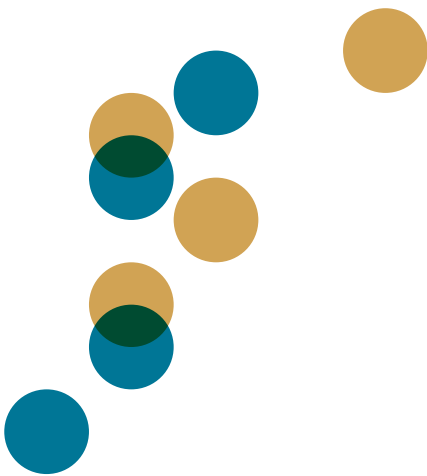# The Macro-economic Effect of Codetermination on Income Equality

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# The Macro-economic Effect of Codetermination on Income Equality

**Editorial Note:**

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(MZES). He received his doctorate in political science at the University of Hei-
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# Abstract

Many studies on the effect of codetermination at company-level reveal its significant influence on wage levels within companies. However, does this effect at the micro-level result in higher income equality at the macro-level as well?

A cross-sectional regression analysis of data on EU and OECD countries will be used to test for the code-termination's effect on income distribution. Assessing the impact of codetermination, a new index on code-termination strength will be introduced, combining the scope of codetermination rights with the threshold of codetermination laws. The results suggest a significant negative impact on the Gini index which indicates that codetermination rights lead to higher income equality.

# Contents

# 1. Introduction[1]

In the 1970s, many Western welfare states established compulsory systems of employee participation on the company board level, while in others there have not been any codetermination rights at the company level until today. Codetermination is thereby defined as the compulsory participation of elected employee representatives in a company's (supervisory) board in corporate decision-making and corporate control. Accordingly, this article only focusses on the impact of codetermination on the board level. Other forms of worker representation which affect bodies below the board level – such as work councils or shop stewards, for example – are out of the scope of this article. Multiple studies proposed a significant impact of codetermination rights at the board level on corporate policy and corporate performance (Baums & Frick, 1998; Benelli, Loderer, & Lys, 1987; Fauver & Fuerst, 2006; FitzRoy & Kraft, 1993, 2005; Gorton & Schmid, 1996, 2000, 2002, 2004; Gurdon & Rai, 1990; Hörisch, 2009; Sadowski, Backes-Gellner, & Frick, 1997; Sadowski, Junkes, Lindenthal, 2001; Schmitz, 2005).

However, do these effects on the micro-level also aggregate to macro-effects on the level of the political economy of western welfare states? Does codetermination also affect the income distribution at the level of the nation state?

In order to answer this query, a newly established index measuring compulsory codetermination rights in companies of the private sector in 32 western welfare states will be applied. It combines the coverage of codetermination with the threshold value of compulsory codetermination and therefore adds a second dimension to the state of codetermination research. Accounting for the threshold of compulsory codetermination in private firms is especially important since the prevalence of codetermination varies strongly within the EU and the OECD.  Consequently, the share of employees and companies, which are affected by codetermination laws, may show different outcomes. Correspondingly, the new index allows for operationalizing the strength of codetermination at the level of the nation state more confidently. Thus enables us to analyze the impact of codetermination on income distribution at the macro level.

The remainder is organized as follows: Chapter two provides an overview of current research on the micro- and macro-effects of codetermination on wage levels and income distribution. Using the current state of research, a hypothesis on the macro-effect of codetermination on the income distribution will be developed. In Chapter three, the index measuring the effective strength of compulsory codetermination in European Union and OECD-member states will be introduced. Chapter four presents the empirical results for the estimates of the effect of codetermination on income distribution in European Union- and OECD-member countries, followed by a conclusion in Chapter five.

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## 2. Micro- and Macro-Effects of Codetermination on Wage Level and Income Distribution: Theory and Hypothesis

Looking at the German system of codetermination, Abraham Shuchman deduced long ago: „ [Codetermination could; F.H.]…mark for the people of the world a new course between capitalism and collectivism that leads to a more rational and more just social order" (Shuchman, 1957; 244). With regard to the twenty-first century, such an outstanding historical relevance cannot be (undisputedly) attributed to codetermination. However, codetermination may possibly contribute to an increasingly socially defined regime, with regard to distributive justice in form of a more equal distribution of incomes.

Previous research indicated that codetermination might lead to higher employment rates in companies and higher wages (Adams, 2006; Gorton & Schmid, 2002 & 2004; Hörisch, 2009; Kraft, 2006; Schmitz, 2005; Vitols, 2008).

Employee representatives could ask to obtain higher wages, shorter working times or more fringe benefits in exchange for compliance in the (supervisory) board. Fauver and Fuerst (2006) state that if codetermination rights reach an excessive extent firms will transform into „country club for workers". Correspondingly, Gorton and Schmid find a strong positive effect of codetermination on the level of labour costs (Gorton & Schmid, 2004).

Accordingly, Gorton and Schmid, who compared equal representation in German firms with one-third representation, find that „employees at firms with equal representation will, on average, be overpaid and overstaffed, relative with firms with one-third representation" (Gorton & Schmid, 2002; 17). They furthermore show in their sample of German firms that codetermination leads to higher wages at the micro-level operationalized as the share of wages on the total revenue. Therefore it will be asked in the commencing sections, as to whether these distributional effects of codetermination at the micro-level aggregate to macro-effects on income distribution at the macro-level in an international comparison.

Until today, only one international comparative study in the field of comparative political economy exists that explicitly tests the macro-economic effects of codetermination. The study was financed by the „European Trade Union Institute for Research, Education and Health and Safety" and was conducted by Sigurt Vitols. Here, Vitols (2005) analyzes the arithmetic average values for a set of essential macroeconomic key values via comparing European Union member countries with codetermination systems with systems having no compulsory codetermination in the private sector. On the basis of his weighted comparison of means, Vitols concludes that countries with obligatory codetermination system perform better in regard to reducing unemployment, the balance of trade, the balance of current accounts, labour productivity, the business competitiveness index, the expense for research and development as a percentage of gross domestic product and the strike quota. However, it is also found that countries operating under codetermination systems perform worse in regard to the growth of the gross domestic product.

In order to estimate the effect of codetermination on income distribution, Sigurt Vitols also compares the arithmetic mean of the Gini index of countries to the mean Gini index of countries without compulsory codetermination. The Gini index measures the income distribution within states after taxes and social contributions have been deducted and including transfers. It therefore calculates the share of realized inequality in comparison to the highest possible inequality (Klein, 2005). Accordingly, the Gini coefficient ranges from 0 to 1, with a value of 0 indicating a completely equal distribution of incomes, and a value of 1, representing the hypothetic case of one person receiving all of the income (Klein 2005; 346).

In Vitols's study, countries contribute to the mean value weights by their weighted gross domestic product of the year 2003. The weighting according to gross domestic product causes that larger (and wealthier) countries like Germany, Italy, France or UK impact far stronger on the results than smaller countries like Slovenia, the Slovak Republic, Malta, Luxembourg or Cyprus.

Furthermore, the results indicate that there is an effect of codetermination rights on income distribution in the European Union member countries. Using a bivariate analysis, his study reveals that European Union Member countries with compulsory codetermination system on average have a lower Gini index score indicating more evenly distributed incomes. When interpreting the results of Vitols's study, one should consider that Vitols conducted a bivariate analysis. One feature to keep in mind for instance is that he did not control for other potentially important explanations of income distribution such as the strength of trade unions, the openness and embeddedness of the economy, the wage bargaining system or the labour market performance.

The eleven EU-member countries with strong codetermination systems score in Vitols's study on average 0.259 on the Gini index. The remaining 14 without or weak obligatory employee representations are characterized by a value of 0.321, indicating a more uneven distribution of income. Vitols thereby classifies Austria, Czech Republic, Denmark, Finland, Germany, Hungary, Luxembourg, the Netherlands, Slovak Republic, Slovenia and Sweden as countries with strong codetermination systems. Belgium, Cyprus, Estonia, France, Greece, Ireland, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Spain and the UK are classified as countries with weak or no codetermination system in the private sector (Vitols, 2005).

Seen from an economic theory point of view, the property rights theorists Jensen and Meckling (1979) expect consistently negative consequences of codetermination on macro-economic outcomes. Jensen and Meckling argue that codetermination rights weaken the possibility of shareholders to pursue their interest. Thus, they predict a significant reduction in capital stock, rising unemployment, decreasing income levels as well as a general decline of macro-economic output and wealth of a political economy if codetermination is introduced.

Elmar Gerum, arguing based on a theory of justice perspective that political economies with compulsory codetermination rights in the private sector have the edge over countries without codetermination rights. This, he states, is due to the provision of a voice-option for the stakeholders, while only the exit-option remains in interest pluralistic corporate governance systems (Gerum, 2004).

Comparative welfare state research argues that the design of welfare state arrangements plays a decisive role for macro-economic outcomes such as income distribution (Esping-Andersen, 1990; Hall & Soskice, 2001). According to the "Varieties of capitalism"-approach Coordinated Market Economies (CMEs), with codetermination being one of the core properties of CMEs, bear more evenly distributed incomes than Liberal Market Economies (LMEs) (Hall & Soskice, 2001; 22).

Dallinger (2011) describes the variance of income distribution in western welfare states in international comparison and explores the degree of welfare state redistribution for different deciles of incomes. As her goal is to discuss the changing role of the middle class she does not specify the driving forces within the welfare states that drive the redistribution between the various deciles of income and does thus not discuss the impact of codetermination on the distribution of income.

Western welfare states try to fight income inequality by applying a wide range of social transfers as well as labour market regulations (compare Schmidt, 2012), such as progressive income taxes, minimum wage, family benefits, social insurance institutions, and employment protection legislation, to name only a few. While many of these state interventions try to redistribute the disposable income of households more or

less directly, codetermination rights aim at strengthening the employees' bargaining position by giving the employee representatives the right to a say in specific matters of company policies. While there has been deregulation in at least some areas of labour market regulation (Jäkel & Hörisch 2009), the level of codetermination remains surprisingly stable (Hörisch 2009). Nevertheless the level of income inequality has been rising for decades in Western Europe (compare Schäfer, 2012). Schäfer demonstrates that these rising income inequalities lead to a decline in social trust and satisfaction with democracy (Schäfer2012). Obinger (2012) argues that the financial crisis will lead to even further severe cuts in public social expenditures and, accordingly, to increasing income inequality and lower levels of satisfaction with democracy.

Due to the conflicting theoretical expectations concerning the effect of codetermination on income inequality, an empirical analysis may constructively contribute to the discussion on the implications of the institution of codetermination as part of the corporate governance system. Accordingly, for the macro-effects of codetermination it holds true what Theodor Baums and Bernd Frick already stated for the effects of codetermination on the company level: „Theory gives no guidance as to the likely effects of mandated codetermination. The beneficial or detrimental effects of co-determination ought, therefore, to be demonstrated empirically"(Baums & Frick, 1998; 144).

In the following section, the macro-economic effect of obligatory codetermination systems for private firms shall be estimated where Vitols (2005) previously mentioned study results will be tested. Beyond the empirical evidence of the micro level there are strong theoretical reasons to expect macro-economic effects of codetermination on the macro level. Employee representatives should have an interest to fight for more and broader investments to lower the chance of massif lay-offs in company boards. Furthermore company boards decide over the compensation for the management. Here, employee representatives should have incentives to fight for a lower management compensation to keep more money in the firm for future investments and / or higher wages. The same applies to the height of dividend pay-out. Thus we would expect political economies with compulsory codetermination to have higher rates of investments and higher wages, which should lead to a more equally distribution of incomes. What is not affected by codetermination is the level of state transfer payments, which is why we would not expect to have a strong impact of codetermination on the lowest income groups, but rather to the middle and / or higher income groups. Furthermore we would not expect to have a (direct) effect of codetermination in the private sector on the level of wages in the public sector. Nevertheless there might be a contagion effect of the wage level in the private sector on the wages in the public sector, if we find evidence for the first relationship.

According to the current state of research, Shuchman's presumption (1957) as well as Sigurt Vitols's (2005) empirical finding that codetermination goes along with more equally distributed incomes, need to be tested. Therefore, hypothesis H1 is:

H1: Higher levels of codetermination rights ceteris paribus lead to more equal income distributions.

## 3. Index of the Effective Strength of Codetermination in the Private Sector in European Union and OECD-Member Countries

In the following chapter a new index combining an existing measure of the scope of codetermination with a measure of the threshold to a new index of compulsory codetermination in the private sector is introduced (the index was developed in Hörisch 2009; see Hörisch 2009: 31-55 for a detailed description of codetermination systems in western welfare states). Table A.1 displays the codetermination systems of the 25 European Union member states (before the accession of Rumania and Bulgaria) and of seven additional

OECD member states: Australia, Canada, Japan, New Zealand, Norway, Switzerland and the United States.

The second column provides information on whether there is a mandatory system of codetermination in the corresponding political economy. A country is labeled "y" if employee representatives participate in corporate governance and control and are integrated in corporate decision making and corporate policy making by means of obligatory seats in the company (supervisory) board of private sector-companies.

In order to be classified as a country with codetermination, a binding law needs to prescribe employee representation through elected members of the supervisory board if a certain threshold of employees or firm size is reached. This is the case for 14 out of 32 countries in the sample. Regarding the non-European Union countries, only Norway has an obligatory codetermination system in the private sector. Consequently, with 13 out of 25, more than half of the European Union countries have compulsory codetermination system. In many countries without codetermination in the private sector, there are codetermination rights in certain state-owned companies or sectors (Hörisch, 2009).

The third column operationalizes the strength of the employee representatives' influence on corporate policy. This classification of the scope of codetermination is based on the preliminary work of Martin Höpner (2004, 2007). Solely the values for Cyprus and Malta were classified on the basis of own inquiry, because they were missing in Höpner's overview.

Countries with no codetermination system in the private sector are coded "0". The only country where employee representatives have obligatory seats in the board but no voting rights is France. Consequently, it is coded as a 1 for the scope of codetermination. In all other states with codetermination systems, all employee representatives inhabit the same rights and duties[2] as the other members of the board and in particular are entitled to vote (Köstler & Büggel, 2003). Countries where employee representation accumulates up to one third of the board members are coded with a value of 2. Here it must be noted that Slovenia is also coded with a value of 2, although up to half of the board members may be employee representatives. This is because the articles of the company, which are agreed on by the shareholders, have to fix a higher participation than the one-third representation of employees (European Trade Union Institute & Hans-Böckler-Stiftung 2004). This process only secures a compulsory one-third representation in Slovenia, so that only this level of codetermination shall be coded here. Countries, in which compulsory codetermination beyond a certain threshold is larger than third, participation are coded as 3 for the scope of codetermination.

The fourth column displays the number of employees beyond which the company is affected by the compulsory codetermination law. The data for the classification of the codetermination threshold are derived from the publications of the European Trade Union Institute and the Hans-Böckler-Stiftung (2004) and Niedenhoff (2005).

When comparing the 32 codetermination systems, the Netherlands appears to be an exceptional case: Here, the application of the codetermination law not only depends on the legal form of the company and the number of employees (at least 100), but also on the existence of a works council and a net equity capital of at least 16 million Euro (European Trade Union Institute & Hans-Böckler-Stiftung, 2004).

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[2]    With the exception of the compensation they get for their membership in the board, which in some countries differs from the compensation of the other board members.

The value in brackets next to the absolute threshold of codetermination indicates the classification of the threshold in four categories, ranging from zero to three. A value of three is assigned to those states where codetermination is already legally compulsory in companies with less than 100 employees, which is the case in five states, where the threshold for codetermination law varies between 25 and 50 employees. The value two is attributed to all countries with legally binding codetermination in firms with a threshold between 100 and 300 employees. In these states, employee representatives in companies of sufficient size possess a voice in concerns of corporate governance and corporate control. The value of one is dedicated to all states in which primary companies of a size of at least 500 employees are affected by codetermination law. Consequently, zero is assigned to all countries either without any codetermination system or countries in which there are only codetermination rights in companies above 1.000 or more employees.

The data on the threshold of codetermination were additionally collected, as the author is convinced that the discussion on codetermination so far was concentrated too much on the scope of codetermination. Therefore, it neglected the influence of the number and importance of the companies that were affected by codetermination.

In the scientific discussion on codetermination it is often stated, for example, that the German system of codetermination provides very high levels of influence for employee representatives (Brocker, 2006; Donges et al., 2007; Rebhahn, 2004; Klös & Stettes, 2006). However, this extensive scope of codetermination is only granted to employees in very large firms. On the contrary, it is often neglected that no codetermination exists in German firms with less than 500 employees. At the same time, the threshold of codetermination law is very influential on the overall strength of codetermination: In Denmark, with a threshold of 35 employees, 60% of all employees are working in companies under codetermination law, while in Austria, with a threshold of 300 employees, this counts only for 15% of the work force (Taylor, 2006; Hörisch, 2009).[3]

This is why it is inadequate to operationalize the strength of codetermination by its scope only. Instead it is required to add an indicator of the threshold for codetermination laws to the one for its scope to measure the strength of codetermination in a political economy. Wanting to combine scope and threshold of codetermination in order to compute the overall level of codetermination, both dimensions are additively connected since there is no sufficiently strong theoretic argument to rate one dimension higher than the other.[4] The values for the overall accumulated level of codetermination are thus provided in the last column of Table A.1 below.

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[3] Further data that provides information on the cover ratio of codetermination for all EU- or OECD member countries is unfortunately not available.

[4] One might also think of connecting both dimensions of codetermination by multiplication to account for the relevance of the scope of codetermination which differs with different thresholds of codetermination. But as there is no comparable data on the coverage of codetermination (for example the share of employees or the share of gdp of the economy that is produced in companies with codetermination) the author favours to connect both dimensions of codetermination by adding them up. If one would try to combine both dimensions of codetermination by multiplication one should account for the differences in the company and economic structure between the several countries within the sample of EU and OECD states.

**Table A.1: Codetermination in 32 European Union- and OECD-Member States**

| Country | Codetermination | Scope of Code-termination | Threshold of Code-termination | Level of Co-determination |
|---|---|---|---|---|
| Australia | n | 0 | - (0) | 0 |
| Austria | y | 2 | 300 (2) | 4 |
| Belgium | n | 0 | - (0) | 0 |
| Canada | n | 0 | - (0) | 0 |
| Cyprus | n | 0 | - (0) | 0 |
| Czech Republic | y | 2 | 50 (3) | 5 |
| Denmark | y | 2 | 35 (3) | 5 |
| Estonia | n | 0 | - (0) | 0 |
| Finland | y | 2 | 150 (2) | 4 |
| France | y | 1 | 1.000 (0) | 1 |
| Germany | y | 3 | 500 respectively 2.000 (1) | 4 |
| Greece | n | 0 | - (0) | 0 |
| Hungary | y | 2 | 200 (2) | 4 |
| Ireland | n | 0 | - (0) | 0 |
| Italy | n | 0 | - (0) | 0 |
| Japan | n | 0 | - (0) | 0 |
| Latvia | n | 0 | - (0) | 0 |
| Lithuania | n | 0 | - (0) | 0 |
| Luxembourg | y | 2 | 1.000 (0) | 2 |
| Malta | n | 0 | - (0) | 0 |
| Netherlands | y | 2 | 100 (2) | 4 |
| New Zealand | n | 0 | - (0) | 0 |
| Norway | y | 2 | 30 respectively 50 (3) | 5 |
| Poland | y | 2 | 500 (1) | 3 |
| Portugal | n | 0 | - (0) | 0 |
| Slovak Republic | y | 2 | 50 (3) | 5 |
| Slovenia | Y | 2 | 500 (1) | 3 |
| Spain | n | 0 | - (0) | 0 |
| Sweden | y | 2 | 25 (3) | 5 |
| Switzerland | n | 0 | - (0) | 0 |
| United Kingdom | n | 0 | - (0) | 0 |
| USA | n | 0 | - (0) | 0 |

Explanatory notes: Own overview on the basis of the data of the European Trade Union Institute and the Hans-Böckler-Stiftung (2004), Höpner (2004, 2007) and Niedenhoff (2005); compare (Hörisch 2009, 2010 & 2012).

Codetermination:   y = Existence of compulsory codetermination in the private sector;
n = no compulsory codetermination in the private sector

<u>Scope of codetermination:</u> 0 = no compulsory codetermination in the private sector;

1 = employee representatives in the (supervisory) board without voting rights;

2 = employee representation with up to one third of all board members including voting rights;

3 = obligatory codetermination rights exceeding a third of all board members. Among others in France, Greece, Ireland, Italy (only Alitalia) and Lithuania there are compulsory codetermination rights for the employees of companies in the public sector.

Concerning the threshold of codetermination some countries have more complex regulation, e.g. the coal and steel industry in Germany. Furthermore Dutch companies not only need to employ at least 100 employees to be subject to codetermination law, additionally a works council must exist and the company has to provide a net equity capital of at least 16 million Euros. For further information on the terms and conditions for companies to be subject of obligatory codetermination law, see Hans-Böckler-Stiftung (2003) and BDA / BDI (2004).

Concluding, Table A.1 displays that 14 of the 32 countries in the sample prescribe an obligatory codetermination system for the private sector. Countries with a codetermination system on average score 3.86 index points with a highest possible index value of 6. An index value of 6 would combine a low threshold of codetermination law with a very far reaching scope of codetermination and is not reached in any country of the sample. The highest index reached by several countries is 5. For all other countries, the average index value is 1.69.

Within the 25 European Union member states that are analyzed here, 13 regulate compulsory codetermination in the private sector by law, including France. Nevertheless, the classification of France in the group of countries with codetermination is controversial since the employee representatives in the board of French companies do not possess voting rights. It is furthermore remarkable that exclusively EU countries and Norway (the only non-EU member) adopted codetermination rights. All other non-EU member states of the OECD do not have codetermination rights in the private sector. Within the European Union, it is noteworthy that in the group of the old member countries there are also countries, which adopted codetermination rights in the 1970s as well as countries without codetermination. The same holds true for the new member states after their accession to the European Union in 2004.

## 4. Empirical Findings

The following figure presents the bivariate correlation between the level of codetermination and the income distribution for all 32 EU and OECD member states in 2005.

**Figure A. 1: Codetermination and Income Distribution in Western Welfare States**
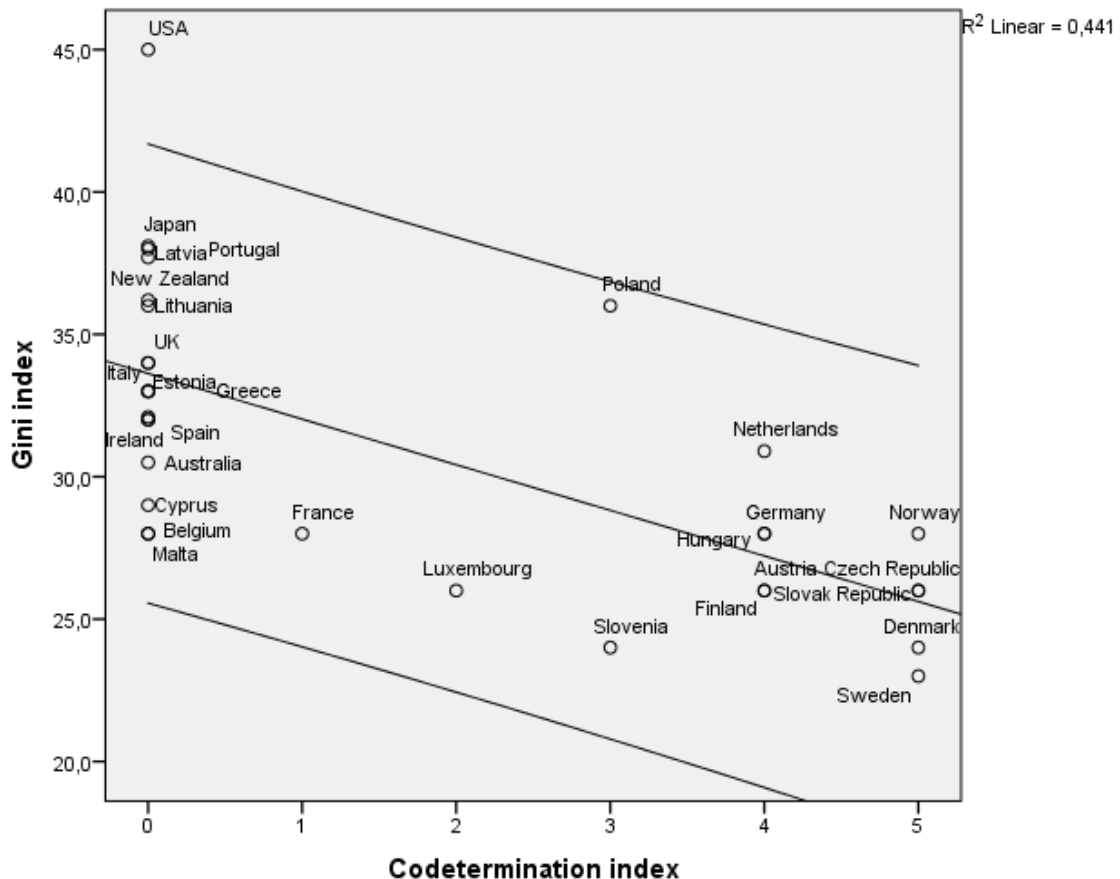


Explanatory notes: Regression line with 95% confidence interval (Beta = -0,664; $R^2$ = 0,441). If the outlier United States is dropped from the sample the correlation between the level of codetermination and income distribution increases (Beta = -0,692; $R^2$ = 0,479). If then Poland is excluded additionally the distribution increases even further (Beta = -0,742; $R^2$ = 0,551).

This figure demonstrates that higher levels of codetermination in western welfare states come along with more equally distributed income levels.

Furthermore, the following cross-sectional analyses controls for further vital, but dormant influencers of income distribution. Therefore, the third model includes three socio-economic control variables: Gross domestic product per capita, the unemployment rate and the openness of the economy. The gross domestic product might have an impact on the income distribution since it sets the leeway for redistribution. Unemployment will be controlled for because a higher unemployment rate could lead to a larger share of people receiving no or only a small income. Thus might lead again to a higher Gini index value. The last independent variable, openness of economy, operationalizes as to how and to what extend a political economy is exposed to international competition.  A very open, integrated economy might induce increas-

ing competition and thus lead to more unequally distributed incomes (compare Beckfield (2006), who emphasizes the positive impact of regional integration on income inequality).

The fourth model includes alternative power resource controls in addition to the codetermination index: Trade union density, workplace participation and the degree of centralisation of wage bargaining. Therefore, it can be tested whether the correlation we find is really a separate effect of the strength of codetermination and not due to further salient variables representing power resources. Out of this, trade union density is included first. Trade unions fight for a more equal division of incomes among employees. Stronger unions should accordingly lead to a lower Gini index score. Furthermore, we control for the workplace participation ensuring that the effect found is one of codetermination at the company level and not one of workplace participation. The degree of bargaining centralization might influence the wage level and thus the overall income distribution at the macro-level as well.

Due to the low degree of freedom, the models are run separately for the socio-economic controls and the alternative power resource controls first. Model five then shows the results if all control variables are included. The results are essentially robust for the choice of control variables.[5] The results of the cross-sectional analysis confirm the bivariate finding (see Table A.2 below).[6]

They indicate that the level of codetermination has a relatively strong and significantly negative effect on the Gini index. This result is robust when control variables are included. Therefore, the hypothesis stating that the level of codetermination affects the distribution of income in an equalizing way is confirmed. Lastly we control for the degree of centralisation of wage bargaining since it determines how the tariff wages are set. This might be an alternative explanation for the variation in the income distribution between the EU and OECD countries.

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[5]   The same holds true for the inclusion of other potential control variables, which possibly could influence income distribution as the partisan composition of the government, the growth of GDP, the share of service sector on GDP and the productivity growth or if it is controlled for the employment rate instead of the unemployment rate. As for reasons of clarity tin the model and scarcity of the degrees of freedom these variables are not included in the presented model.

[6]   The data is derived from the CPDS-I-data set (Armingeon et al., 2010), the publication of the European Foundation for the Improvement of Living and Working Conditions (2007), the Eurostat-data base (2008) and the CIA-world factbook (CIA, 2008). The EU sample generally consists of the 25 member states (before the accession of Rumania and Bulgaria). The OECD sample  consists of Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK and the US (the OECD countries for which the data on codetermination was available). In some of the analyses below some additional cases had to be excluded due to missing data for independent variables in the data sets.

**Table A.2: Level of Codetermination and Distribution of Income (Gini-Index 2005) in EU and OECD States**

| Model | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Level of Code termination | -0.664*** (-4.866) | -0.677*** (-4.413) | -0.519*** (-4.025) | -0.487*** (-3.521) | -0.463*** (-3.126) |
| GDP per Capita | | | -0.188 (-0.98) | | 0.046 (0.221) |
| Unemployment Rate | | | 0.182 (1.002) | | 0.095 (0.584) |
| Openness of the Economy | | | -0.122 (-0.818) | | -0.235 (-1.561) |
| Trade Union Density | | | | -0.388** (-2.693) | -0.319** (-2.156) |
| Workplace Participation | | | | -0.257 (-1.467) | -0.348 (-1.536) |
| Degree of bargaining centralisation | | | | 0.069 (0.434) | 0.123 (0.766) |
| $R^2$ | 0.441 | 0.459 | 0.607 | 0.700 | 0.754 |
| Adj. $R^2$ | 0.423 | 0.435 | 0.529 | 0.641 | 0.653 |
| VIF (Max.) | 1.000 | 1.000 | 1.866 | 2.052 | 3.555~ |
| n | 32 (EU and OECD) | 25 (EU) | 25 (EU) | 25 (EU) | 25 (EU) |

Explanatory notes: The numbers shown are the standardized coefficients. Values in brackets are t-values. * = 10%-level of significance, ** = 5%-level of significance, *** = 1%-level of significance. The dependent variable is the income distribution of the year 2005, quantified via the Gini index. The independent variables are arithmetic means for the years 2000 to 2004. The variable "workplace participation" thereby measures the share of employees working in a company with workplace codetermination rights. There is no outlier with a residuum of more than three standard deviations. The multicollinearity is mainly due to a rather high correlation between the variables "GDP per capita" and "Workplace Participation". However, the level of codetermination has a rather low Variance Inflation Factor of 1.517.

The results show that the level of codetermination in the private sector has a strong and strongly significant impact on the income distribution on both, the EU and the OECD countries. A higher level of codetermination thereby leads to more equally distributed incomes, indicated by a lower Gini index. This result holds true if the socio-economic control variables are included (see Model 3). The impact of codetermination however becomes slightly smaller if the controls are included, but remains strongly significant and negative. None of the three socio-economic variables have a significant effect on income distribution (even though the GDP per capita and the unemployment rate have the expected sign).

Including the power resource control variables in Model 4, the impact of codetermination on income distribution becomes a little weaker however remains significant and powerful. The trade union density has a consistently significant negative effect on the income distribution in all models. Comparing the EU-25 member states one can easily see, that countries with stronger unions also have a more equally distributed

income than countries with rather weak union movements. What should be pointed out here is that there remains a strong independent effect of the level of codetermination on the Gini index despite including the union strength. This shows that there is still a self-contained effect of the level of codetermination on the income distribution if union strength is controlled for. The remaining power resource control variables have no significant impact on the outcome.

Due to the strong influence of union strength and level of codetermination, a model including both, the level of codetermination and the power resource variables, explains more than two thirds of the variation of the dependent variable (Gini index) for the sample of EU-25 countries (see Model 4 in Table A.2).

The results do not change substantially if socio-economic and power resource controls are included in one Model (see Model 5 above). Therefore negative effects of the level of codetermination and union strength on income inequality thus are robust.

Out of this, the previously stated hypothesis can be confirmed by the analysed sample of EU countries. This strongly supports Vitols (2005) results, which indicated a negative bivariate correlation between the existence of a compulsory codetermination system in the private sector and the level of the Gini index. Correspondingly, it is fair to conclude that states with codetermination inhabit a more equal distribution of incomes than states without employee representation in the board of companies in the private sector. This supports – on the macro-level – the results found on the micro-level by Gorton & Schmid (2002), stating that codetermination has an impact on the wage level in German companies.

Finally, the impact of the level of codetermination does not provide an answer on which components of the income distribution the (major parts of the) income disparity consists of (Klein, 2005). This is why the influence of codetermination on the highest and the lowest income decile will finally be tested for the EU-sample, controlling for the variable that had a significant influence in the models of the EU-sample (cf. Hörisch 2009; 235-237). It needs to be assumed that the effect of codetermination on the highest decile of income will be larger than on the lowest decile: On the one hand, the lowest decile of income is mainly dependent on transfer payments and thus not influenced by codetermination at a large scale. On the other hand, it needs to be assumed that codetermination might have a larger effect on the highest decile of income because company policy is made by the board and inter alia the management's compensation is set by the (supervisory) board.

Furthermore, through codetermination rights, the employees are given more influence on the firm policy in comparison to the shareholders and the management. This might lead to a more employee-oriented company policy. As a result, this might lead to lower income levels in the highest decile of income and higher wage levels in the moderate wage groups.

Table A.3 presents the results for the impact of codetermination on the highest and the lowest income decile for the sample of EU-25 member states.

**Table A.3: Codetermination and Share of Income in the Lowest and the Highest Decile of Income in European Union Member Countries (2005)**

| Dependent Variable | Highest income decile | Lowest income decile |
|---|---|---|
| Level of Codetermination | -0.906*** | 0.528** |
| | (-7.711) | (2.461) |
| Trade union density | 0.061 | -0.073 |
| | (0.518) | (-0.338) |
| $R^2$ | 0.776 | 0.251 |
| Adj. $R^2$ | 0.754 | 0.176 |
| VIF (Max.) | 1.231 | 1.231 |
| n | 23 | 23 |

Explanatory notes: The numbers shown are the standardized coefficients. Values in brackets are t-values. * = 10%-level of significance, ** = 5%-level of significance, *** = 1%-level of significance. There is no outlier with a residuum of more than three standard deviations in both models. In the model with the lowest decile of income as dependent variables, there is one outlier with a residuum of more than two standard deviations: Denmark. In the model, the positive effect of the level of codetermination on the dependent variable becomes significant on a 1%-significance level if Denmark is excluded. The estimated coefficient for the impact of the trade union density changes its algebraic sign, the coefficient becomes positive, but is still not significant.

The results of the estimations of codeterminations impact on the highest decile of income are evident: Higher level of codetermination lead to a significant lower income share for the highest decile of income, while the control variable "union strength" does not significantly impact the outcome.

The level of codetermination effect on the lowest decile of income is smaller than the previous. This is to a large degree due to the fact that the lowest decile of income lives on the basis of welfare state payments to a large degree and is thus not mainly affected by codetermination in the private sector. The trade union density has no significant impact on both, the highest and the lowest decile of income. Given the number of cases (n = 23) the multivariate models can only give first results for the impact of codetermination on income inequality as it is not possible to control for all possible alternative explanations, like state interventions via minimum wage legislation for instance.

## 5. Discussion and Conclusions

The present article introduces a new index of compulsory codetermination that goes beyond the state of the art in codetermination research. Therefore it builds on the work of Martin Höpner (2004, 2007) who introduced an index operationalizing the scope of codetermination for firms in the private sector by adding a second dimension of codetermination: The threshold of number of employees from which on the companies are affected by codetermination laws. As it is argued above it is important to account for the size of the firms from which on codetermination is compulsory, because the share of companies (and employees) which are affected by compulsory codetermination varies a lot within the EU and OECD country sample.

The index of compulsory codetermination for private firms enables us to specify the effects of codetermination on income distribution at the macro level. Summarizing the results, the analysis of the macro-effects of codetermination on the distribution of income in EU-25 and OECD member states revealed that codeter-

mination has a strong equalizing effect on the distribution of income. They further indicate that obligatory codetermination systems have a strong compensatory effect on income distribution in both samples. Therefore the findings confirm the results found by Vitols (2005) in bivariate analysis. Accordingly one can agree to Elmar Gerum (2004), who states that corporate governance is a relevant institution for justice in societies. His normative argument finds empirical support by the presented results.

The introduction of obligatory codetermination in the private sector was a "left project" that was mainly pursuit by left or social-democratic parties respectively. It was meant to lead to more participation rights and to a more justice allocation of the goods produced by a political economy. This intended effect of codetermination was found in both samples, for the EU-25 member countries as well as for the OECD member countries. The estimated coefficient for the impact of codetermination on the Gini index was consistently significant and negative.

These results go in line with the research on the micro-effects of codetermination on wage level. Micro- and the macro-effects of codetermination confirm the thesis that codetermination is an institution of the political institution which brings along more distributive justice.

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