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Unions and Collective Bargaining: The Influence on Wages, Employment and Firm Survival[i]

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Abstract

Unions and collective bargaining play a central role in shaping wages and influencing firms' employment decisions and firm survival, especially in industrialised countries, and where they are traditionally strong. Their impact depends on the institutional role unions (can) play in different countries, on the economic conditions, and it varies strongly between industries. Overall, the literature has analysed union wage effects quite extensively, and to a lesser degree also their effects on employment.

Unions typically increase wages and other working conditions for their members and often all employees working in firms where collective bargaining applies. There is strong evidence for a union-non-union wage premium, even for individuals working similar jobs. At the same time, wages are higher in firms under collective bargaining, even in similar firms in the same industry. The size of these premiums can vary widely, however, between countries, time periods, and context. The union wage premium is typically stronger at the lower end of the wage distribution, such that strong unions are associated with lower wage inequality. This result is more or less undisputed in the literature.

The union effect on employment is theoretically more ambiguous, but empirically labelled as 'the one constant' among the effects of unions: employment growth is two to four percent lower in firms with union bargaining. There may, however, also be positive effects of union bargaining on the quality of employment or employment duration from an individual perspective.

A union effect on firm survival is the least well analysed among the three effects presented here. If unions redistribute rents to employees and if 'the one constant' holds, then firm survival might be negatively affected by union bargaining. The empirical evidence is, however, inconclusive.

JEL Codes: J31, J51, J23

Keywords: collective bargaining, trade unions, wages, employment, firm survival

1 Introduction

What are the economic effects of trade unions and collective bargaining on wages, employment, and firm survival? This chapter of the *Handbook of Labor, Human Resources and Population Economics* gives an overview on international empirical evidence. A focus will be on countries where unions and collective bargaining (still) make an impact, and on countries were suitable data has allowed for the topic to be analysed.[iii] Schnabel (2020) outlines the main trends and determinants of unionisation and collective bargaining across a wide range of countries and regions. While there is a considerable amount of variation, union density as well as collective bargaining coverage have fallen in most countries and collective bargaining has become more decentralized over the last decades. Therefore, the impact of unions and collective bargaining has become smaller, as well. However, in most industrialized countries, we still observe unions and collective bargaining to be an important aspect of labour economics and not yet to be part of economic history.

Some scholars claim that unions and collective bargaining will increase wages and other working conditions in an attempt to overcome the imbalance of bargaining power between workers and firms, see Manning (2021) for a recent discussion on monopsony in the labour market. However other scholars claim that if unions raise wages above the competitive level, or that they redistribute rents from firms to employees rather than generating rents, and that then firms reduce employment, which will in turn harm their competitiveness and risk their survival in a competitive environment. Hence, the article by Laroche (2021) presents evidence on the (positive) impact of unions on firm performance. The existing results show that unions should not be seen solely in terms of their costs for a firm, but also as a driver for productivity, mainly through reducing employee turnover, selecting more productive employees, and fostering innovations.[iv] If these effects cancel out the fact that unions might increase wages too much, we would not see a reduction in employment or firm survival. The overall effect is up to debate and subject to specific circumstances and heterogeneity.

What do unions do? This question has been answered already by Freeman and Medoff's (1984), but will be explained in short here, as well. Trade or labour unions negotiate over wages and working conditions with firms or employers' associations on behalf of their members. If organized labour has a higher level of bargaining power than individual workers have, for examples through (the threat of) strikes, wages set by unions will be higher than individually bargained ones. The size of the effect will differ according to differences in the characteristics of union bargaining and the environment it takes place. Often, the wage contracts between trade unions and employers (collective bargaining agreements, CBAs) are extended to other employees as well. Collective bargaining can take place at different levels: single firm, multi-firm company, economic sectors, or even the national level. There are different levels of wage bargaining coordination. Collective bargaining agreements often act as minimum requirements, upon which additional bargaining may be possible or even institutionally fostered, e.g. sector-level union bargaining and firm-level works councils in Germany or multiple layers of union bargaining in France, Portugal, or Spain. All these institutional differences will in part explain the heterogeneity of findings across time and space.[v]

Finally, the size of the union wage premium will have an effect on employment (and firm survival), and vice versa. On the one hand, if unions do not raise wages, there will be presumably no (negative) employment effect. On the other hand, the bargaining power of unions depends on the wage elasticity of labour demand: the smaller the response of employment, the greater the ability of unions to raise wages.

The rest of the chapter is structured as follows. First, some will be presented in Section 2. The empirical section will start to address the effects on the wage level and the wage dispersion (Section 3). This is followed by empirical evidence on the effects on employment (Section 4) and firm survival (Section 5). Finally, Section 6 concludes.

2 Theory

Despite this article's focus on empirical evidence, some theoretical discussion will be presented in this section. Theory on union wage and employment effects has evolved during the last two decades from neoclassical models to ones which focus more on market imperfections and behavioural economics.

Neoclassical theory suggests that if wages equal marginal productivity, the labour market clears and operates at full employment. A labour union shifts the competitive labour supply curve to the left, raising the equilibrium wage and reducing labour demand and therefore employment, potentially forcing unionised firms to close down, which both leads the economy to moving labour and capital to non-unionised firms or sectors. More elaborate models of monopoly union or right-to manage, e.g. presented in Oswald (1985) and Farber (1986) have shown that if unions or collective contracts raise wages, then firms move up along the (inverse) labour demanded schedule (see also Hammermesh 1993). Firms, sectors, or even countries under union bargaining should therefore show higher wages and lower employment levels.

However, Pissarides (2000) among others shows that labour markets are not fully competitive due to the existence of various market imperfections, such as efficiency wages or insider-outsider power (Lindbeck and Snower 1989). In these cases, the employment effects are less straightforward. In a non-competitive environment, the union effects on wages and employment can differ, as the literature on unionised oligopolies has shown (Davidson 1988). More recent contributions in this field, such as Haucap and Wey (2004) show that industry-wide negotiations in the presence of heterogeneous firms lead to a more compressed wage structure within the industry, which benefits highly productive firms. Hence, wages might not rise unambiguously for all workers and some firms may even increase employment. Following other bargaining models, for example efficient bargaining, where firms and labour unions bargain over wages and employment simultaneously, employment may not fall at all (McDonald and Solow 1981).

Naylor (2003) has quite nicely summed up the neo-classical microeconomic theory of labour unions, with a focus on the scope of bargaining and unionised oligopolies. There are also newer models, such as Bauer and Lingens (2014) who show that unions might not reduce employment in search and matching models with decentralized collective wage bargaining. Krusell and Rudanko (2016) or Taschereau-Dumouchel (2020) use search and matching models and feature endogenous union presence. Krusell and Rudanko (2016) model a monopoly union with a hold-up problem, which extracts rents from the firm or reduces employment.

As most economic models are partial equilibrium models, other imperfections, general equilibrium effects, and possible positive union effects on other variables such as firm performance (see Laroche 2021) may challenge the classical theoretical results of collective bargaining on employment. Taschereau-Dumouchel (2020) models unions as a threat to firms, which react by over-hiring workers

who would vote against unionisation. Both unionisation and its threat lead to higher wages and reduced wage inequality, but also to reduced output and employment.

The level of bargaining might play a role in determining its effects on wages and employment. Calmfors and Driffill (1988) show that sector-level labour unions might set higher wages compared to firm-level trade unions. Competition across sectors is less intense than competition within sectors, such that the demand reduction in response to a wage increase is relatively low. This mark-up effect causes labour demand to decline, implying that aggregate employment and output are lower under sector-level trade union regimes. Following the fact that in many countries wages are set at different levels or in multiple stages, where e.g. industry-level collective bargaining followed by firm-specific arrangements, Bastos et al. (2009) show that wages are systematically linked to the degree of firm heterogeneity in the industry. Braun (2011) uses a heterogeneous firm model and shows that collective bargaining at the sector-level bargaining may force the least productive firms to exit the market while firm-level bargaining allows less productive firms to stay. Jimeno and Thomas (2013) compare labour market outcomes under firm-level and sector-level bargaining in a one-sector Mortensen-Pissarides-style economy and show that unemployment is lower under firm-level bargaining.[vi]

The extent of bargaining power also plays a role in the union effects on wages and employment. For example, higher bargaining power yields higher wages in standard Nash bargaining models of rent-sharing.[vii] Unions are ceteris paribus stronger, the higher union density, i.e. the share of union members among all employees. Unions should have stronger effects in countries, sectors, and firms with higher union density. This relationship might be weaker in countries with strong institutions for collective bargaining. In those countries, the institutional design and the level and coordination of bargaining are more important. De Pinto and Michaelis (2019) show that union heterogeneity unambiguously reduces the negative employment effects of stronger unions in a Melitz-type model where union bargaining power is assumed to be firm-specific and varies with firm productivity.

Finally, arguments for a different union effect along the wage distribution run as follows. If employees are risk averse, they prefer wage compression. In this case, a utility-maximizing union is likely to raise wages at the bottom of the wage distribution more (Agell and Lommerud 1992, Burda 1995). Low-skilled individuals might profit more from union bargaining as they have lower individual bargaining power compared to high-skilled individuals. Therefore, union density might be higher and union wage premiums stronger the more workers have to gain. It is also possible that union members choose to compress wages because of ideology, for social cohesion purposes, or for further reasons (see in detail Freeman and James Medoff 1984).[viii]

To sum up, the recent state of theory suggests that unions have positive effects on wages, but how much may depend on market power, competition, and institutions. The effects on employment are ambiguous, e.g. depending on the type of models and the bargaining level. Theory has not much to say regarding the effects of unions on firm survival. Overall, there is no clear-cut picture on the effects we might expect, but this is not surprising. The field has evolved over quite some decades of developments both on academic methodology and on real-life events which have changed the role of unions in many countries. Accommodating to these developments, the next section analyses the empirical evidence on the union effects on wages both over time and between different institutional groups.

3 Wages

Conceptually and theoretically, the effect of unions and collective bargaining on wages should be relatively clear-cut. Whether the direct effects prevail and how large these effects may be, especially considering different institutional contexts, remains an empirical question. Therefore, this section analyses the wage effects of unions and collective bargaining for different (groups of) countries, and distinguishes recent changes in empirical methodology. Furthermore, this section analyses whether unions increase wages differently along the wage distribution. Unions have both an incentive do to so, and the context might also drive inequality reducing wage effects. Many studies actually analyse both an average wage effect alongside distributional effects.

The main body of the literature relies on comparing wages of union members vs. non-union members using employee or household data or collectively covered vs uncovered firms using firm-level or matched employer-employee data. It is mostly cross-sectional or sometimes panel data, and all but some studies rely on selection on observables for identification. We can characterize the literature into different strands:

(1) The union wage premium literature focuses on Anglo-Saxon countries, where union membership determines wages, but has been in decline for long.

(2) The collective bargaining wage premium literature focusses on continental and northern Europe, where union wage agreements extend to all employees in covered plants or sectors, but has gone through a process of decentralization.

(3) Analyses of multi-level bargaining systems such as Spain, Portugal, France, Belgium, and Italy, where different layers of bargaining lead to wage floors and mark-ups.[ix]

(4) Evidence for developing countries, where both the data situation and the institutions are more heterogeneous than for developed countries.

(5) Recent causal evidence mostly on US unionisation elections and other identification strategies.

Since this is not the first literature review on the union wage effects, we cite both research papers as well as previous literature reviews on the topic. A special focus will be on newer evidence, say from the last two decades. Over this time span, only a few literature reviews exist, among which the one by Bryson (2014) shows unions continue to generate a wage premium and to compress the wage distribution despite declining bargaining power, i.e. membership or coverage rates. Hence, a special focus will lie on the time since then. The next section will, however, give a small historical overview, starting will early comprehensive studies on the topic.

3.1 Union Wage Premiums in Anglo-Saxon Countries

The empirical literature on union wage effects has started in the United States (US), followed by other Anglo-Saxon countries. Evidence for Europe has long been sparse, mainly because of a lack of data to calculate a union/non-union wage differential between countries, sectors, firms, or employees; and because institutional differences often require different approaches. Therefore, fist evidence on the union wage effects is presented from a country where unions been historically weaker than in other countries.

Freeman and Medoff (1984) report early work on union wage effects in the US based on aggregate data and have found a mark-up of 10-15 percent in the 1960s, followed by an average of 25 percent in the 1970 based on cross-sectional firm or individual data and of 15 percent based on panel data. Comparative cross-country studies such as Blanchflower and Freeman (1992) present significant union-non-union wage differentials in labour market outcomes in OECD and other countries. They show that US unions have a larger effect on wages and state that this may have contributed to the decline in union density.[x] Teulings and Hartog (1998) provide an overview on the early literature from a corporatist perspective and show early estimates of union wage effects of about 15 percent in the US, at least 20 percent in Canada, about 16 percent in Australia, 9 percent in the United Kingdom (U.K.), but with differences regarding the type of bargaining agreement present. Aidt and Tzannatos (2002) provide an overview on microeconomic evidence and show results for Australia, Canada, Japan, U.K., U.S., West Germany, Republic of Korea, Malaysia, Mexico, South Africa and Ghana for the period of 1963 to 1995. Union wage effects range from zero to 28 percent. Blanchflower and Bryson (2003) examine the impact of trade unions in the U.S., the U.K., and elsewhere in the 1990s and find that unions are able to raise wages substantially over the equivalent non-union wage by an average of twelve percent.[xi] Most studies show that until that point in time the union wage effects are larger in the US with an average effect of 15 percent than they are in the U.K. with an average effect of ten percent. Blanchflower and Bryson (2004) have shown that these estimates were exaggerated, but that the union wage mark-up has been fairly stable until the early 2000s. Micro evidence for the US shows large union membership wage premiums of twelve to 14 percent (Budd and Na 2000) or even higher for low-skilled workers (Gittleman and Pierce 2007). They also seem to be fairly stable over time albeit a decline in unionisation rates (Blackburn 2008, Gabriel and Schmitz 2014), when applying matching techniques (Eren 2007), and when controlling for occupational licensing (Gittleman and Kleiner 2016). Benmelech et al. (2022) show that in manufacturing plants for the years 1978 to 2016 the negative relation between employer concentration and wages increases over time when unionisation rates are low, while Green et al. (2022) indicate the important role played by union decline and its wage spillovers to the non-union sectors in lowering wages over the 1980-2010 period. Hence, the union wage effect in the US has been quite substantial and is suggested to be quite stable over time despite the large drop in union density: where unions still exist, they benefit still benefit the workers. The evidence also shows that the US are not that different from other (mostly European) countries despite their different historical development and cultural differences, especially a mistrust of socialist entities in the majority of the population.

Similar to analyses on the average union wage effect, the empirical literature on the effects of unions on wage dispersion or wage inequality has also started in the US. Several studies tried to explain the rise in US earnings inequality during the 1980s by the erosion of labour market institutions such as the bite of minimum wages and the decline of labour union power, both of which had protected the earnings of low- and middle-wage workers (see DiNardo et al. 1996, Fortin and Lemieux 1997, Lee 1999, and Card and DiNardo 2002). Katz and Autor (1999) and Acemoglu (2002) provide overviews of this literature. At that time, Blau and Kahn (1995) have suggested that lower wage inequality in Europe, especially in the lower half of the distribution, might be explained by higher minimum wages, stronger unions, and more generous transfer programs. Card (1996) finds that wage differences between skill groups tend to be compressed in the union sector in the US and that unionised workers are positively selected in low-skill groups and negatively selected in high-skill groups. Lemieux (1998) shows that unions increase the average wage of workers and compress the returns to skill in Canada as well. Açıkgöz and Kaymak (2014) develop a macroeconomic model of unionisation, which is consistent with

the observed relationship between skills, union participation, and wage distribution in the US 1978 to 2007. They show that the effect of unions on aggregate wage inequality was limited. Card et al. (2004, 2017) present a comparative analysis of the link between unionisation and wage inequality in the U.S., the U.K., and Canada 1973 to 2001. They find that unions tend to systematically reduce wage inequality among men, but have little impact on wage inequality for women in all three countries. Extending this analysis to other OECD countries, Koeniger et al. (2007) indicate that changes in labour market institutions can account for much of the change in wage inequality between 1973 and 1998, and especially that the fall in union density accounts for differences in wage inequality between Anglo-Saxon and Continental European countries. Kahn (2000) finds that higher union coverage and membership lead to higher relative pay and lower relative employment for less-skilled workers, especially men. Hayter and Weinberg (2011) deliver a literature overview as well as some stylised facts that OECD countries with higher collective bargaining coverage also have lower (90/10) wage differentials. To sum up, this strand of the literature also seems relatively conclusive about the effects which unions have on reducing wage inequality, and especially on the inequality-increasing effects of de-unionisation in the US. It also has to be stated that the sheer number of studies is quite astonishing and gives a relatively detailed picture. The rest of the section compares the US findings to other Anglo-Saxon countries, where the institutional differences are small.

Second in line is evidence from the country where the first labour union was founded: the U.K. There is also a large number of studies analysing both wage effects and effects on wage inequality. Apart from very early studies and the cross-country studies cited above, Andrews et al. (1998) report individual-level estimates of positive union-non-union wage differentials between two and four percent in the 1980s. Belfield and Heywood (2001) analyse the effect of unionisation threat on the distribution of non-union wages in the U.K., but find different effects compared to the US (see Neumark and Wachter 1995 and for an overview or Green et al. 2022, for new evidence). Blanchflower and Bryson (2010) show a growing premium in the union membership wage premium between public and private-sector workers in the U.K. Manquilef-Baechler et al. (2009) analyse union membership and coverage wage premiums for 1991 to 2003. They show that the private sector union wage premium disappears when endogeneity of union membership is taken into account, but not the public sector union wage premium. This might be due to higher coverage rates. Mac Flynn (2020) shows a significant collective bargaining premium for Northern Ireland. McGuinness et al (2010) use linked employer-employee data for Ireland to show that centralized bargaining reduces within-firm wage inequality. Similar to the U.S., the U.K. has seen a sharp drop in union power, both institutionally as well as by density. This might explain different findings over time and also a smaller number of recent papers, apart from a potential lack of highest-quality data and potential for causal analyses. Going back West, Renaud (1998) presented first empirical evidence of the impact of unions on benefits and total compensation in Canada using micro data from the Canadian General Social Survey (GSS) of 1989. The estimated union wage effect was ten percent and additionally two percent in benefits. Kuhn and Sweetman (1998) show that losing union status through displacement was associated with large wage losses whether or not a worker switched industries after displacement, indicate a strong union wage premium in Canada as well using exogeneous variation in income levels. Fang and Verma (2002) place the union-non-union wage differential at six to eight percent at the end of the 1990s in Canada. These numbers were even higher for some service occupations at 15 percent at that time (Cleveland et al. 2003). Campolieti (2018) estimates union wage premiums for private-sector workers between 1997 and 2014 to find smaller and declining effects, especially for women, once modern matching techniques are applied. Gomez and Lamb (2019) examine the association between unionisation and

non-standard work in terms of coverage and wages and find that the union wage premium is larger for non-standard workers. Zhang (2019) uses longitudinal data for Canada from 1999 to 2011 and shows a union wage premium of four to nine percent controlling for occupational licensing and individual fixed-effects. Zhang and Gunderson (2020) show for Labour Force Survey data that the union wage premium declined steadily from nine percent in 1998 to five percent in 2018, with a substantially larger effects at the bottom of the wage distribution. Unions reduce overall wage inequality, but this equalizing effect is decreasing over time. Hence, the evidence on Canada is quite substantial, which may be explained by the relatively large role Canadian unions still play in employment relations. However, even there, union density in the private sector is declining and so is potentially the size of the union wage premium.

A similar story could be told about Australia, where union membership has also fallen quite dramatically. Most studies in Australia use survey data to compare wages of unionised workers to non-unionised workers and before the 1990s have found union membership wage effects of around five to 15 percent (e.g. Kornfeld 1993). An exception is Wooden (2001). By using cross-sectional matched employer-employee data the paper shows that there is only a very small intra-workplace union wage effect. There are, however, considerable differences across workplaces in the presence of coverage by collective agreements. More recently, Waddoups (2005) has analysed how the changes in union density and industrial relations law affects the union-non-union wage differential using cross-sectional data for 1993 to 2001. The union wage premium has widened with high union density, and averages five percent for males in 2001. The follow-up study of Waddoups (2008) explores that the union wage effect varies with firm size from eleven percent in smaller firms to two percent in the largest. Cai and Liu, A. Y. (2008) use quantile regressions to examine whether the union wage effect varies across the conditional wage distribution in Australia. The effects are stronger for men than for women, especially at the lower end of the wage distribution. Cai and Waddoups (2011) uses panel data to show that unobserved heterogeneity substantially has biased previous cross-sectional estimates of the union wage premium in Australia. Their estimates are about five percent for males and two percent for females. Nahm et al. (2017) uses newer data for 2001 to 2013 and an endogenous switching model and finds systematic selection into union membership depending on the union wage premium present. Their decomposition analyses suggest that union wage effects in Australia may be negative, rather than the small positive effects typically found in the Australian literature. However, Bishop and Chan (2019) argue that focusing on (falling) union membership wage effects might make less sense in Australia, because of the high share of workers still covered by collective bargaining agreements. They use data on all federally registered collective bargaining agreements between 1991 and 2017 to find a stable union wage growth premium in collective agreements despite falling membership rates. Hence, we see that despite similar developments regarding union density as in other Anglo-Saxon countries, the situation in Australia might be different due to a change in institutions. A focus on collective bargaining agreements might even move Australia away from the Anglo-Saxon style of union bargaining.

A very different development has taken place in South Africa, especially since the fall of the Apartheid Regime. Early estimates of the union wage premia have shown South Africa in line with other similar countries, and Moll (1993) found a union wage premium of 24 percent for black blue-collar workers in South Africa. There are now potentially larger union wage premiums in a two-tiered collective bargaining system that includes union bargaining at the plant level and centralized bargaining councils within a particular industry, occupation or area. Hofmeyr and Lucas (2001) have shown a growing union wage premium for the 1980s and early 1990s, and Banerjee et al. (2008) again for the 1990s and early

2000s, while Ntuli and Kwenda (2014) find a monotonically declining union wage premium in more recent years using cross-sectional data for 2001 to 2010. Butcher and Rouse (2001) have confirmed high union and bargaining council premiums when correcting for union membership endogeneity in households. Butcher and Rouse (2001) also find that the union differential is higher at the lower end than at the top end of the wage distribution for both African and White men, similarly to the results of Schultz and Mwabu (1998). There are, however, large disparities in average union wage effects between African and White workers, as Schultz and Mwabu (1998) and Azam and Rospabe's (2007) have shown. The impact of unionisation on wages seems to be higher for African workers than for white workers, for whom unions only compress wages, but do not increase the overall wage level. However, Bhorat et al. (2012) correct their analyses of the union and bargaining council wage premium for the endogeneity of union membership and the size of the union wage premium to find a much lower union wage premium of six percent. They find, however, additional union wage premiums on top of bargaining council wage premiums in the private and public sectors, such the total estimated premium to union workers within the public bargaining council system stands at 22 percent. Similarly, Kerr and Teal (2015) find that the union wage premium is substantially reduced in the private sector when controlling for individual heterogeneity, and that there is a substantial public sector wage premium. Finally, Wittenberg and Kerr (2021) have estimated the South Africa union premium for the last 25 years and suggest large overall union wage premiums of 20 to 30 percent, which is driven by the public sector in recent years. Kerr and Wittenberg (2021) argue that most union members are in the upper-middle parts of the wage distribution and this causes an inequality-increasing effect from union wage premiums in South Africa. Similar effects are found in a recent working paper by Bassier (2021) for bargaining coverage, while Ntlhola et al. (2019) finds a more or less constant union wage premium across the conditional wage distribution. Effectively, these are the largest union wage effects among the Anglo-Saxon countries. The special situation in South Africa might explain, however, why these occur.

To sum up, this strand of the literature still finds remarkable union wage premiums in Anglo-Saxon countries, albeit a deep decline in unionisation and union membership rates almost everywhere. We can also observe a tendency for a more diverse institutional and cultural setting between the former relatively homogenous group of countries. Changes in institutions (Australia) and culture (South Africa) have led to different developments in some countries compared to the US and, to a smaller degree, the U.K. What can be said for all countries nonetheless, is that unions increase wages and also demonstrate to reduce wage inequality, where they still are present. For some of these countries this might only apply for the public sector and some selective private industries, though. The next sections turn to countries where collective bargaining works quite differently, not via union membership premia, but via industry-level bargaining.

3.2 Collective Bargaining Wage Premiums

While in Anglo-Saxon countries union bargaining mostly takes place at the firm (plant or company) level, in many central and northern European countries, collective bargaining is set mainly at the industry level, and to a lesser degree on the firm level. Firms and unions belonging to a specific sector bargain over an occupation-specific wage schedule, which applies to all workers in that sector, irrespective of their location and of whether or not they belong to a union. Therefore, there is de facto no distinction between sectors with high or low union density in these countries, but between firms

covered and not covered by collective agreements (Card et al. 2004). Most countries have "excess coverage" of collective bargaining in comparison to union density. In Germany, coverage by a collective agreement is decided upon by the firm, with a certain degree of pressure from employees when union density is high. If the company decides to adapt a collective bargaining agreement, all employees are paid according to it, not only union members. Gerlach and Stephan (2005, 2006) are among the first to use linked employer-employee data to find that the expected wage of an average worker is higher in firms applying collective contracts and that during the 1990s these effects became stronger. Kohn and Lembcke (2007) find similar effects towards a higher wage level and also find reduced overall and residual wage dispersion. Gürtzgen (2009a, 2009b) indicate that collectively bargaining wages are less responsive to firm-level profitability and that they are lower in more heterogeneous industries. Gürtzgen (2010) and (2014) conclude that unions favour a compressed intra-industry wage structure and suppress the responsiveness of wages to firm-specific profitability conditions. Kölling (2022) shows that collective bargaining and a lack of skilled workers can lead to higher wages. The interaction of both phenomena explains the countercyclical development of the wage premium from collective bargaining agreements.

Dustmann and Schönberg (2009) use firm panel data matched with administrative employee data to show that union recognition imposes wage floors and wage compression. Jirjahn and Kraft (2010) analyse manufacturing plants in Germany and control for team work and interactions with industrial relations. They find that the influence of collective bargaining coverage on intra-firm wage dispersion depends on the organization of work. Fitzenberger et al. (2013) analyse the effects of coverage and union density and find that a higher share of employees covered is associated with higher wages but find no clear-cut effect on wage dispersion. Dustmann et al. (2009) argue that the increase in wage inequality in West Germany during the 1980s, 1990s, and 2000s can be attributed in part to falling union coverage, a finding which is also present in Card et al. (2013). Addison et al. (2014, 2015) tackle selection into collective bargaining by analysing changes in bargaining status using difference-in-differences and report that average wages increase by three to four percent after entering into a collective agreement and decrease by three to four percent after abandoning a collective agreement. A similar approach is performed by Gürtzgen (2016) using linked employer-employee data and measuring the relative wage changes of workers employed in firms that change contract status. Transitions to non-coverage appear to be associated with negative shocks.[xii] Higher (imputed) union density reinforces the effects of coverage.[xiii] Addison et al. (2017b) use German data and predict changes in bargaining status (leaving or joining a collective agreement) to find out that leaving collective bargaining leads to a modest increase in intra-plant wage dispersion. Bossler (2019) recognises the fact that while formal collective coverage declines in Germany, many firms still orient their pay in accordance to sector-level CBAs. Employees in these firms still receive a higher wage than in totally uncovered firms.[xiv] So, in addition to differences between sector-level and firm-level bargaining, 'shadowing' collective agreements also pays a wage premium.

If it was not complicated enough, collective agreements usually only set wage floors and firms often pay a wage cushion, especially in the presence of works councils. Jung and Schnabel (2011) estimate that more than 40 per cent of plants covered by collective agreements do so, but that the height of the wage cushion depends on various firm characteristics. Wage cushions are found when there is a works council at the plant as an additional body of firm-level codetermination. Addison et al. (2010) find that German works councils are in general associated with higher earnings, even if firm are collectively covered. Hirsch and Müller (2020) use linking employer-employee data for the years 1994–2009 to analyse how the level and the dispersion of wage premiums depends industrial relations. Both

collective bargaining and works councils allow employees to negotiate a larger wage premium, relative to firm performance. Collective agreements and works councils interact, so that in the end both institutions lead to higher wages and smaller wage dispersion.

Recent years have also seen changes in the German system of industrial relations, namely a reduction in collective coverage and a decentralisation of negotiations. Some scholars such as Franz and Pfeiffer (2006) argue that collective bargaining had been one of the main reasons for Germany's downward wage rigidity in the 1980s and 1990s, while Dustmann et al. (2014) argue that Germany's economic success in the 2010s was due to a decrease in real wages, especially at the lower end of the wage distribution. They attribute this to low wage demands by the sector-level unions, because of falling coverage rates and increasing trends towards wage decentralization. Hence, falling collective coverage and declining bargaining power is said to heave lead to both a positive growth rates and a rise in wage inequality in Germany. Ellguth et al. (2014) analyse the effects of increased decentralisation of collective bargaining using so-called opening clauses to find that the existence of such clauses is related to higher wages, but that their application results in wage cuts of roughly the same size, and that works councils mitigate these effects. Garloff and Gürtzgen (2012) also provide evidence that the decentralisation of wage bargaining made wages more flexible to the business situation of a plant. Antonczyk et al. (2010) use the German Structure of Earnings Survey, to investigate to what extent the recent increase in wage inequality can be related to the decline in collective bargaining. The find that that the decline in collective bargaining has contributed to the rise in wage inequality in Germany, but that this is by no means the dominating effect. So, compared to other large industrial countries, the bargaining system in Germany may have changed more within the system. This might have stabilised or dampened the fall in collective bargaining coverage, but has potentially also led to smaller union wage premiums during the last decades.

A somewhat different story is told by Goldschmidt and Schmieder (2017), who have shown that outsourcing has led to increased wage inequality in Germany. Manufacturing firms have moved formerly in-house performed food, cleaning, security, and logistics services into other sectors and therefore out of collective coverage. Wages in these outsourced jobs fall by approximately ten to 15 percent relative to similar jobs that are not outsourced and this accounts for around nine percent of the increase in German wage inequality. At the same time, this has stabilised the high paying union jobs in the manufacturing sectors.

Turning to Scandinavian countries, bargaining works somewhat different, in that sector-level bargaining is more coordinated, sometimes also at the national level. Not all firms are collectively covered and there is also firm-level bargaining, which adjusts collective bargaining pay scales individually. Dahl et al. (2013) use detailed panel data for Denmark to find a wage premium, but more dispersed wages associated with firm-level bargaining relative to sector-level bargaining. Barth et al. (2020) exploit changes in tax subsidies for union members in Norway to identify the effects of changes in firm-level union density on productivity and wages. The results show that increasing union density at the firm level leads to a substantial increase in both productivity and wages. Apart from the causal evidence by Barth et al. (2020), union wage effects in Norway have already been analysed by Bryson et al. (2020), who find a positive union wage premium that depends on the gender composition of the union, and Barth et al. (2000), who show a positive effect of union density on wages in firms covered by collective bargaining agreements, but no individual wage effect of being a union member. Barth et al. (2012) have already shown using longitudinal employer-employee data that the introduction of performance-related pay raises wage inequality in non-union firms only, confirming the wage-

compressing role of unions in Norway. Dodini et al. (2021) examines the effects of unionisation on the dynamics of worker earnings across differently concentrated markets exploiting tax reforms to union due deductions. They show union premiums are higher in concentrated markets. Reite (2020) revisits the role of union membership, collective agreements and union density for wage levels and dispersion in the period 2004-2011 and finds large union membership premiums, but only small collective bargaining or union density premiums. Granqvist and Regnér (2008) and Andréasson (2014) analyses the effects of bargaining decentralization on wage levels and structures in Sweden. The latter's results indicate that the wage premium is around three to six percent, depending on the bargaining structure, and that wage compression is only observed in two-tier bargaining structures. Granqvist and Regnér (2008) find that decentralised wage bargaining increases individual wages and their variance. In the end, the Scandinavian countries feature some of the highest union density rates, despite the fact that collective bargaining is institutionalised to cover large parts of the economy without plant-level union presence. These countries are also famous for their low wage inequality, which is partly explained by the bargaining system. Not much can be said about the smaller countries of central Europe; there are to my knowledge no recent microeconometric papers which estimate union wages effects in Austria. The system is nonetheless, similar to the German one. In the Netherlands, wages should not be distinguished by union membership status, but by the bargaining regime, where multiple regimes exist parallel. Hartog et al. (2002) find that industry-level and firm-level agreements yield on average higher wages than in uncovered firms or ones with extensions of CBAs. However, no clear distinction can be made in the wage structure between covered and uncovered firms. In terms of the wage structure, firm-level bargaining agreements stand out. This result is more in line with the Scandinavian countries, where firm-level bargaining has larger effects than sector-level bargaining (only).

To sum up, this strand of the literature finds smaller wage effects of collective bargaining coverage in these countries in comparison to union-non-union wage premiums in Anglo-Saxon countries. Most studies point out that the decline in bargaining rates and bargaining power as well as the increased decentralisation and flexibility of collective bargaining agreements might have contributed to this development, especially in Germany. The situation seems more stable in the Scandinavian countries. It can also be argued that the relatively small collective bargaining premiums may have contributed to the relatively strong economic development in these countries over the last decades. This contrasts to the next group of countries, the West and Southern European countries.

3.3 Multi-Level Bargaining Systems

In France and other Southern European countries, a large share of workers is covered by industry-level or national collective agreements, with additional firm-level agreements on top of that. This contrasts to Germany, where sector-level and firm-level bargaining are substitutes or to the Scandinavian countries, where sector-level agreements do not serve as minimum standards. Furthermore, France has a high national minimum wage and most French unions are very heterogeneous in their wage demands and policy styles, such that it is difficult to analyse union bargaining effects (Breda 2008). In an early study by Coutrot (1996) finds that French unions improve wages and labour productivity, but the relationship is much weaker than that found in US studies. Breda (2015) identifies a wage premium associated with firm-level union recognition of two percent. He argues that the wage premium is small compared to other countries such as Spain, because legal barriers are low as is union density and therefore bargaining power. Fougère et al. (2018) examine the dynamics of wage floors defined in

industry-level wage agreements in France and shows that they are quite rigid and changes are mainly driven by inflation and changes in the national minimum wage. Hence, the institutional rigidities basically do not allow to estimate a real union or collective bargaining effect on wages.

The situation is quite different in Italy, where a number of studies analyses union wage effects. Dell'Aringa and Lucifora (1994) analyse the impact of unions on relative wages using firm-level data for Italy. They find a positive wage effect where unions are recognized for collective bargaining, which is about 80 percent of the economy. Fanfani (2023) studies the wage and employment effects of Italian collective bargaining by exploiting the generalised wage growth induced by changes in contractual pay levels, whose timing and size differs across collective agreements. He finds that growth in contractual wages increases actual pay levels. Devicienti and Fanfani (2021) study the effects of higher contractual wages set by Italian collective bargaining and find companies' average wages increased. Lucifora and Vigani (2021) document the evolution of so-called pirate agreements in Italy. The wage effects of such non-representative agreements, signed by unknown organizations are smaller compared with regular collective agreements. Garneo and Lucifora (2020) further document that non-compliance with bargained minimum wages is common and a valid strategy in the industrial relations system due to a weak rule of law. Both effects diminish the wage effects of collective bargaining in Italy. In consequence, the situation in Italy is only good on paper.

This situation may also explain mixed results on wage inequality. Devicienti et al (2019) analyse Italian male wage inequality and find that the growth in pay dispersion has entirely occurred between job titles defined by national industry-wide collective bargaining institutions. Belloc et al. (2019) find that employees covered by collective bargaining in Italy differ in their real wages, adjusted for costs of living. Boeri et al. (2021) compare the industrial relations systems between Germany and Italy and find that Germany has a tighter link between local wages and local productivity and, as a consequence, that the Italian system has significant costs in terms of forgone aggregate earnings and employment.[xv] Therefore, the Italian bargaining system may be more egalitarian, but at the cost of performance.

The institutional situation in Spain is characterised by a competition between sectoral and firm-level bargaining agreements without much coordination. Dolado et al. (1997) provides an empirical evaluation of the effects of Spanish sectoral collective bargaining on wages. They estimate wage gains due to minimum bargained wages, which tend to be higher for low-skill, blue-collar and low-tenure workers and therefore reduce wage dispersion. Canal Dominguez and Gutierrez (2004) also find that collective agreements at the firm level have a negative effect on wage dispersion, but show a greater wage dispersion than firms covered by agreements at the sector level. Card and De La Rica (2006) use matched employer-employee data for 1995 to show that firm-level collective bargaining on top of sectoral bargaining agreements is associated with a five to ten percent wage premium. Domínguez and Rodríguez Gutiérrez (2016) analyse the effect of collective bargaining the contractual wage and the wage cushion in Spain during 2002-2010. The results show that workers covered by firm-level bargaining have a higher wage dispersion, but that wage dispersion has overall fallen due to lower wage cushions. Ramos et al. (2018) analyse wage differentials associated to different collective bargaining regimes based on matched employer-employee microdata and after the labour reform of 2012. There is a positive and stable wage premium of firm-level bargaining agreements that favours workers mostly in the middle and upper-middle end of the wage distribution. While only few firms have since abandoned collective bargaining, this is associated with lower wages and higher wage flexibility. Ramos et al. (2022) examine wage inequality associated with collective bargaining levels in Spain to find a positive wage premium of firm-level wage bargaining, which also slightly increases wage

inequality in comparison with sectoral agreements. Collective bargaining per se increases wages and reduced wage inequality, though. The wage effects in this multi-tier bargaining are therefore mostly in line with the theoretical expectations that firm-level bargaining attracts further wage premiums over sectoral bargaining agreements at the cost of more inequality between firms.

A similar institutional situation is found in Portugal: just over ten percent of all workers are union members but nine-tenths of them are covered by collective agreements. Sectoral agreements form a wage floor and firm-level agreements come on top of it (wage cushion). Cardoso and Portugal (2005) analyse the determinants of both the contractual wage and the wage cushion (difference between contractual and actual wages). Their results indicate higher wages for higher levels of union bargaining power. Using administrative data, Bastos et al. (2009) show that unions increase wages depending on the degree of firm heterogeneity in an industry. Portugal and Vilares (2013) find still sizeable union wage premiums of up to 30 percent, which rise with union density. Addison et al. (2017a) provide recent evidence for a sizeable density-related union premium. Martins (2021) analyse the effects of bargaining extensions in Portugal and show that they increase both the wages of workers in covered firms as well as independent contractors. Card and Cardoso (2022) use administrative data from Portugal linked to collective bargaining agreements to analyse the interactions between wage floors and wage cushions inside the multi-layer system of collective bargaining. They show that wage cushions provide for a certain amount flexibility within collective bargaining. Addison et al. (2022) find a union density wage premium on top of a collective bargaining wage premium, which can be traced back to firm-fixed effects and job-title fixed effects, i.e. union members work in better-paying firms and occupations. They also find a modest negative union density effect on wage inequality since low-skill workers benefit most from union membership. Hence, the effects are in line with the ones from Spain and other similar countries. An exception of Portugal may be the availability of quite good data, such that this country seems quite well analysed in the literature.

Data (and paper) availability is somewhat more complicated in other Western and Southern European countries. Daouli et al. (2013) analyse the effect of firm-level contracting on the wage structure in Greece using matched employer-employee data for 2006. They find a wage premium associated with firm-level contracting, which follows a hump-shaped profile across the wage distribution. Giannakopoulos and Ioannis (2020) use decentralization reform in Greece and find that affected firms were more likely to join firm-level and saw a twelve percent drop in wage floors relative to not affected firms. Yilmaz and San (2017) estimate of the union–non-union wage differential and the effect of unions on wage dispersion in Turkey. They find that union membership does have a positive wage differential and that this differential is higher at lower quantiles, resulting in a reduction in wage dispersion. Garnero et al. (2020) use detailed Belgian-linked employer-employee panel data to show that that firm-level agreements increase wage costs compared to sector-level agreements. They also show that firm-level agreements benefit both employers and employees through higher productivity and wages in sectors where firms are more concentrated or less exposed to international competition. These results can fit in line with the ones from other countries. However, comparing the effects of different bargaining systems might prove difficult, but has been done, e.g. by Plasman et al. (2007) using harmonized matched employer-employee for Belgium, Denmark and Spain. They find wage mark-ups of firm-level bargaining in Belgium and in Denmark, as well as higher wage dispersion. In Spain, it also increases wage levels but reduces wage dispersion. Hence, similar wage effects can be found in different institutional settings (Belgium has a multi-level bargaining setting, Denmark has not). Also, Dell'Aringa and Pagani (2007) analyse the impact of different institutional settings in countries with multi-level bargaining (Italy, Belgium and Spain) on pay dispersion using the European Structure

of Earnings Survey for the year 1995. They do not find higher wage dispersion for employees covered by both multi-employer and single-employer contracts.

To sum up, the multi-level bargaining systems in these countries have shown to be more flexible than previously thought. There are significant differences in firm-level mark-ups which allow for some flexibility of wage-setting even though most of the economy is covered by collective bargaining. When wage floors are reasonably coordinated, then wage cushions allow for firm-specific adaptions. In addition, some countries have allowed for opening clauses in sectoral agreements as well, such that firm-level bargaining does not have to come on top of the wage floors all the time. A comparison to the effects in countries where firm-level or sector-level bargaining dominates might prove difficult, though. At least, most of the papers analysed use similar data and (micro-)econometric methods, something that cannot be said for the rest of the world.

3.4 Emerging and Developing Countries

While there are plenty of papers for many of the (large) industrialised countries, the literature on wage effect of unions and collective bargaining in developing countries is characterised by heterogeneity of data availability and quality on the one hand and less developed institutional characteristics on the other hand. Therefore, larger union effects are more common as well as larger differences in effects found between studies analysing the same country across time or across data sources. Institutional change has been most pronounced in the former socialist countries, e.g. in Russia and China (for an overview, see Clarke 2005). An overview on the early literature is found in Hayter and Weinberg (2011).

As regards the potentially most important developing country, institutional weaknesses may affect the heterogeneity of results the most: Unions in China are not free. Lu et al. (2010) conclude, however, that even in the era of transition from a centrally planned to a market economy, unions in China's private enterprises do promote workers' interests as unions do in other economies. Yao and Zhong (2013) analyse union effects on worker welfare in a survey of 1,268 Chinese firms in 12 cities. They find that unionisation is significantly associated with higher hourly wages. However, Song et al. (2016) show that union effects are smaller in firms with good political connections and that firms use these to reduce unions' bargaining powers. Budd et al. (2014) find no relationship between union density and wages or employment in China using provincial-level data for 1994-2008, but Guo and Laroche (2021) find positive union effects on wages (but not on employment) for the period from 1994-2014, which they also backup with an instrumental variable approach to address endogeneity. Anwar and Sun (2015) show that union effects on workers strongly depend on the industry, with textile workers not profiting and workers in the communication equipment, computer and other electronic equipment manufacturing industry as well as the general equipment manufacturing industry profiting. Gunderson et al. (2016) estimate the union-non-union pay premium in China decomposed into different components and along the pay distribution. They find a twelve percent union-non-union pay premium, from where eight percent are wages, also depending on firm ownership and more pronounced at the bottom of the pay distribution. Wand and Lien (2018) use data on rural migrants to show that union membership has a significant positive effect across the wage distribution, a union coverage effect in the lower part of the distribution and positive selection of union members within unionised firms. Booth et al. (2020) show that rural-urban migrant workers in China both union-covered non-members and union members in workplaces with active unions earn higher monthly income. Yao and Gunderson

(2021) investigate the extent to which differences in provincial union legislation have impacts on the union earnings premium. They find that unionised workers in China receive an earnings premium ranging from six to ten percent, but that provincial requirements strongly affect the union pay premium. So, in the end, the question remains how these results can be interpreted. Positive union wage effects seem to be established in China, as well. We do not know yet, whether they prevail when the political landscape turns (again).

Summarising union wage effects is not an easy task for other Asian countries, where institutional differences are quite large. Choi and Ramos (2021) provide evidence on the union wage premium in South Korea considering a very special institutional setting where unions restrict entry. They compare wages of union members to different types of non-members and find that voluntary non-members experience a marginal wage penalty while involuntary non-members experience a large wage penalty. Further studies (in Korean) have supported union wage premiums. Torm (2011) uses matched employer-employee panel data from 2007 and 2009 in Vietnam to show that unionised firms have higher wages. At the individual level, wages for union members are higher than for non-members, yet only when comparing across both unionised and non-unionised firms. Torm (2018) also finds large union wage premiums ranging between nine to 21 percent for Vietnamese manufacturing SMEs in 2013 to 2015. Bach et al (2021) use employee-level data with firm characteristics in Vietnam to show a positive effect of trade unions on wages and also a causal negative moderating effect of collective bargaining on employees' earnings in firms having investment activities. These estimates suggest that overall there are positive union wage effects in all Asian countries analysed as well.

Turning to the next continent, South America, there are also many different countries with different institutions. Arbache (1998) shows that unionism does create a positive wage differential for male, semi-skilled workers with formal labour contracts in Brazilian manufacturing, and that, contrary to the common finding in the existing literature, wage dispersion is greater in the union sector. de Oliveira Cruz and Naticchioni (2012) present OLS estimates of a union wage premium of about ten percent in Brazil between 2002 and 2009. Lagos (2021) analyses how collective bargaining affects firm compensation, i.e., the wages and job characteristics that are valuable to workers in Brazil. Using exogenous CBA extensions, he finds that compensation increases by up to two to four percent, while further evidence indicates that the resulting wage and amenity distributions are compressed. Rios-Avila and Hirsch (2014) analyse the effects of unions on wage levels and wage dispersion in Bolivia and Chile. They show that unions have broadly similar effects on the wage distribution as in the US. Fairris (2003) offers empirical evidence on the impact of trade unions on wage inequality in Mexico. The results indicate that unions impact has been reduced. Gutiérrez Rufrancos (2019) provides evidence on the worker compensation gains (losses) made by males upon joining (leaving) a union. Difference-in-differences estimations show that joining a union is associated with modest wage gains, but some union leavers are found to experience a decrease in wages. Blanchard et al. (2021) use matched employer-employee administrative data from Uruguay to analyse the distributive effects of sectoral minimum wages. They find this wage policy to reduce inequality in the lower tail of the wage distribution for all formal private workers, mainly among males. So, to no surprise, the literature shows a wide range of union premiums and even some unexpected results regarding wage inequality.

The continent where union wage effects are potentially least well understood is Africa. There is only sparse evidence for some selected countries, at when looking at high-quality academic field journals. One of these papers is Manda et al. (2005), which analyses the effect of trade unions on male earnings in the Kenyan manufacturing sector considering the endogeneity of the union status of workers. In

contrast to earlier studies a positive effect is found. Blunch and Verner (2004) use a matched employer-employee data set for Ghana and show using quantile regression approach that there is a union wage premium among poorer paid workers in the formal sector. New evidence on Ghana is presented by Owusu-Afriyie et al. (2023) finds a positive union wage premium of twelve percent. Kingdon et al. (2006) provide an overview of Sub-Saharan labour markets in the 1990s and show positive union wage premiums for Nigeria and Tanzania as well, while Tsafack-Nanfosso (2002) presents evidence for Cameroon. They find a union non-union wage differential of about 14 percent controlling for selection on observables. As can be seen, the evidence shows positive union wage effects, which differ to a relatively large extent, given the few analyses present. For some countries, no evidence could be found. For others, the results differ much between the analyses present. It has to be seen how both the countries and the evidence will develop further.

To sum up, the evidence for developing countries is expandable, frankly speaking. While there are plenty of papers for some countries, evidence is barely existent for others. It is to note though, that as these countries develop, so will their institutions. Also, the quality of the data might still represent an obstacle in some countries. Hence, we might see very different results for some of these countries in the future. This is especially expected when we look at newer evidence, mainly from the US, where causal analyses have led to a revision of the old evidence.

3.5 Causal Evidence

The last decade has shown the emergence of some new papers which challenge the findings of the literature so far, especially in the U.S. They have focussed on causal inference in contrast to the former state-of-the-art methods which were based on selection on observables. New evidence by Farber et al. (2021) on the history of union effects in the U.S. suggests that despite large changes in composition and density of union membership, the household union premium holds has been relatively stable since 1936. Also, they find consistent evidence that unions have reduced inequality in times when they were strong. The most recent evidence on the union wage effect in the U.S. is provided by Kulkarni and Hirsch (2021) using samples of displaced union and non-union workers to show union wage effects of close to 15 percent. The smallest and newest strand of the literature are studies which deliver causal effects based on a quasi-experimental research design. These are DiNardo and Lee (2004), Lee and Mas (2012), Frandsen (2012), Sojourner et al. (2015), Frandsen (2016, 2021), and Barth et al. (2020). While the first use a regression discontinuity design related to union recognition in the US, Barth et al. (2020) contribute to the literature using exogenous variance in the price of union membership to identify the effects of changes in firm union density on firm productivity and wages in Norway. Part of the recent U.S. literature uses regression discontinuity designs by comparing plants where the vote to unionise just succeeds versus plants where the vote is just rejected. DiNardo and Lee (2004) acknowledge that former estimates of union wage and other effects are confounded by selection bias, since unions tend to organize firms who are more capable to pay higher wages. They argue that using narrow votes allows to compare albeit similar firms and workers. They show for the period of 1984-2001 that union effects on wages are close to zero (and other effects on business survival, employment, output, and productivity are small).[xvi] Lee and Mas (2012) show that for financial data, unionisation effects materialize only after more than a year, suggesting that the findings by DiNardo and Lee (2004) may not be that small in the longer run. Also, Frandsen (2012) shows that unions raise the lower end of the distribution by around 30 log points, with a much smaller effect on the upper tail,

and a modest effect on average earnings. Sojourner et al. (2015) examine the effects of nursing home unionisation which appears to raise wages for a given worker while also shifting the composition of the workforce away from higher-earning workers. Frandsen (2016) uses differences in state legislation to analyse the impact of unionisation on public sector workers. The findings differ for teachers (small effect on wages), firefighters (substantial positive effect on wages), and police (modest effect on wages, but large effect on hours). Knepper (2020) argues that collective bargaining targets fringe benefits and shows that following unionisation, average employee compensation and employer pension contributions increase, which raises the labour share of compensation. Frandsen (2021) shows that unionisation substantially decreases payroll and average worker earnings, mainly because older and higher-paid workers leave unionising plants and younger workers join or stay. Fortin et al. (2023) use right-to-work (RTW) in five U.S. states as an instrumental variable to estimate the causal effect of unions on wages. They find an IV estimate of the effect of unions on wages of 0.35, which substantially higher than the OLS estimate of 0.16. The effect might be large because RTW may also reduce the union threat effect.

Concerning the union effect on wage inequality, Card et al. (2020) examine the changing relationship between unionisation and wage inequality in Canada and the United States over a long panel until 2015. Due to changes in the composition of the unionised workforce, they find that unions reduce economy-wide wage inequality by less than ten percent with larger effects in the public sector, whereas previous studies argued that unions tend to reduce wage inequality among men but not among women.[xvii] Fortin et al. (2021) find that the reduction in the threat of unionisation doubles its contribution to the rise of male wage inequality in US between 1979 and 2017.

This new stream of more causal evidence suggests that the previous results may be overestimated and driven by unexplained selection effects, e.g. of motivated employees into unionised plants. There are, however, not many papers of this kind outside the U.S., with some exceptions for Norway (Barth et al. 2020, Bryson et al. 2020). Some of the newer results are still disputed, though, so that it may be too soon to draw general conclusions. Also, the question remains whether the identification of a causal effect is really all that matters. Union presence obviously makes a difference in pay, only the channels might be others than expected.

Given the overall results of union bargaining on wages, the minimum consensus might be that there is no negative effect. As regards the size of the union wage premium, the picture is not as clear-cut as might be expected, mainly because of institutional differences between countries. It is somewhat clearer on the effects on wage inequality, where basically all studies find a wage compressing effect of union bargaining, or at least no increase in wage inequality. Given the various ways of measuring inequality, it is difficult to compare the size of the union effect, though.

After having analysed the literature on union wage effects, and finding that most of the evidence suggests union wage premiums, at least in the lower part of the wage distribution, a union effect on employment also seems immanent, and will be looked at next.

4 Employment

Contrary to union and collective bargaining wage effects, the effects on employment are not directly controlled by unions, but rather a reaction of firms to increased labour costs. Unions care about

employment, though. They would anticipate employment effects when pushing for wage increases in a right-to-manage model or would also negotiate over employment in efficient bargaining models. The last say on this is, in practice, with the firm. For a long time, the literature seemed to having settled the question whether union or collective bargaining wage effects cause an employment reaction. Among all the economic effects of unions or collective bargaining, the effects on employment have been characterized as *the one constant*. Addison and Belfield (2004) review the literature available at that time and conclude that union or collective bargaining reduces employment growth by two to four percentage points per year. The evidence cited is, however, mostly related to Anglo-Saxon countries, where union density (and therefore bargaining power) has fallen and collective bargaining coverage is low and mainly situated at the firm level. Methodologically, the literature on the employment effects of unions or collective bargaining has been established on the basis of comparing employment or employment growth in firms with union or collective bargaining to firms with individual bargaining using mostly cross-sectional or panel data evidence. Another group of papers analyses the effects of unions or collective bargaining as part of institutional drivers of employment and unemployment rates across countries. There is also a parallel strand of the literature regarding the personal benefits of union membership, e.g. reduced dismissals or displacement rates (for recent evidence on this see Kulkarni and Hirsch 2021, for an overview on that see Goerke 2020). The rest of the section will present the micro evidence for selected countries, and some macro studies. There are fewer papers than for union wage effects, though. Hence, the section will be shorter and will not cover all previously analysed countries.

Maybe surprisingly, most evidence on union employment effects is available for the U.K. rather than for the U.S. The majority of the studies finds results supporting the one constant hypothesis (e.g. Blanchflower et al. 1991, Blanchflower and Burgess 1996, Booth and McCulloch 1999, Addison et al. 2000, Bryson 2004, Addison and Belfield 2004, and Bryson and Nurmi 2011). A minority of studies can establish such an effect for selected plants only (Machin and Wadhwani 1991) or cannot establish it at all (Blanchflower and Burgess 1998, Bryson and Dale-Olsen 2008). Salvatori (2012) extends the analysis to the effect of unionisation threat on the use of non-union employment. Using exogenous variation in union threat induced in the U.K. by new legislation, he finds only weak evidence for such an effect. So, with the U.K. being the most studied country, even there the one constant hypothesis is not generally found and may have changed over time.

For other Anglo-Saxon countries, similar results of lower employment growth can be observed, for example for the U.S. (Leonard 1992, Dunne and MacPherson 1994, Bronars et al. 1994), where Linneman et al. (1990) have concluded that high union premiums have led to both employment and unionisation decline. Tinsley (2003) shows that unionisation decreases layoff rates under certain conditions, but that it has no general effect on involuntary job loss. Krol and Svorny (2007) show evidence that links union influence to slower job growth during an economic recovery using variations across US states in union membership and right-to-work laws.

Similar evidence is found for Canada (Long 1993, Walsworth 2010), with a smaller magnitude in more recent years (Walsworth and Long 2013). Even results for Australia indicate a negative union effect on employment despite the very different institutional framework (Blanchflower and Burgess 1998, Wooden and Hawke 2000). Magruder (2021) shows that in South Africa centralized bargaining agreements are found to decrease employment in an industry by eight to 13 percent using identification by a spatial regression discontinuity design. So, the evidence on all Anglo-Saxon countries might indicate the one constant still holds. Although the majority of the papers have been published a

long time ago, such that there might be some need to replicate the findings using new methods or higher quality data.

While there are at least a few papers for each of the (larger) Anglo-Saxon countries, evidence for European countries is sparse with few exceptions, notably Germany. Dolado et al. (1997) find non-negligible employment losses as a reaction of Spanish firms to wage gains from minimum bargained wages. For Norway, Bryson and Dale-Olsen (2008) analyse linked-employer-employee data to find employment growth to be three to five percent lower in plants with collective bargaining. However, in estimates which control for worker sorting, the study finds a positive effect of union density on both short-term and long-term employment. Barth et al. (2020) also show that unionisation slows the rate of employment growth in Norwegian workplaces. Martins (2021) shows that for collective bargaining extensions in Portugal formal employment in the relevant sectors falls, on average, by 2 per cent. The effects are larger in small firms and driven by a reduction in hiring. A similar effect has been found by Hijzen and Martins (2020) using a natural experiment in Portugal, which indicates that collective bargaining extensions had a negative impact on employment growth. Giannakopoulos and Ioannis (2020) report an increase in post-reform employment levels in firms choosing firm-level bargaining in Greece. Fanfani (2023) studies the wage and employment effects of Italian collective bargaining as a reaction to generalised wage growth and shows that firms react to increases in actual pay levels by reducing employment. Devicienti and Fanfani (2021) show that employment falls when Italian firms need to adjust for higher labour costs induced by collective bargaining institutions, while Devicienti et al. (2018) do not find a threat effect of unionisation on employment. In an overview article, Villanueva and Adamopoulou (2022) analyse the effects of extending the wage floors and working conditions set in collective contracts to all employees in an industry. This practice is relatively common in central European countries. They suggest that collective contract benefits come at the cost of reduced employment levels, though typically only for workers earning close to the wage floors. It is to note that many of the studies for European countries have been published more recently and find smaller effects or even no effects at all. Surprisingly, the results are quite in line with each other, given the large differences in institutions and that union wage effects have been found to be quite diverse in these countries.

In one non-Anglo-Saxon country, there is a larger number of studies which analyse union employment effects: Germany. The empirical work on union employment effects has focused on plant-level co-determination in the form of works councils, where evidence is mixed (see Addison et al. 2000, Addison and Teixeira 2006, and Jirjahn 2010). These studies are also inconclusive as to whether collective bargaining has a negative and marginally significant or an insignificant or positive impact on firms' employment growth. Kaiser and Pfeiffer (2001) analyse the way collective bargaining agreements affect the adjustment of employment. The estimation results collective bargaining agreements negatively affect recruitment and the employment of freelance workers. Gralla and Kraft (2018) present negative but mostly insignificant effects of collective agreements on firm-level employment growth. The most recent study by Brändle and Goerke (2018) finds a negative correlation between being covered by a sector-wide bargaining agreement or firm-level contract and employment growth of about one percent per year. However, it seems like the correlation between employment growth and collective bargaining might be driven by selection and should not be interpreted as causal. Hence, although the literature on Germany is more in line with the one in the Anglo-Saxon countries with respect to methodology and data, the results are different, i.e. smaller or even insignificant. This could be attributed to the different level of bargaining centralisation and coordination. In the same manner, Boeri et al. (2021) compare the industrial relations systems in Germany and Italy and find that Germany

has a tighter link between local wages and local productivity. As a consequence, the Italian system has significant costs in terms of forgone aggregate earnings and employment. Hence, the German system might be viewed as one where unions increase wages, but where this does not come at a high cost of employment. This might have been bought with an increase in wage inequality, though (see Dustmann et al. 2014).

Outside the Anglo-Saxon and European countries, evidence for other countries is sparse. For China, some papers analyse union employment effects, but Budd et al. (2014) conclude that there is no clear relationship and further studies (and better data) are needed. Hence, this overview refrains from drawing any general conclusions for developing countries.

Similar to union wage effects, there are some studies employing a regression discontinuity design of unionisation votes in the U.S. to control for self-selection and draw causal conclusions. LaLonde et al. (1996) show that employment (and output) decrease following a in favour of union certification, while the most cited paper by DiNardo and Lee (2004) finds little to no impact of unionisation on hours of work in a large sample of plants facing barely won unionisation votes. Sojourner et al. (2015)'s results for nursing homes are in sharp contrast. Their estimates indicate that hours of work per resident (as a proxy for employment) decline dramatically because of union certification. Some evidence suggests that nursing homes in less competitive local product markets and those with lower union density at the time of election experienced stronger union employment effects. The newest paper by Frandsen (2021) shows that unionisation significantly and substantially decreases plant-level employment. This is after controlling for the fact that close union elections are subject to non-random selection, with large discontinuities in pre-election characteristics at the majority threshold. Wand and Young (2023) study the effect of private-sector unionisation on establishment employment using union elections from 1981 to 2005 and find that unionisation decreases employment. The effects are driven by multi-establishment firms shifting employment to non-union establishments. In conclusion, the newer, more causal evidence on the U.S. is more diverse in with regards to union employment effects. Hence, there is significant doubt that employment effects are still going to be viewed as *the one constant* among the union effects, given more divergent recent results both in the U.S. and in other (European) countries.

Apart from microeconomic studies on single countries, there is some cross-country evidence on union employment effects. Most of the studies discuss the received wisdom that the rigidity and inflexibility of European job markets relative to that in the US is the reason why Europe has high unemployment. Nickell (1997) and Nickell and Layard (1999) discuss whether unions are among the institutions which in fact reduce employment by reducing product market competition, while Flanagan (1999) critically reviews the research on how collective bargaining systems influence macroeconomic performance in industrialized countries to find no clear effect and existing effects to be subject to measurement and specification choices. Kahn (2000) uses data from 1985 to 1994 for fifteen OECD countries to find that greater union coverage and membership lead lower relative employment for less-skilled men and young men. Feldman (2006, 2009) uses data from 19 industrial countries for the period 1985–2002 and from 45 developing countries for the period 1995 to 2003 to analyse the quality of industrial relations and unemployment and employment rates. He finds that cooperative industrial relations are likely to lower unemployment and to increase employment. The effects are larger in industrial countries. Bertola et al (2007) show that unionisation benefits the employment participation of prime-aged men using data from 17 OECD countries over the 1960–1996 period. Van Den Berg et al. (2013) find in a cross-country study for European countries that union employment effects differ between

clusters with similar institutional designs. A negative effect of union presence on firm employment seems to be limited to Southern European and Eastern European countries, whereas collective bargaining reduces employment in the U.K. and Ireland only. Adavic and Salardi (2013) re-assesses the debate that labour market rigidities are responsible for high unemployment using new evidence from a larger group of countries, which includes advanced and new market economies. They find rather thin support for the deregulatory view. The impact of institutions is particularly weak in new market economies. Also, Wesselbaum (2018) uses panel data on 12 OECD countries for 1990 to 2012 to show that union density is associated with lower job flows. Garnero (2020) analysis the link between different types of collective bargaining systems and employment in a new taxonomy of bargaining systems in 36 OECD countries between 1980 and 2015. The results show that coordinated bargaining systems are associated with higher employment. In effect, the literature does not seem to provide a clear-cut picture and still discusses the employment effects of collective bargaining (and other labour market rigidities). This might in part be an ideological discussion and cross-country macro studies are faced with some methodological issues the recent microeconometric evidence does not need to hustle with.

To sum up, putting it positively, *the one constant* among the economic effects of union bargaining seems to hold regarding new microeconomic evidence with a tendency towards smaller effects in recent papers. Putting it more negatively, the new results are quite diverse, such that the range of *the one constant* would be so large when trying to include all recent studies that it becomes useless. Furthermore, the evidence is restricted to a few countries, and the macroeconomic literature does not reach the conclusion that union bargaining is detrimental to employment. As often, cross-country studies conclude that the effects depend in institutional environments such as bargaining centralisation and bargaining coordination and the interaction effects with other institutions. In conclusion, the literature might agree that union employment effects are non-positive as a smallest common denominator.

5 Firm Survival

Following a similar line of argument like for employment effects, firm survival is not directly controlled by unions, but a can be a result of higher wages and lower employment (growth). Following *the one constant*, firms with union bargaining grow slower and are eventually driven out of the market such that unions may be associated with a lower chance of firm survival. Several studies have examined the relationship between unionisation and establishment closures, albeit the number is much smaller than for other union effects. The most frequent explanation is the lack of data that allows following firms after (or until) death, i.e. firm surveys usually only capture existing firms and do not record why former survey participants might have stopped responding.

Most studies are available for the U.S. and show only small or insignificant effects (Dunne and Macpherson 1994, Freeman and Kleiner 1999): More heavily unionised sectors experience similar death rates as less unionised sectors and unionisation does not increase the insolvency of firms. Even when causality is established using close unionisation votes, there seems to be a negligible effect of unionisation on firm survival in the U.S. (DiNardo and Lee 2002, DiNardo and Lee 2004). Regression discontinuity analyses find little or no union effect on short- and long-run employer survival rates. Lee and Mas (2012) use publicly traded firms' equity value in the U.S. as a proxy for firm survival following

unionisation drives over the 1961–1999 period. They find if anything positive effects of unionisation on firm equity. A similar approach to proxy firm survival is taken by Ghaly et al. (2021) who find that unionisation has no causal effect on firm risk also using a regression discontinuity design for union elections. They rely on option-implied firm risk and find that unionisation per se does not affect investor perceptions. In contrast to these results is only the recent paper by Frandsen (2021) who shows that unionisation significantly and substantially decreases the probability of plant survival when controlling for non-random selection of close union elections. The author is cautious about inferring causality, though. Wand and Young (2023) also find negative effects of unionisation on firm survival, but these might be induced by shifts in multi-establishment firms and management opposition. The literature in the U.S. therefore seems inconclusive about union effects on firm survival, with a small tendency towards negligible effects.

A similar conclusion is reached by the empirical literature in the U.K., where Stewart (1995) and Machin (1995) do not find a link between union wage differentials or union presence and the probability of plant closure in the 1980s. Addison et al. (2003) find a strong positive association between both union recognition for collective bargaining purposes and union coverage at the firm level and plant closings in the 1990s. The effect might be driven by multi establishment firms. Bryson (2004) also finds that unions increased the chances of workplace closure in Britain in the 1990s, in contrast to the 1980s. He concludes, however, that the effects are not very robust and heterogeneous. They are also not found any more in later analyses, which use similar data from Norway and Britain covering the period 1997 to 2004 (Bryson and Dale-Olsen 2008). Union recognition is not statistically significantly associated with workplace closure in Britain or Norway. For Norway, there is also no connection with union density. There seem to be negative effects in other countries, such as Australia, where different measures of unionisation have a robust positive influence on the probability of plant closure (Brown and Heywood 2006). Negative effects of union bargaining are also recorded for Canada, where Fang and Heywood 2006) show that the share of a plant's workers covered by collective bargaining has a robust positive partial correlation with the probability of especially larger plants closing. Hence, the evidence for other Anglo-Saxon countries indicates indeed some negative effects of union bargaining on firm survival, but most of the studies have been getting on in years.

For Germany, Addison et al. (2004) finds collective bargaining agreements play a neutral to benign role in Germany regarding the closure of establishments and that works councils are positively associated with plant closures, especially in small firms. Jirjahn (2012) examines the relationship between German works councils, collective bargaining and the closure of manufacturing plants in more detail to find that collective bargaining coverage has no significant effect on firm survival, whereas works councils can have both positive and negative effects, depending on firm structure. This result has been replicated by Addison et al. (2023) using more recent and representative data. Especially dissonant works councils are positively associated with plant closings, although not in plants with collective bargaining, while collective bargaining per se has no effect. Evidence from Brändle and Goerke (2019) also find no significant negative effect of collective bargaining coverage on firm survival of German plants. Hence, the literature in Germany is inconclusive on the topic.

To sum up, the literature on the economic effects of union bargaining on firm survival has, to a large part, not yet overcome the fundamental lack of data on the whereabouts of firms who have left surveys or even administrative data. Causal evidence seems to be limited on close elections to recognise a union for firm bargaining in the U.S. Evidence on developing countries is missing, also evidence on countries outside the U.S., the U.K., and Germany is sparse to non-existent. Given these limitations,

we can conclude that little is known and the best guess based on the literature available is that there is no significant negative effect of union bargaining on firm survival.

6 Conclusion

This overview article has shown that unions play a central role in determine wages, also affecting employment and potentially firm survival. The literature is overall quite extensive and despite the best efforts, the reference list is far from concluding. The effects of unions on these economic variables have been studied for quite some time and with high intensity, especially on wages and to a lesser degree also on employment.

Overall, the empirical evidence suggests that there are positive union or collective bargaining wage premiums. The size of the premiums might vary by a large margin, depending on the country, the time period analysed, the industry, and many other factors: there might be very large wage effects of up to 40 percent or negligible ones. Where the academic literature is overwhelmingly clear is that union bargaining leads to a more egalitarian wage distribution within the workforce (see also Aidt and Tzannatos 2002, Breda 2015, Carlin and Soskice 1990, Flanagan 1999, Hayter 2011). Also, it is important to note that wages are not everything. Apart from wags unions have additionally positive effects on other working conditions. Were they to be quantified (if possible), then the positive effects of union bargaining on compensation would be even larger.

The literature is not so clear-cut on the influence the level of bargaining and the degree of bargaining coordination has on the wage effects of unions. The often-cited hump-shape Calmfors and Driffil (1988) hypothesis potentially ignores too many mediating factors, and is also difficult to test, since the contrafactual is hard to come by: are German firm-level contracts really that different from industry-level contracts? Also, even in countries where union bargaining can take place at different levels, causal evidence is hard to establish.

The union effects on employment are theoretically ambiguous, but have been called ‘the one constant’ among many possible union effects when looking at empirical evidence. Theory on the one hand suggests that higher labour costs and less flexibility with union bargaining would induce firms to reduce employment. On the other hand, there are positive effects on productivity, reduced turnover etc. which could turn the balance. The empirical evidence suggests it does not: unionised plants have less employment and grow less than non-union plants. This result has been remarkably stable over time and across countries, but is mostly derived from non-causal estimates.

Finally, the effects of union bargaining on firm survival are the ones studies the least frequently and also the ones with the vaguest theoretical hypotheses. Only if unions increased wages significantly and over a long period more than productivity, unionised firms would have a competitive disadvantage. It is to no surprise then, that the empirical evidence is inconclusive.

Of course, an overview article like this cannot be as comprehensive as one wishes to be without overextending. Luckily, there are enough lengthy reads on the topic which have recently come out, e.g. the book by Doucouliagos et al. (2017) on *The Economics of Trade Unions*, or the overview article by Fang and Hartley (2021). Each article or book has its own focus and style, such that the reader can choose according to her taste. This article has tried to list most of the empirical findings of the last 15

to 20 years on the topic, and to make some statements regarding the relation of the findings or whether we can draw general messages or conclusions.

Apart from this, recent overviews on other topics increasingly use the tools of meta-regression analysis to identify and quantify economic impacts, as well as to correctly identify research design developments. Union wage effects would also allow for a thorough analysis of the evolution of data availability and quality, and empirical methods, such as the handling of selection bias and model misspecification, and the increasing need for causal analysis using regression design. Both topics would go beyond this article, but might be written in the near future.

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[iii] In consequence, evidence on developed countries will be overrepresented.

[iv] Braakmann and Brandl (2021) stress heterogeneity in their analysis of the relationship between different processes and institutional structures of collective bargaining and firm productivity in the EU.

[v] Brandl (2022) acknowledges that differences in the role and effect of collective bargaining may also arise because of different disciplinary, theoretical and empirical approaches.

[vi] It would also make sense to distinguish between bargaining at the industry and at the national level. Evidence on this is sparse, however.

[vii] Hirsch and Schnabel (2014) are one of the few papers to estimate union bargaining power using German data for 1992 to 2009.

[viii] The literature on this might seem old, but the arguments have not changed.

[ix] A similar structure can be found in Germany, where firm-level works councils increase wages on top of sector-level bargaining agreements. See, for the effects of works councils, Mohrenweiser (2021).

[x] However, Barth et al. (1994) argue that for Germany, Austria, and Norway, the bargaining regime effect is not an effect of individual union membership, but of collective bargaining.

[xi] They find significantly larger effects in the U.S. and U.K-, Australia, Austria, Brazil, Canada, Chile, Cyprus, Denmark, Japan, New Zealand, Norway, Portugal and Spain, whereas only small union membership premiums are found in France, Germany, Italy, the Netherlands and Sweden, where collective bargaining extends union wages to all employees covered.

[xii] Antonczyk (2011) uses an instrumental variables approach. He finds collective coverage tends to increase wages and tends to decrease the wage dispersion, and that this effect increases with net union density, i.e. more powerful unions.

[xiii] Early studies have measured the effect of collective bargaining inadequately as a union membership premium of eight percent for Germany and seven percent for Austria with a similar system (Blanchflower and Freeman, 1992).

[xiv] Even though union membership per se should not yield a wage premium in Germany, several papers, among which Bonaccolto-Töpfer and Schnabel (2023) is the latest, still find one in addition to the collective bargaining premium.

[xv] The reason may be that collectively bargained wages in Germany are pro-cyclical (Gartner et al. 2013).

[xvi] Barth et al. (2020) argue why the findings may be that small: (1) some of the narrow votes never materialize into a union contract, (2) narrow votes are a sign for small bargaining power and (3) unions focus on specific wage groups only.

[xvii] See, e.g. DiNardo et al. (1996), Card (2001), Card et al. (2004), Gosling and Lemieux (2004).