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Does globalization restrict budgetary autonomy? A multidimensional approach

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Nontechnical Summary

An increasing number of politicians regard globalization as a danger for the attainment of domestic policy goals. In reaction to that some advocate tax coordination or even restrictions to international capital mobility. While the theoretical analysis of the impact of globalization on the government budget is already advanced, the empirical analysis has not yet reached a comparable stage. For the relatively few existing empirical studies two shortcomings are striking. First, there is an analytical imbalance insofar most studies are solely concerned with the development of government revenues. Second, many studies fail to identify convincingly the impact of globalization on public finance.

With this background the approach of this study is the following: The impact of globalization on different dimensions of government budgets – tax and expenditure structure, public debt and size - is analyzed for OECD countries. The time perspective is long-run as changes in fiscal variables from the 1970s to the 1990s are analyzed. A central objective is to identify the multidimensional impact of globalization on budgetary policy explicitly. For that purpose, globalization as possible driving force for changes in government finance is identified in form of variables on the existence of capital and current account restrictions, on the exposure to international trade and the exchange rate regime.

The empirical tools employed are cluster and discriminant analysis. In a first step, cluster analysis helps to identify fiscal country clusters, i.e. subgroups of the total country sample with similar fiscal development in the last decades. In a second step, the usefulness of globalization variables is tested in regard to their power to discriminate between these clusters.

The results suggest that globalization has indeed an impact on government budgets although this impact is limited and does not concern all budgetary dimensions. The *size of the budget* is affected as predicted by theory. Countries with an early liberalization of international transactions had lower increases of government outlays and taxes. Nevertheless, even for the liberal countries there was relative to GDP a substantial increase of government activity since the 1970s. This fact is worth to be underlined since it contradicts the theoretical prediction of global markets undermining the welfare state. Abolition of barriers to the free flow of factors has limited the growth of the welfare state, but this growth remained positive with high rates of expansion.

Compatibility of welfare state and globalization is also impressively demonstrated by the findings concerning *expenditure structure* where public investment has been reduced and social security expenditure shares have been increased. National differences from this general tendency do not in all cases correspond to the relative

speed of opening. Those countries for which expenditure shift to social security has been relatively small are even the countries that have been most reluctant to lift restrictions on international transactions.

Concerning *revenue structure* there is some support for the predictions of tax competition theory. Those countries that have been more globalized than others have tended to shift relative tax burdens away from corporate income. Combined with the fact of a high growth of government and especially social spending this indicates the following: With globalization there are limits to finance an *increasing* welfare state by higher tax burdens on mobile factors.

The results concerning *public debt* are disappointing for those who hope that open capital markets can have a helpful disciplining function in the presence of the deficit bias of modern democracies. There is no indication that the abolition of capital restrictions has limited the buildup of large debt levels since the 1970s. Different clusters of debt performance can not be discriminated on the basis of globalization variables.

As a whole the message of this analysis is: Globalization does indeed matter for government budgets. However, substantial room for an individual national policy is left.

Does Globalization Restrict Budgetary Autonomy? A Multidimensional Approach

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Abstract

Does globalization restrict the leeway for national budgetary policy? With the help of cluster and discriminant analysis this study provides evidence on the basis of the experience of OECD countries since the 1970s. Four budgetary dimensions are included in the analysis: tax structure, expenditure structure, public debt and budget size. Globalization as a potential driving force for changes in government finance is identified in form of variables on the existence of capital and current account restrictions, on the exposure to international trade and the exchange rate regime. The results suggest that globalization does indeed matter for government budgets. However, substantial room for an individual national policy particularly in regard to expenditure structure and public debt is left.

JEL-Classifications: H 60, H 87

Keywords: Fiscal Policy, Tax Competition, Globalization, Cluster Analysis, Discriminant Analysis

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1 Introduction

The compatibility of national sovereignty and increasing global integration is at the heart of the globalization debate. On the fiscal field the question is to what extent the increasing mobility of production factors constrains budgetary policy. In Europe the introduction of the Euro has intensified this debate since a further increase in the mobility of real and financial capital is expected (Stirböck and Heinemann, 1999). An increasing number of politicians regard liberalization as a danger for the attainment of domestic policy goals e.g. on the social security field. In reaction to that some advocate tax coordination or even restrictions to international capital mobility.

While the theoretical analysis of the impact of globalization on the government budget is already advanced, the empirical analysis has not yet reached a comparable stage.¹ For the existing empirical studies two shortcomings are striking. First, there is an analytical imbalance insofar many studies are predominantly concerned with the development of government revenues. The impact of factor mobility on the complete government budget, i.e. in addition to revenues also expenditures and public deficits is rarely taken into account in a comprehensive way.

Second, there are only few studies that try to measure the impact of globalization on public finance explicitly. Frequently applied is the following approach: Trends in the structure of revenues in the last decades are identified and significant changes are then ascribed to globalization. Thus the implicit assumption of this traditional approach is that the time scale is sufficient to measure the stage of globalization for a country. This assumption is highly questionable. For different industrial countries at a given point in time the extent of globalization has often been very different, e.g. because of the existence of restrictions to international transactions.

This identification problem makes some conclusions of the literature to appear premature since changes of fiscal structure might be motivated by reasons very different from factor mobility. The decreasing share of corporate taxation in government revenues of some countries can serve as an example. This empirical fact seems to be in line with the prediction that with increasing mobility of some factors the burden of taxation is shifted from the mobile to the immobile tax basis. However, an alternative explanation exists: The reduction of taxes on enterprises has been recommended by supply side economists in order to improve the environment for investments and employment. Therefore, the tax shift away from corporate taxation might – independently from tax competition and purely on domestic grounds - be motivated by the desire to create a growth stimulating tax system.

¹ For a recent survey see Schulze and Ursprung (1999).

With this background the approach of this study is the following. The impact of globalization on government budgets is analyzed in a multidimensional way: the consequences of the OECD countries' growing international integration are studied for different dimensions of public finance – for the size of the budget, the tax structure, the expenditure structure and the public debt. Theory suggests that these dimensions could be affected. The time perspective is long-run as changes in fiscal variables from the 1970s to the 1990s are analyzed.

Furthermore this approach follows the relative few studies that use explicit measures of globalization. International integration as possible driving force for changes in government finance is measured in form of variables on the existence of capital and current account restrictions, on the size of international trade and the exchange rate regime. Thus, an attempt is made to avoid the shortcomings of many existing empirical studies and to take account of national differences in regard to globalization exposure.

The empirical tools employed are cluster and discriminant analysis. In a first step, cluster analysis helps to identify fiscal country clusters, i.e. subgroups of the total country sample with similar fiscal development in the last decades. In a second step, the usefulness of globalization variables is tested in regard to its power to discriminate between these clusters.

The results suggest that globalization has indeed an impact on government budgets although this impact is limited and does not concern all budgetary dimensions. Growing international integration of a country has been associated with a relatively low growth of government although this growth remained substantial in absolute terms even for very globalized countries. The findings support the view that growing market integration restricts the tax burden for corporate income. Substantial leeway remains, however, on the expenditure side. Furthermore, the findings do not indicate any effective globalization restrictions for public debt.

The paper proceeds with a short survey of the relevant theoretical and empirical literature and the derivation of four testable hypotheses. In section 3, a description of the relevant variables and the applied empirical methodology is given. After that section 4 summarizes the empirical findings. These results serve as the basis for the concluding section.

2 Four Hypotheses and Available Empirical Evidence

Globalization might have an impact on four dimensions of the government budget: the revenue structure, the expenditure structure, the level of deficits and the level of the budget. Among these four dimensions the revenue structure impact is – under the heading of “tax competition” - the one most intensively analyzed in the theoretical

public finance literature.² If capital is mobile and labor immobile and if the expenditure side of the government budget does not have the character of a production input, globalization will compete capital taxes down and lead to an underprovision of public goods. With increasing globalization one would thus expect the share of capital taxation to decrease and the share of taxes on immobile factors to increase.

If, however, the expenditure side of the budget has a character of a production input, the consequences of globalization on tax structure are less clear and lead to the debate on the validity of models in the tradition of TIEBOUT (1956). In this model local governments providing local public goods compete for mobile taxpayers resulting in an efficient allocation. The assumptions of the TIEBOUT models are highly controversial. SINN (1994) among others rejects TIEBOUT due to its too restrictive assumptions. However, the theoretical debate on tax competition and its extension to the expenditure side of the budget leads to the identification of testable hypotheses in regard to two government budget dimensions:

Tax structure hypothesis: Globalization forces governments to adjust the tax structure. Taxes have to be shifted away from mobile to immobile factors.

Expenditure structure hypothesis: Globalization forces governments to adjust expenditure structure. Expenditure shares must be relocated in order to benefit rather the needs of mobile taxpaying factors at the cost of reducing benefits for immobile taxpayers.

Adjusting the expenditure structure for the benefit of mobile taxpayers has the character of a substitute to the adjustment of the revenue structure. Only empirical analysis can find out which is the actually applied strategy of fiscal actors faced with increasing mobility of some tax bases.

Globalization might not only be a relevant process for taxes and expenditures but also for public debt. This interrelation has been touched in the debate on EMU and public debt. LANE (1993) ascribes a disciplining function to open capital markets in this context. If public debt exceeds the level that is sustainable, capital flight and increasing risk premia are the consequence. The disciplining function of open capital markets could, however, be neutralized if explicit or implicit bailout-mechanisms are installed for a group of countries e.g. in the European Union. The following hypothesis should be included in the empirical testing:

Public debt hypothesis: Globalization disciplines public debt policy. Governments become increasingly unable to finance expenditure by issuing debt.

² See Schulze and Ursprung (1999) for an non-technical summary of main results.

With the effects of globalization on revenue sources discussed so far the expected effect on the size of the government budget follows. Since tax competition and increasing restrictions to public deficit make it harder to finance public expenditures the outcome should be a shrinking budget.

Size hypothesis: Globalization restricts the size of government budgets.

What do fiscal developments in the last decades reveal about the validity of these hypotheses? The findings of some analyses concerning size and structure of government revenues of EU and OECD countries (LE CACHEUX, 1998, TANZI, 1998, MONGELLI, 1997, BÜTTNER, 1999) can be summarized in the following way: The level of government revenues does not give evidence for a negative impact of globalization on the financial base of modern governments in the last years. On the contrary, tax revenues (including social security contributions) expressed as a share of GDP have been rising for decades in OECD countries with a stabilization but no reversal in the most recent years. The structure of government revenues is clearly changing. Some of these changes are in line with theoretical predictions of a growing burden for immobile factors: In recent years the share of indirect taxation is increasing as it is the case for the share of social security contributions. The prediction of a decreasing burden for mobile capital and companies can not be clearly verified. While there is a tendency for corporate income and capital income tax rates to be reduced this often is accompanied by a widening of the tax base. There are clearly signs of convergence for corporate and capital taxation but so far there seems to be no race to the bottom.

It has, however, to be stressed that the value of these analyses as evidence for the impact of globalization is limited by the fact that the impact of globalization is not adequately identified. The impact of globalization is not only a function of time since the speed of globalization has been very different between OECD countries. While some like the USA had already widely liberalized capital markets in the 60s, others like the Southern Europeans did not abolish last restrictions before the nineties.

SCHULZE and URSPRUNG (1999) cite a few empirical studies to which this criticism does not apply because explicit globalization measures are taken into account. While these study are silent on public debt effects they deal with the other three dimensions: The clearest effect according to his survey is the impact on tax structure while there is no strong evidence for the affection of expenditure structure and size of government.

HEINEMANN (1999) looks into the determination of public deficits in OECD countries by panel regression and takes into account globalization variables such as openness and existence of capital and current account restrictions. He finds some support for the disciplining hypothesis.

With this limited insights from the literature it is the aim of this empirical study to provide evidence to what extent the above four hypotheses are supported when the impact of globalization is identified by the use of appropriate indicators.

3 Variables, Data and Methodology

The following variables are used to measure developments along the four dimensions that according to theory should be influenced by growing international market integration:

Measuring tax structure

Tax structure is measured by taxes on corporate income as percentage of total taxation and taxes on goods and services as percentage of total taxation. According to the tax structure hypothesis with increasing globalization, tax shares are expected to shift away from corporate income towards tax bases with a low mobility. General consumption of goods and services is one of the less mobile tax bases.

Measuring expenditure structure

Expenditure structure is measured by government spending on social security as percentage of total expenditure and government net investment as percentage of total expenditure. Public investment seems to be the best proxy for public spending shares that have an input character for private production. Social security expenditures benefit the relatively immobile factor labor. Therefore, a shift away from social spending towards investment spending would support the expenditure structure hypothesis.

Measuring public debt

The stock and flow dimension of public debt is included by taking into account the level of debt as a percentage of GDP and the primary surplus as percentage of GDP. According to the public debt hypothesis both should react negatively to increasing integration of markets.

Measuring size

Size is measured by total tax revenues including social security contributions as percentage of GDP and government outlays as percentage of GDP. With increasing difficulties to raise revenues the size hypothesis should be supported and increasing globalization should affect both variables negatively.

21 OECD countries are included in the database³. Due to missing variables not all are included in each single analytical step. The data originate from *OECD Revenue Statistics* and the *OECD Fiscal Positions and Business Cycles* data base. The focus is on long-run changes of these variables, i.e. changes from the average of the seventies to the average of the nineties (with 1997 the last year included). Decade averages are the basis for the measurement of long-run changes in order to limit business cycle effects.

Globalization Indicators

Three variables are used to identify more clearly the impact of globalization. Openness is defined as the ratio between the sum of ex- and imports and GDP. The motivation for this variable is the idea that economies for which international trade is of large importance will also be subject to more intense globalization constraints than closed economies. For each country the average openness between 1970 and 1997 is the variable used below (OPENNESS).

Legal restrictions on international transactions reduce factor mobility and might thus alleviate pressures on the government budget arising from tax competition or capital flight. Therefore, the existence of legal restrictions as reported in *Exchange Arrangements and Exchange Restrictions* by the IMF is used as the basis for the second globalization variable. Four kinds of restrictions are taken account of: the existence of multiple exchange rates, restrictions on the current account, restrictions on the capital account and the obligation to surrender export proceeds to government authorities. For each country the variable RESTRICTIONS is calculated in a straightforward way: for each year between 1970 and 1997 a country receives 0 to 4 points if there were zero up to all four kinds of restrictions, the yearly points are then added over the whole period. Thus, a high value indicates a low degree of globalization.

Finally, characteristics of the exchange rate regime are included. MCKINNON (1997) regards the exchange rate regime as one of the important variables for fiscal behavior. He explains the rise of public debt after 1973 by the collapse of the Bretton Woods system and the modified restrictions for fiscal policy arising from the transition to floating exchange rates. This idea is tested below by the exchange rate regime variable FLOATING that for each country counts the number of years between 1970 and 1997 with a floating exchange rate regime. Data on the exchange rate regime originate also from *Exchange Arrangements and Exchange Restrictions*.

³ These countries are: Australia, Austria, Belgium, Canada, Denmark, Spain, Finland, France, Great Britain, Germany, Greece, Ireland, Italy, Japan, Luxemburg, Netherlands, Norway, New Zealand, Portugal, Sweden and the United States.

A combination of cluster and discriminant analysis is the tool for the empirical work (BACKHAUS et al., 1996). In a first step cluster analysis serves the purpose to identify classes of countries that are largely homogeneous in relation to changes of fiscal variables since the 1970s. In a second step discriminant analysis is used to decide whether the globalization variables can be helpful for explaining the cluster structure. This two-step-procedure is applied for each of the four public finance dimensions as described above.

Description of the applied cluster and discriminant methodology

Cluster analysis is a descriptive instrument. The aim is classification. A sample of objects is classified into subgroups (clusters) with a high degree of within homogeneity and a high degree of between heterogeneity. The classification is performed by taking account of specified features of the objects. On the basis of these features, distances between objects and clusters can be measured if a criterion for distance is defined.

Given the objects (21 OECD countries – due to data availability not all are included in each analytical step) and the features (the above discussed four public finance dimensions), the standard approach of agglomerative clustering is used. This approach starts with each individual case being a cluster on its own. It proceeds by successively merging those two clusters with the lowest degree of dissimilarity until all cases are combined into one cluster. Results of this agglomerative procedure are summarized in the dendrogram. The dendrogram is a helpful tool in deciding the adequate number of clusters by depicting for each step the extent of the dissimilarity coefficient for those clusters that are combined. A significant jump in this coefficient indicates that this agglomerating step leads to a combination of dissimilar classes. The following methodological specifications are used: As measure of distance the Euclidean distance is chosen. Dissimilarity between clusters is assessed according to the concept of average linkage, i.e. distance between clusters is calculated as the average of distances between single cases. In order to preclude scale effects, variables are standardized to have a mean of 0 and a variance of 1 before executing the agglomerating procedure.

After classification is done by cluster analysis, discriminant analysis follows. Discriminant analysis helps to answer the following question: Which variables are helpful to decide whether an object belongs to a certain class? Thus it is the logical next step in the attempt to look into the impact of globalization on government budgets. While cluster analysis helps to identify country clusters with similar fiscal developments, discriminant analysis helps to find out whether these similarities can be explained by those variables that are proxies for the intensity of globalization.

In the procedure a discriminant function is calculated. The coefficients are determined in order to minimize for the discriminant function the ratio between the

sum of squares within a given group and the sum of squares between given groups. The goodness of the discriminant function in regard to its capability to discriminate between groups is assessed by Wilk's Lambda, which is defined to be the ratio between the sum of squares within the groups and the total sum of squares. Thus a small statistic stands for a high goodness of discrimination. Wilk's Lambda can be transformed into a chi-square distributed variable. Therefore, the zero hypothesis that groups are not different with respect to the values of the discriminant function can be tested.

The maximum number of discriminant functions is equal to the number of groups less 1 or the number of discriminant variables, depending which value is smaller. In the analysis the maximum number of functions included is two due to the fact that with a higher number the marginal improvement in the goodness of the discrimination is very low. Only one function can be determined if only one explanatory variable is used. This can happen because the discriminant analysis is performed stepwise. Consecutively one after the other potential globalization variable is included. Wilk's Lambda is used as the criterion for the order of inclusion and for the decision whether a variable is included at all. A variable is not included if there is no significant reduction of Wilk's Lambda at a significance level of 5 percent. A further criterion to assess the goodness of discrimination is the percentage share of cases that would be classified correctly on the basis of the discriminant functions. Apart from that results of an F-test for significant differences in the cluster means of globalization variables are reported.

Taking account of starting levels

In addition to the globalization variables, starting levels of the fiscal variables will be included among the discriminating variables. It is plausible to expect the intensity of globalization pressure to depend also on the initial situation before the opening of a country. A country with a relatively high tax burden on companies should for example show a more marked reduction of this burden once globalization starts than a country where the initial burden is low.

4 Results of Cluster and Discriminant Analysis

4.1 Tax Structure Hypothesis

The presumption of the theoretical literature is that globalization leads to a shift of tax burden from mobile to immobile factors. Since companies are more mobile than consumers this effect should result in decreasing company taxes and increasing indirect taxes as shares of total taxation. Figure 1 depicts the changes of these shares from the average value of the 1970s to the average value of the 1990s (until 1997).

The theoretical presumption would be supported if countries in the Northwest segment were highly and countries in the Southeast lowly globalized.

The data do not fit easily into this pattern because there is no clear cluster structure along the Northwest-Southeast direction. On the basis of the dendrogram in Figure 2 a five cluster structure seems appropriate. A further merger of clusters would imply a large increase in the measure of distance.

Three outlier clusters are identified: Norway is characterized by a strong increase in the corporate tax share, obviously a Northsea oil effect. Great Britain, Luxemburg and New Zealand are characterized by an increasing share of indirect taxation but do not form a common cluster because of the fact that in Britain corporate tax share increased while it decreased in Luxemburg and New Zealand. USA, Canada and Japan form a southwest cluster being characterized by a relative strong decrease of corporate taxation, while the remaining 14 (apart from Australia exclusively European) countries are combined to a central cluster with a slight average increase of corporate tax shares and a clear decrease of indirect tax shares. It is interesting to see that the long-run perspective which is applied here leads to different findings on indirect tax shares which according to the studies cited in section 2 are generally increasing in a more short-run perspective.

In the next step it is tried to discriminate between clusters on the basis of the globalization indicators. Due to non-availability of data for Portugal and Luxemburg discriminant analysis can be applied to 19 countries. In the further analysis outliers are excluded and the focus is thus on discriminating between the southwest cluster USA, Japan, Canada (decreasing corporate tax share) and the central mainly European country cluster (slight increase of corporate tax share).

In line with the tax structure hypothesis the southwest cluster has significantly less restrictions than the central cluster (Tables 1 and 2). It is also characterized by a significant predominance of floating exchange rates. Differences in openness between both clusters are not significant at the 5 percent level. This result carries over to the discrimination procedure, where OPENNESS is not included as a significant discriminating variable. The discrimination on the basis of FLOATING and RESTRICTIONS is, however, successful and leads to a correct classification of 15 out of a total of 16 cases (Table 3).

The finding that globalization variables are relevant is not robust in regard to taking account of catching up effects. The inclusion of the start levels of corporate and good tax shares leads to the following (not reported) results: Only the start level of the corporate tax share survives the stepwise procedure and leads to a good discrimination between both clusters. Those countries that initially had high corporate tax shares reduced the burden for corporate income.

Thus, these findings show some support for the tax structure hypothesis though not in an overwhelming way.

Figure 1: Changes in Tax Structure

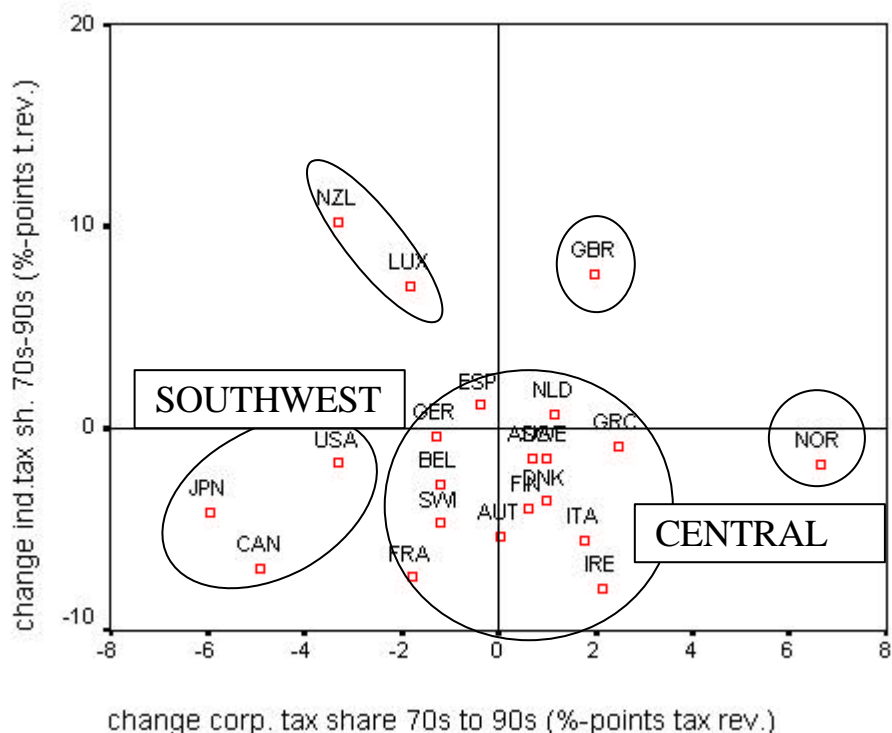


Figure 2: Dendrogram Agglomerative Clustering –Tax Structure Dimension
Rescaled Distance Cluster Combine

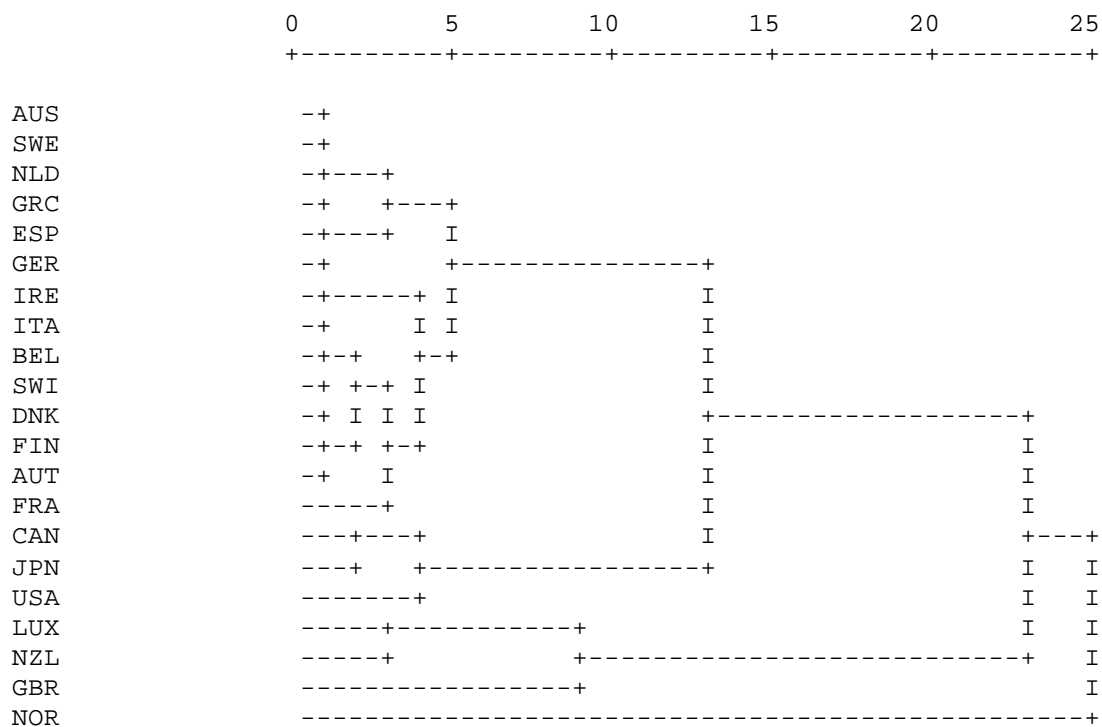


Table 1: Descriptive Statistics of Clusters (2 Clusters –Tax Structure Dimension)

| CLUSTER | GLOBALIZATION VARIABLE | MEAN | STANDARD DEVIATION |
|----------------------|------------------------|-------|--------------------|
| SOUTHWEST 3 CASES | OPENNESS | 31.04 | 19.17 |
| | RESTRICTIONS | 4.06 | 7.02 |
| | FLOATING | 23.33 | 4.04 |
| CENTRAL 13 CASES | OPENNESS | 64.49 | 30.45 |
| | RESTRICTIONS | 36.47 | 21.37 |
| | FLOATING | 3.31 | 7.52 |

Table 2: F-Test for Equality of Group Means (2 Clusters –Tax Structure Dimension)

| | F | DF1 | DF2 | SIGNIFICANCE |
|--------------|--------|-----|-----|--------------|
| OPENNESS | 3.412 | 1 | 14 | 0.086 |
| RESTRICTIONS | 6.427 | 1 | 14 | 0.024 |
| FLOATING | 13.904 | 1 | 14 | 0.002 |

Table 3: Results of Discriminant Analysis (2 Clusters –Tax Structure Dimension)

| NUMBER INCLUDED CASES | NUMBER DISCRIMINANT FUNCTIONS | VARIABLES INCLUDED AFTER STEPWISE PROCEDURE | WILK'S LAMBDA | SIGNIFICANCE OF DISCRIMINATION | %-SHARE CORRECT CLASSIFICATIONS |
|-----------------------|-------------------------------|---|---------------|--------------------------------|---------------------------------|
| 18 | 1 | FLOATING RESTRICTIONS | 0.247 | 0.000 | 93.8 |

4.2 Expenditure Structure Hypothesis

Theory suggests that public expenditure structure should increasingly reflect the needs of mobile factors when integration increases. Expenditure shares of social security spending and of public investment outlays can serve as indicators. Given a

fixed size of the budget and a fixed revenue structure, a country can try to become more attractive for mobile and taxpaying factors by reducing social spending and increasing the quality of infrastructure.

Denmark, Luxemburg and New Zealand are not included in this analysis due to missing data. Figure 3 depicts the changes along these two dimensions from the 70s to the 90s for 18 countries (decade averages). The absolute values of changes are remarkable: There is no country where investment shares have been increased. On the contrary, there have been marked reductions in relative spending on public infrastructure. The opposite is true for social spending where for most countries expenditure shares have risen strongly reflecting the growth of the welfare state. Thus, if globalization has an impact on expenditure structure this refers to the question whether it has served to limit the relative (and even larger absolute) growth of social security spending and the relative shrinking of public investment. In the country cross-section a higher/lower degree of globalization should be associated with a location in the northwest/southeast of figure 3.

Cluster analysis recommends a 5 cluster structure with two single case clusters USA and Ireland (Figure 4). A South European cluster (Italy, Spain, Greece and France) is identified in the northwest, a Middle European cluster (Germany, Netherlands, Belgium and Austria) in the west and a worldwide cluster in the east. Dropping single case clusters, discrimination analysis between clusters is successful on the basis of the globalization variables RESTRICTIONS and OPENNESS while the exchange rate regime variable is rejected (Table 6). However, the impact of globalization has not always the direction predicted by theory: Contrary to theory the northwest cluster where the growth of social security spending and the shrinkage of investment expenditure was limited is the least globalized cluster (most restrictions and lowest openness, Table 4; Table 5 shows that cluster differences of means are significant for all three globalization variables). The east cluster shows a high relative increase of social spending while it has about average values of restrictions and openness. The most globalized cluster is the Middle European one which in line with theoretical prediction shows a slight decrease of relative social security spending. But at the same time it is characterized by a particular large drop of investment spending.

The findings are robust to the inclusion of the starting levels of investment and social security shares in the 1970s (results not reported; these findings show that the countries with an initially low share of social spending tended to be also the countries that have increased this share in the last two decades). As a whole the expenditure structure hypothesis is not supported by these findings.

Figure 3: Changes in Expenditure Structure

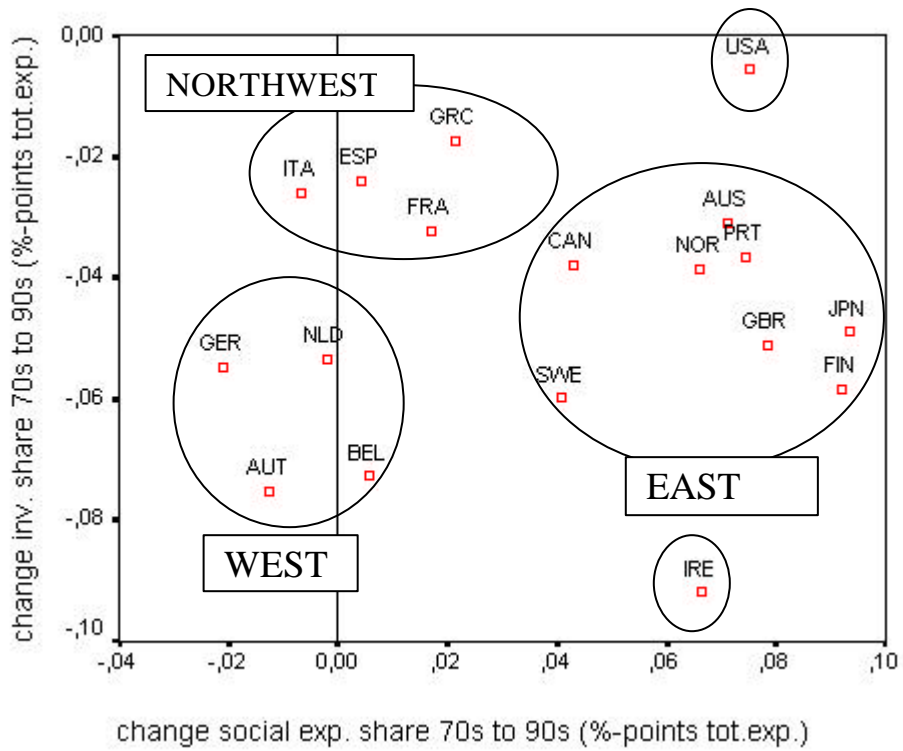


Figure 4: Dendrogram Agglomerative Clustering – Expenditure Structure Dimension

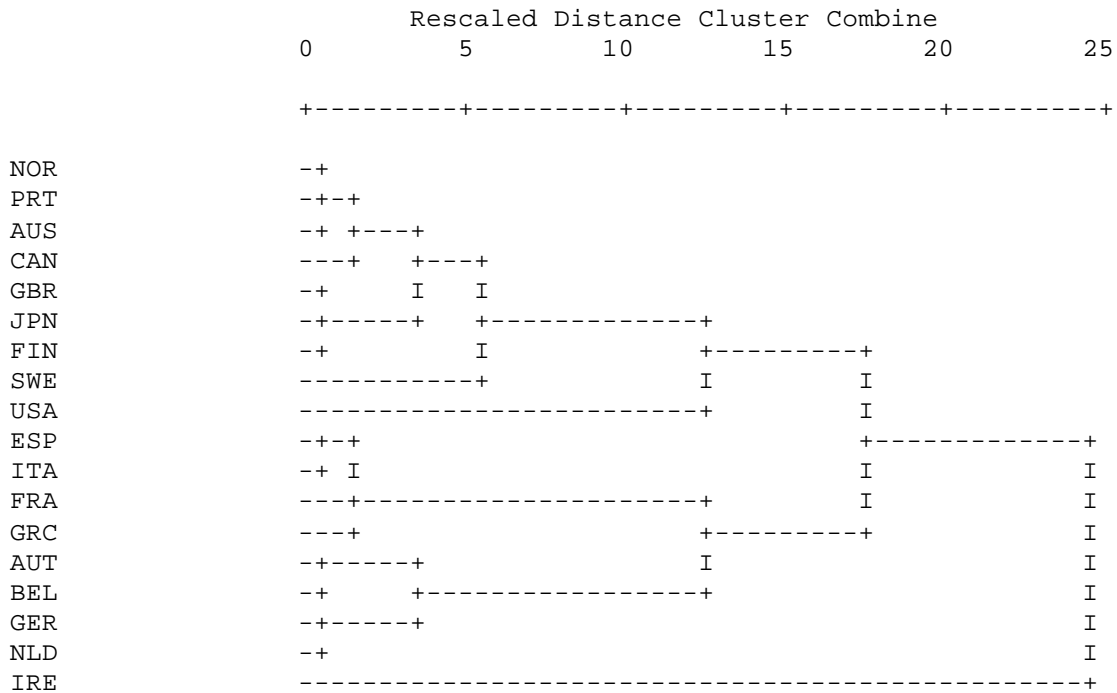


Table 4: Descriptive Statistics of Clusters (3 Clusters –Expenditure Structure Dimension)

| CLUSTER | GLOBALIZATION VARIABLE | MEAN | STANDARD DEVIATION |
|----------------------|------------------------|-------|--------------------|
| EAST 8 CASES | OPENNESS | 53.09 | 18.00 |
| | RESTRICTIONS | 29.15 | 19.96 |
| | FLOATING | 15.63 | 8.88 |
| WEST 4 CASES | OPENNESS | 89.18 | 32.60 |
| | RESTRICTIONS | 16.29 | 15.00 |
| | FLOATING | 0.00 | 0.00 |
| NORTHWEST 4 CASES | OPENNESS | 40.66 | 2.62 |
| | RESTRICTIONS | 59.63 | 12.08 |
| | FLOATING | 12.50 | 6.35 |

Table 5: F-Test for Equality of Group Means (3 Clusters – Expenditure Structure Dimension)

| | F | DF1 | DF2 | SIGNIFICANCE |
|--------------|-------|-----|-----|--------------|
| OPENNESS | 6.252 | 2 | 13 | 0.013 |
| RESTRICTIONS | 6.774 | 2 | 13 | 0.010 |
| FLOATING | 6.415 | 2 | 13 | 0.012 |

Table 6: Results of Discriminant Analysis (3 Clusters –Expenditure Structure Dimension)

| NUMBER INCLUDED CASES | NUMBER DISCRIMINANT FUNCTIONS | VARIABLES INCLUDED AFTER STEPWISE PROCEDURE | WILK'S LAMBDA | SIGNIFICANCE OF DISCRIMINATION | %-SHARE CORRECT CLASSIFICATIONS |
|-----------------------|-------------------------------|---|---------------|--------------------------------|---------------------------------|
| 16 | 2 | RESTRICTIONS OPENNESS | 0.192 | 0.000 | 87.5 |

4.3 Public Debt Hypothesis

Can increasing globalization be helpful to discipline fiscal politicians in regard to the extent of deficit financing? If this is the case countries with an early liberalization of international transactions should consequently have lower deficits and/or lower increases of the debt level. Figure 5 depicts changes of two public debt variables, the debt GDP ratio and the primary surplus. Changes refer to the difference between the average of the 70s and of the 90s. In this analytical step, Australia, Denmark, Luxemburg and New Zealand are not included due to missing data.

With Great Britain and Norway only two countries resisted the general tendency towards a huge buildup of public debt in the last decades. The increase of the stock of debt was paralleled by wide differences in the development of flows: A number of countries experienced a large improvement of the primary surplus. The logic behind this development is obvious: A country with a large increase in the debt level and consequently rising interest rate payments is forced to improve the primary balance even if it only targets at stabilizing the debt ratio.

According to the dendrogram cluster analysis seems to suggest a number of 4 to 6 clusters to be appropriate (Figure 6). In the following the analysis is based on a 4 cluster structure, the main results are however robust to a finer differentiation. Besides the outlier Ireland which is dropped before applying discriminant analysis 3 clusters along the debt level dimension are identified. The northern cluster combines Greece, Belgium and Italy as those countries with an exploding debt level. The southern cluster combines Great Britain and Norway being the countries resisting debt increases. The remaining countries are integrated into the central cluster with a medium debt performance.

The high debt increase country group is also the cluster where restrictions on international transactions were most frequent (Table 7). However, neither the difference of RESTRICTIONS nor of OPENNESS or FLOATING prove significant between clusters (Table 8). Consistent with this result all these variables are rejected in the stepwise procedure as not useful for discrimination at the 5 percent level of significance (results not reported).

According to these results in the last decades debt policy has not been subject to significant globalization constraints.

Figure 5: Changes of Debt Level and Primary Surplus

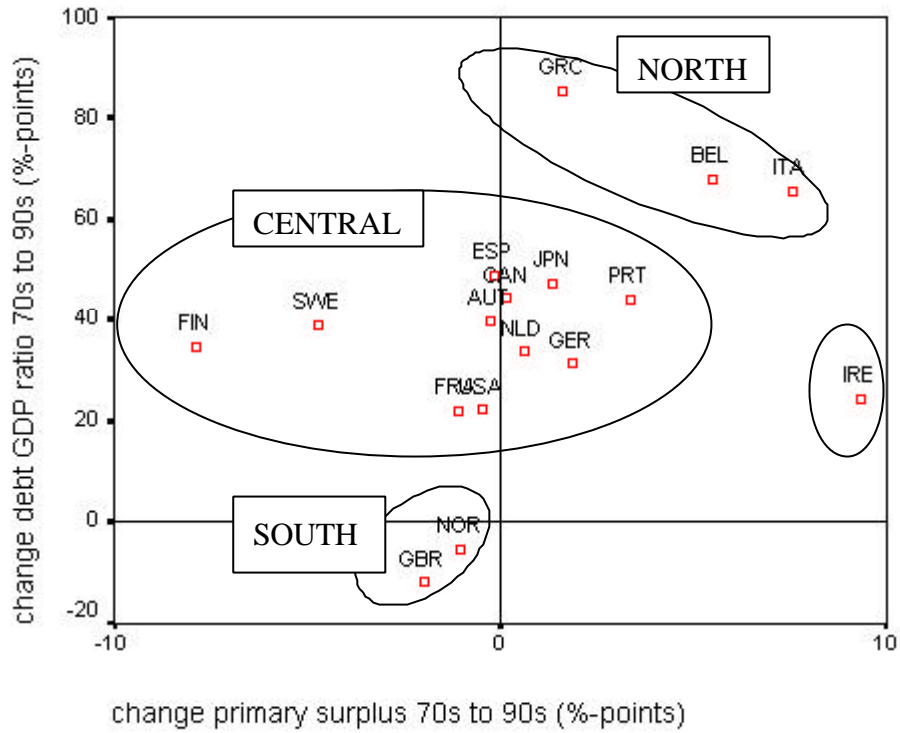


Figure 6: Dendrogram Agglomerative Clustering – Public Debt Dimension

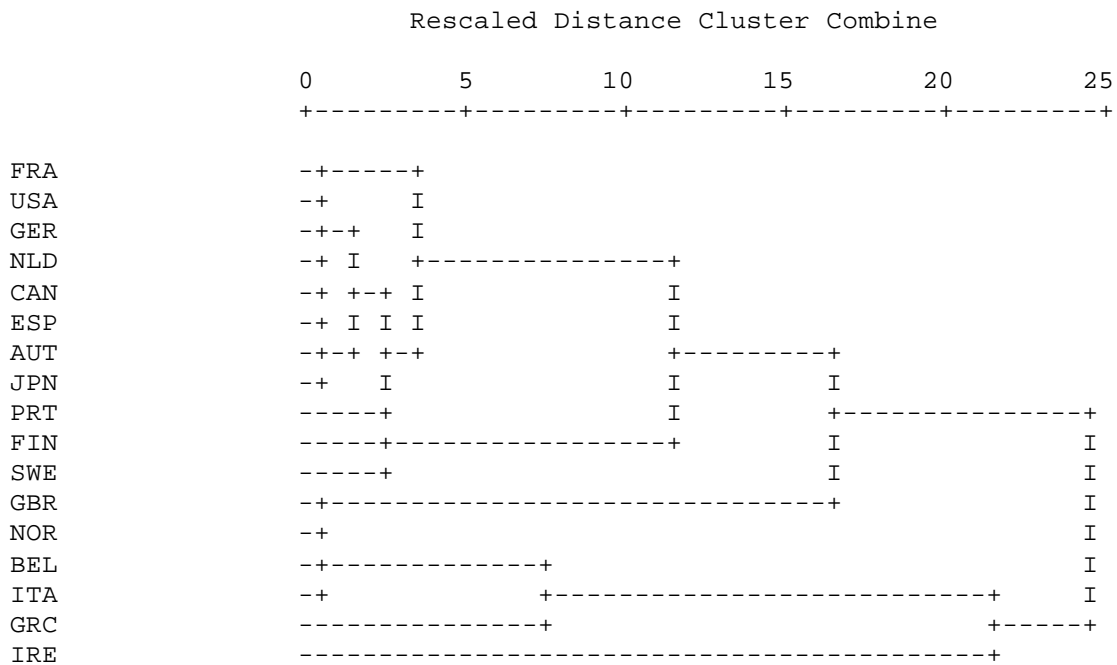


Table 7 Descriptive Statistics of Clusters (3 Clusters – Public Debt Dimension)

| CLUSTER | GLOBALIZATION VARIABLE | MEAN | STANDARD DEVIATION |
|---------------------|------------------------|-------|--------------------|
| NORTH 3 CASES | OPENNESS | 69.21 | 48.79 |
| | RESTRICTIONS | 56.61 | 21.93 |
| | FLOATING | 10.33 | 9.61 |
| CENTRAL 11 CASES | OPENNESS | 53.52 | 24.34 |
| | RESTRICTIONS | 23.88 | 22.95 |
| | FLOATING | 10.55 | 9.84 |
| SOUTH 2 CASES | OPENNESS | 65.92 | 19.33 |
| | RESTRICTIONS | 37.67 | 13.67 |
| | FLOATING | 14 | 12.73 |

Table 8: F-Test for Equality of Group Means (3 Clusters – Public Debt Dimension)

| | F | DF1 | DF2 | SIGNIFICANCE |
|--------------|-------|-----|-----|--------------|
| OPENNESS | 0.425 | 2 | 13 | 0.662 |
| RESTRICTIONS | 2.640 | 2 | 13 | 0.109 |
| FLOATING | 0.106 | 2 | 13 | 0.900 |

4.4 Size Hypothesis

The final testing concerns the evolution of the size of government. Figure 7 depicts the change of the tax-GDP-ratio (taxes including social security contributions) and the change of the ratio between government outlays and GDP. The change is the difference between the average level of the 70s and the average of the 90s (up to 1997). Data availability allows for the inclusion of 18 countries (excluded are Denmark, Luxemburg and New Zealand). Obviously, a departure from the 45-degree-line to the right indicates that growth of outlays is not paralleled by growth of tax revenues.

It is important to note that the growth of public activity according to these indicators has been substantial. This corresponds to the findings cited in section 2 that there are no signs of a shrinking state in the era of globalization. A statement parallel to the results for the expenditure structure and the growth of social security spending applies: If globalization has an impact this refers to the question whether it has served to limit growth of public outlays and taxes.

Cluster analysis leads to straightforward results. The dendrogram in Figure 8 recommends a 2 cluster structure. 5 countries (Greece, Portugal, Spain, Italy and Finland) form the northeast cluster with high growth of public activities, the remaining 13 countries form the low growth southwest cluster. Comparing both clusters in regard to globalization variables only the difference in the number of restrictions is significant: The countries of the northeast high growth cluster have been more restrictive on international transactions (Tables 9 and 10).

As in the preceding section only the RESTRICTIONS variable turns out to be useful in the discriminant analysis (Table 11). Wilk's lambda indicates a significant discrimination function on the basis of this variable alone. Three quarter of cases are correctly classified. Neither OPENNESS nor FLOATING leads to a significant improvement of the discrimination.

Robustness was checked by the inclusion of the initial levels of taxes and outlays in the stepwise discriminating procedure in order to control for the existence of a catching up process in government activity (results not reported). The catching up presumption is confirmed: The initial level of government outlays is helpful to discriminate. At the same time, the discriminating power of the RESTRICTIONS variable is not reduced, it remains important – even more important than the catching up variable.

These results are in line with the size hypothesis. Governments of countries that liberalized international transactions early were not able to increase outlays and taxes to a similar extent as the governments in countries with continuing restrictions. Due to the generally positive sign of changes this does, however, not support the hypothesis of liberalization undermining the financial basis for the modern fiscal state.

Figure 7: Changes in Levels of Public Revenues and Outlays

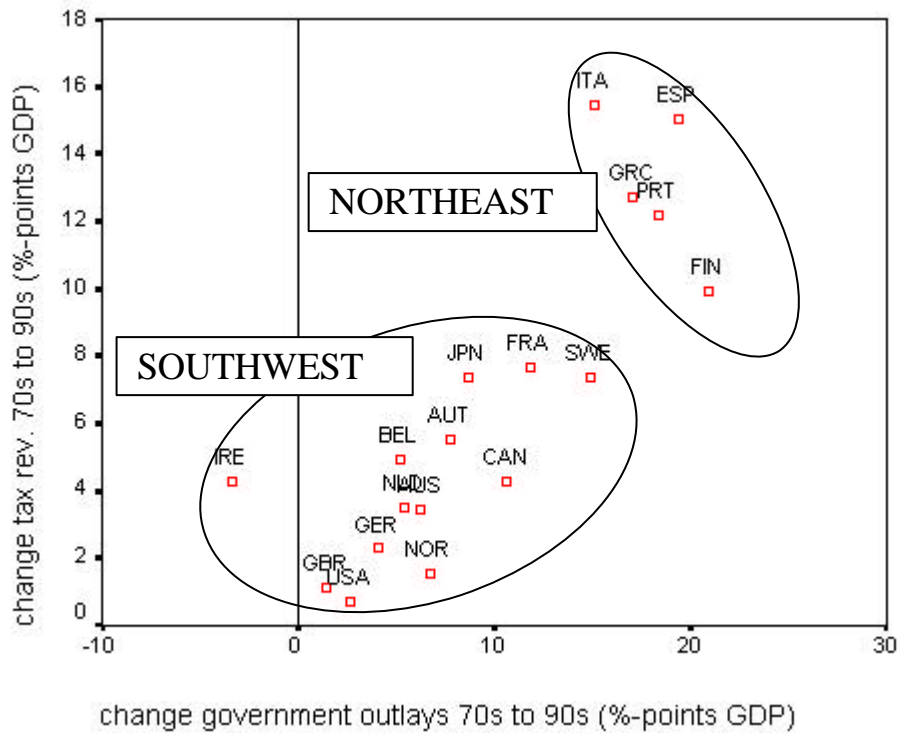


Figure 8: Dendrogram Agglomerative Clustering – Size Dimension

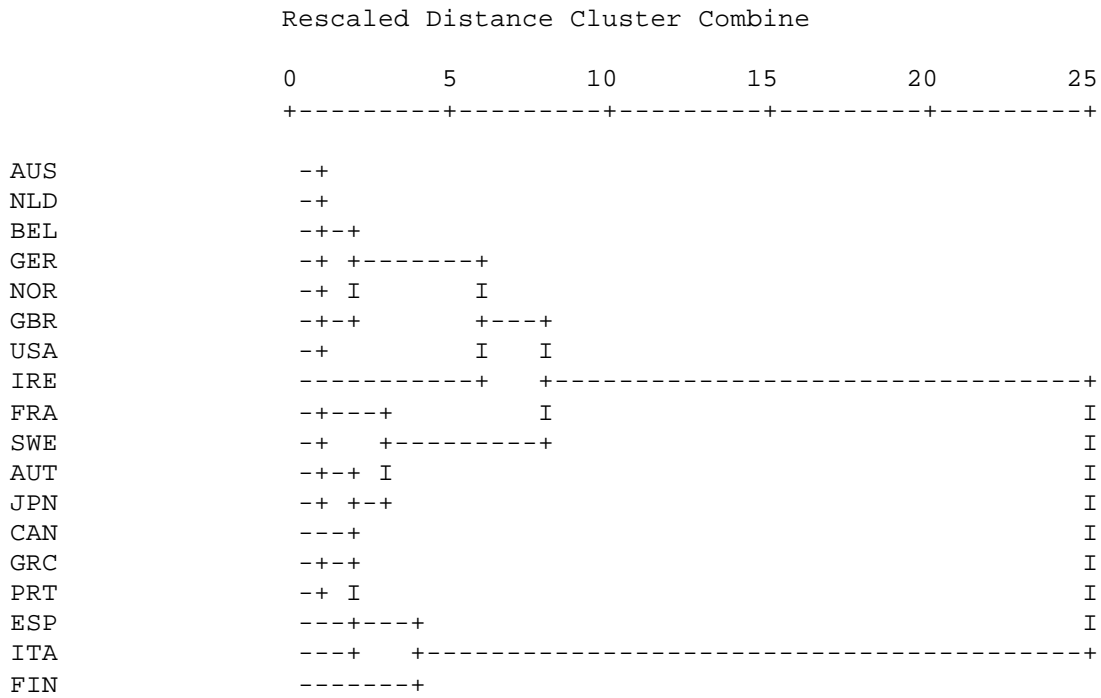


Table 9: Descriptive Statistics of Clusters (2 Clusters –Size Dimension)

| CLUSTER | GLOBALIZATION VARIABLE | MEAN | STANDARD DEVIATION |
|-----------------------|------------------------|---------|--------------------|
| SOUTHWEST 13 CASES | OPENNESS | 64.0688 | 33.7860 |
| | RESTRICTIONS | 23.7308 | 18.9958 |
| | FLOATING | 9.6923 | 10.8042 |
| NORTHEAST 5 CASES | OPENNESS | 48.2199 | 12.0460 |
| | RESTRICTIONS | 56.4333 | 18.0495 |
| | FLOATING | 13.6000 | 4.0373 |

Table 10: F-Test for Equality of Group Means (2 Clusters –Size Dimension)

| | F | DF1 | DF2 | SIGNIFICANCE |
|--------------|--------|-----|-----|--------------|
| OPENNESS | 1.016 | 1 | 16 | .328 |
| RESTRICTIONS | 10.969 | 1 | 16 | .004 |
| FLOATING | .602 | 1 | 16 | .449 |

Table 11: Results of Discriminant Analysis (2 Clusters –Size Dimension)

| NUMBER INCLUDED CASES | NUMBER DISCRIMINANT FUNCTIONS | VARIABLES INCLUDED AFTER STEPWISE PROCEDURE | WILK'S LAMBDA | SIGNIFICANCE OF DISCRIMINATION | %-SHARE CORRECT CLASSIFICATIONS |
|-----------------------|-------------------------------|---|---------------|--------------------------------|---------------------------------|
| 18 | 1 | RESTRICTIONS | 0.593 | 0.0045 | 77.8 |

5 Conclusion

The above findings show the existence of interrelations between globalization and government budgets in the OECD. These links are not equally strong for all budgetary dimensions. The clearest evidence concerns the *size of the budget*. It is

affected as predicted by theory. Countries with an early liberalization of international transactions had lower increases of government outlays and taxes. Nevertheless, even for the liberal countries there was relative to GDP a substantial increase of government activity since the 1970s. This fact is worth to be underlined since it contradicts the theoretical prediction of global markets undermining the welfare state. The abolition of barriers to the free flow of factors has limited the growth of the welfare state, but this growth remained positive with high rates of expansion.

Compatibility of welfare state and globalization is also impressively demonstrated by the findings concerning *expenditure structure* where public investment has been reduced and social security expenditure shares have been increased. National differences from this general tendency do not in all cases correspond to the relative speed of opening. Those countries for which expenditure shift to social security has been relatively small are even the countries that have been most reluctant to lift restrictions on international transactions.

Concerning *revenue structure* there is some support for the predictions of tax competition theory. Those countries that have been more globalized than others have tended to shift relative tax burdens away from corporate income. Combined with the fact of a high growth of government and especially social spending this indicates the following: With globalization there are limits to finance an *increasing* welfare state by higher tax burdens on mobile factors.

The results concerning *public debt* are disappointing for those who hope that open capital markets can have a helpful disciplining function in the presence of the deficit bias of modern democracies. There is no indication that the abolition of capital restrictions has limited the buildup of large debt levels since the 1970s. Different clusters of debt performance can not be discriminated on the basis of globalization variables.

The relative performance of the three globalization variables might offer some indications in regard to the channel over which global integration influences budgetary policy. The exchange rate regime and the openness variable are almost always rejected in the discrimination procedure. This contrasts to the impact of the variable counting the number of restrictions on international transactions. It seems that a liberal approach towards a free flow of capital and goods is a more important restriction for fiscal policy makers than the exchange rate regime or the size of international trade.

Summing up the message of this analysis is: Globalization does indeed matter for government budgets but substantial leeway for an individual budgetary policy of national countries is kept.

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