The London School of Economics and Political Science

Growing periphery in core sectors and the challenges for labour representation.

A case study of the German manufacturing sector

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Statement of conjoint work

I confirm tha the third paper was jointly co-authored with Lisa Dorigatti (University of Milan) and I contributed 60% of this work.

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Abstract

This thesis investigates the causes of the growth of contingent work and its implications for labour. It focuses on German core manufacturing sectors, where contingent work recently increased to a great extent and the metal union started organising agency workers and bargaining on their behalf. In contrast, existing literature expects the German core manufacturing to rely on a stable specific-skilled workforce and on labour management coalitions while contingent work affects the service periphery.

The thesis contends that the literature has overestimated employers' interests in retaining their skilled workforce as well as the stability of cross-class coalitions, which are supposed to support the equilibrium between core and peripheral labour market segments. The main argument is that labour will include contingent workers in its representation domain when employers' segmentation strategies start developing competition between contingent and permanent workers and threatening the existence of the core workforce. Institutional change undermining labour cohesiveness and increasing employer discretion is found to trigger this process.

The first paper examines how weakening negotiated and legal employment protections have affected the association between specific skills and stable employment. It finds that the whole manufacturing workforce –including specific-skilled workers- have become more likely to be on a temporary contract since the eighties, also thanks to the routine nature of work.

The second paper examines how labour influenced the workplace arrangements for agency workers in four automotive plants. It finds that inclusive arrangements are the outcome of the combination of labour power –rooted in workplace industrial relations and conditions external to the plant - and labour commitment to a homogeneous workforce.

The third paper explains the union campaign for agency workers started in 2007. By analysing the union's strategies towards agency workers from the seventies until 2012, it shows that the union adopted an inclusive strategy because growing agency work threatened the collectively agreed standards for core workers.

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Note on the structure of the thesis

This thesis conforms to the guidelines of the London School of Economics and Political Science specifying that a series of three papers of publishable standard, with an introduction and conclusion, where the total word count does not exceed 100,000 words, can be submitted instead of a conventional book thesis.

In line with the guidelines, this thesis starts with an introductory chapter, followed by a series of three articles, and finishes with a concluding chapter. The historical section on German industrial relations in teh introduction relies on research I have conducted for Professor Lucio Baccaro (University of Geneva) within a project on the liberalisation of European industrial relations. My review of German industrial relations constitutes the basis for a co-authored chapter in the final book of the project, which is forthcoming with Cambridge University Press. An early version of the second paper has been published as Working Paper by the European Trade Union Institute (Benassi 2013), which also supported my research. The third paper has been published in the British Journal of Industrial Relations (Benassi and Dorigatti 2014). All of the work submitted in this thesis has been carried out following my initial registration for a PhD in the Employment Relations and Organisational Behaviour Group at the Department of Management.

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INTRODUCTION

THE GROWTH OF CONTINGENT WORK AND THE CHALLENGES TO LABOUR REPRESENTATION

This thesis investigates the causes of the growth of contingent work and its implications for labour representation. Contingent workers are usually lower paid and have more precarious jobs than the permanent workforce; furthermore, they often are neither organised in the union nor covered by collective agreements. As this study concerns inequalities in working conditions, protection and representation, its research enquiry is ultimately related to the broader question central to the industrial relations and political economy literature of why labour market outcomes differ across workers.

The segmentation literature in the seventies put as first differences in labour market outcomes at the centre of the analysis.[1] Previously, the working class was mainly seen as homogeneous. Most prominently, Marx's analysis emphasised the commonalities across workers as "wage-laborers who, having no means of production of their own, are reduced to selling their labor-power in order to live" (Marx and Engels 1906: 12). The commonality of workers' interests against capital was supposed to contribute to overcoming individual self-interests, leading to a united front of representation of the working class (Marx and Engels 1906: Ch. 1; see also Ollman 1968). Braverman (1974) furthered Marx's analysis regarding the mechanisms through which the capitalist process of production drives the formation of the working class. He contended that new technologies and scientific management techniques deskill the working class, leading to the "interchangeability of persons and functions" (p.359).

In contrast with the picture of a homogeneous working class constituted by interchangeable individuals, the works by Doeringer and Piore (1971), Osterman (1974) and Berger and Piore (1980) showed that the workforce is segmented along gender and ethnic lines and, primarily, between internal and external labour markets. Workers in

[1] With the exception of Lester (1951) and Kerr (1954).

internal labour markets are skilled and enjoy good wages and working conditions; in contrast, employees in external labour markets are employed in unstable, low-paid and dead-end positions. While some Marxist authors argued that segmentation was the outcome of employers' control strategies (Reich, Gordon et al. 1973), most models of dual labour markets have interpreted it as the outcome of employers' efficiency-seeking strategies and labour market institutions. Doeringer and Piore (1971) and Osterman (1974) argued that the skill requirements of complex technologies in company's core are one of the main factors driving segmentation. Among others, Rubery (1978) and Jacoby (1983) pointed out the active role of labour in bargaining with the management the boundaries between external and internal labour markets in order to protect the core workforce from market pressure.

The segmentation literature developed mainly in Anglo-Saxon countries, whose "liberal" model of capitalism is characterised by flexible and deregulated labour markets. The comparative political economy literature instead highlighted that in coordinated forms of capitalism, high wages and employment security for the whole workforce were successfully associated with efficient production strategies based on high skills, innovative technology and complex work organisation. This model of production was supported by cooperation between encompassing labour organisations and management (Dore 1973; Albert 1991; Streeck 1991). Given the broad political support and the competitiveness on international markets, coordinated, or social, models of capitalism were argued to persist despite the liberalising pressures of globalisation (Hall and Soskice 2001).

In the last ten years the literature has acknowledged the erosion of coordinated models of capitalism – such as in Denmark, France, Germany and Japan. Institutional changes have mainly been interpreted through a core-periphery framework, suggesting that the core of the economy is still coordinated while the periphery has become increasingly flexible and deregulated (Emmenegger, Hausermann et al. 2012a; Thelen 2014). As the coordinated economy par excellence, Germany is now the paramount example of a dual economy. The German manufacturing sector, which represents the core of the German coordinated production model, is argued to have maintained the traditional characteristics of a stable specific-skilled workforce and close labour management cooperation. The cross-class coalition in manufacturing is supposed to rely on the

common interest of maintaining high wages and good working conditions for the core manufacturing workforce; at the same time, cost competitiveness is achieved at the expense of the service periphery, which is increasingly deregulated and flexibilised (Eichhorst 2012; Thelen 2012; Hassel 2014).

This PhD project starts from two observations, which are at odds with the core-periphery analysis of the current changes in the labour markets of coordinated economies, and particularly of Germany. First, contingent work has been dramatically increasing in the last ten years in German core manufacturing sectors. Second, the German metal union IG Metall launched a campaign in 2007 for organising agency workers and started bargaining on their behalf. The present thesis argues that these phenomena challenge the traditional understanding that contingent workers occupy a secondary labour market segment, which is separate from and not in competition with the core workforce. Previous literature seems to have overestimated employers' interests in retaining their skilled workforce as well as the stability of labour-management arrangements, which are supposed to maintain coordinated and flexible labour market segments in a dual equilibrium. Furthermore, the thesis sheds new light on the extent of liberalisation trends: The marketisation of the employment relationship has not spared the core of the coordinated economy par excellence, triggering the reaction of the powerful German metal union, which started organising workers traditionally considered as marginal.

The main argument is that labour will include contingent workers in its representation domain when their presence on the labour market starts threatening the standards and the future existence of the core workforce. Institutional changes undermining labour cohesiveness and increasing employer discretion trigger this process because they allow employers' increasing use of contingent work, which slowly erodes the size of the traditional core workforce and develops competition dynamics between contingent and permanent workers. Overall, the PhD project shows that institutional change driven by liberalisation affects the workforce throughout the whole political economy in the long run, making the interests between "core" and "marginal" workforce converge and leading to broader working class solidarities.

The introduction is organised as follows. The next section illustrates the relevance of contingent work both from a social and an academic perspective. Section two, three and four present respectively the three academic debates this thesis will contribute to. Section five illustrates the main changes in the German model over the last thirty years, motivating the focus of this thesis on German core manufacturing sectors. The sixth and final section presents the content and the structure of the thesis.

1 The changing employment relationship: From facts to theory

1.1 The growth of contingent work and the challenges for labour

"Guestworkers and other captive workers, contingent workers and contract labor in the United States, hold a crystal ball into the economy. If you look at it, it is a pretty terrifying picture. At the end of this transformation, […] we will be trapped in an economy of temporary work. We will be climbing supply chains instead of career ladders. We will be working to get out of debt, rather than building wealth."

Soni Saket, Executive Director of the National Guestworkers' Alliance and the New Orleans Workers' Center for Racial Justice and National Guestworker Alliance, 14 February 2013.

In the Jerry Wurf Memorial Lecture at Harvard Law School in 2013, Soni Saket made gloomy predictions about the future of work. In his speech he reported that over 40 million contingent workers were employed in the US in 2006 (US Bureau of Labour Statistics cit. in Saket 2013); and since the end of the crisis in 2009 these numbers have been constantly rising - the US staffing industry has been growing with rates around 9%, and temporary help contracts now make up 19% of the newly created jobs (Bloomberg News 10.05.2013). Also in Europe, part-time and fixed-term work, agency work and freelance contracts have become increasingly common in the labour market, and the rates are expected to rise in the future (Giaccone 2011; Koch 2013). In the EU-28 temporary contracts are 14% of the total workforce and their rate is 43% among young workers aged between 15 and 24 (Eurostat 2014).

The growth of contingent work has been attributed to shifting structural factors such as the development of the service and knowledge economy relative to traditional

manufacturing (Castells 1996); technological change, especially advances in IT, which contributed to job polarisation between core high-skilled employees and peripheral workers (Smith 1997: 332 f.); and the financialisation of the economy and companies' shareholder-value orientation, which made companies more vulnerable to market uncertainty and more oriented towards short-term profits (Dörre 2001; Koch 2013). In addition, since the nineties national governments have implemented policies providing companies with greater flexibility in supposedly rigid labour markets. These policies have mainly consisted of the deregulation of labour markets and of industrial relations (OECD 1994; Kalleberg 2009: 3; Koch 2013: 33). They have been promoted as job-creating policy instruments as growth rates of Western economies slowed down since the eighties and unemployment started rising at higher levels than in the past. At the same time, labour started losing its political influence, also because of declining union density and bargaining coverage rates.

While the effect of labour market flexibilisation on unemployment is contested in the literature,[2] there is broad agreement that the expansion of contingent work represents a concerning trend for society. Indeed, nonstandard contracts[3] are often associated with low pay, limited benefits and bad working conditions, and expose contingent workers to higher poverty risks than workers in a standard employment relationship (McGovern, Smeaton et al. 2004; Maurin and Postel-Vinay 2005). Precarious working and living conditions limit individuals' ability to plan their lives and to successfully integrate and actively participate in society (Bourdieu 1998; Castel and Dörre 2009; Standing 2011). National governments and the European Union have recognised the need for an intervention in order to guarantee employment and income security to the new workforce. While the use of contingent contracts has not been re-regulated[4] (Koch 2013: 42), equal treatment provisions for some forms of contract and specific welfare policy instruments – for example unemployment benefits and training – have been, at least partly, slowly implemented (Taylor-Gooby 2004; Bonoli 2007; Arrowsmith 2009).

But the growth of contingent work does not represent a challenge only for national policy makers. As traditional working class actors, labour unions have been struggling with the representation of contingent workers, who present lower union density rates

[2] See discussion and findings by Scarpetta (1996) and Bassanini and Duval (2006).
[3] "Nonstandard" and "contingent" will be used as synonyms.
[4] With the exception of France.

and lower coverage of collective bargaining arrangements compared to standard workers (Ebbinghaus, Goebel et al. 2008; Vandaele and Leschke 2010). On the one hand, contingent workers are difficult to organise. They are more vulnerable to employers' retaliation and, therefore, more afraid than permanent workers of joining unions and participating in industrial action. Furthermore, contingent workers are difficult to approach and even identify for the union because they often change their workplace and in some cases they do not share the same employer as their colleagues. On the other hand, unions have historically developed on the basis of the stable employment relationships and set their political priorities according to the interests of their core membership. As the interests of the latter are different from those of the contingent workforce, unions might not be willing or able to initiate deep organisational changes in order to adapt their goals and their representation forms to the new labour force (Ross and Martin 1999; Gumbrell-McCormick 2011).

Despite the obstacles, the representation of contingent workers is a vital issue for the future of unions and of industrial democracy. Labour power has been declining and unions' ability to set standards for the old and new workforce is increasingly dependent on their mobilisation potential. Indeed, unions have progressively lost political support of left-wing parties, making the influence of national politics more difficult than in the past (Ross and Martin 1999: 14 f.). Furthermore, their traditional membership pool of permanent workers - mainly in manufacturing or in the public sector - is declining so unions will need to organise the new workforce as well (Western 1995; Lee 2005). Contingent workers represent an important and growing part of the economy which has so far remained at the margins of the bargaining arena. Their inclusion in the union bargaining domain would give contingent workers a collective voice in order to achieve better working conditions.

1.2 Contingent work as object of research

The casualisation of work has been identified as one of the most important changes – if not the most important - in the labour market in the last twenty years (Kalleberg 2009). Some scholars have interpreted the expansion of contingent work as the erosion of the Fordist class compromise, which relied on workers' acceptance of the Taylorist mode

of mass production in exchange for family-supporting wages and employment security (Alonso and Martinez-Lucio 2006); similarly, other scholars have stressed that the phenomenon of contingent work represents a (re)commodification or marketisation of the employment relationship in comparison to Fordist times (McGovern, Hill et al. 2007: Chapter 2; Hyman 2013). Indeed, contingent work falls out – at least partly - of the existing regulation standards regarding wages and social security bargained between labour and management. Furthermore, the temporary nature of the employment relationship prevents labour from bargaining over new work standards because it impairs workers' resistance to managerial practices (Hyman 2013).

Since the nineties, research has explored the deterioration of stable employment, highlighting different aspects of the changing employment relationships. In their research on white-collar–careers in the US Osterman (1996) and Cappelli (1999) documented the declining length of tenure and the increasing flexibility of work contracts, suggesting the end of "career jobs". In their comparative study of four large companies in the manufacturing and service sector, Grimshaw et al. (2001) have shown that employers' use of temporary contracts and staff agencies has contributed to increasingly flat and network-based work hierarchies. Rubery at al. (2002) have argued that the use of sub-contracting and agency work led to new multi-employer relationships, even blurring organisational boundaries. At the individual level, the increasingly flexible and fragmented employment relationship between employees and the organisation has been found to also affect the psychological contract between managers and workers, which relies on commitment and mutual trust (Coyle-Shapiro and Kessler 2002; Guest 2004).

The diffusion of market-based mechanism in the employment relationship has raised questions on the role of employers and labour in this process. First, research has investigated why employers have made increasing use of contingent work and in what labour market segments or job positions. Some scholars have found that employers' use of contingent work is driven by efficiency considerations regarding market volatility, the customer market segment, and the requirements in terms of skills and tasks (Mangum, Mayall et al. 1984; Purcell 1998; Kalleberg 2003; Kalleberg, Reynolds et al. 2003). Other scholars have investigated the politics underlying the use of contingent work in more detail and have illustrated how labour market and industrial relations

institutions contribute to shape the employers'use of contingent work (Olsen and Kalleberg 2004; Gautiè and Schmitt 2010; Eichhorst and Marx 2011).

Second, scholars have looked at labour responses to the expansion of contingent work. The existing literature provides mixed evidence and expectations. Unions have often been argued to contribute to the divide between permanent and contingent workers, suggesting that unions are conservative organisations focussing exclusively on the interests of their core membership (Lindbeck and Snower 1986; Lindbeck and Snower 2002). In contrast, research has also found that unions have increasingly started including contingent workers in order to counteract labour market liberalisation and labour decline (Heery and Adler 2004; MacKenzie 2009).

As the study of the employment relationship is inevitably interrelated with the analysis of capitalism (Edwards and Wajcman 2005), a third relevant debate at the macro-level has focused on the implications of the marketisation of the employment relationship for the trajectory of change of national political economies. On the one hand, scholars have stressed the dualisation of some coordinated political economies between stable core and a flexible periphery, which is supported by labour-management coalitions aimed at protecting insiders' and employers' interests (Emmenegger, Hausermann et al. 2012b; Thelen 2014). On the other hand, scholars have argued that the liberalisation of the employment relationship is an employer-driven phenomenon, which will not stop at the core unless labour manages to counteract it (Streeck 2009; Baccaro and Howell 2011; Tapia and Turner 2013).

The next sections present the abovementioned debates in more detail. Section two presents the discussion of efficiency-related vs. institutional factors for determining the use of contingent work. The third section contains the debate about unions' strategies towards contingent work. Section four illustrates the macro-debate about the trajectory of change of national political economies.

2 Market vs. institutions as determinants of contractual arrangements

A central question to research in the field of sociology, industrial relations and management is under what conditions employers offer workers employment security, high wages and good working conditions. In the seventies, the segmentation literature studied as first[5] the division of the labour market between stable well-paid jobs with chances of career progression and precarious dead-end jobs. The literature distinguishes between internal, or primary, labour markets and external, or secondary, labour markets (Doeringer and Piore 1971; Osterman 1987). In Internal Labour Markets (ILMs) "the pricing and allocation of labour is governed by a set of administrative rules and procedures" (Doeringer and Piore 1971:2). ILMs are characterised by job ladders, qualification requirements, training programs and a system of rules on compensation and duty distribution. In contrast, the employment relationship in external labour markets relies on market-driven mechanisms, and workers are mainly employed on contingent contracts (Doeringer and Piore 1971; Berger and Piore 1980; Osterman 1994).

The segmentation literature considers internal and external labour markets as separate market segments dedicated to different functions, and suggests several factors contributing to the creation and stability of ILMs. On the one hand, it points out efficiency-related factors driving employers' staffing strategies, such as the specificity of skill requirements and the complexity of work organisation which characterise core job positions. Workers in ILMs perform companies' core functions and therefore employers offer them high wages and career perspectives in order to retain them. In contrast, peripheral workers are supposed to be assigned to easy tasks requiring general or no skills, and are mainly used as a buffer workforce for coping with demand peaks and economic downturns (Doeringer and Piore 1971; Berger and Piore 1980; Osterman 1987). On the other hand, some scholars have argued that the division between internal and external labour markets is primarily the outcome of bargaining between labour and management. Unions have an interest in ILM arrangements because they limit competition among workers and help them to maintain control over skill supply and workers' knowledge. Workers in secondary labour markets are those who fall out of the union bargaining domain (Rubery 1978; Elbaum 1983; Jacoby 1983; Althauser 1989).

[5] With the exception of Lester (1951) and Kerr (1954).

The debate about the role of production requirements vs. institutional factors for determining the working conditions and, in particular, the type of work contract is still central in the academic literature. The debate on High Performance Work Systems (HPWSs) is prominent in this regard. HPWSs are characterised by a complex work organisation based on teamwork and knowledge sharing; furthermore, employers provide training and guarantee high wages and employment security in order to build a committed, skilled and stable workforce (Pfeffer 1996: 36; Butler, Felstead et al. 2005: 4).[6] In the bundle of practices of HPWSs, employment security is a fundamental element because it leads to employees' high productivity through experience and commitment (Brown, Reich et al. 1993; Appelbaum, Bailey et al. 2000). Indeed, in their quantitative cross-sectoral study of US establishments Cappelli and Neumark (2004) found that HPWSs are associated with lower voluntary and involuntary turnover as well as with lower incidence of contingent contracts. [7]

Some scholars have argued that employers have a rational interest in adopting HPWSs as they constitute their comparative advantage on national and international markets (Arthur 1994; Osterman 1994; Appelbaum, Bailey et al. 2000). In their study of work practices in US apparel, steel, medical equipment and imaging industries, Appelbaum et al. (2000) found that workers reported higher job satisfaction and better working conditions (for example high wages, employment security, and work autonomy) in companies adopting HPWSs than in the other companies; furthermore, HPWSs were found to positively contribute to companies' performance. In their multi-level analysis of HPWSs, productivity and turnover in the Chinese hotel industry Yun et al. (2007) found similar results. Thus, HPWSs have been argued to represent a win-win situation for both employers and employees.

However, not all employers have the same interest in adopting HPWSs, which are closely associated with the product market strategy. Companies competing in value-

[6] The definitions of HPWSs is very controversial and will not be discussed here. For more details see Becker and Gerhart (1996).

[7] Some studies found a trade-off between the implementation of HPWSs and the use of temporary contracts as a buffer Gramm and Schnell (2001); Kalleberg (2001). The academic discussion regarding this issue uses similar argument as the early segmentation literature. For this reason, the following discussion focuses on the academic debate about different factors conducive to HPWSs, which is central to the literature about HPWSs (Kalleberg 2001).

added markets are more likely to adopt HPWSs because employers can benefit from the long-term returns on investments in human resource practices such as the development of human capital and the high quality of their products. In contrast, companies whose competitiveness is mainly based on costs - especially labour costs – are less likely to adopt HPWSs and rather employ workers on contingent contracts (Youndt, Snell et al. 1996; Lepak and Snell 2002). For a similar reason, temporary work tends to be concentrated in services as the linkage between production quality and a stable committed workforce has been argued to be stronger in manufacturing (Appelbaum, Bailey et al. 2000: 21; Bosch and Kalina 2008). In service companies research found that high performance practices including employment security are adopted only for top customer market segments such as in the case of the call centre sector (Batt 2002) and of banking (Keltner and Finegold 1996).

The argument linking production requirements, HPWSs and employment stability has been challenged from different perspectives. First, some scholars have argued that employers have a strategic interest to employ temporary high-skill workers for specialised positions because this form of work organisation fosters innovation, contributing to the company's competitive advantage (Matusik and Hill 1998). Saxenian (1996) and Jones (1996) have shown that workers in the Silicon Valley IT industry and in the independent filmmaking industry were employed in external labour markets, with great benefits in terms of innovation.

Second, research findings have questioned the necessity of employment security for HPWSs. Employment security is supposed to contribute to achieving workers' commitment to the company through increased job quality, mutual trust among employees, and identification with the company (Whitener 2001; Zacharatos, Barling, et al. 2005). However, the study of six establishments in different sectors in the UK conducted by Edwards et al. (1998) found that employment security favours the acceptance of total quality management practices, but that commitment can also be the outcome of a disciplined environment characterised by close monitoring and performance-based appraisal systems. In their analysis of the Workplace Employment Relations Study in 2000, McGovern et al. (2007) found that workers' commitment – measured by increased work effort – was positively correlated with the fear of job losses (McGovern, Hill et al. 2007: 233). Similarly, in his analysis of a survey of US

manufacturing companies Osterman (1998) found that establishments characterised by HPWSs made comparatively more use of contingent work, and workers were committed because they feared job losses due to companies' restructuring.

The third point of critique regards the role of institutions for ensuring employees' benefits, including employment stability, which was almost neglected by the early literature on HPWSs (i.a. Appelbaum, Bailey et al. 2000). In contrast, the VoC framework underscores the relevance of institutions for providing different sets of available strategies to companies, and shows that institutions in CMEs better support HPWSs than in LMEs (Hall and Soskice 2001). For instance, by comparing the Japanese and US manufacturing sector, Brown and Reich (1997) concluded that the Japanese system of industrial relations favours HPWSs because the bargaining institutions ensure mutual commitment between employers and employees, and the "institution of lifetime employment" reduces the costs of vocational training and raises the costs of quitting for employees. In contrast, unregulated labour markets in the US favour the growth of unstable low-skill employment. In his research on the relationship between workplace representation, HPWSs and firm performance in German establishments, Zwick (2004) found that the presence of works councils is positively related to high-performance practices and to high company productivity.

Other scholars stressed the pivotal role of collective voice institutions in the workplace as power resources labour can use for ensuring that HPWSs actually deliver positive outcomes for employees, including job security (Doellgast 2010; Doellgast 2012). In her comparison between German and US call centres, Doellgast (2010) found that the presence of works councils in Germany favoured the adoption of human resource practices entailing work autonomy and training, in contrast with US establishments. In her in-depth qualitative study of the aerospace and pharmaceutical industries in the UK, Lloyd (2000) found that the presence of collective voice mechanism and labour market regulation was fundamental for making companies adopt HPWSs and actually investing in their employees.

The debates in the segmentation literature and in the HPWS literature agree that industrial relations institutions are crucial for determining workers' outcomes in sectors such as low-end services, where there is weak or no association between employment

security, high wages and good working conditions on the one hand and companies' performance on the other hand (Boxall 2003: 15 f.; Lloyd, Warhurst et al. 2013). Among others, the Russell Sage Foundation project on low wages in advanced countries shows that strong unions and strict legal regulation regarding contingent work limited the use of precarious work in services such as the catering and hotel industry, nursing, cleaning and retail (Applebaum 2010; Gautiè and Schmitt 2010).

However, the debate regarding what factors influence the provision of employment security from the employer's side is more controversial in sectors such as high-quality manufacturing. As illustrated above, in those sectors some scholars have argued that employers have rational interests in providing high wages and employment security and, more generally, in maintaining internal labour markets for the core workforce. In contrast, others have argued that industrial relations are critical for ensuring employment security and good wages even in those sectors - especially because high-performance practices are not necessarily linked with positive outcomes for workers. Therefore, the question regarding the extent to which employers would support stable employment and high wages even with weak or declining industrial relations institutions is still open.

This section has presented the debate regarding the determinants of workers' outcomes and, in particular, of employment security. The literature underscoring the role of institutions does not discuss the role of unions as actors but only as institutions constraining employers' strategies. However, as the workforce is fragmented, unions might have an ambivalent role towards marginal workforce segments. The next section illustrates the debate about unions' strategies towards contingent workers.

3 The controversial role of labour in segmented labour markets

Scholars have advanced different arguments regarding unions' approach towards contingent workers. On the one hand, unions have been argued to contribute to the marginalisation of contingent workers on the labour market. On the other hand, unions were found to organise contingent workers and to bargain on their behalf in order to improve their working conditions. The segmentation literature argues that unions

bargain skill and occupational demarcations within the workforce in order to control the workforce supply on the labour market. Child (1967) and Wilkinson (1974) studied how unions bargained over technologies and skill demarcations in the British metal and printing industry, influencing the workforce structure within the company in order to maintain control over their wages and skills (see also the review by Rubery 1978). Further research in the UK and in the US illustrated how unions contribute to build up ILMs - ports of entry, training systems and career ladders - in order to control the skill supply and workers' knowledge (Rubery 1978; Jacoby 1983; Althauser 1989).

According to this perspective, unions contribute to the workforce segmentation by excluding parts of the workforce from the access to ILMs and pushing them into peripheral labour markets. This perspective is predominant in economics where unions are considered to represent exclusively the interests of labour market insiders – permanent workers in full-time employment – at the expense of labour market outsiders – unemployed and temporary workers. In particular, the economists Lindbeck and Snower (1986; 2002) claim that unions contribute to unemployment and to the increase of contingent work: In order to serve the interests of their members, unions bargain high wages and job security for labour market insiders. By so doing, they prevent outsiders from competing with insiders and force them into low wage and unstable jobs or even into unemployment.

Scholars in the industrial relations and sociological tradition found evidence that unions act according to an insider-outsider logic: In his research on labour market flexibility in South Korean large entreprises, Yang (2006) found that unions obtained job security for their members at the expense of marginal workers. In Poland Zientara (2008) found that Polish unions discriminated against job seekers as they fought to maintain high employment protection for permanent workers and refused public sector reforms. In Germany Hassel (2014) and Thelen (2012) argue that unions and works councils in core manufacturing companies agreed to the flexibilisation of the service periphery in order to ensure high wages and employment stability to their core members.

In contrast to this evidence, the union revitalisation literature contends that unions can also start including marginal segments of the workforce, in particular when their institutional and organisational power resources have been declining. Expanding the

organisation and bargaining domain to contingent workers represents a strategic reaction to membership decline or a strategy to compensate for the loss of support from politics or institutions (Katz, Batt et al. 2002; Frege and Kelly 2004; Heery and Adler 2004). The earlier revitalisation literature suggests that unions' strategies are path-dependent and reflect unions' identity and their institutional context (Baccaro, Hamann et al. 2003; Frege and Kelly 2003). This implies that some unions are more likely than others to start broadening the agenda and organising campaigns towards the marginal workforce. Organising strategies towards marginal workers are also more likely to be adopted by unions whose power relies on their membership and whose identity is closer to a social movement than to a social partner. UK and US unions, after many years of steady membership decline, have been found to organise migrant workers (Holgate 2005; Fine 2006), and service workers in the cleaning (Erickson, Fisk et al. 2002) and hotel industry (Wells 2000). In contrast, unions with institutionalised bargaining rights such as German, Italian and Spanish unions are more likely to focus on their core membership – protecting insiders - and try to re-gain institutional power by entering negotiations over social pacts at the national level (Baccaro, Hamann et al. 2003).

While this evidence suggests that unions' strategies are path-dependent, more recent revitalisation research has found that the decline of traditional power resources is also one of the most important conditions for unions' path-breaking behaviour (Greer 2008a; Bacon and Samuel 2009; Turner, 2009; Vandaele and Leschke 2010). Thus, even unions with a social partnership tradition and institutionalised bargaining rights might adopt strategies outside their "repertoire of contention"[8] if the traditional institutional channels of influence have lost their effectiveness. For instance, Dutch unions were found to try to organise fixed-term workers in addition to offering them services targeting their specific needs (Vandaele and Leschke 2010); the German service union Ver.Di started a campaign for precarious workers of the supermarket chain Lidl (Gajewska and Niesyto 2009) and the Austrian whitecollar union opened its organisational domain to the self-employed (Pernicka, Aust et al. 2007).

The union revitalisation literature is partly compatible with the insider-outsider perspective because it acknowledges that not all unions include marginal workers in their representation domain. However, the union revitalisation literature also

[8] Tilly (1978).

acknowledges that unions can change their strategies and become more inclusive. Still, existing literature has not closely examined under what conditions (and at what point) unions respond to resource decline by adopting new strategies because it mainly focused on exceptional campaigns for organising marginal workers and relies on case studies conducted over a short time period.

4 The debate about convergence and divergence of national models

The political economy literature distinguishes between coordinated, or organisation-oriented, and liberal, or market-oriented, employment systems, which are at the centre of national political economies (McGovern, Hill et al. 2007: 36 f.). The debate dominating the political economy literature regards the changing trajectory of national capitalist systems under the pressure of globalisation, whether they are going to converge on a system or rather maintain national differences. Thus, the increasing marketisation of the employment relationship in the form of work casualisation has implications for this debate because it implies a shift towards a liberal employment system.

4.1 From convergence to Varieties of Capitalism

The debate about convergence and divergence of employment systems started in the eighties. A group of scholars argued that national systems were going to converge on the model of a service-oriented, liberal market economy due to the impact of technological change, trade, regional integration and capital mobility (Bell 1973; Baumol, Blackman et al. 1989; Verspagen 1991). In response, other scholars contended that different national institutional constellations in terms of labour markets, industrial relations and welfare institutions allow countries to differentiate and specialise their production systems in order to achieve a comparative advantage on international markets (Streeck and Katz 1984; Maurice, Sellier et al. 1986). Strong unions and worker representation in the workplace, high employment protection and encompassing collective agreements constitute incentives for companies to upgrade their product strategies and adopt high-quality manufacturing production systems. Streeck (1991) and

Berggren (1993) found evidence of this process in the German and Swedish automotive industries, respectively. In contrast, low and fragmented wage standards, weak unions and low dismissal protection encourage companies to choose low value-added markets because they do not have to invest in training and technology in order to maintain competitive production costs (Ackroyd and Procter 1997). For instance, Craft and Thomas argue that this constituted the comparative advantage of UK manufacturing on international markets between 1910 and 1935 (Crafts and Thomas 1986). Given their different institutional assets, countries are expected to respond differently to globalisation pressure and maintain their national diversity (Goldthorpe 1984; Berger and Dore 1996).

The framework of Varieties of Capitalism (VoC) is built on these insights. The main distinguishing characteristic of this framework is that firms are the central rational actors which strategically interact with other firms and their workforces in different ways according to the institutional context. Institutions allow companies to solve their strategic interaction problems in institutional arenas such as industrial relations, corporate governance, training and labour markets. These are interlocked through institutional complementarities, which guarantee the coherence and economic success of the political economy. In Liberal Market Economies (LMEs) such as Anglo-Saxon countries, strategic interaction takes place through market-based mechanisms because industrial relations are weak, labour markets flexible and corporate governance fragmented. Manufacturing in LMEs reflects the low-road type while the institutional structure favours specialisation in areas where flexibility and radical innovation is required, such as pharmaceuticals and software development. In contrast, in Coordinated Market Economies (CMEs), manufacturing companies successfully specialise in high value-added product strategies because the vocational training system provides a skilled workforce, encompassing collective agreements set high and homogeneous wage levels, and workplace representation fosters labour management cooperation at company level. As national institutions are the source of comparative advantage, employers are supposed to have an interest in maintaining the institutional assets, and political economies are expected to follow divergent path-dependent trajectories. Most interestingly, the VoC literature argues that companies in CMEs have a rational interest in maintaining coordinating institutions which decommodify the employment relationship (Hall and Soskice 2001; Hancké, Rhodes et al. 2007).

4.2 Two paths of endogeneous institutional change: Dualisation vs. liberalisation

Despite the VoC expectations of stability, research has found evidence that coordinated market economies had started changing at least by mid-nineties. For instance, Vogel (2005) found that Japanese companies reduced their commitment to lifetime employment by hiring increasing numbers of temporary workers. In Germany, Hassel (1999) documented the declining coverage of collective bargaining and of works councils and the progressive decentralisation of industrial relations. As a result, the literature dedicated increasing attention to mechanisms of endogeneous change, which is a process of incremental change driven by actors in their everyday implementation and enactment of institutions (Streeck and Thelen 2005). Actors themselves can be initiators of change if they do not completely follow the pattern of behaviour prescribed by institutions (Hall and Thelen 2009: 10). Institutions can be ambiguous or poorly enforced and can always be reinterpreted contextually or circumvented (Jackson 2005); they are contested by social actors with different interests, who might defend or try to change them (Hall and Thelen 2009: 27).

The introduction of agency brought "new life" to the debate about convergence vs. divergence of national political economies. In fact, the interpretation of the role labour and management play in the institutional change of CMEs distinguishes the two main interpretations of institutional change: On the one hand, some scholars argue that CMEs have changed into dual economies, maintaining a coordinated core while the periphery is increasingly flexibilised (Emmenegger, Hausermann et al. 2012b; Thelen 2012). On the other hand, a group of scholars underscore that CMEs have also been following a changing trajectory of liberalisation, and dualisation is just a phase of liberalisation rather than an institutional equilibrium (Streeck 2009; Baccaro and Howell 2011).

The dualisation literature takes a political-coalitional approach to institutional change. It stresses that temporary and low-wage contracts are concentrated among young workers, low-skill workers and (low-end) service workers, which are peripheral market segments separate from core labour markets. This division between a deregulated periphery and a coordinated core is due to the political coalitions driving institutional change in CMEs (Emmenegger, Häusermann et al. 2012b). The literature has focused on the role of

labour-management, or productivity, coalitions in the institutional arena of labour market and industrial relations – a term which was first used by Windolf (1989) in his article on the decentralisation of industrial relations in Germany and Italy. According to the dualisation perspective, employers and unions, which represent permanent workers in full-time employment, have a common interest in maintaining coordination mechanisms. Employers support coordination at least in those sectors where they constitute a source of comparative advantage; unions have direct representational interests in maintaining the wages and working conditions of their core members. For this reason, they agree, implicitly or explicitly, to the flexibilisation at the margins of the labour market (Emmenegger, Hausermann et al. 2012b; Thelen 2014).

Evidence from different countries supports this argument. In his study of labour markets in Japan and South Korea, Peng (2012) argues that the partial deregulation of the labour market, which led to the increase of contingent contracts, was the result of tacit agreements between employers and unions, especially in large enterprises, supported by the government. Palier and Thelen (2010) have attributed to national coalitions of business and unions in export manufacturing the dualisation of the labour market between permanent and contingent workers in France and Germany. These cross-class coalitions support the industrial relations and labour market institutions in the core of the coordinated model, while flexibilisation and deregulation have been limited to the periphery of the economy. This arrangement benefits the export sector, as the reduction of service costs allows it to stay competitive.

The theoretical framework of the dualisation literature relies on three main pillars. First, it does not break away from the VoC tradition but it rather shows that the coordinated model still exists, at least in the core of national political economies; however, it does not deliver egalitarian outcomes because the coordinating institutions are not as encompassing as they used to be (Thelen 2009: 486). Second, dualisation is not only driven by structural changes such as increased competition on national and international markets and the rise of services, but it is rather the outcome of policy choices. Thus, the preferences and strategies of political parties, employers and unions are fundamental for filtering structural dualisation tendencies (e.g. tertiarisation). In this framework, the role of unions is considered to be even more important than that of employers – who are considered to be always pro-dualisation – "as their support can be pivotal for the

formation of a political coalition facilitating dualisation" (Emmenegger, Häusermann et al. 2012b: 310). Third, core and periphery are in a relatively stable dual equilibrium, which will last in the long term. On the one hand, peripheral workers are not as well represented through unions and political parties in the institutional sphere, and, therefore, reforming institutions to their advantage is difficult. On the other hand, atypical workers "do not work in the same jobs for less money; they work in different jobs" than permanent workers in full-time employment (Emmenegger, Häusermann et al. 2012b: 316). Emmenegger et al. (2012b) argue further that the clear division between the two labour market segments prevents the competition and "two different 'labor market regimes' may coexist alongside each other, one for the insiders and one for the outsiders" (p. 317).

In contrast to the dualisation literature, a group of scholars argues that all advanced political economies have been undergoing an inexorable process of liberalisation. Already in the nineties Cappelli (1999b; 2001) argued that market-mediated mechanisms were expanding to the detriment of ILMs in the US. More recent literature has highlighted common tendencies towards liberalisation across LMEs and CMEs even though liberalisation trends progress at a different pace according to the national institutional context (Baccaro and Howell 2011; Heyes, Lewis et al. 2014). This framework underscores the role of labour market and welfare institutions as constraints over market forces rather than as structures of incentives influencing actors' (especially employers') formation of preferences. Adopting a Polanyian perspective, Streeck has argued that institutions are the outcome of the continuous conflictual interplay between societal attempts to regulate the market through collective institutions and capitalist actors' attempts to undermine regulation for individual economic advantage (Streeck 2009: 4). As labour has been declining, dualisation should be seen only as a phase of the liberalisation process rather than as dual equilibrium, because the fringe might eventually "eat the core" (Streeck 2010: 512). Liberalisation in the arenas of labour markets and industrial relations are identified in trends such as increasing employer discretion, the decentralisation and individualisation of decision-making and the diffusion of price-based mechanisms (Baccaro and Howell 2011).

This literature suggests a different mechanism underlying liberalisation than the dualisation literature, which focuses on the common interests between employers and

labour to maintain a coordinated core and a flexible periphery. In contrast, this literature focuses on employers' interests in reducing costs and negotiated constraints on unilateral decision-making via liberalising employment relations and labour market regulation. First, research has found evidence that employers' strategies changed from cooperation to promoting institutional change or avoidance of institutions. Even in countries and sectors where they were expected to support social partnership, stable employment and encompassing collective agreements, employers were found to openly push for the deregulation of labour markets and industrial relations. Kinderman (2005) and Menz (2005) found German employers to openly advocate for the liberalisation of the labour market and the decentralisation of industrial relations. Similarly, the Swedish employers' associations withdrew their representatives from the national government agencies at the beginning of the nineties, undermining the corporatist system (Johansson 2003). Second, while employers have sometimes maintained formal institutions, they have used them differently for pursuing their aims, changing the meaning and scope of institutions. For instance, Sako and Kotosaka (2012) found that the Japanese "Shunto" - the yearly national collective bargaining round for setting wage floors for the whole economy – has become the employers' instrument to justify wage increases in line with companies' performance rather than to acceptable living standards (Sako and Kotosaka 2012: 86 ff.). Third, employers were found to avoid existing institutions by exploiting existing loopholes. Employers have been found to use temporary contracts and subcontractors for avoiding sectoral collective agreement, employment protection legislation and union control. These employers' strategies were found in the retail, hotel and catering sector in France and Germany (Jaehrling and Méhaut 2012), in the construction sectors in Finland, Germany and the Netherlands (Lillie, Wagner et al. 2014) and in the call centre sector across Europe (Doellgast, Batt et al. 2009).

The main explanation for why these changes have taken place is declining labour power, which impairs labour from counteracting employers' liberalising strategies. In all advanced political economies – even though the extent varies across countries - unionisation rates have been declining, bargaining coverage has been shrinking and union ties to left-wing political parties have been loosening (Ross and Martin 1999; Bryson, Ebbinghaus et al. 2011). In this context, unions' defensive strategies to protect the core through concessions, also including the flexibilisation at the periphery, are interpreted as a signal of labour weakness (Doellgast 2008; Greer 2008b) rather than a

political choice as in the dualisation literature. Given the power imbalance between labour and management, these so-called political coalitions are not sustainable in the long run. Some optimistic accounts have highlighted unions' potential as countermovements (Turner 2009; Tapia and Turner 2013) even though their attempts have not managed to reverse the trend so far.

The crucial point in the debate between the dualisation and liberalisation perspectives is the evaluation of the stable dual equilibrium between core manufacturing and the service periphery. The question is whether liberalisation will spare core manufacturing sectors and, in particular, whether peripheral workers are potential substitutes for core ones. If the boundaries are more blurred than the dualisation literature suggests and there is competition and even substitution between the two labour market segments, dualisation is just likely to be an intermediate step in a process of ongoing liberalisation. However, the debate is still open, as existing dualisation literature has often neglected the overtime dimension, and instead conducted macro-level comparative analyses which provide a static picture of the workforce segmentation (Barbieri 2009; Häusermann and Schwander 2010; Marx 2011). Similarly, the literature on liberalisation has provided case studies within a limited time frame, which does not provide information on the trend (Doellgast and Greer 2007; Lillie and Greer 2007). The few works taking into consideration overtime trends have not looked specifically at workplace dynamics between core and peripheral workers and between labour and management, especially in core manufacturing (Streeck 2009; Baccaro and Howell 2011; Thelen 2014).

Section two, three and four have illustrated three ongoing academic debates relevant to the analysis of contingent work. Even though they were presented separately, they are actually closely related to each other. Indeed, the debate about the convergence and divergence of national employment systems is centred around two main controversies, which are respectively the focus of the academic debates previously presented. On the one hand, the dualisation literature and the liberalisation perspectives disagree regarding the extent to which stable employment and high wages are a result of employers' interest in coordinating institutions and coordinated labour market outcomes or rather of labour power resources. This is the core of the debate illustrated in section two. On the other hand, the two strands of literature ascribe different roles to unions either as labour

market insiders' representatives or as potential countermovements to employers' segmentation strategies. This discussion was illustrated in section three.

The next section shows that German core manufacturing sectors represent a critical case for studying the expansion of contingent work from the perspective of all three debates.

5 The critical case study of German core manufacturing sectors

Since the seventies, Germany has represented the model of social capitalism, and export manufacturing has always been regarded as the core of the economy, which best reflects the characteristics of the "social" or "coordinated" model (Albert 1991; Hall and Soskice 2001). However, in the nineties the German production model started changing, and the literature is currently divided regarding the interpretation of these changes for the trajectory of the political economy.

5.1 The German coordinated model

In the seventies and eighties, research on industrial relations and political economies focused on the German model of Diversified Quality Production (DQP). This production model distinguished itself from mass production because it specialised in innovative, technologically advanced and high-quality manufacturing production, and increased product variety without decreasing the amount of production. As the markets for DQP were less price-sensitive than for mass production, German manufacturing companies could at least partly avoid the cost pressure of international mass markets (Sorge and Streeck 1987).

In the narrative of the German model, industrial relations have a pivotal role for the origin of DQP because they constrain and enable employers' strategies for product upgrading (Streeck 1991; Streeck 1992). Institutions considered particularly relevant are vocational training, workplace codetermination, sectoral bargaining and employment protection. First, German vocational training provided workers with sector- and firm-

specific skills, allowing them to perform independent work without close supervision (Roth 1997: 117). Second, German works councils, which enjoy consultation and codetermination rights on qualitative issues[9], favoured cooperation between labour and management in the workplace (Müller-Jentsch 1995: 14; Hyman 2001: 120). At the same time, they were also the union's arm in the companies, as in the eighties the unionisation rates of works councils were high in the manufacturing industry, reaching a peak of over 90 percent in the steel industry (Niedenhoff 1981: 27-30). Third, wage standards were set by sectoral bargaining rounds between the union and the employers' association. In the eighties the sectoral coverage of collective metal agreements was between 70 and 80% (Doellgast and Greer 2007: 57). The metal union had high mobilisation potential during the negotiations because the union density in the metal sector was around 40-45% (Hassel and Schulten 1998: 499). Finally, employment protection for permanent workers was among the highest in Europe and the use of temporary work was strictly regulated by law (Mosley 1994).

These institutions contributed to the formation and stability of the DQP model. Encompassing agreement at sectoral and at workplace level prevented employers from compressing labour costs through wage cuts and high dismissal protection limited employers' abilities to reduce the workforce. These constraints forced employers to invest in technology for increasing productivity and to adjust their products to high-quality markets. The low wage differentials encouraged employers to invest in broad training instead of focusing on a few professional figures (Streeck 1992: 32). The skilled workforce and the works councils pushed employers to collaborate to create "a flexible, non-Taylorist organisation of work" (Streeck 1991: 25), which relied on teamwork, task rotation, and mutual trust (Kern and Schumann 1984; Sorge and Streeck 1987; Jürgens, Malsch et al. 1993).

While Streeck's interpretation of the origin of the German model highlights the constraining role of institutions (Streeck 1991), the VoC framework stresses the role of institutions for solving coordination problems with the workforce and with other companies. For instance, centralised and coordinated bargaining, setting homogeneous wages and working conditions at sectoral levels, limits the risk of poaching, assuring employers a return on their investments in training (Soskice 1999; Hall and Soskice

[9] Such as working time or work organisation.

2001). In addition, high employment protection legislation ensures stable employment to employees who would otherwise be unwilling to commit to specific training (Estevez-Abe, Iversen et al. 2001; Hall and Soskice 2001). In the VoC framework, institutions are functional to employers' interests because they constitute the source of comparative advantage on international markets by facilitating the intra-firm and labour-management coordination within and across different institutional spheres (for example labour market, industrial relations, and training/education). For this reason, employers, who represent the central actors in the VoC framework, have a rational interest in maintaining coordinating institutions. Thus, the VoC framework emphasises the stability of the (German) coordinated model. This fundamental difference between the VoC framework and the sets of arguments pointing out institutions as power resources becomes relevant to the interpretation of the changes in the German model illustrated in the next section.

5.2 The transformation of the German model

In the nineties, the German model entered a period of crisis and the high labour costs have been argued to constitute the main factors responsible for its loss of competitiveness. The competitiveness problem was exacerbated thanks to the rise of other competitors - such as US and Japanese manufacturers – which proved that there were alternative (and cheaper) ways to DQP, bringing the labour-cost competition into high-quality product markets (Herrigel 1997).

However, Germany did not shift its economic model based on export manufacturing towards services even though the economies of US and UK were often presented as the models to follow at the time (Gries and Birk 1999; Krämer 1999). German employers instead responded to the cost pressure from international markets by heavily restructuring manufacturing production. On the one hand, they introduced lean production techniques in order to improve company performance. These measures led to the reduction of job positions and had ambiguous effects on the organisation of work (Jürgens 1997). While forms of work self-organisation and group work developed among skilled workers, the work in new greenfield sites rather presented Tayloristic features (Roth 1997). On the other hand, companies restructured their value chain into

modules which could be carried out by suppliers both in Germany and abroad. The value chain of big manufacturing companies became fragmented as companies made increasing use of subcontractors (Jürgens 2004: 419; Doellgast and Greer 2007; Greer 2008b); besides setting up new plants in Eastern Germany, companies started outsourcing abroad, and especially to Eastern Europe, which offered close and cheap production sites (Kinkel and Lay 2003; Jürgens and Krzywdzinski 2006). According to a survey by the Fraunhofer Institut, over 40 percent of companies in core manufacturing sectors outsourced part of their production abroad between 1999 and 2001. For over 75 percent of these companies the reason behind outsourcing was the reduction of production costs (Kinkel and Lay 2003: 4).

The debate over outsourcing and the future of Germany as a production site (*Standortdebatte*) contributed to building a consensus around the necessity to cut labour costs in order to re-gain competitiveness and to save Germany as a manufacturing production site (Upchurch 2000: 113). This discourse helped to legitimise the future policy measures and reforms in the institutional arenas of collective bargaining, labour market and welfare, aimed at strengthening market-based mechanisms (Upchurch 2000: 76; Silvia 2010: 223).

In the first half of the nineties, employers' associations – especially Gesamtmetall – introduced the option of membership without applying the sectoral agreement (*Ohne Tarifbindung (OT)-Mitgliedschaften*). Even so, the rate of employees working in companies which are members of an employers'association declined from 80% in 1980 to 60% in 2008 (ICTWSS 2011). The coverage rate is even lower in the metal sector, especially in Eastern Germany: While in Western Germany the membership rates in the employers association dropped from around 65% to 52% in 2008, the density in Eastern Germany went from around 50% in 1995 to 16% in 2008 (Silvia 2010). This trend contributed to the decline of the rate of establishments covered by collective agreements, which dropped from 59.3% in 1995 to 26.2% in 2010 in core manufacturing sectors even though it is still almost 80% for establishments with more than 500 employees (Data of the Institute for Employment Research in Baccaro and Benassi 2014). Furthermore, since the post-unification membership boom, overall union density declined from 36% in 1991 to 19.3% in 2009 (Bispinck, Dribbusch et al. 2010: 13) even though IG Metall is still a strong union with its 2.24 million members.

However, its organisation rate changes according to the specific industry: in the car industry it is around 70% while the electronics and IT industry is characterised by 30% union density (Bispinck and Dribbusch 2011: 18).

In addition to shrinking bargaining coverage, the use of opening clauses started spreading since the mid-nineties as an instrument for amending the wage and working time standards set by sectoral collective agreements. The use of these workplace agreements - Pacts for Employment and Competitiveness (PECs) – was bargained between unions and employers in 1994 and quickly spread across sectors. In 2007 51.5% establishments covered by collective agreements had opening clauses in core manufacturing sectors (Data of the Institute for Employment Research in Baccaro and Benassi 2014). Given the pressure for concessions due to the credible threat of disinvestment, the PECs have soon become an institutionalised instrument for co-management and have often amended sectoral bargaining provisions (Rehder 2003).

At national level, the most significant labour market reforms took place in 2003 under the Red-Green coalition government. The so called Hartz reforms – from the name of the Head of the Commission in charge of the reforms, Peter Hartz – changed the system of unemployment benefits[10] and deregulated the use of atypical work. Hartz I focused on agency work, setting up staff agencies for unemployed people at every local employment office. At the same time, limitations on the use of agency work were lifted. Companies could hire on agency contracts without specifying the reason for the fixed-term and without offering any guarantee of a permanent job afterwards. Dismissal protection was lowered as agencies could employ agency workers on contracts which lasted only until the end of their assignment at the hiring company. The equal pay principle could be amended by collective agreement (Bundesagentur für Arbeit 2011: 5). Hartz II created minijobs and midijobs, which are employment contracts with lower social security contributions and tax rates. Minijobs and midijobs can generate an income of maximum 400€ and 800€ respectively a month. The reform lifted the limitation of 15 hours/week which used to apply to marginal employment, offering employers an exit option from the collective agreements (Weinkopf 2009a: 13).

[10] The Hartz IV reform will not be discussed here. See for further details Hassel and Schiller (2010).

Furthermore, Hartz II created subsidies for self-employment (Ich-AG) (Jacobi and Kluve 2006: 21).

The literature has documented that the German coordinated model underwent profound changes in the institutional arenas of industrial relations and labour markets (among others) over the last twenty years. Therefore, the political economy and industrial relations literature had to amend the stability scenario offered by VoC. However, existing research currently disagrees on the extent and interpretation of these changes. Germany is, in fact, the centre of the dispute between the two factions presented in the fourth section: the dualisation literature and the authors arguing that institutions have become universally more liberalised across the economy.

5.3 Dualisation vs. liberalisation perspectives on German core manufacturing

The dualisation literature contends that flexibilisation and deregulation took place only at the service periphery while core manufacturing sectors are still coordinated (i.a. Hall, 2007; Hassel, 2014; Palier and Thelen, 2010; Thelen, 2014). The literature suggests that coordination in German manufacturing is supported by cross-class coalitions between labour and management. German manufacturing employers are considered "outspoken defenders of industry wide bargaining" who "appreciate the advantages of dealing with strong and unified bargaining partners" (Thelen 2014: 48). Furthermore, labour-management relations at company-level are seen as extremely cooperative and the diffusion of PECs is interpreted as the expression of shared interests in company's competitiveness of both employers and works councils (Hassel 2014; Thelen 2014: 49). Labour in core manufacturing sectors is considered to be as strong as in the heydays of the German model, and even stronger because export manufacturing success is increasingly dependent on the close coordination of different production phases and, therefore, employers want to avoid industrial action at any cost (Thelen 2001; Thelen and van Wijnbergen 2003).

According to this literature, the presence of a flexible and deregulated labour market in the service sector is due to low unionisation rates but, most of all, to employers' fragmentation as they do not have the same interest in coordination as employers in the

manufacturing sector (Thelen 2014: 52). Thus, employers in services do not apply collective agreements and make great use of atypical work, especially minijobs, which have been liberalised through the Hartz reforms. In her latest work, Thelen (2014) argues that the increasing size of services compared to manufacturing naturally leads to the dualisation of the German economy. However, earlier works by Thelen herself and other scholars suggested that the cross-class coalition in manufacturing contributed to the liberalisation of the periphery by supporting (or, in the case of unions, more or less implicitly consenting to) policy measures and labour market reforms reducing the costs of services. In this way, manufacturing would stay competitive in terms of costs without impairing the standards of the core workforce. Thanks to the powerful coalitions of actors, the German economy is believed to be in a dual equilibrium between a coordinated manufacturing sector and a service periphery (Palier and Thelen 2010; Thelen 2012; Hassel 2014).

In contrast with the dualisation literature, a group of scholars contend that liberalisation does not distinguish only low-end services but rather affects the whole German political economy. They highlight that the trajectory of German industrial relations and labour market institutions has been clearly moving towards increasing liberalisation if this is analysed over time. Thus, even though the extent of change varies between manufacturing and services, the two segments are not in a dual equilibrium but they are rather moving in the same direction (Streeck 2009; Baccaro and Benassi 2014). Long-term analyses show that, even in core manufacturing sectors, union density and collective bargaining coverage have become less encompassing in comparison to the traditional German model of the eighties and early nineties (Bosch, Haipeter et al. 2007: 331 f.; Baccaro and Benassi 2014). Furthermore, qualitative studies have shown that atypical work has been increasingly used not only in the service sector (Bosch and Kalina 2008) but also in manufacturing companies (Holst, Nachtwey et al. 2010).

This evidence questions employers' support for coordinating institutions in core manufacturing sectors. As cost-competition has become increasingly relevant also in high-quality market segments, export manufacturing companies need not only to constantly innovate their technologies and product but also cut costs (Herrigel 2014). For instance, the metalworking association of Saxony and large firms were found to openly promote the opt-out from sectoral agreement in favour of greater

decentralisation (Raess 2006). Even when collective bargaining institutions are still in place, employers can avoid them or manipulate their meaning and function. In core manufacturing sectors employers have been using subcontractors for industrial services (for example logistics and facility maintenance) and components. By so doing, employers can circumvent the high wage standards set by sectoral collective agreements because subcontractors are usually not covered or covered by less favourable agreements in terms of workers' outcomes (Doellgast and Greer 2007; Helfen 2011). The existence of competing collective agreements at workplace level is now used for increasing wage competition within the company's workforce instead of decommodifying labour (Holst 2014). Furthermore, employers have used the threat of relocation and made works councils co-responsible for plant-level investments in order to gain more leverage in company-level bargaining; the diffusion of concession bargaining changed the function of codetermination which has become an instrument to serve firms' short-term logic rather than to exercise industrial democracy in the workplace (Höpner and Jackson 2002: 364).

This section has shown how the German political economy has changed over time from the traditional coordinated model. Some scholars have shown that these changes towards liberalisation have not spared the core of the German political economy, the manufacturing sectors (Doellgast and Greer 2007; Holst, Nachtwey et al. 2010). However, the prominent view in the literature is that German core manufacturing sectors have maintained their coordinating characteristics despite institutional changes such as the decentralisation of industrial relations and the flexibilisation of the labour market (Herrigel 2010; Hassel 2014; Thelen 2014). This recent quote by Thelen (2014) exemplifies this point:

"Consistent with the logic of VoC, heightened competition in international markets has if anything intensified cooperation between labor and capital in the manufacturing sector and shored up traditional institutions and practices, including coordinated wage bargaining and labor-management cooperation at the firm-level […] by the mi-1990s at latest, industrial relations in Germany had become increasingly bifurcated between a stable core (where traditional institutions and social partnership still held sway) and a growing periphery concentrated especially in emerging service sectors (where weaker unions struggle against employers whose interests with respects to labor relations are very different from those of industry)." (Thelen 2014: 47)

German core manufacturing sectors represent a least-likely case for the study of the following two phenomena as they are fundamentally at odds with the dualisation scenario of a stable core based on labour-management cooperation. First, contingent work has been dramatically increasing in the last ten years in German core manufacturing sectors. Second, the German metal union IG Metall launched a social movement-style campaign in 2007 for organising agency workers and started bargaining on their behalf. As German core manufacturing sectors are supposed to present the characteristics of CMEs and of high value-added sectors implementing high performance practices (for example training, complex work organisation, high wages, employment security), the analysis of changes in the employment relationship offers precious insights for understanding the factors leading to coordinated (or not) labour market outcomes and labour's role in increasingly segmented labour markets. The next section will illustrate how this thesis contributes to the academic debates mentioned in the previous three sections, supported by evidence from the German manufacturing sector.

6 Contribution and structure of the thesis

This thesis addresses three main issues, which are still debated in the academic literature. The first debate regards the conditions under which companies make use of contingent work. As illustrated in section two, there is an ongoing discussion in the literature regarding the extent to which employers' use of temporary work is determined by production requirements rather than by industrial relations institutions, especially in high value-added sectors. The second research issue concerns labour's role in increasingly segmented labour markets. While some scholars have argued that unions exclusively protect the interests of the core workforce, other scholars have shown that unions can include agency workers. However, it has remained unclear under what conditions unions decide to switch to inclusive strategies. The third debate regards the implication of the marketisation of the employment relationship for the trajectory of change of CMEs. While some argue that some coordinated economies are constituted by a coordinated core and a liberalised periphery in a stable dual equilibrium between each other, other scholars argue that liberalisation is affecting all political economies

and will not spare the core in the long term. However, the literature is still missing conclusive evidence.

By addressing these debates, this study focuses on German core manufacturing sectors, which have been argued to have maintained the traditional characteristics of the German model of high-quality production such as a stable skilled workforce and labour-management cooperation. Cross-class coalitions are supposed to have maintained a stable manufacturing core at the expense of the service periphery, which has been increasingly flexibilised. In contrast to this scenario, these sectors have recently experienced a dramatic growth of contingent work; in response, the German metal union has become more inclusive towards contingent workers by organising them and bargaining on their behalf. Thus, the thesis addresses the question of why contingent workers could grow to such an extent in German core sectors as to trigger unions' inclusive strategies.

This thesis argues that these phenomena challenge the traditional core-periphery framework according to which contingent workers occupy a secondary labour market segment, which is separate from and not in competition with the core workforce. This thesis first evaluates the explanatory power of employers' interest in coordinated labour market outcomes as opposed to the role of labour power resources, concluding that previous literature has overestimated employers' interests in maintaining coordinated and flexible labour market segments in dual equilibrium. In contrast, employers' use of temporary contracts puts core workers under pressure and can even trigger competition between the two labour market segments. This core-periphery dynamic questions the stability of labour-management arrangements which supposedly rely on the protection of core workers at the expense of the marginal workforce; instead, this dynamic is argued to explain why unions have started including contingent workers in their representation domain. This evidence, based on data at the individual, workplace and sectoral level from the eighties until 2012 sheds new lights on the extent of liberalisation trends in CMEs as the marketisation of the employment relationship has not spared the core of the coordinated market economy par excellence.

The main argument of the thesis is that labour will include contingent workers in its representation domain when their presence on the labour market starts threatening the

standards and the future existence of the core workforce. Institutional changes undermining labour cohesiveness and increasing employer discretion trigger this process because they allow employers' use of contingent work, which slowly erodes the size of the traditional core workforce and develops competition dynamics between contingent and permanent workers. Overall, the PhD project shows that institutional change driven by liberalisation affects the workforce throughout the whole political economy in the long run, making the interests between "core" and "marginal" workforce converge and favouring broader working class solidarities.

Each paper in this thesis contains a distinct contribution to the debates illustrated in section 2, 3 and 4. The following three abstracts provide an overview of each paper, illustrating the methods, the findings and the original contribution.

6.1 Paper 1: Do specific skills still lead to stable employment? The role of weakening "beneficial constraints" in German core manufacturing sectors

This paper investigates the relationship between skills, work organisation, and contingent employment contracts in German core manufacturing sectors. The analysis contributes to debates about the growth of contingent work in Germany in recent years, as well as the profile of employees affected by this trend. The VoC and dualisation literatures have contended that manufacturing employers in CMEs like Germany have a sustained interest in retaining permanent employment contracts for workers with industry-specific skills (Hall and Soskice 2001; Thelen 2014; Hassel 2014). Other scholars, instead, have argued that strong industrial relations institutions are critical for stable employment (Streeck 1991; Lloyd and Payne 2006; Marsden 2010). The former set of arguments expects the "complementarity" between specific skills and stable employment to remain stable despite eroding negotiated and legal employment protection; in contrast, the latter literature strand would expect the casualisation of work to also proceed in the manufacturing core of CMEs.

The analysis relies on quantitative and qualitative data. The quantitative analysis is based on five workers' surveys from the German Federal Institute of Vocational Training and Education conducted between 1986 and 2012. The qualitative evidence is

used to illustrate the causal mechanisms underlying the relationship between skills, work organisation and stable employment. It relies on interviews with human resource managers and workers' representatives in German automotive and machine tool plants between 2010 and 2013.

Findings confirm some of the expectations of the dualisation literature as contingent contracts are more common among workers who lack industry-specific vocational training, and the rate of contingent work among this group relative to those with specific skills has increased over time. However, the paper also finds that the jobs held by core skilled workers are increasingly vulnerable to casualisation due to the routine nature of work and labour market deregulation. These findings are compatible with the literature focusing on the role of industrial relations and work organisation in supporting the linkage between skills and employment stability. As the (increasing) levels of job routine in core manufacturing sectors facilitate the employment of temporary workers, the role of industrial relations is crucial for ensuring stable employment: While works councils still manage to advance skilled workers along the career ladder, labour market deregulation has eroded their ability to control external hiring and the transition of trainees to permanent employment.

This paper suggests that the "complementarity" between specific skills and stable employment in German core manufacturing sectors has been overestimated in the literature and it also contributes to the broader debate about trajectories of change in coordinated political economies. By using individual-level data, the present paper has shown how the casualisation of work has affected the whole workforce even though its effect depends on their skills.

6.2 Paper 2: The political economy of labour market segmentation: The case of the German automotive industry

This paper compares the segmentation between standard workers and agency workers across four German automotive plants. In the period between 2010 and 2012 the plants differed in terms of the proportion of agency workers in the whole workforce, the length of their assignment, their function and their wage level compared to standard workers.

The paper explores the role of labour in determining different segmentation patterns between standard workers and agency workers in the workplace. The literature on union strategies towards contingent workers has analysed unions' preferences regarding contingent workers but the level of analysis is at national or at sectoral level (Vandaele and Leschke 2010; Gumbrell-McCormick 2011). In contrast, research focusing on labour responses to employers' segmentation strategies at workplace level has mainly focused on the role of sectoral and workplace institutions of collective voice for explaining different outcomes for contingent workers (Greer 2008a; Doellgast, Batt et al. 2009). This literature has neglected the role of different labour attitudes towards workforce segmentation; furthermore, it has not considered how conditions external to the company can affect labour strategies and their outcomes regarding the workforce segmentation (with the exception of Pulignano and Doerflinger 2013).

The empirical analysis relies on interviews with human resource managers and workers' representatives at company level and on unions' internal documents and collective agreements. In addition to the interviews, the evidence has been collected through the analysis of company reports, company-level agreements, internal union publications, interviews with works councillors published in union magazines and in the local press, newspapers articles, and the reports of the European Industrial Relations Observatory.

The findings of the case studies show that labour power was necessary to regulate segmentation in the workplace, which relied both on workplace industrial relations and external conditions such as the support of the national union, the socio-economic context of the plant and the timing of company-level agreements in regard to labour market reforms. However, labour power was not sufficient for achieving encompassing agreements for contingent workers as labour's commitment to a homogeneous workforce, which was found to vary across workplaces, made a fundamental difference.

The present study provides an original contribution to the literature because it shows that the interaction between strategies and power is fundamental for understanding different segmentation patterns in the case studies; furthermore, it provides evidence that the labour responses to contingent work at workplace level are influenced by

factors external to the company as much as by internal industrial relations institutions (similar to the studies about unions' involvement in workplace change by Locke 1992, Frost 2000 and Pulignano and Stewart 2012).

6.3 Paper 3: Straight to the core — Explaining union responses to the casualisation of work: The IG Metall campaign for agency workers

This paper explains why the German metal union has recently started organising agency workers and including them into its bargaining domain. The German metal union represents a critical case because it traditionally has strong institutional power resources and a broad membership. For this reason, it is not expected to include workers traditionally considered as marginal. However, industrial relations institutions have been eroding in Germany and the labour market reforms passed in 2003 deregulated the use of agency work.

The existing literature provides different accounts of unions' strategies regarding marginal workers in a context of declining industrial relations institutions. On the one hand, a group of scholars contend that unions prioritise their core constituencies and seek compromises with management (Palier and Thelen 2010; Hassel 2014). On the other hand, a body of research has shown that unions adopt inclusive strategies towards peripheral workers to counterbalance eroding bargaining power (Heery and Adler 2004; Turner 2009). Goldthorpe (1984) had argued that both inclusion and exclusion of marginal workers are equally viable strategies for unions in increasingly segmented labour markets. Dualism has ambiguous implications for unions as their core members' "interests may be as much protected as undermined by dualism through the "shock absorber" function that the secondary workforce performs" (p. 339).

Still, there has been little research into the conditions under which unions decide to undertake the one or the other strategy. To this end, the paper conducts an historical analysis of the strategy of the German metal union towards agency workers from 1970s until 2012. The analysis shows that exclusion and inclusion are subsequent phases of a strategy in constant evolution and identifies institutional change towards liberalisation in the labour market as an important condition for unions' strategic re-orientation.

Liberalisation reconfigures the constraints and opportunities for actors and lifts constraints to the employer discretion (Baccaro and Howell, 2011: 527) so that employers can adopt aggressive segmentation strategies threatening the collectively agreed standards for the core workforce. Thus, the paper argues that the strategic choice depends on the (perceived) competition between core and peripheral employees related to employers' personnel strategies; this affects the possible alignment of interests between unions' core members on the one hand, and either management or peripheral employees on the other.

The findings do not only contribute to the research on unions' strategies. They also throw new light on the traditional concept of dual labour markets as a stable equilibrium between primary and secondary labour markets. Liberalisation opens up loopholes employers can exploit for circumventing legal and collectively agreed standards. By doing so, in the long run employers challenge the boundaries between core and periphery and undermine labour's bargaining power.

The remainder of the thesis is organised as follows. The next three chapters are respectively dedicated to each of the papers in the same order they have just been presented. The fifth and final section summarises the findings of the PhD thesis and illustrates the main theoretical contributions.

Paper 1

DO SPECIFIC SKILLS LEAD TO STABLE EMPLOYMENT? THE ROLE OF WEAKENING "BENEFICIAL CONSTRAINTS" IN GERMAN CORE MANUFACTURING SECTORS

Abstract: This paper investigates the relationship between skills, work organisation, and contingent employment contracts in German core manufacturing sectors. The Varieties of Capitalism and dualisation literatures have contended that employers in Coordinated Market Economies like Germany have a sustained interest in retaining permanent employment contracts for workers with specific skills. Findings confirm that contingent contracts are more common among workers who lack industry-specific vocational training, and the rate of contingent contracts among this group relative to those with specific skills has increased over time. However, the jobs held by core skilled workers have also become increasingly vulnerable to casualisation due to the routine nature of work and labour market deregulation. This suggests that the "complementarity" between specific skills and stable employment has been overestimated in the literature. The findings rely on the workers' surveys of the German Federal Institute of Vocational Training and Education between 1986 and 2012 and on interviews with human resource managers and workers' representatives in German automotive and machine tool plants between 2010 and 2013.

1 Introduction

In all advanced political economies increasing competition on national and international markets, labour power decline and the progressive deregulation of labour markets through state policy have contributed to the expansion of contingent work (Houseman and Ōsawa 2003, Kalleberg 2009). Since mid-Nineties research in Liberal Market Economies (LMEs) such US and UK has shown that contingent work has been spreading throughout the workforce, from manufacturing to services and from bluecollar workers to managers (Osterman 1996, Cappelli 2001, Grimshaw, Ward et al. 2001). While researchers on trends in LMEs agree that the casualisation of work has affected all groups of workers, research on contingent work in Coordinated Market Economies (CMEs) such as Germany and Sweden has raised debates regarding the pervasiveness of casualisation because the stable employment relationship has long been argued to represent a fundamental trait of these political economies (Hall and Soskice 2001, Amable 2003).

According to the Varieties of Capitalism (VoC) literature,[11] production in CMEs – especially in manufacturing – relies on specific-skilled workers in a stable employment relationship. As these arrangements are a source of competitive advantage on international markets, employers are expected to support them even under increasing competitive pressure. In contrast, LMEs are characterised by flexible labour markets, which are more suitable to sectors relying on radical innovation (Hall and Soskice 2001, Amable 2003). Thus, while the casualisation of work in LMEs can be interpreted as a strengthening of the typical institutional traits, the same phenomenon in CMEs represents a departure from the traditional system of production and of employment relations.

As a consequence, the literature has been debating the implications of labour market liberalisation trends in CMEs for their trajectory of change. On the one hand, some scholars have argued that CMEs have moved towards a dual model of political economy: The core of the political economy is supposed to have maintained traditional

1 I am referring here explicitly to the VOC literature because I use the terms "liberal" and "coordinated". However, also other authors, who do not really belong to the VoC literature - for instance Streeck (1991,1992, 1997) and Marsden (1999)- pointed out similar characteristics for Germany, which is the coordinated market economy par excellence.

coordination characteristics while the periphery has become increasingly flexibilised and deregulated. The two segments are complementary and in equilibrium, as stability in the core is supported by the deregulation of the periphery (Palier and Thelen 2010, Emmenegger, Hausermann et al. 2012b). On the other hand, other scholars have argued that CMEs have been slowly converging on the liberal model – even though at a slow pace, marketisation processes will affect the core as well (Streeck 2009, Baccaro and Howell 2011).

The debate has focused particularly on Germany, which is the paramount example of a CME. In Germany, contingent work has been growing since the end of the nineties (Bosch and Kalina 2008, Kroos and Gottschall 2012) and manufacturing companies have increasingly outsourced industrial services and the production of components to subcontractors and staff agencies (Greer 2008b, Jürgens and Krzywdzinski 2010). Some scholars have argued that these trends undermine coordinating institutions both in core and in peripheral workplaces, transforming the German political economy as a whole in the long term (Doellgast and Greer 2007, Streeck 2009, Baccaro and Benassi 2014). Other scholars have contended that core manufacturing sectors are still coordinated and rely on a stable specific-skilled workforce thank to the support of both employers and labour representatives while the service periphery is flexibilised (Thelen 2012, Hassel 2014).

The present paper examines trends towards the casualisation of work in the critical case of German core manufacturing sectors. In particular, it investigates the relationship between skills, work organisation and employment stability, which is crucial to the debate above. Early political economy literature emphasised the constraining (and enabling) role of institutions in German manufacturing, and contended that strong industrial relations and high employment protection pushed employers to invest in the provision of industry-specific skills, to adopt a complex work organisation and to upgrade the production to high-quality markets (Streeck 1991, Streeck 1992). The VoC literature, instead, argued that the stable employment relationship is an outcome of employers' interests in retaining specific-skilled workers, who are necessary to the high-quality production of German manufacturing. This literature only implicitly acknowledges the role of work organisation, suggesting a direct link between specific skills and stable employment (Hall and Soskice 2001).

Both sets of arguments picture a virtuous circle between skills, permanent employment and high-quality production. However, the first set of arguments relies on a power-based understanding of labour market outcomes, stressing the role of labour power resources in determining wages and working conditions, including employment stability. Therefore, it expects the casualisation of work to affect core manufacturing sectors once institutional constraints are weakened, in line with the expectations for slow and pervasive liberalisation of the employment relationship mentioned earlier. In contrast, the second position focuses on employers' efficiency-maximising strategies as drivers of labour market outcomes. Thus, it expects employers to maintain labour market coordination in core manufacturing, as suggested by the dualisation literature.

The analysis of the growth of contingent work in German core manufacturing sectors is relevant also beyond the specific context because it allows examining the relationship between skills, work organisation, institutions and employment stability. Research in the VoC tradition has mainly examined the relationship between specific skills and stable employment through comparative – mainly quantitative - analyses (Gebel and Giesecke 2011, Vlandas 2013). Given their exclusive focus on the macro-level, these works have not tested the employer-driven mechanism suggested by the VoC theory. At the same time, this literature has not engaged with existing research based on qualitative case studies, which highlight the role of industrial relations institutions and of work organisation for sustaining the relationship between stable employment and good working conditions (Streeck 1991, Jürgens 2004, Lloyd and Payne 2006, Lloyd, Warhurst et al. 2013).

This paper represents an attempt to bridge the gap between the two literature strands as it aims at understanding change at the political economy level through micro-level evidence. The empirical evidence is based, first, on a longitudinal statistical analysis of the workers' surveys of the Federal Institute of Vocational Training and Education (1986-2012), which allows studying the relationship between skills, work organisation and stable employment over a long time period through which German labour market and industrial relations institutions have progressively eroded. Second, the paper combines the quantitative analysis with qualitative case study findings at workplace based on interviews with human resource managers and labour representatives in

automotive and machine tool building plants. The findings confirm some expectations of the VoC and dualisation literature as workers with industry-specific skills have been found less likely to be on a contingent contract than workers without specific skills; furthermore, skill specificity has become a more critical asset over time for protecting employees from work casualisation. However, findings also show that the rate of temporary contracts among workers with specific skills has increased over time. Evidence suggests that this trend is due to the routine nature of work and to labour market deregulation and weakening industrial relations institutions. Findings show the relationship between skills and employment stability is not as tightly coupled as suggested in the VoC and dualisation literature. Industrial relations are fundamental for limiting the casualisation of work as skill specificity can only partly protect workers, especially when the job is routine.

The paper is organised as follows. The next section explains why German core manufacturing sectors represent a critical case for studying the expansion of contingent work. The third section illustrates the hypotheses regarding the influence of skills and work organisation on the probability of being on a temporary contract. The fourth section presents the methodology. The fifth and sixth sections contain respectively the quantitative and the qualitative analysis. The seventh section discusses the findings and the eight section concludes.

1 German core manufacturing sectors as a critical case study

Since the seventies[12] the segmentation literature has started looking at the relationship between skills, work organisation and employment stability. The main argument is that permanent workers in internal labour markets are assigned to job positions which are characterised by a complex work organisation and require specific skills. In contrast, workers in external labour markets are assigned to easy tasks requiring general or no skills and have precarious dead-end jobs (Doeringer and Piore 1971, Berger and Piore 1980, Osterman 1987). Scholars in comparative political economy and industrial relations used similar arguments to differentiate between countries whose manufacturing production relied either on external or internal labour markets,

12 For earlier works see among others Kerr (1954).

depending on the national institutional context. Manufacturing production in market-based economies such as the UK and the US is characterised by a general-skilled workforce and high turnover, which match mass production technologies and a Taylorist work organisation. In contrast, in coordinated or social forms of capitalism such as in Germany, Sweden and Japan, the manufacturing sectors are distinguished by a complex post-Taylorist work organisation, sophisticated technology and a skilled and stable workforce (Dore 1973, Streeck 1987, Berger and Dore 1996).

German core manufacturing sectors are prototypical for the coordinated production model, where specific skills are tightly coupled with work organisation and stable employment; therefore, they represent a critical case for studying the expansion of contingent work. Indeed, the "Diversified Quality Production" of core manufacturing sectors – characterised by a broad range of high quality and technologically advanced products - traditionally relies on a stable workforce mainly constituted by *Facharbeiter*[13] (Sorge and Streeck 1987, Streeck 1991). The workforce acquires occupational specific skills through dual vocational training, which provides workers with a "broad-based knowledge of materials, tools, machinery and products" (Roth 1997: 117); still, companies are deeply involved in the system as training takes place in the workplace (Busemeyer 2009). Overall, the existing literature has acknowledged that specific skills and employment stability are associated but it has stressed different mechanisms underlying this relationship.

Streeck's argument on "beneficial constraints" (1991; 1992) represents one of the first and best known illustrations of the relationship between skills and stable employment. He defines as "beneficial constraints", among others, the strict employment protection legislation and the presence of strong labour representation at workplace, which characterised the German labour market from the seventies until the beginning of the nineties. As these institutions limited the ability of employers to dismiss their workers at will or hire on precarious contracts, the management needed to invest in training the whole workforce in order to increase their productivity and, in this way, to compress labour costs.[14] Furthermore, the combination of a stable specific skilled workforce and strong works councils led to the implementation in manufacturing companies of a

[13] *Facharbeiter* is the German word indicating workers who completed a dual vocational training degree and is typicall used for professional figures in the manufacturing sector.
14 A similar mechanism was suggested between inclusive sectoral agreements and training.

"flexible, non-Taylorist organisation of work", which required a stable specific-skilled workforce (Streeck 1991: 25). On the one hand, the "redundant" capacities of the German *Facharbeiter* were necessary for this work organisation, characterised by teamwork and task rotation, exchange of information within and across teams, and autonomous work (Kern and Schumann 1984, Streeck 1991). On the other hand, stable employment was necessary to the complex work organisation relying on high commitment and mutual trust among workers (Sengenberger 1987).

While Streeck's argument addressed the origins of the virtuous circle between specific skills and stable employment,[15] recent political economy literature has mainly looked at the mechanisms mutually enforcing this relationship. There are two main differences between the older literature and the recent comparative political economy literature of Varieties of Capitalism. First, the constraining role of institutions moved to the background while the VoC literature took a functionalist approach to institutions, seen more as resources for employers pursuing strategic advantage (Howell 2003: 105-110). The VoC literature contends that employers have an interest in retaining their specific-skilled trainees as a return on their investment in training; workers are willing to invest in specific skills, which are transferable across employers only to a limited extent, because they have the perspective of a stable employment relationship (Estevez-Abe, Iversen et al. 2001, Hall and Soskice 2001). Second, the VoC literature does not explicitly discuss the role of work organisation, which constitutes the link in the older literature between skill specificity and the standard employment relationship. In contrast, the analyses based on the VoC framework assume a correspondence between specific skills and a complex work organisation[16] and neglects work organisation as central explanation for the association between skills and stable employment. As just illustrated, the VoC literature suggests a direct causal relationship between the two elements, based on workers' and employers' individual preferences.

Since the eighties, the literature on the German model has acknowledged that specific skills and stable employment are tightly coupled, but emphasised different mechanisms: While the older literature underscored the constraining role of industrial relations

15 There is also a lively debate regarding the different definition of "specific skills" in the political economy literature, which is not going to be illustrated here in detail. Very briefly, a further difference between Streeck's work and VoC is the conceptualisation of "specific skills", which relies on the human capital theory and the asset theory respectively. See Streeck (2011) for a detailed discussion.
16 Jürgens (2004) also makes a similar argument.

institutions and of complex work organisation, the VoC literature has contended that the association relies on the strategic preferences of employers and workers within the institutional context. However, existing literature suggests that the traditional characteristics of the German model have changed in two areas central to the past literature: Negotiated and legal employment protection has progressively weakened over the last twenty years and the work organisation has been argued to be (increasingly) routine despite the high skill level of the German manufacturing workforce.

The first important set of changes regards the weakening of constraints on employers' ability to hire and fire. The use of temporary work has been progressively deregulated in Germany since the nineties. The OECD index of employment protection for temporary workers, which includes the dimensions of individual and collective dismissals, length of contract duration and equal treatment, decreased from 5 in 1985 to 3.25 in 1992, 2 in 1998 and 1 since 2006, while employment protection for permanent workers did not significantly change over time (OECD 2013). In 1990 the obligation to justify the use of temporary work was lifted for contracts up to 18 months, and six years later the maximum length was increased up to 24 months. In 1997 the duration of agency contracts with the hiring company was extended from 9 to 12 months and agencies were allowed to hire agency workers on temporary contracts (Oschmiansky and Kühl 2010). In 2004 the Hartz reforms lifted any limitation to the maximum duration and the obligation to motivate agency contracts. Furthermore, they allowed derogations by collective agreement to the principle of equal pay for agency workers (Bundesagentur für Arbeit 2013: 5). Due to unforeseen union competition from Christian unions, the DGB unions signed a collective agreement putting in place low wages for agency workers - around 30-40% lower than in the metal sector in 2009 (Weinkopf 2009b). Only in the summer of 2012 did the DGB unions and the staff agencies' employer association sign a collective agreement setting wage bonuses for reducing the wage gap between standard workers and agency workers. Sectoral agreements in core manufacturing sectors do not contain any provisions limiting the use of contingent work such as quotas.

Works councils, even though they have formal bargaining rights over recruiting, have decreasing influence on employers' staffing strategies. Union density, also in core

manufacturing sectors, has been declining after the re-unification membership boom and, while the automotive and steel industries are still well organised, union density greatly varies in the chemical and electronics industries (Bispinck and Dribbusch 2011, Dribbusch and Birke 2012). Since the nineties, the law has allowed opening clauses at workplace level, which can even amend collective sectoral agreements. Works councils have increasingly been put under pressure to make concessions as companies started outsourcing production segments abroad, especially to Eastern Europe, and benchmarking the German production sites with new plants (Hassel and Rehder 2001, Rehder 2003). Thus, works councils could not prevent the outsourcing and subcontracting of components and industrial services such as logistics, catering and building maintenance (Doellgast and Greer 2007; Blöcker and Jürgens 2008). Similarly, works councils have not been effective in regulating the use of contingent work at company level. Besides lacking the preparation to face the challenge of temporary work (Promberger 2006: 138 ff.), works councillors have seen contingent work as an instrument for responding to firms' need of flexibility and of cutting labour costs without worsening the conditions for the permanent workforce (IG Metall study reported in Aust, Pernicka et al. 2007: 263).

The second set of changes concerns work organisation. The continued importance of vocational training and the high rates of skilled workers in German core manufacturing sectors have provided support to the argument that the core of German capitalism has remained stable over time, without investigating changes in job characteristics (see also Jürgens 2004 for a similar remark on the VoC literature). However, research in industrial sociology has documented that the work organisation has moved away from the ideal type of "the end of the division of labour"[17] based on task integration, if it has ever existed. First, scholars pointed out that the integrated work organisation has never spread across all occupations and production segments within core manufacturing sectors but it rather characterised only certain occupational profiles, while work in direct production, especially on the assembly line, was mainly organised along Fordist lines (Schumann 1994, Roth 1997, Jürgens 2004). Second, lean management techniques, which companies increasingly implemented over the nineties, did not lead to a further integration of work functions such as repairs, maintenance, quality checks and production. Work processes have become increasingly standardised and routine

17 Kern and Schumann (1984).

(Springer 1999), and this trend has also affected qualified positions: Lacher (2006) defines this phenomenon as the creation of "qualified routine work", which puts an end to the "model of the poised and autonomous *Facharbeiter*" (Lacher 2006: 88).

The institutional changes and the (increasingly) routinised nature of work can be seen as undermining two main conditions argued in previous literature to support the close relationship between high levels of specific skills and high employment stability in core manufacturing firms. This raises two questions regarding the effects of institutional change and job routine on this relationship: First, do we see an expansion of contingent work in core manufacturing firms? Second, if contingent work is expanding, to what extent are employees with specific skills protected from these trends?

Existing literature suggests two possible answers to this question. On the one hand, the dualisation literature contends that contingent work would not expand in core manufacturing sectors, and particularly among the core skilled workforce, despite labour market deregulation and declining labour power (Hassel 2014; Thelen 2012). On the other hand, from a power resource perspective and similar to Streeck's argument on beneficial constraints (1991; 1992), it could be argued that the relationship between stable employment and specific skills does not hold if institutional constraints are weakened and work organisation is routine.

As both constitute equally plausible, but not established explanations, the present paper will further explore the relationship between skills, work organisation, institutions and stable employment. The next section illustrates the hypotheses derived from the literature.

2 The role of skills and work organisation for the use of contingent work

This section presents six hypotheses on the relationship between skills, work organisation and stable employment under the erosion of legislative and negotiated employment protections. The hypotheses are formulated at the individual level because the available dataset is a workers' survey. The probability of being on a temporary contract is taken as a proxy for stable employment because it is assumed that the length

of tenure for workers on a temporary contract is shorter than for workers on a permanent contract.

3.1 Skill specificity and employment stability in core sectors

In the VoC literature the German dual vocational training represents the paramount example of a system providing specific skills as opposed to the system of general education of LMEs such as the US and UK. The dual vocational training is co-financed by the government and employers, and takes place both at school and in the workplace. The index of skill specificity provided by Iversen and Soskice (2001), which is widely used in the comparative political economy literature, measures skills in terms of their occupational specificity rather than of the firm-specific content. For this reason, the ability of this index to capture skill specificity has been questioned (Tåhlin 2008, Busemeyer 2009, Streeck 2011, Thelen and Busemeyer 2012). Among others, Marsden (1999) compares the provision of skills in France and Germany and contends that German occupational skills are not as specific as informal on-the-job training, which is instead considered "general" in the VoC literature (see also Streeck 2011: 17). Thelen and Busemeyer point out that German occupational skills are portable because of the existence of an authorised certification system (Busemeyer 2009, Thelen and Busemeyer 2012).

Even though the literature disagrees on the firm-specific content of dual vocational training, all authors acknowledge that employers use dual vocational training as recruiting instruments for their skilled workforce. Employers are interested in retaining those workers who have been through vocational training and acquired valuable and specific skills to the company. For this reason, they offer workers with this industry-specific training permanent contracts and good working conditions (Stevens 1996, Estevez-Abe, Iversen et al. 2001, Hall and Soskice 2001). In contrast, employers are less interested in retaining workers without this training and therefore are more likely to give them a temporary contract. Thus, the following proposition can be derived:

Proposition 1: *In German core manufacturing sectors, specific-skilled workers*[18] *are less likely to be on a temporary contract than workers without specific training.*

18 Please note that the term "specific skills" will refer from now on workers with a dual vocational training in a sector-relevant profession.

As employers' interests in retaining their trainees are so central in the VoC framework, the relaxation of limitations to the use of contingent work is not expected to affect skilled workers. Quantitative analyses of workers' surveys and household panels in Western countries recently investigated the effect of liberalising labour market reforms on the probability of being employed on a temporary contract according to skill level. All studies found that the effect of reforms is stronger on low-skilled or unskilled workers than on workers who have been through vocational training, that is, on specific skilled workers (Kahn 2007, Jacobi and Schaffner 2008, Gebel and Giesecke 2011).

In German core manufacturing sectors, Palier and Thelen (2010), Thelen (2012) and Hassel (2014) even contend that the casualisation of work has not affected the core workforce. These sectors are supposed to still rely on a stable specific-skilled workforce because both employers and works councils have an interest in maintaining the working conditions of the core workforce unchanged. However, under increasing cost-competition on national and international markets this status-quo in core manufacturing sectors can be sustained only because the service periphery of the German economy has been flexibilised and deregulated. This literature expects core specific–skilled workers not to be affected by the flexibilisation of work, suggesting a dualisation scenario in the German economy where core manufacturing sectors maintain their high-road equilibrium (Palier and Thelen 2010, Thelen 2012, Hassel 2014). These considerations lead to the following proposition:

Proposition 2: *In German core manufacturing sectors, only workers without specific skills have become more likely to be on a temporary contract over time.*

3.2 A strategic perspective on employers' strategies

The political economy literature on skills often assumes that skills correspond to job requirements. For instance, in their research on the linkage between skills and welfare/labour market outcomes Oesch (2003), Emmenegger (2009) and Gebel and Gieshecke (2011) collapse the dimension of task complexity with the skill variable (Oesch 2003: 18, Emmenegger 2009: 408, Gebel and Giesecke 2011: 21). The literature

assumes that workers are trained to acquire specific skills and then hired because they need to perform complex and autonomous tasks. As the performance of this kind of task requires stable and committed workers (Marsden 1996), specific skilled workers are protected from the casualisation of work. However, the assumptions of the political economy literature are inaccurate: First, the transition from training to permanent employment also depends on external conditions (for example labour market deregulation or unemployment), which can alter the strategies through which employers achieve their goal to retain specific skilled workers. This perspective leads to the formulation of a proposition in antithesis to Proposition 2. Second, formal skills do not always reflect the content and the structure of work, leading to the inclusion of variables other than skills to capture the organisation of work.

Regarding the transition from training to permanent employment, Marsden's work on "extended entry tournaments" is particularly relevant. Marsden (2010) argues that high levels of competition among workers with comparable qualifications and experience can lead to extended entry tournaments: Given the oversupply, workers accept low standards even for relatively long periods, hoping to be hired in a permanent position in the next round. While Marsden (2010) focuses on extended entry tournaments in new and creative professions characterised by unstructured internal labour markets, he acknowledges that employers can also use tournaments in more traditional sectors and occupations if the institutions regulating entry to internal labour markets erode (p. 1). If the obligations to permanent hiring are lifted, employers do not need to offer well-paid permanent contracts for hiring and retaining the required skilled workforce, especially when the skill supply is higher than the demand (Korpi and Tåhlin 2010).

As the German system of vocational training is bargained between social partners and the government, the trainee positions do not always correspond to the actual demand for skilled workers in the company. During the eighties, for instance, dual vocational training was even used as an anti-cyclical policy instrument in conditions of high unemployment (Streeck 1997: 247). As employers sometimes have trained workers above their needs, skilled workers, especially right after their training, have often worked in positions which do not reflect their skills (for example on the assembly line) (Franz and Zimmermann 1999). Working first in an unskilled position is considered a normal step for career progression and young *Facharbeiter* simply wait until a skilled

position becomes vacant. If hired permanently, young skilled workers are covered by the same agreement and enjoy the same benefits as their colleagues even though they work in unskilled positions. However, if the employment protection legislation for temporary workers is relaxed, employers might offer young workers temporary contracts, which are more convenient as temporary workers have no rights to company-level agreements, can be easily dismissed if there is no demand for new *Facharbeiter* and, overall, are easier to control. The risk for employers to lose their investment in training is at a minimum as young *Facharbeiter* might see temporary work as a necessary – and possibly short- transition period to a permanent position.

These observations lead to an alternative proposition to Proposition 2:

Proposition 3: *In German core manufacturing sectors, specific-skilled workers have become more likely to be on a temporary contract over time.*

The observation that skilled workers are employed in unskilled positions leads to the second critique of the political economy literature, which is, that there is not a perfect correspondence between formal qualifications and work organisation (Grugulis and Lloyd 2010: 94 f.). Lam found that the work organisation of British and Japanese engineering varied across countries even though the formal qualifications are the same (Lam 2002). The other way round, by comparing aerospace engineers and workers at the automotive final assembly in the UK and in Italy, Stewart et al. (2010) found that both groups of workers in both countries were experiencing a similar reduction in work autonomy despite their different qualifications. These findings suggest that factors related to skill specificity and to work organisation should be analysed separately rather than collapsed into one dimension. This is particularly important in the case of German core manufacturing sectors as the work organisation in German core manufacturing sectors has been found to be standardised and repetitive despite the high skill levels of the workforce (Springer 1999, Lacher 2006).

The routine nature of work has been argued to favour the employment of temporary work. Workers are more interchangeable if jobs are characterised by repetitive and low-discretion tasks (Lepak, Takeuchi et al. 2003: 688) because routine jobs can be easily learned and their performance does not require great work experience (Brown and

Lauder 2006). In addition, job repetitiveness suits short-term employment relationships because it negatively affects commitment (Baba and Jamal 1991), productive cooperation among workers (Drago and Garvey 1998) and employees' health in the long run (Nainzadeh, Malantic-Lin et al. 1999). Thus, temporary workers have been found to occupy more routine and repetitive job positions while multi-tasking and complex jobs are attached to career ladders and compensated through higher wages (Osterman 1987, Egger and Grossmann 2005). For instance, in her qualitative study of a service firm, Smith (1994) found that temporary workers did not require the same "customer-specific" knowledge as they were assigned to the most unskilled and routine tasks (Smith 1994: 294). Furthermore, the Eurofound report (1998) on working conditions in the European Union found that temporary workers are more likely to occupy repetitive job positions (Letourneux 1998). From the existing research the following propositions can be derived:

Proposition 4a: *In German core manufacturing sectors, job routine has an independent effect from specific skills on the probability of being on a temporary contract.*

Proposition 4b: *In German core manufacturing sectors, workers in highly routine job positions are more likely to be on a temporary contract than workers in non-routine job positions.*

Institutions can be expected to mediate the relationship between job routine and the incidence of temporary work. Research on precarious work in low-end services has shown that industrial relations are particularly important for regulating wages, working conditions and the use of temporary contracts when job characteristics do not require a stable employment relationship. Existing literature on this issue is mainly comparative: The findings of the Russell Sage Project on Low-Wage Work in six Western countries have shown that the type of work contract and working conditions for workers in low-end services and manufacturing varied across countries, according to the industrial relations institutions. Countries with weak labour market regulation and labour representation, such as the US and the UK had the highest rates of precarious work (Appelbaum and Schmitt 2009, Gautiè and Schmitt 2010). Similarly, drawing on data from the Global Call Center Project, Shire et al. (2009, 2009) found that institutional differences across countries constrain employers' use of contingent work even though in

some cases employers could exploit legal loopholes. If the use of temporary work is strictly regulated, employers would hire workers on permanent contracts even though the job does not require a stable workforce. However, if the labour market regulation is weakened in order to allow the employment of temporary workers, employers might increasingly try to occupy routine job positions with these workers. The following proposition can be derived:

Proposition 5: *In German core manufacturing sectors, workers in highly routine job positions have become more likely to be on a temporary contract over time.*

3 Methodology

The present paper uses mixed methods and the empirics rely both on quantitative and qualitative analysis.

4.1 Quantitative analysis

The quantitative analysis is based on the Workers' Survey from the German Federal Institute for Vocational Training and Education (BiBB). Five waves are taken into consideration: 1985/86, 1991/92, 1998/99, 2005/06 and 2011/12. The first wave in 1979 has been excluded from the analysis as it does not include any information about temporary contracts. The surveys do not follow either the same individuals or the same companies over time. However, the sample is representative for the population in every survey year.

The study population is restricted to the blue-collar workforce in core manufacturing sectors, which are: chemicals, steel, forging, machine tool building, automotives, white goods, electronics, fine mechanics, ship and aeroplane building. The analysis considers only the active German population (at least 10 working hours a week) aged between 15 and 64, and trainees have been excluded. The sample restriction follows the recommendation of BiBB researchers (Rohrbach-Schmidt and Tiemann 2013) apart

from the inclusion of Eastern Germany in the sample,[19] where the use of temporary work is more widespread and the plants set up after the reunification are characterised by more Tayloristic forms of work organisation than in Western Germany. [20]
The number of observations for each wave is:

	n. observations
1985/86	3,037
1991/92	4,016
1998/99	2,368
2005/06	1,247
2011/12	1,042

Model and method

The analysis of the dataset has been conducted using the STATA software. The analysis starts with descriptive statistics exploring the distribution of skills and job routine and the temporary work among the German bluecollar workforce in core manufacturing sectors. The descriptive statistics use sample weights.

After this, I conduct a pooled logistic regression analysis with robust standard errors. My dependent variable, which is the probability of being on a temporary contract, is dichotomous (1=temporary contract; 0=permanent contract). The logistic regression analysis tests a simple model and three interactive logistic models, which aim at testing the conditional effect respectively of skill specificity and job routine on the probability of being on a temporary contract given increasing labour market deregulation over time. Model II and III contain only one interaction term each for testing the propositions 2, 3 and 5. Model IV is the full interacted model, which includes all the interaction terms and the constituent terms, as prescribed by Brambor et al. (2006). This model furthers the analysis of the effect of the interaction between skills, work organisation and institutional erosion on the probability of being on a temporary contract. It allows examining, for instance, the marginal effect of job routine at theoretically relevant values of skill specificity and time. All models include control variables such as age,

19 The inclusion of Eastern Germany is not recommended for ensuring better comparability across waves.

20 The logistic regression has been run also without Eastern Germany in the sample and the results do not change (see Tables A12 –A16 in the Appendix).

gender, local unemployment rate, the location of the workplace in Eastern Germany, the firm size and sectoral dummies.

The simple model and the interactive models look as follows:

(I) $\text{Temporary contract} = \beta_{0+} \Sigma \beta_1 \text{CONTROLS}_{it} + \beta_2 \text{routine}_{it} + \beta_3 \text{skill specificity}_{it} + \beta_4 \text{time}_{it} + \varepsilon_{it}$

(II) $\text{Temporary contract} = \beta_{0+} \Sigma \beta_1 \text{CONTROLS}_{it} + \beta_2 \text{routine}_{it} + \beta_3 \text{skill specificity}_{it} + \beta_4 \text{time}_{it} + \beta_5 \text{time}_{it} * \text{skill specificity}_{it+} \varepsilon_{it}$

(III) $\text{Temporary contract} = \beta_{0+} \Sigma \beta_1 \text{CONTROLS}_{it} + \beta_2 \text{routine}_{it} + \beta_3 \text{skill specificity}_{it} + \beta_4 \text{time}_{it} + \beta_5 \text{time}_{t} * \text{routine}_{it+} \varepsilon_{it}$

(IV) $\text{Temporary contract} = \beta_{0+} \Sigma \beta_1 \text{CONTROLS}_{it} + \beta_2 \text{routine}_{it} + \beta_3 \text{skill specificity}_{it} + \beta_4 \text{time}_{it} + \beta_5 \text{time}_{t} * \text{routine}_{it+} \beta_6 \text{time}_{it} * \text{skill specificity}_{it+} \beta_7 \text{skill specificity}_{it} * \text{routine}_{it} + \beta_8 \text{time}_{it} * \text{skill specificity}_{it} * \text{routine}_{it} + \varepsilon_{it}$

Table A1 in the Appendix contains descriptive statistics for all variables. Before performing the regression analysis, I have conducted multicollinearity tests for my independent variables and produced a correlation table[21], which are both reported in the first section of the Appendix (Table A2 and A3). The multicollinearity test shows that the Variance Inflation Factors (VIFs) are lower than 10 and the tolerance value higher than .1, which constitute the threshold values by rule of thumb. The correlation table also confirms that there is no multicollinearity between the variables as the correlation values are below .8 (Franke 2010). In addition, the direction of correlation between specific skills, job routine and time with the probability of being on a temporary contract confirms the direction of correlation suggested in the hypotheses.

Variable description

My dependent variable is *Employment on a temporary contract*. It is a dummy variable which takes value 1 if the worker is on a temporary contract and value 0 if the worker is on a permanent contract.

21 Given that the variables are both dichotomous and continuous, I used the command polychoric. See UCLA (2014).

I operationalise my independent variables as follows. First, the variable *Skill specificity* refers to the workers who have their last vocational training degree in an occupation which traditionally belongs to core manufacturing sectors. The ISCO88 codes of the occupations are between 10 and 15 and between 19 and 32. The corresponding occupations in the wave 1985/86, which precedes the publication of the International Standard Classification of Occupations, take code values between 1210 and 1541 and between 1910 and 3237.

Second, the variable *Job routine* has been operationalised through the survey question "How often do you repeat the same work procedure?" The answers' scale changes across waves, as the table below shows:

Table 1: Comparison of answers' scales for the question on routinisation

Value	**1985/86 - 1998/99**	**2005/06 - 2011/12**
1	almost always	often
2	often	sometimes
3	now and then	rarely
4	rarely	never
5	almost never	

In order to create a variable across waves the categories 1 and 2 for the first three waves were merged. The variable has been dummy-coded across waves: It has value 1 when respondents report that they always or often repeat the same work procedure while it takes value=0 for the other survey answers. This measurement reflects the findings of Springer (1999) and Lacher (2006) as well as the interview findings in this paper (see section 6), which describe how work tasks in core manufacturing sectors are actually routine despite the traditional image of sectors characterised by complex work organisation. However, there are two possible objections to this measurement. First, the question of whether the workpace is dictated by a machine has also often been used as a measure of job routine in manufacturing (Braverman 1974; Baron and Bielby 1982; Bailey 1993) but the survey does not include it. However, it could also be argued that the measurement in this paper is rightly broader as workers in industrial services (such as logistics) are likely to have a repetitive job even though the pace is not dictated by a machine such as for the workers on the assembly line. Second, the measure of job

routine is a perception of workers which could be argued to be endogenous to the type of contract. This linkage would however be counter-intuitive because temporary workers should find their work less repetitive as they can be reasonably assumed to work in the same job positions for shorter time periods. Following this reasoning, old workers should be more likely to find their job routinised: Indeed, across all waves 54% workers between 15 and 25 declared that their work was highly routinised against 60% among workers between 55 and 64.

Third, labour market deregulation has been operationalised through the time variable because the dataset does not provide information on the presence and strength of industrial relations at workplace level. [22] However, the weakening of industrial relations, the relaxation of labour market regulation, and their effect on workers' outcomes in Germany have been widely studied in the literature (Promberger 2006; Seifert and Brehmer 2008; Dörre 2013). Therefore, additional confirmation through statistical analyses regarding how institutional changes in the arena of industrial relations contribute to the marketisation of the employment relationship in Germany is not strictly necessary. Furthermore, the case study findings illustrate in detail how national labour market reforms and workplace concession bargaining influence the use of contingent work, tracing the causal mechanism linking the weakening legislative and negotiated employment protection with the probability of being on a temporary contract.

Time has been coded as a continuous variable taking the values from 1 to 5 in order to facilitate the interpretation of the interaction terms and to save degrees of freedom. Indeed, the use of dummy waves would have required the inclusion of eight interaction terms between job routine and skill specificity and four wave dummies (excluding the wave dummy used as reference category). In order to make sure that the effect of time follows a positive trend, the logistic regression has first been run with the wave dummies instead of the continuous variable *Time*, confirming that the direction of the

22 A multi-level analysis for disentangling the effect of reforms at national level and of individual-level variables could not be conducted because it requires at least 20 clusters, while the dataset has a limited number of observations and of survey waves for this type of analysis. Gebel and Giesecke (2011) perform a multi-level logistic regression for testing the effect of labour market reforms on the workforce. However, their dataset allowed nesting the individual observations in each of the fifteen EU countries included in the analysis at different time points.

time effect does not change the direction between the waves, and showing a positive trend since 1992 (see Table A 10 in the Appendix).

The logistic regression also includes the following control variables: *Age*, which is grouped in five categories 15-24; 25-34; 35-44; 45-54; 55-64; *Company size*, which is constituted of three categories (n. employees<10; 10≤ n. employees≤500; n. employees >500); *Eastern Germany*, which is a dummy variable taking value equal to 1 if the respondents work in a Federal State belonging to the former German Democratic Republic); the dummy variable *Gender*, which takes value 1 if the respondent is female; *Local unemployment rate*, which reports the unemployment rate by Federal State for each wave year as reported in the official statistics of the Federal Ministry of Labour.

Further variables used in the analysis are not included in the regression either because they are redundant – such as the variables *Occupational group* and *Highest qualification* - or they are not present in all waves, such as the variables *Overqualification*, *Overskilling* and *Task dummies*. However, the variables are included in the descriptive analysis at the beginning of the empirical section because they offer valuable information on the distribution of skills and tasks within the population. These variables are: *Highest qualification*, which entails the four categories "no formal qualification", "vocational training", "qualification as master craftsmen, technicians and senior clerks", and "tertiary education"; *Occupational group*, which refers to the job position of the respondents rather than to their formal qualification and includes the three categories "unskilled", "skilled" and "master craftsmen/technicians/senior clerks"; the dummy variable *Overqualification* which takes value 1 if workers feel that their job could be done by someone with lower qualifications and value 0 if their job could be done by someone with different or lower qualifications; the dummy variable *Overskilling* which takes value 1 if workers feel that their skills are appropriate for their job and value 0 if the skills are not; the dummy variables on various tasks, which take value 1 if the respondent often performs a specific task and take value 0 if the respondent performs the specific task only sometimes or never.

Section 1 in the Appendix reports additional information on the variables such as the original survey questions, the variables' values, and the procedure used for building the variables.

Limitations of the dataset

As already mentioned, the dataset does not contain any information on the presence of industrial relations at workplace level, which is an important control variable as it has been found to be relevant in different studies (i.a. Davis-Blake and Uzzi 1993, Lepak and Snell 1999). Indeed, it could be argued that labour market deregulation and the pressure to engage in concession bargaining have no (or milder) effects on the use of temporary work in establishments covered by sectoral agreements and with workplace labour representation. Furthermore, it could be argued that skills and job routine do not have independent effects in companies with developed internal labour markets and workers' representation in the workplace because works councils ensure a correspondence between specific skilled workers and complex job positions.

In order to overcome this limitation, two strategies have been used. On the one hand, the case study findings following the regression analysis (see section 6) illustrate how labour market deregulation and works councils affected the use of temporary work in large automotive and machine tool plants with workplace representation. On the other hand, the same logistic regression was run only for companies with more than 500 employees as a robustness check, which corresponds to 40% of the sample (see Table A17-A21 in Section 3 in the Appendix). According to Baccaro and Benassi (2014), companies with more than 500 employees have higher average coverage rates of both sectoral collective agreements and works councils than the average rates for the whole population of companies in German core manufacturing sectors. The calculations are based on the data of the Establishment Panel of the Federal Institute of Employment Research (IAB), which is a company survey conducted every year since 1993 and is representative of the German firms' population. The table below shows that the coverage of sectoral collective agreements for companies with more than 500 employees in core manufacturing sectors is declining but still over 75% and the coverage of works councils is almost total.

Table 2: Coverage rates of collective bargaining and works councils (1995-2010)

	Sectoral collective agreements		**WCs coverage**	
	all companies	>500 employees	all companies	>500 employees
1995	59.3	93,9	15.3[a]	99,2
2000	47.8	82,9	10.7	98,8
2005	36.5	83,9	7.74	98,2
2010	26.2	76,9	8.74	99,2

[a]refers to 1994
Calculations based on the IAB Establishment Panel from Baccaro and Benassi (2014).

4.2 Qualitative analysis

The case study findings complement the quantitative analysis because they illustrate the reasons for the change over time, which cannot be tested directly through the quantitative analysis. In particular, the case studies help to map out the effect of labour market reforms and collective bargaining on the relationship between skills and employment contracts.

The case study findings rely on semi-structured qualitative interviews conducted either by phone or in person between January 2011 and April 2013. The interview partners were human resource managers, union representatives and works councillors in five automotive plants and two machine tool building plants. The interview partners also included union officials who had extensively worked on the issue of contingent work within the German metal union IG Metall either in the headquarters or in local union offices. The interviews have been conducted in German and the quotes in the paper have been translated by the author. A full list of the interviews is provided in the reference list.

5 From words to numbers: An analysis of skills, job routine and temporary work

5.1 Skills and job routine in the German workforce

The qualifications of the German bluecollar workforce have increased since the eighties, as Table 3 illustrates. The rate of workers without qualifications almost halved from 17 % in 1986 to 9.4% in 2012. The rate of the workforce with a vocational training degree remained stable between 74 and 78% of the workforce. The rate of workers with a qualification as master craftsman, technician and senior clerk has increased from around 3% in 1986 to 10% in 1998 and it has stayed at the same level since then. Table 3 also shows that vocational training in a metal profession is still relevant: Across all waves, between 66 and 74% of workers with vocational training had a dual vocational training degree in a metal or electronic profession.

Table 3: Skill composition of the blue-collar workforce (1986-2012)

	1986	**1992**	**1998**	**2006**	**2012**
Highest qualification (% on the whole workforce) [a]					
No qualification	17.12	13.56	14.61	8.89	9.45
Vocational training	78.59	76.48	74.55	78.91	78.68
Qualification as master craftsman or technician	3.48	8.86	10.01	9.8	10.35
Tertiary education	0.81	1.11	0.83	2.4	1.52
Vocational training in a sector-relevant profession(% on the whole workforce) [b]					
Specific-skilled workers	68.72	74.09	66.54	66.08	74.52

[a] n.observations=10,678
[b] n.observations=10,420

While the bluecollar workforce has high qualification levels, not all job positions are characterised by a complex organisation of work. Table 4 shows that the average levels of job routine are high overall within the workforce. Furthermore, even though workers with specific skills are less likely to find their job highly routine than workers without specific qualifications, the rate of specific-skilled workers in routine job positions is around 50% since 1998, which represents an increase if compared to 41% in 1986.

Table 4: Job routine within the whole workforce and specific skilled workers (1986-2012)

	1986	**1992**	**1998**	**2006**	**2012**
Among the whole workforce (%)[a]	50.39	50.88	57.92	58.08	54.82
Among specific skilled workers (%)[b]	43.38	45.87	50.54	50.51	49.68
Among workers without specific skills (%)	65.95	66.07	72.61	73.15	69.87

[a] n.observations=10,678
[b] n.observations=10,420

The German bluecollar workforce has high formal qualifications as suggested in the literature about the German traditional model. However, a large proportion of job positions, also among specific-skilled workers, are highly routine instead of being characterised by autonomy and complex tasks. Thus, despite high skill levels, the work organisation presents characteristics which allow the employment of temporary workers.

5.2 Temporary workers: Qualifications and tasks

Table 5 shows that temporary work has been increasing overall from almost 5% in 1986 to 11% in 2012 within the whole workforce. Temporary contracts are concentrated in unskilled positions, where their rates tripled between 1986 and 2012, going from 5.5% to 24%. In addition, in skilled job positions, temporary contracts increased from 4.6% in 1985 to almost 8% in 2012. The difference between the rates in 1986 and 2012 greatly varies across groups: Temporary contracts among unskilled workers increased by 18 percentage points between 1986 and 2012 and by 3 percentage points among skilled workers, while they declined by 3% among master craftsmen and technicians. Table 6 also shows that temporary work among workers with specific skills has also been increasing over time, and particularly among young workers (it increased by 24% between 1986 and 2012).

Table 5: Temporary work by occupational group (1986-2012)

	1986	1992	1998	2006	2012	Rate difference (1986-2012)
Unskilled (%)	5.48	9.77	15.5	12.88	23.71	+18.23
Skilled (%)	4.56	5.29	5.13	7.51	7.83	+3.27
Master craftsmen or technicians (%)	3.78	2.28	1.69	0.66	0.4	-3.38
Total workforce (%)	4.92	6.22	8.26	8.25	11.15	+6.23

n. observations = 10,615

Table 6: Temporary contracts among specific skilled workers (1986, 2012)

	1986	1992	1998	2006	2012	Rate difference (1986-2012)
Among specific skilled workers (%)						
	4.56	4.74	6.12	8.06	7.05	+2.49
Among specific-skilled workers by age (%)						
15-25	9.32	6.83	18.29	37.7	33.33	+24.01
45-65	6.63	5.19	9.55	15.32	14.44	+7.81

n.observations=10,420

The first rows of Table 7 show that there is no difference between temporary and permanent workers regarding the proportion of those with a vocational training degree: Excluding the wave 1998,[23] the rates of workers with a general vocational training for both permanent and temporary workers is above 74% across all waves. The second part of the table refers to workers with a specific vocational training degree. In the waves 1985/86 and 2005/06, the independent sample t-test shows there is no significant difference between permanent and temporary workers. However, in the remaining waves the percentage rates of workers on temporary contracts are significantly lower than those of permanent workers.

[23] The independent sample t-test shows that the rate of permanent workers with a vocational training degree is significantly higher than the rate of temporary workers.

Table 7: Qualification by type of contract (1986-2012)

	1986	1992	1998	2006	2012
Workers with vocational training (%)[a]					
Permanent workers	78.45	75.89	76.06*	78.58	74.38
Temporary workers	78.95	74.55	64.32	80.56	76.85
T-test	0.11	0.39	3.63*	-0.48	-0.56
Workers with specific skills (%)[b]					
Permanent workers	68.68	74.74	68.31	66.37	77.21
Temporary workers	66.24	64.00	46.83	62.77	51.85
T-test	0.32	7.58*	5.83*	1.06	4.34*

[a]n.observations=10,233
[b]n.observations=10,420
* p<.001

The differences between temporary and permanent workers are clearer regarding the routine nature of their work. Table 8 shows that temporary workers are more likely to work in routine job positions across all waves, and the independent sample t-test confirms that the difference between permanent and temporary workers is significant in all waves. Furthermore, the last two survey waves allow further investigation about the tasks temporary workers perform, showing that temporary workers are concentrated in production and in industrial services. The comparison in Table 9 between temporary and permanent workers suggests that supervision of machinery (in 2006), maintenance, goods supply, production planning, product development, training and working with a computer are tasks which are more typical for permanent workers than for temporary workers. For logistics, quality checks, production of goods and security there is no relevant difference in terms of composition between permanent and temporary workers.

Table 8: Routine job positions by type of contract (1986-2012)

	1986	1992	1998	2006	2012
Permanent workers (%)	57.43	54.2	56.61	57.08	54.89
Temporary workers (%)	61.52	62.19	72.54	70.39	68.30
T-test	-1.95*	-1.55*	-4.31*	-1.70*	-2.96*

n.observations=10,233
*p <.05

Table 9: Comparison of tasks by type of contract (1986-2012)

	2006		**t-test**	**2012**		**t-test**
	perms	temps		perms	temps	
Production	53.7	62	1.2	53.6	53.3	-1.0
Quality check	74.3	75	0.7	75.5	68.5	-1.6
Supervision of machinery	55.1	43.5	-2.7*	56.5	48.1	-1.7
Maintenance	42.1	26.9	-4.2*	38.	28.7	-2.8*
Goods supply	8.5	3.7	-2.9*	9.8	2.8	-2.2*
Logistics	30.1	25	-1.6	30.7	33.3	.11
Production planning	27	17.6	-3.8*	31.3	15.7	-5.0*
Product development	8.9	6.5	-2.0*	9.0	1.9	-5.1*
Training others	14.3	5.6	-4.0*	15.5	2.8	-5.8*
Security	23.7	25.9	0.4	22.3	24.1	-1.1
IT	55.9	37	-4.8*	63.0	43.3	-5.7*

n.observations=3,086
* p<.05

However, the employment of temporary workers in routine job positions does not necessarily reflect the skills of temporary workers, who are less likely to hold a sector-specific vocational training degree than permanent workers but the vast majority of whom still have general vocational training degrees. Indeed, Table 10 shows that temporary workers are more likely to feel overqualified and overskilled than permanent workers, and the independent sample t-tests confirm that this difference is significant. Furthermore, it reports that both perceptions of overqualification and overskilling levels among permanent workers have been increasing. This trend suggests that the high skill levels reported above might not be necessary and some tasks could be performed by workers with lower qualifications and experience.

Table 10: Overqualification and overskilling by type of contract (1986-2012)

	permanent workers	**temporary workers**	**t-test**
Overqualification (%)[a]			
1986	24.9	35.2	-2.4*
1992	26	32	-2.3*
1998	43	62.5	-4.9*
Overskilling (%)[b]			
1998	5.9	13.3	-3.2*
2006	15	23	-2.3*
2012	11.2	21.3	-3.3*

[a] n. observations=8,492
[b] n. observations=6,031
*p<.05

5.3 Logistic regression analysis

Table 11 contains the results of the logistic regression analysis. Model I is a simple regression model, which aims at testing the relationship between skill specificity and job routine and the probability of being on a temporary contract (Proposition 1, 4a&b). Model II and III and IV are logistic interactive models testing the conditional propositions 2, 3 and 5, which expect the effect of skill specificity and job routine on the probability of being on a temporary contract to change over time. The logistic regressions with robust standard errors have been run using the STATA commands *logit* and *robust.* The log odds are reported.

Table 11: Logistic regression table

VARIABLES	(I) No interaction	(II) Interaction specific skills*time	(III) Interaction routine*time	(IV) Full interacted model
Specific skills	-0.509***	-0.0985	-0.509***	-0.383
	(0.0990)	(0.228)	(0.0990)	(0.405)
Job routine	0.412***	0.411***	0.243	0.0428
	(0.0890)	(0.0891)	(0.215)	(0.418)
Time trend	0.268***	0.361***	0.231***	0.235*
	(0.0377)	(0.0585)	(0.0573)	(0.121)
Specific skills*time		-0.143**		-0.00451
		(0.0712)		(0.135)
Job routine*time			0.0612	0.166
			(0.0703)	(0.136)
Job routine*specific skills				0.379
				(0.488)
Job routine*specific skills*time				-0.187
				(0.160)
Local unemployment rate	0.0367**	0.0371**	0.0367**	0.0373**
	(0.0152)	(0.0152)	(0.0152)	(0.0152)
Male respondent	-0.215*	-0.206	-0.213*	-0.198
	(0.125)	(0.125)	(0.125)	(0.126)
Reference category: age 15-25				
26-35	-1.037***	-1.037***	-1.037***	-1.037***
	(0.119)	(0.119)	(0.119)	(0.119)
36-45	-1.504***	-1.504***	-1.506***	-1.505***
	(0.129)	(0.129)	(0.129)	(0.130)
46-55	-1.566***	-1.569***	-1.568***	-1.571***
	(0.139)	(0.139)	(0.139)	(0.140)
56-65	-1.624***	-1.624***	-1.630***	-1.627***
	(0.186)	(0.186)	(0.186)	(0.187)
Reference category for firm size:<10 employees				
10≤ employees ≤500	0.406***	0.409***	0.407***	0.409***
	(0.115)	(0.116)	(0.115)	(0.116)
>500 employees	0.153	0.165	0.156	0.169
	(0.118)	(0.119)	(0.118)	(0.119)
Eastern Germany	0.823***	0.833***	0.826***	0.836***
	(0.131)	(0.132)	(0.131)	(0.132)
Sectoral dummies		Yes (non significant)		
Constant	-2.791***	-3.083***	-2.694***	-2.820***
	(0.322)	(0.361)	(0.341)	(0.468)
Wald chi2	426.42	431.93	429.06	437.93
Prob>chi2	0.000	0.000	0.000	0.000
Pseudo R2	0.0838	0.0846	0.0839	0.0851
Observations	9,922	9,922	9,922	9,922

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of Model I are the following: The firm size and working in Eastern Germany are factors which are positively correlated with the probability of being on a temporary contract. Male and old workers, instead, are less likely to be on a temporary contract than female and young workers. The time variable also shows that workers have become more likely to be on a temporary contract over time. In line with the first proposition, having a sector-specific vocational training degree is negatively correlated with the probability of being on a temporary contract. Reflecting the expectations of propositions 4a and 4b, job routine has an independent effect from the variable "skill specificity" and is positively correlated with the probability of being on a temporary contract.

Models II and III contain the interaction terms respectively between time and skill specificity and between time and job routine. With the exception of the gender variable, which loses significance in Model II, the coefficients of the control variables do not change. The variables specific skills, job routine and the interaction term routine*time are not significant.[24] However, neither the interaction terms nor the constituent terms can be interpreted from the table and they require further statistical analysis (Ai and Norton 2003, Norton, Wang et al. 2004, Brambor, Clark et al. 2006). Indeed, by using interactive models "the analyst is not concerned with model parameters per se; he or she is primarily interested in the marginal effect of X on Y for substantively meaningful values of the conditioning variable Z" (Brambor, Clark et al. 2006: 12).[25]

Following the command routine recommended by Brambor et al (2006) and Williams (2012), the command *margins* is used to estimate the marginal effects of skill specificity and routine given each value of the time variable. In this paper, only the plot graphs are reported, which give a clear representation of the interaction term, but the tables with the values of the marginal effect, the standard errors and the confidence intervals are

24 It can be noted that the standard errors of both constituent terms and interaction terms are higher than in the simple model. This is not a signal of multicollinearity, it just means that the data does not contain enough information to estimate coefficient. However, the aim of the multiplicative term is to analyse the marginal effect of one factor on the independent variable. Therefore the standard errors of the marginal effects are actually the relevant ones (see Brambor et al. 2006). The tables A4-A9 in the Appendix show the standard errors, which are all small.

25 Norton et al. (2004) also contend that the significance of interaction terms particularly in non-linear models is not telling as the interaction might be still significant for most observations. Indeed, The Figures A1-A4 in the second section of the Appendix shows that the interaction job routine*time is significant for most observations even though the parameter in the table is not (see similarly Norton, Wang et al. 2004).

reported in the Appendix (TableA4 and TableA5). Figure 1 reports the plot for the marginal effect of skill specificity on the probability of being on a temporary contract over time (1=1985…5=2012). The line shows that the marginal effect is significant since 1992 and negative, which means that the negative effect of skill specificity on the probability of being on a temporary contract has been increasing over time. Figure 2 reports the plot of the marginal effect of job routine on the probability of being on a temporary contract, which shows that the positive marginal effect of job routine has been increasing over time.

Figure 1: Average Marginal Effects of skill specificity with 95% confidence intervals

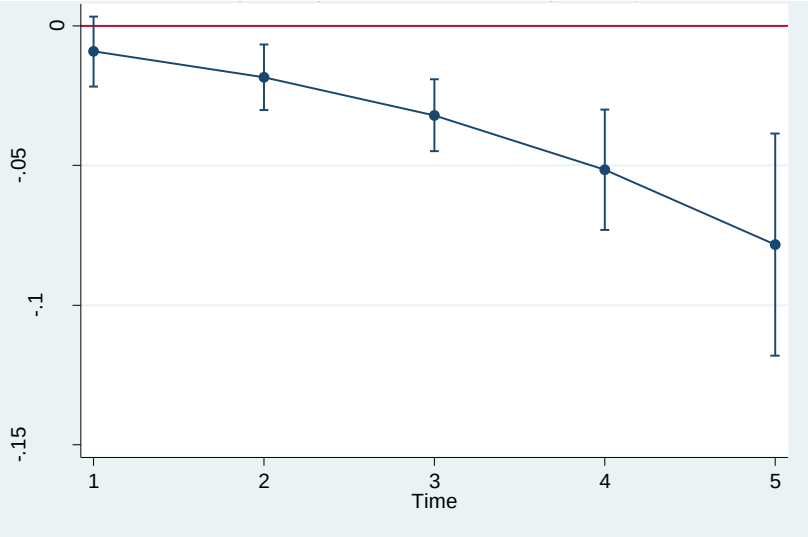
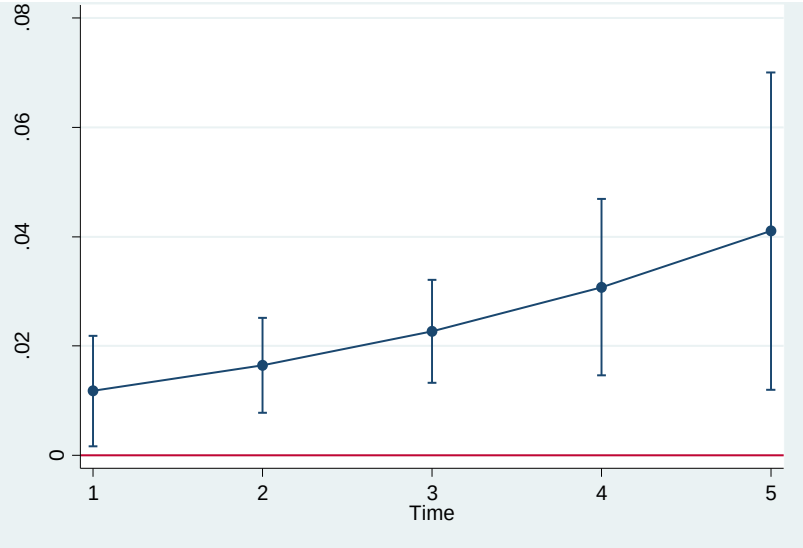


Figure 2: Average Marginal Effects of job routine with 95% confidence intervals



Predicted probabilities give a slightly different, and more intuitive, representation of the relationship between specific skills and time and between job routine and time. While Figure1 and 2 represent the overtime variation of marginal effects of specific skills and of job routine on the probability of being on a temporary contract, the predicted probabilities show how the probability of being on a temporary contract has varied over time for workers with specific skills or in routine job positions. Figure 3 shows that the probability of being on a temporary contract has become higher for workers without specific skills than for workers with specific skills. However, it also shows that both categories of workers have become more likely to be on a temporary contract. Figure 4 reports that the probability of being on a temporary contract for workers in routine job positions has increased over time and to a greater extent than the probability for workers who are not employed in routine job positions. The table with the probability values, the standard errors and the confidence intervals are included in the Appendix (Tables A6 and A7).

Figure 3: Predicted probabilities of skill specificity with 95% confidence interval

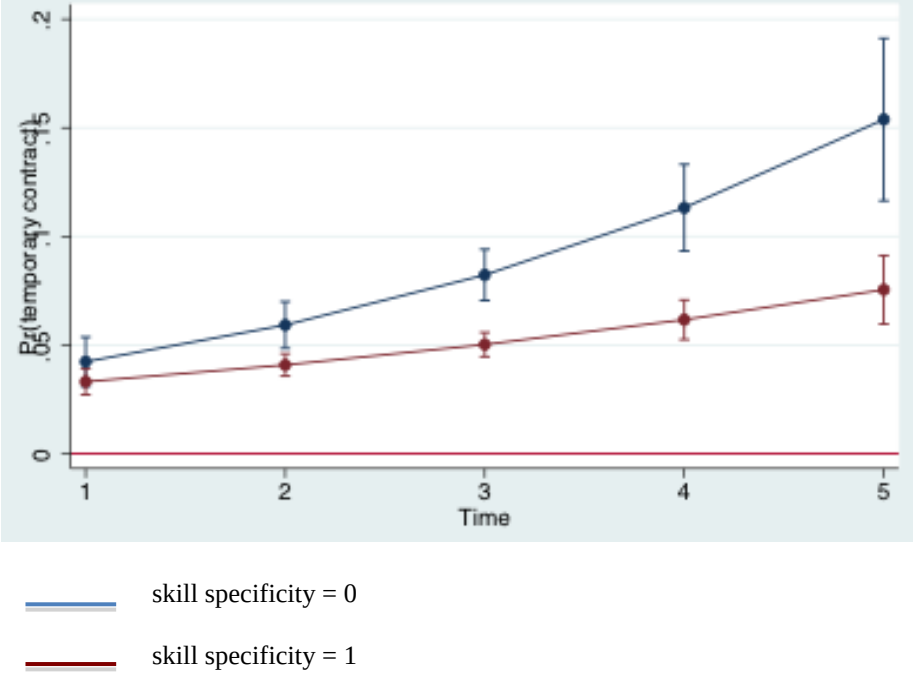
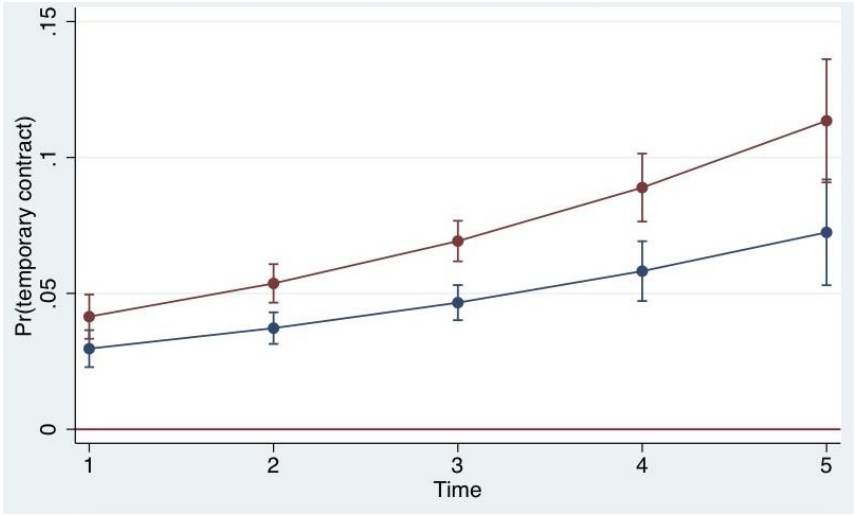


Figure 4: Predicted probabilities of job routine with 95% confidence interval

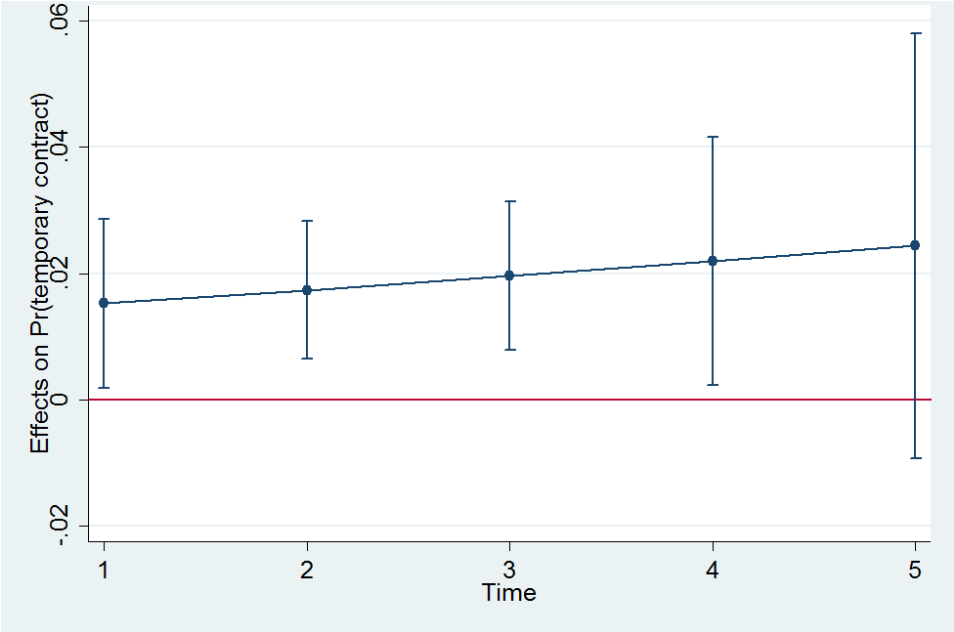


Model IV includes two additional interaction terms: the term job routine*specific skills allows the analysis of the marginal effect of job routine on the probability of being on a temporary contract conditional on workers' skills. The term job routine*specific skills*time is used for the analysis of how the marginal effect of job routine on the probability of being on a temporary contract changes over time for specific-skilled workers. Figure 5 shows that the marginal effect of job routine on the probability of being on a temporary contract declines when workers are specific-skilled. Figure 6 shows how the marginal effect of job routine on the probability of being on a temporary contract changes over time among specific-skilled workers. The trend has been increasing since 1992 even though it is not significant for the last wave. [26]

26 Additional tables analysing the interaction terms are in Section 2 of the Appendix (Table A8 and A9).

Figure 5: Average Marginal Effects of job routine at different values of skill specificity with 95% confidence intervals

Figure 6: Average Marginal Effects of job routine among specific skilled workers at different time points with 95% confidence intervals



Further logistic regressions have been run as robustness checks, which can be found in the third section of the Appendix. First, the simple model has been run with wave dummies instead of the continuous variable "time" in order to show that the direction of the effect of time on the probability of being on a temporary contract does not change

but there is a positive trend since 1992 (see Table A10). Second, the regression has been run with standard errors clustered by sector and by Federal State in case the observations within the sector or the Federal State were correlated – for instance, through common technology, or labour market regulation at regional level. Table A11 in the Appendix reports the simple model, showing that the significance level and the coefficients of skill specificity and job routine do not change. Third, the regression has been run without Eastern Germany, as the exclusion of Eastern Germany from the sample was recommended by BiBB researchers (Rohrbach-Schmidt and Tiemann 2013). The Tables A12-A16 in the Appendix show that the results do not change compared to the analysis conducted on the sample including Eastern Germany.

Fourth, the logistic regression has been run only on companies with more than 500 employees, which have almost 100% coverage of works councils and a sectoral bargaining coverage going from 93.9% in 1995 to 76.9% in 2010 (see Baccaro and Benassi 2014). In this way, the analysis checks whether the results have been biased by missing the control variable "industrial relations". Indeed, it could be argued that labour market deregulation and the pressure to engage in concession bargaining have no (or milder) effects on the use of temporary work in establishments covered by sectoral agreements and with workplace labour representation. Furthermore, it could be argued that skills and job routine do not have independent effects in companies with developed internal labour markets and workplace representation because works councils ensure a correspondence between specific skilled workers and complex job positions. However, Table A17 in the Appendix, which contains both the simple model and the interactive model, shows that both coefficients of the variables "job routine" and "time" are positive and significant. The analysis of the interactions terms "job routine*time"and "job routine*time*specific skills" gives similar results as the analysis conducted on the whole sample (see Table A19 and A21). In contrast, the coefficient of the variable "specific skills" is non-significant even when the logistic regression is run without the variable "job routine" (see Model I in Table A17). The interaction term "specific skills*time" is non-significant either, as shown in Table A18. The non-significant effect of skill specificity might be due to the ability of bigger companies to recruit specific-skilled workers even on temporary contracts. Table A20 suggests that the marginal effect of job routine on the probability of being on a temporary contract is bigger among

workers without specific skills than among workers with specific skills but the result is not significant when the variable specific skills takes value 1.

To sum up, this section has shown that, first, the bluecollar workforce have maintained a high level of skills over time but, at the same time, high (and even increasing) rates of workers, including skilled workers, report that they work in routine job positions. Second, workers with specific skills are less likely to be on temporary contracts compared to workers without specific skills – and rates of increase have been lower for this group; however, both groups have experienced an increase in temporary contracts over time, showing that skill specificity does not protect workers from casualisation. Third, workers in routine jobs are more likely to be on a temporary contract, and this relationship is independent from skill specificity. Furthermore, even among specific skilled workers, the marginal effect of job routine on the probability of being on a temporary contract has been increasing over time.

The empirical analysis, therefore, has confirmed some of the expectations of the VoC and dualisation literature that employees with specific skills are less likely to be on temporary contracts than workers without a specific dual vocational training. Furthermore, the empirical evidence has shown that the negative association between specific skills and temporary contract and the positive association between job routine and temporary contracts have strengthened over time. These findings still leave two main questions open. First, the reasons for the continuing association between specific skills and temporary contract are still in need of clarification as the literature has assumed that employers need a stable and specific-skilled workforce because of the complex work organisation. However, this constitutes only a partial explanation because the analysis has shown that specific-skilled workers are also (increasingly) employed in routine jobs, even though to a lower extent than workers without specific vocational training. Second, the analysis has shown trends over time in the associations between the main variables, but it cannot explain the reasons for these trends.

The qualitative analysis in the following section allows for a more detailed explanation because it further explores the relationship between skills and work organisation and shows how weakening institutional constraints influenced employers' use of contingent work.

6 Case study findings

This section is based on interviews with human resource managers, works councillors and union representatives in large automotive and machine tool building plants, all above 1,000 employees (see the methodology section for further details).

6.1 To what extent is a stable specific-skilled workforce needed?

The interviews both with employers and employees suggested that the literature has overestimated the relevance of specific skills for production in German core manufacturing sectors**.** They report that there are broad segments in core manufacturing sectors where "specific" skills, either firm-specific or sector-specific, are not – and have never been - essential. Particularly in direct production, the training time required for working efficiently is very short. A works councillor, who had been working in the body shop of a big automotive plant for thirty years, suggested that for complex tasks such as welding "even" one day is necessary but two or three hours of training are sufficient for working on the assembly line (WC-1 11.09.2012). For these jobs, both temporary and permanent workers might have a vocational training degree but not necessarily in a metal or electronic profession.

Furthermore, interview partners pointed out that the work organisation in some production segments favours the employment of temporary workers. The standardisation and the (increasingly) routinised nature of work reduce the necessity for complex and specific knowledge of work processes. Indeed, temporary workers are often employed in job positions characterised by easy and repetitive tasks. The following two quotes, which stem respectively from a works councillor and an IG Metall official in Berlin-Brandenburg, clearly illustrate these points:

"Nowadays the work processes are so standardised that anyone with a vocational training as electrician could repair the circuits either for Ford or for BMW, it is the same. Today everyone is available and disposable at any time" (WC-2 19.04.2012)

"We used to have group work […] but now we have again the assembly line, because every job position was fragmented to such an extent that you only perform one work task, you only need one activity.

[However,] you will have many production areas where complex knowledge through *experience [Erfahrungswissen]* is present and needs to be present and you will not be able to employ agency workers" (IG Metall official 06.07.2011)

The interviewees also reported that the temporary workforce is often as skilled as the standard workforce; especially in the case of agency workers, employers can just "order" workers with the required qualifications (MGMT 07.08.2012; WC 20.04.2012). Thus, temporary workers can be employed everywhere if they have the appropriate qualification as *Facharbeiter*. Furthermore, temporary workers are sometimes employed in the same positions for months and even for years. In those cases, they accept working on temporary contracts, hoping to be hired permanently – as one works councillor said, "this wish is always in their minds" (WC assistant 25.04.2012). A works councillor in an automotive plant suggests, *Facharbeiter* qualifications are no longer exclusive to the "core" workforce:

"it *[the phenomenon of temporary work]* has become a real labour market, where workers have all the qualifications you need. It might be that it *[the use of temporary workers]* does not work in some job positions. Still, today it is not a problem after a certain training time to employ them *[temporary workers]*, it's no big deal. Regarding toolmaking, the toolmakers used to say: 'We are not replaceable'.[27] But now you can get it *[the work done]* everywhere in the world. You can do it everywhere" (WC-2 19.04.2012)

As temporary workers are not necessarily less qualified than the permanent workforce, the concentration of temporary workers in positions characterised by routine tasks, especially in direct production, is not entirely justified by the level of education of temporary workers, as reported by human resource managers and works councillors (MGMT 07.08.2012; WC-2 19.04.2012; IG Metall official 25.11.2011). Interviews suggest that this is mainly due to internal labour market rules enforced by works councils. A human resource manager explained that temporary workers could be employed as skilled workers[28] but they are employed in unskilled positions because permanent skilled employees, who are employed in unskilled positions, are advanced in the career ladder as soon as there is a vacancy for a *Facharbeiter* (MGMT 31.08.2012). Thus, works councils let temporary contracts be used for unskilled positions even

27 The works councillor used to be a tool maker and he often referred to this profession as the paramount example of the core *Facharbeiter* during the interview.
28 As in the case of BMW in Leipzig, where one third of the skilled workforce is constituted of agency workers.

though some works councillors reported that the management also wanted to employ temporary work in skilled positions. The works councillor of a Bavarian automotive plant reported the discussion with the management when they bargained about temporary work:

"The management wants to do *it [use temp work] also in* the production segments of *Facharbeiter*. But we say both as works council and as union that these are key competences – if we cannot handle that our equipment works, it does not matter whether we have agency workers in the direct production or not *[in the sense: cost reduction will not save us from failing as a company]"*(WC 17.07.2012)

Works councillors and union representatives stressed the role of labour for enforcing internal labour market rules such as the provision of vocational training and the permanent hiring of trainees. An IG Metall union official who works very closely with a German automotive MNC illustrated this mechanism:

"If a company such as XX could break out of the vocational training system, they would probably do it and would hire only semi-skilled…But obviously there is an obligation for XX to train people, to hire *Facharbeiter* and to pay their qualification in an appropriate way. IG Metall provides that XX does not break out" (IG Metall official 24.09.2012)

6.2 The role of weakening beneficial constraints for employers' strategies

The previous section has shown that both labour and employers have a different perspective regarding the association between specific skills and stable employment than that suggested by the VoC and dualisation literature: Thanks to the routine nature of work in some job positions, specific skills are not so "specific" to require a stable and experienced workforce; furthermore, labour power better explains why contingent workers are mainly employed in unskilled job positions. Starting from the latter observation, this section shows that the erosion of institutional constraints led to the expansion of contingent work.

Works councils and union representatives identified the main cause for the growth of contingent work in labour market deregulation – in particular, the liberalisation of the use of fixed-term and agency work which started in the mid-nineties and culminated with the Hartz reforms (MGMT 07.08.2012; IG Metall official 18.04.2012; WC

25.04.2012; IG Metall official 25.11.2011).[29] A works councillor claimed that "thanks to the legislation employers can take decisions on their own on certain issues *[temporary work]*", despite the presence of works councils in the workplace. Another works councillor reported that:

"Until the last ten years the *Facharbeiter* thought that they were irreplaceable. Since the labour market has been deregulated, this has dramatically changed" (WC-1 19.04.2012)

The slow erosion of internal labour markets could also take place in companies with strong industrial relations at workplace because works councils were under pressure of cost-cutting and the threat of outsourcing, and therefore implicitly accepted the cost reduction through temporary work (IG Metall official 06.07.2011; WC 17.07.2012).[30] In some plants, the management did not even really bargain on the introduction of temporary workers since the labour market regulation did not pose any limits to the use of temporary work (WC 20.04.2012; IG Metall official 25.11.2011). Thus, employers increasingly employed new hires on temporary rather than permanent contracts starting from the margins of the career ladder of internal labour markets.

An IG Metall official suggested that the expansion of temporary work after the Hartz reforms is an unofficial way to "break out" from the traditional vocational training system as employers cannot do it officially for political reasons, at least at the automotive plant he was closely working with. Instead of training (and then retaining) *Facharbeiter* who do a "very silly job at the assembly line" and "some pro forma teamwork", they would hire semi-skilled workers on temporary contracts (IG Metall official 25.01.2012). While this statement would need to be supported by further evidence, employers have, indeed, reduced their commitment to vocational training in metal professions and the dual vocational training has become more selective, moving away from the collectivist system which used to provide "abundant skills" to the workforce (Thelen and Busemeyer 2012, IG Metall 2013). While the obligation to permanent hiring represented an incentive for employers to invest in training their workforce in order to increase their productivity, employers now seem to be reducing

29 Benassi and Dorigatti (2014) illustrate in detail the perception of unions and works councils concerning the role of deregulation for the increase of agency work.
30 See for a detailed analysis Benassi 2013.

the number of training positions and skilled workers to the minimum and to be hiring other workers on temporary contracts.

Not only external hires in unskilled positions but also trainees are increasingly affected by the use of temporary contracts. IG Metall and the German Trade Union Confederation report that even trainees have been increasingly offered temporary contracts at the end of their dual vocational training. In this way, employers can only decide to dismiss young *Facharbeiter* when there is a crisis and when there are no vacancies in skilled positions (IG Metall Jugend 13.08.2010, IG Metall 23.07.2012, DGB Bundesvorstand 2009). As a result, IG Metall conducted a campaign between 2009 and 2012 aimed at (re)regulating the hiring of trainees. In May 2012 IG Metall signed a collective agreement which guarantees at least a one-year contract to all trainees and obliges employers to bargain with the works council over the number of permanent hirings either before the start of the vocational training or at least six months before its end (IG Metall 23.05.2012).

In those plants where the interviews were conducted, both managers and works councillors declared that trainees were hired permanently even though not necessarily straight away in job positions reflecting their qualifications as *Facharbeiter.* However, the stability of vocational training as a recruiting path might be due to the plants' characteristics as they were all bigger than 1,000 employees and characterised by very strong works councils, which still manage to ensure the permanent hiring of trainees.

While the literature has emphasised the necessity of a stable specific workforce for the efficiency and success of the German production model, the interview findings have shown that, first, many job positions, even though they might have been occupied by skilled workers, do not require specific qualifications. Second, temporary workers can be easily employed because of the routine nature of work; furthermore, they can even be employed in more complex skilled positions because they are qualified and willing to stay. Third, labour market deregulation and the increasing pressure of works councils for concession bargaining have weakened the institutional constraints supporting the traditional German production model. As a consequence, contingent work spread and young skilled workers are increasingly affected by casualisation even though specific skilled workers are still advanced in their career ladder. The findings suggest that there

is a broad scope for employers' cost-cutting strategies even within the core manufacturing workforce.

7 Discussion of findings

By taking the German manufacturing sector as a critical case study, the present paper has investigated the conditions under which contingent work could grow in core sectors of CMEs. Existing literature has controversial expectations regarding the extent to and the mechanisms through which contingent work can spread. The VoC literature and the dualisation literature expect that core workers are not going to be affected by the casualisation of work because employers have an interest in retaining these workers (Hall and Soskice 2001, Amable 2003, Hassel 2014). While this literature is mainly based on macro-level analyses, qualitative studies at workplace level have shown that the relationship between stable employment and skills needs to be supported by institutions and by a certain type of work organisation (Streeck 1991, Lloyd and Payne 2006, Lloyd, Warhurst et al. 2013). This evidence is compatible with political economy analyses at the macro-level arguing that the casualisation of work can also affect core workers if institutional protections erode (Streeck 2009, Baccaro and Benassi 2014).

The present paper bridges the gap between the research strands at the macro- and micro-level and provides micro-level evidence to the debate about trajectories of change in CMEs. To this end, it has illustrated trends over time in work casualisation through longitudinal individual-level data and workplace case studies, focusing on the relationship between skills, work organisation and stable employment. The paper finds that specific-skilled workers are less likely to be on a temporary contract than workers without a specific dual vocational training and this gap increases over time. However, specific skilled workers in core manufacturing sectors have also increasingly been affected by casualisation thanks to labour market deregulation and the routine nature of work. This section sums up and discusses the findings in the order in which the propositions were presented.

The first proposition contends that workers with specific skills are less likely to be on temporary contracts than workers without these skills (Estevez-Abe, Iversen et al. 2001,

Hall and Soskice 2001). While the quantitative analysis has confirmed this, the case-study findings have shown that specific-skilled workers are hired on permanent contracts not only because employers are interested in retaining them, as suggested by the VoC literature (Hall and Soskice 2001), but also because labour representatives push for the permanent hiring of trainees after the vocational training.

The second and third propositions have different expectations regarding the relationship between skills and stable employment when the labour market is deregulated and labour power declines. While the second proposition expects specific-skilled workers to be protected from the casualisation of work (Emmenegger, Häusermann et al. 2012b, Thelen 2012, Hassel 2014), the third proposition argues that specific-skilled workers will become more likely to be on a temporary contract if the legislative and negotiated employment protections erode (Marsden 2010). The empirical analysis has found evidence which is compatible with both propositions. On the one hand, the difference between the probability of being on a temporary contract for workers with specific skills and for workers without specific skills has increased over time. This finding supports one of the main points of the dualisation literature, that phenomena such as temporary employment or unemployment are unevenly distributed in the workforce and that the segmentation within the workforce has been increasing (Emmenegger, Häusermann et al. 2012b). On the other hand, specific skilled workers have also become more likely to be on a temporary contract since the eighties. German unions, also in core manufacturing sectors, report that temporary contracts are increasingly used in the transition between vocational training and permanent employment. In this way, if there are no vacancies in the *Facharbeiter* segments, employers can dismiss the trainees or, at least, keep the costs of hiring skilled workers in unskilled positions low. The descriptive statistics clearly show that the rates of temporary work among workers with a vocational training degree in a sector-relevant occupation have particularly increased among young workers since 1986.

The qualitative case studies explain these mixed findings through industrial relations institutions, which are still holding up, to some extent. On the one hand, employers' interest in a stable and specific skilled workforce does not fully explain why sector-relevant vocational training still protects workers from work casualisation to a certain extent. These outcomes can also be explained through the resilience of industrial

relations institutions: Labour actively intervened to negotiate provisions regarding the permanent hiring of young specific skilled workers, and works councils in the case studies still managed to ensure the permanent hiring of trainees. On the other hand, case study findings have shown that labour market reforms weakening the employment protection for temporary workers, even though often defined as "reforms at the margins" (Boeri and Garibaldi 2007), actually have consequences for the core workforce as well in the long run even if to a lower extent than for workers without specific skills.

Proposition 4a contends that work organisation and skills should be considered separately in the analysis of the incidence of contingent work (Lam 2002, Grugulis and Lloyd 2010: 94 f., Stewart, Danford et al. 2010), while proposition 4b expects job routine, which characterises the Tayloristic manufacturing production, to have a positive effect on the probability of being on a temporary contract. The empirical analysis has confirmed proposition 4a, as work organisation and skill specificity have independent effects on the probability of being on a temporary contract. Furthermore, the rising rates of overqualification and overskilling among the workforce between 1986 and 2012 suggests that there is not a perfect correspondence between a routine work organisation and an increasingly qualified workforce. In line with proposition 4b, empirical evidence has confirmed that temporary workers are concentrated in routine job positions. However, this is not necessarily related to the skills of temporary workers as the descriptive statistics show that in 2012 over 80% of temporary workers had a vocational training degree and 52% a specific vocational training degree. Furthermore, they have been found to feel more overqualified and overskilled than permanent workers. The (increasing) concentration of temporary workers in routine job positions is also due to the presence of industrial relations at workplace level, as discussed below.

The fifth and last proposition expects workers in highly routine job positions to be more likely to be on a temporary contracts over time. Indeed, the evidence shows that employers have increasingly employed temporary workers in routine positions since the end of the nineties. As the labour market was deregulated and works councils were under pressure because of the threat of outsourcing and of plant closure, employers started cutting labour costs in unskilled positions first, which are the most routine positions. This is also due to companies' internal labour market rules which give

permanent workers priority for advancement if there are vacancies in *Facharbeiter* segments. Thus, temporary workers, also with a sector-relevant vocational training degree, are employed in unskilled positions. An interview partner even suggested that the broad use of temporary workers in unskilled positions represents an instrument for avoiding the training and the permanent hiring of skilled workers in oversupply. However, the interviews have reported that using temporary work in skilled positions would not be problematic, also thanks to the routine work organisation. Indeed, contingent work has also been slowly spreading into skilled positions and job routine has a positive and over time increasing marginal effect (even though weak) on the probability of being on a temporary contract of workers with specific skills.

The findings have shown that temporary contracts have been spreading in core manufacturing sectors especially among workers without sector-relevant vocational training. However, specific skilled workers have also been affected by work casualisation. These outcomes can be explained through the routine nature of work, which facilitates the employment of temporary contracts; and through industrial relations institutions, as works councils are still able to ensure the permanent hiring of skilled workers even though it has been partly impaired by labour market deregulation.

The next section concludes by highlighting the theoretical implications of these findings and the limitations of the study and direction of further research.

8 Conclusion

This paper has contributed to the debate about the casualisation of work in the core of CMEs by providing new evidence based on longitudinal micro-level data and on case-study findings in the German manufacturing sector. The theoretical contribution of this paper is twofold. First, it has illustrated at the micro-level how the interplay between skills, work organisation and institutions leads to stable employment and, most of all, how workers' outcomes can change over time when negotiated and legal employment protections erode. By so doing, the paper conciliates different expectations derived from the existing literature. The paper has confirmed the expectations of the VoC and dualisation literature that specific-skilled workers are less likely to be on a temporary contract than workers without specific training and the gap has increased over time

(Hall and Soskice 2001; Hassel 2014; Thelen 2014). However, employers' interests in a stable workforce have been overestimated as the (increasing) levels of job routinisation in core manufacturing sectors facilitate the employment of temporary workers. Thus, the role of industrial relations is crucial for ensuring stable employment: While works councils still manage to advance skilled workers along the career ladder, labour market deregulation has eroded their ability to control external hiring and the transition of trainees to permanent employment. These findings strengthen the argument about the centrality of industrial relations, rather than only employers' interests, in determining workers' outcomes (Doellgast 2012; Lloyd, Warhurst et al. 2013). In relation to Streeck's argument (1991; 1992), the findings suggest that, even in the Golden Age of the traditional German model, the constraining role of institutions was probably more important than the complexity of work organisation, as large segments of (even skilled) job positions were routine even then although to a lower extent. This observation is compatible with past research criticising the image of the work organisation in German core manufacturing sectors as homogenously complex and generally requiring skilled work (Jürgens 1997; Roth 1997; Jürgens 2004).

Second, this paper contributes to the broader debate about trajectories of change in coordinated political economies. While some scholars have argued that coordinated economies such as Germany have maintained a stable coordinated manufacturing core (Thelen 2012, Hassel 2014), other scholars oppose the idea of a dual equilibrium and contend instead that CMEs – just like LMEs – have been going down a common path towards liberalisation, which will not spare the core in the long run even though it proceeds at a slower pace (Streeck 2009, Baccaro and Howell 2011, Baccaro and Benassi 2014). By using individual level data, the present paper has shown how liberalisation has affected the whole workforce and exposed all workers to the casualisation of work even though its effect depends on their skills. Furthermore, the detailed empirical analysis has shown that employers' cost-cutting and flexibilisation strategies have also become increasingly relevant in core sectors, affecting both unskilled and skilled workforce segments.

The paper leaves three questions open. First, the paper remains ambiguous regarding the extent to which employers need specific skills. Indeed, the paper is limited to stating that employers' interests in stable employment have been overestimated in the

literature. On the one hand, the paper has questioned the assumption that specific skilled workers are hired after their dual vocational training because companies actually require their skills. High overqualification and overskilling levels and the interview findings suggest that specific skilled workers are not hired permanently for their actual job requirements but rather also because of works councils and union representatives pushing for it. Thus, once institutional protections are weaker, temporary workers can be hired instead, even though they might be less skilled and have less experience. This suggests that employers are interested in reducing the provision of training and the hiring of specific-skilled workers. Indeed, Thelen and Busemeyer (2012) show that employers have started reducing their commitment to the provision of training (Thelen and Busemeyer 2012). On the other hand, the interview findings suggest that employers also hire temporary workers with a sector-specific degree, who are willing to work for the company, even for longer periods, hoping to be permanently hired. This implies that employers still need a specific-skilled workforce – although to a lower extent than expected by the literature - and temporary workers serve the same purposes and are cheaper at the same time. This paper is limited to illustrating these temporary staffing strategies as different options employers have for bypassing the link between specific skills and temporary employment. However, research on (changing) employer preferences regarding the provision of training and the hiring of specific-skilled workers is needed.

The second question is related to this latter point as the paper does not estimate whether employers face costs when they depart from the traditional production model. The original argument about beneficial constraints expects that employers might risk decreasing productivity or worsening product quality. The findings suggest that employers could casualise employment to a greater extent than the literature expected without incurring in any costs. However, further research in this direction is needed.

Third, job routine is most likely to be just one of the factors which favours the expansion of contingent work. The standardisation of technologies across the industry and changes in the required knowledge - such as narrowing from broad to more specific competencies - are likely to have taken place and to have contributed to further facilitating the employment of temporary workers. These developments should be researched through qualitative empirical work in the workplace.

Paper 2

POLITICAL ECONOMY OF LABOUR MARKET SEGMENTATION: AGENCY WORK IN THE GERMAN AUTOMOTIVE INDUSTRY

Abstract

This paper compares the segmentation between standard workers and agency workers, based on four case studies of German automotive plants. The plants differed in terms of the proportion of agency workers in the whole workforce, the length of their assignment, their function and their wage level compared to standard workers. The paper contributes to improve the understanding of labour role in determining workplace segmentation: the variation is explained through workplace bargaining, whose outcomes were shaped by the interplay between differences in labour power and labour commitment to a homogeneous workforce. The findings show that labour power is necessary to regulate segmentation in the workplace, which relies both on workplace industrial relations and external conditions such as the support of the national union, the socio-economic context of the plant and the timing of company-level agreements in regard to labour market reforms. However, labour power is not sufficient for achieving encompassing agreements for contingent workers as labour commitment to a homogenous workforce, which varies across workplaces, makes a fundamental difference.

1 Introduction

The proportion of the workforce on contingent employment contracts has increased over the last twenty years and is expected to rise further in all advanced political economies (Kalleberg 2009; Giaccone 2011; International Labour Organisation 2013; Stone 2013). One group of scholars has taken a macro-approach to analysing this phenomenon, highlighting the causes such as technological change (Smith 1997: 332 f.), the tertiarisation and financialisation of national economies (Dörre 2001; Koch 2013) and labour market liberalisation (Kalleberg 2009: 3). Other scholars have adopted a micro-level approach, looking at why and how companies use contingent workers at company-level (Davis-Blake and Uzzi 1993; Kalleberg 2003; Kalleberg, Reynolds et al. 2003).

Within the latter literature strand, industrial relations researchers have dedicated particular attention to how industrial relations institutions influence the use of contingent workers at workplace level (i.a. Olsen and Kalleberg 2004: Shire, Schönauer et al. 2009). The present paper seeks to further develop the understanding of the role of labour in determining workplace arrangements for contingent workers. To this aim, it analyses the causes of cross-plant variation in the segmentation pattern between standard workers and contingent workers based on four case studies of German automotive plants. The German automotive industry is a critical case for studying labour market segmentation. Even though the industrial relations institutions of the German "coordinated market economy" (CME) (Hall and Soskice 2001) have been eroding and labour market inequalities have increased (i.a. Bosch and Kalina 2008), some literature argues that core manufacturing sectors still rely on a stable specific-skilled workforce and on labour-management coalitions at workplace (Herrigel 2010; Palier and Thelen 2010; Hassel 2014). However, agency work has been dramatically increasing in German core manufacturing sectors in recent years.

The use of contingent work in core sectors requires an explanation, confirming that there is still need for research on "how strategic HR decisions in using temporary workers are formed within firms and which factors shape them" (Pulignano and Doerflinger 2013: 4149). In particular, this paper aims to explain how labour power and labour strategy at workplace level interact to shape different segmentation patterns. Past literature on union strategies towards contingent work has looked mainly at the sectoral

and at the national level (Heery and Adler 2004), while research on labour responses to employers' segmentation strategies at workplace level has mainly focused on the role of sectoral and workplace institutions of collective voice for explaining different outcomes for contingent workers (Gooderham and Nordhaug 1997; Doellgast, Batt et al. 2009).

This study provides an original contribution to the literature because it shows that the interaction between the two factors was fundamental for understanding different segmentation patterns in the case studies; furthermore, it provides evidence that the labour responses to contingent work at workplace level are influenced by factors external to the company as much as by internal industrial relations institutions (similarly as in the studies about unions' involvement in workplace change by Locke 1992; Frost 2000; Pulignano and Stewart 2012). The findings show that power was necessary to labour for regulating segmentation at workplace but it was not sufficient for bargaining encompassing agreements for contingent workers. To this aim, labour commitment to a homogenous workforce, which varies across workplaces even though the same sectoral union is involved, was a fundamental condition. Labour power is found to rely both on workplace industrial relations and external conditions such as the support of the national union, the socio-economic context of the plant and the timing of company-level agreements in regard to labour market reforms. Labour commitment to a homogenous workforce is found to depend on their political proximity with the management and also to shift according to labour ability to influence employers' segmentation strategies.

The plants chosen in this study use agency work but they differ in terms of the proportion of agency workers employed in the whole workforce, the length of their assignment, their function and their wage level compared to standard workers in the post-crisis period between 2010 and 2012. The empirical analysis is based on interviews with local unionists, works councillors, human resource managers and experts in the automotive sector conducted between January 2011 and March 2013 and on the analysis of company-level agreements, internal union publications, press statements, and interviews of works councillors published in union magazines and in the local press. The time frame of the case studies is between 2000 and 2012.

The paper unfolds as follows. The next two sections discuss the literature on labour market segmentation with a particular focus on the role of labour. The fourth section

illustrates the methodology and contains a detailed description of the plant characteristics. The fifth section presents the cases. The sixth section compares and discusses the cases. Section seven concludes.

2 The determinants of segmentation: From production requirements to workplace politics

The segmentation literature contends that standard workers belong to a company's Internal Labour Market (ILM), which is characterised by career ladders, training programs and wage scales based on tasks, qualification and/or seniority. Workers in ILMs are skilled and perform the core functions of the company and therefore employers are interested in retaining them. Contingent workers, instead, are employed in peripheral, secondary labour markets, which companies use to cope with flexibility needs such as demand peaks. Thus, the literature considers primary and secondary labour markets as separate market segments dedicated to different functions (Doeringer and Piore 1971; Berger and Piore 1980; Osterman 1994).

The early segmentation literature pointed out the role of product markets, technology and skills for explaining the segmentation between internal and external labour markets (Doeringer and Piore 1971; Berger and Piore 1980). The volatility and the conditions of the product markets have been supposed to determine the use and size of peripheral labour markets. Companies which are in seasonal industries or exposed to (international) competitive markets are subject to volatility of demand and cost pressure and thus they need a large, flexible periphery (Berger and Piore 1980; Kalleberg, Reynolds et al. 2003). In addition, a declining or stagnating demand in product markets might impair the financial conditions of companies, which find it difficult to develop a long-term staffing strategy in times of economic uncertainty (Rubery 1994: 48). Segmentation also depends on the type of product market: In high quality markets, companies are less exposed to price competition and can employ a stable and qualified workforce, which is required by the complex technology and work organisation typical of high-quality production (Sorge and Streeck 1987; Youndt, Snell et al. 1996; Appelbaum 2000). Related to this, the extent to which companies (need to) invest in training their workforce can also explain the size of the periphery. For instance, Baron et al. (1986) found from a sample of 100 Californian establishments that the intensity of

firm-specific training was correlated with the probability of belonging to the ILM. In their research on a public utility with over 6,000 employees, Cappelli and Cascio (1991) found that positions attached to a career ladder and with higher wage premiums were assigned to workers with organisation-specific skills.

Most of the early segmentation literature did not really integrate the role of labour in their analysis. A critical body of research neglected the role of unions, focusing exclusively on employers' use of segmentation in order to increase their control over their employees (Reich, Gordon et al. 1973; Stone 1974). Doeringer and Piore (1971) and Osterman (1987) acknowledged the role of labour but they did not analyse the bargaining dynamics between labour and management, limiting their discussion of industrial relations institutions to the observation that they influence the use of contingent work.

In response to this gap in the literature, Rubery (1978) and Elbaum (1983) contended that the segmentation literature should integrate labour as strategic actor in the analysis. Unions have the power and the interest to bargain ILM arrangements in order to limit competition among workers and to maintain control over skill supply and workers' knowledge. Thus, ILM arrangements are considered primarily the result of a bargaining process between labour and management. The extent to which labour can influence the ILM arrangements and, in particular, the pattern of workforce segmentation depends on the power resources available and on the strategies of labour actors. The next section will discuss the literature which has focused on these two factors.

3 Bargaining segmentation: Labour power and strategies

3.1 Internal and external sources of labour power

Scholars explaining unions' role in influencing workplace restructuring and, in particular, segmentation patterns at workplace level have highlighted different power sources unions can draw on. Here they will be discussed, distinguishing between internal and external sources of power.

Some scholars identified workplace industrial relations - such as union density, the presence of collective agreements and of collective voice institutions - as fundamental internal labour power resources. Among others, Frost (2000) identified the mobilisation potential of the workforce, the access to information and to different levels of decision-making as explanatory factors for unions' influence in workplace restructuring. Scholars found that internal power resources also matter when it comes to bargaining company-level arrangements for contingent workers. By comparing British and Norwegian workplaces, Gooderham and Nordhaug (1997) found that, thanks to their institutionalised bargaining rights, Norwegian unions were more successful at limiting the use of temporary workers than British unions. In their research on telecom ex-incumbents in ten Western countries, Doellgast, Sarmiento and Benassi (2013) found that different national industrial relations institutions determine the extent to which unions can cover the workforce employed by staff agencies, subsidiaries and subcontractors.

In addition to internal power resources, the literature looking at unions' involvement in workplace restructuring examined the role of external sources of labour power. Some scholars pointed out the ability of local unions to build coalitions with national unions, local communities and social movements (Frost 2000; Lévesque and Murray 2005; Doellgast 2008). Locke (1992) and Pulignano and Stewart (2012) highlighted the role of local external authorities for explaining different unions' bargaining leverage in workplace restructuring. Meardi et al. (2009) pointed out the constraining role of external conditions on unions' influence on workplace restructuring such as local labour market conditions (e.g. unemployment) and legislation regarding flexibility.

Similarly, the literature on labour's role in workplace segmentation acknowledged that external factors – for example labour market deregulation, unemployment, international market competition, union decline – influence the workplace balance of power, constraining the ability of unions to affect workplace arrangements for contingent workers (Osterman 1992; Grimshaw and Rubery 1998; Cappelli 2001). For instance, in their study of four large organisations in the UK, Grimshaw et al. (2001) found that the liberalisation of the use of temporary work and the decline of collective bargaining had a direct impact also at the workplace level as it shifted the power from labour to employers, leading to non-transparent pay structures and fragmented career ladders.

However, the segmentation literature mainly focused on how employers take advantage of the conditions external to the company rather than on labour power and strategies (see also the edited book by Rubery and Wilkinson 1994). The limited attention paid to the role of local external conditions – and their interplay with internal power resources - in explaining labour responses to contingent work at workplace level represent the first research gap this paper will contribute to filling in. The next section will illustrate the second gap in the segmentation literature, the lacking integration of labour power and strategies for explaining the role of labour in determining workplace segmentation.

3.2 Labour strategies

A broad body of research has focused on labour strategies towards contingent workers at sectoral and national level, arguing that labour can make strategic decisions about the inclusion (or not) of contingent workers in its bargaining domain. The insider-outsider perspective contends that unions tend to protect their core members, who are permanent workers in full-time positions, and support the use of temporary work without trying to regulate wages and working conditions of peripheral workers. By entering a coalition with the management, labour representatives use contingent workers as a volatility and cost buffer in order to protect wages and working conditions for their core members (Lindbeck and Snower 1986; Hassel 2014). In contrast, the revitalisation literature has argued that unions with declining membership and institutional resources are likely to include peripheral workers (Baccaro, Hamann et al. 2003; Heery and Adler 2004; Turner 2009). Furthermore, Hyman (1996; 2001) contends that unions' ideologies (for example working class oriented or business unions) influence how unions define their representation domain, which might be more or less exclusive. Indeed, Heery and Abbott (2000) found that unions'approaches towards non-standard workers (exclusion, servicing, partnership, dialogue and mobilisation) reflect the union identities identified by Hyman (2001).

This literature on labour strategies towards contingent workers has presented unions' preferences as monolithic, neglecting local differences (see also Pulignano and Doerflinger 2013 for a similar remark). In contrast, the literature on unions' responses

to workplace restructuring has illustrated how union strategies are formulated according to management strategies and according to the socio-economic context and the workplace industrial relations structure (Doellgast 2010; Pulignano and Stewart 2013). Bacon and Blyton (2004) and Murray, Dufour et al. (2010) also found that unions' ideologies and collective identities contribute to explain unions' responses to employment restructuring. However, the literature on unions' responses to contingent work at workplace level has not yet developed a framework for explaining different degrees of labour engagement and inclusiveness towards contingent workers. An exception is the article by MacKenzie (2009), who showed that in the Irish telecom sector union engagement with contingent workers also depended on the extent to which an unregulated supply of labour represents a risk for labour power. Recently, Pulignano and Doerflinger (2013) found that societal differences, to which union identities are closely tied, explained the differences in the labour approach to agency work between Belgian and German automotive plants and in the resulting regulation (Pulignano and Doerflinger 2013).

This paper seeks to further develop the understanding of the role of labour in the segmentation between standard workers and contingent workers at workplace level. In particular, it aims to explain differences in labour power and labour strategy at workplace level – as well as how these factors interact to shape different segmentation patterns. The paper argues that labour power is necessary to regulate the segmentation patterns between contingent workers and permanent workers. Labour power derives from the interplay between workplace industrial relations and external conditions such as the support of the national union, the socio-economic context of the plant and the timing of company-level agreements in regard to labour market reforms. However, labour power is not sufficient for achieving encompassing agreements for contingent workers and needs to be associated with labour commitment to a homogenous workforce. Even though the same national union is involved, labour commitment is found to vary across workplaces: labour acceptance of segmentation depends on the political closeness between management and labour, but it can also shift depending on whether labour is powerful enough to not fear segmentation as a threat to its bargaining power and to the permanent workforce (similar to MacKenzie 2009).

This paper mainly contributes to the segmentation literature by including both internal and external sources of power and showing how they interact with labour strategies. It

also contributes to the literature on unions' strategies towards contingent workers by showing that labour attitudes towards these workers can differ depending on the labour-management dynamics at plant-level and on external constraints.

4 Methodology

This paper explains the variation in the segmentation between standard and agency workers in four automotive plants of German MNCs: BMW in Leipzig, BMW in Munich, Volkswagen (VW) in Wolfsburg, and Ford in Cologne. This section explains the motivation behind the selection of case studies, presents the characteristics of the case-study plants and illustrates the method of data collection.

4.1 Why the German automotive industry?

The German automotive industry represents a critical case for studying the use of agency work. The German automotive industry, especially large companies, is still considered prototypical for the German model of Diversified Quality Production, based on a stable and specific-skilled workforce and on strong industrial relations, which ensure high wages and good working conditions. The German system of industrial relations is traditionally characterised by a system of dual representation: Strong sectoral unions bargain encompassing collective wage agreements for the whole sector while works councils bargain at workplace level over qualitative issues such as work rules and working time thanks to strong codetermination rights. The Work Constitution Act (*Betriebsverfassung)* gives works councils strong codetermination rights but it also prevents them from exerting collective pressure on management and commits them both to the firm's and to workers' interests (Müller-Jentsch 1995: 14; Hyman 2001: 120). Thus, works councils can potentially pursue a company-oriented logic. However, they were rather considered union arms in the company (Jürgens 1984) because high union density among works councillors and encompassing collective agreement controlled centrifugal tendencies.

This system of industrial relations has eroded at the national level as national collective bargaining coverage and union density have been declining among the workforce and

among works councils. In the automotive industry, union density is still high – around 70% - and average union density among works councils reached 88% in the elections of 2010 (Bispinck and Dribbusch 2011: 18; 25). However, the automotive sector has experienced the proliferation of opening clauses at workplace level, which started spreading in Germany in the mid-nineties under the credible threat of disinvestment and high unemployment rates. Through these so-called Pacts for Employment and Competitiveness (PECs), works councils have been made jointly responsible for the competitiveness of the production site; thus, they agreed on concessions regarding working time, work reorganisation, early retirements and wage cuts or freezes, and could amend sectoral agreements for the first time (Rehder 2003; Jürgens and Krzywdzinski 2006). However, industrial relations in the automotive sector are still considered stable due to high union density, even though local works councils have gained more decision-making power. The dominant view in the literature is that labour and management form productivity coalitions at workplace level, which still support the traditional features of the German production model such as high wages and stable employment (Herrigel 2010; Palier and Thelen 2010; Hassel 2014).

Despite this relative stability in industrial relations, the automotive sector has been affected by the growth of agency work since the so called Hartz reforms in 2003, which deregulated the use of contingent contracts. The limitation on the duration of assignment was abolished, and companies were allowed to re-hire the same agency worker through a fixed-term contract without justifying the reasons for the time limitation. The requirement to recruit agency workers on a permanent contract after a certain period of time was also lifted (Bispinck and Dribbusch 2011: 25). The equal pay principle was amended by collective agreements setting wages and working conditions for agency workers below the metal agreement. In 2009 the wage gap between agency and metal workers was between 30 and 40% (Weinkopf 2009b). Only in 2012 the metal union IG Metall achieved an agreement for setting wage bonuses, which was designed to (partly) compensate for this difference.

Despite this progressive re-regulation and the high agency fees, the interviews revealed that agency work has many cost advantages compared to standard work. Firstly, agency workers are not covered by company-level agreements. In big automotive companies, these agreements include benefits (for example retirement contributions) and bonuses

which are well above the sectoral collective agreement. Secondly, employers do not have to bear the costs of holidays or sick leave, as the agency sends a replacement. Third, employers do not have to bear dismissal costs for agency workers and, fourthly, they do not need to bargain with works councils over the termination of their contracts.

4.2 Data collection

The time frame for the case studies is between 2000 and 2012. The data concerning the status quo in the plants refers to the post-crisis period between 2010 and 2012. Findings are primarily based on 20 interviews with local unionists, works councillors, human resource managers and experts in the automotive sector. Both the employee representatives and the management have been interviewed in each plant, excluding BMW-L where the management twice refused my interview request. The interviews were conducted between January 2011 and March 2013 either face-to-face or by phone. The interviews have been conducted in German and the quotes in the paper have been translated by the author.

In addition to the interviews, the empirical analysis relies also on company reports, company-level agreements, internal union publications, interviews of works councillors published in union magazines and in the local press, newspapers articles, and the reports of the European Industrial Relations Observatory. This material is used both for integrating the information collected through the interviews but also, when possible, to triangulate the interview findings. This was necessary because workforce segmentation is a controversial issue to talk about, both for labour representatives and employers.

4.3 The cases

The four auto plants included in this study were selected because they differed in their organisation of agency work and, at the same time, permit controlling for some of the potential efficiency-driven explanations mentioned in section 3. The case studies focused on the areas of direct production (for example the assembly line) and indirect production (for instance maintenance, repairs and quality checks). Focusing on the blue-collar workforce allowed me to hold constant a number of factors that have been found

to influence segmentation patterns, including the type of work and the structure of the work process (see Lautsch 2002). Both these factors have reached a high level of standardization in the German car industry (Jürgens 2008).

Plant characteristics

BMW in Munich, Ford in Cologne and VW in Wolfsburg are well-established plants in Western Germany and also the company headquarters - Ford Cologne is the headquarters of Ford-Europe. In contrast, BMW in Leipzig is a newer 'greenfield' plant, which opened in 2007 in Eastern Germany. All plants are very large but their size differs: BMW-L has 6,000 workers on site, BMW-M has 30,000, Ford has over 17,000 and VW has around 50,000. The plants are described according to the factors mentioned in section 2, which the literature expects to influence the use of peripheral workers at company-level: the characteristics of the product market, the company's financial conditions, the product quality, the investment in skills and the industrial relations.

Regarding the type of product, BMW is a luxury car producer. The plant in Munich produces BMW-3 and 4, which are larger and slightly more expensive models than the BMW-1, which is produced in the Leipzig plant. In contrast, VW and Ford are usually classified as mass producers (Bispinck and Dribbusch 2011: 3). The VW plant is dedicated to the Golf and to the larger car models Tiguan and Touran while the Ford plant in Cologne produces Fiestas. In all plants, the products are available in several variants and are all built to order, indicating that the companies face similar pressures regarding the ability to react quickly to customers' demand.

Differences in the type of product are not reflected in companies' commitment to investing in human capital. BMW, both in Leipzig and in Munich, has the lowest rate of trainees (around 2.5%), with 150 and 800 trainees respectively per plant, while VW has approximately 2,000 trainees, who constitute around 4% of its workforce. Ford has 600 trainees (3.4%).[31]

Even though luxury car producers should be theoretically less exposed to cost pressure because their market niche is less price-elastic (Sorge and Streeck 1987), it has recently

[31] The findings derive from the interviews and are triangulated with the information found on the plants' websites.

been argued that car manufacturers in high–end segments also have to now consider both quality and price in order to compete in export markets (Holweg 2008; Herrigel 2014). All companies considered here are heavily reliant on exports and compete on international markets; therefore, they are exposed to a similar cost pressure. Between January and September 2012 BMW sold only 15% of its cars in Germany and VW sold 13% in the same period (VW 2013; BMW 2013). According to a Ford manager, the Ford plant in Cologne similarly exports 90% of its cars to other European countries (MGMT 31.08.2012).

The financial conditions of the companies differ. BMW and VW registered record profits in 2011 and 2012, while Ford – especially in Europe – experienced declining profits in both years. Considering the time frame covered by case studies, BMW's share of global car production experienced an overall trend up from 2.04% in 2000 to 3.27% in 2012, registering a decline to 2.4% only in 2010. Between 2001 and 2005, VW's global market share dropped from 11.95% to 10.52% and then started increasing again, reaching 13.6% in 2012. Ford, instead, has experienced a decline in its market share from 9.8% in 2001 to 4.9% in 2012 (Statista 2013). Ford's market share has also declined in Europe since 2007, which is the destination of 90% cars at Ford Cologne (Ford 2013).

All companies have strong industrial relations institutions, with works councils and high unionisation rates. However, again, there are some differences between the plants. The BMW plant in Leipzig has the lowest union density among the case studies, at 65%; while the plant in Munich has among the highest, at 90%. At company level, where collective bargaining takes place, the BMW general works council has a unionisation rate of 90% (Bispinck and Dribbusch 2011: 26). The unionisation rate at Ford is 85%, while it stands at 87% in the general works council. VW has a union density around 95%, which is as high as the unionisation rate of the works council.

The organisation of agency work

The dimensions chosen for comparing the form of segmentation across cases reflect the definition of primary vs. secondary labour markets, which highlight the different functions and the job characteristics between the two labour market segments (similarly see Osterman 1987). I compare four dimensions: 1) the proportion of agency workers

used; 2) the typical length of assignment; 3) the kinds of jobs performed by agency workers; and 4) the extent of wage differentiation/inequality between agency and permanent workers.

At both BMW plants, agency workers can be employed for three or four years in the same job position, and have been paid according to the collective metal agreement since 2009. However, these plants differ in the proportion of agency workers they employ and what positions they are employed in. BMW-L uses the largest proportion of agency workers (30%); and they perform the same jobs as permanent workers at all levels, both in direct and in indirect production. They are used to increase the company's ability to quickly react to changes in consumer demand but also to save labour costs (WC 20.04.2012). BMW-M, by contrast, has a more defined division between internal and external labour markets, because agency workers are employed mainly in direct production. At the assembly line, they constitute around 20% of the workforce. In addition to labour costs and flexibility issues, a workplace union representative mentioned that agency work is used to relieve the core workforce from the heaviest tasks (Union rep 11.09.2012).

VW Wolfsburg is also characterised by a large periphery, which is, however, even more stable than that at BMW, as agency workers are hired through internal staff agencies (Wolfsburg –WOB- AG and Autovision). Agency workers can be employed for even six or seven years in the same job position and have only been paid according to the metal agreement since 2011. From January 2013, agency workers have received 80% of standard pay for the first three months, after the fourth month they receive 90% and after the tenth month they are paid the same as their VW colleagues. An HR manager openly appreciated the economic value of agency workers, as they are not covered by the VW company-level agreement, and the company does not have to pay severance pay in case of dismissal (MGMT 09.07.2012). Furthermore, agency work is used as a screening tool, and the management wants it to become a recruiting route parallel to traditional vocational training (IG Metall official 25.01.2012).

Ford in Cologne has a smaller proportion of agency workers (around 5%), who are mainly employed on the assembly line. They are typically hired for short periods and employed in case of peaks in demand, replacement of workers on leave, or staff

shortages due to the start of production of a new vehicle model. Since 2003, agency workers have been covered by the sectoral metal agreement (MGMT 07.08.2012).

This paper attempts to explain why similar plants in the same industry and country adopted approaches to agency work with different implications for workers. These "models" of segmentation ranged from BMW-L, which can be characterised as the worst model from a labour perspective, to Ford, which is the best practice in terms of the size and the function of agency work, and of protection for agency workers. BMW-L has the highest proportion of agency workers, who are employed for long periods and perform similar tasks to those of the core workforce. They have been covered by the metal agreement since 2009, which narrows the gap between standard workers and contingent workers. Ford has a "traditional" segmentation model characterised by a small and volatile periphery employed for the easiest tasks; the model is characterised by significant wage parity across worker groups, based on a collective agreement that has been in place since 2003. BMW-M and VW are "mid-way cases" as they both have a large and stable workforce component of agency workers, who are mainly assigned to the assembly line. The main difference between these two plants is that agency workers at BMW are employed through external staff agencies while VW has two internal staff agencies; thus, agency workers at VW practically share the same employer as the stable core workforce, but not the same conditions. Furthermore, while agency workers at BMW have been covered by the metal collective agreement since 2009, agency workers in Autovision and WOB AG have been covered by the equal pay rule[32] only since 2011, which fully applies only after nine months. In the discussion section the four case study plants will be matched differently in order to highlight different dimensions of interests, controlling for other factors.

The table below sums up the plant characteristics and the use of agency work at plant level. It is important to note that there is not a perfect correspondence between the plant characteristics and the plant-level use of agency work. This strengthens the motivation of the analysis to look at the micro-political bargaining processes underlying workforce segmentation at workplace level. For instance, Ford is the company with the most critical economic situation and also a mass car producer, but still has the lowest

[32] VW does not apply the metal agreement but rather has an in-house agreement. Also the internal staff agencies are covered by inhouse agreements, which is different from the VW one.

percentage of agency workers, who have been paid according to the metal agreement for longest. Instead, BMW, which is a luxury car producer and has experienced an expansion of its market share, has a plant with the highest proportion of agency workers. Despite the highest union density and codetermination rights, and favourable economic conditions, VW was the last plant to achieve an equal pay agreement.

Table 12: Summary table of plants' characteristics

		BMW-L	**BMW-M**	**Ford**	**VW**
Position of the site within the company		Greenfield site	General headquarter	European headquarter	General headquarter
Size		6,000 workers but only 3,800 are employed by BMW while the others work for subcontractors	30,000 employees (9,000 in production)	17,300 (4,000 in production)	50,000 workers (20,000 in production)
Export orientation		85%		90%	87%
Product quality		Luxury producer		Mass	Mass
Market share		Increasing between 2001 and 2009. After a drop in 2010 the market share increased to over the level of 2008.		Declining since 2001/in Europe since 2007	Declining between 2011 and 2005. Increasing until 2013
Commitment to training	**%trainees on the whole workforce**	2.5%	2.6%	3.4%	4%
Strength of IR	**Union density**	65%	90%	85%	95%
	Presence of WC	Yes	Yes	Yes	yes
	Unionisation of general WCs	90%		87%	94%
Agency work	**% on the workforce**	30% overall	30-40% in direct production	3-5% in direct production	20% in direct production

	Staff agencies	i.a. Randstadt	i.a. Manpower	i.a. Adecco	Internal agencies: Autovision, WOB AG
	Length of assignment	Even years	Even years	Months	Even years
	Tasks	All levels, also in qualified positions	Easiest tasks (assembly line, logistics)	Easiest tasks (assembly line)	Easiest tasks (assembly line, logistics)
	Rationale	Flexibility buffer, cost compression	Flexibility buffer, cost compression, heavy tasks	Flexibility buffer, substitution of workers on leave	Flexibility buffer, cost compression

5 Embedded politics in German establishments

This section of the paper shows that employers' segmentation strategies are strongly shaped by collective agreements bargained between management and works council. The differences in these agreements are explained by the interplay between labour power – rooted in internal industrial relations and external conditions - and labour strategy at the workplace level.

5.1 BMW in Leipzig: Uncontrolled and blurring segmentation

BMW-L presents the least favourable outcomes regarding workforce segmentation, which can be attributed to external conditions such as the unfavourable socio-economic context and the uneven support from the metal union; and to internal factors such as relatively low union density and short bargaining tradition with the management due to the greenfield status of the plant. The conditions of agency workers at BMW-L could be improved thanks to increased activism of the works council in Leipzig and to the support from the BMW works council in Munich.

BMW-L was set up in an extremely unfavourable political and economic context for labour. Before taking the decision of setting up a plant in Leipzig, the site was benchmarked with other sites in Eastern Europe, putting initial constraints on the

personnel costs (WC 10.09.2012). Furthermore, in Leipzig and in Saxony the unemployment rate was around 17-18% at the beginning of 2000s, when the negotiations between labour, management and the local authorities about the plants started (it is now almost 8 percentage points lower) (Bundesanstalt für Arbeit 2000: 170; Stadt Leipzig 2013). High unemployment was a challenge for the local government, which supported the use of agency work in order to get more people into employment (WC 20.04.2012); in addition, Wolfgang Theeser, who was at the time the Mayor of Leipzig, was also member of the Hartz Commission and therefore in favour of new job-creating instruments.

Even though BMW had been planning to open a new plant in Eastern Germany before the Hartz reforms, the company changed its human resource strategy for the new plant once the reforms were passed. Indeed, a works councillor reported:

"… *[the local administration]* thought, it would get more people into employment…and immediately the BMW concept of staff planning took a new turn. When it became clear that the legislator would liberalise agency work, they *[BMW management]* immediately said: 'Ok, we'll reduce the stable core workforce; we'll hire only the minimum number of permanent workers because this threshold is linked to the funding of the European Union'…And this minimum was 2,700. And BMW has filled all jobs above that number with agency workers [*N.B. one third more*]…when the company grew, they tried to maintain this rate" (WC 20.04.2012)

Furthermore, BMW Leipzig has an on-site supplier park, which employs 2,200 workers.

The Hartz reforms and the general consensus that employment should be boosted at any cost limited the works council's bargaining power. When the works councillor was asked whether the works council was given the opportunity to bargain over the conditions for opening up the plants, he answered as follows:

"No, we tried, but we could only sit at the same table and try to convince our bargaining partner on a voluntary basis. [*the management said*]: 'yes, works council, you are right but we'll do it our way now'…And the management also said: 'we are completely free according to the law, it doesn't limit agency work, there is even a collective agreement, even the trade union collaborated, [33]dear works council. We are absolutely legitimate'" (WC 20.04.2012)

[33] The works council refers to the bargaining round between the DGB bargaining body and the agency employers' associations.

Despite strong linkages with IG Metall, the union did not offer immediate support to the works council. The works councillor thought that IG Metall "looked the other way for too long" regarding the issue of agency work; thus, he rather took the initiative to make the issue public. Indeed, BMW Leipizig has been strongly present in the media and in internal union material and later became the symbol of employers' exploitation of agency workers during the IG Metall campaign for agency workers, which was started in 2007 (Frankfurter Rundschau 29.03.2012; Spiegel Online 29.03.2012; Zeit Online 29.11.2013; IG Metall 2012). The BMW-L works councillor stated that:

"The instruments to put the management under pressure should be built up in different forms through the public opinion, through the unions and so on. From a legal perspective, given the law, in Germany everything is legitimate" (WC 20.04.2012)

Besides going "public" with the issue of agency work, the works council also brought the HR management at BMW-L to the local labour court in 2011 as soon as the German Temporary Employment Act was amended. The new law states that agency work can be used only "temporarily" (*vorübergehend*), which is an extremely ambiguous formulation but it excludes, at least, the permanent employment of agency workers. The works council set up five court cases against the management. By doing this, it wanted to put the management under pressure in order to get an agreement limiting the use of agency work even before the labour court reached its final decision. At the time of the interview, the management had won the first case but the works council did not want to stop the other four cases because there was an ongoing bargaining round in Munich on the issue and therefore did not want to release the legal and mediatic pressure (WC 20.04.2012; Focus Online 23.03.2012).

An agreement for limiting the use of agency work was achieved in Munich in November 2012 and was then also extended to the plant in Leipzig. Before that, the works council in Munich had bargained an equal pay agreement in 2009, which also covered BMW-L. As the politics underlying the agreements is related to labour-management dynamics in Munich, it is illustrated in the following section.

5.2 BMW in Munich: Late attempts to regulate segmentation

The segmentation at BMW-M has been slowly regulated over time. Both internal conditions and external conditions have been favourable to labour even though the management has threatened the works council with outsourcing production. While the works council prevented segmentation through subcontracting and service agreements, it did not regulate agency work initially. It became more active at regulating the phenomenon only when its size increased and could constitute a threat to bargaining power at company-level. Given the difficulty of finding a compromise with the management, the works council had to mobilise the support of IG Metall for building up more confrontation potential and achieving a company-level agreement.

The local workforce in Munich has never been under pressure of high unemployment. In Bavaria, unemployment rates have always been low – around 5% in 2000 and 3.7% in 2012. Munich has similarly low rates (Bundesanstalt für Arbeit 2000: 170; Bundesagentur für Arbeit 2012a: 182; Stadt München 2013). Even so, the BMW Munich plant was put under pressure by the management, who pushed for outsourcing parts of the production since the 1990s. It proved impossible to avoid the outsourcing of some business units such as electronics and some parts of seat production. Furthermore, in 2007, the works council bargained a dual-tier wage system, which initially put new hires on a lower pay scale. However, the works council managed to prevent onsite subcontracting and wage segmentation between workers in so-called industrial services (for example the canteen, and logistics) and those in production. It also kept the seat assembly in-house by organising protest meetings and blocking production (Union rep 11.09.2012).

Before the Hartz reforms, the BMW works council had not tried to regulate agency work and rather accepted its use to a certain extent. After a brief attempt at employing *Facharbeiter* at the assembly line, the company mainly employed unskilled and agency workers. When the permanent workforce did not want to perform heavy tasks, agency workers were used, and they were also employed as a means of facilitating team rotation. Agency workers were also hired, to a large extent – in the body-making unit there were occasionally up to 16-20% – when planned technological innovations were expected to displace a large number of job positions. In this way, the management and

the works council prevented the transfer of workers from one business unit (for example body-making) to another (for example the press shop) so that the original teams could be maintained. Such transfers are common when the management makes workers redundant (WC-1 11.09.2012).

However, the Hartz reforms represented a turning point, as the use of agency workers intensified and, since then, assembly-line workers are mainly hired externally. Furthermore, as the Hartz reforms abrogated the equal pay principle, the works council realised that an increasing segment of the workforce was paid much less than the permanent workforce – according to a works councillor, assembly-line workers were paid in 2007 €5.65 per hour compared to the €12-14 per hour of the permanent workforce (Union rep 11.09.2012). As a reaction to the increase of cheap workforce within the company, the works council started pushing for an agreement regulating the phenomenon, which had to be extended to all other BMW plants. During the interviews, the works councillors seemed confident of their power to influence the company's management. Manfred Schoch – the head of the general works council – was considered a key figure in this process as he has a close relationship with the management, even though he does not advertise his power (WC 10.09.2012). A newspaper article seems to confirm this picture of Manfred Schoch:

"He wants to be left undisturbed in his empire – and he also lets live. At BMW social partnership means: No open criticism of the management. The principle of invisible power – Schoch has been living up to it quite well for years" (authors' translation from Süddeutsche Zeitung 17.02.2013) [34]

In a recent interview for the weekly magazine "Wirtschaftswoche", Schoch highlighted the common interest of the works council and the management to find a model for the use of agency work, which allows the company "to survive difficult crises in the long term, without dismissing core workers to a large extent and without getting into the red". According to Schoch, the works council was suggesting a "win-win situation" both for the management and the employees (not necessarily for the agency workers) (Wirtschaftswoche 30.06.2012).

Despite the closeness of the works council to the management, a works councillor also reported that management and works councils "are two different businesses (*Läden*), we

34 See also Focus Magazin (29.11.2010) and T-Online (30.11.2010).

know each other well, we treat each other with respect but that's all there is to it (*dann ist das auch vorbei*) and this is what we want" (WC 10.09.2012). Indeed, the power of the works council does not derive only from the social partnership with the management but also from the close connection with IG Metall. The works councillors recognised that unions can have more influence on management because they can mobilise workers and present politically sensitive issues to public scrutiny as they are not committed to the company's interests (WC 10.09.2012; Union rep 11.09.2012). The works councillors agreed during the interviews that the union is stronger than the works council, and thus more effective on certain issues. A works councillor explained: "as works councillors we can be blackmailed (…) because the company says: 'Either you come to an agreement on agency work or we outsource the whole assembly line'" (Union rep 11.09.2012). The intervention of IG Metall was fundamental regarding the issue of agency work. The management had refused to negotiate an agreement on equal pay for agency workers until IG Metall threatened to park a truck in front of the experience museum "BMW Welt", with a sign reading: 'This is the slave temple of agency work'. The management knew that this could severely damage the brand's reputation and agreed to open bargaining procedures.

As a result, all BMW plants are covered by the same company-level agreement concluded in 2009, which has been centrally negotiated by the BMW works council in Munich and provides that agency workers are paid according to the metal agreement. Over the years the works council has occasionally conducted bargaining on the hiring of agency workers, and in September 2012 it negotiated 3,000 permanent positions for agency workers across all plants, in exchange for increased flexibility of working-time accounts for the core workforce (FAZ 27.09.2012). In November 2012 the company agreed on a quota of 12% to be achieved by 2015. However, the BMW works councillors are pessimistic that BMW will fulfil the agreed requirement (Die Tageszeitung 17.02.2014).

5.3 Volkswagen in Wolfsburg: Institutionalised segmentation

At VW in Wolfsburg, agency workers are employed by internal staff agencies, which have been increasingly regulated through collective agreements. The setting up of the internal agencies took place when the external conditions were unfavourable to labour: The unemployment rate was high and the works council was under political pressure from local authorities and under the threat of outsourcing. Still, as the workplace industrial relations at VW are very strong, the works council achieved a progressive regulation of agency work via the institutionalisation of segmentation at company level. This accommodating strategy is typical of the VW works councils and reflects the political closeness between labour and management, based on strong industrial relations.

Since the 1990s, the VW plant in Wolfsburg has been undergoing cost-cutting measures, which have taken a unique form in that plant. On the one hand, between the mid-1990s and the beginning of the 2000s, VW management pushed for outsourcing components and other non-core business units given the economic troubles of the company (WC 25.04.2012; Schulten 1997a). On the other hand, the VW plant is in an economically disadvantaged region, with unemployment rates higher than average, especially in the nineties and early 2000s. At the end of the 1990s the unemployment rate was between 9 and 13% in Lower Saxony and it reached almost 18% in 1996 in Wolfsburg. The unemployment rate dropped gradually until 2011 – it is now 6.6% in the region and 1% lower in Wolfsburg (Bundesanstalt für Arbeit 2000: 170; Bundesagentur für Arbeit 2012a: 182; Stadt Wolfsburg 2012: 4).

In order to reduce local unemployment and to maintain the production site, several measures were undertaken since the end of the nineties, which were always bargained with the works council. The pressure to adopt job-creating measures at the plant was particularly strong because the state of Lower Saxony has a blocking stake (around 20%) in VW. Furthermore, Peter Hartz, the head of the Hartz Commission, was also the Human Resources Executive at VW between 1993 and 2005. At the end of the 1990s, he started the project Auto 5000 which aimed at creating 5,000 new jobs for 5,000 DM/month. The workers of Auto 5000 were not covered by in-house collective agreements, and their agreement set lower wages and longer working hours than for

VW employees. Moreover, the agreement expected workers to repair production faults (if they were responsible for them) during unpaid overtime hours (Sperling 2006). The works council also agreed on the constitution of the Service Factory, which employed workers in logistics, catering and security and was covered by a company-level agreement with lower pay grades (WC 25.04.2012; Schulten 1997a). Furthermore, the VW works council bargained a collective service agreement for Autostadt, the theme park opened at the beginning of the 2000s, and agreed on the introduction of a two-tier wage system in 2004 (Dribbusch 2004).

In the bargaining round in 1997, the VW management tried to push for setting up internal staff agencies; the works council refused but agreed on the employment of temporary workers on a 10% lower wage (WC assistant 25.04.2012; Schulten 1997b; Zagelmeyer 1997). A few years later, at the beginning of the 2000s, the internal staff agencies Autovision and Wolfsburg AG (WOB AG) were founded and presented as "a gift to the city of Wolfsburg" in order to halve the unemployment rate (MGMT 09.07.2012). After the Hartz reform, the use of agency work increased to a considerable extent and the proportion of agency workers in direct production achieved a rate of 20%, even though VW has a collectively agreed quota of 5% in the workforce as a whole (MGMT 09.07.2012; IG Metall official 25.01.2012; WC 25.04.2012).

The workers of the two internal staff agencies were covered since 2003 by a less favourable collective agreement than the one for VW employees. However, during every bargaining round, which takes place after the central bargaining round at VW, additional payments were bargained for the agency workers who were employed at VW and its subsidiaries in order to (almost) close the gap between agency workers and standard workers (IG Metall Niedersachsen 17.12.2013; WC 25.04.2012; IG Metall Niedersachsen August 2009).

In November 2012 the Charter of Agency Work was signed, which included measures on pay, the transition from agency contract to permanent contract at VW and training. First, after nine months of employment at VW, agency workers have the right to the same basic pay as VW core employees. Second, the works council negotiated special training provision for agency workers at VW, which runs parallel to the traditional vocational training. The HR manager involved in the bargaining round reported that he

"could not state the difference" between a traditional *Ausbildung* and this new form of training. Their market value will not be comparable, however, as agency workers with these qualifications will continue to be paid less than *Facharbeiter* (MGMT 04.04.2013). Third, the agreement requires that agency workers are offered a permanent job position after 36 months of employment at VW – a year longer than the 24 months set by the last IG Metall agreement.

There are distinct recruitment paths between agency workers, who are treated as unskilled workers, and skilled workers who did their vocational training at VW. The hiring of agency workers depends on the economic situation, while the transition from a training position to a permanent position is required regardless of the economic situation. According to an HR manager, IG Metall and the works council pushed for the hiring of agency workers after three years – but always on the basis of individual performance and economic conditions (MGMT 04.04.2013). A works councillor himself distinguished between hiring trainees and agency workers:

"I cannot draw any parallels. That would be fatal. On one side, there are skilled people, who are hired and trained. On the other hand... there are the occasional economic dips, when VW is economically doing well.' 'If the day after tomorrow the model Golf A were to be produced and didn't do as well on the market as expected, we would have a problem with hiring 5,000 agency workers. Everything depends on the economic conditions of VW."(WC 25.04.2012)

The works council recognises that the recent achievements in the bargaining round were facilitated by the good economic conditions of the company. However, it also is very confident of its bargaining power both thank to its strong connection to IG Metall, which dominates the works council, and to its close cooperation with the management. The Head of Management, Martin Winterkorn, is also a member of IG Metall. This triangular actors' constellation at VW between the works council, the management and IG Metall sets its own agenda independently from the national union. A works councillor in Wolfsburg said that "…in principle VW is always a few steps ahead *[of the national union]*" (WC 25.04.2012).

The works council does not interpret internal workforce segmentation as a sign of weakness. Rather, the model of the internal staff agencies is regarded as ideal because the works council is in a better position to keep agency work under control. Overall, at

VW in Wolfsburg, the workforce segmentation seems politically accepted by the works council, which also agreed on other segmentation measures beyond Autovision and WOB AG, as mentioned above. Further evidence of this stance is the presence of onsite subcontractors which are not covered by the same collective agreement as VW's direct employees. An IG Metall official in Wolfsburg explains that there is "no overview of subcontracting, there are an incredible number" so that "the only person who knows [*how many onsite subcontractors*] is the gate keeper who can recognise who has a VW badge or not" (IG Metall official 24.09.2012).

The works councils' acceptance of the workforce segmentation through the projects Auto5000 and the Service Factory raised controversies within the IG Metall and the other automotive works councils too. For instance, a works council at BMW defined the Service Factory as "unacceptable" (WC 10.09.2012); Stephan Krull, who was a member of the VW works council in Wolfsburg and of the IG Metall bargaining commission until 2006, wrote several articles criticising the "modernisation" concept behind the project Auto5000 (Krull 2007a; 2007b). The power constellation at VW is as controversial. The power of the VW works council was admired by other works councillors at Ford and BMW. However, the relationship between the management and the works council was also seen as controversial. The Ford works councils commented that "the world looks very different at VW because the headquarters is in Wolfsburg", while having the headquarters in the US makes it easier for the Ford works council to keep the necessary (political) distance (WC-1 19.04.2012). A BMW works councillor specified that the difference between the VW and the BMW works council is that "they *[at BMW]* are not on first-name terms with each other" as is the case in Wolfsburg. Exactly the same critical expression regarding the political closeness of labour and management at VW was used by an anonymous union official in an article in the Süddeutsche Zeitung (Süddeutsche Zeitung 19.05.2010).

In addition, the newspaper article already quoted in relation to BMW reports a similar impression:

"The representative of workers does not only go to big events and motor shows together with the management board – he also speaks as if he were one of them. A few days ago, Osterloh *[the Head of the general works council]* explained that … *[briefly: VW achieved its production goals and needs a new*

production strategy until 2022]. Statements which usually come from a CEO" (author's translation from Süddeutsche Zeitung 17.02.2013).

5.4 Ford: Limited segmentation

The use of agency work at the Ford plant in Cologne is limited and well regulated. The main explanatory factor is that works councils bargained an agreement setting strict quotas and equal pay before the Hartz reforms were passed. In addition, the works council has shown itself to be committed to and successful in maintaining a complex and encompassing internal labour market, which can be also explained through the presence of the top management in the US. The distinction between the general and the local management gives works council more freedom to bargain over the work organisation and prevents the formation of a close political front between the works council and the local management.

Even though the unemployment rate in North-Rhine Westphalia even reached peaks of 16-18% between 1995 and 2004 and was around 8% in 2012, it was not mentioned in the interviews as a factor building pressure on the works council (Bundesanstalt für Arbeit 2000: 170; Stadt Köln 2004: 124; Bundesagentur für Arbeit 2012a: 182; Stadt Köln 2012: 10). This is probably because North Rhine Westphalia hosts many companies other than Ford, which is not the most important employer in the region. The pressure to agree on concession came mainly from outsourcing which has been taking place at Ford since the 1990s, as a works councillor describes here:

"*[the management said]* this is not our core business, our core business is building cars […] But all the rest, where we get the seats, the blinkers or the wheels, who is in charge of repairing….it does not matter! If my machine stops working, I call the maintenance and they will repair it. Why should I have permanent *Facharbeiter*? … If we *[the works council]* had listened to the management five years ago, a decision would also have been taken to close the machine tool building and the maintenance unit" (WC-2 19.04.2012)

Still, the works council agreed on concessions in exchange for job security. In 1997 the works councils agreed on a reduction of "payments above collectively agreed wages" (*übertarifliche Leistungen*) and of overtime bonuses as well as on increased flexibility of working time (Schulten 1997c). In 2006, the works council accepted further pay cuts,

introduced a two-tier system for entrants and apprentices, and incorporated overtime into the system of working time accounts. In exchange, the management agreed not to dismiss any workers, initially until 2011 and later extended until 2021 (Stettes 2006; IG Metall Köln-Leverkusen 2014; Ford 10.06.2014). Furthermore, at the beginning of the 2000s, a supplier park was created, which takes the components to the assembly line of the Ford plant through a tunnel. However, the works councils managed to keep "the most interesting jobs in-house", to maintain industrial services under the same agreement and to avoid on-site subcontracting (WC-1 19.04.2012). Regarding the latter, the works council put in extra-effort, making sure that onsite subcontracting was not used as a substitution for agency work and forced the management to turn subcontractors into agency contracts, which could be better regulated:

"We had a look at the subcontracting contracts and we asked: 'Are these really subcontractors or are they 'hidden' agency contracts?'…in this way, we got an additional 560-580 agency work contracts… they became visible. If I tell you: 'I have my subcontracting contract with the company Schwitz and Müller', 'Oh, nice, how much?' '4 Million….' Yeah, but you still do not know how many employees hide behind this contract. This is now more transparent" (WC-1 19.04.2012)[35]

The works council indeed regulated the use of agency work through a company-level agreement signed in 2003. According to the management, it was important for the works council not to have two types of workforce in the company so they at least agreed to have the same pay level (MGMT 07.08.2012). First, agency workers are to be paid in accordance with the rates laid down in the sectoral agreement for the metalworking industry. The Ford company-level agreements covering pensions, bonuses and other fringe benefits do not apply to agency workers. Second, agency workers (and also temporary workers) should be given priority at the end of their assignment if there are vacancies for permanent positions. Third, the agreement sets a relatively low quota of 3%, which includes both agency and temporary work and applies only to direct production as no temporary workers are allowed in indirect production. The quota was negotiated with a view to allowing the use of agency work only as replacement for workers on leave or in case of production peaks. It can be extended by 5% (to a maximum of 8%) during the period when a new vehicle model is being brought in and

35 The reliability of the information that the Ford plant does not have onsite subcontracting while the VW plant does has been confirmed by an article in Automotive Logistics (17.02.2014).

the old model is still in production. When two production lines are running parallel in this way, the company temporarily needs more staff.

A works councillor is convinced that they would probably not have been able to achieve such an agreement after agency work was made 'socially acceptable' (*salonfähig)* thanks to the bargaining round between the DGB and the agencies' associations (WC-1 19.04.2012). The works council tackled the issue as soon as it "saw the problem coming" (Ford works councillor in Müller 2011). The early and active effort to regulate agency work reflects the commitment of the works council to maintain a dynamic internal labour market even at the cost of changing work arrangements for the stable core workforce. As mentioned above, the works council forbade on-site subcontracting and the use of agency work in indirect business units: This strategy was aimed at maintaining the integration of indirect activities such as repairing, maintenance and quality checks into direct production and at ensuring the promotion of young skilled workers employed at the assembly line to more specialised production units. The career ladder would be disrupted if the employment of temporary workers was allowed to any great extent, especially in indirect production.

It is striking that, while the works council agreed to cut costs on the pre-existing and future stable workforce, agency work was not used as a 'bargaining chip'. Indeed, a works councillor believes that there would be room to bargain for the acquisition of benefits for the core workforce in exchange for more and cheaper agency workers:

"If I went to a company and said: 'What do you think, the core workforce gets extra bonuses and you can use as many agency workers as you want', we would all get €10,000. That's obvious" (WC-2 19.04.2012)

However, another works councillor reports that the managerial proposals to change the arrangements regarding agency work do not impress him:

"It is natural that some people from the finance department think that the company should pay agency workers the same lump sum that other companies pay them… I can live with that" (WC-1 19.04.2012)

Thus, the Ford works council maintained its commitment even in the last bargaining round conducted under difficult economic conditions for the company. The works

council managed to achieve a job security agreement until 2021, agreeing on a three-shift system in the motor building plant and on a flexible shift system in direct production. The agreements on the use of temporary work remained untouched (IG Metall Köln-Leverkusen 2014).

The commitment to maintaining a complex and internal labour market is favoured by the political and geographical distance with the top management. According to a works councillor, Ford is different to BMW and VW because "the Headquarters is far away and the big boss doesn't come all the time to see *[what we are doing]".* This gives the works council more freedom to bargain with the local management regarding the organisation of work and management of the workforce as long as the company "makes the ends meet" (WC-2 19.04.2012). Furthermore, the differentiation between the top management in the US and the local German management prevents the formation of a united front between labour and management in the company. A works councillor explained that the works council exploits the pressure put in place by the top management on the local management to increase productivity and competitiveness. This pressure gives the works council the ability to set the conditions with the local management under which the productivity objectives are to be achieved (WC-1 19.04.2012).

This section has illustrated the bargaining processes underlying different segmentation patterns between standard and agency workers across plants. Each case study highlighted the sources of labour power constraining labour's ability to bargain over segmentation: the sources of power were internal, such as the strength of workplace industrial relations; and also external, such as the unemployment rate, the political pressure of local authorities and the timing of the agreement on agency work in respect to the national labour market reforms. Works councils were found to be committed to a homogenous workforce to different extents, depending on their political proximity to the management and also on their ability to influence employers' segmentation strategies. The next section compares and discusses the cases.

6 Discussion of findings

This paper has explained the role of labour concerning the variation in the segmentation between standard and agency workers across four plants: BMW Leipzig, BMW Munich, Ford in Cologne and VW in Wolfsburg. At BMW in Leipzig 30% of the workforce consists of agency workers who work permanently in the plant and are employed also in skilled positions. In Munich 20% of the workforce in direct production consists of agency workers. While in both BMW plants an equal pay agreement has been in force since 2009, a loose and high quota of 12% to be achieved in 2015 was bargained in 2013 and there is not an automatic mechanism for the permanent hiring of agency workers yet. The Ford plant has a small periphery of agency workers, which is well regulated by means of quotas, equal pay and transition rules. At VW Wolfsburg, agency workers are hired through two internal staffing agencies, there are rules for progressively achieving equal pay, a loose quota of 5%, and transition rules were agreed upon between 2011 and 2012, which make the permanent hiring compulsory after 36 months of assignment. BMW-L represents an extreme case in terms of the segmentation between standard workers and agency workers. Ford, on the other side, is the plant where the employment and the working conditions of agency workers are best regulated. BMW-M and VW are mid-way cases with a large periphery of agency workers, which has been progressively and partly regulated over time.

The comparison between BMW-L and the other plants highlights the influence of both workplace industrial relations and external conditions on labour's ability to regulate agency work. BMW-L and BMW-M offer a within-company comparison, which highlights the relevance of external and internal sources of power: Even though both plants belong to the same company and are characterised by similar production, BMW-L is a greenfield site with lower union density while BMW-M is the headquarters and has a long tradition of bargaining with management. Furthermore, the high unemployment rate and the political pressure of local authorities in Leipzig when the plant was set up did not leave any room for bargaining to the works council and favoured the use of agency work for one third of the workforce, both in direct and in indirect production. In contrast, at BMW-M agency work is used only in direct production and the works council managed to progressively regulate the phenomenon and extend the agreements to other plants including BMW-L, even though it required the external intervention of IG Metall.

The comparison between BMW-L and VW highlights the importance of internal sources of power given similar external conditions: Both plants are in areas with high unemployment rates, and the HR strategies were formulated on the basis of the Hartz project to boost employment through agency work. These conditions favoured the creation of a model integrating agency work as a stable component of the workforce in both plants. However, the VW works council has more internal power resources available given the high union density and a strong tradition of collective bargaining with management. Thanks to its bargaining leverage at workplace level, the VW works council can progressively regulate the use of agency work, achieving a controlled segmentation model. Differently, BMW-L had to increase its bargaining leverage, building up conflict through external resources, by using local and national media and by bringing the management to the local labour court. Nevertheless, all agreements were achieved centrally by the works council in Munich.

The comparison between Ford and the BMW-M and VW plants clearly illustrates the key role of external sources of power given the comparable strength of industrial relations in the workplace. As the Ford works council bargained the agreement before the Hartz reforms were passed, the works council has an even better regulation of agency work than the VW plant in Wolfsburg, which enjoys more power at workplace level. Despite the high unionisation and the traditions of social partnership and collective bargaining, the BMW-M works council and the VW works council could not filter out, but rather only moderate, the pressure for liberalisation due to labour market deregulation at national level.

Works councils were found to draw on different power resources in each case, which derived both from internal and external sources, and these power resources were found to be necessary for achieving some regulation regarding agency work. Still, labour commitment to a homogeneous workforce constituted a fundamental condition to the bargaining of encompassing agreements for contingent workers. BMW-L did not have enough power resources to bargain, so the works council's strategy is not relevant to explain the outcomes. However, the works councils at VW and BMW-M could draw on different power resources but were not committed to a homogeneous workforce even though the strategy of the BMW-M works council relatively shifted towards more

inclusiveness. Finally, the Ford works council was powerful and had an inclusive strategy towards contingent workers, achieving the most comprehensive agreement. The following comparison between VW, BMW-M and Ford shows that works councils varied in their commitment to a homogenous workforce and this variation was associated with the political proximity between works councils and management and on the works councils' ability to influence employers' segmentation strategies.

The VW works council in Wolfsburg agreed on other controversial "segmentation experiments" such as Auto5000 and the Service Factory and had the closest relationship with the management among the three plants. Furthermore, there is little distinction between the politics of IG Metall in Wolfsburg and the VW works council, which also contributes to the proximity between labour and management. Indeed, the union control over the works council traditionally represents a counterbalance to the company-oriented logic of the latter as the union agenda is usually independent from the works council's one (Müller-Jentsch 1995).

The BMW-M works council also has a cooperative relationship with the management but still differs from VW in Wolfsburg. The BMW-M works council has shown more commitment to a homogeneous workforce by forbidding onsite subcontracting and differentiated agreements for industrial services. Furthermore, works councillors perceived more political distance between them and the management than at VW and found some "segmentation initiatives" at VW politically controversial. However, the works council has also accepted the use of agency work in direct production since the nineties, even though at lower rates than in the post-Hartz period. Furthermore, the Head of the Works Council is very close to the management, and its statements regarding agency work do not reveal a solidaristic attitude towards agency workers. Thus, the changing attitude of the works council for regulating agency work seems to be due more to a less favourable balance of power rather than to a greater political distance between management and works council compared to the VW plant. The shifting strategy of the works council is due to its growing awareness that its ability to control employers' segmentation strategies, which might threaten its power, is limited. Indeed, the works council at BMW-M still needed the mobilisation potential of the local IG Metall to achieve an agreement on agency work and has not been successful so far in limiting the use of agency work.

The Ford works council offers a clearer example of a different attitude towards the segmentation of the workforce compared to BMW-M and VW. Its efforts to maintain a homogeneous workforce were revealed by the measures undertaken to avoid onsite subcontracting and by explicitly limiting the use of agency work to direct production and only if the temporary vacancies could not be covered through staff re-allocation. The commitment to an encompassing internal labour market probably also led the works council to regulate temporary work as soon as the discussion about labour market reforms started. This commitment to a homogeneous workforce was favoured by the geographical distance of the top management, which gave the works council more freedom for bargaining; and also by the opportunity to exploit fractures between the US management and the local management to achieve its bargaining goals rather than entering a coalition of interests with the local management.

The table below summarises the findings:

Table 13: Summary of findings

		BMW-L	BMW-M	Ford	VW
Strength of IR	**Union density**	65%	90%	85%	95%
	Unionisation of WCs	90%		87%	94%
External factors	**Unemployment (beginning 2000s)**	18%	5%	9%	12-18%
	Hartz reforms	HR strategy developed on the basis of the Hartz reforms	Regulation of agency work post-Hartz	Regulation of agency work pre-Hartz	'Hartz model' before the reform
	External power resources	Union support perceived as late; Media pressure, legal procedures against the MGMT	IG Metall intervention during the bargaining round	Not required	Not required
WC strategy	**Attitude to segmentation**	-	Partial acceptance	Refusal	Acceptance
	WC – Management - Union	-	Close cooperation between the Head of Works Council and MGMT/IG Metall as external actor	Distanced cooperation between works council and MGMT/IG Metall as external actor	Close cooperation WC-MGMT-IG Metall
Combination of strategy and power		***Confrontational strategy, relying on external resources***	***Cooperative and reactive strategy, partly relying on external resources***	***Cooperative and proactive strategy, relying on internal resources***	***Cooperative and reactive strategy, relying on internal resources***
Regulation	**Quotas**	12% on the whole workforce to be achieved by 2015		3% in direct production, not in indirect production	5% on the whole workforce
	Equal pay	Yes (2009)		Yes (2003)	Yes (2011)
	Transition to permanent position	Not yet (IG Metall agreement applies)		Yes (2003) and IG Metall agreement	Yes (2012) but longer than in IG Metall

				applies	agreement
Agency work	**% on the workforce**	30% overall	30-40% in direct production	3-5% in direct production	20% in direct production
	Staff agencies	i.a. Randstadt	i.a. Manpower	i.a. Adecco	Internal agencies: Autovision, WOB AG
	Tasks	All levels, also in qualified positions	Easiest tasks	Easiest tasks	Easiest tasks
Segmentation model		***Uncontrolled segmentation***	***Semi-controlled segmentation***	***Limited segmentation***	***Institutionalised segmentation***

Overall, the cases can be fully explained by considering the interaction between labour power –rooted in internal and external sources – and labour attitudes towards workforce segmentation. The findings have different implications for theory. They further the evidence provided by existing studies on labour market segmentation confirming that the presence of strong industrial relations at the workplace can make all the difference when plants are experiencing similar pressures from the external context, as suggested by the comparison between BMW-L and VW-Wolfsburg (Doellgast 2008; Doellgast 2010; Gautiè and Schmitt 2010). However, they also show that, even though workplace bargaining institutions are instrumental, it has become increasingly difficult for them to filter the external pressure for the progressive marketisation of labour relations (as also noted by Hancké 2000; Doellgast and Greer 2007; Holst 2013). Similar to the literature on workplace restructuring (Locke 1992; Frost 2000; Pulignano and Stewart 2012), the present paper shows that the socio-economic and political context of the company/plant constrains labour strategies in regard to workers' segmentation at workplace level.

The emphasis on the hostile external environment casts new light on the nature of workplace cross-class coalitions, through which labour actors contribute to the marginalisation of contingent workers (Palier and Thelen 2010; Hassel 2014). As external factors dramatically constrained labour bargaining power, it seems too simplistic to explain the segmentation between standard workers and agency workers

through works councils' pro-insider preferences – the case of BMW-L is paradigmatic in this regard.

Furthermore, the findings suggest a more nuanced and differentiated picture than the insider-outsider literature and the revitalisation literature offer. First, works councils might shift their strategies when they are unable to control employers' use of agency work, as the BMW-M works council did. Therefore, it is important to consider the interplay between strategies and power for explaining labour's role in determining segmentation in the workplace (MacKenzie 2009; Pulignano and Doerflinger 2013). Second, the works councils' attitude towards segmentation has been found to vary across cases, and these differences were found to be decisive for explaining a proactive strategy of the works council, aimed at achieving encompassing agreements for agency workers. Works councils' commitments to a homogeneous workforce was associated with different degrees of political closeness to the management, confirming the findings of Nienhüser (2005) that less cooperative works councils bargain more in regard to workplace regulations.

Finally, the findings have also shown that labour can use external sources of power to regulate segmentation at workplace level, strengthening the point that the segmentation literature should look at the wider context of the plant for understanding labour's role in workplace segmentation as suggested by the studies on unions in workplace restructuring by Locke (1992), Lévesque and Murray (2005) and Pulignano and Stewart (2012). In particular, the findings have shown that works councils can partly re-build their power in the workplace by using external resources.

7 Conclusion: Limitations and further research

This paper has investigated the role of labour in defining different segmentation models between standard workers and contingent workers. Overall, the paper argues that, in the case studies, labour power – rooted in internal industrial relations and conditions external to the company – was necessary for labour to regulate agency work, at least to some extent. However, labour power needed to be combined with works councils' commitment to a homogeneous workforce for achieving encompassing agreements.

Given the limited number of case studies, the present paper cannot make general claims about the interplay between labour power and strategies. However, Benassi and Vlandas (2013) have found a similar causal path in their fuzzy-set Qualitative Comparative Analysis (QCA) on union strategies towards agency workers across 15 European countries: Their findings suggest that a certain level of bargaining power combined with a working-class orientation of national unions represent INUS conditions[36] to inclusive agreements for agency workers.

Further research is not only needed for improving the generalisability of the findings but also for building a comprehensive analytical framework for understanding the role of labour in determining segmentation patterns at workplace level. This paper points towards this research direction by bringing the insights of the literature on unions' involvement in workplace change (Eaton 1990; Frost 2000) into the segmentation literature (Grimshaw, Ward et al. 2001; Rubery 2007).

Finally, the paper has also provided new evidence to a growing body of research, which only recently started looking at the effect of liberalisation at national level on employment relations in the workplace (Doellgast 2009; Lillie 2012; Greer, Schulten et al. 2013). In line with this literature, the present paper has suggested that labour and management dynamics are now particularly affected by external liberalisation pressures and invites future research on workplace industrial relations to take them into account.

[36] INUS conditions are "Insufficient but Necessary parts of a condition which is itself Unnecessary but Sufficient" (Mackie 1965).

Paper 3

STRAIGHT TO THE CORE – EXPLAINING UNION RESPONSES TO THE CASUALISATION OF WORK. THE IG METALL CAMPAIGN FOR AGENCY WORKERS

Abstract

The existing literature provides different accounts on the strategies of unions regarding marginal workers. It has been argued that under increasing labour market segmentation unions have either to prioritise their core constituencies and to seek compromises with management; or to adopt inclusive strategies towards peripheral workers to counterbalance eroding bargaining power. This paper shows that both strategies represent equally viable options to protect the interests of unions' core members. The strategic choice depends on the (perceived) competition between core and peripheral employees related to employers' personnel strategies; this affects the possible alignment of interests between unions' core members on the one hand, and either management or peripheral employees on the other. Our historical analysis of union strategies towards agency workers in the German metal sector illustrates this mechanism, and identifies institutional change towards liberalisation as the trigger for aggressive segmentation strategies by employers and for inclusive union strategies.

1 Introduction

Temporary, precarious and low-wage work has been growing in Western political economies over the last thirty years (Houseman and Osawa 2003; Gautiè and Schmitt 2010). This phenomenon has challenged the ability of traditional class actors such as trade unions to represent workers (Gumbrell-McCormick 2011). A broad body of literature has pointed out the factors which make the union representation of contingent workers difficult, such as the heterogeneity and vulnerability of these workers and their dispersion along the value chain (i.a. MacKenzie 2009; Doellgast 2012; Holtgrewe and Doellgast 2012). Still, a controversial research issue remains the willingness of unions to engage in the representation of contingent workers.

The dualisation literature claims that unions contribute to the labour market marginalisation of contingent workers. Under increasing economic pressure, unions are supposed to use contingent workers as a buffer in order to protect their core constituencies from market fluctuations and cost-cutting pressure (Palier and Thelen 2010; Hassel 2014). Theories of union revitalisation argue that unions increasingly seek to recruit contingent workers and bargain on their behalf. Their inclusion has been interpreted as a reaction to an increasingly hostile environment for labour. In order to regain bargaining power, unions strengthen their recruiting and mobilisation efforts (Frege and Kelly 2004; Greer 2008a; Turner 2009).

While these contradictory perspectives have often been set up as a debate (Clegg, Graziano et al. 2010), some authors have framed them as a dilemma unions face in dual labour markets (Goldthorpe 1984; Olsen 2005). Goldthorpe (1984) argued that both inclusion and exclusion are viable strategies for unions to maintain their labour market power: Confronted with employers' segmentation strategies, unions can "strive to uphold class orientation, which must entail as far as possible opposing dualism" or they can "accept dualism and fall back on the defense of the specific sectional interests of their enrolled members, in the hope that these interests may be then as much protected as undermined by dualism through the "shock absorber" function that the secondary-workforce performs" (p. 339).

Still, little research exists on the conditions under which unions decide to undertake the one or the other strategy. Ultimately, this decision relates to the issues of how unions define their boundaries and constituencies. This paper argues that the inclusion of peripheral workers into unions depends on the changing perception of potential alignment of interests between the union and its core members, on one hand, and either management or peripheral employees, on the other. Segmentation can provide mutual benefits to employers and core workers because it allows cutting productions costs, while protecting the core workforce. Thus, unions and employers may potentially enter a coalition of interests that excludes marginal workers. Alternatively, however, segmentation may also threaten core workers through increasing competition with the peripheral workforce. This makes the interests of core union members more interdependent with peripheral workers, while those of core workers and management progressively diverge. This study identifies institutional change towards liberalisation in the labour market as an important condition for unions' strategic re-orientation, as it reconfigures the constraints and opportunities for actors. Labour market liberalisation lifts constraints to employer discretion (Baccaro and Howell 2011: 527), who can adopt more aggressive segmentation strategies threatening unions' power and collectively agreed standards for the core workforce.

This paper illustrates this argument through a historical analysis of how the German metalworkers' union IG Metall has approached the issue of agency workers. This form of contingent work has become quantitatively and qualitatively important in Germany during the last ten years, reaching the peak of almost one million workers in 2011 - one fifth of which are concentrated in metal occupations (Bundesagentur für Arbeit 2013: 8-12). The case of IG Metall is critical because German unions, especially in export manufacturing sectors, are often argued to focus on their core constituencies (Palier and Thelen 2010; Hassel 2014). However, since 2007, IG Metall has been running a campaign aimed at recruiting agency workers and promoting their equal treatment and pay. Moreover, agency work was a central issue in the most recent bargaining rounds, which reduced the wage gap between agency and standard workers and set rules for their permanent hiring.

The progressive opening of IG Metall boundaries to contingent workers points to a re-definition of union's constituencies. This paper will show that the catalyst for this

strategic re-orientation was institutional change conducted through the reform of the Temporary Employment Act in 2003 which deregulated the use of agency work. The union's inclusion of agency workers was a reaction to the resulting threat to the working conditions of union members posed by employers' increasing use of "peripheral" workers. The findings demonstrate that actors' perceptions regarding the impact of institutional change are important for their strategic responses – in this case, how unions draw their organisational boundaries.

The paper unfolds as follows. The next section discusses the literature on the definition of union representation domain and the third section illustrates the framework used to analyse changing union strategies towards contingent workers. After the fourth section on the methodology, the fifth section illustrates how employers' strategies changed after the Hartz reforms. The sixth section follows the evolving IG Metall strategies towards agency workers from the Seventies until 2012. The seventh section discusses the findings and concludes.

2 Constructing union boundaries in segmented labour markets: employee identities, interests and institutions in Germany

Goldthorpe (1984) illustrates the dilemma unions face in segmented labour markets regarding whether to focus on their core constituencies or organise and represent the peripheral workforce in order to maintain their labour market power (p. 349). This dilemma regards the issue of how unions set their boundaries. Unions define their representation domain according to principles of inclusion, which constitute also elements of distinction and exclusion of other workers (Hyman 1996: 55). Different factors influence union boundaries, including product markets (Commons 1909), skills and tasks (Cappelli and Sherer 1989), identities (Herrigel 1993; Hyman 2001) and national institutions of labour markets and industrial relations (Streeck 1993; Ebbinghaus and Visser 1999). This paper investigates the interplay between union identities and institutions on the definition of union boundaries (see also Hyman 2001; Frege and Kelly 2003).

Unions have developed on the basis of salient individual and collective identities among employees (Herrigel 1993; Streeck 1993), following the unions' "perception of special interests within the general interest of (labour) as a class" (Schmitter and Streeck 1999: 55). The prevalence of one identity over another is associated with particular types of organisational form. For instance, a working-class identity relies on an understanding of contrasting interests between labour and capital, and is associated with industrial unionism. Industrial unions vertically organise workers and pursue solidaristic policies for reducing status and occupational differences; one of their leading principles is "equal pay for equal work" (Jackson 2009: 72). By contrast, enterprise unions emerge when the identity of the workers is attached to their company and its economic success, and the unions are mainly focused on the companies' core workforce. Thus, they cooperate with the management in order to pursue their common interests within the company (Streeck 1993: 42ff.). Unions never perfectly reflect one form of unionism – such as the above mentioned industrial and enterprise unionism or the craft unions; rather, they are caught in a tension among these types and the form they take varies according to changes in the external environment and the issues at stake (Hyman 2001: 1-5).

Unions' organisational domain is also shaped by institutions. Institutions define the structure of opportunities and constraints in which union organisations formulate their strategic choices and interact with other actors, such as employers and the state. Institutions "influence the success of different forms of union organisation," favoring the persistence of one over the other (Jackson 2009: 72). Institutions and identities have historically developed together and mutually influence each other. Institutions do not just favor particular types of interests, but are themselves the product of actors' interactions and struggles that have shaped their existing identities. Conversely, institutions are a context where unions formulate their interests and channel the expectations of their members – in other words, where unions form their identities as organisations. Given their close interconnection, institutional change affects the prevalence of one union identity over the other, and, ultimately, also unions' representation domain.

The weakening of industrial unionism and the erosion of the solidaristic wage policies in Germany illustrates this connection between institutional change and identity.

German unions and collective bargaining institutions have historically represented workers vertically within an industry and supported a homogenous wage distribution. However, the German labour movement has always been characterised by a tension between its industrial and enterprise identity (Streeck 1993) as a result of the dual system of interest representation that encompasses both industrial unions organised across broad industrial sectors and works councils with codetermination rights at company-level. In the 1970s and 1980s, capillary union presence enabled the control over works councils; the unions' bargaining agenda reflected their working-class identity, which aimed at sharing productivity increases across sectors, reducing inter-establishment and inter-sectoral wage dispersion (Müller-Jentsch 1995; Streeck 1997).

Since the 1990s, these industrial relations institutions have become less inclusive and inequality has risen. Union density and bargaining coverage have declined, collective bargaining institutions have become increasingly decentralised and fragmented, and contingent work has expanded (Hassel 1999; Artus 2001; Doellgast and Greer 2007). Fragmented bargaining and the increasing competitive pressures have opened up opportunities for the expression of particularistic interests of company-level or even establishment-level worker interests, thus emphasising intra-class conflicts (Rehder 2003; Doellgast 2009).

The dualisation literature has argued that these developments reflect company-level cooperation between employers and core workers (represented by their works councils), which relies on their common interest of enhancing the company's competitiveness. These cross-class coalitions support cost-cutting and flexibility measures, but limit these strategies to the service periphery, while preserving the standards for core workers (Palier and Thelen 2010; Hassel 2014). Thereby, works councils have distanced themselves from the broader agenda of industrial unions; instead, works councils in core industries have increasingly supported plant-level cooperation and gained political weight within the labour movement (Hassel 2014: 65). Reframing the analysis of the dualisation literature in the terms of this paper, unions seem to have abandoned a broader understanding of working-class solidarity typical of industrial unionism, and moved to an enterprise model of interest representation that excludes the peripheral workforce.

On the other hand, a growing literature emphasising the revitalisation perspective has shown that the erosion of industrial relations has opened up new opportunities for employers to circumvent collectively agreed standards, undermining unions' bargaining power (Doellgast, Batt et al. 2009). As a consequence, German unions have increasingly targeted marginal workforce groups through campaign and bargaining initiatives. The inclusion of new workforce groups and the adoption of social-movement style strategies aim at revitalising the existing institutions and at rebuilding conflict potential towards employers (Greer 2008a; Turner 2009; Vandaele and Leschke 2010). In this framework, the interests between management and core unions are conflicting, and a cross-class coalition does not represent a viable option because the existing institutions do not support the balance of power between the parties. Instead of collaborating with the management, unions need to open their boundaries to new workforce groups, re-emphasising their identity as industrial unions.

3 Analytical framework: Explaining changing strategies towards contingent workers

The accounts of unions' strategies towards peripheral workers in Germany are mixed and contradictory, revealing the incompleteness of the present theoretical accounts. While the dualisation literature is unable to account for new recruitment strategies towards marginal employees, the revitalisation literature falls short in explaining why unions continue supporting existing social partnership institutions in times of labour decline and accept political compromises with management.

The paper's framework does not present these strategies as alternatives, but rather as equally viable responses to increasing labour market segmentation. This paper conceptualises unions' strategic options in regard to contingent workers on a continuum ranging from exclusion, to subordination, and finally to inclusion. Our conceptualisation follows Heery's typology of union strategies towards contingent workers. Heery's framework (2009) encompasses both internal representation, which refers to the recruitment of contingent workers into the union, and external representation of contingent worker interests into the bargaining agenda at workplace, sectoral and national level. An exclusive attitude is associated with policies aimed at

removing contingent work from the labour market - either through legislation or bargaining – and refusal to organise and support agency workers. Subordinated representation implies the acceptance of contingent workers on the labour market and as union members, even though the representation of their interests is subordinated to their core constituencies. Finally, the attempts to recruit contingent workers and policies aiming at their equal pay and treatment reflect the adoption of an inclusive strategy (pp. 430ff.).

The paper claims that subordinated representation and inclusion are both strategies which can help unions to secure their institutional and organisational power resources when these are declining. It argues that the strategic choice depends on unions' perception of potential alignment of interests between those of core workers with either management or peripheral employees. If the power resources deriving from past institutions are still available even in the face of erosion, unions are likely to adopt a subordinated model of representation and respond to these pressures by trying to strengthen cooperation with management. Even if at the expense of broader working-class solidarities, the perception of labour movement weakness makes alliances with the management more attractive. Unions will not seek to represent new workforce segments as long as the negative consequences of eroding bargaining power can be externalised to the peripheral workforce.

However, unions' perceptions regarding the function of the peripheral workforce are likely to change with the increase of contingent work. Unions will perceive contingent work as a threat to the interests of core employees and as a managerial attempt to undermine collectively agreed standards. Under these conditions, unions regard the interests of employers and core workers as increasingly diverging, and those of core and peripheral workers as interdependent. Thus, unions are likely to abandon their cooperative approach with the management and to pursue instead broad working-class interests. They enlarge their representation domain and try to increase their bargaining leverage through membership mobilisation and campaigning.

Besides the content of union strategies, the level of conflict also signals the shifting alliance of interests: Coalition strategies with the management, based on a narrow understanding of workers' interests, tend to be cooperative. Strategies pursuing broad

working-class interests are associated with high levels of conflict with the management – for example membership mobilisation and campaigns.

In this analysis institutions are crucial because they define the structure of opportunities and constraints in which the interest alignment takes place. The liberalisation of industrial relations and labour market institutions lifts constraints on employer discretion (Baccaro and Howell 2011: 527), allows the growth of contingent work and undermines employers' incentives to rely on cooperation with core workers. As liberalisation progresses, unions are likely to shift from an enterprise union logic, characterised by cooperation with the management, to a more confrontational industrial logic. The paper shows that the unions' perception whether their interests are aligned with employers or peripheral workers mediates the causal relationship between declining institutional power resources and union strategies.

As section two illustrates, German industrial relations have been eroding over the last twenty years. However, this paper identifies in the labour market reforms in 2003– the so called Hartz reforms - the trigger of IG Metall's inclusive strategies towards agency workers. While the Hartz reforms have often been interpreted as instrument of flexibilisation at the margins, the fifth section (following the fourth section on the methodology) shows that they changed employers' use of agency work, putting the core workforce under pressure (see also Eichhorst and Marx 2011). The sixth section illustrates how this influenced IG Metall strategies towards agency workers.

4 Methods

The empirical analysis relies on multiple data sources. The data on employers' use of agency work rely on research reports of IG Metall and of the Hans Böckler Foundation, on works councils' surveys, and on the statistics of the German Federal Employment Agency (Bundesagentur für Arbeit) and of the Institute for Employment Research (IAB).

The analysis of changing perceptions and strategies within IG Metall covers a forty-year period between 1972 and 2012. The empirical evidence on union's strategies until

beginning 2000s mainly relies on secondary literature and on IG Metall internal material. More recent empirical evidence is based on the IG Metall surveys conducted on work councillors and union representatives, the resolutions of union congresses, position statements and internal magazines. Furthermore, eight semi-structured interviews with DGB and IG Metall officials at the national and federal level were conducted both by phone and in person between July 2011 and September 2012. Our interview partners were identified through snowball sampling and were involved in the campaigns and in the bargaining rounds on agency work.

5 The Hartz reforms as a turning point for the use of agency work

In 1972 the Temporary Employment Act allowed the use of agency work in Germany, which has been progressively deregulated over the last twenty years. The duration of assignments was extended from a maximum of three months in 1972 to 24 months in 2002. While companies were not allowed to re-hire the same agency workers on agency contracts, a legal provision introduced a one-time exception in 1997. The principle of equal pay was amended in 2002, introducing equal pay only after completing 12 months of assignment (Bundesagentur für Arbeit 2013: 5).

The labour market reforms in 2003 represented a turning point for the use of agency work as they fully deregulated it. They lifted any limitation to re-hiring agency workers on agency contracts and to the duration of their assignment. They lowered dismissal protection for agency workers as they allowed the staffing agencies to employ workers on contracts of the same duration as their assignment at the hiring company. Additionally, since 2003 companies do not need to specify the reason for hiring agency workers. The reforms also re-introduced the application of the equal pay principle from the first day of assignment unless specified otherwise by collective agreement (Bundesagentur für Arbeit 2013: 5).

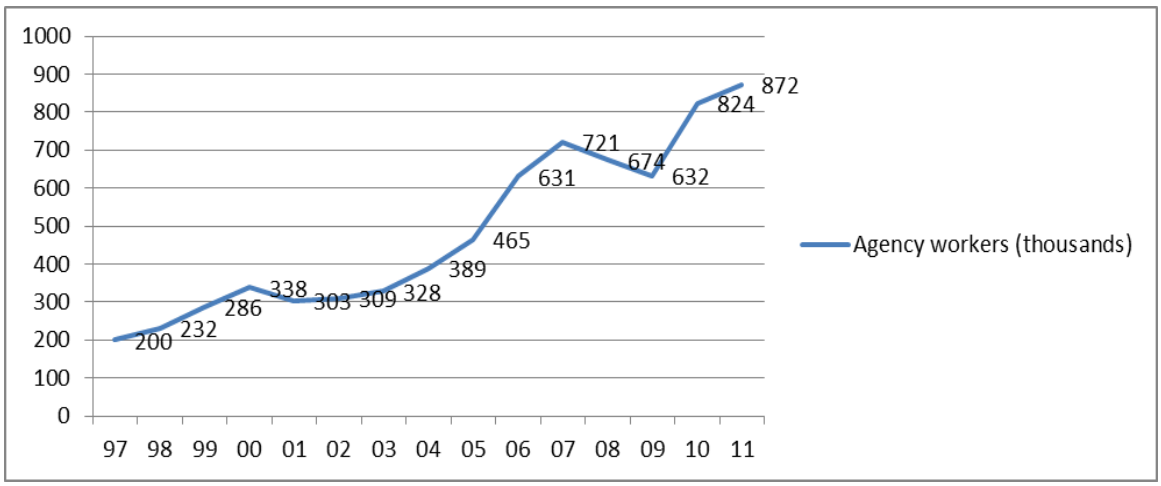
This exception clause opened up opportunities to circumvent the principle of equal pay. To this aim, staff agencies were willing to bargain a collective agreement – which is applied now by more than 90% of the agencies–, and negotiations between the

employers' association and the German Trade Union Confederation (DGB) started immediately after the Hartz reforms were passed (Vitols 2008: 197ff.). The DGB set up a special bargaining body, which substituted the sectoral unions in the negotiations with the two main agencies' associations. However, a third agencies' association started bargaining with the Christian Federation of Trade Unions[37], breaking up the traditional monopoly of DGB unions (Dribbusch and Birke 2012: 6). The collective agreement of the Christian trade unions set low wages and working conditions. Furthermore, the presence of another union and employers' association weakened the bargaining power of DGB unions as it represented for the agencies an exit option from the DGB collective agreement. Eventually, the DGB body signed a collective agreement with the two biggest employers' associations, which reflected the poor outcomes of the Christian unions' agreement. As a result, the pay differential between an agency worker and a regular employee in the metal sector was between 30 and 40% in 2009 (Weinkopf 2009b). As hiring companies pay agency fees, the labour costs are higher than the actual wages for agency workers. However, low wages and the absence of a flexibility bonus – provided for instance by French collective agreements– contribute to maintain the costs under the level of standard workers. Moreover, employers do not have to factor in the "shadow costs" of dismissal when they hire agency workers (Holst, Nachtwey et al. 2010: 110; Seifert 2011: 76).

As Figure 1 shows, agency work dramatically increased after the Hartz reforms. While agency workers amounted to 328,000 in 2003, their number exceeded 700,000 in 2007. Due to the economic crisis in 2008-9, it sharply decreased by 100,000 jobs, but two years later it reached the peak of over 900,000. The rate of agency workers on the whole workforce more than doubled between 2004 and 2011, rising from 1.3% to 2.9% (Bundesagentur für Arbeit 2013: 8).

[37] The Christian unions are renowned for undermining DGB collective agreements, and the special body of the Christian Unions on agency work has been declared as unable to bargain collective agreements since 2003 through the rulings of the Berlin Labour Court and Federal Labour Court in 2011.

Figure 7: Development of agency work in Germany (1997-2011)



Source: (Bundesagentur für Arbeit 2012b)

Regarding the sectoral distribution, in 2012 21% of agency workers were employed in the metal sector (Bundesagentur für Arbeit 2013: 12), making up 5.3% of the sectoral workforce (Gesamtmetall 2012). After the Hartz reforms, the use of agency work has not only increased but also changed its original function of filling in short-term gaps in the workforce. Employers traditionally hired agency workers in response to seasonal production peaks or in substitution for workers on holidays or maternity and sick leave. Thus, short contract tenure and fluctuations due to seasonal cycles characterise this use of agency work (Seifert and Brehmer 2008: 337). However, data show that contract tenure has extended over time: In 2002, 44% of agency workers had a contract longer than three months, while ten years later the figure rose to 54% (Bundesagentur für Arbeit 2013: 18). Moreover, seasonal productive cycles cannot explain the increasing trend, especially since 2003.

In Germany, agency work has often been presented as a stepping stone in the labour market, especially for unemployed people (Hayen 2005: 9; Vitols 2008: 144). However, data on the transition from an agency contract to a permanent position do not fully support this claim. According to the dataset on individual employment histories of the IAB, the transition rate to a permanent contract for individuals who worked in a permanent position for 180 days before getting an agency contract is less than 20%, while 42% remain employed as agency workers. More than half of individuals

employed as agency workers 180 days before the survey date were still hired on an agency contract three months later (Crimmann, Ziegler et al. 2009: 86). According to a survey conducted among works councils in the metal sector in 2007, 16% of the companies had not hired any agency worker on a permanent basis in the previous two years, and almost half of the works councils claimed that only 5% of agency workers were hired on standard contracts after their assignment (Wassermann and Rudolph 2007: 12).

The flexibilisation of the employment relationship affects also the new hires. According to an IG Metall survey which was conducted among more than 5,000 works councils in 2010, the majority of new hires had a temporary agency contract in 43% of the companies, while they were offered open-end contracts only in 15% of the companies. One fifth of the works councils reported that their companies substituted the job positions lost during the crisis in 2008-09 through agency contracts (IG Metall 2010). In support of this evidence, the Federal Government's 10th Report on Agency Work reports that "considering the growth of agency work, it has to be said that these are not always new jobs. Particularly in big firms there are trends indicating the substitution of stable workers through agency work" (10th Report on Agency Work IG Metall 2007a: 16) Also the high percentages of agency workers in some companies suggest that standard positions were substituted by agency contracts. Bellmann and Kühl (2007) analysed the IAB establishment-level panel data, showing that the use of agency work changed: While the percentage of companies using up to 5% of agency workers on the total workforce decreased from 65% to 54% between 1998 and 2006, the number of companies making an intensive use of agency workers (over 20%) more than doubled, increasing from 4.8% to 10.4% (p. 32).

Agency work has been expanding also in workforce segments characterised by middle and high skills. Agency workers are still more likely to be employed for easy and standardised tasks such as at the assembly line or in logistics (Gesamtmetall 2010). However, recent studies have shown that agency workers are hired also in skilled positions and even at the engineering level (Bromberg, 2011; Dudenhöffer & Büttner, 2006: 32ff.). A survey of the metal employers' association Gesamtmetall confirms that in 2010 73% of metal companies had agency workers in production but 21% also employed them in Research & Development (Gesamtmetall 2010). Holst et al. (2010)

and Benassi (2013) found that agency workers in the automotive industry are hired at every qualification level in some companies, and have become a structural component of staff because the core workforce, reduced to its minimum, cannot satisfy the production requirements for normal demand. In this way, the management has built a "security net" for companies, which can quickly reduce personnel costs in case of economic downturns (Holst, Nachtwey et al. 2010: 110).

Even though the evidence is fragmented, it suggests a change from a reactive use of agency work characterised by ad-hoc assignments to a more strategic use, making agency work a structural component of the workforce. The next section shows that the increasing use of agency work changed IG Metall's perceptions of the phenomenon and therefore its strategies towards agency workers.

6. IG Metall strategies towards agency workers

Relying on Heery's typology, we distinguish three phases in the strategy of IG Metall towards agency workers: exclusion, subordinated bargaining and inclusion. Given its dramatic effects on the use of agency work, we identify in the Hartz reforms the institutional change which triggered the re-definition of unions' interests.

6.1 First phase (1972-1996): Exclusion

The refusal of agency work altogether characterises the first phase. Immediately after the Temporary Employment Act in 1972, the DGB publicly advocated a ban on agency work, which was introduced in its statute in 1981 (Hayen 2005: 9). In this phase, the initiatives of the unions focussed on lobbying political actors in order to re-introduce the ban against this form of employment instead of trying to regulate the sector (Vitols 2008: 150). In the 1989 congress, IG Metall deliberated not to sign any collective agreement with staff agencies because that would have weakened the unions' opposition to that form of "modern slave trade" (IG Metall 1992). This radical opposition to agency work had the consequence to leave agency workers unrepresented, as a former

IG Metall secretary in North-Rhine Westphalia explained: “For a long time we (the unions) have been of the firm opinion that agency work had to be banned and therefore we have not taken care of the issue” (Weigand cit. in Mulitze 2006).

Also, IG Metall considered unrealistic to mobilise works councils and the core workforce for enforcing the ban at the plant-level given the low impact of agency work on the workforce in the hiring companies (Bode, Brose et al. 1994: 365; Aust, Pernicka et al. 2007: 243). In this first phase, IG Metall strategy was exclusive and characterised by a *laissez-faire* attitude. Around the mid-1990s, IG Metall realised that politics was never going to support the ban, and was instead progressively deregulating its legal framework. Thus, the request for the ban was cancelled from the DGB-statute in 1996 (Wölfle 2008: 39).

6.2 Second phase (1997-2006): Subordinated bargaining

Given high unemployment levels at the end of the nineties, DGB unions started considering agency work as a useful instrument for re-integrating into the labour market marginalised groups such as elderly people or long-term unemployed. The DGB in North-Rhine Westphalia set up the staff agency “START”, which aimed at facilitating the transition into the labour market of those disadvantaged groups (Vitols 2008: 152). At the same time, unions and agencies signed collective agreements aimed at securing adequate working conditions to agency workers. Together with other unions, IG Metall bargained collective agreements with some major agencies, but the coverage was low and the wages of agency workers were below the salary levels of workers directly employed by the hiring company (Linne and Vogel 2003: 18; Weinkopf and Vanselow 2008: 15).

As unions considered agency work an instrument for job creation, they were more willing to accept its deregulation (Wölfle 2008: 39). In 2002, also under pressure from the Social-Democratic Party (Vitols 2008: 189-193), the DGB agreed to partly deregulate agency work under two conditions: equal pay should be applied and union bargaining power in the agency sector had to be guaranteed and strengthened by law (Aust, Pernicka et al. 2007: 244). The new legal provisions included both requests but

they also allowed the amendment of the equal pay principle by collective agreement. Still, even though the resulting collective agreement *de facto* abrogated equal pay, a union official at the DGB headquarter reported that the bargaining round was considered a success because the agency sector could be partly regulated (DGB official 05.07.2011).

Around the mid-2000s, most works councils had not engaged with agency workers and felt responsible only for the core workforce (Aust, Pernicka et al. 2007: 263). A works councils' survey, which was conducted in 2007 in 80 companies with over 25% of agency workers on the workforce, reports that only 12% of the works councils had developed initiatives specific for agency workers such as special office hours or extra-meetings (Wassermann and Rudolph 2007: 18). According to Promberger's case-study analysis at plant level, works councils were not aware to have co-decisional rights regarding the motivation and the extent of the use of agency workers. Thus, they did not fully exploit their co-determination rights (Promberger 2006: 138ff.). IG Metall was also responsible for their lack of preparation because the union did not provide any specific training for works councils, "leaving them alone for years", as a works councillor in a metal company said (Wassermann and Rudolph 2007: 9).

There are several reasons for this passive attitude towards agency workers. The additional efforts required by their presence exceeded the capacities of many works councils. Even though the reform of the Works Constitution Act in 2001 established that agency workers could vote for works councils after three months of assignment in one firm, the size of works council is still calculated according to the number of permanent workers.[38] This lack of staff resources led works councils to follow a strict interpretation of their representative mandate and to leave the issue of agency work to the union (Wassermann and Rudolph 2007: 26ff.). Furthermore, works councils were not concerned about the presence of agency workers. According to an IG Metall internal research project in the district of Berlin-Brandenburg-Saxony, 75% of the interviewed works councillors rejected the claim that agency work could undermine the working conditions of core workers (IG Metall study reported in Aust, Pernicka et al. 2007: 263).

[38] In March 2013 the Federal Labour Court decided in one case that agency workers should be counted in for determining the size of the works council. This decision is currently object of a lively debate and has not been translated into law yet.

Empirical studies conducted in the mid-2000s found that works councils understood agency work as an instrument for coping with employers' flexibility needs without undermining the working conditions of core workers. According to the above mentioned IG Metall study, the majority of the interviewed works councillors suggested that the main function of agency workers was to secure core workers (IG Metall study reported in Aust, Pernicka et al. 2007: 263). In the works councils' survey conducted by Wassermann and Rudolph, 43% of the works councillors agreed on using agency work as a flexibility buffer while only one out of four shared the DGB position of eliminating agency work. Only one out of three works councillors pursued equal pay and equal treatment as bargaining aims, and only 8% of the workplace agreements signed in those years contained equal pay provisions (Wassermann and Rudolph 2007: 15-24). The qualitative studies reported by Weinkopf and Vanselow show that works councils signed agreements shifting risks and costs from core to agency workers, strengthening the workforce segmentation within the company (Weinkopf and Vanselow 2008: 30). According to an evaluation of plant-level agreements of the Hans Böckler Foundation's archive, the majority of these provisions regarded the organisation of work - such as holidays and shifts - and flexibility arrangements in terms of overtime and work during unsocial working hours. Most of the agreements included a maximum quota for agency workers, specifying that they should contribute to secure the standard workforce. They generally made reference to sectoral agreements for setting the pay and working conditions of agency workers (Zumbeck 2009: 15-40).

In this phase, agency workers were not fully integrated into the IG Metall representative structure. The regulation of agency work was delegated to the DGB bargaining group and was exclusively focused on agencies, both for setting standards and for creating representation structures. IG Metall did not undertake initiatives in hiring companies and left the issue to the works councils, which subordinated its regulation to the interests of the core workforce and accepted managerial cost-cutting strategies at the periphery. Agency workers' representation can be described as subordinated and the first attempts to bargain on their behalf did not raise any major conflicts with employers.

6.3 Changing perspectives on agency work

After the Hartz reforms, works councillors, core workers, and IG Metall started perceiving agency work as an attempt of "conscious creation of cheap workforce" (IG Metall 2007a: 23). IG Metall portrayed the use of agency work as a strategy for weakening collective agreements and workers' representation and for circumventing dismissal protection. According to the IG Metall former vice-secretary[39] Detlef Wetzel, "while agency work in the past has been an instrument for managing production peaks, its character has deeply changed since the Hartz reforms. Agency work is now aimed at establishing a permanent low-wage sector inside the firms" (Wetzel in IG Metall 2008a: ii). This quote from an IG Metall official from North-Rhine Westphalia illustrates these concerns:

> "Our core workers feel threatened by agency work – by the instrument of agency work not by the workers themselves – because agency workers have nothing to lose while our core workers do, as their working conditions have come under pressure. The more agency workers you have (in a company) the more likely employers are to think about challenging the collective agreements for the core workforce".
>
> (IG Metall official 25.11.2011)

Agency workers are often used as benchmark for measuring the performance of permanent employees, because they tend to work harder and at a faster pace in order to be hired on a permanent contract. According to a works councillor of a major automotive company, "agency workers are lured with the promise of permanent hiring so that they outperform stable workers. However, they are not hired. In contrast, core workers are questioned as to why they cannot increase their performance to the agency workers' level" (IG Metall 2007b: 6).

The presence of agency work has a disciplining effect on core workers and undermines their mobilisation potential. A high presence of agency workers affects the effectiveness of labour struggles lowering the impact of strikes on production. Furthermore, stable workers who are afraid of being replaced by agency workers are difficult to mobilise. Qualitative studies showed that core workers in companies with a high rate of agency workers develop a so called "feeling of substitutability" (Dörre in IG Metall 2007a: 8). Indeed, more than half of the 5,000 works councils involved in an IG Metall survey

[39] Detlef Wetzel has become the IG Metall General Secretary in 2013.

claimed that agency work was used in their companies to substitute standard job positions (IG Metall 2008b).

Accordingly, unions agreed on a stronger intervention on the issue (IG Metall 2008b: 15). At the 21st IG Metall congress, the secretary Bertold Huber stated:

"Agency workers cannot be treated worse than the core workforce. We cannot allow agency work to keep creeping into stable jobs. This threatens our collective agreements and us all in the long run. Where we cannot stop agency work, there must be equal pay. For this principle we will stand up - plant by plant. This is what we understand as solidarity!" (Huber 2007).

Even though the government has not been responsive to the requests of re-regulating agency work, IG Metall thinks that there is room for action: "We will not wait until the legislator acts, instead we'll strive together with the works councils inside the companies for better conditions and better regulation until we achieve the 'same wage for the same work'", reported an union official from the IG Metall headquarter (IG Metall official 18.04.2012).

6.4 Third phase (2007-2012): Reorientation and Action

As agency work kept growing, IG Metall started perceiving previous strategies as unsuccessful – especially sectoral bargaining because of unions' lack of bargaining power in the agency sector. Works councils existed only in the biggest agencies such as Adecco and Randstad, and even in those firms the triangular relationship between staff agency, hiring company and agency workers made the organisation of agency workers difficult, as they could rarely enter in contact with their representatives and their colleagues (Vitols 2008: 15; Weinkopf and Vanselow 2008: 26).

Therefore, IG Metall decided to focus its efforts in the hiring companies - where the union still had bargaining power -, and to integrate the issue of agency work into IG Metall's activities at sectoral and at company level (Wetzel 2011). Furthermore, the union understood that the hiring companies determine working standards over the value chain, dictating the conditions for providing services to the staff agencies. Several working groups of standard workers, agency workers and union officials were founded at regional level in order to promote the unionisation of agency workers and to mobilise the works councils in the hiring companies (Weinkopf and Vanselow 2008: 23ff.).

In 2004, IG Metall Berlin-Brandenburg started the initiative "Human Agency Work" and two years later IG Metall North-Rhine Westphalia launched the campaign "Same Work - Same Wage". While these initiatives were local, the real turning point was the 21st IG Metall Congress in Lipsia, which approved the launch of a national campaign. The 2008 national initiative "Same Work, Same Wage" aimed at recruiting agency workers and at integrating them into the traditional structures of representation. The campaign raised awareness among works councillors and union officials about agency work and their responsibilities towards this category of workers. It also built the pressure of public opinion on employers and the government, which were to blame for the working conditions of agency workers. The campaign was conflictual, as "improvements for agency workers will not be given away, they have to be gained through the conflict against employers" (IG Metall 2008a: 20). This strategic choice reflects the new orientation of the union since 2009, i.e. recruitment-oriented, participation-oriented and conflict-oriented (Wetzel, Weigand et al. 2008).

The new strategy was developed at two levels. First, IG Metall focused on collective bargaining at firm and at sectoral level. At firm level, IG Metall provided works councils of hiring companies with information about the legal framework and their co-determination rights in regard to agency work. IG Metall wanted works councils to fully exploit their co-determination rights in order to influence the deployment of agency workers and to achieve equal treatment agreements (IG Metall 2008a: 30). Works councils were also pushed to adopt a pro-active role towards agency workers and to organise them. This implied a deep change for works councillors, who had to understand themselves as the representatives of agency workers as well, even though they are not formally employed by the firm (IG Metall 2009: 15). According to vice-secretary Wetzel, this required the development of "a political and not juridical concept of the firm" (Wetzel 25.09.2008).

Second, IG Metall put efforts into political lobbying for improving legal regulation. This strategy was supported by a confrontative media campaign: Agency work was represented as an unfair strategy of greedy employers, who make profits by producing negative externalities for the whole society and by breaking the social contract characterising the economy of post-war Germany. The initiatives included a campaign

truck which was sent to different German cities, a postcard action which made visible people's support to the initiative, and several bill boards highlighting the wage differentials between agency workers and regular employees and the "trap effect" of agency contracts. These initiatives publicly blamed employers in order to increase unions' bargaining leverage.

A union officer in Berlin-Brandenburg explained how the work with the works councils and the name-and-shame campaign belonged together:

"Many *[works councillors]* let themselves be put under pressure, often they had already experienced layoffs; and hence the mixed calculation: "We can keep our core workers, we are happy to keep this reserve, and if something happens, then…". There still is this little ambiguity. And this is the reason why we need to achieve this awareness […]. We had to publicly blame the whole issue as it has been experienced in the company, with employers' abuses [...]. As works councillor, I am either part of the scandal or of the solution but I am ready to disclose what's going on when such a fundamental scandalisation is taking place". (IG Metall official 06.07.2011)

IG Metall considered the outcomes of this campaign very positive, as declared by the member of the IG Metall Representative Board Helga Schwitzer (2012). After little more than five years, 35,000 agency workers had become members of IG Metall and more than 1,200 firms had signed agreements setting better working conditions for agency workers. The main contractual results were first achieved in September 2010, when the equal pay principle was successfully included in the collective agreement of the steel sector. In May 2012 the new collective agreement for the metal and electronics industry was signed, which contains two important provisions in regard to agency work. First, it strengthens works councils' co-determination rights in hiring companies by defining specific cases in which agency workers can be hired. Second, it sets regulations for securing the permanent hiring of agency workers: If company agreements do not state otherwise, after 18 months of continuous assignment, metal firms have to take into consideration the permanent hiring. After 24 months the hiring is compulsory. The unions bargained in the same year a collective agreement with the agencies' associations. It sets branch bonuses for agency workers in metal companies, which aim to close the wage gap between agency and core workers. The bonuses start from a level of 15% additional salary after six weeks of continuous assignment and increase

gradually up until the level of 50% after nine months (IG Metall 21.05.2012; Schwitzer 2012).

During the crisis the attitude of the union and the works councils towards agency workers changed. The so-called "crisis corporatism" between works councils and management prevented the dismissal of core workers by using short-time working schemes and working time accounts. At the same time, the interests of agency workers were marginalised in the union agenda, as the strategy of labour hoarding implied the massive layoffs of agency workers (Lehndorff 2012: 89ff.). Even though the union set up some counseling services for agency workers and asked to extend short-time work arrangements to them as well, they were mainly used by managers and works councils as a flexibility buffer.

This strategic change was caused by economic contingencies, which affected the structure of opportunities for the interest alignment between labour and management. Still, the renewed bargaining efforts towards agency workers in 2012 demonstrate that the long-term strategic orientation of IG Metall remains the extension of its representation domain to agency workers and the achievement of equal pay. In this latter phase, the attitude of the union towards employers was inclusive and overall conflictual.

7. Conclusions and implications

Given the conflicting accounts of unions' responses to increasing labour market segmentation, this paper has sought to explain how unions define their identity and interests vis-à-vis peripheral workers. While past literature has either focused on union exclusion or inclusion of the peripheral workforce as alternative scenarios, the longitudinal analysis conducted in this paper has considered them as subsequent phases of a strategy in constant evolution; this has allowed exploring the conditions under which unions choose an exclusive strategy that centers on the enterprise-based interests of core employees or an inclusive approach that reflects the ideals of industrial unionism. Here the key factor relates to the strategic options unions have for aligning

their interests with either peripheral workers or management, which proves critical in explaining this strategic choice. These strategic options are, in turn, shaped by changes in the institutional setting, which reconfigure constraints and opportunities for actors.

The empirical analysis has shown that the strategies of IG Metall have shifted over the last 40 years from exclusion to subordination and finally to inclusion of agency workers. In turn, its attitudes towards the management have also shifted away from cooperation toward greater confrontation. In the first two phases, IG Metall mainly focused on core workers' interests. First, IG Metall advocated the ban of agency work and did not commit to its regulation. Successively, advent of differentiated collective bargaining agreements with temporary agencies, the wage gap between agency and standard workers increased. Meanwhile, works councils in the larger core companies increasingly consented to hiring agency workers as a buffer for protecting the core workforce. As agency work was understood as a marginal phenomenon used for managing production peaks, IG Metall did not intervene in the workplace cooperation between management and works councils, thus neglecting the specific interests of agency workers. In other words, IG Metall allowed greater scope for union strategies based on the logics of enterprise-centered employees'representation.

The third phase is dominated by the strategic shift of IG Metall, marked by their campaign that publicly challenged employers and used the media to increase pressure regarding agency workers. The campaign also aimed at recruiting and mobilising agency workers, and pushed local unions and works councils to represent their interests, shifting their appeals to broad class solidarities. This phase is characterised by a conflictual approach towards employers, which indicates diverging interests between labour and employers. Even though the economic contingencies of the global crisis led to a revival of cross-class coalitions at workplace level, IG Metall tried to extend the short-time work arrangements to agency workers and offered them support services; since 2012, agency work has become central again for the union bargaining agenda. Overall, in this latter phase IG Metall strategies aim at including all workers into its bargaining domain, reflecting a shift back toward its identity as an industrial union.

The paper has shown that this strategic change is linked to the perception of possible alignment of interests between the actors. This was shaped by the broader context of

institutional change. In particular, the Hartz reforms represented a "turning point" for employers' use of agency workers. Unions have increasingly perceived agency work as a threat to collective agreements and union bargaining position. As employers' use of contingent work became unacceptable to unions, the interest alignment between labour and the management that supported employers' segmentation strategies in the previous phase eroded. The paper argues that the inclusion of agency workers by IG Metall was driven by concerns regarding the interests of core employees, which were now perceived to be threatened by employers' segmentation strategies. As liberalisation and labour market deregulation undermined even its traditional strongholds, the union enlarged its boundaries of representation in an effort to more effectively represent its constituencies. Table 14 summarises the findings.

Table 14: Evolution of IG Metall strategies towards agency workers (1972-2012)

	First phase (1972-1996)	**Second phase (1997-2006)**	**Third phase (2006-2012)**
Institutional framework	Introduction of agency work but tight regulation	Moderate liberalisation (until 2003)	Full liberalisation
Identity	Prevalence of class (with exclusion of agency workers)	Prevalence of enterprise	Prevalence of class (with inclusion of agency workers)
Union perception of agency workers' function	Residual	Buffer	Substitution
Coalition and alignment of interests	No coalitions	Cross-class coalition (alignment with the management)	Class coalition (alignment with peripheral workers)
Strategy	Exclusion and inaction	Subordinated bargaining	Active inclusion of agency workers
Union boundaries	Core workers	Core workers	Sectoral (including agency workers)

This paper contributes to the broader literature on unions' role in (increasingly) segmented labour markets (i.a. Lillie and Greer 2007; Doellgast 2012; Adler, Tapia et al. 2013). In particular, the findings question the arguments of the dualisation literature, which describes dual labour markets as stable outcome of the institutional compromise between management and labour. The (perceived) competition between standard and agency workers and the following change in the interest alignment make this emphasis

on stability problematic. Liberalisation opens up loopholes employers can exploit for circumventing legal and collectively agreed standards, also in the so-called core of political economies (Doellgast, Batt et al. 2009; Jaehrling and Méhaut 2012). By doing so, in the long run employers challenge the boundaries between core and periphery and undermine labour bargaining power. Under these conditions, the alignment of interests between unions (and their core workers) and the management is not sustainable. The findings suggest that adopting broad working-class solidarities and encompassing bargaining goals might be the only possible way to protect core constituencies under the liberalisation processes all political economies have recently experienced.

Even though the paper focuses only on one case study, the argument seems to apply to other groups of workers, sectors and countries, where unions have engaged with so-called outsiders in response to core-periphery competition. For instance, in 2007, the service union Ver.Di ran a campaign for statutory minimum wages in the postal sector. The campaign aimed at reducing the wage differentials between employees of the former incumbent and those of newly established competitors which put the German Post employees under pressure and instigated a downward spiral in the entire sector because employers used these differences strategically to their favor (Brandt and Schulten 2008: 84ff.). In Finland, unions bargained on behalf of posted workers in order to stop the pressure experienced by their rank-and-file (Lillie 2012: 149); French unions have supported pro-outsiders labour market reforms in order to prevent outsiders from replacing their core constituencies (Vlandas 2013). While the competition between core and peripheral workers has been demonstrated to be a critical variable in the analysis, more research is needed to extend this perspective and thereby explain how variation across countries or sectors - different institutional contexts, production strategies and skill structures are likely to affect employers' strategies and the competition between labour market segments.

CONCLUSION

The present PhD project has analysed the causes of the growth of contingent work and the consequences for labour representation. Over the last twenty years, contingent work has expanded in the labour markets of advanced political economies, contributing to the growth of precarious jobs and of wage inequality (International Labour Organisation 2009; Kalleberg 2009). This phenomenon presents new challenges for the organised labour, which typically represents workers in a permanent employment relationship (Pedersini 2010; Gumbrell-McCormick 2011).

According to the early segmentation literature, contingent work is concentrated in low-skill, service job positions, which lie beyond the traditional labour representation domain. In contrast, permanent employees benefit from representation in the workplace and occupy job positions characterised by complex tasks requiring high skills and experience (Doeringer and Piore 1971; Osterman 1987). However, given the rapid expansion of contingent work in the labour market, some scholars, especially in the US and in the UK, had already started to argue in the nineties that this phenomenon threatened the existence of the stable employment relationship and represented the end of the distinction between core and peripheral labour market segments (Osterman 1996; Cappelli 1999a; Grimshaw, Ward et al. 2001).

In contrast, most analyses of the growth of contingent work in coordinated market economies (CMEs) (for example Austria, Germany, Netherlands and Sweden) have maintained a core-periphery framework. CMEs have more regulated labour markets and stronger industrial relations than liberal market economies (LMEs), and the production model traditionally relies on stable employment and labour-management coordination (Hall and Soskice 2001). Therefore, some scholars have argued that CMEs have been undergoing a dualisation process: Contingent work expands in the increasingly liberalised service periphery while core manufacturing sectors have maintained the traditional characteristics of the coordinated model. According to Emmenegger et al. (2012b), "…outsiders do not directly increase the cost of the insider workforce: this

means that outsiders do not work in the same jobs for less money, they work in different jobs. Hence, two different 'labor market regimes' may coexist alongside each other, one for the insiders and one for the outsiders, as is reflected in the idea of primary and secondary labor markets that are not necessarily merging" (p. 316 f.).

This PhD project began with two initial observations, which are at odds with the "dualisation" scenario. First, agency work has been dramatically increasing in the last ten years in German manufacturing sectors. German manufacturing represents a least-likely case for studying the growth of contingent work because Germany is the CME par excellence and the export manufacturing sectors represent the core of the traditional German model of production, based on a stable specific-skilled workforce and on labour management cooperation. Indeed, many scholars have taken Germany as an example of a dual market economy which has maintained a coordinated manufacturing core supported by a cross-class coalition as both labour and management have a common interest in maintaining a stable specific workforce in the core while keeping the production costs low thanks to the deregulation of services (Eichhorst 2012; Thelen 2012; Hassel 2014). Second, the German metal union IG Metall launched a campaign in 2007 for organising agency workers and bargaining on their behalf. The IG Metall campaign of agency work is a critical case to study because social-movement style strategies addressed to the marginal workforce are typical of unions with declining membership and traditionally weak institutional resources (Baccaro, Hamann et al. 2003). However, IG Metall has a relatively stable membership base among skilled metalworkers and benefits from a social partnership tradition with the management. Indeed, the literature has contended that IG Metall exclusively represents the interest of the core workforce (Hassel 2007).

Thus, the thesis has looked at why and how contingent work, and agency work in particular, has been growing in German core manufacturing sectors to such an extent to become a relevant workforce segment for labour to organise and to bargain for. When looking at labour's reaction to the phenomenon of contingent work, this study has also examined why workers' representatives (unions/works councils) pursue different strategies towards contingent workers and change them over time, with different outcomes. The PhD project has challenged the main approaches to labour market segmentation in CMEs, which fall short in explaining the case of the German

manufacturing sector. First, the existing literature has overemphasised the distinction between a coordinated core and a flexible periphery as well as the stability between these two complementary labour market segments. By so doing, it has neglected the potential development of competition, and even of substitution, between core and periphery, which can undermine the stability of the dual labour market itself and prevent cooperation between labour and management. Second, the assumption of a stable core relies on the concept of "coordination", which is central to the Varieties of Capitalism (VoC) framework. The VoC literature suggests that employers support coordinating institutions (for example unions, collective agreement, or vocational training) because they are fundamental for their competitive advantage on international markets. This framework, however, neglects the power dynamics between labour and management underlying coordinated labour market outcomes. Thus, the dualisation literature finds it difficult to acknowledge and explain trends towards the liberalisation of the employment relationship in traditionally coordinated sectors.

This study has found that labour market deregulation and eroding industrial relations institutions have allowed the expansion of contingent work even among the core workforce. The most relevant institutional changes were the national labour market reforms deregulating the use of temporary work, and in particular of agency work, and the decentralisation of collective bargaining institutions. Interestingly, these institutional changes have previously been interpreted as catalysers of dualisation. On the one hand, labour market reforms which relax the employment protection for temporary workers are usually interpreted as reforms at the margins of the labour market, thus exacerbating the divisions between core and periphery (Hassel and Schiller 2010; Palier and Thelen 2010). In contrast, the present research has found that after the Hartz reforms employers can also use contingent workers in core manufacturing sectors and among the specific skilled workforce.

On the other hand, the proliferation of opening clauses at workplace level shifted the decisional power from unions to works councils, which, following a company-oriented logic, supposedly formed cross-class coalitions with the management in the workplace (Palier and Thelen 2010; Eichhorst 2012). This process contributed to marginalising "peripheral workers" from the labour representation domain. This research acknowledges the ambiguous attitude of works councils but it also shows that

workplace labour representation, even though strong, has limited room for action because of the external pressures for the liberalisation of the employment relationship.

As the institutional limitation on the use of agency work weakened, employers were found to make increasing use of contingent work, especially in routinised job positions and among young skilled workers. In some cases contingent workers were also employed in skilled job positions and for longer periods of time. The growth of contingent work challenged labour representation bodies, which were finding it increasingly difficult to set high and homogeneous standards for the workforce as contingent workers were beyond their bargaining domain. Furthermore, employers also used contingent workers to benchmark the cost and productivity of the core workforce, questioning the standards set by the union for the permanent workforce.

Thus, the German metal union has progressively regulated contingent work and included contingent workers in the union. The union used instruments which usually belong to the repertoire of more conflict-oriented or social-movement oriented unions such as media campaigns and organising strategies. The choice of this approach reflected the difficulty of finding a compromise with the management regarding contingent work. In addition, unions wanted to "scandalise" employers' strategies in the face of public opinion in order to distance themselves from the increasing use of contingent work. This strategy was successful in setting rules regarding pay, working conditions and the transition from temporary to permanent employment; furthermore, IG Metall recruited over 35,000 agency workers. By setting standards at sectoral level, the IG Metall campaign also helped works councils to regain control over the use of contingent work in the workplace, releasing them from pressures for concessions.

The main argument of this thesis is that labour in CMEs will include contingent workers in its representation domain when their presence on the labour market starts threatening the standards and the future existence of the core workforce. Institutional changes liberalising the employment relationship trigger this process because they allow employers' increasing use of contingent work, which slowly erodes the size of the traditional core workforce and develops the competition between contingent and permanent workers. Overall, the PhD project shows that institutional changes

undermining labour cohesiveness and increasing employer discretion affects the whole workforce in the long run by facilitating the casualisation of work.

Each paper has contributed to supporting the main argument by providing the pieces of evidence illustrated above. The first paper has focused on how employers' use of contingent work in core manufacturing sectors has changed since the eighties, looking particularly at the effect of the relaxation of employment protection for temporary workers. The second paper has compared the segmentation patterns between standard workers and agency workers in four automotive plants, exploring the role of works councils in limiting and regulating agency work. The third paper has looked at strategies towards agency workers in the German metal union from the eighties until today, focusing particularly on the IG Metall campaign for agency workers. The next section briefly summarises the content and the theoretical contribution of each paper.

1 Summary of the papers

1.1 Paper 1: Do specific skills lead to stable employment? The role of weakening "beneficial constraints" in German core manufacturing sectors

This paper investigated the relationship between skills, work organisation, and contingent employment contracts in German core manufacturing sectors. Despite the erosion of industrial relations institutions and the deregulation of the use of temporary work, the dualisation literature contends that employers have an interest in retaining specific-skilled workers; therefore, contingent work is not expected to affect core manufacturing sectors but rather to spread in the service periphery of the German political economy (Palier and Thelen 2010; Thelen 2012; Hassel 2014). In contrast, other scholars argue that institutional constraints are also fundamental for ensuring stable employment among the skilled workforce, and their erosion would also lead to the liberalisation of the employment relationship in the core of the German model in the long run (Streeck 2009; Baccaro and Howell 2011).

The paper looked at how the link between stable employment and skill specificity has changed under the erosion of legislative and negotiated employment protections. For the empirical analysis the paper applied a mixed-method approach. The quantitative analysis was based on workers' surveys of the German Federal Institute of Vocational Training and Education between 1986 and 2012. The qualitative evidence relied on interviews with human resource managers and workers' representatives in German automotive and machine tool plants between 2010 and 2013.

The empirical analysis confirmed some expectations of the dualisation literature, as contingent contracts are more common among workers who lack industry-specific vocational training, and the rate of contingent work among this group relative to those with specific skills has increased over time. However, employers' interests in a stable workforce have been overestimated as the (increasing) levels of job routine in core manufacturing sectors have been found to facilitate the employment of temporary workers. Thus, the role of industrial relations is crucial for ensuring stable employment: While works councils still manage to ensure the advancement of skilled workers along the career ladder, labour market deregulation has eroded their ability to control external hiring and the transition of trainees to permanent employment. Indeed, findings suggest that the jobs held by core skilled workers are increasingly vulnerable to casualisation due both to the routine nature of work and labour market deregulation. These findings are compatible with the literature focusing on the role of industrial relations and of work organisation for supporting the linkage between skills and employment stability (Streeck 1991, Jürgens 2004, Marsden 2010, Lloyd, Warhurst et al. 2013).

The contribution of this paper is twofold. First, the paper argues that the traditional "complementarity" between specific skills and stable employment has been overestimated in the literature as employers can use different strategies to bypass it once the negotiated and legislative employment protections have been weakened. Second, it provides new evidence based on individual-level data regarding how the liberalisation of the employment relationship has affected the workforce in core manufacturing companies.

1.2 Paper 2: The political economy of labour market segmentation: The case of the German automotive industry

This paper compared the segmentation between standard workers and agency workers across four German automotive plants. In the period between 2010 and 2012 the plants differed in terms of the proportion of agency workers in the whole workforce, the length of their assignment, their function and their wage level compared to standard workers.

The paper focused on the role of labour in determining different segmentation patterns between standard workers and agency workers in the workplace. The literature on union strategies towards contingent workers does not appreciate the differences at workplace level as it has analysed unions' preferences and strategies only at national or sectoral level (Vandaele and Leschke 2010; Gumbrell-McCormick 2011). In the literature on workplace segmentation, labour strategies and their outcomes are mainly explained through the presence of power resources within the company (Gooderham and Nordhaug 1997; Garcia-Serrano and Malo 2002). This literature has neglected the role of different labour attitudes towards workforce segmentation; furthermore, it has not considered how conditions external to the company can affect labour strategies and their outcomes regarding workforce segmentation (with the exception of Pulignano and Doerflinger 2013).

The empirical evidence relied on interviews with human resource managers and workers' representatives at company level conducted between January 2011 and March 2013; the interview findings were integrated and triangulated through the analysis of company reports, company-level agreements, internal union publications, interviews of works councillors published in union magazines and in the local press, newspapers articles, and the reports of the European Industrial Relations Observatory.

The empirical analysis found that the political and economic context of the plant, the timing of company-level agreements in respect to national labour market reforms and the (missing) support of the national union influenced the bargaining power of works councils' strategies in regard to agency work. Labour power – rooted both in internal industrial relations and in those conditions external to the plant – was found necessary for achieving some regulation of agency work. However, labour power was not sufficient for encompassing agreements covering agency workers. Labour commitment

to a homogeneous workforce, which varied across workplaces even though the same union was involved, made a fundamental difference.

The present study provided an original contribution to the literature because it illustrated how strategies and power interact at workplace level, showing that their interplay was fundamental for understanding different segmentation patterns in the case studies; furthermore, it provided evidence that the labour responses to contingent work at workplace level are influenced by factors external to the company as much as by internal industrial relations institutions (similar to the studies about unions' involvement in workplace change by Locke 1992; Frost 2000 and Pulignano and Stewart 2012).

1.3 Paper 3: Straight to the core — Explaining union responses to the casualisation of work: The IG Metall campaign for agency workers

This paper explained why the German metal union has recently started organising agency workers and including them into its bargaining domain. Existing literature provides different accounts on unions' strategies regarding marginal workers in a context of declining industrial relations institutions. On the one hand, a group of scholars contend that unions prioritise their core constituencies and seek compromises with management (Palier and Thelen 2010; Hassel 2014). On the other hand, a body of research has shown that unions adopt inclusive strategies towards peripheral workers to counterbalance eroding bargaining power (Frege and Kelly 2003; Turner 2009).

Still, there has been little research into the conditions under which unions decide to undertake one or the other strategy. To this aim, the paper conducted a historical analysis of the strategy of the German metal union towards agency workers from 1970s until 2012. The findings illustrated that exclusion and inclusion are subsequent phases of a strategy in constant evolution and identified institutional change towards labour market liberalisation as an important condition for unions' strategic re-orientation because it allows employers to adopt aggressive segmentation strategies threatening the collectively agreed standards for the core workforce.

The paper has argued that both inclusion and exclusion of marginal workers are equally viable strategies for unions in increasingly segmented labour markets. The strategic choice depends on the (perceived) competition between core and peripheral employees related to employers' personnel strategies; this affects the possible alignment of interests between unions' core members on the one hand, and either management or peripheral employees on the other, and ultimately contributes to determining whether unions are going to marginalise or rather organise and represent contingent workers.

The findings do not only contribute to the research on unions' strategies by identifying the conditions and the mechanisms through which union strategies are shifted. They also throw new light on the traditional concept of the dual labour market as a stable equilibrium between primary and secondary labour markets. Liberalisation opens up loopholes employers can exploit for circumventing legal and collectively agreed standards. By doing so, in the long run employers challenge the boundaries between core and periphery and undermine labour's bargaining power.

2 The liberalisation agenda in Germany

The thesis has explained the growth of contingent work through the erosion of industrial relations at sectoral and at company level and the progressive deregulation of the labour market. It has mainly focused on the extent to which unions and works councils could limit the marketisation of the employment relationship under conditions of declining labour power. Given its emphasis on the role of labour, the thesis has paid less attention to two further aspects related to the implementation of the liberalisation agenda in Germany: the sources of the liberalisation pressure and the role of employers in pursuing the liberalisation of the employment relationship. This section discusses the literature dealing with these aspects and how they were treated in the thesis.

2.1 The pressure for liberalising the employment relationship

There is a broad body of research about the origin of the pressure for liberalising the employment relationship in Germany. Existing research has found that the German

model has been increasingly exposed to the globalisation of the product and financial markets. Scholars in industrial sociology and political economy have focused on the liberalisation of financial markets for explaining the increasing short-termism in the employment policies of German companies, which is at odd with the traditional coordinated model (Dörre 2001, Höpner 2001, Holst, Nachtwey et al. 2009, Haipeter, Jürgens et al. 2012, Holst 2012). For instance, Dörre (2001) and Holst et al. (2009) have contended that companies use the flexibilisation of the employment relationship as an instrument for shifting to employees the risks related to their increased financial uncertainty and their dependence on the short-term interests of the shareholders.

Other scholars have focused on changes in the product market, showing that the market niche of the Diversified Quality Production (DQP) has become more sensitive to price competition over time (Jürgens 2004, Herrigel 2010, Baccaro and Benassi 2014, Herrigel 2014). For instance, Jürgens (2004) has argued that the rise of Japanese car producers challenged the German DQP because they could produce cars in the same variety and quality but at a lower cost. Baccaro and Benassi (2014) have showed that the price elasticity of German exports has increased over the last twenty years, pushing employers and the government to deregulate industrial relations institutions (e.g. encompassing sectoral agreements) in order to maintain the competitiveness of German exports.

Not only changes in the demand side but also new developments on the supply side of the labour market have contributed to increase the pressure on wages and working conditions. In particular, the European enlargement has provided German manufacturing companies with cheaper production sites just across the border. Thus, not only significant parts of the production were transferred abroad but the new sites were also used as a benchmark for the production costs in German plants. Under these conditions employers in manufacturing companies could easily obtain concessions from the works councils (Blöcker and Jürgens 2008, Jürgens and Krzywdzinski 2010).

The increasing exposure of the German DQP model to international price competition suggests that there are cheaper alternatives to German products in similar markets, even in the high-end segments German export companies are specialised in. Furthermore, the outsourcing to Eastern Europe (and to production sites even further away) questions the

relevance of the German institutional context for DQP. These trends suggest that there are alternative and cheaper production processes for high-quality products than the DQP model which characterised German manufacturing in the eighties and at the beginning of the nineties: High and homogenous wages, stable employment relationships, high and specific skills and complex work organisation (Kern and Schumann 1984, Sorge and Streeck 1987, Streeck 1991).

Since the nineties the improvement of Germany's competitiveness on international markets has served as justification for employers' restructuring strategies in the manufacturing sector. The credible threat of outsourcing favoured the diffusion of concession bargaining regarding wages and working conditions for core workers and the use of subcontractors both offsite and onsite. Thus, German manufacturing companies have experienced dramatic restructuring measures since the nineties, such as the introduction of lean production management techniques and the increasing use of cheap subcontractors (Springer 1999, Jürgens 2004, Doellgast and Greer 2007).

Furthermore, the imperative to save Germany as production site contributed to create a general consensus about the necessity to make the German labour market more flexible through the reform of industrial relations institutions (Upchurch 2000). The literature has shown that between the end of the Nineties and the beginning of 2000s a neoliberal consensus dominated the public opinion and the programmes of the main political parties, including traditional labour allies such as the Social Democratic Party. Indeed, the SPD Prime Minister Schröder launched the controversial neoliberal package of reforms "Agenda 2010", which included also the Hartz reforms (Seeleib-Kaiser and Fleckenstein 2007, Bruff 2008, Fleckenstein 2008). This shift towards a neoliberal consensus was traced back to the influence of the UK model on German policy-making (Seeleib-Kaiser and Fleckenstein 2007, Fleckenstein 2008) and to the lobbying initiatives of employers – such as the New Social Market Initiatives, which advocated the implementation of neoliberal labour market reforms (Kinderman 2005, Bruff 2008).

In the thesis the outsourcing threat and the active role of government in deregulating the labour market have been taken into account as factors shifting the balance of power in favour of employers. In particular, the second and third paper have emphasised the importance of these factors for understanding the bargaining dynamics between labour

and management. The papers have shown the weakness of works councils' bargaining position against the local management as they face the trade-off between protecting the standards of the core workforce and regulating the employment of agency workers.

This thesis has provided a further piece of evidence in support of the claim that high-quality products are not necessarily associated with high-road practices by showing that cheap and flexible workforce can be used also in the companies' core without impairing product quality or company's productivity. The second paper has shown that four plants can produce similar final products with very different rates of agency workers, which depended on the plant-level bargaining dynamics rather than on production requirements (e.g. skills). The BMW plant in Leipzig, which produces the luxus car BMW-1, was the extreme case with 30% of agency workers also among skilled workers. Furthermore, the first paper has shown that in German core manufacturing companies skilled workers have become more affected by temporary contracts, especially young workers in the transition period between vocational training and permanent employment. The employment of temporary workers is facilitated by the routine nature of work, which characterises job positions in core manufacturing sectors to a higher extent than the narrative of the DQP model would suggest. These findings are compatible with research on qualification and work organisation, which has pointed at trends towards the "Taylorisation" of work in German manufacturing companies, also among the specific-skilled workforce (e.g. Springer 1999, Lacher 2001, Lacher 2006).

To sum up, the increasing competitive pressure on German companies, the reforms liberalising industrial relations and labour market institutions, and the opening of new outsourcing opportunity in Eastern Europe are not a matter of inquiry of this thesis but they are taken into consideration as factors contributing to put under pressure the stable employment relationship and labour representation at workplace and at sectoral level. In addition, the thesis has shed some lights on the reasons why DQP is not sheltered anymore from price competition by showing that also low-road human resource practices can be implemented in the production of high-quality manufacturing goods. The next section explores further this matter by looking at the employers' attitudes regarding the so called "beneficial constraints" leading to DQP (Streeck 1991), such as labour market legislation and collective agreements at company level and at sectoral level.

2.2 Employers' strategies

The attitude of German manufacturing employers regarding industrial relations institutions is very controversial in the literature. According to the VoC literature, they should support the institutions of industrial relations and even shore them up in case of erosion because these institutions are the source of comparative advantage on international markets (Soskice 1999, Hall and Soskice 2001). The historical institutionalist perspective does not expect German employers to leave the path designed by existing industrial relations institutions either (Thelen 1999), and, indeed, some scholars have contended that German manufacturing employers still support the system of sectoral collective bargaining and are still committed to stable employment (Hassel 2014, Thelen 2014).

However, existing literature has found German employers to publicly lobby for labour market deregulation and for the decentralisation of collective bargaining (Kinderman 2005, Menz 2005). Furthermore, at manufacturing companies have been progressively leaving the sectoral employers' association (Silvia 2010). At workplace level, German employers have been found to use subcontractors in order to avoid collective bargaining agreements (Doellgast and Greer 2007, Helfen 2011) and to make broad use of opening clauses which amend the standards set through sectoral agreements (Seifert and Massa-Wirth 2005, Haipeter 2011).

This thesis has found evidence in support of the latter body of literature. In the interviews human resource managers openly appreciated the employment of agency workers because they are cheaper than manufacturing workers on standard employment contracts and can be easily dismissed without redundancy costs. In other words, the use of agency work is seen as an instrument for avoiding employment protection legislation for standard workers and metal sectoral agreements.

The interview with two Gesamtmetall representatives provided an overview of employers' motivations for using agency work. One of the interview partners explained that agency work responds to employers' flexibility needs primarily by giving them the freedom of hiring and firing: "In the crisis this was the most important sign of

flexibility: You could reduce the number of agency workers without any problem" (Gesamtmetall official-1 23.04.2012). Furthermore, agency work is an instrument for keeping labour costs low. According to the same Gesamtmetall official, companies reported to the employers' association that they use agency work in order to achieve such a wage level that allows them to keep their production in Germany. Otherwise they would have to outsource their production abroad because the salaries are too high in Germany for "easy jobs".

While the previous statements suggest that agency workers constitute a volatile workforce segment which occupies unskilled positions, the Gesamtmetall official openly acknowledged that companies also tend to hire the same agency workers from the staff agencies, who, in this way, do not need training and can productively work also in skilled positions because they are already familiar with the company's practices and with the machines. The first paper has also reported about other employers' strategies aimed at avoiding legal employment protection without slowing down productivity such as hiring trainees on temporary contracts in the transition between apprenticeship and permanent employment.

Interestingly, the Gesamtmetall interview partners did not think that the regulation of agency work would prevent employers from using employment practices aimed at avoiding the national and sectoral standards of employment protection, wages and working conditions. According to one Gesamtmetall official, "the idea 'I achieve the regulation for agency work and after that all agency workers will be hired permanently'[40] is naive. The companies would just look for other options" (Gesamtmetall official-1 23.04.2012). The only type of regulation which seemed to worry the Gesamtmetall officials was the increase of codetermination rights in regard to agency workers because works councils "are responsible for the company and not for the agency workers and there would be great conflicts" in the companies if the regulation passed. Ironically, at the end of May 2012, only one month after the interview, IG Metall achieved a sectoral collective agreement setting greater codetermination rights for works council regarding the hiring of agency workers.

[40] The Gesamtmetall official made this example because at the time IG Metall and Gesamtmetall were negotiating the metal sectoral agreement containing provisions for the permanent hiring of agency workers.

The findings from the interview with the Gesamtmetall officials clearly indicate that companies do not necessarily follow the behavior prescribed by industrial relations institutions, as the VoC literature would expect (Hall and Soskice 2001). In contrast, they actively look for solutions which allow them to avoid existing regulatory institutions (Doellgast, Batt et al. 2009, Jaehrling and Méhaut 2013).

The thesis has also offered some insights regarding employers' attitudes towards legal and negotiated limitations to the use of agency work, which seem to reflect the ambiguity of Streeck's concept of "beneficial constraints". In the case studies, employers never took the initiative for negotiating agreements on temporary work, which was, instead, an outcome of unions' bargaining efforts. However, once the limitations were in place (some) employers seemed to appreciate the importance of a stable skilled workforce for the production, even though with some reluctance.

The human resource managers involved in this study explained that the companies' works councils were responsible for the achievement of regulation. According to a VW human resource manager, the works council's primary motivation was that it did not want agency work to replace permanent positions (MGMT 09.07.2012). Indeed, employers did not see great obstacles to the employment of agency workers, and temporary workers in general, both in unskilled and skilled positions, as discussed also in the first paper. For instance, a Ford human resource managers explained that, as agency workers "are also qualified *Facharbeiter,* they can be employed almost everywhere" in the company (MGMT 07.08.2012). A BMW human resource manager explained that the use of agency workers and subcontractors depends on the considerations of the company regarding the core business. However, the decision regarding the definition of core business is dependent on the economic conditions of the company and is taken each year so workers who were considered as core one year could be hired on agency contracts or transferred to a subcontractor the following year if the company's economic conditions required their business unit to save personnel costs (MGMT 11.09.2012).

The case study of the Ford plant, which is the best regulated among the plants covered by this study, provides some evidence regarding employers' ambiguous attitude towards the regulation of agency work. The Ford plant has an agreement which limits the use of

agency work to 3% in direct production, and can be extended up to 8% only when two production lines (dedicated respectively to an old and a new car model) are running parallel for a limited time period. The Ford managers did not openly complain about the agreement and one of them rather suggested that, overall, the management was happy about it because it ensured "social peace" in the company (MGMT 31.08.2012). Furthermore, even though the Ford manager stated that agency work can be potentially used in every job positions (see citation above), he also believed that the employment of high rates of agency workers in the company could make the production more difficult because "the more agency workers I take on board the less possible work organisation arrangements such as teamwork become" (MGMT 07.08.2012). At the same time, however, the same manager also thought "that in some situations it would actually not be bad to take on board some more agency workers". The works council as well reported that the management would be favourable to increase the proportion of agency workers (WC-1 19.04.2012; see paper 2).

To sum up, the Ford example suggests that employers, when faced with strict regulation of agency work and a determined works council, try to make the best of it and even acknowledge the advantages of a stable workforce. However, the interview findings have also shown that employers are reluctant to regulate the phenomenon even under the pressure from union's side and adopt different strategies in order to circumvent existing regulation. Furthermore, the increase of employers' use of agency work right after the Hartz reforms, which has been broadly discussed in the thesis, suggests that employers opt for market-based employment practices when weak institutional regulations and labour representation cannot set limits to employers' action (see also the discussion in section 3.3 and 4.2).

3 A critique to Varieties of Capitalism from a power resource perspective

This section illustrates the position of this thesis in the broad academic debates about the dynamics underlying different models of capitalism and their trajectories of change. It illustrates and discusses the points of criticism regarding the approach of Varieties of Capitalism and the dualisation literature, which have been raised in the thesis and underlie its theoretical contribution (see section 4). The thesis has applied a power

perspective to the study of contingent work and of labour responses, showing that the power resource approach has greater explanatory power for the phenomena of interest than the VoC framework and the dualisation literature. After briefly presenting the approach of Varieties of Capitalism, this section illustrates the points of criticism: This thesis has contended that the VoC framework is too deterministic in regard to actors' behaviour and national trajectories of change. Therefore, the VoC approach and the dualisation literature, which relies to a great extent on the VoC framework, are argued to neglect the conflict of interests and the power relations between labour and management characterising political economy institutions.

3.1 The approach of Varieties of Capitalism

The trajectory of change of capitalist economies has been object of academic debate since the seventies. A group of scholars expected that economic factors such as technological change, deepening regional integration and increased capital mobility and international trade would lead to the convergence of national systems on a liberal market economy model (Bell 1973; Baumol, Blackman et al. 1989; Verspagen 1991). In response, other scholars contended that countries would maintain and even strengthen their institutional differences in terms of labour markets, industrial relations and welfare institutions because they constitute a source of comparative advantage on international markets (Streeck and Katz 1984; Maurice, Sellier et al. 1986).

Building on the insights of the second literature strand, the Varieties of Capitalism framework presented itself as an alternative to mainstream economic approaches which neglected the role of national institutions and politics in the study of national economic development. The VoC framework suggests that countries can be categorised along the well-known dichotomy between Coordinated Market Economies – such as Germany and Sweden - and Liberal Market Economies – such as the UK and the US; and that both models can be equally successful on the global markets by specialising in different products and services. These ideal types are defined along their differences in the institutional arenas of industrial relations, corporate governance, training, labour market regulation, and interfirm relations. These arenas are interlocked through institutional

complementarities, which guarantee the coherence and efficiency of the political economy as a whole (Hall and Soskice 2001, Hall and Gingerich 2004).

The firm, which is the central rational actor in the VoC approach, interacts with actors such as unions and other companies within the given institutional environment. This interaction leads to institutional reproduction because social actors, in particular firms, are aware that the institutions constitute the source of comparative advantage of their national economy on international markets. Therefore, firms are not only interested in maintaining the existing institutional arrangements but they would also re-build these institutions if they were eroding (Soskice 1999, Hall and Soskice 2001). For instance, Soskice (1999) expects employers in CMEs to shore up the collective bargaining system in case unions were losing their bargaining power.

As a result, neither CMEs nor LMEs are expected to change but rather to strengthen their distinctive institutional characteristics. Also the so called mixed market economies are expected to change in the direction of the coordinated model or the liberal model. These political economies, such as France and Italy, are not reducible to one of the two ideal types because their institutional arenas reflect a mix of the characteristics of CMEs and LMEs. For this reason, VoC scholars consider these economies as dysfunctional because the incongruence among the institutional spheres impairs the overall efficiency of the economy by hindering the development of institutional complementarities. Thus, social actors in mixed market economies are expected to change their institutions in order to make the national political economy converge either on the coordinated or on the liberal model (Hall and Gingerich 2004).

3.2 From institutional determinism to "creative" action

The approach of Varieties of Capitalism has been widely criticised (see for a review Hancké, Rhodes et al. 2007, Hancké 2009). Some scholars have argued that there are more than two possible models of capitalism, which can be equally successful on international markets and do not need to converge on either the liberal or the coordinated model (Amable 2003, Schmidt 2003, Nölke and Vliegenthart 2009). Other scholars have pointed out aspects which have been neglected by Varieties of Capitalism,

such as the role of the state for ensuring coordination (Schmidt 2006) or the gender dimension (Estevez-Abe 2006). The focus here is on those works who have defined the VoC approach as too static and deterministic, a criticism supported by the findings of the thesis (Crouch and Farrell 2004, Thelen 2009: 474, Mahoney and Thelen 2010: 6). According to the VoC approach, employers (and labour) follow the behaviour prescribed by the institutions because these lead to the maximisation of their interests by guaranteeing their comparative advantage on international markets. Thus, social actors have no interest in changing the status quo and continue reproducing existing institutions by following the same pattern of behaviour.

Because of its institutional determinism, VoC cannot explain institutional change because the theory does not expect institutional equilibria either in the coordinated or in the liberal model to be undone (Pontusson 2005: 165). Some scholars have suggested that institutional change might take place as a consequence of changes in the broader political and economic context such as an economic or a political crisis. Changing external circumstances can cause shifts in the power and preference of actors and/or make other institutions more relevant than others (Thelen and Steinmo 1992: 16 f., Thelen 1999: 383, Crouch and Farrell 2004: 6). The new circumstances do not necessarily lead to abrupt change but they might favour endogenous change, which is an incremental process of change taking place through the everyday (non)enactment of institutions. Thus, actors themselves are the initiators when they do not fully adhere to the pattern of behaviour prescribed by institutions. Even though the process of endogenous change is incremental, it can be deeply transformative in its outcomes (Streeck and Thelen 2005, Hall and Thelen 2009).

While the VoC literature has contended that actors would respond to external changes by strengthening the institutional coherence of political economy systems, other scholars have suggested that actors would rather use institutions in "creative ways" in response to these changes (Crouch 2005, Streeck and Thelen 2005, Wood and Lane 2011). According to this perspective, institutions should be interpreted as resources social actors can employ in different ways rather than as structures of opportunities and constraints (Wood and Lane 2011: 11). For instance, Crouch (2005a; 2005b) has argued that political economies are incoherent institutional systems which are characterised by institutional inconsistencies and redundancies. These can become important when

external circumstances change and actors choose to use institutional resources which they had not taken into consideration before. Similarly, Jackson (2005) has pointed at the multifaceted aspect of institutions in his study on German workplace codetermination, and has found that institutions are ambiguous or poorly enforced and therefore actors can reinterpret them contextually or circumvent them.

A recent body of literature has emphasised the role of agency for explaining different segmentation patterns across countries and sectors, which VoC is unable to make sense of. These works have shown that the strategic action of unions and employers at sectoral and company level is determinant for understanding how institutions work and the outcomes they produce. On the one hand, the dualisation literature has suggested that a reconfiguration of actors' constellations took place in CMEs, leading to new coalitions of interests which changed the way in which institutions perform (Zientara 2008, Thelen 2009, Peng 2012, Hassel 2014, Thelen 2014). Recent works on Germany and France have suggested that a cross-class coalition between business and unions in manufacturing formed under the competitive pressure of globalisation and the erosion of industrial relations institutions at national level. This producer coalition is supposed to still support the coordination in the core of the model, while the service periphery is deregulated in order to maintain the cost competitiveness of the export sector. This new model implies that the industrial relations institutions and labour management cooperation typical of coordinated economies still exists in the core but the institutions of industrial relations do not deliver egalitarian outcomes as they did in the past (Thelen 2009, Hassel 2014, Thelen 2014).

Other scholars have pointed out that institutions represent a system of rules employers try to avoid, exploiting their loopholes and their exit options. These works focus on the gap between institutional rules prescribing certain behaviour, their enactment and their outcomes. In particular, employers were found to purposely avoid existing institutions such as employment protection and collective agreements (Doellgast and Greer 2007, Doellgast, Batt et al. 2009, Shire, Schönauer et al. 2009, Sørensen and Weinkopf 2009, Bosch, Mayhew et al. 2010, Jaehrling and Méhaut 2013). For instance, Jaehrling and Méhaut (2013) found that employers in retailing, hospital and hotels in France and Germany contributed to the erosion of collective bargaining institutions by making broad use of atypical contracts which are not covered by sectoral agreements on wages

and working conditions. At the same time, this research strand has also contended that unions can counteract employers' strategies of "institutional avoidance" by using existing industrial relations institutions in innovative ways (Greer 2008, Doellgast, Batt et al. 2009, Turner 2009). For instance, Doellgast et al. (2009) found that unions in European call centres adopted social-movement style strategies such as campaigns or coalitions with external actors in order to prevent outsourcing and subcontracting.

This thesis shares the criticism that VoC is too deterministic. By adopting a micro-level perspective on the growth of contingent work and on labour responses to this phenomenon, the thesis avoids "the fallacies of economic functionalism" of the VoC approach and examines instead actors' strategies within the institutional context (Streeck 2009: 3 f.). The thesis has contributed to the latter research strand by providing evidence that employers, even in core sectors of CMEs, are willing to and able to avoid existing industrial relations institutions by making use of agency work (see discussion in section 2). Furthermore, it has also suggested that labour actors can decide, under certain constraints, to use industrial relations institutions in different ways. The second paper has shown that works councils can use their codetermination rights either for excluding agency workers or for bargaining agreements aimed at improving their wages and working conditions. Similarly, the third paper has illustrated that the IG Metall responded to the labour market deregulation at national level by shifting its strategies towards agency workers from exclusive to inclusive. Through initiatives for raising the awareness of works councils, IG Metall managed to include provisions in favour of agency workers in company-level agreements; at the same time, media and organising campaigns contributed to revitalise the IG Metall bargaining structure by enlarging the union representation domain.

3.3 Uncovering the conflict dimension

The determinism of VoC has led to neglecting the politics underlying political economy institutions because the emphasis on institutional complementarity and actors' coordination does not allow accounting for conflicts of interest about the institutional status quo (Howell 2003: 110, Pontusson 2005: 164 f.). The VoC approach assumes actors to rationally agree on certain institutional arrangements and to reproduce them by

following the prescribed pattern of behaviour just because these arrangements were found ex post to provide comparative advantages to national political economies, thus contributing to the overall societal welfare (Howell 2003: 111). In this framework, actors do not have any incentive to undermine the existing institutional equilibrium and therefore the VoC framework cannot explain why and how institutional change takes place (Pontusson 2005: 165).

Scholars in the research tradition of historical institutionalism have acknowledged the conflict of interests underlying existing institutional arrangements, suggesting that some actors would defend the existing institutions while others would push for change, when they are aware of better alternatives (Hall and Thelen 2009: 27). Thus, institutional change is interpreted as the outcome of compromises among actors in certain institutional arenas (Mahoney and Thelen 2010: 8), and the resulting institutions are expected to stay in place as long as "they serve the interests of relevant actors" (Hall and Thelen 2009: 11). The historical-institutionalist perspective has suggested focusing on actors' preferences for explaining the direction in which institutions change and the form they take (Steinmo and Thelen 1992, Thelen 1999, Katznelson and Weingast 2005).

The coalitional approach to the analysis of institutional change has built on this perspective and it has looked at how different actors cooperate in order to build and to maintain certain institutional arrangements (Windolf 1989, Swenson 1991, Iversen 1996, Palier and Thelen 2010, Hassel 2014, Thelen 2014). The coalitional approach has disaggregated the interests of state actors and employers, which seem to be collapsed in VoC[41], and the interests of different components of the workforce. In particular, it has distinguished between the interests of "labour market insiders", who are full-time permanent employees in well-established manufacturing industries, and the interests of "outsiders", who typically are service employees and therefore more exposed to flexible jobs and unemployment. Given the increase of competitive pressure and the retrenchment of the welfare state, the preferences of labour market insiders, represented by unions and social-democratic parties, move away from working-class interests and become compatible with the preferences of employers, who want to reduce the production e.g. by undercutting the labour periphery while retaining their core skilled

[41] Howell 2003: 110. See next section 3.3.

workers. This converge of preferences between employers and labour in manufacturing leads to a process of dualisation between core manufacturing and service periphery, which takes place in continental market economies, where unionisation and bargaining coverage is uneven between the manufacturing and the service sector and therefore the interests of service sector workers can be easily marginalised (Palier and Thelen 2010, Thelen 2012, 2014).

The main difference between VoC and the new coalitional approach is that preferences in the rational institutionalist approach of VoC are exogenous and fixed while preferences are formed endogenously according to the historical institutionalist perspective (Steinmo and Thelen 1992). However, the understanding of institutions as outcome of compromises between actors with endogenous preferences has the same bias as the rational-institutionalist perspective of VoC because both approaches suggest - to put it bluntly - that certain institutions are in place because relevant actors want them to be. As a consequence, the historical institutionalist literature has suggested the existence of relatively stable institutional equilibria between core and periphery of political economies even though it has emphasised that they are the outcome of political processes of coalition formation.[42] The constellation of actors supporting the institutional equilibrium might shift if there are significant changes in the external conditions of the political economy or in other institutional arenas (Hall and Thelen 2009: 11, Thelen 2012: 152 f.).

In contrast, scholars adopting a power resource approach have pointed at the conflicts underlying the institutions of national political economies. Among others, Streeck (2009) has contended that the institutional configuration of markets can be understood as a product of the continuous conflictual interplay between societal attempts to regulate it through collective institutions and capitalist actors' attempts to undermine regulation for individual economic advantage (p. 4). Thus, employers are expected to push for the deregulation of industrial relations and labour market institutions, which constitute constraints over market forces, rather than to cooperate with (parts of) labour in order to maintain the coordinating institutions.

[42] See Baccaro and Benassi (2014) for a detailed discussion on the concept of "institutional equilibrium".

However, even though Streeck has pointed at the importance of societal conflict for understanding change in capitalist economies, his work does not put at the centre of the analysis the "struggle between capital and labour" to which "industrial relations is the core battleground", which is at the heart of Marxist approaches to the study of political economy institutions (Coates 2014: 26). Marxist scholars have highlighted the tension between capital and labour, which is intrinsic to capitalist production, in order to understand the functioning and the evolution of capitalist economies. In particular, they have combined the study of class relations with a macro-perspective on the type of national accumulation regime and on the interconnections between capitalist economies (Coates 2005: 22 f.).

The emphasis on the conflictual relationship between labour and capital questions the concept of institutional equilibrium and rather points at the intrinsic instability of institutions in capitalist economies (Coates 2005, Jessop 2014). According to Jessop (2014), institutions rely on an "unstable equilibrium of compromise" or "on open use of force" and are set in place in order to secure the conditions for capitalist production by postponing the class conflict. However, institutions "cannot prevent social conflicts from overflowing them" (p.50). Also the analysis of the linkages between internal institutional settlements and the international capitalist system, which is characterised by increasing competition and prone to crises, contributes to building a dynamic framework for the study of political economies and their evolution. Indeed, the frequent shifts in the global capitalist system lead to changes of internal settlements between labour and capital as well (Coates 2014: 25; see also next section).

This thesis has provided evidence in support of the power resource approach by showing that employers have different interests than unions and that cross-class compromises are unstable. It has contended that employers' strategies which challenge existing institutional arrangement in order to pursue the maximisation of their profits undermine the (already) shrinking basis of labour power in the long run (see section 2). The first and second paper have questioned the extent to which employers have an interest in retaining core skilled workers, which constitutes the basis for the compromise with manufacturing unions according to the coalitional approach. In addition, the second paper and particularly the third paper have illustrated that a coalition of interest with the management can only be a phase of the unions' strategies towards marginal

workers. By analysing the IG Metall strategies towards agency workers since the Seventies, the third paper has shown that a coalition of interests was detrimental to the interests of labour as a whole because it allowed the expansion of contingent work, which threatened the standards of the core workforce and so the power basis of IG Metall. Therefore, the union strategies shifted from cooperative (with the management) and exclusive (towards contingent workers) to conflictual and inclusive, rebuilding a united labour front against employers' interests.

3.4 The relevance of power relations

The Varieties of Capitalism and the coalitional approach to institutional change neglect the power dimension for explaining institutional change and the resilience of institutions in the core of political economies. The VoC literature contends that the reproduction of institutional arrangements and the outcomes for workers are the result of voluntary coordination between labour and management, who both rationally pursue their interests. Thus, in coordinated market economies, employers voluntarily coordinate with labour and support stable employment and encompassing collective agreement setting high and homogeneous wages for large segments of the workforce (Soskice 1999, Hall and Soskice 2001).

The dualisation literature has acknowledged that employers' coordination with labour depends (also) on the extent to which labour presence represents an unavoidable hurdle employers have to organise around (Thelen 2012: 155). While sectoral unions in the manufacturing sector are still considered strong, in the service sector employers do not support coordinating institutions because unions are too fragmented and weak to constitute an obstacle to employers (Palier and Thelen 2010, Hassel 2014, Thelen 2014: 47). Still, the dualisation literature has not interpreted the dynamics of institutional change as an expression of the societal conflict along class lines (Thelen 2012: 155). The analysis has focused on the political dynamics among labour and management in core manufacturing sectors, who are key actors in the process of institutional change. In these sectors unions' interests are seen as overlapping with those of employers, who also want to maintain encompassing bargaining institutions for their skilled employees (Thelen 2014: 47). Thus, the power balance in core sectors becomes almost irrelevant to

the analysis as both sides of the production process strive for the same goals. Even though the dualisation literature tries to take into account the role of power more than VoC, its coalitional approach ultimately emphasises actors' preferences for explaining different trajectories of institutional change and institutional outcomes in coordinated economies.

Power-based explanations are, instead, central to the critical approaches of the study of capitalist models and their trajectories of change. The diversity of capitalist models is studied (also) looking at dimensions such as the level of institutionalisation of class compromise (Pontusson 2005) and the role of labour for the national economic performance (Coates 2000). Furthermore, as the power resource approach acknowledges that labour and management have different interests regarding the regulation of the sphere of labour markets and welfare state, it can focus on "the power balance among political-economic actors", which " provides the most obvious point of departure of an explanation of why institutions and policies change in a particular direction" (Pontusson 2005: 165). Thus, the power resource approach is more sensitive to the (changing) constraints under which labour actors operate.

First, the scholars of the power resource approach who are closer to the Marxist tradition take into consideration in their analysis that labour is structurally disadvantaged in capitalist economies because of the power asymmetry which characterises the relationship between the employer and the individual workers (Offe and Wiesenthal 1985, Coates 2000: 103). Industrial relations and labour market institutions can only partly address the power imbalance between labour and capital (Coates 2000: 103) and they exist because labour pushed for them against the interests of capital (rather than as an outcome of employers' coordination) (Korpi 1983, Coates 2000, Korpi 2006).

Second, as Pontusson (1995, 2005) suggests, the form and functioning of political economic institutions should be studied as shaped by economic action in order to better understand the "systemic power of capital" (Pontusson 1995: 120). For this reason, scholars study national political economies embedded in the big picture of global capitalism, showing that common trends at the international level "corrode the viability of particular internal settlements between classes" (Coates 2005: 20 f.). For instance,

Coates' analysis of different capitalist models considers the interchange between national economies, showing that the increasing competition between "capitalist enterprises in a context of globalised labour" has been leading to a deterioration of workers' outcomes in all national economies, even in coordinated (or trust-based) models of capitalism (Coates 2000: 260). These findings are compatible with the works by Streeck (2009, 2010), Baccaro and Howell (2011) and Baccaro and Benassi (2014, forthcoming), who contend that advanced national economies have been showing a common trend towards wage deterioration and higher inequality.

Third, the power resource approach criticises the thin role assigned to the state by the VoC literature, which considers the state as the executor of employers' interests by providing and maintaining the conditions for national comparative advantage (Jessop 2014: 52).[43] In contrast, according to the power resource approach the state is not a neutral actor driven by efficiency considerations but rather constitutes "a terrain upon which different political forces attempt to impart a specific strategic direction" (Jessop 1990: 268). State action is fundamental for setting up institutions which constrain the markets and, therefore, limit employers' liberalising strategies; or, for lifting these constraints and leaving social actors to voluntary coordination (Jessop 1990: 268 f., Jessop 2002: 110 f.). Streeck's argument (2009) on liberalisation in Germany ascribes a similar role to the state: He defines liberalisation as a shift from Durkheimian to Williamsonian institutions, which takes place as the state increasingly delegates to the private sphere and withdraws from its role as rule-maker and rule-enforcer so that institutions lose their ability "of subjecting economic actors individually or collectively to social obligations and public responsibilities" (p.157). From these observations, it follows that the balance of power between labour and management is greatly sensitive to the role the state takes in the economy, either as regulator or as "liberaliser". Coates (2000) clearly illustrates this point in his narrative of the class struggles and of the union decline in the UK, when the conservative government headed by Margaret Thatcher started its anti-union offensive, reduced the size of the public sector and of welfare provisions (p. 86-94).

[43] Some works in the dualisation literature acknowledge the role of the state, which distinguishes continental European economies from Scandinavian economies. In Scandinavian countries the state plays a bigger role in the labour market (e.g. as employer) and therefore contributes to more solidaristic workers' outcomes (Martin and Thelen 2007, Thelen 2014).

This thesis is critical in regard to the concept of voluntary labour-management coordination in core manufacturing sectors advanced by VoC and by the dualisation literature. The thesis has questioned the extent to which production requirements and employers' interests in retaining skilled workers can explain the (expanding) use of contingent work (see paper 1 and 2). Furthermore, it has shown that labour power resources are fundamental for ensuring employers' compliance with industrial relations institutions and, in the specific case, with sectoral wage agreements and employment protection legislation. In conceptualising the power balance between labour and management, the thesis has not only looked at the industrial relations institutions at workplace level but it has also included external economic dynamics – such as local unemployment rate and the outsourcing pressure. As discussed in section 2, the influence of increasing market competition on power relations remained in the background, even though the managerial pressure for cutting labour costs and the threat of outsourcing, which followed the enlargement to Eastern Europe, were often mentioned in the interviews and reported as factors to take into account for understanding the power balance between works councils and plant management. In addition, the thesis has taken into consideration the influence of state action on the power relations between labour and management and has shown that national labour market reforms, which lifted constraints from employers' hiring strategies by deregulating the use of contingent work, shifted the balance of power in favour of employers both at sectoral and at workplace level.

4 Contribution

This PhD thesis has contributed to the existing literature by illustrating the dynamics between core and peripheral labour market segments. It has challenged the dualisation argument that the two labour market segments are clearly distinct and in a dual equilibrium in CMEs. It has shown that labour and management constantly bargain the boundaries between the two segments, and the outcome depends on the power balance between the parties and the strategies they implement. It has argued that institutional changes undermining labour cohesiveness and increasing employers' discretion regarding their staffing strategies cause employers' increasing use of contingent work, slowly eroding the size of the traditional core workforce and developing the competition

between contingent and permanent workers. Thus, labour includes contingent workers in its representation domain when their presence on the labour market starts threatening the standards and the future existence of the core workforce.

By pursuing this main argument, the thesis has challenged three main crucial points of the dualisation argument regarding the role of labour in segmented labour markets and the relevance of power relations for workers' outcomes and for the liberalisation trajectory of CMEs.

4.1 Labour responses to competing core and periphery

The dualisation literature has contended that labour might implicitly agree on the use of contingent work because these workers serve as flexibility buffers to the core workforce. As suggested in the early segmentation literature (Doeringer and Piore 1971), core and peripheral workforces are supposed to be in two separate labour market segments, which are not in competition with each other because they serve different functions (Emmenegger, Häusermann et al. 2012b). Thus, the dualisation literature suggests that a new dual equilibrium between core and periphery exists and is supported by a cross-class coalition between the management and the labour representation of core workers. The interests of the two parties overlap because they want to maintain the core workers, who are usually more skilled and perform critical functions in the company, while reducing the production costs at the expense of the periphery (Palier and Thelen 2010, Hassel 2014, Thelen 2014; see discussion in section 3.2).

This thesis has contended that the concept of stable cross-class coalitions relies on the misinterpretation of the dynamics between core and periphery as distinct labour market segments. On the contrary, the thesis has shown that the expansion of contingent work can threaten the standards of the permanent workforce, pushing labour to expand its representation domain to marginal workers. The literature on the revitalisation of union strategies has already argued that labour is likely to include marginal workers when its membership and institutional power resources have been declining (Heery and Adler 2004). While some scholars have argued that only unions with traditionally scarce institutional resources will expand their membership (Baccaro, Hamann et al. 2003),

other scholars have shown that strongly institutionalised unions can also adopt revitalising strategies departing from the traditional path (Greer 2008a; Turner 2009). However, existing literature has mainly focused on exceptional union campaigns for organising marginal workers, preventing an analysis of the conditions under which unions abandon insider-focused strategies to adopt inclusive strategies and then to institutionalise them in the long term.

This thesis has shown that the competition and substitution dynamics between core and peripheral workers constitute the triggers for inclusive union strategies towards contingent workers (Paper 2 and 3). Blurring boundaries and competition between core and periphery indicate that there is no agreement between management and labour regarding the definition of "core workforce", as the dualisation literature suggests. The boundaries are rather a matter of political redefinition between the two parties involved. Indeed, the adoption of inclusive union strategies is associated with a departure from a compromise-oriented approach towards management, and moves towards a more confrontative, or at least distant, approach. This shows the instability of cross-class coalitions, suggesting instead that "compromise can function but that is dependent on the degree to which institutions can protect it from pressures in the market" (Bélanger and Edwards 2007: 728).

Furthermore, this research has shown that the conflict regarding the issue of contingent work had to be pursued outside single workplaces and escalated to the sectoral level as workplace representation could not prevent the expansion of contingent work. By setting sectoral standards and including agency workers in their representation domain, labour strengthened its power at each bargaining level. This finding also suggests that labour cohesion is necessary in an increasingly fragmented labour market for delivering positive outcomes for workers (see also Simms and Dean 2014).

4.2 A micro-macro approach to the study of power in the workplace

The dualisation literature contends that labour management coordination is still present and stable in core manufacturing sectors, despite the erosion of negotiated and legislative employment protection at the national level. In CMEs, employers in core

manufacturing sectors have no incentive to withdraw their commitment from the traditional human resources practices such as training, employment stability and high wages, because they provide them with a competitive advantage on international markets (Hall and Soskice 2001). Thus, positive workers' outcomes in core manufacturing sectors are a result of voluntary employers' coordination with labour and commitment to industrial relations institution; the constraining role of institutions and of labour actors is not mentioned in the VoC approach and remains in the background in the dualisation literature (see section 3.3).

In contrast with this interpretation, this thesis has contended that employers are ready to withdraw their commitment to coordinated labour market outcomes if the constraints of industrial relations institutions have weakened. As discussed in the third section, scholars critical of the VoC approach have pointed out the role of institutions not only as a structure of opportunity to companies but also as a power resource for labour. Thus, labour power has been regarded as fundamental for ensuring working standards, including employment stability, and for developing and supporting a complex work organisation and encompassing internal labour markets. Some scholars have illustrated the relationship between workers' outcomes and institutional power resources at the macro-level through comparative and longitudinal analysis (Western and Healy 1999; Rueda and Pontusson 2000; Korpi 2006; Gallie 2007; Heyes, Lewis et al. 2012). Other scholars have focused on cross-company differences in workers' outcomes by looking at the bargaining dynamics and the power balance between labour and management in the workplace, mainly within a short time frame (Smith 1994; Doellgast 2008; Shire, Schönauer et al. 2009).

This thesis has examined employers' and labour strategies regarding contingent work through workplace comparisons (Paper 2) and through a longitudinal analysis (Paper 1 and 3). This approach provided further evidence in support of the arguments stressing the role of power resources for workers' outcomes and also allowed studying the causal link between institutional changes at national level and employers' and labour strategies in the workplace. The second and third paper have illustrated how the decentralisation trends of industrial relations and, most of all, national labour market reforms, have changed the labour management dynamics at sectoral and especially at workplace level while the first paper has investigated the extent to which these phenomena affect

employers' use of contingent work, with a particular focus on the role of skill specificity and of job routine.

By so doing, the present research follows the research direction also proposed by Hauptmeier and Vidal (2014), who recommend the integration between the institutionalist political economy and the labour process literature. This thesis bridges the gap between the two literature strands contributing to developing the conceptualisation of the linkages between institutions at the macro-level and actors' strategies and workers' outcomes at the micro-level (see also Doellgast, Nohara et al. 2009; Doellgast 2012; Thompson 2013). By so doing, this research suggests that understanding actors' strategies and their outcomes at the micro-level requires embedding the analysis in the broader (transforming) institutional and socio-economic context.

4.3 Germany's liberalisation trajectory

The central role assigned to power resources for determining workers' outcomes has also implications for the debate on the trajectory of change of advanced capitalist economies. On the one hand, the dualisation literature has contended that the dual equilibrium between a coordinated manufacturing core and a flexible service periphery is stable. This argument is mainly based on macro-level analyses, which rely on the theoretical assumption that specific skills need to be associated with stable employment because of the complex work organisation (Cusack, Iversen et al. 2006; Gebel and Giesecke 2011). Furthermore, existing research has often neglected the overtime dimension, conducting instead cross-sectoral or cross-country comparisons which provide a static picture of the workforce segmentation (Barbieri 2009; Häusermann and Schwander 2010; Marx 2011).

On the other hand, scholars have contended that the liberalisation of employment relations has been progressing in all CMEs and in Germany as a consequence of declining labour power due to economic structural factors (e.g. tertiarisation, global market integration) and to neoliberal reforms. This literature has taken into consideration overtime trends but has not looked specifically at changes in core manufacturing, and especially at workplace dynamics (Coates 2000; Streeck 2009;

Baccaro and Howell 2011). Alternatively, it has provided company-level case studies within a limited time frame, which do not provide information on the trend (Doellgast and Greer 2007; Lillie and Greer 2007).

This thesis provides further evidence to the latter literature strand by showing that the equilibrium between the two labour market segments is not stable and liberalisation is a pervasive phenomenon which will not spare the core. It has illustrated how workers' representation at workplace level - even though present and characterised by formally strong codetermination rights - could only partly prevent market-based mechanisms from filtering in companies' internal labour markets over the last ten-twenty years (Paper 2 and 3). By adopting a micro-level perspective, it has also shown how employers' use of contingent work has changed over time, concentrating temporary contract in routine job positions but also slowly affecting the specific skilled workforce. These findings have questioned the often assumed linkage between skills, work organisation and stable employment (Paper 1). Thus, this research has provided micro-level evidence showing that liberalisation has also pervaded the German core manufacturing sectors.

However, existing literature has seen liberalisation as an irreversible phenomenon, neglecting labour's ability to counteract the process (Streeck 2009; Baccaro and Howell 2011). In contrast, this study suggests that labour and management are constantly engaged in a process of deregulation and reregulation of markets (see similarly Tapia and Turner 2013). Even though it is too early to draw conclusions on the IG Metall success to reverse the liberalisation process, agency work has indeed been re-regulated through collective bargaining. In addition, IG Metall is further pursuing its regulatory efforts through the recent campaign on subcontractors, which employers have increasingly started using since the re-regulation of contingent work.

5 Limitations and further research

The research project has two main limitations: the limited information on changes in the labour process and skill content and the focus on one sector in one country. This section discusses these limitations and suggests directions for further research.

5.1 Further development of the labour process perspective

This thesis has investigated the extent to which the erosion of industrial relations and labour market institutions affect employers' use of contingent work, with a particular focus on the role of skill specificity and of work routine. In this way, it has critically examined the linkage, often assumed in the political economy literature, between high quality products, high skills and good working conditions including stable employment.

Besides the routinisation of work organisation and the relaxation of employment protection, other factors might facilitate the use of contingent work, which have not been taken into consideration. For instance, the standardisation of technology and increased automation might favour the transferability of skills across employers as well as the standardisation of the skill content. In addition, technology might reduce the need for *Facharbeiter* and polarise the labour demand between unskilled workers and workers with tertiary education.[44] This trend would also lead to the increasing employment of contingent workers as workers' skills in both categories might be considered less "specific" and certainly do not require investments from employers.

Thus, further empirical research is needed to explore how the nature of manufacturing work and employers' demand for skills have changed over time and whether these changes are associated with the use of flexible contracts.

5.2 Improving generalisability

The present research has exclusively focused only on one sector in one country. Even though German core manufacturing is a least-likely case for the comparative political economy and industrial relations literature, the generalisability of the findings is limited. The present research might help to explain employers' and unions' strategies regarding contingent work in other CMEs but the framework is less useful for LMEs such as the UK and the US. As industrial relations and the vocational training system in CMEs are

[44] For instance, the works by Oesch and Rodriguéz Menés (2011) and by Rohrbach-Schmidt and Tiemann (2011) point towards this direction.

more institutionalised than in LMEs, CMEs are likely to experience a more durable dualisation phase of the workforce in terms of labour market outcomes and workers' representation because existing institutions, even though declining, are more resilient. Thus, both employers and unions in CMEs are faced with a different structure of resources and constraints than in LMEs.

Furthermore, the dramatic growth of contingent work and unions' counteraction might be typical only of the traditional manufacturing sector. First, the growth of contingent work could be due to the decline of the German manufacturing sector as the production model is characterised by complex work organisation and high skills. The manufacturing sector has become increasingly automated and has experienced the introduction of scientific management techniques, which have probably facilitated the use of temporary workers. This might imply that the "core workforce", which benefits from high skills and high wages, is now to be found in other occupations (for example engineers) and in other sectors (e.g. IT). Second, strong unions have traditionally dominated the manufacturing sector and their power relies both on their institutionalised rights and on their mobilisation capacity; therefore manufacturing unions are likely to have a bias towards broad-scope recruiting and bargaining. Smaller professional unions might have a different approach towards contingent workers because they are focused on providing services to their members and their strength is based on the cohesion of members' interests rather than on the size of the organisation (Look 1997).

These limitations invite further research in the following directions: First, the analysis of employers' and unions' strategies regarding contingent workers should be expanded to different sectors and occupations. In particular, high-skill occupations such as software engineers and researchers would represent interesting case studies because skills are high but not necessarily acquired in the workplace, and workers' representation structures are not as developed. Thus, the study of these occupations would allow the exploration of further aspects regarding the effect of skills on work casualisation as well as unions' interest and commitment to a homogeneous workforce.

Second, the analysis of labour's role in plant-levels segmentation could be expanded to more workplaces, also in different sectors. This type of research would lead to building

a comprehensive framework for understanding labour strategies (and their outcomes) towards dualisation in the workplace.

Third, the German manufacturing sector could be compared with similar sectors in other countries in order to go beyond the specificity of the German system of industrial relations. This direction of research allows the investigation of the effect of institutional and societal differences on employers' and labour strategies regarding contingent work.

6 Policy implications

6.1 Industrial relations and labour market reforms

The German model has always raised admiration among researchers and policy-makers. Advanced technology, high quality products, a high-skilled workforce, encompassing bargaining agreements setting high wages and cooperation between labour and management at workplace level seemed to represent a "win-win" situation for all parties involved. During the nineties the fascination with Germany was obfuscated by the economic boom of UK and US, which relied on the expansion of services - especially financial services (Coates 1999; Freeman 2000). In those years and until the beginning of 2000s, the German manufacturing sector experienced heavy restructuring, which fundamentally changed the functioning of the traditional model, as argued by many authors[45] as well as in this thesis.

Especially since the recent economic crisis, the popularity of the German (export-manufacturing) model has been revived because Germany recovered from the crisis fastest and now has one of the strongest economies among advanced countries. Besides advocating a return to manufacturing production as a way out of the crisis, the UK and the US governments have encouraged the implementation of vocational training schemes similar to the German dual vocational training (The Telegraph 01.03.2014; The Atlantic Times 15.11.2013). In addition, European institutions have shown growing interest for vocational training as an instrument for reducing unemployment and

[45] Jürgens (2004); Streeck (2009); Baccaro and Benassi (2014).

creating “good jobs”, as suggested in the Bruges Communiqué (2010). Furthermore, the structural reforms discussed and partly implemented in Southern European countries reflect the recent reforms in the arenas of industrial relations and of the labour market which are regarded as key elements of the German economic success: The reforms regard in particular the decentralisation of industrial relations and the relaxation of the employment protection legislation for temporary workers (Anderton, Izquierdo et al. 2012; Dustmann, Fitzenberger et al. 2014).

Given the political prominence of Germany, this thesis has important policy implications because it critically examines the functioning of the German labour market and industrial relations institutions. First, this thesis has shown that vocational training does not automatically lead to the creation of “good jobs”. This thesis has provided evidence that precarious contracts can also spread in high-skill sectors if existing industrial relations institutions do not support high wages and employment security. Similarly, Streeck’s argument on the “beneficial constraints” (1991; 1992) suggested that the causality between skills and working conditions should not be inverted: The obligation to pay high wages and to retain employees led to employers’ investment in training, not the other way around.

Second, this thesis has shown that the decentralisation of industrial relations – even in a country with strong codetermination rights such as Germany – weakens labour and works to the advantage of the management if national labour market legislation and sectoral agreements do not set out homogenous and inderogable standards. The decentralisation of industrial relations is regarded as the main instrument to increase export competitiveness because it incentivises labour-management cooperation at company-level around wage issues (Dustmann, Fitzenberger et al. 2014). Industrial relations in several European countries have been undergoing a process of organised decentralisation, especially in Southern European countries in the post-crisis period (Keune 2011; Marginson 2014). For instance, since the recent economic crisis, Italian policy-makers have often made reference to the German codetermination model and the opening clauses for promoting industrial relations reforms aimed at decentralising the bargaining system (Boeri in La Voce 18.07.2005; Sbilanciamoci 27.12.2012). Part of the Italian labour movement has agreed to opening clauses derogating the sectoral collective agreements in the automotive company FIAT, and to a national framework

agreement contributing to the decentralisation of industrial relations (L'Unità 11.01.2011; La Repubblica 22.11.2012).

Third, the thesis has shown that labour market reforms considered to be "at the margins" actually have an impact on the whole workforce. They not only lead to a dramatic expansion of precarious work but also undermine the representation and the standards of the core permanent workforce. These findings invite policy-makers (at least from the left-wing spectrum) to think carefully about the implementation of labour market reforms similar to the Hartz reforms, which have been publicly advocated for increasing the flexibility of the labour market and creating jobs (Merkel in Bloomberg News 19.02.2013; Il Fatto Quotidiano 27.03.2014). As argued in the literature, the increase of precarious contracts has consequences not only for workers' representation and industrial democracy but also for the welfare of the wider society (Paugam and Russell 2005; Standing 2011; Dörre 2013). Furthermore, the findings question recent political claims in Mediterranean countries about the necessity of implementing a single labour contract for all workers with lower employment protection. Academics and policy makers have promoted these reforms as an egalitarian instrument for bridging the unfair divide between labour market insiders and outsiders (Boeri and Garibaldi 2008; Ichino 2009; Bentolila, Dolado et al. 2012). The present thesis has shown, instead, that the divide is less marked than it is suggested by these political claims, questioning the actual need to lower institutionalised protection for the whole workforce.

6.2 Unions' strategies in segmented labour markets

This thesis has two main policy implications for unions. First, unions should expand their representation boundaries in increasingly fragmented labour markets. The IG Metall campaign has shown that the formulation of inclusive bargaining goals and of a united labour front is the most effective instruments for defending collectively-agreed labour standards from erosion due to the casualisation of work.

Second, this thesis has shown that unions should not be afraid of building conflict potential against employers. When organisation and institutional power resources are declining, a compromise-oriented approach is likely to lead to concessions and is not a

sustainable strategy in the long-term because it slowly erodes labour power. Active recruiting initiatives, demonstrations outside the workplace and the strategic use of media for raising public awareness have been found instead to contribute to the success of bargaining initiatives.

Appendix

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Section 1: Variable description

Variable list

Age:

Question: (filled in by the interviewer)

Variable construction: The values have been grouped in five categories: 15-24; 25-34; 35-44; 45-54; 55-64.

Values: The categories have been assigned values from 1 to 5. The first category includes workers between 15 and 25 years old and takes value 1. Workers between 26-35 belong to the second category, which has value 2. The remaining categories (from 3 to 5) have been built in a similar way.

Company size:

Question: How many employees does the company have?

Variable construction: The values have been grouped into three categories: n. employees <10; 10≤ n. employees≤500; n. employees>500.

Values: The three categories have the following values: The first category (below 10 employees) takes value 1. The second category (between 10 and 500 employees) takes value 2: the third category (above 500 employees) takes value 3.

Eastern Germany:

Values: The variable is dummy-coded: The value is equal to 1 if the respondent works in a Federal State belonging to the former German Democratic Republic and it is equal to 0 if the respondent works in a Federal State belonging to the former Federal Republic of Germany. Berlin has been coded as belonging to Eastern Germany.

Gender:

Question:(filled in by the interviewer)

Values: 1=male; 0=female

Highest qualification:

Question: The variable has been constructed by the researchers of the Federal Institute for Vocational Training and Education (BIBB) for the waves 1998-2012 and by myself for the first two waves, therefore there is no specific question but the surveys contain

separate questions, asking whether the respondent has any qualification, a vocational training degree, a degree as master craftsman, technician or senior clerk, and tertiary education.

Variable construction: The variable "highest qualification" entails four categories: 'no qualification', 'vocational training', 'qualification as master craftsmen, technicians and senior clerks', and 'tertiary education'. In order to build the variable for the first two waves, I had to make the assumption that workers obtained degrees in the order in which the categories have been presented.[46] For instance, I created the dummy variable "vocational training as highest qualification" and assigned the value 1 to all workers who have a vocational training degree but stated they did not have any other education degree, and the value 0 to all workers without a vocational training degree or with a higher degree. I applied the same procedure to constructing the variables "master craftsman or technician as highest qualification" and "tertiary education as highest qualification". A fifth category "other qualifications" was coded as a missing value, given the limited relevance from both a numerical and an analytical perspective, and the difficulty of classifying the qualification degrees within the four categories of the variable in the last three waves. The two qualifications were: civil servants' training (*Beamtenausbildung*) and professional health training (*Schule des Gesundheitswesens).* I then used the dummies 'no qualification', 'vocational training', 'qualification as master craftsmen, technicians and senior clerks', and 'tertiary education'to build the categorical variable "highest qualification" for the last two waves.

Values: The categories have been assigned values from 1 to 4. no qualification=1, vocational training=2, qualification as master craftsmen, technicians and senior clerks=3, and tertiary education=4.

Job routine:

Question: How often do you repeat the same work procedure?

Variable construction: The answers' scale changes across waves as follows:

[46] The procedure has been discussed by email with Dr. Daniela Rohrbach-Schmidt from the BIBB. The correspondence can be made available.

Value	1985/86 - 1998/99	2005/06 - 2011/12
1	almost always	often
2	often	sometimes
3	now and then	rarely
4	rarely	never
5	almost never	

For the first three waves I recoded the value 1 and 2 into the value 1 and assigned the value 0 to all other values. For the last two waves, I assigned value 0 to the values 2,3 and 4. I then merged the dummy variables into the dummy variable "job routine" across waves.

Values: 1=highly routine; 0=partly or non-routine

Local unemployment rate:

Variable construction: The variable reports the unemployment rate by Federal State for each wave year. The data is from the official statistics of the Federal Employment Agency (Bundesagentur für Arbeit 2012c).

Occupational group:

Question: Which occupational group do you belong to?

Variable construction: The variable refers to the job position of the respondents rather than to their formal qualification, and includes three categories within the bluecollar workforce: unskilled, skilled and master craftsmen/technicians/senior clerks. The categorisation of master craftsmen, technicians and senior clerks includes both blue collar and white collar workers since 1991/92 because the differentiation is due to an insurance reform rather than to an actual job differentiation (Meine 2005). In the last two waves there is a separate question for this category, which asks whether the respondent is a whitecollar worker, master craftsman or technician. The positive answers have been included in the categorical variable "occupational group" in the last two waves.

Values: The categories have been assigned values from 1 to 3. 1=unskilled; 2= skilled; 3= master craftsmen/technicians/senior clerks

Overqualification (only for the waves 1986-1998):

Question: Could someone with a lower or a different qualification do your job?

Variable construction: The variable had three values: 1=yes, with a lower qualification; 2=with a different qualification; 3=no. I assigned value =0 to the values 2 and 3.

Values: 1=overqualified; 0=non-overqualified

Overskilling (only for the waves 1998-2012):

Question: Do you think that the job requirements reflect your skills or do you feel overchallenged or underchallenged?

Variable construction: The variable originally had three values: 1=skills are appropriate for my job; 2=I feel overchallenged; 3=I feel underchallenged. I assigned value=1 to value=3 and the value 0 to the other answers.

Values: 1=underchallenged; 0=overchallenged or appropriate skills.

Sectoral dummies:

Question: In which sector is your company?

Variable construction: The classification of sectors changes between the waves 1998 and 2006. This is how the codes correspond across waves:

	1986-1998	**2006-2012**
Automotive	16	34
Chemical	11	24, 25
Electronics	19	31,32
Fine mechanics	20	33
Glass	12	26
Machine tool building	15	29
Ship and aeroplane building	17	35
Steel and metal	13	27

A dummy variable has been created for each sector.

Values: 1=it belongs to the sector; 0=it does not belong to that sector.

Skill specificity:

Question: For the waves 1986-1992: In what occupation have you completed your last vocational training? For the waves 1998-2006 there are five different questions asking what the occupational code of the respondent's first, second, third, fourth and fifth vocational training is.

Variable construction: This variable refers to the workers who have their latest vocational training qualification – which is not necessarily the highest qualification – in an occupation which is immediately relevant to core manufacturing sectors. The ISCO88 codes of the occupations are between 10 and 15 and between 19 and 32. The corresponding occupations in the wave 1985/86, which precedes the publication of the

International Standard Classification of Occupations, take values between 1210 and 1541 and between 1910 and 3237. I constructed the variable for the last three waves. As with the variable "highest qualification", I consulted Dr. Rohrbach-Schmidt from the BIBB for the right procedure. In each wave I have created 5 different dummy variables, which take value 1 if the repondent has a vocational training degree in a sector-relevant occupation AND if the respondent answered "no" to the other four questions. The variables take value 0 if the respondent answered no to having a vocational training degree in a sector-relevant occupation or if they answered "yes" to one of the other questions.

Values: 1=vocational training degree in a sector relevant occupation; 0=no vocational training degree in a sector relevant occupation

Task dummies (Only for the waves 2006-2012):

Question: There is one question for each of the tasks. Each question asks how often the respondent performs tasks including production of goods, quality checks, supervision of machinery, maintenance, goods supply, logistics, production planning, product development, training others, security, working with IT.

Variable construction: The answers were 1=often; 2=rarely; 3=never 9=I don't know, which has been recoded as a missing value. The values 2 and 3 have been recoded as 0.

Values: 1=the task is performed often; 0=the task is performed rarely or never.

Temporary contract:

Question: Do you have a fixed-term contract?

Variable construction: Besides the question above, a separate question was introduced in the last three waves, whether the worker was employed by a staff agency. Thus, in the last three years a dummy variable was created including all temporary workers and the agency workers on a permanent contract, assuming that the agency workers who have a temporary contract with a staff agency would have answered "yes" to the question whether they were employed on a temporary contract.

Values: 1=temporary contracts; 0=permanent contract

Time:

Variable construction: Time has been coded as a continuous variable.

Values: 1=1986; 2=1992; 3=1998; 4=2006; 5=2012.

Table A 1: Descriptive statistics

Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
Temporary contract	10615	0.068016	0.251783	0	1
Local unemployment rate	10710	8.42304	3.148066	3.7	20.4
Gender	10710	0.848847	0.358213	0	1
Firm size (<10 as reference category)					
<10	10630			0	1
10-500	10630	0.347549	0.476213	0	1
>500	10630	0.40258	0.490439	0	1
Total	10630	0.170538	0.376121	0	1
Eastern Germany	10710	0.170538	0.376121	0	1
Specific skills	10420	0.725528	0.446269	0	1
Routine	10327	0.551602	0.497352	0	1
Age (15-25 as reference category)					
26-35	10710	0.277284	0.447677	0	1
36-45	10710	0.276601	0.447337	0	1
46-54	10710	0.231341	0.421708	0	1
55-64	10710	0.096413	0.29517	0	1
Chemical	10710	0.173015	0.378276	0	1
Glass	10710	0.057216	0.232265	0	1
Steel	10710	0.116994	0.321427	0	1
Machine tool	10710	0.200598	0.400465	0	1
Automotive	10710	0.244748	0.429956	0	1
Ship and aeroplane building	10710	0.020752	0.142557	0	1
Electronics	10710	0.152775	0.359786	0	1
Fine mechanics	10710	0.033903	0.180986	0	1
Highest qualification (no qualification as reference category)					
vocational training	10678	0.766056	0.423355	0	1
qualification as master craftsman or technician	10678	0.091822	0.288872	0	1
tertiary education	10678	0.012417	0.11074	0	1
Overqualification[a]	9548	0.3191	0.466	0	1
Overskilling[b]	6033	0.1	0.30194	0	1

[a] only for the waves 1985/85, 1991/92, 1998/99
[b] only for the waves 1998/99, 1005/05, 2011/12

Section 2: Logistic regression analysis

Table A 2: Multicollinearity table

Variable	VIF	Tolerance
Age	1.05	0.95
Eastern Germany	1.43	0.70
Firm size	1.03	0.97
Gender	1.22	0.82
Local unemployment rate	1.44	0.69
Routine	1.06	0.95
Specific skills	1.23	0.82
Time	1.13	0.12

Table A 3: Correlation table

	1	2	3	4	5	6	7	8
1.Temporary contract	1							
2. Specific skills	-0.170	1						
3. Local unemployment rate	0.119	0.059	1					
4. Gender	-0.194	0.688	0.0280	1				
5. Age	-0.175	-0.103	-0.011	-0.003	1			
6. Firm size	0.008	-0.135	-0.113	-0.030	0.090	1		
7. Eastern Germany	0.269	0.075	0.699	-0.194	0.062	-0.089	1	
8.Time	0.130	-0.110	-0.160	-0.187	0.2182	0.076	0.201	1
9. Routine	0.159	-0.325	-0.010	-0.328	0.040	0.129	-0.01	0.010

Significance of interaction terms

Norton et al. (2004) show that the interpretation of interaction terms in non-linear models is less straightforward than in linear models. As the significance and sign of the interaction term are not interpretable directly from the table, they suggest analysing the interaction terms with the STATA command *inteff*.[47] The command, which has to be run after the logit, shows the interaction effect and the z-statistics for each observation (Norton, Wang et al. 2004).

Figure A1 and A2 below show the analysis of the interaction term specific skills*time, run after the logit in Modell II in section 5. The interaction term is negative and significant for all observations. Figures A3 and A4 show that the interaction term

[47] By now the literature has reached the consensus that interaction terms should never be interpreted from the table, even in linear regressions (Brambor, Clark et al. 2006; Williams 2012).

routinisation*time is positive and significant not for all, but for most observations, similar to the case illustrated by Norton et al. (2004) (p.166). This shows that reading the results from the table can be misleading. However, the analysis of the interaction term in the paper has been conducted through the command "margins", which is now considered correct standard practice (Brambor, Clark et al. 2006; Buis 2010; Williams 2012). Furthermore, the command *inteff* does not allow analysing interaction terms with more than two constituent terms (Norton, Wang et al. 2004).

*Figure A 1: Interaction effect specific skills*time*

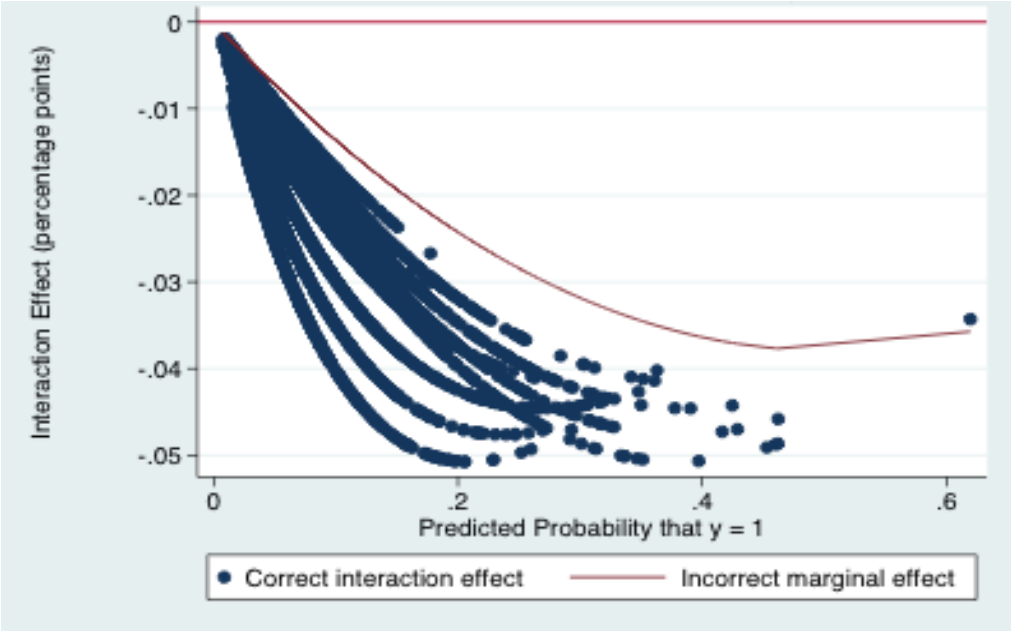

*Figure A 2: Z-statistics of the interaction effect specific skills*time*

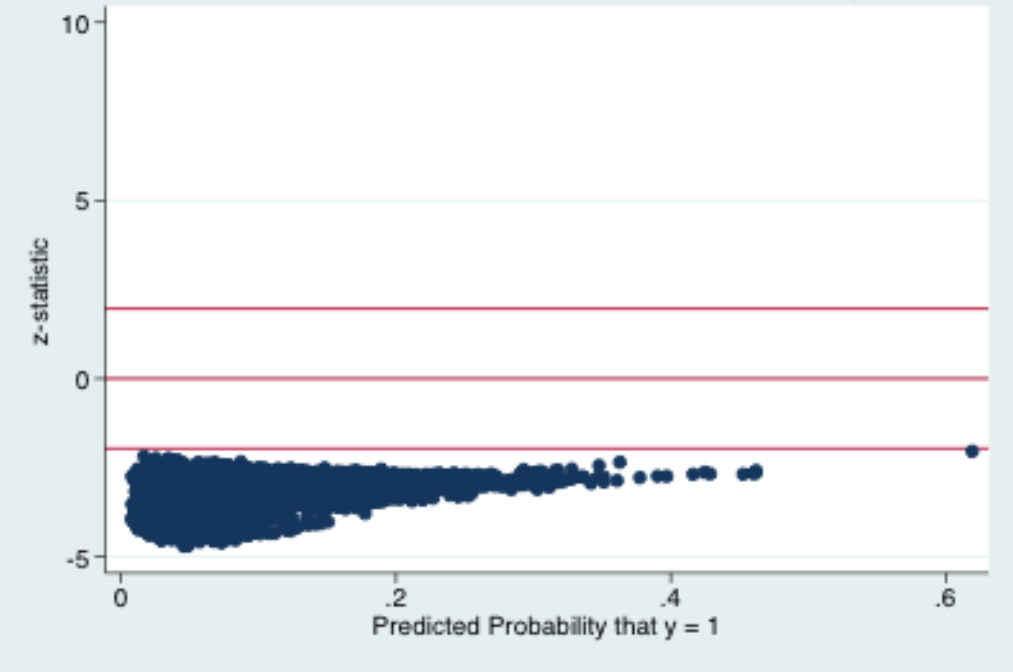

*Figure A 3: Interaction effect routine*time*

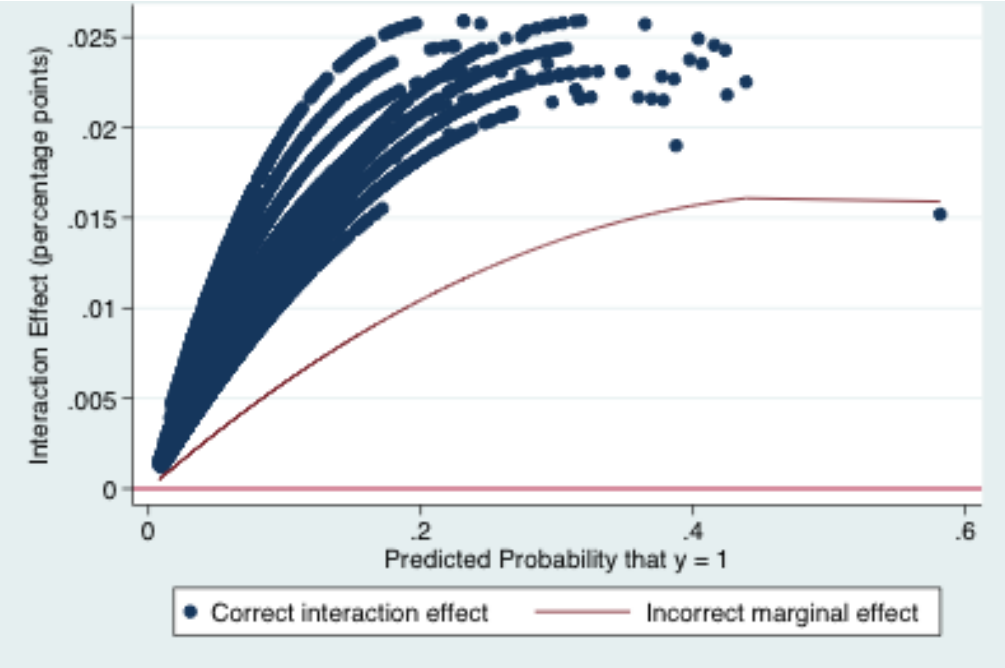

*Figure A 4: Z-statistics of the interaction effect routine*time*

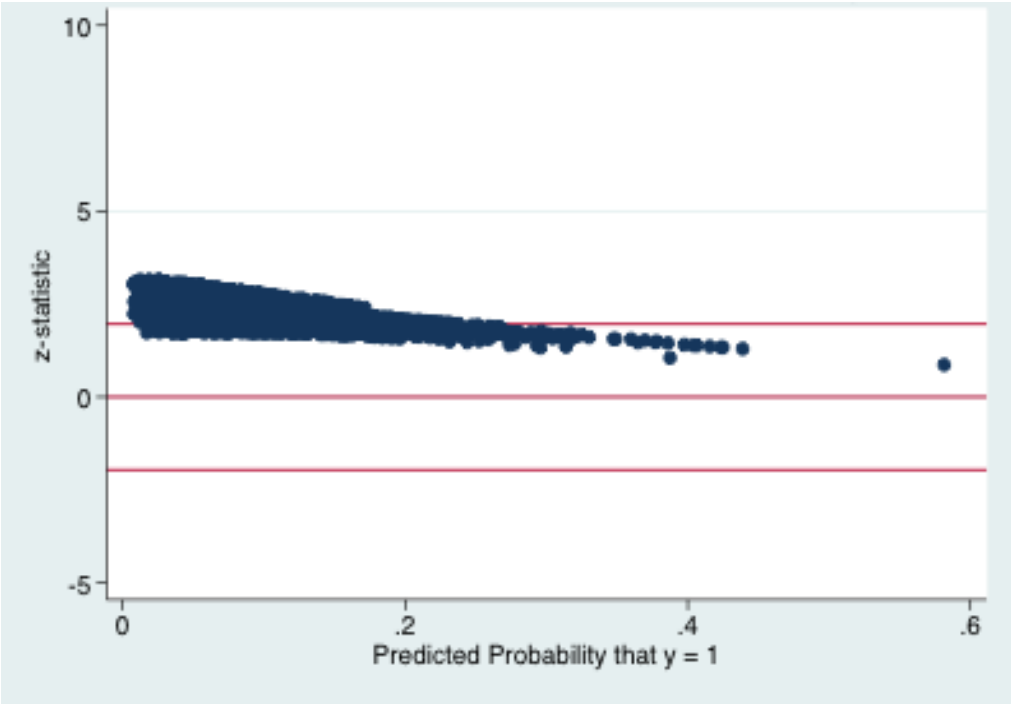

Table A 4: Average Marginal Effects of skill specificity at different time points

	dy/dx	z	P>|z|	95% Confidence interval	
1986	-.0091898 (.0063655)	-1.44	0.149	-0.021666	0.0032864
1992	-.0183747 (.0059627)	-3.08	0.002	-0.0300614	-0.006688
1998	-.032023 (.0065787)	-4.87	0.000	-0.044917	-0.019129
2006	-.0515403 (.0110078)	-4.68	0.000	-0.0731153	-0.0299654
2012	-.0783558 (.0202764)	-3.86	0.000	-0.1180969	-0.0386147

Standard errors in parentheses

Table A 5: Average Marginal Effects of job routine at different time points

|	dy/dx	z	P>|z|	95% Confidence interval	
1986	.0117753 (.0051581)	2.28	0.022	0.0016656	0.021885
1992	.0164555 (.0044331)	3.71	0.000	0.0077668	0.0251442
1998	.0226549 (.004814)	4.71	0.000	0.0132197	0.0320902
2006	.0307303 (.0082351)	3.73	0.000	0.0145898	0.0468708
2012	.0410456 (.01481)	2.77	0.006	0.0120185	0.0700726

Standard errors in parentheses

Table A 6: Adjusted probabilities of being on a temporary contracts among workers with and without specific skills

	Probability	z	P>|z|	95% Confidence interval	
1986 specific skills= 0	.0423016 (.0057865)	7.31	0.000	0.03096	0.053643
1986 specific skills= 1	.0331118 (.0030982)	10.69	0.000	0.02704	0.039184
1992 specific skills= 0	.0591863 (.0054865)	10.79	0.000	0.048433	0.06994
1992 specific skills= 1	.0408116 (.002627)	15.54	0.000	0.035663	0.045961
1998 specific skills= 0	.0822319 (.0060019)	13.7	0.000	0.070469	0.093995
1998 specific skills= 1	.050209 (.0028368)	17.7	0.000	0.044649	0.055769
2006 specific skills= 0	.1131715 (.0101613)	11.14	0.000	0.093256	0.133087
2006 specific skills= 1	.0616311 (.0046519)	13.25	0.000	0.052514	0.070749
2012 specific skills= 0	.1538011 (.0190771)	8.06	0.000	0.116411	0.191192
2012 specific skills= 1	.0754453 (.0080436)	9.38	0.000	0.05968	0.091211

Standard errors in parentheses

Table A 7: Adjusted probabilities of being on a temporary contracts among workers in routine jobs and in non-routine jobs

	Probability	z	P>|z|	95% Confidence interval	
1986 routine = 0	.0296682 (.0034681)	8.55	0.000	0.022871	0.036466
1986 routine = 1	.0414435 (.0041529)	9.98	0.000	0.033304	0.049583
1992 routine = 0	.0372164 (.0029646)	12.55	0.000	0.031406	0.043027
1992 routine = 1	.0536719 (.0036131)	14.85	0.000	0.046591	0.060753
1998 routine = 0	.0465929 (.003296)	14.14	0.000	0.040133	0.053053
1998 routine = 1	.0692478 (.0038048)	18.2	0.000	0.061791	0.076705
2006 routine = 0	.058189 (.0056137)	10.37	0.000	0.047186	0.069192
2006 routine = 1	.0889192 (.0063799)	13.94	0.000	0.076415	0.101424
2012 routine = 0	.0724517 (.0099241)	7.3	0.000	0.053001	0.091903
2012 routine = 1	.1134973 (.0115648)	9.81	0.000	0.090831	0.136164

Standard errors in parentheses

Table A 8: Average Marginal Effects of job routine at different values of skill specificity

	dy/dx	z	P>z	95% Confidence interval	
Specific skills=0	0.015934 (0.004668)	3.41	0.001	0.006786	0.025083
Specific skills=1	0.029881 (0.010279)	2.91	0.004	0.009735	0.050027

Standard errors in parentheses

Table A 9: Average Marginal Effects of job routine at different time points among workers with specific skills

	dy/dx	z	P>z	95% Confidence interval	
1986	0.015221 (0.006823)	2.23	0.026	0.001849	0.028593
1992	0.017376 (0.005584)	3.11	0.002	0.006431	0.02832
1998	0.019656 (0.006016)	3.27	0.001	0.007866	0.031447
2006	0.022009 (0.010025)	2.2	0.028	0.00236	0.041658
2012	0.024358 (0.017154)	1.42	0.156	-0.00926	0.057979

Standard errors in parentheses

Section 3: Robustness checks

Table A 10: Logistic regression with wave dummies

VARIABLES	(1)
Specific skills	-0.509***
	(0.0992)
Job routine	0.413***
	(0.0892)
W1986 as reference category	
W1992	0.0843
	(0.146)
W1998	0.449***
	(0.138)
W2006	0.733***
	(0.170)
W2012	0.957***
	(0.181)
Local unemployment rate	0.0279
	(0.0213)
Male respondent	-0.213*
	(0.125)
Reference category: age 15-25	
26-35	-1.028***
	(0.120)
36-45	-1.498***
	(0.129)
46-55	-1.562***
	(0.139)
56-65	-1.614***
	(0.186)
Reference category for firm size:<10 employees	
10≤ employees ≤500	0.406***
	(0.115)
>500 employees	0.157
	(0.118)
Eastern Germany	0.900***
	(0.155)
Sectoral dummies	Yes
Constant	-2.383***
	(0.345)
Wald chi2	408.00
Prob>chi2	0.000
Pseudo R2	0.0841
Observations	9,922

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A 11: Logistic regression with clustered standard errors

VARIABLES	(I) Standard errors clustered by sector	(II) Standard errors clustered by sector
Specific skills	-0.509***	-0.509***
	(0.0880)	(0.0852)
Job routine	0.412***	0.412***
	(0.0690)	(0.0929)
Time trend	0.268***	0.268***
	(0.0842)	(0.0781)
Local unemployment rate	0.0367**	0.0367
	(0.0185)	(0.0296)
Male respondent	-0.215***	-0.215**
	(0.0660)	(0.0977)
Reference category: age 15-25		
26-35	-1.037***	-1.037***
	(0.128)	(0.0973)
36-45	-1.504***	-1.504***
	(0.0858)	(0.124)
46-55	-1.566***	-1.566***
	(0.0968)	(0.214)
56-65	-1.624***	-1.624***
	(0.203)	(0.219)
Reference category for firm size:<10 employees		
10≤ employees ≤500	0.406**	0.406***
	(0.205)	(0.227)
>500 employees	0.153	0.153
	(0.190)	(0.127)
Sectoral dummies	Yes	Yes
Constant	-2.791***	-2.791***
	(0.324)	(0.363)
Observations	9,922	9,922

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A 12: Logistic regression without Eastern Germany in the sample

VARIABLES	(I) No interaction	(II) Interaction specific skills*time	(III) Interaction routine*time	(IV) Full interacted model
Specific skills	-0.486***	-0.168	-0.485***	-0.589
	(0.118)	(0.270)	(0.118)	(0.489)
Job routine	0.547***	0.545***	0.426	0.0671
	(0.109)	(0.109)	(0.262)	(0.490)
Time trend	0.435***	0.505***	0.407***	0.360**
	(0.0460)	(0.0685)	(0.0722)	(0.144)
Specific skills*time		-0.110		0.0630
		(0.0830)		(0.162)
Job routine*time			0.0436	0.186
			(0.0853)	(0.159)
Job routine*specific skills				0.573
				(0.579)
Job routine*specific skills*time				-0.233
				(0.190)
Local unemployment rate	0.115***	0.116***	0.115***	0.116***
	(0.0218)	(0.0218)	(0.0218)	(0.0218)
Male respondent	-0.298**	-0.293**	-0.297**	-0.289*
	(0.149)	(0.149)	(0.149)	(0.150)
Reference category: age 15-25				
26-35	-1.138***	-1.139***	-1.139***	-1.138***
	(0.134)	(0.134)	(0.134)	(0.134)
36-45	-1.716***	-1.718***	-1.718***	-1.718***
	(0.152)	(0.152)	(0.152)	(0.152)
46-55	-1.998***	-2.002***	-1.999***	-1.999***
	(0.175)	(0.176)	(0.175)	(0.176)
56-65	-1.989***	-1.998***	-1.994***	-2.001***
	(0.221)	(0.222)	(0.221)	(0.222)
Reference category for firm size:<10 employees	0.289**	0.293**	0.290**	0.296**
10≤ employees ≤500	(0.139)	(0.139)	(0.139)	(0.139)
	0.0441	0.0557	0.0472	0.0608
>500 employees	(0.138)	(0.138)	(0.138)	(0.139)
Sectoral dummies	Yes	Yes	Yes	Yes
Constant	-3.554***	-3.767***	-3.480***	-3.416***
	(0.399)	(0.438)	(0.425)	(0.560)
Wald chi2	319.95	325.23	322.02	331.20
Prob>chi2	0.000	0.000	0.000	0.000
Pseudo R2	0.0991	0.0996	0.0992	0.1001
Observations	8,369	8,369	8,369	8,369

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A 13: Average Marginal Effects of skill specificity at different time points in the sample without Eastern Germany

	dy/dx	z	P>z	95% Confidence interval	
1986	-0.00822 (0.005982)	-1.37	0.170	-0.01994	0.003506
1992	-0.01656 (0.006349)	-2.61	0.009	-0.02901	-0.00412
1998	-0.03017 (0.007703)	-3.92	0.000	-0.04526	-0.01507
2006	-0.05077 (0.013466)	-3.77	0.000	-0.07717	-0.02438
2012	-0.07964 (0.025453)	-3.13	0.002	-0.12952	-0.02975

Standard errors in parentheses

Table A 14: Average Marginal Effects of job routine at different time points in the sample without Eastern Germany

	dy/dx	z	P>z	95% Confidence interval	
1986	0.01335 (0.004749)	2.81	0.005	0.004042	0.022658
1992	0.020306 (0.004733)	4.29	0.000	0.011029	0.029582
1998	0.030157 (0.005848)	5.16	0.000	0.018696	0.041618
2006	0.043461 (0.010935)	3.97	0.000	0.022029	0.064894
2012	0.060404 (0.021064)	2.87	0.004	0.01912	0.101688

Standard errors in parentheses

Table A 15: Average Marginal Effects of job routine at different values of skill specificity in the sample without Eastern Germany

	dy/dx	z	P>z	95% Confidence interval	
Specific skills=0	0.021104 (0.005394)	3.91	0.000	0.010532	0.031676
Specific skills=1	0.035233 (0.010612)	3.32	0.001	0.014435	0.056031

Standard errors in parentheses

Table A 16: Average Marginal Effects of job routine at different time points among workers with specific skills in the sample without Eastern Germany

	dy/dx	z	P>z	95% Confidence interval	
1986	0.011272 (0.004177)	2.7	0.007	0.003085	0.019458
1992	0.015173 (0.004185)	3.63	0.000	0.006971	0.023376
1998	0.020104 (0.005431)	3.7	0.000	0.00946	0.030749
2006	0.02608 (0.010561)	2.47	0.014	0.005381	0.046778
2012	0.032882 (0.021111)	1.56	0.119	-0.00849	0.074258

Standard errors in parentheses

Table A 17: Logistic regression analysis only on companies with more than 500 employees

VARIABLES	(1) No routine	(2) No interaction	(3) Interaction specific skills*time	(4) Interaction routine*time	(5) Full interacted model
Specific skills	-0.200	-0.118	0.494	-0.115	-0.376
	(0.162)	(0.171)	(0.382)	(0.171)	(0.643)
Job routine		0.401***	0.403***	-0.0970	-0.920
		(0.150)	(0.150)	(0.342)	(0.690)
Time trend	0.339***	0.292***	0.442***	0.180**	0.159
	(0.0594)	(0.0596)	(0.0994)	(0.0895)	(0.197)
Specific skills*time			-0.213*		0.0259
			(0.115)		(0.217)
Job routine*time				0.178	0.388*
				(0.110)	(0.225)
Job routine*specific skills					1.194
					(0.793)
Job routine*specific skills*time					-0.314
					(0.259)
Local unemployment rate	0.0528**	0.0244	0.0240	0.0241	0.0243
	(0.0266)	(0.0271)	(0.0270)	(0.0271)	(0.0271)
Male respondent	-0.321	-0.400*	-0.404*	-0.419**	-0.438**
	(0.204)	(0.211)	(0.210)	(0.211)	(0.213)
Reference category: age 15-25					
26-35	-1.191***	-1.226***	-1.237***	-1.229***	-1.239***
	(0.188)	(0.194)	(0.193)	(0.193)	(0.193)
36-45	-1.619***	-1.714***	-1.723***	-1.722***	-1.728***
	(0.206)	(0.212)	(0.212)	(0.213)	(0.212)
46-55	-1.698***	-1.756***	-1.775***	-1.767***	-1.782***
	(0.227)	(0.226)	(0.227)	(0.227)	(0.227)
56-65	-1.992***	-2.004***	-2.018***	-2.028***	-2.038***
	(0.344)	(0.346)	(0.345)	(0.344)	(0.343)
Eastern Germany	0.523***	0.969***	0.989***	0.969***	0.977***
	(0.199)	(0.218)	(0.218)	(0.218)	(0.219)
Sectoral dummies	Yes	Yes	Yes	Yes	Yes
Constant	-2.606***	-2.343***	-2.779***	-2.002***	-1.790**
	(0.536)	(0.530)	(0.582)	(0.567)	(0.766)
Observations	4,123	3,911	3,911	3,911	3,911

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A 18: Average Marginal Effects of skill specificity at different time points in companies with more than 500 employees

	dy/dx	z	P>z	95% Confidence interval	
1986	0.006487 (.0074753)	0.87	0.386	-0.00816	0.021138
1992	0.001771 (.0073002)	0.24	0.808	-0.01254	0.016079
1998	-0.00695 (.0084793)	-0.82	0.413	-0.02356	0.009674
2006	-0.02158 (.0147977)	-1.46	0.145	-0.05059	0.00742
2012	-0.04447 (.028679)	-1.55	0.121	-0.10068	0.011736

Standard errors in parentheses

Table A 19: Average Marginal Effects of job routine at different time points in companies with more than 500 employees

	dy/dx	z	P>z	95% Confidence interval	
1986	.0039355 (.0071375)	0.55	0.581	-0.01005	0.017925
1992	.0105462 (.0063222)	1.67	0.095	-0.00185	0.022938
1998	.0205898 (.0070005)	. 2.94	0.003	0.006869	0.034311
2006	.0352842 (.0120202)	2.94	0.003	0.011725	0.058843
2012	.0560274 (.0221189)	2.53	0.011	0.012675	0.09938

Standard errors in parentheses

Table A 20: Average Marginal Effects of job routine at different at different values of skill specificity in companies with more than 500 employees

	dy/dx	z	P>z	95% Confidence interval	
Specific skills=0	0.019398 (0.00731)	2.65	0.008	0.005064	0.033731
Specific skills=1	0.003431 (0.01302)	0.26	0.792	-0.0221	0.028967

Standard errors in parentheses

Table A 21: Average Marginal Effects of job routine at different time points among workers with specific skills in companies with more than 500 employees

	dy/dx	z	P>z	95% Confidence interval	
1986	0.012967 (0.010686)	1.21	0.225	-0.00798	0.03391
1992	0.018984 (0.008894)	2.13	0.033	0.001551	0.036416
1998	0.026772 (0.009453)	2.83	0.005	0.008244	0.0453
2006	0.036654 (0.015412)	2.38	0.017	0.006448	0.06686
2012	0.048943 (0.026301)	1.86	0.063	-0.00261	0.100492

Standard errors in parentheses

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Interviews

DGB official (05.07.2011). Face-to-face interview. Berlin, Deutscher Gewerkschaftsbund. **57'**.

Union rep (11.09.2012). Face-to-face interview. Munich, BMW. **1:40'**.

Gesamtmetall official-1 (23.04.2012). Face-to-face interview. Berlin, Gesamtmetall **1:13'**.

IG Metall official (06.07.2011). Face-to-face interview. Berlin, IG Metall **1:03'**.

IG Metall official (18.04.2012). Face-to-face interview. Frankfurt am Main, IG Metall **1:02'**.

IG Metall official (24.09.2012). Face-to-face interview. Wolfsburg, IG Metall **1:01'**.

IG Metall official (25.01.2012). Face-to-face interview. Wolfsburg, IG Metall **1:24'**.

IG Metall official (25.11.2011). Phone interview. Düsseldorf, IG Metall **42'**.

MGMT (04.04.2013). Phone interview. Wolfsburg, VW. **38'**.

MGMT (07.08.2012). Phone interview. Cologne, Ford. **53'**.

MGMT (09.07.2012). Phone interview. Wolfsburg, VW. **50'**.

MGMT (31.08.2012). Phone interview. Cologne, Ford. **39'**.

WC (10.09.2012). Face-to-face interview. Munich, BMW. **1:02'**

WC (17.07.2012). Phone interview. Dingolfing, BMW. **34'**.

WC (20.04.2012). Face-to-face interview. Leipzig, BMW. **1:10'**.

WC (25.04.2012). Face-to-face interview. Wolfsburg, VW. **1:06'**.

WC assistant (25.04.2012). Face-to-face interview. Wolfsburg, VW. **1:06'**.

WC-1 (11.09.2012). Face-to-face interview. Munich, BMW. **49'**.

WC-1 (19.04.2012). Face-to-face interview. Cologne, Ford. **50'**.

WC-2 (19.04.2012). Face-to-face interview. Cologne, Ford. **1:08'**.

List of interviews

	Function	Organisation	Place	Phone/face-to-face	Date	Length
1	Works councillor	BMW	Leipzig	Face-to-face	20/04/2012	1:10'+site visit
2	Works councillor	BMW	Dingolfing	Phone	17/07/2012	34'
3	Works councillor	BMW	Munich	Face-to-face	10/09/2012	1:02'+site visit
4	Union representative	BMW/IG Metall	Munich	Face-to-face	11/09/2012	1:40'+site visit
5	Works councillor	BMW	Munich	Face-to-face	11/09/2012	30'
6	Works councillor	BMW	Munich	Face-to-face	11/09/2012	49'
7	HR manager	BMW	Munich	Face-to-face	11/09/2012	21'
8	Works councillor	Bosch[a]	Stuttgart	Phone	05/11/2012	43'
9	Union official	Deutscher Gewerkschaftsbund (DGB)	Berlin	Face-to-face	05/07/2011	57'
10	Works councillor	Ford	Cologne	Face-to-face	19/04/2012	50'
11	Works councillor	Ford	Cologne	Face-to-face	19/04/2012	1:08'+site visit
12	HR manager	Ford	Cologne	Phone	07/08/2012	53'
13	HR manager	Ford	Cologne	Phone	31/08/2012	39'
14	Employers'official	Gesamtmetall	Berlin	Face-to-face	23/04/2012	1:13'
15	Employers'official	Gesamtmetall	Berlin	Face-to-face		
16	Union official	IG Metall	Berlin	Face-to-face	06/07/2011	1:03'
17	Union official	IG Metall	Düsseldorf	Phone	25/11/2011	42'
18	Union official	IG Metall	Wolfsburg	Face-to-face	25/01/2012	1:24'
19	Union official	IG Metall	Frankfurt am Main	Face-to-face	18/04/2012	1:02'
20	Union official	IG Metall	Munich	Face-to-face	12/09/2012	20'
21	Union official	IG Metall	Wolfsburg	Face-to-face	24/09/2012	1:01'
22	Union official	IG Metall	Cologne	Face-to-face	07/03/2013	1:52'
23	HR manager	Opel[a]	Rüsselsheim	Phone	26/09/2012	21'
24	Works councillor	SKF[a]	Schweinfurt	Phone	02/10/2012	26'
25	Expert	SOFI	Göttingen	Phone	06/08/2012	52'
26	Works councillor	VW	Wolfsburg	Face-to-face	25/04/201	1:06'
27	Assistant of the works councillor	VW	Wolfsburg	Face-to-face		

28	HR manager	VW	Wolfsburg	Phone	09/07/2012	50’
29	Ex-works concillor	VW	Wolfsburg	Face-to-face	24/09/2012	1:17’
30	HR manager	VW	Wolfsburg	Phone	04/04/2013	38’
31	Expert	University of Jena	Berlin	Face-to-face	29/01/2012	About 2 hours[b]
32	Expert	Wissenschaftszentrum Berlin	Berlin	Face-to-face	24/01/2012	1:39’

[a] These interviews have been conducted extra for the project on collective bargaining in networked companies funded by the Hans Böckler Foundation. The counterparts from either management side or employees’ side have been interviewed by other team members and therefore have not been reported in this table. Within the PhD project, these interviews have been used for robustness checks for the findings regarding the main case studies.

[b] The interview, conducted in an informal setting, has not been recorded.