Collective Bargaining Coordination and the Impact on Labor Costs and Unemployment

The Importance of Supporting Legal Provisions to Create Internal Governability

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I hereby declare and confirm that this thesis is entirely the result of my own work except where otherwise indicated. I acknowledge the supervision and guidance I have received from professor Pierre Garello. This thesis is not used as part of any other examination and has not yet been published.

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1. Introduction

In the last century collective bargaining served as the cornerstone to increase workers' incomes, working conditions and reduce inequality (Hayter et al., 2011). However increased globalization and recent demand shocks put pressure on collective bargaining systems to become more flexible. In Europe there is a clear tendency towards more decentralized collective bargaining to give employers a better opportunity to adjust to changed labor market conditions (Clauwaert and Schömann, 2012). To answer whether there is a future for collective bargaining it is first important to answer why collective bargaining exists. After I briefly discuss that collective bargaining can be useful I move to the next question: which are the necessary ingredients for a collective bargaining system to perform well?

1.1. Why does collective bargaining exist?

The initial goal of collective bargaining was to redistribute power from the employers to the employees and to fix the power asymmetry between these two parties (Offe, 1985). Other goals are the ones I already mentioned: to increase workers' incomes and improve working conditions (Hayter et al., 2011). These are all redistributive arguments.

Besides these redistributive argument there is an efficiency argument in favor of collective bargaining. The bargaining for a labor contract between an individual employee and an individual employer can be regarded as a contract. Standard economic theory shows that (direct) bargaining[1] for a contract on a well-functioning market will yield the highest level of efficiency. The collective agreement limits the freedom of bargaining in the individual

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[1] Direct bargaining means that individuals bargain with each other without interference. In the framework of Cooter and Ulen (2012) this is called freedom of action.

bargaining process (since the individual employee and employer are bound by the collective agreement) which means that the freedom of action (Cooter and Ulen, 2012) is restrained and consequently likely will (under the assumption that the labor market is a well-functioning market) decrease efficiency. So why would collective bargaining persist if it decreases efficiency?

Freeman and Medoff (1984) and Cohen and Wacher (1988) argue that collective bargaining systems in some situations might increase labor productivity. Evidently increased labor productivity leads to a higher level of efficiency. Examples of reasons are that a well-functioning collective bargaining system increases the collective voice of the employees in the firm (Freeman and Medoff, 1988)[2] or that collective bargaining creates incentives for firms to invest more in job-specific trainings (Cohen and Wacher, 1988).[3] It is intuitive that if increased labor productivity increases efficiency in the market, collective bargaining can be a useful tool in some situations.

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[2] The collective voice of all employees combined might cause that employees also will bargain for public goods in the firm. Theoretically this improves the productivity of each employee. In a setting without collective bargaining or ill-functioning collective bargaining individual employees will not bargain for these public goods because their own productivity only increases a bit while they incur all the costs (Freeman and Medoff, 1984).

[3] Cohen and Wacher (1988) argue that the internal labor market does not function well because it is vulnerable to strategic behaviour from either the employees or the employers which increases transaction costs. The internal labor market is a market where employers and employees bargain for a long term relationship. In such market it is beneficial to invest in firm-specific trainings which increases only the employee's productivity in that specific firm. Since it is expensive for both parties to end the relationship after the training has been given, both the employee and employer will use strategic behaviour to increase their share of the pie. Since parties anticipate this, the firm will not invest in firm-specific trainings which would have increased the pie for both in the absence of strategic behaviour. The argument of Cohen and Wacher (1988) is that by the creation of collective bargaining both parties can punish each other for behaving strategically. The employee punishes by using the right to strike (which is only effective in the case there is a trade-union to organize it collectively) and the employer punishes by the threat of a lock out. If the threats of the right to strike and lock out are credible (if it decreases the benefits for the other party sufficiently) it avoids strategic behaviour which decreases transaction costs in the internal labor market. As a result employee and employer will be willing to invest in firm-specific trainings.

1.2. Aim of thesis

The redistributive (Offe, 1985; Hayter et al., 2011) and efficiency arguments (Freeman and Medoff, 1985; Wacher and Cohen, 1988) show reasons why there might be a reason to have a collective bargaining system. The question to have a collective bargaining system or not is less relevant however since all OECD countries (the group I focus on) have some sort of collective bargaining. More interesting is that there is a huge variation between the different collective bargaining systems in the different countries. This makes it valuable to research which factors make a collective bargaining system perform better. Indicators for better macroeconomic performance are for example lower labor costs per unit, less unemployment, less inflation, more economic growth etc.

Before I can describe the main focus of the thesis, the role of supporting legal provisions on the macroeconomic performance of the different systems, I need to describe the main channel how this happens because without doing this the relationship will be unclear. In short, the relationship works as follows: to make a collective bargaining system with a certain degree of coordination perform well high internal governability is required. This high internal governability can be created by supporting legal provisions. The relevant question however is whether supporting legal provisions are the only way to create high internal governability or whether there are also other ways to create high internal governability in which case supporting legal provisions are not necessarily needed. Analyzing the validity of the other options will show the importance of supporting legal provisions for this type of collective bargaining systems.

Figure 1 – Importance of supporting legal provisions on macroeconomic performance for collective bargaining systems with a degree of collective bargaining coordination.

Supporting Legal Provisions	→	High Internal Governability	→	Macroeconomic Perfomance
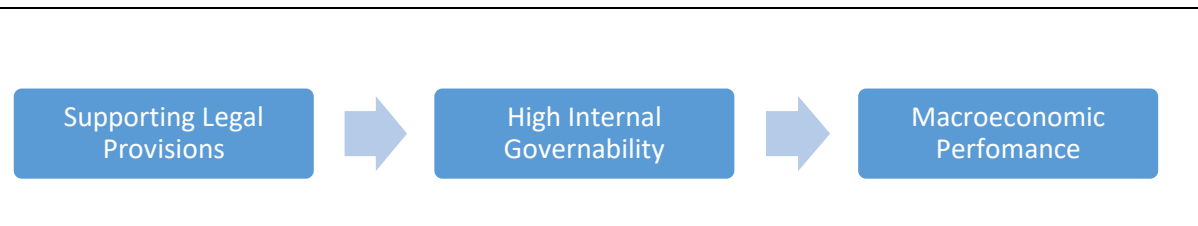
In the remainder of the introduction I will start describing this channel first by separating the main different relevant factors which matter for the macroeconomic performance of the different systems (collective bargaining coordination is one of them, see below), then I will explain why high internal governability is a crucial element for systems with a degree of collective bargaining coordination. I will finish the introduction by explaining how supporting legal provisions create high internal governability and offering a second potential way to create high internal governability.

Before describing the most important factors I want to make some general remarks. Important for the rest of this thesis is that, like the majority of the literature, I mainly focus on the trade union side. For the employers' organization side often a similar analysis can be made. In this sense both main collective bargaining parties are assumed to be symmetric. In case the trade union and the employers' organization have a different role in the theory I will clearly mention it. If I refer to parties I mean the different sides of the collective bargaining process: employees (represented by a trade union) and employers (represented by an employers' organization).

1.3. Important factors for a well-functioning collective bargaining system

Many researchers focused on the question of which factors make a collective bargaining system a successful one. In general three factors can be separated:

1) **The degree of bargaining centralization on which collective bargaining takes place**

(e.g. Olson, 1982; Calmfors and Drifill, 1988).

The degree of collective bargaining centralization is most easily to understand after observing figure 2.

Figure 2 – Overview collective bargaining centralization
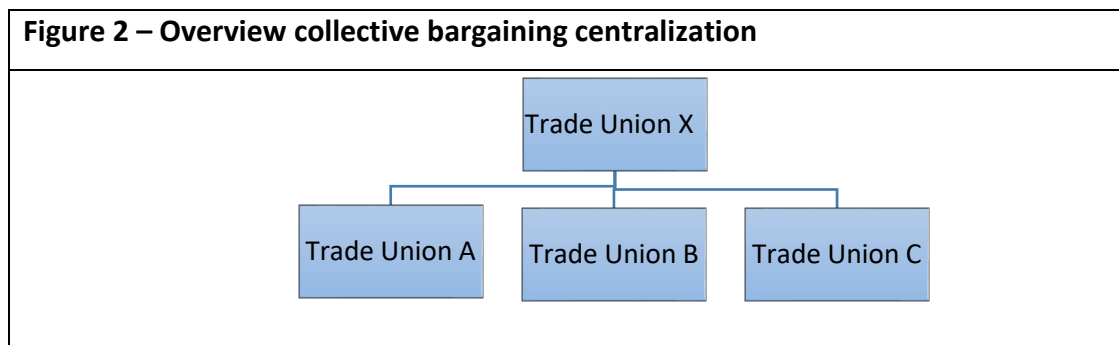
In figure 2 trade unions A, B and C represent the employees of the firms A, B and C. In a decentralized system these trade unions individually negotiate on collective agreements with an employers' organization on the same level. In some systems however trade union A, B, C organize together in a new trade union (in figure 2 trade union X) and negotiate for a collective agreement on the centralized level. The collective agreement negotiated by trade union X also binds trade union A, B and C. Here I only presented either full decentralization or full centralization. In reality it is a spectrum. The main finding in the literature is that the higher the degree of centralization the better the macroeconomic performance (Olson, 1982).

2) **The degree of collective bargaining coordination** (e.g. Soskice, 1990; Traxler and Kittel, 2000).

More coordination means that the different trade unions collaborate and follow the same policy and this in turn might boost macroeconomic performance. Coordination in figure 2 means that trade unions A, B and C follow the same policy. This for example

can be done by trade union X who sets a collective agreement. In a well-functioning coordinated system the other trade unions (A, B and C) have, in their own separate collective agreements, to comply with the collective agreement from X.[4] It is important to differentiate between the two types of collective agreements: coordinating collective agreements and other collective agreements. The difference is that the **coordinating collective agreement** (in the example the collective agreement from trade union X) sets the rules for the **other collective agreements** (collective agreements from trade unions A, B and C separately).

3) **The degree of flexibility on the decentralized level** (e.g. Hayek, 1945; Bentolila and Bertola, 1990).

A higher degree of flexibility on the decentralized level serves two main purposes. Firstly, collective bargaining on the decentralized level is better able to deal with information and opportunities on a specific time and place (Hayek, 1945). A second reason is that more flexibility makes it easier for firms to cope with uncertainty (Bentolila and Bertola, 1990). These two factors might have a positive effect on macroeconomic performance.

The degree of centralization mainly in the early literature received much attention and is likely over simplistic. In the more recent literature researchers focus more on the interaction between the degree of coordination and the degree of flexibility. The degree of coordination and the degree of flexibility imply a trade-off. The trade-off is a spectrum: if a system has a higher degree of coordination it has a lower degree flexibility and vice versa (Ebbinghaus and

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[4] It is often the case that the system consists of multiple collective agreements: a general collective agreement on the centralized level which leaves space for collective bargaining on the decentralized level. In a well-functioning coordination system the decentralized collective agreements are in line with the centralized collective agreement.

Kittel, 2005). The logic is easy to understand: if trade union A, B and C collaborate and follow the same policy (coordination) they have less space to follow their own policy (flexibility). Both factors create gains for the parties on the decentralized level which have to be weighed to find the optimal collective bargaining system. Traxler and Kittel (2000) show that systems which involve a mix of coordination and flexibility perform better than systems which focus purely on either coordination or flexibility.[5]

1.3.1. Coordination: the importance of internal governability

A system of full flexibility is the natural situation. In this case the trade unions on the decentralized level can purely decide accordingly to their own interests. However since coordination yields gains for all trade unions in the economy a relevant question is how to create a system with a degree of coordination. The main characteristic of coordination is that trade union A, B and C are bound by a collective agreement which not only represents their own interests so there might be cases that they want to deviate from it. In a system with a degree of coordination either trade union X (a centralized coordinated collective agreement) or trade union A, B or C (a more decentralized coordinated collective agreement. In this case the trade union from the main economic sector negotiates for the coordinated collective agreement which the trade unions from the other sectors follow) sets the coordinating collective agreement. A key assumption for this system to work is that the other trade unions will follow this coordinating collective agreement. Seen that all trade unions have their own interests, this is of course unrealistic. If different trade unions start to deviate from the coordinating collective agreement the system is no longer coordinated and the system ends

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[5] Only if the system does not suffer from internal governability problems, see next paragraph for an explanation.

up in the natural situation of full flexibility. The literature calls this the **internal governability or articulation issue** within the collective bargaining party (Crouch, 1993; Traxler, 2003).

1.3.1.1.   *How to create internal governability*

I will two introduce two options to create internal governability. The first option is by creating a labor law provision which enforces the collective agreement combined with a peace obligation for the period the collective agreement is in force (Traxler and Kittel, 2000; Traxler, 2003). In this thesis I refer to the combination of a labor law provision and a peace obligation as supporting legal provisions. These supporting legal provisions avoid that trade union A, B and C in figure 2 deviate from the collective agreement set by trade union X because the law enforces the collective agreement. This is the contingency hypothesis: the macroeconomic performance of systems with some degree of coordination depends on the fact whether a system has supporting legal provisions to solve the internal governability issue (Traxler, 2003). See figure 3 for an overview of countries which have these supporting legal provisions.

Figure 3– Enforcing labor law provision, overview countries	
Both a labor law provision as a legal peace obligation	**Either no labor law provision or no peace obligation**
Austria	Spain
Australia	France
Canada	Ireland
Switzerland	Japan
Denmark	Portugal
Finland	United Kingdom
The Netherlands	United States
Sweden	
Based on Traxler (2003) table 1. See appendix about data for more.	

In this thesis I will introduce a second theoretical option to create internal governability. This theory argues that supporting legal provisions are not always necessary for a collective bargaining system to perform well. To come to this conclusion I separated two different types of coordination gains. The policy of the coordinating collective agreement can address both gains. Supporting legal provisions are necessary for internal governability depending on which type of coordination gains the collective agreement aims to achieve. I describe the complete theory in the theoretical part.

In this thesis I test the necessity of supporting legal provisions for the macroeconomic performance of different collective bargaining categories. I do this by using an improved regression specification[6] and a new panel dataset existing of 19 OECD countries in the period

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[6] My regression specification improvement, compared to the existing literature, consists of three things: I separate the voluntary centralized collective bargaining group into three subgroups, I change the reference group and I use a stricter criterion for the contingency hypothesis (see methodology part for a more elaborate description).

1970-2012. The analysis will show the importance of supporting legal provisions in labor law for the macroeconomic performance of the different collective bargaining systems. As I will show empirically some collective bargaining systems with a coordination element need supporting legal provisions to perform well while others do not. If I link this what I explained before, the reason might be that supporting legal provisions are necessary depending on which type of coordination gains the systems aims to achieve.

In broad terms I separate four different categories to analyze the importance of supporting legal provisions. In my framework internal governability is only an issue for systems with a mix of coordination and flexibility (represents two categories). So supporting legal provisions only matter for these categories. See figure 4 for an overview.

Figure 4 – performance different collective bagaining categories
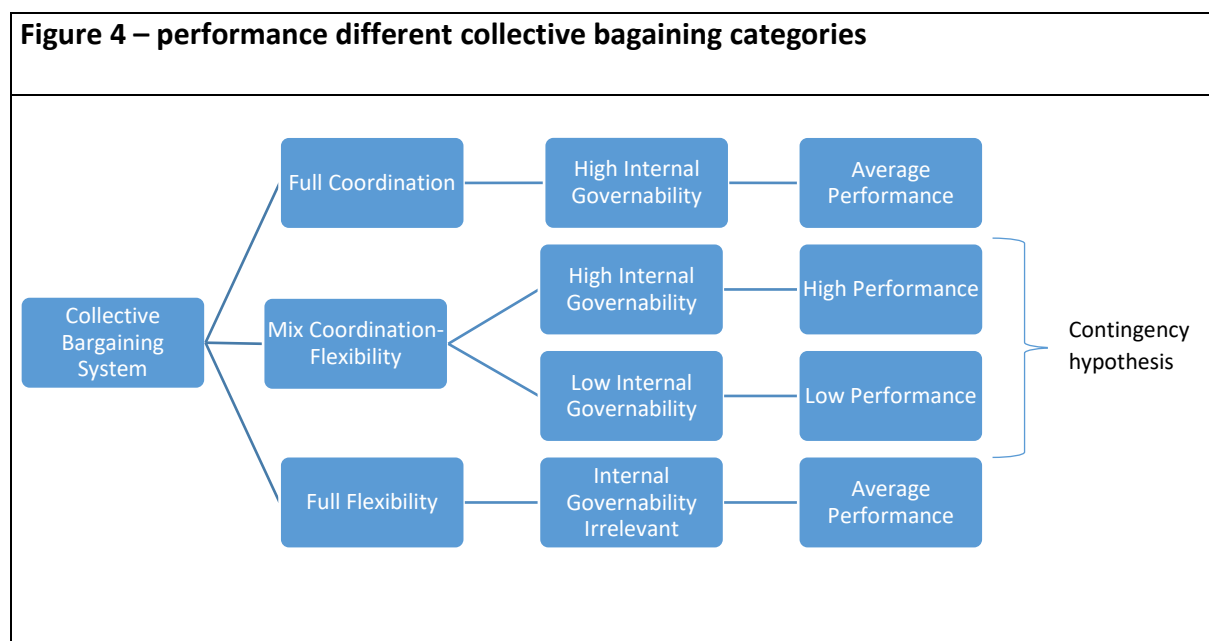
The four categories I separate are the category with full coordination, the category with a of mix coordination and flexibility combined with high governability, the category with a mix of coordination and flexibility combined with low governability and the category with full flexibility.

Based on Traxler and Kittel (2000) I assume that a system with a mix of coordination and flexibility has the potential to yield better macroecomic performance than a full coordination or full flexibility system (which I assume have average performance). For this category internal governability is of vital importance: with low governability the macroeconomic performance is low and with high governability the macroeconomic performance is high. The contingency hypothesis states that supporting legal provisions are necessary to create this internal governability (Traxler, 2003).

Theoretically a mix of coordination and flexibilty combined with low governability is the same as a full flexibility system since in a system with low governability parties can deviate from the coordinated collective agreement and consequently enjoy full flexibility. However, consistent with with the empirical findings in Traxler and Kittel (2000) and Traxler (2003) I assume that this category yields lower macroeconomic perfomance. A reason might be that in this system collective barganing parties do not know anymore whether they have to choose for theirselves or to comply with the coordinated collective agreement which means that chaos dominates and as a results this leads to lower macroeconomic performance.

A last thing to notice is that for the category of full coordination always has high governability. This is based of the finding that in practice internal governability is not a problem for this category because in reality the collective bargaining in this kind of systems is characterized by a lot of government intervention who enforces the collective agreement strictly (the state-imposed collective bargaining category, see the theoretical framework for more) (Traxler and Kittel, 2000).

2. Theoretical framework

2.1. General remarks

The (theoretical) literature in general assumes that both collective bargaining parties bargain on the same level which means that they neglect the possibility that for example a centralized trade union negotiates with multiple individual employers on the decentralized level or that multiple decentralized trade unions negotiate with a centralized employers' organization.

The theoretical framework will offer the building blocks for the empirical analysis. The structure will be similar to the structure in the introduction. I will first elaborate on the link between collective bargaining coordination and flexibility on the macroeconomic performance. I will continue by explaining why internal governability is a problem for collective bargaining systems with coordination elements. Then I will illustrate two options how this internal governability problem can be solved. I will finish the theoretical part by describing the four main collective bargaining categories in the OECD, their degree of coordination and flexibility and whether internal governability is a problem for the respective categories.

2.2. Link between collective bargaining coordination and flexibility on macroeconomic performance

As argued in the introduction a collective bargaining system which combines the optimal mix of collective bargaining coordination and flexibility yields the best macroeconomic performance. The idea why collective bargaining coordination is beneficial for macroeconomic performance is largely based on the theory why collective bargaining centralization is beneficial for macroeconomic performance. So I will start by describing why the early

literature argued that collective bargaining centralization led to better macroeconomic performance of collective bargaining systems. After that I will make the individual link between collective bargaining coordination and macroeconomic performance. Then I will focus on the link between collective bargaining flexibility and macroeconomic performance which is based on a separate argument. I will finish this subsection by arguing why a mix of coordination and flexibility leads to the best macroeconomic performance.

2.2.1. Link between collective bargaining centralization and macroeconomic performance

In the early literature mainly two academic fields argued why collective bargaining centralization led to better macroeconomic performance: economists and political scientists. Economists used the externality internalization hypothesis while political scientist used the corporatist hypothesis.

2.2.1.1. *Externality Internalization hypothesis (economists)*

Economists argue that a higher degree of centralization leads to better macroeconomic performance because more centralized collective bargaining parties internalize more of the externalities of high wage demands (e.g. Olson, 1982; Calmfors and Drifill, 1988). How does this internalization work? Olson (1982), who introduced this idea, argues that decentralized trade unions face a collective action problem. In a decentralized setting an individual trade union sets a high wage because the consequences of inflation and unemployment[7] are not

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[7] There is only an unemployment impact if the employees from different trade unions are complements. In this case not only employees from the respective trade union will be fired but also employees of other trade unions from connected firms/industries. Flanagan (1999) notices that if employees are substitutes employment will be redistributed to another firm if the respective trade unions sets high wages. In this case there will not be an effect on the unemployment rate.

only for its own members but also for the members of the other trade unions. The decentralized trade union will not take into account the consequences for members of other trade unions because this is not in the personal interest of the respective trade union. The trade union does not represent these members after all. For a centralized trade union this externalization problem is less of a problem because all members of the smaller trade unions fall under the umbrella of the more centralized trade union (see figure 2. The members of trade unions A, B and C are also all member of trade union X).

The collective action problem is easy to show in a static prisoner's dilemma game (see table 1). Individual rationality pushes people to freeride in the prisoner's dilemma game. Because everyone freerides individual rationality pushes the equilibrium away from the one which should be made from the perspective of group rationality (social optimum) (Olson, 1965; Axelrod, 1980; Picker, 1994).

Table 1	Trade Union B		
Trade Union A		Low wage demands	High wage demands
	Low Wage demands	10, 10	5,<u>12</u>
	High Wage demands	<u>12</u>,5	**<u>7.5, 7.5</u>**

In terms of Olson (1965,1982) the social optimum (low, low) in table 1 will not be reached because parties, by choosing high wage demands parties, do not include the drop in utility for the other party: by deviating from the social optimum both trade unions do not internalize the consequences of this choice for the other actor in the game. In the end the equilibrium will be the most inefficient one: (high, high). If trade union A and B are trade unions on a more centralized level the game changes to the situation in table 2. By choosing high wage demands

more centralized trade unions incur an additional (internalization) cost now compared to the situation of less centralized trade unions. The collective bargaining parties will both choose (low) if $x > 2$.

Table 2	Trade Union B		
Trade Union A		Low wage demands	High wage demands
	Low Wage demands	10, 10	5,12-x
	High Wage demands	12-x, 5	5, 5

Based on this analysis Olson (1982) argues that a higher degree of collective bargaining centralization leads to better macroeconomic performance. Calmfors and Drifilll (1988) however argue that the relationship between the degree of collective bargaining centralization and macroeconomic performance might be non-linear (in the literature known as the hump shape hypothesis). They argue that the impact of the degree of centralization collective bargaining takes place on macroeconomic performance does not only depend on the externality internalization issue but also on the market power of the trade union. Interesting is that the two factors work in opposite directions. Like Olson (1982) they argue that in a more centralized system trade unions will internalize more of the consequences of high wage demands. It means that their wage demands will be lower. On the other hand the trade union in a more centralized system also has more market power (because it does not have to compete with other trade unions) and with more market power it is able to demand higher wages. Evidently the opposite is true for decentralized collective bargaining systems: a decentralized setting involves less market power for the trade unions but also less internalization. Whether the relationship between centralization of collective bargaining and

wages are monotonic negative or hump shaped depends on whether the externality part or the market power part dominates (Calmfors and Drifill, 1988). In their theory a half centralized – half decentralized system will yield the worst macroeconomic performance because in this case trade unions only to a limited degree internalize the consequence of high real wage demands while the trade unions also have a reasonable degree of market power.

2.2.1.2. *Corporatist hypothesis (political scientists)*

Political scientists argue that that trade unions will demand lower wages in exchange for concessions from the government. The idea is that a higher degree of centralization leads to better macroeconomic performance because the parties in a centralized collective agreement are better able to coordinate economy-wide policies on the more centralized level. The reason is that less parties are involved and more centralized collective bargaining parties are more willing to think about economy-wide benefits (Flanagan, 1999). This is the corporatist hypothesis. In this sense the degree of collective bargaining centralization might proxy for the degree of collective bargaining coordination in the collective bargaining process (Traxler, 2003a).

2.2.2. Link between collective bargaining coordination and macroeconomic performance

Soskice (1990) argues that also for the externality internalization argument, it is coordination which matters and not centralization on itself. The idea is similar as under the centralization argument: a coordinating trade union will internalize more of the consequences of setting high wage demands. The trade union which coordinates policy can be both on the centralized level (trade union X in figure 2 serves as the coordinating trade union) as the decentralized

level (trade union A, B or C in figure 2 serves as the coordinating trade union). This shows however that the finding that a higher degree of centralization leads to better macroeconomic performance only holds to a certain extent since the negotiations for the coordinating collective agreement also can take place on a more decentralized level (Soskice, 1990).

The reason why a centralized coordinating trade union will internalize all the consequences of high wage demands is exactly the same as in the centralization argument: this coordinating trade union represents all members. More interesting is why a decentralized coordinating trade union internalizes consequences of high wage demands. The reason is that a more decentralized trade union will only be able to coordinate if it the trade union in the main economic sector of country which represents many employees.[8]

2.2.3. Link between collective bargaining flexibility and macroeconomic performance

Traxler et al. (2003) and Hayter et al. (2011) observe that mainly employers push for more flexibility. One reason is that they want to use their increased bargaining power to take control over the employment relationship (Traxler, 2003). This is mainly a redistributive argument. There are however also efficiency arguments. These arguments show that a higher degree of collective bargaining flexibility (which entails more collective bargaining decentralization) leads to better macroeconomic performance.

Hayek (1945) uses the argument that a central planner is not able to deal with knowledge of time and place. It is impossible that a central planner gathers all information of specific time

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[8] The decentralized version will only function if the trade union in the main economic sector sets the collective agreement and that this sector is sufficiently strong that the trade unions in the other sectors have to follow. If the sector is not strong enough the trade unions from the other sectors will deviate from this decentralized coordinating collective agreement (pattern setting, see page 24 for more). This is the governability issue.

and place and coordinates this into a policy which leads to the most efficient level. His argument is that individuals are much closer to the knowledge of specific time and place and that they can use the price system to combine and spread this knowledge. If Hayek's argument is applied to collective bargaining it means that the more decentralized trade unions and employers bargain the better it is for macroeconomic performance so that they are best able to spread information of specific time and place through society.[9]

Lindbeck and Snower (1984) argue that more rigid collective bargaining systems lead to higher levels of unemployment. In their analysis they first separate the employed and the unemployed. Secondly, they observe that the unemployed are willing to work for a lower wage than the employed currently get. However, the employer does not replace the employed for the unemployed because the sum of the wage the unemployed demand and the fire costs is greater than the wage the employed demand. Trade unions manage to increase the power of the employed because they manage to increase labor turnover costs (Lindbeck and Snower, 2001). This makes the system more rigid (or in other words less flexible). In this system less people will be employed because it is costly for the employer to fire people. Another finding is that trade unions put pressure on wages in times of economic booms but that the this wages remain equal in times of economic slowdowns. Also the fact that trade unions do not allow wages to decrease during the economic downturn also increases unemployment (Lindbeck and Snower, 2001).

Bentolila and Bertolo (1990) also argue that less flexible labor market institutions make it more difficult to fire employees in economic downturns. They argue that firms will anticipate

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[9] In Hayek's (1945) ideal world there would probably be no collective bargaining at all. Information of specific time and place would most easily spread if the individual employee would bargain with the individual employer.

this and hire less employees because they want to avoid this problem in the future. This increases the unemployment rate and reduces macroeconomic performance.

2.2.4. Mix between collective bargaining coordination and flexibility on macroeconomic performance

As argued in the introduction the degree of collective bargaining coordination and the degree of collective bargaining flexibility involves a trade-off. There are two main arguments why a system with a mix of coordination and flexibility is desired: Hayek's argument in favor of flexibility and the externality internalization hypothesis in favor of coordination. Why, in the spirit of Hayek (1945), do we not completely decentralize the collective bargaining system and make use of the price system to spread information of specific time and place through society? Bronk (2013) argues that prices do not include externalities which means that not all relevant information is included in the price. That prices in fully flexible markets do not include externalities is exactly the argument Olson (1982), Calmfors and Drifill (1988) and Soskice (1990) make in the specific case of collective barganining. It means that some degree of coordination is necessary to deal with the main externalities. On the other hand, which is Hayek's argument, it is also necessary to keep a certain degree of flexibility so that trade unions and employers' organizations on the decentralized level can deal with opportunities on a specific time and place. In this way much information on a specific time and place is still spread through the economy through the price system. Besides the argument of dealing with information of specific time and place and the externality internalization argument the other arguments in favor of either coordination or flexibility I described above also apply. All arguments should be weighed to find the optimal mix of flexibility and coordination. Traxler

(2003) and Hayter et al. (2011) show how a mix between coordination and flexibility works in practice. They call this a collective bargaining system of 'organized decentralization' (Traxler, 2003; Hayter et al, 2011). This system exists of a general coordinating (or centralized) collective agreement which covers the most important issues but on the same time it leaves a lot of space on the decentralized level because the coordinating agreement is very general.

2.3. Link between internal governability and collective bargaining coordination

As I described some degree of collective bargaining coordination leads to better macroeconomic performance compared to the case of no coordination. This statement puts too much trust in the internal governance capacity of the coordinating collective bargaining parties however (Crouch, 1993). A well-functioning internal governance structure (within the trade union side) means that the non-coordinating trade unions simply will follow the collective agreement negotiated by the coordinating trade union. For the well-functioning of collective bargaining systems with a role for coordination it is of crucial importance that the internal governance structure functions well (within both the trade union- as the employers' organization side). The intuition is simple: if the collective bargaining parties do not follow the coordinating collective agreement then it is just a system of full flexibility. The reason is that the parties just can what is in their own interest because they do not take into account the coordinating collective agreement. So a crucial factor for a system with some degree of coordination is that decentralized parties will stick to the (more centralized) collective agreement from the coordinating parties. It means that it is important to take this internal governability problem into account for collective bargaining systems with (a certain degree of) coordination.

Before turning to the options to solve the internal governability problem it is important to shortly describe why parties will want to deviate from the coordinating collective agreement. As said, Olson (1982) defines the outcome of the collective bargaining agreement as a collective good with a potential collective action problem. This is shown in the game in table 1 where the optimal equilibrium is (low, low) and freeriding (by not internalizing all the costs of your action) of both the decentralized trade unions A and B leads to the less preferred equilibrium (high, high). Assume now that the decentralized trade unions organized together in a trade union on the centralized level which coordinated them to (low, low). Before the finding from Crouch (1993) scholars assumed that the non-coordinating trade unions always would follow the wage policy from the coordinating trade union and consequently the equilibrium would be (low, low). The failure in this argument however is that all individual trade unions have an incentive to deviate from the equilibrium (low, low) as soon as they realize that the policy of the other trade union is low. In more technical terms the problem is that equilibrium (low, low) is not a Nash equilibrium. It is the point Crouch (1993) in fact makes: because the decentralized trade unions have an incentive to deviate from the coordinated policy they will not behave according to the policy set by the coordinating institution and the system falls apart into a system of full flexibility.

2.4.   How to create internal governability?

Traxler and Kittel (2000), who address the internal governability problem like Olson (1982) as a collective action problem, argue that the main factor which creates internal governability within a collective bargaining party (trade union, employers' organization) is ''trust''. Since Traxler and Kittel (2000) address the internal governability problem as a collective action

problem they imply that there are gains from coordination because of externality internalization. Trust has two dimensions. Firstly it means that if the coordinating trade union sets a low wage policy all other trade unions also will set a low wage policy. Secondly it means that the different parties (trade unions and employers' organizations) know from each other that the other party does not have internal governability problems. If trust is the problem then the solution is to create a labor law provision which makes the coordinating collective agreement enforceable combined with a legal peace obligation (Traxler and Kittel, 2000). Since parties cannot deviate from this coordinating collective agreement this creates high governability and the peace obligation avoids that parties will try to renegotiate the coordinating agreement by using the threat of the right to strike or lock out.

I offer a second option to create high governability. The main idea behind this option is that not all gains from coordination suffer from a collective action problem. There are some policies which yield gains for all trade unions if these policies are coordinated in which case deviating from these policies is not in the interest of the decentralized trade unions. I refer to this type of gains as direct coordination gains . The problem is that decentralized trade unions lack information on these direct coordination gains. To solve this the decentralized trade unions give power to a centralized trade union to analyze this type of gains and if found inform the decentralized trade unions on these gains. The centralized trade union does this by setting a coordinating collective agreement. Since this is collective agreement is non-binding it serves as a recommendation. For detecting the direct coordination gains, the coordinating collective agreement is important because for the separate trade unions it is too expensive to research these gains their selves and coordinate it with all other trade unions in the economy. So the collective agreement negotiated by the coordinating trade union is an information providing tool on direct information gains.

Note that the coordination gains which are dealt with in the last option are not necessarily the same as the coordination gains dealt with by supporting legal provisions. In the case of supporting legal provisions the coordinating collective agreement can both cover externality internalization gains as direct coordination gains for all trade unions while in the second option the collective agreement only can cover direct coordination gains. The latter is the case because the other trade unions will deviate from a collective agreement which addresses externality internalization gains.

2.5. The main collective bargaining categories in the OECD

Traxler and Kittel (2000) separate four different collective bargaining categories:

1) State-imposed collective agreements

2) Voluntary centralized collective agreements

3) Pattern setting

4) Uncoordinated collective bargaining.

Each category has its own degree of coordination, flexibility and internal governability risks.

State-Imposed Collective Agreements

In this model the state forces the collective parties to come to an collective agreement and enforces this strictly. It is a model of full coordination. The category has high governability since the state enforces the collective agreement strictly (Traxler and Kittel, 2000).

Voluntary Centralized Collective Agreements

These centralized collective bargaining agreements follow from voluntary bargaining by all parties. The system can have different degrees of coordination. It is a more centralized version

of coordination (in figure 2 trade union X is the coordinating trade union). In practice, most of the voluntary centralized collective agreements systems set some basic rules at the centralized level and leave a certain degree of freedom to the more decentralized level. It is basically a system of organized decentralization from Traxler (2003) and Hayter et al. (2011) (see page 18 and 19). Since the system involves coordination, governability is a potential risk. This is why this system either has high or low internal governability.

- **Intra-associational collective bargaining** (univariate centralized collective bargaining)

  The centralized trade union and employers' organization merge into one organization which sets the main policy. Traxler and Kittel (2000) argue that this might seem authoritative since the merged centralized organization might set policy which binds all the decentralized organizations but that this does not happen because the policy set often is a non-binding recommendation: parties at the decentralized level do not give power to the intra-associational organization to bind them because this organization also represents the other side (i.e. in the case of a decentralized trade union: the intra-associational organization also represents employers).

- **Inter-associational collective bargaining** (bipartite centralized collective bargaining)

  The centralized trade union and centralized employers' organization directly bargain with each other.

- **State-sponsored collective bargaining** (tripartite centralized collective bargaining)

  The centralized trade-union, centralized employers' organization and the government bargain with each other. In contrast with the state-imposed category the government does not have a superior role. Pizzorno (1978) argues that the centralized trade union and centralized employers' organization accept the role of the state in bargaining

because it involves political exchange: the trade union and employers' organization make concessions in exchange for concessions from the government in other areas.
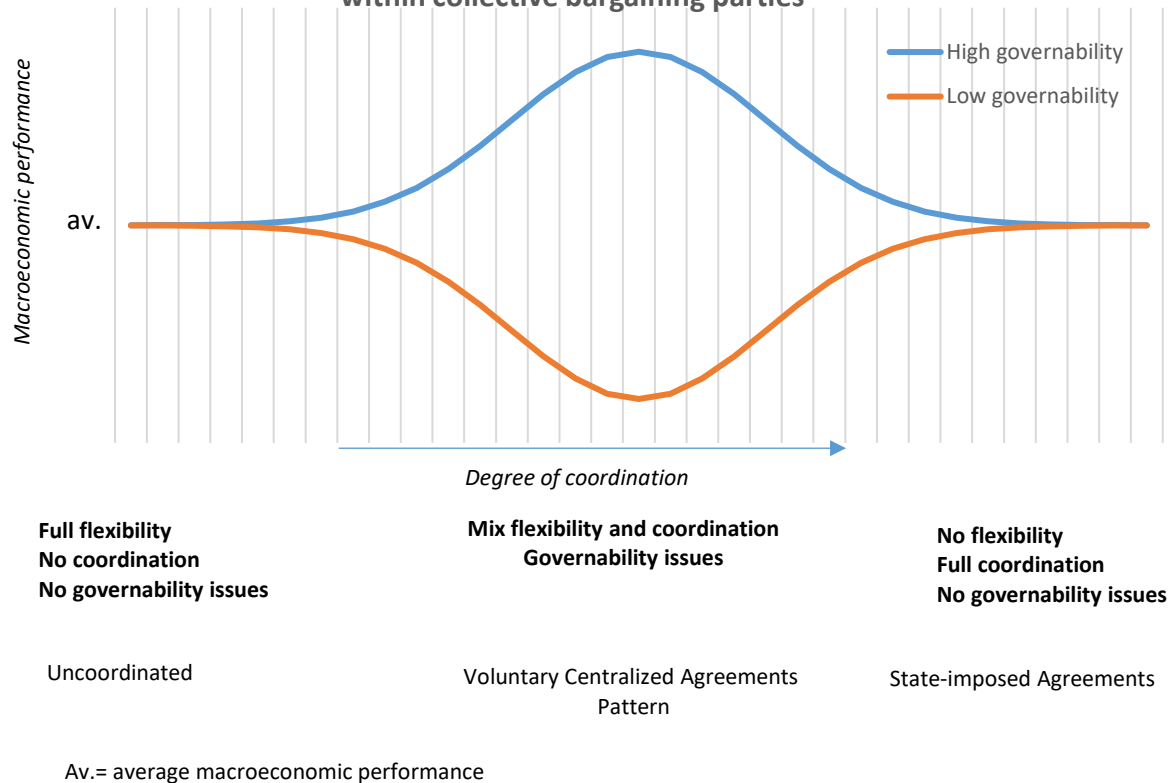
Pattern setting

In the pattern setting category the collective bargaining parties in the key economic sector set the main collective agreement which the collective bargaining parties in the other sectors have to follow. It is a more decentralized version of coordination (In figure 2: trade union A, B or C sets the coordinating collective agreement). Like the voluntary centralized agreements category in practice most pattern setting systems set some basic rules at the centralized level and leaves a certain degree of freedom to the more decentralized level. Whether governability is an issue depends on the strength of main economic sector: the main economic sector needs to be sufficiently important and strong that the trade unions (as an example) in the other sectors do not have another choice than to follow the collective agreement negotiated by the trade union from the main economic sector.

Uncoordinated collective bargaining

In this collective bargaining system trade unions at the decentralized level enjoy full flexibility. It means that internal governability is not relevant for this category (Traxler and Kittel, 2000).

See figure 5 for a graphical impression of the macroeconomic performance of the four different categories. Internal governability is only a problem in the voluntary centralized agreement category and the pattern setting category. So these are the main categories to be studied to be able to analyze whether supporting legal provisions are a necessary ingredient to solve internal governability

Figure 5: Macroeconomic performance depending on governability within collective bargaining parties

Macroeconomic performance

av.

High governability
Low governability

Degree of coordination

Full flexibility
No coordination
No governability issues

Mix flexibility and coordination
Governability issues

No flexibility
Full coordination
No governability issues

Uncoordinated

Voluntary Centralized Agreements
Pattern

State-imposed Agreements

Av.= average macroeconomic performance

Note that it is not necessarily the case that half flexibility and half coordination yields the best macroeconomic peformance. The aim of the figure is to show that a system consisting of a mix of flexibility and coordination yields a better macroeconomic perfomance than average if it is combined with high internal governability and less if it is combined with low internal governability.

3. Methodology and data

The aim of my empirical approach is to find whether supporting legal provisions are necessary for good macroeconomic performance of collective bargaining categories with a certain degree of coordination

I research the importance of supporting legal provisions by analyzing the macroeconomic performance of the categories which have internal governability problems (the voluntary centralized agreement category and the pattern setting category). For the interpretation my key assumption is that these categories only manage to perform well if they solve their internal governability problem. So if supporting legal provisions make a system perform well, then the interpretation is that this is because the supporting legal provision created high internal governability and if a system performs well without supporting legal provisions it means that supporting legal provisions are not necessary to create high internal governability.

In this thesis I focus on the labor costs per unit and unemployment. I use a panel dataset for a set of 19 OECD countries in the period 1970-2012 (using yearly data). The dataset consists of data for each country on which collective bargaining category fits best with the actual collective bargaining system of the country and whether the collective agreement is enforced by law. Some countries have, for example, an inter-associational collective bargaining system with supporting legal provision while another country has an inter-associational system without supporting legal provision. By analyzing this variation in the data, by applying regression analysis, I can detect whether supporting legal provisions boost macroeconomic performance for the categories with internal governability problems.

3.1. Panel data

In macroeconomic settings it is popular to make use of panel data. The reason is to increase the number of observations which increases the power of statistical tests.[10] However a strong assumption needs to be made for panel data settings: the homogeneity assumption needs to hold. It means that the impact of an independent variable on a dependent variable is assumed to be the same for all different cross section units. In the appendix I describe the homogeneity assumption in more detail.

3.2. Regression specification

First I aim to find the most direct impact of collective bargaining which is on the labor costs per unit. Secondly I research the indirect impact on unemployment rates. The idea is that if collective bargaining systems have an impact on labor costs firms will respond on this by adapting their labor hiring policy which impact the unemployment rate.

As argued before I separate six distinctive collective bargaining categories:

- Decentralized uncoordinated collective bargaining

- Semi-centralized pattern setting

- Voluntary centralized intra-associational collective bargaining

- Voluntary centralized inter-associational collective bargaining

- Voluntary centralized state-sponsored collective bargaining

- Centralized state-imposed collective bargaining

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[10] In a panel data setting time series of different cross section unit are pooled together to increase the number of observations.

The first estimated regression is (for the second replace labor cost per unit by unemployment rate):

$Labor\ Costs\ per\ Unit\ (LCU)_{i,t}$

$$= \alpha_i + \sum_{j=1}^{4} \alpha_j * LCU_{i,t-j} + \beta_1 * Pattern_{i,t}$$

$$+ \sum_{k=2}^{4} \beta_k * Voluntary\ Centralized\ Agreement_{i,t} + \beta_5 * State\ Imposed_{i,t}$$

$$+ \gamma_0 * Law_{i,t} + \gamma_1 * Pattern_{i,t} * Law_{i,t}$$

$$+ \sum_{k=2}^{4} \gamma_k * Voluntary\ Centralized\ Agreement_{i,t} * Law_{i,t} + \gamma_5$$

$$* State\ Imposed_{i,t} * Law_{i,t} + \delta * Control\ Variables + \varepsilon_{i,t}$$

Where k=2: Intra-Associational Collective Bargaining, k=3: Inter-Associational Collective Bargaining, k=4: State-Sponsored Collective Bargaining.

The variables for the different collective bargaining categories and the variable for the supporting legal provisions are dummy variables. It for example means that if a country has a pattern setting system the dummy for the pattern setting system takes the value 1 and the dummies for the other collective bargaining systems take the value 0 (since on a specific moment in time a country only can have one collective bargaining system). The same idea applies for the supporting legal provisions dummy: if a country has supporting legal provisions the dummy takes the value 1 and if not it takes the value 0.

The intuition behind the regression specification is straightforward: to explain the labor costs per unit I use as explanatory variables the different collective bargaining systems without protection of the coordinating collective agreement by supporting legal provisions (impact: β,

since in that case the labor law dummy takes value 0), the different systems with protection of the coordinating collective agreement by supporting legal provisions (impact: β+γ), [11] control variables to minimize the risk of omitted variable and, given that the labor costs per unit and the unemployment rate are highly persistent, some lagged variables of the dependent variable.

Note that in the regression specification there is no dummy for the uncoordinated collective bargaining category. This is to avoid perfect multicollinearity. The coefficients of the different categories need to be interpreted as the additional impact of the respective category on the labor costs per unit compared to the case of the uncoordinated collective bargaining category. The uncoordinated category serves as a proxy for how the average system would perform (see figure 5 and footnote … for more and why). γ_0 shows the impact of the uncoordinated collective bargaining category with supporting legal provisions which I expect to be insignificant.[12]

3.2.1. How to detect whether option 1 or 2 solves the internal governability problem?

As argued the idea of the contingency hypothesis is that collective bargaining categories with internal governability problems only will function if the system is combined with supporting legal provisions.[13] If this is the case, then the system will outperform the average system (and if not, then the system will underperform the average system). So from the regression

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[11] In more practical terms: the average impact of an intra-associational collective bargaining system with supporting legal provisions on respectively the labor costs per unit or the unemployment rate is $\beta_2 + \gamma_2$. The average impact of an intra-associational collective bargaining system without supporting legal provisions is β_2

[12] The uncoordinated collective bargaining category is a system with full flexibility. Systems with full flexibility do not have internal governability problems which means that theoretically supporting legal provisions will not have an impact on macroeconomic performance.

[13] The supporting legal provisions solve the internal governability problem in this theory.

specification, if the contingency hypothesis holds, I expect for the three different subgroups of voluntary centralized collective agreements category and pattern setting category:[14]

1) A significant positive impact on labor costs per unit if the system does not have supporting legal provisions ($\beta_k > 0$).

2) A negative (more than offsetting β_k) effect if the system has supporting legal provisions. The way to write this down formally is: $\gamma_k < 0$ and $|-\gamma_k| > \beta_k$.[15]

If I find these coefficients, it would show that the respective category underperforms (relative to the average category) if supporting legal provisions are absent and performs better than the average category if supporting legal provisions are present. It is exactly what the contingency hypothesis predicts. The second requirement is most important so I will also argue in favor of the contingency hypothesis if $\beta_k = 0$ as long as the second requirement holds.

In fact, to verify the validity of the contingency hypothesis, I adopt the approaches of Traxler and Kittel (2000) and Traxler (2003). I follow the approach of Traxler and Kittel (2000) by interacting the different collective bargaining categories with a supporting legal provisions dummy where Traxler (2003) focuses on the interacting effect of collective bargaining centralization with the supporting legal provisions dummy. It makes more sense to focus on the category instead of centralization since different categories can have a similar degree of centralization but they deal with internal governability problem in a different way. It means that focusing on only the degree of centralization is oversimplified. I change the Traxler and

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[14] Here I use the coefficients for the voluntary centralized collective agreement category. I expect the same coefficients for the pattern setting category. The same applies when I discuss option 2 on the next page.

[15] β_k and γ_k are the coefficients of the centralized collective agreements category. The coefficients of the pattern setting category (β_1 and γ_1) are expected to have the same sign.

Kittel (2000) approach by setting the uncoordinated collective bargaining category as the reference group instead of the state-imposed category because the uncoordinated collective bargaining category is more likely to perform as the average collective bargaining system.[16]

There is also a second option to solve the internal governability problem: treat the collective agreement as an information providing tool instead of an enforceable contract. For the second option the coordinating collective agreement does not need to be binding: both the trade unions as the employers' organizations on the decentralized level will comply because it is their self-interest to do so. I also will explore the validity of this option. If this options holds I expect that the voluntary centralized agreement category and the pattern setting category already perform well without supporting legal provisions because the system already has high internal governability in absence of supporting legal provisions. So I expect $\beta_k < 0$ and γ_k to be insignificant.[17] If I find these coefficients it means that on average the collective bargaining category already performs well without supporting legal provision and does not improve if supporting legal provisions are present. In this case the second option might offer an explanation why the collective bargaining category already performs well without supporting legal provisions.

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[16] The idea follows form figure 5. Both the uncoordinated as the state-imposed category perform as the average category. It means that you can interpret a positive coefficient (in the case of labor costs per unit and the unemployment rate) that a category is performing worse than the average category. The opposite applies for a negative coefficient. Theoretically the uncoordinated collective bargaining category has the highest degree of flexibility but no degree of coordination. The state-imposed category has the highest degree of coordination but the lowest degree of flexibility. Based on this Traxler and Kittel (2000) argued that those two categories perform average because the two systems do not have an optimal mix of both (and the state-imposed category does not have internal governability problems) . To a certain extent I agree with this analysis but I expect that the uncoordinated category is more likely to perform average. This category by definition does not coordinate (Traxler and Kittel, 2000) because it enjoys the highest degree of flexibility. This is not the case for the state-imposed category which means that there might be some internal governability problems. The state for example can have problems to enforce the policy it sets. In that case the state-imposed category will not perform average. It is the reason why I choose for the uncoordinated category as the reference group.

[17] β_k and γ_k are the coefficients of the centralized collective agreements category. The coefficients of the pattern setting category (β_1 and γ_1) are expected to have the same sign.

A risk to be aware of for this analysis (and validity of the results) is reverse causality: do some collective bargaining categories cause better macroeconomic performance or do collective bargaining parties in countries with better macroeconomic performance opt for certain collective bargaining categories. According to Traxler (2003) it is common in the literature however to assume that a respective collective bargaining theory has an impact on the aggregate wage and that this has an impact on the macroeconomic performance. In this thesis I follow this line of thought.

3.3.   Fixed Effects estimator

In a panel data setting it is possible to give each cross-section unit its own constant (the so-called fixed effects constant). By creating for each cross-section unit its own constant a fixed effects estimator removes all the in between variation (the differences between the different cross-section units) of the dataset. The main advantage of the fixed effects estimator is that it controls for time invariant heterogeneity between the different cross-section units. However applying a fixed effects estimator is problematic if the main explanatory variable does not have a lot of variation within the cross-section unit.[18] Since the main independent variables are dummy variables which do not have a lot of variation over time it is not wise to apply the fixed effects estimator since I need the cross section variation in the main independent variable to quantify the effect of the respective collective bargaining systems on labor costs per unit and the unemployment rate.

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[18] Least Squares estimators estimate coefficients by explaining the variation in the dependent variable by the variation in the independent variables. Consequently if there is no or hardly variation in the main independent variable this main variable cannot explain variation in the independent variable.

3.4. Unit Roots

Doing regression analysis with macroeconomic time series is dangerous because it is well known that many macroeconomic variables contain a unit root. The danger of doing regressions with variables containing a unit root is the danger of spurious regression which means that the regression analysis will find a statistical significant relationship which in fact does not exist. Baltagi (2008) however argues that regression analysis with variables containing a unit root are less problematic in panel data sets with a relatively large cross-section dimension. Given that my panel dataset has 19 cross –section units the risk of spurious regression will be limited.

To see whether unit roots exists in the series I will use the Levin, Lin & Chu test. If the test shows that a unit root is present I will either take the natural logarithm or the first differences of the variable to remove the unit root from the variable.

4. Results

To verify whether supporting legal provisions are the only way to create internal governability and as a result boost macroeconomic performance I estimated the regression equation twice (see page…). In the first regression the dependent variable is the labor costs per unit and in the second the unemployment rate. The output can be found in table 3. If the two options offer a solution to the problem it would reduce labor costs which theoretically should boost macroeconomic performance (for example reduce unemployment). I took the natural logarithm of the labor costs per unit variable to remove the detected unit root. The unemployment rate did not contain a unit root (see appendix for unit root tests). It means that the way how to interpret the output from both regressions is different.[19]

I will start by summarizing the main findings of the regression analysis and verify whether the contingency hypothesis holds. Then I will offer alternative interpretations if for some categories the contingency hypothesis does not hold (for example option 2 to create high internal governability). I will finish this section by mentioning a limitation of this kind of research.

For the main findings, first focus on the analysis regarding the labor costs per unit (see table 3, column 2 and 3). Consistent with Traxler and Kittel (2000) I find that the pattern setting category has an additional significant negative effect on the labor costs per unit compared to the average performing category (in this thesis the uncoordinated category). The three subcategories of the voluntary centralized collective bargaining category show the most interesting findings. Traxler and Kittel (2000) found statistical proof that the contingency

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[19] The interpretation of the coefficients is different in both regressions. The impact of an independent variable changes the labor costs per unit with β%, $(\beta+\gamma)$% or δ% (depending on the significance of the coefficient) while the impact of an independent variable changes the unemployment rate with β, $(\beta+\gamma)$ or δ (depending on the significance of the coefficient) .

hypothesis holds for two of the three different voluntary centralized collective bargaining sub-categories[20]: the inter-associational and intra-associational category. If I use my more strict criterion however that also $|-\gamma_k| > \beta_k$ has to hold to have proof for the contingency hypothesis there is, both in my analysis as their analysis, only proof for the hypothesis for the inter-associational category. Based on own my analysis and contradictory to findings from Traxler and Kittel (2000) the intra-associational category on the other hand on average already performs well (relative to the uncoordinated category) without supporting legal provisions and its macroeconomic performance does not improve with supporting legal provisions. The state-sponsored category on average both with as without supporting legal provisions performs similar as the uncoordinated category.

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[20] In this thesis I will refer to the sub-categories of the voluntary centralized agreement (inter-associational, intra-associational and state-sponsored) as categories. Note however that in fact it are sub-categories.

Table 3 – regression analysis				
Dependent variable	**Labor costs per unit**		**Unemployment rate**	
	Coefficients	*Proof contingency hypothesis*	*Coefficients*	*Proof contingency hypothesis*
Performance of collective bargaining system (impact β) relative to the average system (assumed to be the uncoordinated category). A negative coefficient means better performance while a positive coefficient means worse.				
Pattern	-0.017(***)		-0.0427	
Intra-Associational	-0.0148(**)		-0.0048	
Inter-Associational	-0.002		0.3933***	
State-Sponsored	-0.0027		-0.2055	
Additional effect because of supporting legal provisions (Impact $\beta + \gamma$)				
Pattern	0.0115		-0.0239	
Intra-Associational	0.0048	No proof	-0.0547	No proof
Inter-Associational	-0.0194(*)	Proof $0 < |-0.0194|$	-0.4536*	Proof $0.39 < |-0.45|$
State-Sponsored	-0.0086	No Proof	0.1438	No proof
*** significant at 1% level, ** significant at 5% level, * significant at 1% level For full regression output table see appendix.				

I perform a similar analysis for the unemployment rate. Before turning to the results I need to make some important remarks. Traxler (2003) notices two interesting things before he does his regression analysis in an attempt to explain the difference in the unemployment rate. Firstly, he correctly notices that the effect of the different collective bargaining categories on the unemployment rate is likely to be less convincing compared to the impact of different

collective bargaining processes on the labor costs per unit. The reasoning is that the impact on the unemployment rate is less direct: a well-functioning collective bargaining category has a decreasing impact on labor costs which on its turn decreases unemployment. It is why many studies (for example Aidt and Tzannatos (2002)) do not find a significant impact of different collective bargaining categories on the unemployment rate. Secondly and less convincing he argues that if there is no effect of the collective bargaining category on the labor costs per unit and there is a significant effect of the respective category on the unemployment rate then this effect on the difference in the unemployment rate cannot be attributed to the respective collective bargaining category. In my view Traxler uses a too narrow influence of collective bargaining. He basically argues that the only channel through which collective bargaining has an impact on the economy is through wages. This is too simplistic. There are also other channels which means that if I find a significant impact of a category in explaining the unemployment rate and I do not find one of the respective category in explaining labor costs per unit it still can be attributed to the respective collective bargaining category. Freeman and Medoff (1984) and Cohen and Wacher (1988) for example argue that better collective bargaining system have the ability to increase labor productivity: either because a well-functioning collective bargaining category increases the collective voice of the employees combined in the firm (Freeman and Medoff, 1988) (see footnote 2) or collective bargaining creates incentives for firms to invest more in job-specific trainings (Cohen and Wacher, 1988) (see footnote 3). If labor productivity increases the marginal product of labor of each worker increases which has an unemployment effect irrespective of the wage/ labor costs level. Traxler (2003) however is in my opinion correct that the relationship between the collective bargaining category and unemployment is less clear than the relationship between the collective bargaining category and the labor costs per unit. In this sense the relationship with

the unemployment rate will more likely be noisy or driven by omitted variables and is the analysis based on the on the labor costs per unit most reliable.

My analysis based on the unemployment rate shows (see table 3, column 4 and 5), consistent with my finding based on the labor costs per unit analysis, that there only is significant proof for the contingency hypothesis in the inter-associational category. There is no significant proof that the intra-associational and state-sponsored category, both with as without supporting legal provisions, perform better than the average collective bargaining system.

4.1. Interpretation

Consistent with the literature I find that on average the pattern setting category already performs relatively well without supporting legal provisions.[21] A first explanation might be that the main economic sector is strong enough so that the collective bargaining parties in the other sector sectors have to follow the collective agreement set in the main economic sector in which case the system has high governability anyway. Another interpretation is that the second option creates governability for the pattern setting category.

The finding that the contingency hypothesis holds depending on the type of the voluntary centralized collective bargaining category raises the question why this is the case. Based on both analyses I can generalize to the finding that the contingency hypothesis holds for the inter-associational categories but not for the others. Based on the labor costs per unit analysis I find proof that the average intra-associational system already performs well with supporting legal provisions and does not perform better with supporting legal provisions. An explanation

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[21] In my analysis both the low- as the high governability version performed third best based on the labor costs per unit analysis. Based on the unemployment rate analysis I did not find a significant different impact from the uncoordinated collective bargaining category.

for this finding might be the second option to create internal governability: the collective agreement in the intra-associational category is treated as a (non-binding) recommendation which serves as a tool to provide information on direct coordination gains for all trade unions. Since following this recommendation yields gains for all trade unions there is no reason for trade unions to deviate from this collective agreement and consequently supporting legal provisions are not necessary to create high internal governability. This is in line with the fact that for the intra-associational category the centralized collective agreement often has a non-binding character (Traxler and Kittel, 2000). The state-sponsored category does not seem to perform better than the uncoordinated category. An interpretation might be that since the government has a role in the bargaining process it complicates the bargaining which makes the system move too much towards a system of full coordination. In fact the system becomes a quasi state-imposed collective bargaining system.

4.2. The best performing collective bargaining category

Since the link between collective bargaining and labor costs per unit is most direct I will based on this analysis show a ranking of the best performing categories. The same can be done for the unemployment rate but it is less reliable since this relationship will be more likely driven by noise. It is the reason why I only used the unemployment rate analysis to find whether option 1 or option 2 creates internal governability. According to my labor costs per unit analysis there is no collective bargaining category performing worse than the uncoordinated collective bargaining category (the reference group in the analysis). The state-imposed collective bargaining category with combined with supporting legal provisions performs best. The second best performing category is the inter-associational combined with supporting legal

provisions. The pattern- and intra-associational collective bargaining categories do not perform better with than without supporting legal provisions and are the third and fifth best achievers. The seventh is the state-imposed category without supporting legal provisions. The rest of the categories does not perform significantly better than the uncoordinated collective bargaining category.

Table 4 - Performance different collective bargaining categories based on labor costs per unit				
Category	System without supporting legal provisions	Rank	System with supporting legal provisions	Rank
Uncoordinated	0 (reference group)	8	0	8
Pattern	-0.0169	3	-0.0169	3
Intra-Associational	-0.0148	5	-0.0148	5
Inter-Associational	0	8	-0.0194	2
State-Sponsored	0	8	0	8
State-imposed	-0.0082	7	-0.0297	1

The finding that the state-imposed category with supporting legal provisions performs better the state-imposed category without supporting legal provisions is surprising. It is hard to explain because theoretically as Traxler and Kittel (2000) notice this category should not have internal governability problems. So either there are internal governability problems for this category or the finding is driven by noise (omitted variables). The finding that the state-imposed collective bargaining category performs well in general is explainable by the fact that

if the state knows what is good for the economy it can easily and efficiently push on the decentralized level to do the right thing.[22]

4.3. Limitation analysis

In this thesis I use a panel data analysis. As mentioned in the methodology and appendix panel data approaches use the homogeneity assumption. In the framework of my thesis it means that in all countries the different collective bargaining categories have the same impact on macroeconomic performance. Although I control for some factors this assumption might be unrealistic. The consequence is that the coefficients for the individual countries will be miss specified and in the case of a dynamic setting the coefficient for the average country will even by miss specified (Pesaran and Smith, 1995). Kittel (2006) who applied this method multiple times (e.g. Traxler and Kittel, 2000; Ebbinghaus and Kittel, 2005) acknowledges that the use of panel data in macro-quantitative research is problematic and that it is better to rely on time-series for one specific country or cross-section unit. He calls the lack of robust findings in this field as symptomatic for this problem. It shows that it is important to realize what the weaknesses of panel data approaches are. I agree with Kittel (2006) that the use of panel data in this setting is problematic. However there is not enough data available to perform a simple time-series analysis. In this sense I believe that a panel data approach can give a proper indication of the true situation. However it is important not to over-rely on the findings based on a panel data analysis.

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[22] It is the reason why the Sovjet-Union for a long time could catch up with the United States. The economic growth of the Sovjet-Union declined however after the economy reached a certain level. Economic historians believe that this is because the state could no longer see what is the next step for the economy. From that point on the economy grows based on investment and innovation. My personal belief is that this is also the case for collective bargaining systems.

5. Conclusion

Previous research shows the importance of supporting legal provisions on the macroeconomic performance of collective bargaining systems with a certain degree of coordination (e.g. Traxler and Kittel, 2000; Traxler, 2003). This finding is often explained by the contingency hypothesis: supporting legal provisions create internal governability within both the trade union side as the employers' organization side which means the decentralized trade union and employers' organization cannot deviate from the coordinating collective agreement. This internal governability facilitates macroeconomic performance. My aim was to expand on this and research whether there are also circumstances that a system (with a certain degree of coordination) can perform well without these supporting legal provisions My entire analysis is based on the assumption that systems that are based on coordination cannot function if they have low internal governability, which means that trade unions and employers' organizations on the decentralized level will deviate from the coordinating collective agreement set on the more centralized level. If the decentralized trade unions and employers' organizations deviate from the collective agreement, which happens in a system of low internal governability, then the system falls apart and the system ends up in a system of full flexibility which leads to lower macroeconomic performance.

In this thesis I offered an additional option to create high internal governability in which case supporting legal provisions are not necessary: the collective agreement should be treated as a non-binding recommendation which serves as an information providing tool on possible direct coordination gains for all trade unions.

After having established the four categories (inter-associational, intra-associational, state-sponsored and pattern setting) which have potential internal governability problems I did an

empirical analysis to verify whether supporting legal provisions are necessary for these systems to yield higher macroeconomic performance or not. If supporting legal provisions yield higher macroeconomic performance this can be explained by the contingency hypothesis. If supporting legal provisions are not necessary for macroeconomic performance the option of treating the collective agreement as an information providing tool might offer a valid explanation.

This thesis offers three main findings. First, the contingency hypothesis only holds for one sub-category of the voluntary centralized collective agreement category: the inter-associational category. For the intra-associational category supporting legal provisions are not required to boost macroeconomic performance and the state-sponsored category never performs better than the uncoordinated category. Second, the pattern setting category already functions well without supporting legal provisions. Third, a full coordination system may also work well.

The explanation for the finding that the contingency hypothesis holds for the inter-associational category is that the supporting legal provisions create high internal governability which is a necessary requirement for collective bargaining systems with a certain degree of coordination to perform well. The finding that the intra-associational category already performs well without supporting legal provisions can be explained by the idea that in the intra-associational category the collective agreement is treated as a non-binding information providing tool on direct coordination gains for all trade unions. If it is in all trade unions interest to behave accordingly to this information the result is that supporting legal provisions are not necessary to create high governability which involves that the system can pick the fruits of coordination without supporting legal provisions.

The pattern setting category already performs well without supporting legal provisions. This finding can have two different explanations. Either the system has high governability because of the same reason as the intra-associational category (treat the collective agreement as a non-binding information providing tool) or the main economic sector is sufficiently strong so that the trade unions in the other economic sectors do not have an other choice than to follow the coordinating collective agreement set in the main economic sector. In this case the others trade unions cannot deviate from the coordinating collective agreement and has the system high governability as well.

The last finding is that the state-imposed category, a system of full coordination and theoretically without internal governability problems, also seems to perform relatively well (both with as without supporting legal provisions). An explanation might be that the state has a clear impression of what is good for the economy and can efficiently force the collective bargaining parties to do what is good for the economy. Based on evidence from the past (Sovjet-Union) this might work on the short run but on the long run it will not. It is the reason why on the long run I believe that system which incorporate a mix of coordination and flexibility, given that they solve the internal governability issue, yield the best macroeconomic performance: it is a system with coordination gains but it leaves a sufficient amount of opportunities on the decentralized level so that information of specific time and place can spread.

So are supporting legal provisions necessary ingredients for systems with a certain degree of coordination to perform well? My empirical analysis shows that supporting legal provisions only matter for the inter-associational category. For this category supporting legal provisions significantly increased macroeconomic performance. For the intra-associational category on

the other hand supporting legal provisions are not necessary to perform well. This can be explained by my theory that supporting legal provisions are necessary depending on which coordination goal the collective bargaining system wants to achieve. Is the goal of the collective bargaining system to solve the externality internalization problem then supporting legal provisions are necessary because without the supporting legal provisions decentralized trade unions will deviate from the coordinating collective agreement. Is on the other hand the goal to provide information on things which are beneficial for all trade unions then supporting legal provisions do not matter for macroeconomic performance since it is not in the decentralized trade unions' interest to deviate from this non-binding recommendation.

6. Appendix

6.1. (Control) variables and source

Variable	Proxy	Source
Labor Costs per Unit		J. Visser, ICTWSS Data base. version 5.0.
Unemployment Rate		OECD Statistics
Different Collective Bargaining Categories		J. Visser, ICTWSS Data base. version 5.0.
Governability (BGOV)	Dummy=1 (governability =high) if labor law provides both a provision which makes a collective agreement enforceable as a peace obligation. Dummy=0 (governability is low) if either labor law provision which makes the collective agreement or the peace obligation is absent.	Until 1996: Based on Traxler (2003), table 1. After 1996: Extrapolation (in all countries used no change during 1970-1996, indication that extrapolation is justified). OECD (2004) uses a similar definition for governability.
Openness Economy	Export/GDP*100%	World Development Indicators
GDP Growth per Capita		World Development Indicators
Monetary Policy	Central Bank Independence Index	Carolina Garriga's Central Bank Independence Index (2016)[23]
Labor Productivity		OECD Statistics

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[23] A higher degree of Central Bank Independence proxies for less-accommodating Central Bank policy.

Coverage Rate		Before 2000: based on Aidt and Tzannatos (2008), table 3
		After 2008: ILO Stat
Welfare Regime	Anglo-Saxon Bismarckian Scandinavian Southern European Rest	Own construction
Inflation Rate		OECD Statistics

6.2. Consideration concerning homogeneity assumption

Regression analysis using panel data assumes that the impact of the different factors on the dependent variable is homogenous. In my setting for example it assumes that the impact of a centralized collective bargaining system on the labor costs per unit is the same for all countries. If the homogeneity assumption does not hold in a static setting problems arise for the interpretation of the individual cross-section unit (or in my case country) since the regression will still yield consistent estimates for the average country. In the case of a dynamic setting a wrongly assumed homogeneity assumption yields more severe problems arise because in that case it is not even possible to interpret the coefficient for the average country (Pesaran and Smith, 1995).

My setting makes use of dynamic panel data set which makes the homogeneity assumption additionally important. Since I use a set of OECD countries which are relatively homogenous and control for a bunch of important variables there is not a reason to assume that the homogeneity assumption will not hold but it remains a risk.

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8. Regression tables and other statistical output

8.1. Unit Root tests

Levin, Lin and Chu test H0: All cross-sections have a unit root		
Variable	**P-value**	**Conclusion**
Labor costs per unit	0.9134	All cross-sections have a unit root
Ln(labor costs per unit)	0.0000	None of the cross-sections has a unit root
Unemployment Rate	0.0135	None of the cross-section unit has a unit root

8.2.   Main Regressions

	Ln(Labor Costs Per Unit)	Sign.	Unemployment Rate	Sign.
Intercept	0.3591	***	2.1211	**
Lagged dependent variables				
Ln(Labor Costs per Unit (-1))	1.3906	***		
Ln(Labor Costs per Unit (-2))	-0.6239	***		
Ln(Labor Costs per Unit (-3))	0.1660	**		
Ln(Labor Costs per Unit (-4))	0.0065			
Unemployment Rate (-1)			1.3958	***
Unemployment Rate (-2)			-0.4417	***
Collective Bargaining system				
Pattern	-0.0169	***	-0.0427	
Intra-Associational	-0.0148	**	-0.0048	
Inter-associational	-0.0020		0.3933	***
State-Sponsored	-0.0027		-0.1353	
State-Imposed	-0.0082	**	-0.2055	**
Additional impact legal provisions				
Law	0.0004		-0.2135	**
Pattern*Law	0.0115		-0.0239	
Intra-associational*Law	0.0048		-0.0547	
Inter-associational*Law	-0.0194	*	-0.4536	*
State-Sponsored*Law	-0.0086		0.1438	
State-Imposed * Law	-0.0215	*	0.4015	**
Control variables				
Openness economy	0.0002	**	0.0021	
GDP per capita growth	-0.0033	***	-0.2605	***
Monetary policy	0.0126	**	-0.3274	
Ln(labor productivity)	-0.0210		-0.4115	**
Ln(coverage)	-0.0020		0.1053	
Welfare regime				
Bismarckian	0.0022		0.0284	
Scandinavian	0.0075	**	-0.0255	
Southern European	0.0036		0.0327	
Rest	0.0266	***	-0.2910	*
Inflation			-0.0006	

	Ln(Labor Costs Per Unit)	Sign.	Unemployment Rate	Sign.
Adjusted R^2	**0.997**		**0.966**	

*** significant at 1% level, ** significant at 5% level, * significant at 1% level

White period Standard Errors