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Fiscal Policy in the Context of Varieties of Capitalism

A project carried out on the Master in Economics Program under the supervision of:
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Abstract:

In the recent literature the impact of institutional variables on macroeconomic policy outcomes has been largely ignored. However one particular strand of the political economy has lately shed some light on the relationship between fiscal policy and its effects on economic growth by distinguishing the type of capitalism which characterizes developed countries. In this paper I will follow this so-called Varieties of Capitalism approach to examine the question, whether fiscal policy in liberal market economies is more effective than in non-liberal ones due to institutional complementarities. For this purpose I rely on a mixed-methodology, first using vector autoregressive models to determine fiscal multipliers across 19 OECD countries, before investigating by which institutional factors expansionary fiscal effects might be influenced. Indeed, significant difference in the size of the multiplier between the two production regimes can be found. However, the obtained results seem exactly to contradict my expectations.

Contents

1. Introduction:

The effects of fiscal policy on the economy are of ongoing interest to economic policymakers. Recently, the US, European, and various other governments intend to weaken or avoid a potential recession related to financial market turbulences by large fiscal stimulus packages or massive tax cuts. Many papers about the relation between fiscal policy and economic growth postulate quasi homogenous fiscal multipliers across countries. I would like to question this view and demonstrate that there is probably a great portion of cross-country heterogeneity in this relation. What is missing in most empirical investigations so far is a comparison of economic systems that are not only split by the stage of institutional development but by various types of production systems, for example different ideals of institutional settings. Following the 'Varieties of Capitalism' literature, which was initiated by Hall and Soskice in 2001, different types of institutional settings characterize different market and production regimes in the economy. Basically two polar cases have been identified by this literature. The first one is the *Liberal Market Economy* (LME) containing mostly Anglo-Saxon countries, who mainly rely on deregulated markets to acquire coordination among economic actors, while price signals and formal contracting are its primary mechanisms. In contrast to those liberal market economies, *Coordinated Market Economies* (CMEs), mainly Scandinavian and Continental European countries can be distinguished by the 'Varieties of Capitalism'-literature, where coordinated collective actions by the state or unions play meaningful roles and affect procedures of strategic interaction. I will demonstrate that various production regimes as illustrated in the 'VoC'-literature deliver a narrative for heterogeneity between categories of countries regarding growth effects of fiscal policy. My core argument is that different economic systems lead to different degrees of fiscal uncertainty and effectiveness due to certain institutional features, which significantly characterize the economic growth at similar fiscal adjustments and by this generate a source of heterogeneity in the fiscal multipliers between LMEs and CMEs.

2. Theoretical Part: Varieties of Capitalism in a Comparative Analysis

When comparing both, the understanding how differences in their institutional characteristics effect their economic performance is key. The concept of path dependence by Bebchuck and Roe (1999) explains why the differences in multiple institutional spheres in developed economies are strongly persistent over time, although the powerful forces of globalization push them to international convergence. Because of this path dependence, a country's pattern of institutional features at any point in time depends partly on the patterns it maintained earlier. Consequently, when countries possessed different industrial relations or rules at earlier points in time because of their different circumstances at that time, or even because of historical accidents these differences might persist in their present even if their economies have otherwise converged. However, one should bear in mind that probably more than one strategy can deliver economic success. In a liberal market economy, companies are confronted with large stock markets marked by high levels of transparency and dispersed shareholding, while companies' financing opportunities strongly depend on market valuation. In addition regulatory authorities allow contested takeovers that rely on stock prices, driving executive directors more sensitive to the ongoing profitability of their company. Technology transfer is usually achieved by licensing or recruiting expert staff, while standards are mostly determined by competitive market mechanisms. Besides, executive directors enjoy essential power and control over all aspects of corporate strategy. In this scenario, most of the business relations are shaped by the competitive character of unregulated markets. Moreover, because labor markets are more fluid in such a liberal environment, workers have stronger incentives to invest in general skills that can be taken to other jobs, and, because industry associations are weak, companies cannot offer in-house vocational training systems, which could impart industry-specific skills. In contrary firms of CMEs are closely linked by dense networks of cross-shareholding and powerful industry associations. These business networks also play a major role in standard setting, providing opportunities for technology transfers and allowing

firms to develop reputations that grant access to capital on terms that less depend on their stock market values. Correspondingly, executive directors are less sensitive to ongoing profits. In most industries, labor unions and employers associations manage concerted vocational training systems, endowing employees with firm or sector-specific skills and private supplementary insurances, if they take part in them. In the presence of influential labor unions and industry associations, executive director enjoy less freedom for solo runs, and companies usually prefer a more consensual style of decision-making. To accomplish their primary purposes, companies in CMEs have to rely more strongly on strategic interaction. Nevertheless, the quality of the results and the institutional setting for strategic coordination may still differ across countries. Especially the Mediterranean economies (Italy, Portugal and Spain) are often described as 'Mixed Market Economies', because they do not seem to possess all essential features of an archetype-CME. Labor unions and employers associations are less organized in these countries compared to other CMEs and therefore many coordination problems have to be solved by the state as key actor. For example public regulators play an important role in the allocation of credits by banks.

Aggregated Demand Management Regimes (ADMR)
Consequently the 'VoC'-literature (Soskice, 2007) has stated that different types of production regimes should show various fiscal political reactions to macroeconomic shocks. The demand for a counter-cyclical macroeconomic policy should differ in each variety, because LMEs and CMEs support various institutional characteristics in the sub-spheres of VoC in particular: industrial relations, education and vocational training, corporate governance, and inter-firm relations (Hall and Soskice, 2001). Correspondingly, each variety of capitalism has developed its own aggregate demand management regime to solve comparable macroeconomic problems with differentiated, type-specific political reactions. In recent contributions, Carlin and Soskice (2009) as well as Iversen and Soskice (2010) have argued that liberal market

economies would manage a more generous and more counter-cyclical fiscal policy than non-liberal market economies. Under similar economic condition, for example in the face of a recession, non-liberal market economies would implement a restrictive budget policy in order to constraint public debt, while their liberal counterparts prefer a looser stance on budgetary politics to mitigate the painful effects of an economic downturn on growth or unemployment. Besides, a more conservative stance on monetary policy should be considered as superior solution in CMEs, due to the fact that it is complementary to a collective wage bargaining strategy by unions in the Small-N case, since tough monetary authorities require tough fiscal authorities for their own credibility. Consequently, my core argument is that powerful complementarities tie ADMRs into the context of fiscal policy, linking production regimes with welfare states and political systems. Different demand management regimes lead to different restrictions and opportunities that each style of production regime would face. LMEs for example are characterized by a relatively low level of social protection. Contrary to this, non-liberal market economies afford a much more active and accommodating type of welfare state. As already mentioned above, past economic circumstances may explain these differences accordingly to the concept of path dependence. For instance Fordism and mass semi-skilled workforces were more important in those economies, which became LMEs. Since they have been long characterized by the absence of well-organized, nation-wide labor unions and coordinated employer movements, which are necessary to create vocational training systems, these mainly Anglo-Saxon economies moved strategically towards flexible labor markets. As a result LMEs rest their ability to compete on operations that get along with a general skilled workforce (Iversen, 2005). In case of a lay-off workers should find a new job more easily, because the industrial sector in these countries does not necessarily require specific-skilled labor. Since neither employees nor employers have an incentive to invest in vocational training, which could not significantly contribute to the productivity or competitiveness of the firms, there would be no need to protect specific-skills by a labor

union or the state. In contrast, coordinated market economies' ability to compete relies mostly on operations that demand a workforce with firm- or industry-specific skills. In this case, the presence of a strongly protective employment law works as an ex-ante incentive to adopt firm- or industry-specific skills. Correspondingly, one would expect labor protection and social insurance systems in coordinated market economies to be more extensive. As a result non-liberal market economies maintain large and efficient "automatic stabilizers", while their liberal counterparts have mostly deficiencies on that domain. Thus, liberal market economies require massive discretionary fiscal responses to compensate for macroeconomic shocks, while non-liberal market economies can rest on their automatic stabilizers to manage an economic crisis. Amable and Azizi (2013) have shown that in contrary to Soskice's prediction liberal market economies operate far less counter-cyclical in terms of fiscal policies than coordinated market economies. As it turned out, the complementarities between the fiscal political stance and the institutional features in a particular state consequently appear to vary corresponding to the type of production regime, but not in the direction, which is suggested by the VoC-literature.

Complementarities in VoCs and the Fiscal Multiplier

A second prediction by Soskice (2007) is the hypothesis that governments of CMEs run a less effective fiscal policy than those of LMEs, which may be appropriate due to the industry-specific skills of employees in non-liberal economies. Regarding labor relations companies must solve the issue of providing their employees with proper skills, while the workforce must decide how much to invest in which ability. Not only the success of individual firms and employees but the qualification level and competitiveness of the overall economy rest on the results of this coordination problem. In a non-liberal environment the workforce would likely respond pro-cyclically and by this create more precautionary savings in times of recession than under liberal conditions, because it could be much more difficult for them to find a new

job on regulated labor markets in case of a lay-off. Furthermore, because these rigid labor market are dominated by specific skills, there is a potential negative externality. The number of vacancies within a given category of employment will likely be limited, if the major part of employees have long-term employment contracts. Hence, firms will try to occupy open positions with trainees. Consequently the supply of mid-career vacancies is quite short. In any case, the fear for rising unemployment could increase pressure on governments to reform social security systems and cut public spending. In result, also well-trained workers in stable jobs might react pessimistic by building up their savings. Following Modigliani's life-cycle hypothesis, savings do not arise out of an interest rate incentive to substitute future for current expenditure but from precautionary savings in reaction to actual reductions in public old-age provision. Furthermore, a precautionary saver will prefer to buy government bonds rather than private bonds, which will create stronger crowding-out effects in CMEs during fiscal expansions. As a consequence fiscal multipliers are smaller and therefore counter-cyclical fiscal stimuli become less efficient. However, this second prediction of Soskice has been largely ignored by the recent literature and not been verified yet. The latest international financial and economic crisis confronted all OECD member states with similar economic challenges. Nevertheless policymakers from different institutional backgrounds present different narratives and solutions towards this crisis. Since the economic consequences of fiscal adjustment might vary across countries, according to their production regimes, any policy advice should consider the institutional environment. Thus, it seems reasonable, that Central European economists and politicians are mainly worried about budgetary consolidation as a prerequisite for growth. Their Anglo Saxon counterparts on the other side consider debt effects as trivial and call for more extensive public spending in times of recession. Both opinions seem plausible, because the relation between fiscal adjustments and growth can vary across countries. In this regard economic systems matter, because production regimes might represent a source of heterogeneity in fiscal multipliers.

3. Methodology-Part:

To examine if there is correlation between the efficiency of fiscal policy by developed economies and their respective type of production system, a mixed-methodology approach is conducted in this paper. First 20 vector autoregressive models (VARs) are run to determine the size of the fiscal multiplier across countries. While proceeding this first step I realized that in the case of New Zealand the accessible data set was just too poor to produce reasonable results. Thus, I decided to drop this observation before going ahead to the second regression. In the second step a cross-sectional OLS regression was performed on the 19 remaining country-specific multipliers with two coordination indices and some specific institutional explanatory variables all related to the varieties of capitalism approach.

Empirical strategies for fiscal policy analysis

The empirical investigation of the impacts of expansionary spending is performed with a vector autoregressive approach. Older studies about budgetary policy have usually rest on the cyclically-adjusted primary deficit as benchmark for the budgetary stand. But the adjusted deficit is inconvenient in econometric evaluations, because no theory entails that spending hikes and tax reductions have necessarily the same impact on growth. Nevertheless, the adjusted deficit can still provide information about the current policy. In addition to the existing debate on the size of the fiscal multipliers, there is great controversy concerning how one should identify fiscal shocks. The identification problem emerges since two causal directions are conceivable. Either government expenditure has an effect on GDP or GDP shapes government expenditure via automatic stabilizers or policy rules. Thus, there are two strategies to solve the identification problem: the vector autoregressive framework (VAR), which was used for the first time in fiscal political investigations by Blanchard and Perotti (2002) and the natural experiment of large military buildups. Ramey and Shapiro (1998) use news of forthcoming military buildups as the shock variable, instead of applying military

buildups as itself to identify fiscal shocks. Their identification strategy rests on the fact that it is very improbable that military buildups are induced by the business cycle and are consequently exogenous fiscal shocks.

A Vector Autoregressive Approach

The fundamental supposition behind the vector autoregressive framework is that fiscal policy needs some time, which is estimated to be at least one-quarter, to react to new information about the business cycle. Since government expenditure and taxation are supposed to have an influence on GDP, the two are unlikely independent. Consequently for estimating the effects of the one it is also necessary to include the other. Following a vector autoregressive model to remove foreseeable responses of the two variables to each other, it can be supposed that any remaining correlation between the unpredicted components of public expenditure and GDP is because of the effect of public expenditure on GDP. The main difficulty is that identified shocks may still have been known to private agents. In the small number of OECD economies that have been analyzed so far, the existing spectrum of estimates in the VAR literature differs significantly. For instance, Blanchard and Perotti (2002) determine a fiscal multiplier of nearby 1 in the U.S. for public expenditures. Despite, Perotti (2004, 2007) demonstrates that estimates differ considerably between five developed economies and over time, with a spectrum of -2.3 to 3.7. Further studies about the USA with minor modifications in the identification matrix obtain values of 0.65 on impact but -1 in the long term (Mountford and Uhlig (2009)) and even larger than 1 (Fatás and Mihov (2001)). However, one big problem in fiscal policy analysis remains, since both taxation and spending changes are usually signalized by the government. Therefore these fiscal adjustments are predictable and since they do not vary systematically with economic terms, the vector autoregressive model could omit important information and thus be misleading due to not involving expected adjustments in government spending or income. For that reason it has been stated that the macroeconomic

shocks obtained from a VAR do not look like the shocks estimated by other tools, like rational expectations of markets. Besides, the shocks obtained from a VAR can display variables omitted from the model. These economic shocks will be biased, if the omitted variables correlate with the included variables,

Nevertheless, I will employ a VAR approach, since the military buildup strategy seems to be inconvenient for my purpose. The baseline model includes three endogenous variables in (log) levels: real government spending on goods and services per capita (SPEND), real output per capita (GDP), real net tax revenues per capita (TAX) and an exogenous constant term (C).[1] I also include an additional endogenous variable, the long term interest rate (INT) to control for monetary policy and debt service because public spending reflects only primary expenditure. The long-term interest rate is used, rather than the short-term version, because the former should be the more critical for the elements of output like capital expenditure. Further information about the exact definition of my variables can be found in section 4 and in the Appendix. The vector for the endogenous variables is labeled by X_t. Together with the residual vector U_t, the reduced form vector can be formally denoted as:

$$X_t = B(L)X_{t-1} + U_t , \qquad\qquad t = 1,2,\dots,T$$

where $X_t = [g_t \; y_t \; t_t \; i_t]'$ is a four dimensional vector of variables in logarithms, $B(L)$ is an autoregressive lag polynomial and $U_t = [u_t^g \; u_t^y \; u_t^t \; u_t^i]'$ is the vector of reduced-form shocks. All equations include four lags of each endogenous variable. The constant and a linear deterministic trend are also included in the standard specification but left out from the notation for convenience.

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[1] Nominal data was deflated using the corresponding deflator, if available, and using the CPI index when such a deflator was not available. In some cases data was already deflated directly by the local statistical agencies, which might create a source of inconsistency across countries.

The Identification Problem

The reduced form residuals u_t^g and u_t^t, can be seen as linear combinations of three elements: At first, there are unexpected changes in taxes in reaction to output shocks for given tax rates, also described as automatic response of fiscal variables to innovations in output and interest rates. At next there are planned discretionary responses of fiscal policymakers to output or interest rate innovations. This might be for example a tax cut, which is implemented as reaction to a fall in GDP. And ultimately, the random discretionary shocks to fiscal policies e_t^g and e_t^t, which are the structural exogenous shocks, one wants to isolate from the rest. This approach can formally be written in the reduced form:

$$u_t^g = \alpha_{gy}\, u_t^y + \alpha_{gi}\, u_t^i + \beta_{gt}\, e_t^t + e_t^g$$

$$u_t^y = \alpha_{yg}\, u_t^g + \alpha_{yi}\, u_t^i + \alpha_{yt}\, u_t^t + e_t^y$$

$$u_t^t = \alpha_{ty}\, u_t^y + \alpha_{ti}\, u_t^i + \beta_{tg}\, e_t^g + e_t^t$$

which is based on the work by Blanchard and Perotti (2002). Theoretically the first two components are captured by the coefficients α_{jk}. Because e_t^g and e_t^t are correlated with the reduced form residuals, the ordinary least squares assumption are not fulfilled. Thus, a simple OLS-regression cannot be performed unless further restrictions are made. But if one assumes, that systematic discretionary response by policymakers is trivial in quarterly data, since budgetary policy decision-making can be sluggish procedure, including various actors in administration, legislation and society, the coefficients α_{jk} should only capture the automatic response of taxes and public spending to exogenous shocks. In this case it is possible to determine α_{jk}. Consequently one can isolate cyclically adjusted fiscal shocks and use them as instruments in the remaining equations, since they are no longer correlated with e_t^y and e_t^i.

$$u_t^{g,CA} = u_t^g - (\alpha_{gy}\, u_t^y + \alpha_{gi}\, u_t^i) = \beta_{gt}\, e_t^t + e_t^g$$

$$u_t^{t,CA} = u_t^t - (\alpha_{ty}\, u_t^y + \alpha_{ti}\, u_t^i) = \beta_{tg}\, e_t^g + e_t^t$$

In order to define structural fiscal shocks, I go along with the recursive identification scheme (Cholesky or recursive decomposition) firstly suggested by Sims (1980). In that respect, the sequence of the variables is essential, since it determines the causal direction for their interrelations. Another part of the identification problem concerns the relationship between government expenditure and tax revenues. The questions is whether spending responses to taxes or vice versa. As in Blanchard and Perotti (2002) I assume β_{gt} to be zero by ordering spending first, since Perotti (2004) could show that the correlation between their shocks is very low. Hence, the ordering between these two is of little importance. Furthermore also α_{yt} can be assumed to be zero, because the political system involves significant time lags between the development and the realization of adjustments of taxation, which could influence GDP. Moreover, consumption and investment schedules need some time to adjust to a reform even after it has been executed. The sequence of the rest of the variables is trivial, since I am only interested in determining the impacts of fiscal policy on output. Finally my chosen order of the variables is: Spending, Output, Tax Revenue and the Long-Term Interest Rate.

$$u_t^{g,CA} = e_t^g$$

$$u_t^y = \alpha_{yg}\, u_t^g + e_t^y$$

$$u_t^t = \alpha_{iy}\, u_t^y + \beta_{tg}\, e_t^g + e_t^t$$

$$u_t^i = \alpha_{ig}\, u_t^g + \alpha_{iy}\, u_t^y + \alpha_{it}\, u_t^t + e_t^i$$

From this perspective GDP reacts simultaneously to adjustments in government expenditure but government expenditure does not react to adjustments in GDP at the same time (as in Blanchard and Perotti, 2002). Furthermore, GDP simultaneously shapes tax revenues but just the opposite is not true. Finally, I assume that the long term real interest rate reacts simultaneously to adjustments in others items but the opposite shall not be true.

Integration Issues and Impulse Response Functions

With respect to the time series properties all variables are found to be integrated of order 1. Standard unit root and stationarity tests such as the augmented Dickey-Fuller (ADF) test are applied in all 20 country samples. According to the methodology by Johansen I perform a battery of cointegration tests, which suggest the presence of multiple cointegrating vectors for most of the countries. Therefore, a vector error correction model (VEC) could be estimated to take account of cointegration by imposing reduced-rank restrictions, which would possibly lead to more efficient estimates. However, I decided to estimate a VAR in levels to ensure better comparability across countries, since it also provides consistent estimates of the VAR coefficients and impulse response functions presuming that the asymptotic covariance matrix of the parameter estimator is singular (Hamilton, 1994). The impulse response functions are represented for the first 12 quarters. Because the vector autoregressive model is estimated in levels, there are unit roots or near unit roots in the system. Phillips (1998) demonstrates that impulse responses become inconsistent for long-term VAR models under these conditions. Hence, impulse responses for longer periods ahead should not be trusted.

The Cross Sectional Regression Analysis

In order to examine my hypothesis, the coordination index developed by Hall and Gringerich (2009) is used to determine the degree of market and strategic coordination across several field of political or economic interaction. A common feature of most cross-country growth regressions is that the explanatory variables are entered independently and linearly. Hence, the following relationship is taken to the data to identify heterogeneity of fiscal policy effect in various types of economies:
$$\frac{\Delta \text{GDP}_i}{\Delta \text{G}_i} = \alpha + \beta_k X_{ki} + u_i$$

where $\frac{\Delta GDP}{\Delta G}$ describes the fiscal spending multiplier and X_k is the explanatory variable of interest, which are: a simple dummy for the type of VoC, three coordination indices as constructed by Hall and Gringerich, a labor protection index by the OECD, the wage

bargaining coverage ratio, the job tenure, the size of the stock market (measured by market capitalization of listed domestic companies in relation to GDP) and shareholder protection measured by the anti-director right index (ADRI) developed by La Porta et. al. (1998). At first I choose variables that have been focus of past empirical studies about VoC, X_k, and run a baseline regression that includes only that variable of interest. The institutional sub-spheres of Labor Relations and Corporate Governance are of particular relevance here. At second I compute the regression results for some possible linear combinations of up to two X_k-variables, which have shown significance the 0.05 level. If β_k remains significant and of the same sign, one can maintain a fair amount of confidence in that partial correlation. In such a case, the result turns out to be robust. If the coefficient does not remain significant or if the coefficient changes sign, then one might feel less confident in the relationship between the X_k and $\frac{\Delta GDP_i}{\Delta G_i}$ variables, because adjustments in the condition information set would change the statistical inferences that one draws regarding the X_k - $\frac{\Delta GDP_i}{\Delta G_i}$ relationship. In this case, the result turns out as fragile. Unfortunately I had to renounce additional control variables, since this final regression only relies on 19 observations. Therefore, including more regressors into the equation would come along at additional costs of even less degrees of freedom. Consequently, the 19 fiscal multipliers across countries as well as the institutional regressors related to the VoC are assumed to be time-invariant, which is nevertheless legitimated for the latter by the work about institutional change by Hall and Gringerich, who have shown empirically that despite some liberalization movements cross-national differences in institutional practices remain strongly persistent even in the face of globalization and international convergence tendencies. Though a meaningful disadvantage of such a time-invariant model is the fact, that it makes it impossible to control for possible effects of exchange rate regime switches on the fiscal multiplier such as in a panel-dated VAR-approach for various Euro-zone countries by Silva et. al (2013).

4. Description of Data

All the data used in this study are from National Income Accounts and freely available from the World Wide Web. The demographic and monetary data (population size, long-term interest rates, consumer commodity price index and exchange rates) are taken from the OECD website or the respective central banks. The specific sources, variable definitions and time frames for each country can be found in the Appendix. While GDP is deflated by the GDP deflator, all the components of national income are expressed in real per capita terms and transformed from their nominal values by dividing them by the corresponding deflator, when available, and using the CPI index when such a deflator was not available. Besides, all variables were non-stationary, with the exception of the long-term interest rate. Following Blanchard and Perotti (2002) net tax revenues are defined as sum of taxes on production and imports, personal income, corporate income and contributions for public social insurances subtracted by current transfers payments (treating them as negative taxes). Interest receipts and dividends are excluded from the government revenue side. Government spending on the other side includes current expenditures for goods and services (final government consumption expenditures) and capital expenditures (government investment) also subtracted by current transfer payments. Debt service and interest payments are explicitly not part of the government spending variable used in this approach. The chosen decomposition of the government budget is just one of many opportunities. Many approaches assume that transfer payments by the government have different effects than direct public expenditure on goods and services: only the latter affects immediately the usage of resources. Thus, adding tax revenues and transfers is reasonable, since in the short- and medium run fiscal policy works mainly through the demand channel. For a more extensive VAR-estimation of fiscal multipliers with further decompositions of government spending and net taxes take a look at Perotti (2004).
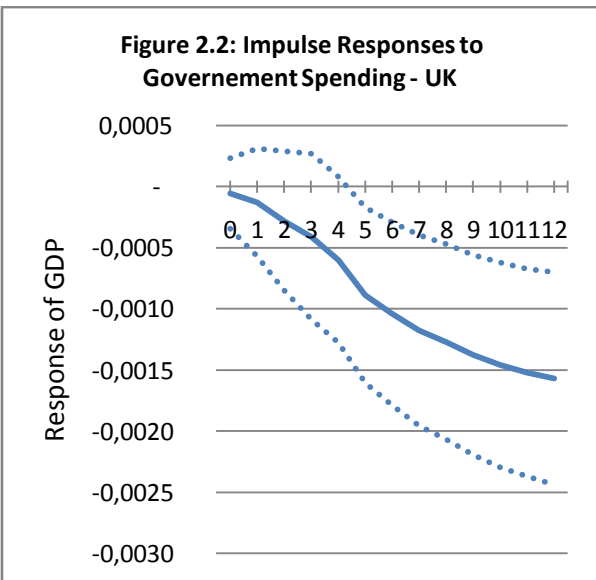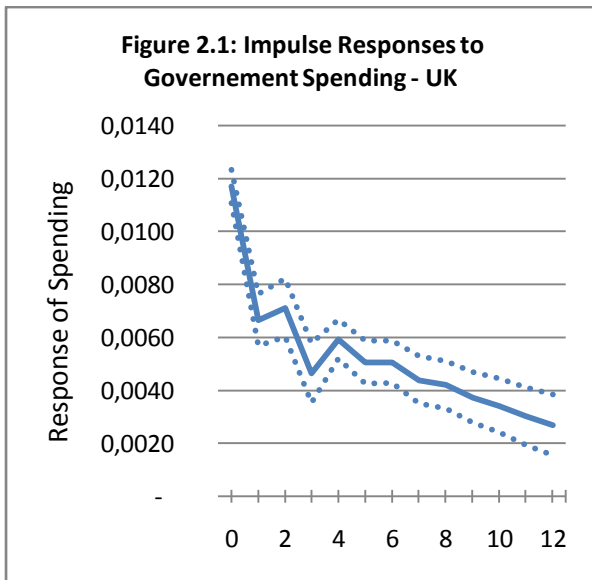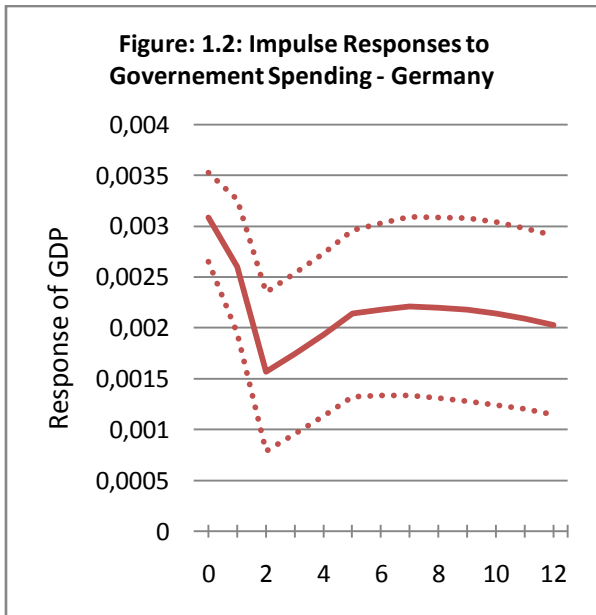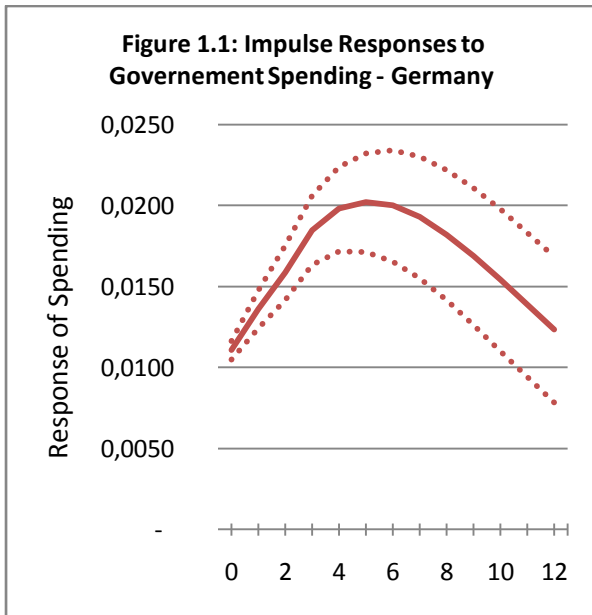
Data Collection and Availability

The greatest challenge of this high-frequency study of fiscal policy in a large number of countries was collecting and inspecting the data set, since the availability of quarterly fiscal variables in developed countries represents the main constraint for the analysis of fiscal policy with VAR models. The criterion for inclusion in this study is the availability of non interpolated government budget data for the general government, since data reported at a quarterly frequency but collected at annual frequency may lead to spurious regression results. One common method of interpolating government expenditure data that was collected at annual frequency is to use the quarterly seasonal pattern of revenue collection as a proxy for the quarterly seasonal pattern of government expenditure (data on tax revenues are more commonly collected at quarterly frequency). As tax revenues are highly pro-cyclical, this method of interpolation would create a strong correlation between government expenditure and output by construction. Using an VAR to identify fiscal shocks with data constructed in such a manner would clearly yield economically meaningless results. My analysis was only possible due to the fact that numerous countries have begun to collect fiscal data at a quarterly frequency. This is attributable mainly to two important changes, which made high-frequency fiscal data available for a broader set of countries. First, the adoption of the ESA95, a common statistical standard in the European Monetary Union, that encouraged member states to collect and classify fiscal data at quarterly frequency[2]. Second, the IMF adopted the Special Data Dissemination Standard (SDDS) in 1996 and required by its subscribers reports about central government expenditure with quarterly frequency recommended. With these institutional changes, at least one decade of quarterly data is now available for various countries. For this study I collected data on an quarterly basis for 20 developed economies (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK

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[2] See http://circa.europa.eu/irc/dsis/nfaccount/info/data/ESA95/en/een00000.htm for more details.

and the US) from different time frames (mostly 1999 to 2015), that have already been typified by the VoC literature. One possible inconsistency across countries in my data set might be, that in some cases data was deflated and seasonally adjusted directly by the national statistical agencies with various methods. In other cases, I deflated the data using a CPI deflator myself or rather de-seasonalized it using the X-11 method, where the data shows a strong seasonal pattern. This both creates an inconsistency across countries, but moreover raises the question of whether consumer prices are the appropriate measure of the ratio between the nominal value of government expenditures and their real value.
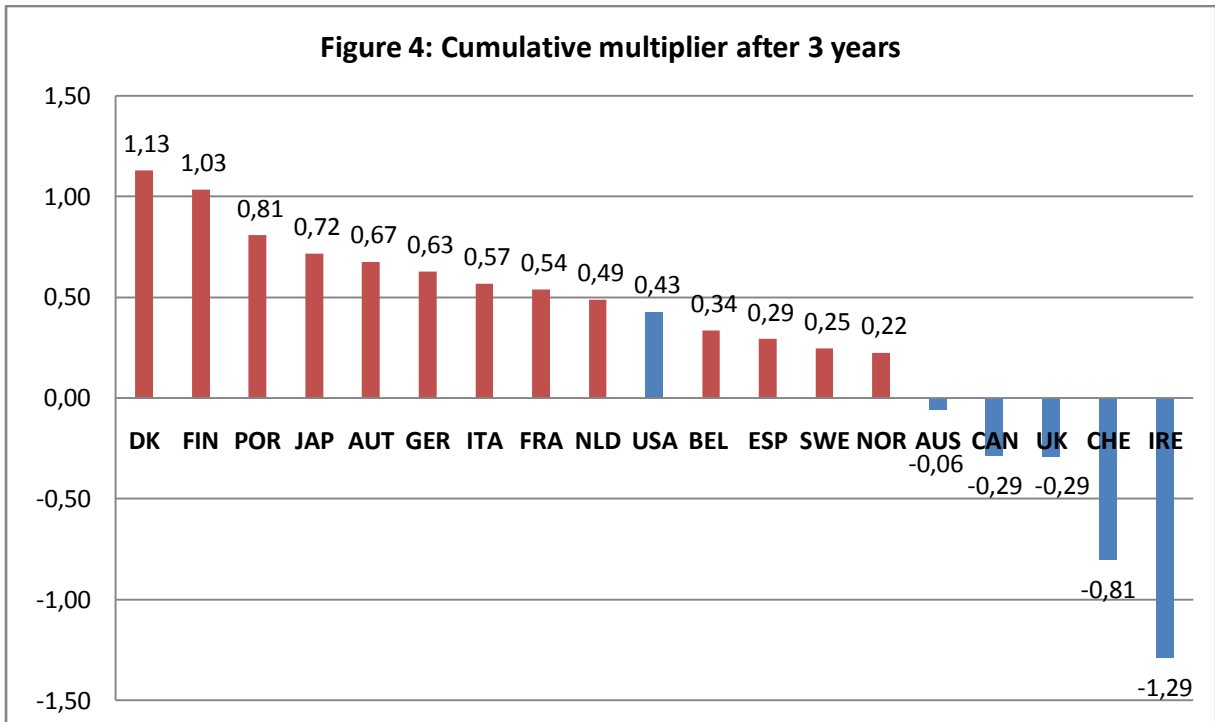
5. Results

As a first cut at the data, the sample was divided into market-coordinated and strategic-coordinated countries. Figures 1 and 2 show the impulse responses to a one standard deviation shock to government consumption at time 0 in the first line, and to output in the second line. Figure 1 gives responses for a illustrative CME-country (Germany), and Figure 2 for a LME-country (UK). The response of output to government consumption is in the right-hand panel of each figure. Only the German impact response is statistically significant from zero at the 99% confidence level. To sum it up, two differences stand out between the impulse responses. First, the impact response of output to government spending is nearly zero in the UK (-0.01 percent), but is positive in Germany (0.31 percent), which is also true for all the remaining countries in my sample with only one exception - the United States. The U.S. is in fact the only liberal market economy, which exhibits a significant positive fiscal expansion effect. Second, the output response to a shock in government consumption is significantly less persistent in LME-countries like the UK than that of CME-countries such as Germany. While the GDP response for coordinated market economies remains significantly positive for all 12 quarters covered in the plot, it is zero for the full forecast horizon in most LME countries.

Figure 1.1: Impulse Responses to Governement Spending - Germany

Figure: 1.2: Impulse Responses to Governement Spending - Germany

Figure 2.1: Impulse Responses to Governement Spending - UK

**Figure 2.2: Impulse Responses to Governement Spending - UK**

Focusing only on the short-run impact multiplier, however, might be misleading because fiscal stimulus packages can only be implemented over time and there may be lags in the economy's response. To account for these factors, Figure 3 shows the accumulated impulse response function for both countries at forecast horizons ranging from 0 to 12 quarters. The plots report the value of the impact and long-run cumulative fiscal effects. The dashed lines give the 95% confidence intervals based on analytical standard errors.

Figure 3: Accumulated Impulse Responses - UK and Germany
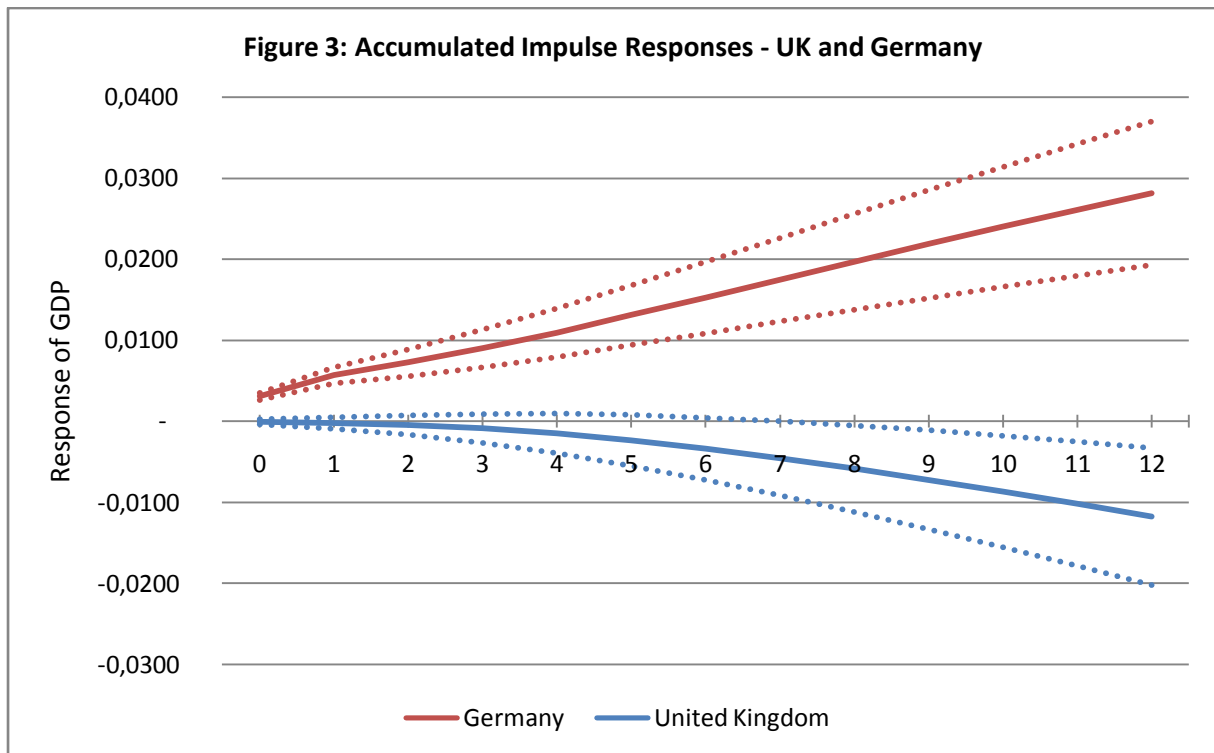
Based on the accumulated impulse responses depicted in Figures 3, we can compute the corresponding fiscal multipliers, which are displayed in Figure 4. We can see that the cumulative multiplier in Germany rises from an initial value of 0.13 (the impact multiplier effect) to a long-run value of 0.63 and is statistically different from zero at every horizon. Hence, even after the full impact of a fiscal stimulus is accounted for, output has risen less than the cumulative increase in government consumption, implying some crowding out of output by government consumption at every time horizon. On the other hand, the cumulative long-run multiplier for LME countries is -0.29. In other words, in the long run the increase in government consumption is not only fully crowded out by other components of GDP (private consumption, investment or net exports), but also results in a reduction in overall output via a loss of economic efficiency (often called excess burden).

Figure 4: Cumulative multiplier after 3 years

| Country	Value
DK	1,13
FIN	1,03
POR	0,81
JAP	0,72
AUT	0,67
GER	0,63
ITA	0,57
FRA	0,54
NLD	0,49
USA	0,43
BEL	0,34
ESP	0,29
SWE	0,25
NOR	0,22
AUS	-0,06
CAN	-0,29
UK	-0,29
CHE	-0,81
IRE	-1,29

The accumulated multiplier for CME-countries is on average 0.6. In other words, an additional dollar of government spending will deliver only 60 cents of additional output 3 years after it was implemented. This effect of government consumption, while small, is statistically significant in most of the coordinated market economies. For LMEs, the cumulative multiplier is negative at -0.4, but statistically insignificant from zero. However, the difference between the accumulated multiplier in the two groups of countries is statistically significant at the 99% confidence level as been shown in Figure 5.

Figure 5: Fiscal Multipliers - LME vs. CME

LME = 0
CME = 1

Y-axis: Cumulative Multipliers

Legend: VoC — Linear (VoC)
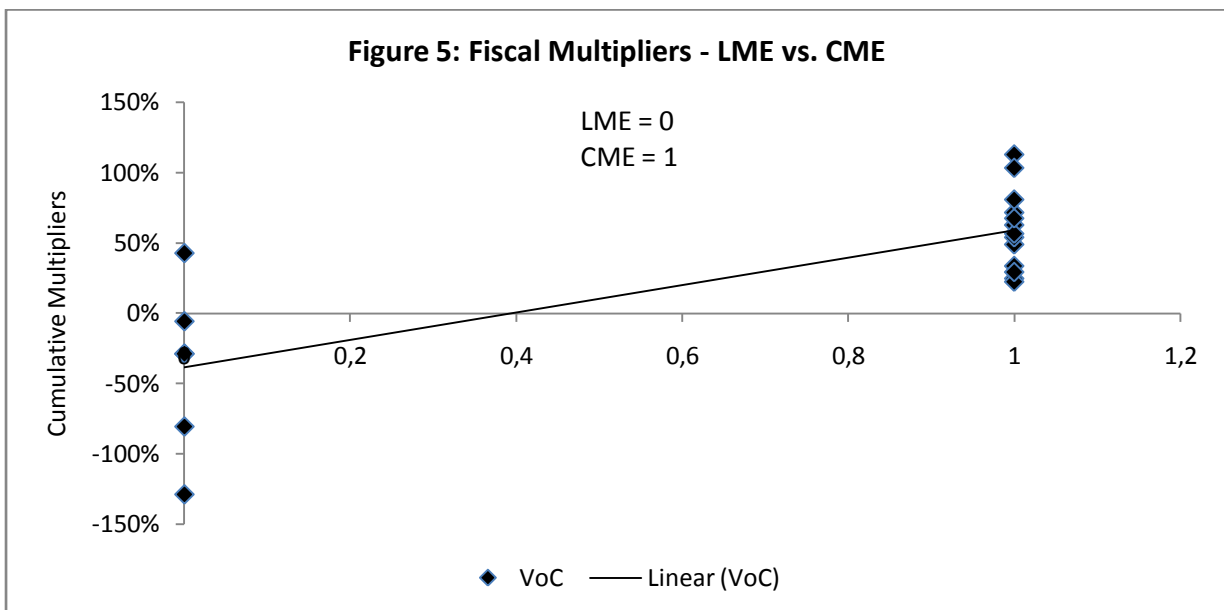
Institutional drivers for the size of the multiplier

Next, a closer look is taken at the result of cross-sectional regression analysis. Several relationships between the cumulative fiscal multiplier and the institutional features of the VoC classification turn out to be significant. A detailed overview about all performed relevant regressions can be found in the Appendix. First, there occurs a clear positive linear relationship between the fiscal multiplier and the coordination index for labor relations as constructed by Hall and Gringerich (2009). This index is based on labor turnover, the degree and the level of collective wage bargaining between labor unions and employee associations.
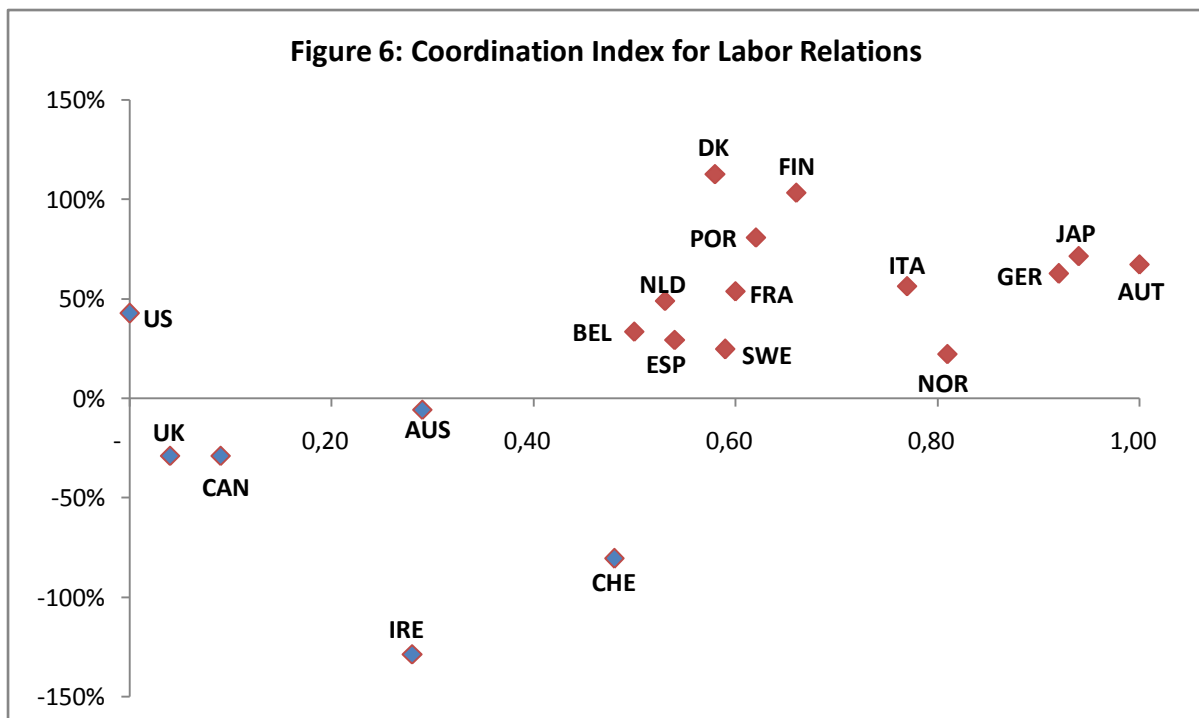
The regression is rerun on single components of this index to identify the original impact on the multiplier. By doing so the coefficient for labor protection (as measured by the OECD) shows significance at the 95% level, while the median job tenure and the collective bargaining coverage rate (according to the World Bank) turn out to be insignificant. Likewise I proceed with examining the relationship for the sub-sphere of Corporate Governance and its associated variables. While the index itself and the size of stock markets display significant negative coefficients at the 95% level as expected, the shareholder power measured by the

ADRI does not provide strong significance for any relationship to the cumulative multipliers.

Figure 7: CI in corporate governance
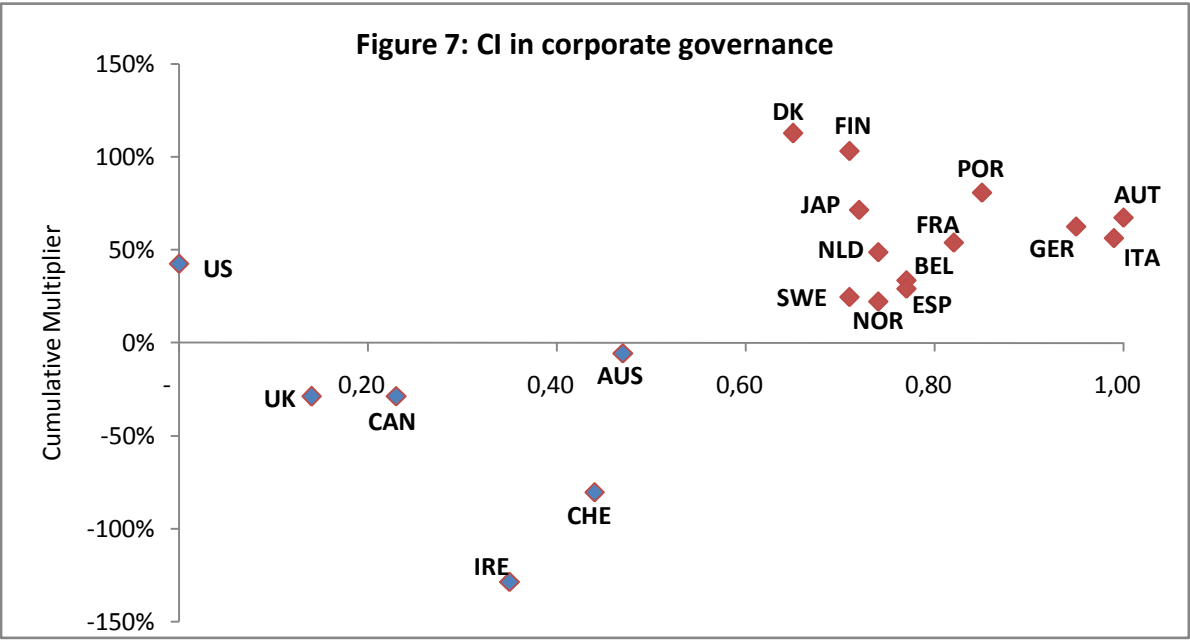
Clearly these results are a big contrast to the predictions of Soskice. Contrary to my expectations fiscal policy in CMEs seems to be more efficient. Negative multipliers were exclusively found in LMEs, pointing out that a fiscal stimulus in liberal countries could do more harm than good to the economy. The only exception is represented by the US, which might benefit more from demand-orientated policies due to its huge domestic market potential. The export-addicted Ireland on the other side, possess the lowest multiplier. Another reason for this condition might be the fact, that it is the only liberal country inside the Euro-zone. Thus, Ireland faces serious difficulties with the conservative monetary policy stance and further incomplementary CME-structures in the EU. Furthermore these findings validate previous studies by the OECD (2006). Accordingly automatic stabilizers and fiscal expansions are more complementary than substitute to each other. This fact contradicts the viewpoint that institutions and macroeconomic policy positions would complement each other to achieve coherence in macroeconomic dynamics as argued in Soskice (2007). Alternatively the same logic which explains, why CMEs are expected to have more generous welfare states than their liberal counterparts, can illustrate why their fiscal policy could be more effective. As argued earlier, specific-skilled workers in non-liberal economies are more likely to

struggle finding a new job in case of layoffs. Such layoffs will of course be more probable in times of recession. In such periods, a reflationary policy would be in the interest not only of workers, but also of firms. In this case applying a fiscal stimulus would be rather complementary rather than a subsidiary for a strong welfare state. When employment and production are stimulated by counter-cyclical fiscal policy, an extensive welfare state could be stabilized in political and economic terms and ultimately improve household's confidence in the overall stability of the system. Therefore, instead of precautionary saving, a much more positive outlook on consumption can be expected, which could explain smaller crowding-out effects in non-liberal countries.

6. Conclusion:

This work project examined the relationship between fiscal policy and economic growth by differentiating production regimes that characterize countries. As recently proposed in the VoC literature LMEs would be expected to conduct a more effective fiscal policy compared to non-liberal varieties, where more precautionary saving takes place due to complementarities between their stance on fiscal policy, welfare state concepts and ADMRs. Following the VoC-typology, VAR models were performed to determine the size of fiscal multipliers for a panel of 19 OECD countries. After regressing various institutional variables on the computed multipliers, the obtained results claim the exact opposite of the expected relationship. One possible explanation for this might be that fiscal expansionary policy is complementary to automatic stabilizers like for instance a more generous welfare state. Also other explanations combining characteristics of political economies to the stand on fiscal policy (the small-N problem in collective bargaining or the common pool problem for public spending) might be notable in this context. Nevertheless, my results suggest that the VoC-approach is not only limited to formal rules such as in labor protection, but is also expressed in different impacts of macroeconomic policy.

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