to a negative productivity shock in savings banks, both male and female wages decline. However, due to men's larger bargaining share, their wages decrease more, reducing the gender wage gap (Figure A6). A more implicit effect is also observed in other bank types: As wages fall in savings banks, workers in other banks have lower outside option values, which negatively affects their wages as well. However, due to gender differences in bargaining power, the impact of outside option is larger female wages than for male wages. Hence, female wages decline relatively more than male wages in other banks, as their lower bargaining power makes their wages more sensitive. As a result, gender wage gap widens in other banks. This mechanism in the model suggests that differential development of the gender wage gap in Figure 1 may also be driven by the policy through these spillover effects.

In the last two columns of Table 8, parameter values are taken from Shimer (2005) and Hochmuth et al. (2021). They show relatively large spillover effect to other banks. 77 percent of the change in relative gender wage gap across bank types is driven by lower gender wage gap in savings banks, whereas 23 percent of it is driven by higher gender wage gap in other banks. Parameter values by Pissarides (2009) on the other hand reveals lower spillover effect to other banks. Finally, parameter values by Hagedorn/Manovskii (2008) drives negative spillover effect to other banks where they also do experience a shrinking gender wage gap, due to a very high outside option parameter $b = 0.85$ value, which makes the other forces relatively less important.[15]

8 Conclusion

Our study provides a detailed examination of gender differences in rent sharing within Germany's banking sector, using a unique policy reform as a natural experiment. Leveraging

[14] which corresponds to our $\hat{\alpha_2}$ in Table 4.

[15] Hagedorn/Manovskii (2008) assumes $\beta = 0.052$, which is too low for us to implement our gender bargaining difference of ± 0.12. Hence, we adjust this value slightly to be 0.15 that enables us to use gendered difference. Also, they assume unusually high outside option $b = 0.955$. Given our policy experiment of decreasing y_S to 0.91, there cannot be an interior solution as nobody will accept to work in savings banks. Hence we adjust b slightly to be 0.85, which enables us to run our experiments meaningfully. However, parameter values are still closer to Hagedorn/Manovskii (2008) then to other papers.

Table 8: Productivity Shock

	Hagedorn Manovskii (2008)	Pissarides (2009)	Shimer (2005)	Hochmuth et al. (2021)
Initial GWG	0.079	0.060	0.070	0.041
		Post Productivity Shock		
GWG in Savings Banks	0.0468	0.0393	0.0530	0.0237
GWG in Other Banks	0.0684	0.0609	0.0746	0.0453
		Pre-Post Change		
ΔGWG in Savings Banks	0.033	0.020	0.017	0.017
ΔGWG in Other Banks	0.011	-0.001	-0.005	-0.004
Differential Change	0.022	0.022	0.022	0.022

Source: own calculations.

bank-region level data and a Nash bargaining framework, we find that women in this sector possess only about two-thirds of the bargaining power of their male counterparts. Importantly, our findings indicate that reductions in firm profitability, such as those experienced by savings banks after the reform, can incidentally narrow the gender wage gap, underscoring the complex relationship between firm-level economic dynamics and gender equity. Furthermore, our quantitative exercise implies that, differences in gender bargaining power gap alone translates into 13 to 25 percent of the existing gender wage gap in the banking sector.

Our analysis highlights critical implications for policymakers and researchers alike. While declining gender wage gaps might be celebrated as progress, our results caution against interpreting such changes as definitive evidence of improved gender equality, especially when structural issues like the gender bargaining power gap persist. Future research should focus on disentangling the nuanced contributors to gender wage disparities, such as firm profitability, industry-wide wage contracts, and bargaining power dynamics. Addressing these hidden elements is essential for developing informed policies to promote genuine and sustainable gender equity in the workplace.

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Appendix

9 Additional Empirical Results

Table A9: Wages after the removal of guarantees: savings banks vs. cooperative banks

Wages	baseline regression		de-trended regression	
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.009	-0.001	-0.022**	-0.012
	(0.008)	(0.007)	(0.008)	(0.007)
Savings × post-2004		-0.028		-0.036*
		(0.016)		(0.018)
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	3,117,139	3,117,139	3,117,139	3,117,139

Note: The table shows regression coefficients of baseline wage estimation for all bankers working in local banks. Savings takes the value of 1 when the establishment is a savings bank. Pre (Post) guarantee time period includes 1995-2000 (2001-2007). The dependent variable is individual log daily wages. Fixed effects include person-establishment fixed effects and county-year fixed effects. Controls include interaction of gender, age, education, establishment size indicators with year dummies. Standard errors (in parentheses) are double clustered at the establishment and year level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

Table A10: Wages of males and females after the removal of guarantees: savings banks vs. cooperative banks

Wages	baseline regression		de-trended regression	
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.017	-0.006	-0.031**	-0.017*
	(0.010)	(0.008)	(0.011)	(0.008)
Savings × female × post-2000	0.018**	0.011**	0.019**	0.012**
	(0.007)	(0.005)	(0.007)	(0.005)
Savings × post-2004		-0.037*		-0.045**
		(0.018)		(0.020)
Savings × female × post-2004		0.020***		0.020***
		(0.006)		(0.006)
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	3,117,139	3,117,139	3,117,139	3,117,139

Note: The table shows regression coefficients of baseline wage estimation for all bankers working in local banks. Savings takes the value of 1 when the establishment is a savings bank. Pre (Post) guarantee time period includes 1995-2000 (2001-2007). The dependent variable is individual log daily wages. Fixed effects include person-establishment fixed effects and county-year fixed effects. Controls include interaction of gender, age, education, establishment size indicators with year dummies. Standard errors (in parentheses) are double clustered at the establishment and year level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

Table A11: Relative wages of females after the removal of guarantees: establishment-year fixed effects

Wages	full sample		local banks sample	
	(1)	(2)	(3)	(4)
Savings × female × post-2000	0.018**	0.012**	0.016**	0.011**
	(0.066)	(0.004)	(0.006)	(0.004)
Savings × female × post-2004		0.021***		0.018***
		(0.005)		(0.005)
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,706,148	4,706,148	3,095,246	3,095,246

Note: The table shows regression coefficients of baseline wage estimation for all bankers working in local banks. Savings takes the value of 1 when the establishment is a savings bank. Pre (Post) guarantee time period includes 1995-2000 (2001-2007). The dependent variable is individual log daily wages. Fixed effects include person-establishment fixed effects, county-year fixed effects and establishment-year fixed effects. Controls include interaction of gender, age, education, establishment size indicators with year dummies. Standard errors (in parentheses) are double clustered at the establishment and year level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

Table A12: Wages of males and females after the removal of guarantees: separate estimation

Wages	baseline regression		de-trended regression	
	male	female	male	female
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.024**	-0.013*	-0.020**	0.004
	(0.008)	(0.008)	(0.008)	(0.007)
Savings × post-2004	-0.067**	-0.045**	-0.064**	-0.032*
	(0.023)	(0.019)	(0.022)	(0.017)
Savings × female × post-2000		0.011		0.016
Savings × female × post-2004		0.022		0.032
Controls	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	2,497,230	2,239,600	2,497,230	2,239,600

Note: The table shows regression coefficients of baseline wage estimation for all bankers working in local banks. Savings takes the value of 1 when the establishment is a savings bank. Pre (Post) guarantee time period includes 1995-2000 (2001-2007). The dependent variable is individual log daily wages. Fixed effects include person-establishment fixed effects and county-year fixed effects. Controls include interaction of gender, age, education, establishment size indicators with year dummies. Standard errors (in parentheses) are double clustered at the establishment and year level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

Table A13: Wages of males and females after the removal of guarantees: balanced sample

Wages	full sample	local banks sample
	(1)	(2)
Savings × post-2000	-0.017**	0.001
	(0.008)	(0.008)
Savings × female × post-2000	-0.003	-0.005
	(0.004)	(0.004)
Savings × post-2004	-0.066**	-0.039**
	(0.023)	(0.019)
Savings × female × post-2004	0.015***	0.0133***
	(0.004)	(0.004)
Controls	Yes	Yes
Fixed Effects	Yes	Yes
Observations	1,484,275	1,121,263

Note: The table shows regression coefficients of baseline wage estimation for bankers that do not switch financial institutions and appear in the sample during the entire period. Savings takes the value of 1 when the establishment is a savings bank. Pre (Post) guarantee time period includes 1995-2000 (2001-2007). The dependent variable is individual log daily wages. Fixed effects include person-establishment fixed effects and county-year fixed effects. Controls include interaction of gender, age, education, establishment size indicators with year dummies. Standard errors (in parentheses) are double clustered at the establishment and year level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

Table A14: Profits after the removal of guarantees: savings banks vs. financial institutions with county-time fixed effects

Profits	profit per assets		log profit per employee	
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.0023***	-0.0019***	-0.0506***	-0.0865***
	(0.0003)	(0.0003)	(0.0149)	(0.0152)
Bank Controls	No	Yes	No	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,164	8,164	8,115	8,115

Note: The table shows regression coefficients of baseline profit estimation for the full sample of banks. Savings takes the value of 1 when the bank is a savings bank. Pre (Post) guarantee time period includes 1996-2000 (2001-2006). The dependent variable is bank profits, defined as (log) profits before taxes and employment compensation to assets (employment). Bank controls include lagged log total assets, log employment, equity, liquid assets and deposits to assets. Fixed effects include bank and county-time fixed effects. All the variables are winsorized at the 1 percent level. Standard errors (in parentheses) are clustered at the bank level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

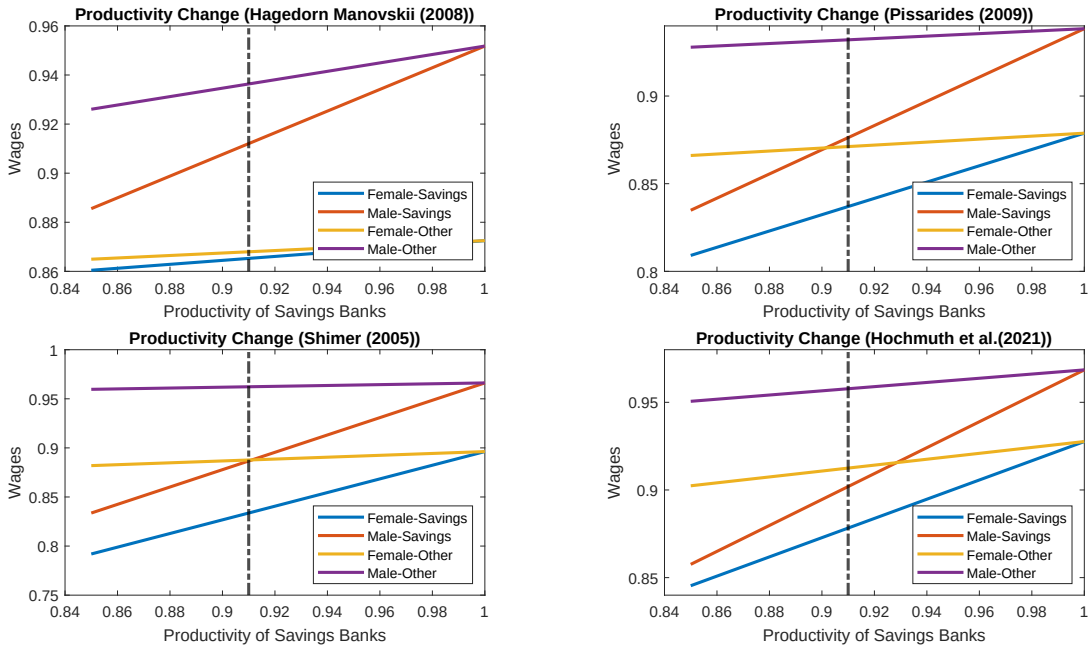
Table A15: Profits after the removal of guarantees: savings banks vs. cooperative banks

Profits	profit per assets		log profit per employee	
	(1)	(2)	(3)	(4)
Savings × post-2000	-0.0027***	-0.0025***	-0.0519***	-0.0982***
	(0.0002)	(0.0002)	(0.0114)	(0.0108)
Bank Controls	No	Yes	No	Yes
Fixed Effects	Yes	Yes	Yes	Yes
Observations	8,425	8,425	8,413	8,413

Note: The table shows regression coefficients of baseline profit estimation for the sample of savings banks and cooperative banks. Savings takes the value of 1 when the bank is a savings bank. Pre (Post) guarantee time period includes 1996-2000 (2001-2006). The dependent variable is bank profits, defined as (log) profits before taxes and employment compensation to assets (employment). Bank controls include lagged log total assets, log employment, equity, liquid assets and deposits to assets. Fixed effects include bank and year fixed effects. All the variables are winsorized at the 1 percent level. Standard errors (in parentheses) are clustered at the bank level. *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
Source: own calculations.

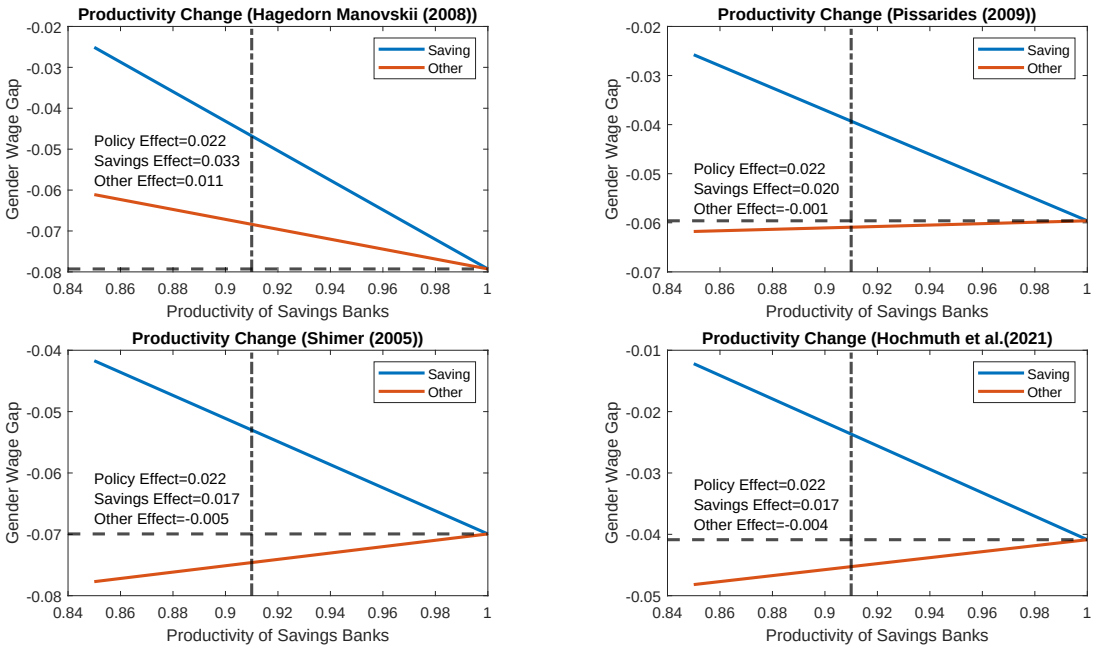
10 Additional Model Results

Figure A6: Female and Male Wages with Different Parameter Values



Note: Vertical line is set at the value of productivity of savings banks after the reform; i.e. a 9% decline. The colored lines show the effect of a productivity shock on the wages of males and females in savings banks and other banks, respectively.
Source: own calculations.

Figure A7: Policy Shock Experiment



Note: Horizontal line is set at the initial gender wage gap value. Vertical line is set at the value of productivity of savings banks after the reform; i.e. a 9% decline. Policy effect is the gender wage gap difference between savings and other banks at the reform value of $y_s = 0.91$. Savings effect is the change in the gender wage gap in savings banks after the reform (distance between blue line and horizontal dashed line at $y_s = 0.91$.) Other effect is the change in the gender wage gap in other banks after the reform (distance between the horizontal dashed line and orange line at $y_s = 0.91$.)
Source: own calculations.

List of Figures

List of Tables

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