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Revised Version

# Institutions of Conflict Management and Economic Growth in the European Union\*)

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## Abstract

High-quality institutions of conflict management can serve to mitigate the negative effects of adverse external shocks and social conflict on long-run economic growth. But in addition to the benefits (production-enhancing cooperation) there are also costs (taxes and rent-seeking) of conflict-management institutions like corporatism and trust. We examine both dimensions in the context of a simple growth model. Other than in most of the literature so far, a non-linear relationship between institutions and growth is the theoretical prediction. The empirical evidence from a panel for the years 1961-1995 shows that neo-corporatism as such has had positive effects on long-run growth in the EU, as had trust, suggesting that the diminishing product range of institutions has not yet been reached. Under an increasing size of government, however, both lead to a dominating negative rent-seeking effect, which has grown larger over time.

**JEL Codes:** O40, P16, P5, H10

**Key words:** institutions, neocorporatism, positive political economy, economic growth

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## 1 Introduction

European economies have had widely differing growth experiences in the past 40 years. This paper shows theoretical and empirical evidence that institutions of conflict management like corporatism and trust have been able to promote long-run growth in Europe but increasingly come at costs in the more recent past. It seems plausible that some countries are better able to deal with external shocks and social conflict because of better functioning institutions of social conflict management within their countries. This idea has been the topic of some recent papers (Easterly and Levine 1997, Rodrik 1999). Interestingly, they mainly use indices of bureaucratic efficiency, corruption, the extent of political participation etc. It is somewhat unclear, however, how these no doubt important institutions can be seen to promote cooperation and deal with conflict. De Grauwe and Skudelny (1999), in the only recent working paper we know of that deals with Europe, use bureaucratic efficiency, the size of the government and tax revenues as proxies for the degree of conflict management. Again, we doubt that the selection of these variables as institutions of conflict management is ideal.

Trust seems to be a better candidate. In the first of a series of papers, Knack and Keefer (1997) showed that trust and civic cooperation have significant impacts on economic performance. Group memberships, hypothesized to have positive effects (Putnam 1993) or negative effects (Olson 1982) have no significant relation to growth. La Porta et al. (1997) also find positive effects of trust on economic performance. In an extended analysis Zak and Knack (2000) repeat the previous work and show that the results also survive different specifications and the use of religious composition variables as exogenous instruments for trust. The only study we know of that deals with trust and growth on the European level is Moesen et al. (2000) and an earlier working paper by the same authors (Moesen et al. 1998)<sup>1</sup>.

A yet much more natural candidate, however, for being regarded as an institution of conflict management, especially with the background one has as a European, is corporatism. Corporatism has been at the center of interest of political economists for quite a while. However, it is interesting that there are only a handful of studies actually examining its

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<sup>1</sup> However, their empirical analysis is rather incomplete. They only have initial GDP in their regressions and do not control for other economic variables. They do find a positive impact of trust on growth, but in the light of the severe limitations of their econometric approach, this result is at best tentative – which they themselves honestly admit.

impacts on long-run economic growth. Rather, most studies concentrate on static models or the implications of corporatism and wage-bargaining systems on employment (Calmfors and Driffill 1988). The latter restriction is, in our view, too strong. It is certainly true that corporatist systems have at their core a centralized wage-bargaining system. What is equally important, however, is the culture of trust and consensus that is a characteristic of such systems. Recently, Galli and Padovano (1999) have claimed to have found evidence of a negative effect of “corporatism” on growth; at a closer look, however, they used an index of the centralization of wage bargaining as a proxy for “corporatism”, which can be quite a different thing (see the appendix for more on this). Alvarez et al. (1991) report a positive effect of centralized wage bargaining if the degree of union density in the labor force is high and government is controlled by left wing parties. Again, an explicit study for the European Union<sup>2</sup> is missing.

These gaps with respect to studies dealing with institutions in Europe are unfortunate since, first, results for large samples of countries cannot be directly applied for policy recommendations in other samples (see Rodrik (2000), who also warns against the “blueprint” approach), and second, the impact of institutions on growth has particular relevance for policy in the European Union: Because monetary policy is controlled solely by the European Central Bank, the countries in Euroland have to rely on other mechanisms for economic policy. In times of fiscal problems for many EU countries, well-functioning conflict management institutions seems to be very important. If the same shock hits several or all EU countries, some will better be able to adapt to this shock, while others will suffer more severe output slumps. Our intent, therefore, is to see what we can learn from exclusively examining the experience of western European countries. This study is not meant to be primarily used in the debate on the supposed convergence of capitalism to the “American model” (Freeman 2000, Krugman 2000). This is an interesting, but different topic. Another purposeful limitation of this paper is that we do not aim to answer the question of how to develop certain institutions which might have been asserted to promote growth. This is a difficult question that goes beyond the scope of the present analysis.

The paper is organized as follows. Section 2 explores the theoretical role of institutions of conflict management. The main focus is on the relation between growth, social conflict, and

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<sup>2</sup> For a treatment of the particular relevance of centralized wage bargaining and corporatism for the labor market see Schneider and Wagner (1999). They also provide an empirical analysis of this issue.

institutions like corporatism. A simple model with benefits and costs of institutions is presented. The empirical analysis is done in section 3. We examine the two competing hypothesis derived in the theoretical part: Hypothesis (A) asserts, as has been common in the literature, that certain institutions of conflict management have an approximately linear positive effect on growth (results are in section 3.3). Hypothesis (B), by contrast, emphasizes a non-linear impact because of the costs certain institutions bring with them (see section 3.4). Our results suggest that for some institutions, (A) might be a better description, whereas for some (B) might be closer to reality. Section 4 summarizes and provides some conclusions.

## **2 How do institutions that resolve social conflict and manage shocks affect the growth rate?**

If posed the simple question “Do institutions matter for economic performance?”, most economists today would answer yes. Still, the term institutions is sometimes used in a confusing manner. In this paper, following North (1990: 3) we define institutions as the “rules of the game in a society or, more formally, ... the humanly devised constraints that shape human interaction.” Institutions are thus clearly distinct from “organizations” which are particular, structured combinations of resources. Three of the most important roles of institutions that have been identified in the literature are: (i) promoting technological progress (like property rights and bureaucratic efficiency), (ii) allowing commitment and dealing with uncertainty (like some religious rules) and (iii) managing conflicts and shocks (compare Aron (1998) for a similar classification).

We only focus on the third category. As mentioned in the introduction, the main candidates for this group are corporatism and centralization of wage bargaining, trust, civic cooperation, and group activity<sup>3</sup>. Generally, the connection between theory and empirics is rather loose in this field. Sometimes the theoretical foundation for why these institutions might be good for growth have been given in verbal descriptions at least. For example, the main reasons put forward by Knack and Keefer (1997) for a positive growth effect of trust which may also apply to other institutions like corporatism are the following:

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<sup>3</sup> Actually, group (associational) activity per se may have either a positive or a negative effect, depending on the type of activity. Rent-seeking interest groups (“Olsonian” groups) certainly will, if at all, have negative effects, whereas groups that promote trust and “instill in their members habits of cooperation, solidarity, and public-spiritedness” (Putnam 1993: 89-90) should be hoped to have a positive effect.

- (i) Since economic activities often require agents to rely on the actions of others, a high-trust environment might be one of low transaction costs. Moreover, civic activity and norms of civic cooperation may act to constrain self-interest. Corporatism may also act in this way.
- (ii) Societies with high levels of trust are less dependent on formal institutions to enforce agreements. Better levels of enforcement in turn increase the returns to innovation and to education.
- (iii) The transaction costs of political action (Dixit 1999) might be lower in high-trust environments because promises and policy announcements are perceived as more credible. A related positive effect may be that trust and civic norms may improve governmental performance and the quality of economic policies by affecting the level and character of political participation.

We think that point (i) is a very important one and we therefore have formally modeled this idea here. Point (ii) has in the meantime been formalized by Zak and Knack (2000) in a principal-agent model. We do not yet know of a model that explicitly shows the relationship between trust and policy credibility, as argued in point (iii).

To derive the direct relationship between institutions and growth as typically done in the literature, we can start from the now common notion that, first, social conflict is costly for the economy and bad for growth. For example, the number of coups, revolutions, strikes, assassinations etc., all can plausibly be linked to growth by pointing to the uncertainty they create for investment decisions (Alesina and Perotti 1993, Barro 1991, Rodrik 1999). Similarly, ethnic divisions have been shown to be detrimental to growth, in particular in African economies (Easterly 2000, Easterly and Levine 1997). For the European countries, inequality can be asserted to be a more adequate measure. While even now the exact relationship between inequality and growth is not clear<sup>4</sup>, we use it as a proxy for “latent social conflict” (Rodrik 1999), i.e. a kind of conflict that works “behind the scenes” and relatively seldom breaks out in actual revolutions. Nevertheless, it can create substantial costs for the economy.

Second, certain institutions of conflict management may induce more cooperative and cost-saving behavior of individuals or groups in the presence of social conflict and an external

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<sup>4</sup> The most complete review on inequality and growth can be found in Aghion et al. (1999) which builds heavily upon the more formal treatment in Aghion and Williamson (1998); another recent review is Zweimüller (2000).

shock. The outcome is, as has been argued by Rodrik (1999), that countries with better developed institutions of conflict management can expect that competing groups will use the cooperation strategy more often<sup>5</sup>.

Generally, therefore, the hypothesis would be that there is an unambiguously positive effect of institutions on growth (hypothesis (A)). Moreover, theoretical considerations lead us to expect that shocks, social conflict, and institutions of conflict management interact: In a worse situation, i.e. when there are more conflicts and / or more shocks, better institutions of conflict management become even more important. The latter point has partly been discussed for other countries and other institutions (Easterly 2000), and we just offer an analogous empirical analysis for the role of corporatism in the European Union as an example (see section 3.3.2)<sup>6</sup>.

More novel theoretical and empirical results are derived when we extend the theoretical framework in two directions: First, we apply ideas from the government and growth literature to exemplify how one can relate institutions more directly to growth (and not just to “cooperation”). In our interpretation they promote a more efficient use of human capital and therefore generate higher growth potentials. Second, we also pay attention to the potential costs of institutions, especially in the form of rent-seeking. It is important to keep in mind that each institution may bring about benefits and costs; institutional failures may simply reflect an unavoidable price to be paid if another goal is to be achieved. This is similar to the idea of “transaction-cost-politics” in Dixit (1999), who shows “the need to accept some imperfection and toleration of a slow process of coping using whatever instruments are at hand, economic and political.” This point has been largely ignored in the literature. Grootaert (1998) is one of the very few authors to point out that the notion that there are opportunity costs to the accumulation and use of institutions (“social capital” in the sense of Putnam (1993)) is largely underdeveloped<sup>7</sup>. If one takes this point seriously, then, a non-linear relationship arises that allows for costs of institutions. We will call this hypothesis (B) below. What is important is

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<sup>5</sup> This idea can be formalized in a simple game-theoretic model available from the authors on request.

<sup>6</sup> A more systematic evaluation of the evidence can be found in Wagner (2000).

<sup>7</sup> Some studies have pointed out possible other limits of various organizational factors. Levine (2000) examines whether “unbalanced” financial systems (with respect to the size of the banking sector compared to the stock market) adversely affect performance. Durham (1999) argues that the efficacy of some institutions depends on

that hypotheses (A) and (B) are competing. Each institution is different; it is not clear a priori which institution fits which hypothesis.

Following the standard government and growth literature and basing our model closely on that by Barro (1990) and Barro and Sala-i-Martin (1992), we assume that the production side of the economy can be represented by a standard Cobb-Douglas production function with modification.

**Equation 1**  $y = Ak^a l^{1-a} \mathbf{k}^{1-a}$

As usual  $A$  is a technological parameter, and  $k$  and  $l$  are aggregate capital and labor inputs, respectively. Variable  $\mathbf{k}$  denotes a further factor which governs how the capital stock can be used and contains the potential for sustained growth. Assume for simplicity that

**Equation 2**  $\mathbf{k} = Qk = (\mathbf{t} + \mathbf{m})k$

$Q$  stands for the level of development of institutions of conflict management: It will be higher in economies where there are institutions that promote cooperation, in particular where joint use of production capabilities is more attractive. As Equation 2 shows, it has two correlates:  $\mathbf{m}$  describes the degree of cooperation (higher cooperation corresponds to a higher value of  $\mathbf{m}$ ).  $\mathbf{t}$  is a tax on capital: Institutions have to be financed somehow.  $\mathbf{t} + \mathbf{m}$  together can be interpreted to stand for the “level of institutions” where we do not know exactly a priori whether this level is attained by a broad notion of governmental finance action which brings about costs (see below),  $\mathbf{t}$ , or the behavior of the agents ( $\mathbf{m}$ ). The main difference between these two concerns their impact on the interest rate: The tax reduces the real return on capital whereas  $\mathbf{m}$  does not. Among those institutions that achieve the same total level of conflict management, there are therefore differences with respect to the costs of these institutions. It will prove useful to have a shortcut for describing the relation of  $\mathbf{m}$  to  $\mathbf{t}$ . We therefore define  $\mathbf{m}/\mathbf{t}$  to be the *quality of institutions*. The larger this index, the more

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the initial level of development. Another “cost” that could be modeled is the “decay” of the effectiveness of institutions over time.

institutions can act as conflict-managing and cooperation-promoting without running into the costs of rent-seeking.

This formulation can further be motivated as follows. In the standard growth models (both neoclassical and endogenous ones) capital is something like a policy variable. It does not depend on individual decisions; more precisely, the production process does not contain interdependencies that require interaction between individual producers. We modify this assumption by allowing for another variable – namely, cooperation,  $m$  - explaining part of the actual amount of capital usable for production. Note that  $m$  is not necessarily (or even not likely) supplied by the government. Rather, it depends on the institutions and norms that have evolved between the economic agents.

The tax  $t$  may be interpreted in several ways. First of all, it might actually be a formal tax levied by the government to provide institutional and public services. This is the traditional interpretation in the government and growth literature (see e.g. Barro (1990), Barro and Sala-i-Martin (1992), Alesina and Rodrik (1992), and many others) Secondly, it may represent “external transaction costs”: Corporatist systems, for example, typically allow the interest groups that are “in” the systems to manage their conflicts efficiently. There may be considerable external costs on outsiders that hurt the total availability of productive capacity (the capital stock). In other words, corporatist systems tend to lower innovation incentives and lead to a more static behavior of the economy than purely competitive systems. However, the problem of external costs through neglecting the “outsiders” of the system can be hypothesized to be highest in just centralized systems that do not have the same consensus orientation and relative high degree of government involvement as corporatist systems (Choi 1983, Galli and Padovano 1999, Olson 1982, Vedders and Gallaway 1986). Therefore, distinguishing between centralized and corporatist systems is expected to yield different outcomes. Finally, we certainly have to take the role of potential rent-seeking into account (Olson 1982). In fact, a main objection against the literature on institutions and growth so far is that it does not consider the possibility that institutions, while growth promoting in one way or the other, may also bring with them an increased proneness toward rent-seeking behavior. On the contrary, we model rent-seeking as the true cost of corporatism: More corporatism leads to higher “taxes” (the rent-seeking literature interprets rent-seeking as tax activity; see, e.g. Murphy et al. (1993)) which do lead to some positive productive effect (through allowing the building and maintenance of institutions which in turn promote production) but also to a

negative growth effect. A similar argument could be made for other conflict management institutions like trust, civic norms, and associational activity.

We regard this multiplicity of interpretations as a strength rather than a weakness of the model. If we had to choose just one of the above, we would say that the third one (rent-seeking) probably captures the costs of institutions of conflict management best.

To complete the description of the production side, we assume perfect competition in factor markets<sup>8</sup>. Then, wages and rental rates on capital are determined by the marginal productivities. Taking the partial derivative of Equation 1 with respect to capital (and assuming  $l = 1$  for convenience), we get

$$\text{Equation 3} \quad \frac{\partial Y}{\partial k} = A(\mathbf{t} + \mathbf{m})^{1-a} = r(\mathbf{m} \mathbf{t})$$

Endogenous growth is thus characterized by a non-decreasing marginal product of capital.

On the household side we model the problem solved by the representative household with a simple log utility function (the results would hold just as well for the more general constant intertemporal elasticity of substitution (CIES) function where the intertemporal elasticity of substitution is also constant but not equal to one).

$$\text{Equation 4} \quad U = \int \log c * e^{-rt} dt$$

This means that instantaneous utility is just the logarithm of consumption,  $c$ . Consumption over the infinite time horizon, which is discounted at rate  $r$ , is maximized subject to

$$\text{Equation 5} \quad \frac{dk}{dt} = (r - \mathbf{t})k - c$$

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<sup>8</sup> A more complete description would perhaps allow for non-competitive behavior, taking the rent-seeking interpretation more literally. Still, for the individual,  $\mathbf{t}$  and  $\mathbf{m}$  are taken as given so that Equation 3 constitutes a reasonable description of the optimization on the product market.

Note that the real rate of return is given by  $r - t$ , since the tax on capital reduces the actual return earned on capital. What is important is that  $m$  does *not* reduce the rate of return since it is not financed by taxes but rather describes a state of behavior of the economic agents.

The solution<sup>9</sup> is given by the familiar growth equation

**Equation 6**  $g_c = g_k = r - t - r$

Linking the household and production sides, we see that similar to Barro's (1990) model the economy's growth rate is determined by

**Equation 7**  $g(m, t) = r(m, t) - t - r$

Note that for all  $m$ ,  $\partial g / \partial m > 0$ . The relation between the tax rate  $t$  and the growth rate, by contrast, is ambiguous. Simple calculations reveal that the maximum value of  $g$  is attained where  $t = [(1 - \alpha)A]^{1/a} - m$ . Above that value, the growth rate decreases as more taxes are levied to finance the institutions (or as rent-seeking becomes more costly)<sup>10</sup>. Put another way, the substitution possibilities between  $t$  and  $m$  are imperfect. The higher the degree of pure cooperation  $m$ , the less an economy must spend on taxes in order to obtain a specified level of institutional arrangements. If it does nevertheless entertain a large government sector to create even more of an institution<sup>11</sup>, it will soon run into possibly severe costs. The marginal

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<sup>9</sup> For a complete derivation of this equation and discussion of the associated dynamic optimization problem see Barro and Sala-i-Martin (1995), for example.

<sup>10</sup> Note that this maximum value of  $t$  corresponds to the value derived by Alesina and Rodrik (1992, equation 10) when government transfers are left out of the model.

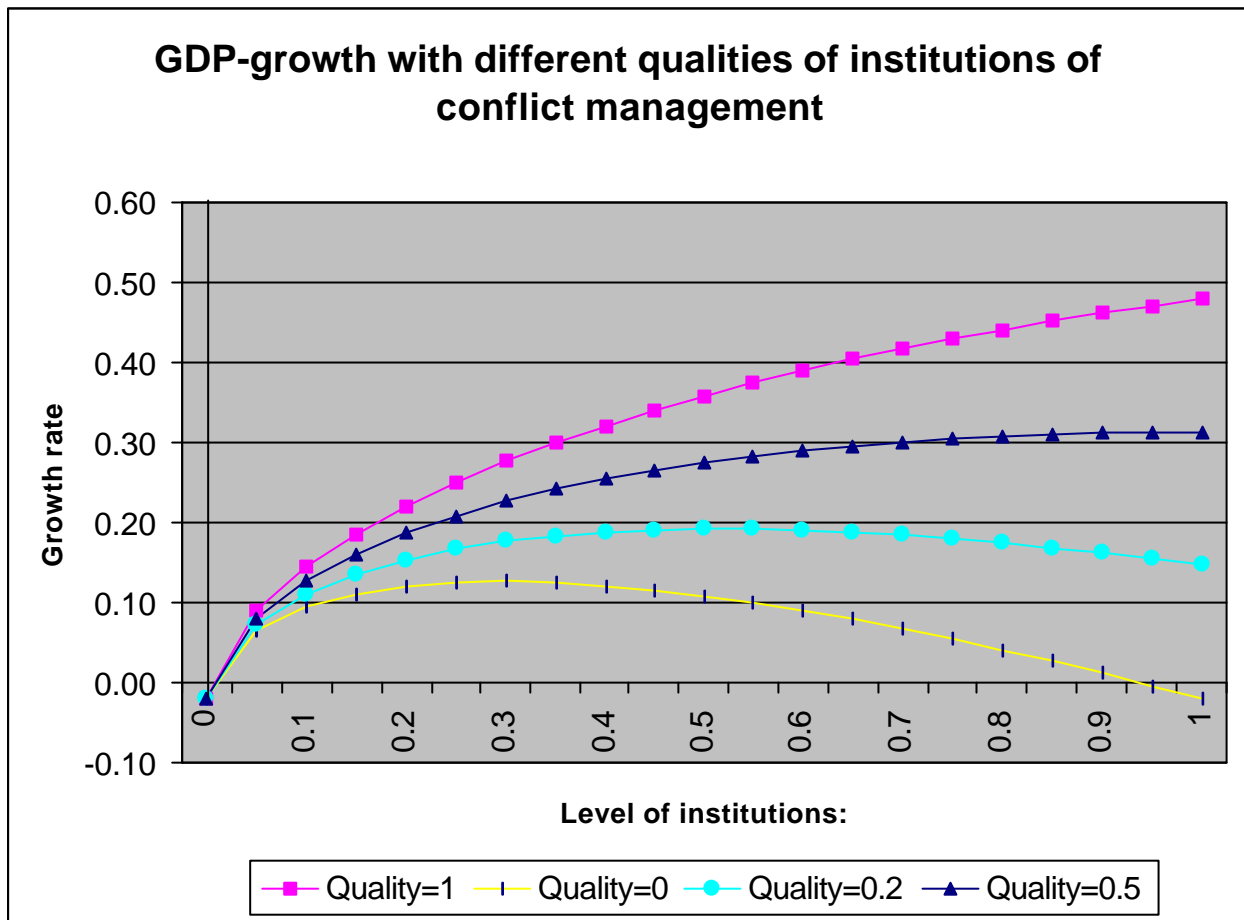
<sup>11</sup> Remember that the „production technology“ for institutions specified in this paper is deterministic. The level of institutional attainment can thus be varied as wanted. This part of the model is of course not very realistic (in particular if we think in terms of trust and related institutions). Still, it is a useful assumption because it just states that more effort (higher  $t$ ) to create institutions will eventually really lead to more trust, corporatism etc. To make more policy-relevant statements, one would have to more specifically say how exactly a given level of institutions can be acquired. This is beyond the scope of this paper but is a topic of ongoing research effort.

effect of institutions on growth will then be negative. The model predicts that the higher autonomous cooperation  $m$ , the earlier the effect of more taxes on growth will be negative.

However, actually we do not want to know what happens for a given  $m$  but rather what happens for a given  $m/t$ . The exercise we are interested in is the following: Given some quality of institutions  $m/t$ , what is the effect of an increase in the level of institutions  $t + m$ ? Depending on the quality of an institution, such an increase (which is uniquely determined by the given ratio  $m/t$ ) either leads to more rent-seeking (“taxes”) or to “true” cooperation that does not reduce the return to capital. Depending on the relationship between these two factors we get different predictions for the growth rate. (An alternative question one might want to examine is what happens if the quality itself changes over time.)

These points and some more are best understood with the help of the following figure 1 (which assumes specific numerical values for  $a$ ,  $A$ , and  $r$  solely for illustrative purposes; the numerical values in the figure should not be interpreted as such). It highlights the key theoretical result of our paper: Institutions of conflict management have different effects depending on their quality.

**Figure 1 GDP-growth with institutions of cooperation**



The figure shows the growth rate for different qualities ( $m/t$ ) of an institution. The higher the quality, the more of an institution can be used without rent-seeking costs dominating the production-enhancing effects of institutions. This figure is drawn with  $A = 1$ ,  $a = 1/3$ , and  $r = 0.02$ .

The lower benchmark case is the schedule termed “quality=0”, drawn with the thick curve in the lower part of the figure. It represents a situation with no cooperation, i.e.  $m = 0$  (and thus  $m/t = 0$ ) and therefore corresponds to the standard hump-shaped relationship between government and growth. The other lines describe several different institutions, each associated with a different value of the institutional quality index,  $m/t$ . Note first that all lines with positive values of the cooperation index are above the benchmark, reflecting the conjecture that cooperation allows a more efficient use of production factors (capital in this model) and therefore increases growth. An “ideal” world and rather unrealistic case (the upper benchmark case) is the line for which  $m/t = 1$ . Here a higher level of institutions of conflict management brings so huge advantages that no negative effects of more taxes or rent-seeking

set in (remember that  $t = 1$  does *not* mean that a formal tax of 100% is levied; rather this is a catchall of the costs of the institutions; therefore the growth rate is not negative even at these extreme levels).

Generally, starting from the lower benchmark case, if the *index of quality* of a certain institution ( $m/t$ ) increases, growth can be expected to be not only higher but also increasing longer as this institution gets more developed. This can be seen from the maximum going further and further to the right and up as  $m/t$  increases. The non-linear relationship between institutions and growth remains relevant for all types of institutions, but negative growth effects of conflict management institutions set in much later for some institutions because they have a better  $m/t$ -ratio. The empirical question then is if we really observe such non-linearities which may be reflected by (negative) quadratic terms of the respective institution. If we get only a significant coefficient for the linear term, this does not necessarily disprove the theory. Rather it means that we may just be in an area where the costs of the institutions have not become so apparent yet. We may then need another method to explore the effects implied by the model. This is described more in the empirical section.

### **3 Institutions and growth in Euroland: Empirical analysis**

#### **3.1 The hypotheses**

Summarizing the theoretical discussion, we will test two main competing hypotheses:

(A) Institutions of conflict management have an unambiguously positive effect on growth.

This means that the more or better of any institution the higher the growth rate will be. Institutions of conflict management may in particular act through mitigating social conflicts and adverse external shocks. The latter hypothesis is mainly tested for corporatism.

(B) The effect of institutions on growth consists of a positive and a negative effect.

Institutions are no free lunch. For institutions of conflict-management the theoretical model predicts a non-linear relationship with a positive influence of certain institutions on growth for some time but with too large costs (rent-seeking) associated with an excessive development of these institutions and the government size. In terms of the model, the domination of either of the two depends on the quality of the respective institution.

The following sections describe the methodology we use to evaluate these hypotheses. The hypotheses are competing because for institutions the bring with them significant costs, only (B) will not be rejected, whereas (A) cannot be correct. The exercise we are presenting here does not have the goal to generally, i.e. for all institutions, assert that either (A) or (B) are “true”. Rather, our point is that each institution type’s quality is different.

### 3.2 Data and Methodology: Main specification

Summarizing, we estimate the model

**Equation 8**

$$GDPCGROW_{it} = c + \mathbf{b}_1 GDPY1_{it} + \mathbf{b}_2 POPGROW_{it} + \mathbf{b}_3 EDUEXP_i + \mathbf{b}_4 INVEST_{it} + \mathbf{b}_5 GOVTEXP_{it} + \mathbf{b}_6 EU_{it} + \mathbf{b}_7 TRADE_{it} + \mathbf{b}_8 INSTIT_{it}$$

where  $INSTIT_{it}$  stands for all the institutional variables to be described below.

We expect:  $\mathbf{b}_1 < 0$ ,  $\mathbf{b}_2 < 0$ ,  $\mathbf{b}_3 > 0$ ,  $\mathbf{b}_4 > 0$ ,  $\mathbf{b}_5 < 0$ ,  $\mathbf{b}_6 > 0$ ,  $\mathbf{b}_7 > 0$ .

#### 3.2.1 Dependent variable and standard explanatory variables<sup>12</sup>

Our dependent variable is real per capita GDP growth ( $GDPCGROW_{it}$ ) in 14 European economies (all EU member countries except Luxembourg). In a future paper, it might be seminal to also run investment regressions (compare Hicks (1994) and Alvarez et al. (1991)). Here we restrict ourselves to growth regressions. Our empirical model follows the traditional specification of econometric growth models like those in Barro and Sala-i-Martin (1995), augmented by institutional variables. There are some standard variables that have been shown to be robustly related to growth and therefore should be included in any growth regression (see Wagner (2000) for a review of recent worldwide and EU-specific theoretical and empirical growth literature). These explanatory variables are:

|              |                                                                                                                                                   |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| $GDPY1_{it}$ | GDP per capita in the initial year of the period (negative coefficient expected)                                                                  |
|              | This variable is included to account for any convergence effects. If one assumes diminishing returns to capital, low-income countries will have a |

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<sup>12</sup> We are very thankful to Paul De Grauwe and Frauke Skudelny who have given us access to their dataset used in one of their papers (Grauwe and Skudelny 1999). All standard variables are from their dataset. Descriptive statistics can be found in the appendix.

|                |                                                                                                                                                                                                                                                                                                                           |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | higher marginal productivity of capital than high-income countries and thus will grow faster.                                                                                                                                                                                                                             |
| $INVEST_{it}$  | Gross fixed capital formation = investment rate in percent of GDP (positive coefficient expected) <sup>13</sup>                                                                                                                                                                                                           |
| $POPGROW_{it}$ | Growth rate of the population (negative coefficient expected)                                                                                                                                                                                                                                                             |
| $EDUEXP_i$     | Expenditure on education in percent of GDP, 1985 (positive coefficient expected). With this variable (which does not change over time because of data constraints) the skill of the labour force is captured. The variation of this variable in the EU is larger than that for the number of years in tertiary schooling. |

Moreover, we include the following variables:

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $EU_{it}$      | This dummy is equal to one for years in which the country was a member of the EU, and zero for years in which it was not (positive sign expected).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| $TRADE_{it}$   | Imports plus exports in percent of GDP (in current home currency) (positive sign expected). More open countries have more ways to adapt new technologies and in general have better access to investment capital. A positive sign is expected.                                                                                                                                                                                                                                                                                                                                                                                                            |
| $GOVTEXP_{it}$ | Total expenditure of general government (percentage of GDP in market prices). On the one hand, a higher value of this variable indicates a more active social system which might act as a conflict management mechanism. Once we control for other institutions, however, this effect should not be present any more. Rather, infrastructure investments and provision of public goods on the positive side and proneness to inefficiencies and rent-seeking on the negative side may be important. In any case, contrary to most of the existing literature, we hereby can separate actual effects of institutions and those of other public activities. |

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<sup>13</sup> Running regressions and panel estimations (random effects) with lags, we find that lagged investments have a significant effect on growth. This means that for this sample there is no reverse causation from growth to investments and *INVEST* can meaningfully be used as an explanatory variable. Certainly, different types of investment might be more meaningful explanatory variables. This is not the focus of this paper, though.

### 3.2.2 Institutional variables used to test hypothesis (A)

Several attempts have been made in the literature to measure the degree of corporatism to be able to make reasonable international comparisons. The table below shows some of the rankings used in the literature. The countries are ordered according to the ranking of Tarantelli (1986) because we too use this ranking as a starting point for the empirical analysis. The index, which we call CORP, in principle ranges from 0 to 15 with 15 being the value for the most corporatist countries (only Austria). Following hypothesis (A), the coefficient of this variable is expected to be positive.

Some significant facts about the other rankings should be mentioned which make especially clear that centralization of wage bargaining and corporatism is not automatically the same: Calmfors and Driffill (1988) and Blyth (1979) both deal with the degree of centralization of wage bargaining. They naturally come to similar results. The scales of Tarantelli (1986) and Lehbruch (1984) also take into account the role of the government, for example in the form of interventions in conflicts of the social partners. Lehbruch (1984) implies a stronger correlation between centralization and government intervention. Major differences arise for the Netherlands, Japan and Australia. Soskice (1990) argues that such approaches are more useful because the degree of corporatism would then not be underestimated like by Calmfors and Driffill (which is, of course, again a question of definitions). According to Soskice, Japan and – albeit to a lesser degree – Switzerland are characterized by a high degree of implicit coordination of wage setting on the side of employers. In a disaggregated country study Zetterberg (1991) also finds evidence that the espoused “textbook” example of the United States cannot be considered a typical competitive market because of strong insider effects in several branches. There is thus no equivalency between centralization and corporatism. This is also implied by our data (see below). There are several similarities, though. All authors (except for Wilensky (1976)<sup>14</sup>) rank Austria first for the degree of corporatism. There is a general consensus that the nordic countries (Norway, Sweden, Denmark, and Finland) have very centralized wage bargaining systems and other elements of corporatism. Similarly, while there are some differences in the rankings, the authors do rank Germany and the Netherlands as rather corporatist.

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<sup>14</sup> This measure also takes into account the centralization of government activity which goes beyond our definition of corporatism.

**Table 1 Degrees of corporatism and centralization of wage bargaining**

| Country        | Ranking <sup>1)</sup> by different authors |                           |                  |                |                     |              |                 |                  |
|----------------|--------------------------------------------|---------------------------|------------------|----------------|---------------------|--------------|-----------------|------------------|
|                | Tarantelli (1986)                          | Calmfors/ Driffill (1988) | Schmitter (1974) | Cameron (1984) | Bruno/ Sachs (1985) | Blyth (1979) | Wilensky (1976) | Lehmbruch (1984) |
| <b>Austria</b> | <b>1</b>                                   | <b>1</b>                  | <b>1</b>         | <b>1</b>       | <b>1</b>            | <b>1</b>     | <b>7</b>        | <b>1</b>         |
| Germany        | 2                                          | 6                         | 8                | 7              | 2                   | 8            | 10              | 6                |
| Japan          | 3                                          | 13                        | - <sup>2)</sup>  | 14             | 10                  | 11           | -               | 10               |
| Norway         | 5                                          | 2                         | 2                | 3              | 4                   | 2            | 3               | 4                |
| Sweden         | 5                                          | 3                         | 4                | 2              | 5                   | 3            | 4               | 3                |
| Denmark        | 5                                          | 4                         | 4                | 5              | 7                   | 4            | 9               | 5                |
| Netherlands    | 8                                          | 7                         | 6                | 8              | 3                   | 10           | 2               | 2                |
| Finland        | 8                                          | 5                         | 4                | 5              | 8                   | 5            | 6               | 7                |
| Australia      | 8                                          | 9                         | -                | 11             | 14                  | 7            | -               | 16               |
| Belgium        | 10                                         | 8                         | 7                | 6              | 9                   | 9            | 1               | -                |
| Canada         | 10                                         | 16                        | 11               | 12             | 15                  | 16           | 13              | 15               |
| USA            | 10                                         | 15                        | 11               | 13             | 16                  | 15           | 15              | 14               |
| New Zealand    | 12                                         | -                         | -                | -              | -                   | 6            | -               | 17               |
| France         | 13                                         | 10                        | 13               | 16             | 12                  | 12           | 5               | 11               |
| GB             | 14                                         | 11                        | 14               | 10             | 11                  | 13           | 12              | 12               |
| Italy          | 15                                         | 12                        | 15               | 15             | 13                  | 14           | 8               | 13               |
| Switzerland    | -                                          | 14                        | 9                | 9              | 6                   | -            | 11              | 9                |
| Ireland        | -                                          | -                         | 11               | -              | -                   | -            | 14              | 8                |

Source: Schneider and Wagner (1999)

1) 1 = highest degree of corporatism, 17 = lowest degree of corporatism , 2) no value available

We use the ranking of Tarantelli (1986) because it best covers our understanding of corporatism. His wide definition is already conceptually superior because centralization alone does not mean that a consensus is found for distribution (for arguments in this sense see Pekkarinen et al. (1992)). Tarantelli (1986) does not provide values for several European countries. The method we used to get values for Greece, Ireland, Portugal, and Spain was to compare the verbal descriptions in Henley and Tsakalotos (1993) for all European countries and thus draw conclusions about their relative position when compared to other countries for which values were available. In this way, at least the ranking is consistent in itself. The appendix shows the values we used for the countries in our sample.

Not so much as a institution of conflict management, but rather to show the difference between corporatism and other institutional arrangements, we also use the time varying dummy variable CENTR which captures the degree of centralization of wage bargaining. Galli and Padovano (1999), who have compiled the data for this variable, claim that the dummy variable takes a value of 1 for corporatist governance. Contrary to that claim, it is 1 for countries and periods “when wages are effectively determined through a process of *centralized bargaining* that involves, at least, the confederations of union movements and the

associations of industries and, at most, also the government” (p. 33). Therefore, this index does *not* capture what is meant by “corporatism” in the sense described above; it rather is a (useful) attempt to create a time varying index of types of wage bargaining<sup>15</sup>. In line with the literature, a negative coefficient is expected.

Thirdly, we use the measures of trust, civic norms, and associational activity as provided by Knack and Keefer (1997). The first variable (*TRUST*) is the percentage of people asked in the World Values Surveys “Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in dealing with people” who answered that “most people can be trusted”. *CIVIC* is a measure of norms of civic cooperation, again based on a survey. *GROUPTS*, *OGROUPTS* (Olsonian groups), and *PGROUPTS* (Putnam groups) measure the density of associational activity by stating the average number of groups in which the respondents were members, with the three types being the number of general memberships, memberships in “distributional coalitions”, and “cooperation-building groups”, respectively<sup>16</sup>. Except for Olsonian Groups, a positive coefficient is generally expected, although sometimes the rent-seeking effect may dominate for all groups. This is an empirical question. The data are from 1981; for some countries the data are from a 1990 survey.

The following Table 2 shows the simple correlations between the institutional variables. Since the correlation between the different institutional variables is not very high, we can hope to gain insights from including them each at a time in a regression.

**Table 2 Correlation matrix of the institutional variables in the EU sample**

|                        | (1)  | (2)  | (3)  | (4)  | (5)   | (6)  | (7)  |
|------------------------|------|------|------|------|-------|------|------|
| <b>(1) Corporatism</b> | 1.00 |      |      |      |       |      |      |
| <b>(2) Centralized</b> | 0.46 | 1.00 |      |      |       |      |      |
| <b>(3) Trust</b>       | 0.25 | 0.17 | 1.00 |      |       |      |      |
| <b>(4) Groups</b>      | 0.27 | 0.37 | 0.44 | 1.00 |       |      |      |
| <b>(5) O-Groups</b>    | 0.04 | 0.09 | 0.22 | 0.69 | 1.00  |      |      |
| <b>(6) P-Groups</b>    | 0.60 | 0.43 | 0.64 | 0.63 | 0.11  | 1.00 |      |
| <b>(7) Civic</b>       | 0.39 | 0.31 | 0.46 | 0.41 | -0.23 | 0.67 | 1.00 |

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<sup>15</sup> Galli and Padovano do not provide values for CENTR for three countries. We have followed their methodology in rating the missing countries as well.

<sup>16</sup> Typical Olsonian groups include trade unions, political parties and professional associations. Religious organizations, cultural activities, and youth clubs can be regarded as Putnam-esque groups, on the contrary. These categorizations are not iron-clad, of course.

### 3.2.3 Further variables for tests for corporatism

We will also perform some specific tests of the hypothesis that corporatism in Europe acts to mitigate the adverse effects of external shocks and (latent) conflicts. The appendix shows why inequality should be an adequate proxy for latent social conflict in Europe. As a proxy for the degree of social conflict we use the GINI index of income disparities, taken from World Bank data (Deininger and Squire 1996) which contains high-quality income data for relatively many countries. Data are mainly from the 1970s, thus minimizing problems of endogeneity.

The external shock in the EU sample is modeled as a deterioration of the terms of trade. It is meant to capture the unexpected component of the volatility of the streams of income associated with foreign trade. This is just one simple way to get the effect of a shrinking pie which is at the center of the argument of the formal model in the appendix and the model by Rodrik (1999). Rodrik (1998) shows that assuming that the terms of trade follow a random walk (possibly with drift), this is the theoretically appropriate indicator of external volatility. Since the study of different kinds of shocks is not our focus we keep things simple by using the same specification as De Grauwe and Skudelny (1999) and define the shock in period  $p$  (for example from 1961-1970) as (see below for more on the structure of the panel)

$$\text{Equation 9} \quad SHOCK_p = \left( \frac{M + X}{GDP} \right)_p \sqrt{\frac{1}{10} \sum_{y=1}^{10} \begin{cases} (\Delta ToT_y - \Delta ToT_p)^2 & \text{if } (ToT_y - ToT_p) < 0 \\ 0 & \text{otherwise} \end{cases}}$$

$M$  is imports,  $X$  is exports,  $GDP$  stands for GDP in current prices. ToT are the terms of trade. The subscript  $y$  indicates the year and  $p$  the period of 10 years (see below). Note that this definition means that this variable only takes up negative shocks. It has positive values and therefore we expect its coefficient to have a negative sign. One can justify this formalization with the argument that negative and positive shocks do not have symmetric effects. Rodrik (1999) does not differentiate between positive and negative shocks. Finally, as in Rodrik (1999), Easterly (2000) and other papers, we also use interaction terms to check for the effects suggested by our model, knowing that interaction terms cannot easily be interpreted. This holds in particular for interaction terms with institutional variables because these are no cardinal variables. Nevertheless, we use the following interaction terms:

$$\text{Equation 10} \quad GC = GINI * CORP$$

**Equation 11**  $SCO = SHOCK * CORP$

**Equation 12**  $SGC = SHOCK * GINI * CORP$

We can expect these variables to have positive coefficients if good institutions serve to mitigate social conflict and/or external shocks<sup>17</sup>.

### 3.2.4 Variables used to test hypothesis (B)

The obvious way to test hypothesis (B), i.e. a non-linear relationship between institutions and growth instead of the linear positive effect asserted by hypothesis (A), is to use squared terms. When the linear term has a positive sign and the squared term has a negative sign, we have evidence for the hump-shaped relationship predicted by the model.

An alternative test of this hypothesis concerning benefits and costs is to directly look for evidence if countries with more active institutions of conflict-management are more prone to rent-seeking. As discussed above, our hypothesis is that, e.g., corporatism provides a nearly optimal context for rent-seeking in large governments. In particular, we expect a negative effect of an interaction term between government size and the degree of the institutions of conflict management (except centralization of wage bargaining which is excluded from this analysis because it is not strictly speaking such an institution of conflict management):

**Equation 13**  $GOVINST_{it} = GOVTEXP_{it} * INST_i$

where  $INST_i$  comprises all conflict management institutions like corporatism and trust. It is an empirical question whether the positive (production-enhancing) effect or the negative (rent-seeking) effect dominates.

### 3.2.5 Econometric methodology

We use a panel data set for the EU member countries (except Luxembourg) for the years 1961-1995. However, in the main analysis we do not use the annual data. Rather we use De Grauwe and Skudelny's (1999) data structure: Each variable is averaged for 10 years with 9 years overlap with the previous value and 1 new year (see the appendix for the data set

structure). This approach is a complement to traditional cross-sectional empirical analysis which would not be very reliable with the small sample of countries used here<sup>18</sup>. Since we want to study long-run growth, we face the obvious difficulty of selecting the time intervals to use from the panel data. If we were to use annual data, we would have to take great care in modelling the short-run dynamics. As Temple (1999) recommends, five or ten-year averages generally make most sense, but in a pure panel this also means that one is left with little time series variation. The overlapping panel structure serves to overcome this disadvantage.

Note that those variables that do not change over time (like education expenditures and corporatism) only explain growth differences between countries and not the change of growth over time. This does not worry us, however, since our research goal is in fact to find hints for why different countries grow at a different speed. After all, most of the variables do exhibit more lively dynamics over time. Only if *all* variables in the model were temporally inert, a panel design would kind of “artificially” reduce the standard errors of the estimates and increase the degrees of freedom. In such cases, averaging variables (typically institutional and political variables) would not waste information, making pure cross-sectional designs more appropriate. It has become common practice in the growth literature to use fixed institutional indices for very long time periods (see e.g. Easterly (2000)). For our purposes the assumption that institutional change takes place slowly (North 1990) justifies this setup. An additional argument can be found when we take a look at the general institutional ranking of the Business Environment Risk Guide (BERI). Knack and Keefer (1997) and Easterly (2000) report a correlation of 0.95 between the BERI averages for 1970-1979 and 1980-1989; similar characteristics may apply for the institutions analyzed here. Moreover, the conjecture that rich countries may have “better” institutions is not connected with the claim that one cannot include fixed or average institutional variables in growth regressions; such an argument confuses level and growth effects (Durham 1998, Durham 1999). Still, we find the approach of Galli and Padovano (1999) useful (see above).

Contrary to the usual panel which has more observation units than time periods, we here have 14 countries and 26 periods. This in principle makes Feasible Generalized Least Squares

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<sup>17</sup> Note that because of the division by 100 of the conflict and institutional variables (not of the shock variable) special care must be taken when interpreting the size of the coefficients (see the descriptive statistics).

<sup>18</sup> Wagner (2000) presents results obtained with cross-sectional data. For the institutions (in particular corporatism), there is generally a similar effect as the one presented here. The non-linearities come out even stronger in that setup.

(FGLS) the appropriate technique because of the possible presence of serial correlation which would be ignored if one used that standard random effects panel estimation (Stimson 1985). Beck and Katz (1995) show that in cases like the present one (when the number of time periods is not too large relative to the number of units), the coverage probabilities for the OLS point estimates with associated model-based standard errors are much closer to the nominal levels than the coverage probabilities for the GLS estimators. One calls this FGLS with panel corrected standard errors. With this technique one can assume heteroscedasticity across panels and panel-specific AR(1) autocorrelation. However, because of the special setup of the dataset this may still overestimate the standard errors. De Grauwe and Skudelny (1999) therefore recommend the Newey-West heteroscedasticity and autocorrelation consistent standard errors with a maximum lag of 9 years which corrects the standard-errors appropriately.

### **3.3 Results for hypothesis (A)**

#### **3.3.1 Main specification**

Our results are summarized in the following tables<sup>19</sup>. Results of robustness tests can be found in the appendix. Starting with the standard variables in growth regressions<sup>20</sup>, note that they usually have the expected sign and are also often significant. There is evidence for conditional convergence (a negative coefficient for *GDPY1*). Investment (sometimes) and education expenditures (always) also contribute positively to growth. Larger governments consistently are shown to be detrimental to long-term growth, also when one controls for institutional effects as in the present regressions. But as we will see below, this does not show the full picture. EU membership has had a positive impact on long-run growth; a notable side effect of this study, we think, even more so as this effect remains relevant and significant in almost all specifications. What comes as a small surprise is that the openness indicator *TRADE* is never significant and sometimes has the “wrong” sign. One important point (which seems puzzling at first but then is logical) concerns the sign and the size of the coefficient of the

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<sup>19</sup> In interesting cases, for institutional variables we also present the standardized *b*-coefficient below the t-statistics in brackets. This coefficient, which does not depend on the standard errors and is therefore independent of the Newey-West method, helps us to interpret the quantitative importance of certain variables.

<sup>20</sup> Note: The R-Squared are not shown because they are not strictly the correct values because of the adaptation of the standard errors in the Newey-West procedure.

population growth rate. Its negative sign seems to suggest that population growth is negatively related with growth. However, remember that the dependent variable is per capita growth. Since the coefficient of *POPGROW* is smaller than one, our results indicate that population has in fact a positive effect on economic growth in total in Europe. Note that because we have per capita growth as the dependent variable, the coefficient of the population growth rate will be upward-biased, i.e. the true coefficient will be a little bit smaller than the one we get out of the regressions.

Turning to the institutional variables and hypothesis (A), we gain evidence for the importance of institutions. The results indicate that the term “institutions of conflict management” needs to be interpreted quite carefully since not all institutions have the same effects. Regression (1) shows that more corporatist countries have had higher long-run economic growth in Europe. While the variable cannot be interpreted very easily<sup>21</sup>, one can reason as follows: *Ceteris paribus*, if a country increased its corporatism degree by one, it would increase its growth rate by nearly 0.1%. On the contrary, equation (2) provides evidence that the degree of centralization of wage bargaining is *negatively* related to growth, as in Galli and Padovano (1999). This reflects Olson’s (1982) conjecture that centralized systems engender higher transaction and free-riding costs than decentralized systems. It also shows that describing systems as corporatist just on the basis of the degree of wage bargaining as done by Galli and Padovano can lead to confusion.

In the main specification, trust does not exhibit any significant influence<sup>22</sup>. This does not disprove the hypothesis that trust may act as conflict management institution. However, there seem to be some costs associated with higher trust that are reflected in the inconclusive coefficient. Contrary to Moesen et al. (2000) who report a positive influence of trust on growth in European regions, we have also controlled for other variables, thus avoiding the specification bias of Moesen et al.’s work.

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<sup>21</sup> A value of 14, e.g. does not mean that such a country is twice as corporatist as another one. In other words, the scale is ordinal, not cardinal. However, it has become common practice in the literature on democracy and growth, for example, to use ordinal scales and interpret the coefficients in similar ways.

<sup>22</sup> In a crucial but still unresolved way there does seem to be an important role for trust: The regressions including trust are the only ones of many regressions we have run that yield a non-significant coefficient for initial GDP. Certainly, multicorrelation can explain this, but perhaps there is more to it.

There is a strong negative effect of group and associational activity on growth. This is surprising since the theoretical predictions were not so clear; they rather pointed in the direction of a positive effect. Therefore, we have used Knack and Keefer's (1997) classification in Olsonian (mainly rent-seeking) groups and Putnam groups that rather have the development of cooperation and a feeling of togetherness as their respective purposes. This approach has proven useful: It allows us to distinguish between the strong and highly significant negative effect of distributional coalitions like trade unions and political parties and the virtually non-existent effects of youth clubs and religious activity in a country. These results are encouraging. On the other hand, the establishment of civic norms seems to be totally unimportant for long-term growth. This result is somewhat disappointing.

**Table 3 Standard growth regressions and institutions of conflict management.**  
**Dependent variable: GDP per capita growth, 1961-1995, 14 EU countries, t-statistics based on Newey-West heteroscedasticity and autocorrelation consistent standard errors in parentheses**

|                        | Dependent variable: GDP per capita growth, 10 years moving average panel |                    |                    |                    |                    |                    |                    |
|------------------------|--------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|                        | (1)                                                                      | (2)                | (3)                | (4)                | (5)                | (6)                | (7)                |
| Log initial GDP        | -0.012<br>(3.22)**                                                       | -0.009<br>(2.62)** | -0.005<br>(1.17)   | -0.010<br>(2.66)** | -0.009<br>(2.66)** | -0.012<br>(3.44)** | -0.008<br>(2.11)*  |
| Pop. growth            | -0.713<br>(4.01)**                                                       | -0.795<br>(2.86)** | -0.716<br>(3.18)** | -0.690<br>(3.04)** | -0.657<br>(3.02)** | -0.534<br>(2.78)** | -0.726<br>(3.12)** |
| Educational exp.       | 0.578<br>(6.01)**                                                        | 0.529<br>(5.43)**  | 0.643<br>(3.85)**  | 0.558<br>(4.03)**  | 0.732<br>(4.56)**  | 0.673<br>(4.67)**  | 0.590<br>(3.83)**  |
| Investment ratio       | 0.043<br>(1.04)                                                          | 0.089<br>(2.65)**  | 0.079<br>(2.02)*   | 0.082<br>(2.00)*   | 0.047<br>(1.16)    | 0.026<br>(0.66)    | 0.077<br>(1.81)    |
| Governm. exp.          | -0.001<br>(5.31)**                                                       | -0.001<br>(3.05)** | -0.001<br>(3.68)** | -0.001<br>(3.41)** | -0.001<br>(4.10)** | -0.001<br>(4.14)** | -0.001<br>(3.59)** |
| Trade                  | -0.003<br>(0.69)                                                         | 0.000<br>(0.07)    | 0.003<br>(0.58)    | 0.000<br>(0.05)    | -0.001<br>(0.32)   | 0.005<br>(1.59)    | -0.001<br>(0.16)   |
| EU membership          | 0.007<br>(4.42)**                                                        | 0.004<br>(2.36)*   | 0.004<br>(1.73)    | 0.006<br>(3.52)**  | 0.006<br>(3.52)**  | 0.005<br>(3.27)**  | 0.005<br>(2.95)**  |
| Corporatism            | 0.083<br>(3.44)**<br>[0.26]                                              |                    |                    |                    |                    |                    |                    |
| Centralized wage barg. | -0.007<br>(2.54)*<br>[-0.26]                                             |                    |                    |                    |                    |                    |                    |
| Trust                  | -0.010<br>(0.88)<br>[-0.10]                                              |                    |                    |                    |                    |                    |                    |
| Civic                  | 0.000<br>(0.92)<br>[0.08]                                                |                    |                    |                    |                    |                    |                    |
| Groups                 | -1.027<br>(2.38)*<br>[-0.22]                                             |                    |                    |                    |                    |                    |                    |
| Olson groups           | -2.584<br>(3.57)**<br>[-0.30]                                            |                    |                    |                    |                    |                    |                    |
| Putnam groups          | -0.260<br>(0.36)<br>[-0.03]                                              |                    |                    |                    |                    |                    |                    |
| Constant               | 0.045<br>(3.41)**                                                        | 0.028<br>(2.48)*   | 0.033<br>(2.77)**  | 0.015<br>(0.67)    | 0.042<br>(3.55)**  | 0.053<br>(4.62)**  | 0.033<br>(2.59)*   |
| Observations           | 328                                                                      | 328                | 294                | 320                | 320                | 320                | 320                |

+ significant at 10% level; \* significant at 5% level; \*\* significant at 1% level  
 Newey-West t-statistics in parentheses. **b**-coefficients in square brackets.

All in all, the evidence summarized in Table 3 once again points to the importance of institutions as determinants of the growth rate. With respect to corporatism, the strong and robust positive effect which is clearly in line with hypothesis (A) is surprising. Are there really no rent-seeking costs? This merits further investigation which is undertaken in section 3.4.

### 3.3.2 Corporatism: Further evidence

First, to see if the effect of corporatism is dominated by any other institution, we include all institutional variables into one regression because we showed above that their partial correlations are not so high that one gets multicollinearity problems. The result is intriguing (Regression (8)). Apart from the rather disturbing result that trade now becomes significantly negatively related to growth, we get the interesting result that many institutional variables enter significantly. With one exception, they are in the direction predicted by hypothesis (A): Corporatism, trust, and civic cooperative norms are good for growth whereas centralized wage bargaining as such is bad for growth. Unfortunately, Putnam groups do not seem to be so growth-enhancing as normative recommendations would like to see them<sup>23</sup>.

Based on the theoretical conjecture that the importance of institutions of conflict management depends on how badly conflicts and shocks affect the economy (Easterly 2000, Rodrik 1999), we now introduce conflict and shock variables as well as described above. Moreover, we control for a term  $GOVCORP = GOVTEXP * CORP$  (this is explained in more detail below), which improves the results markedly. Regression (9) shows that inequality is bad for growth in Europe. Corporatism is able to lessen some of the strain put on the economy by inequality, as seen in the significantly positive coefficient of  $GINI * CORP$ <sup>24</sup>. The total growth effect of

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<sup>23</sup> If we use the original centralized wage bargaining index by Galli and Padovano where three countries are missing, the sign of the coefficient of the Putnam groups becomes insignificant and Olsonian groups are significantly negatively related to growth. However, CIVIC's coefficient is insignificant then, too.

<sup>24</sup> Easterly (2000) uses a similar procedure but only includes this interaction term into the regressions, while he does not include the variables that make up the term. We think that this may lead to incorrect interpretations. As has been argued convincingly by Hamermesh (1999), including only the interaction terms or one of the variables that make up the interaction term into the regression has a very specific meaning often not fully appreciated in empirical work. Estimating  $GDPCGROW_{it} = c + \dots + \mathbf{b}_8 GINI_i + \mathbf{b}_{10} GINI_i * INST_i$  would mean that operation of institutional variables on economic growth is restricted to the effect through the conflict variable. Since we do want to control for possible additional effects not captured by our model, we

an increase in corporatism can be calculated with help of the **b**-coefficients which are shown in square brackets.  $(0.19-1.58+0.93=-0.46)$ . The same effect is also present if we only use the years 1981-1995 (regression (10)); then, however, the rent-seeking effect captured by *GOVCORP* is even stronger.

The last three columns in Table 4 check whether the alleged shock management effect is also present (compare Rodrik (1999), Easterly (2000), and other papers for similar tests for other institutions). The results generally imply that European countries can mitigate the negative effects of shocks and conflicts by adequate institutions, e.g. corporatism, but that the ability to do so has diminished in recent time. Regression (12) combines shocks and conflict into one “indicator of troubles” and multiplies this indicator with the degree of corporatism. A higher degree of corporatism serves to lessen the strain of external shocks and latent social conflicts<sup>25 26</sup>. In total, the effect almost cancels out with the negative effects of corporatism through the government size: Note that in regression (12), the **b**-coefficients are such that the positive effect of corporatism and the interaction term with shocks and conflict is virtually totally offset by the negative effect of *GOVCORP*.

Again, an important question to ask is what happens if we perform tests of time sensitivity, taking the endogeneity problem seriously. Regression (13) addresses this and recalculates regression (12) for the years 1981-1995. Corporatism again has a positive coefficient. However, the interaction term with shocks and inequality is not significant. Even more

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include corporatism as an explanatory variable, too. The coefficient for the interaction term rises sharply if this is not done, which means that our story is probably correct.

<sup>25</sup> The significance of the interaction term’s coefficient is important: Since the institutional variable does not vary over time one might wonder whether its significance was dominated by a time-varying variable like shock. But if this were the case we would get a negative coefficient on the interaction term. Since the coefficient is significantly positive this is not the case.

<sup>26</sup> One can use these coefficients for a quantitative interpretation. Let us take regression (12) and create the “average European country” by assuming that country has the average GINI coefficient and that it was hit by the EU average of external shocks during the period. What happens if that country increases its degree of corporatism so that CORP increases by 1? First, there is the direct effect captured by the coefficient of CORP itself  $(0.266/100)$ . Second, multiplying the average shock and the average GINI value (divided by 100) gives us 0.003051 (see the appendix). Multiplying this by 29.71 (the coefficient of the interaction term between shock, GINI and corporatism), we get  $0.091/100$  as the growth effect. Finally, there is the cost term represented by GOVCORP. Multiplying the average value of government expenditures, 44.16, times  $-0.007/100$  and adding this to the other terms gives us the long-term effect of an increase in corporatism by 1 point: 0.03%.

importantly, the *b*-coefficients (in square brackets) now strongly suggest that the rent-seeking effect dominates. In particular, the effect of *GOVCORP* now more than offsets the positive effect of corporatism alone. But this is exactly the core theme in hypothesis (B) which we therefore examine more closely next<sup>27</sup>.

**Table 4 A closer look at corporatism (Part 1): Growth regressions and corporatism (1961-1995; 1981-1995). Dependent variable: GDP per capita growth, 14 EU countries, Newey-West t-statistics in parentheses**

|                          | Dependent variable: GDP per capita growth, 10 years moving average |                    |                     |                     |                     |                     |
|--------------------------|--------------------------------------------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
|                          | (8)                                                                | (9)                | (10)                | (11)                | (12)                | (13)                |
|                          | 1961-1995                                                          | 1961-1995          | 1981-1995           | 1961-1995           | 1961-1995           | 1981-1995           |
| Initial GDP              | -0.029<br>(-8.18)**                                                | -0.020<br>(4.97)** | -0.022<br>(-5.30)** | -0.019<br>(-4.29)** | -0.019<br>(4.66)**  | -0.158<br>(-3.43)** |
| Population growth        | -0.460<br>(-4.66)**                                                | -0.621<br>(3.36)** | -0.533<br>(-5.39)** | -0.514<br>(-3.15)** | -0.501<br>(-3.24)** | -0.439<br>(-4.53)** |
| Educational expenditures | 0.736<br>(7.85)**                                                  | 0.659<br>(7.20)**  | 0.434<br>(6.59)**   | 0.691<br>(8.57)**   | 0.676<br>(8.62)**   | 0.472<br>(6.12)**   |
| Investment ratio         | -0.073<br>(-2.60)*                                                 | 0.006<br>(0.16)    | -0.130<br>(-2.40)*  | 0.024<br>(0.60)     | 0.021<br>(0.54)     | -0.048<br>(-0.94)   |
| Government expenditures  | -0.000<br>(-1.50)                                                  | 0.000<br>(0.71)    | 0.000<br>(2.47)*    | 0.000<br>(0.04)     | -0.000<br>(-0.03)** | 0.000<br>(0.785)    |
| Trade                    | -0.012<br>(-2.76)*                                                 | -0.012<br>(2.52)*  | -0.009<br>(-2.80)*  | -0.006<br>(-1.40)   | -0.007<br>(-1.53)   | -0.002<br>(-0.72)   |
| EU membership            | 0.011<br>(4.77)**                                                  | 0.008<br>(4.01)**  | 0.003<br>(1.23)     | 0.008<br>(4.18)**   | 0.007<br>(3.89)**   | 0.005<br>(2.00)*    |

+ significant at 10% level; \* significant at 5% level; \*\* significant at 1% level

Continued on the next page.

<sup>27</sup> A final estimation we tried which is not shown here is to include interaction terms  $CORPEDU = CORP * EDUEXP$  and  $CORPINV = CORP * INVEST$  into the regressions. This amounts to directly testing the hypothesis that corporatism promotes a more efficient use of inputs. The results are interesting: The interaction terms enter significantly, if corporatism itself is *not* included in the regression, thus leading us to the tentative conclusion that this is in fact the main channel corporatism works through. Further robustness tests and possibly better indicators for these estimations are needed and could provide valuable insights.

**Table 4 A closer look at corporatism (Part 2): Growth and corporatism regressions (1961-1995; 1981-1995). Dependent variable: GDP per capita growth, 14 EU countries, Newey-West t-statistics in parentheses**

|                             | Dependent variable: GDP per capita growth, 10 years moving average |                               |                                  |                                |                               |                                |
|-----------------------------|--------------------------------------------------------------------|-------------------------------|----------------------------------|--------------------------------|-------------------------------|--------------------------------|
|                             | (8)<br>1961-1995                                                   | (9)<br>1961-1995              | (10)<br>1981-1995                | (11)<br>1961-1995              | (12)<br>1961-1995             | (13)<br>1981-1995              |
| Corporatism                 | 0.195<br>(7.19)**<br>[0.60]                                        | 0.060<br>(0.32)<br>[0.19]     | 0.234<br>(2.25)*<br>[1.10]       | 0.341<br>(3.28)**<br>[1.07]    | 0.266<br>(2.56)*<br>[0.84]    | 0.415<br>(2.71)*<br>[1.92]     |
| Gov.exp*CORP                |                                                                    | -0.009<br>(3.77)**<br>[-1.58] | (-0.016)<br>(-4.73)**<br>[-4.23] | -0.007<br>(-2.91)**<br>[-1.31] | -0.007<br>(2.95)*<br>[-1.30]  | -0.010<br>(-3.08)**<br>[-2.67] |
| Inequality (GINI)           |                                                                    | -0.185<br>(3.53)**<br>[-0.70] | -0.231<br>(-5.92)**<br>[-1.37]   | -0.078<br>(-3.37)*<br>[-0.30]  | -0.102<br>(3.80)**<br>[-0.39] | -0.101<br>(-4.94)**<br>[-0.60] |
| GINI*Corp                   |                                                                    | 1.418<br>(1.99)*<br>[0.93]    | 2.101<br>(3.36)**<br>[2.05]      |                                |                               |                                |
| ToT shock                   |                                                                    |                               |                                  | -0.202<br>(-2.00)*<br>[-0.12]  | -0.905<br>(-2.31)*<br>[-0.53] | -0.160<br>(-0.34)<br>[-0.07]   |
| Shock*GINI*Corp             |                                                                    |                               |                                  |                                | 29.71<br>(1.76)+<br>[0.45]    | 15.25<br>(0.835)<br>[0.19]     |
| Centralized wage bargaining | -0.006<br>(-3.66)**<br>[-0.22]                                     |                               |                                  |                                |                               |                                |
| Trust                       | 0.028<br>(2.83)*<br>[0.28]                                         |                               |                                  |                                |                               |                                |
| Civic                       | 0.207<br>(2.43)*<br>[0.32]                                         |                               |                                  |                                |                               |                                |
| Groups                      | -1.091<br>(1.03)<br>[-0.23]                                        |                               |                                  |                                |                               |                                |
| Olson groups                | -1.694<br>(-1.19)<br>[-0.20]                                       |                               |                                  |                                |                               |                                |
| Putnam groups               | -3.434<br>(-2.81)*<br>[-0.36]                                      |                               |                                  |                                |                               |                                |
| Constant                    | 0.004<br>(0.12)                                                    | 0.084<br>(3.76)**             | 0.114<br>(5.65)**                | 0.054<br>(3.25)**              | 0.088<br>(5.60)**             | 0.068<br>(2.95)**              |
| Observations                | 294                                                                | 328                           | 84                               | 328                            | 328                           | 84                             |

+ significant at 10% level; \* significant at 5% level; \*\* significant at 1% level

Newey-West t-statistics in parentheses. **b**-coefficients in square brackets.

### 3.4 Results for hypothesis (B)

As already seen in Table 4, the interaction of corporatism and the size of the government, *GOVCORP*, plays an important role when one wants to gain a more balanced view of the role corporatism for growth. This section extends this analysis to other institutions. We follow this path because a first direct test of the non-linear effects of institutions of conflict management on growth as suggested by hypothesis (B) shows that the costs associated with these institutions are not so easily detectable: When we include squared terms of each institution, generally no significant coefficients arise, except for corporatism in some specifications (not shown for space reasons). There is thus no evidence of a hump-shaped relationship between institutions of conflict management and growth in our sample.

A second possibility might be that the observed countries have not yet reached the stage where institutions become harmful for growth, but that at least the growth advantage of the institutions diminishes. In other words, we test for a diminishing marginal growth effect of, say, corporatism. This can be done by taking the logarithm of corporatism and including it in the regression. Our calculations (not shown) lead to the result that for those variables where the linear coefficient was significant, it remains so also in the log case and vice versa. The explaining power of log institutional variables is not higher. Another test for this hypothesis involves leaving out the most corporatist country, Austria. If the coefficient of corporatism increased markedly, this would mean that the most corporatist country already experienced more important costs of corporatism than the others. The results (again not shown) are at odds with this view since the coefficient remains nearly the same. At least, however, such a calculation shows that the estimations are robust with respect to the inclusion of Austria which has sometimes been regarded as a very special case.

To specifically test the hypothesis that conflict management institutions may bring about costs in terms of rent-seeking in the government sector, we include interaction terms, defined as  $GOVINST = GOVTEXP * INST$  where *INST* stands for the different institutions<sup>28</sup>. Since the calculations above have suggested an important role for inequality, we include this variable also. The results shown in Table 5 generally suggest that corporatism and trust bring about incentives that promote rent-seeking whereas for the other institutions the evidence is less

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<sup>28</sup> We have excluded the centralized wage bargaining index here because the theoretical predictions cannot be related clearly to this index. The coefficient of the respective interaction term is always insignificant.

clear. In terms of our theoretical model, the  $m/t$ -ratio is such that enlargements of the government sector have moved the economy to the downward sloping part in Figure 1 where enhancements in the institutions lead to higher costs than benefits. In Regression (14), for example, corporatism enters with a strongly significant positive effect. The coefficient is now much larger than in regression (1) because we have included the interaction term of government expenditures and corporatism, allowing us to distinguish between the direct positive growth effect of corporatism (supposedly through its conflict management ability) and the negative effect of corporatism on growth through the increased chances of rent-seeking in a corporatist system. Comparing the two associated standardized coefficients ( $1.14 - 1.38 = -0.24$ ) we find that the total effect is in fact negative. This was disguised in regression (1) where part of the negative effect seems to have been captured by the government expenditures alone.

Since corporatism enters significantly both in regressions following hypothesis (A) and those following hypothesis (B), an important question is which specification fits the data better. The following exercise proves helpful to evaluate the fit: We ran our regressions for shorter time periods, in particular 1961-1994, 1961-1993 etc. Then, using the estimated coefficients, we predicted growth rates for the periods of years we left out (1986-1995 in the first case, 1985-1995 in the second etc.<sup>29</sup>). Computing the absolute and relative deviations of the predictions from the actual values gives us a measure of how well a particular specification fits the data. This measure is also comparable across regressions. The results indicate that the regressions based on hypotheses (B) generally do better. For example, regression (1), based on hypothesis (A), leads to 27.46% average deviation of the predicted value for average growth for each country in 1986-1995 from the actual value. The deviation of the predicted value of average European growth from the actual value is 10.53%. By contrast, regressions (12) and (14), which both include the *GOVCORP*-term typical of hypothesis (B), only lead to deviations of 20.31% and 20.86% for the average of deviations and 5.97% and 10.15% for the deviation from the actual average European growth, respectively. Similar relations hold for other time periods. While these results are not completely conclusive, they are suggestive and strengthen our confidence in the conjecture that corporatism is prone to rent-seeking although it does bring about a positive cooperation-effect.

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<sup>29</sup> Recall that we use an moving average panel structure.

Trust is now significantly related to growth, but it also brings about potentials of rent-seeking; the sum of the standardized coefficients again is negative ( $0.72-0.91=-0.19$ ). Regression (15) thus partly explains why the coefficient of trust alone in regression (3) was insignificant. Thus, the regression based on hypothesis (B) tells us more about the effect of trust on growth in Europe.

Regressions (16) and (19) do not reveal much further insights for civic norms and the three group measures. The coefficients are generally insignificant<sup>30</sup>.

Finally, it is again interesting to see if the experience of the eighties and nineties differs from that picture. Table 6<sup>31</sup> shows that it does not; rather, rent-seeking and the cost effects of institutions of conflict management have become even more important. Totaling the standardized coefficients, we get  $-0.66 (=2.07-2.73)$  for corporatism as compared to  $-0.24$  for the sample 1961-1995. For trust the dominance of the rent-seeking effect captured by *GOVTRUST* is also stronger. Even for civic norms, we now get a negative total effect. A seemingly counterintuitive result emerges for Olsonian groups. They bring about a positive direct effect. We interpret this as the effect of groups promoting cooperation. However, the interaction term that takes up the rent-seeking effect is large and negative, offsetting the positive direct effect (this can also be seen from the *b*-coefficients) and thus being in line with regression (6). For Putnam groups, there is also a negative effect which, however, does not come from the rent-seeking costs. All in all, the results for groups further increase our doubt in the adequacy of this measure; it remains rather dubious what it really measures.

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<sup>30</sup> Inclusion of corporatism as an additional explanatory variable does not change much, although one would suppose that this would serve to separate cooperation building and rent-seeking effects more clearly.

<sup>31</sup> The results for the standard variables are very similar to the previous regressions and are omitted for space reasons. They are, of course, available from the authors.

**Table 5 Rent-seeking and institutions of conflict-management. Growth regressions and institutions (1961-1995). Dependent variable: GDP per capita growth, 14 EU countries, Newey-West t-statistics in parentheses**

|                      | Dependent variable: GDP p.c. growth, 10 years moving average panel |                               |                               |                               |                              |                               |
|----------------------|--------------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|-------------------------------|
|                      | (14)                                                               | (15)                          | (16)                          | (17)                          | (18)                         | (19)                          |
| Initial GDP          | -0.019<br>(4.28)**                                                 | -0.021<br>(4.02)**            | -0.017<br>(3.59)**            | -0.020<br>(5.71)**            | -0.019<br>(5.08)**           | -0.018<br>(3.48)**            |
| Population growth    | -0.568<br>(3.23)**                                                 | -0.604<br>(3.37)**            | -0.653<br>(3.23)**            | -0.475<br>(3.30)**            | -0.451<br>(3.15)**           | -0.591<br>(3.16)**            |
| Educational exp.     | 0.679<br>(8.02)**                                                  | 0.832<br>(6.62)**             | 0.828<br>(5.37)**             | 1.057<br>(7.74)**             | 0.828<br>(5.94)**            | 0.965<br>(6.91)**             |
| Investment ratio     | 0.021<br>(0.54)                                                    | 0.053<br>(1.49)               | 0.036<br>(0.92)               | -0.013<br>(0.36)              | 0.004<br>(0.11)              | 0.008<br>(0.23)               |
| Government exp.      | 0.000<br>(0.20)                                                    | 0.000<br>(0.12)               | 0.001<br>(0.71)               | -0.001<br>(1.89)+             | -0.001<br>(2.93)**           | -0.001<br>(2.07)*             |
| Trade                | -0.008<br>(1.86)+                                                  | -0.011<br>(1.94)+             | -0.010<br>(1.82)+             | -0.009<br>(2.51)*             | 0.000<br>(0.03)              | -0.012<br>(2.16)*             |
| EU membership        | 0.008<br>(4.14)**                                                  | 0.011<br>(4.51)**             | 0.008<br>(4.08)**             | 0.011<br>(5.77)**             | 0.009<br>(4.36)**            | 0.009<br>(4.22)**             |
| Inequality (GINI)    | -0.084<br>(3.66)**<br>[-0.32]                                      | -0.123<br>(4.94)**<br>[-0.43] | -0.119<br>(3.76)**<br>[-0.44] | -0.125<br>(5.60)**<br>[-0.46] | -0.088<br>(3.80)**<br>[0.32] | -0.134<br>(5.34)**<br>[-0.49] |
| Corporatism          | 0.363<br>(3.63)**<br>[1.14]                                        |                               |                               |                               |                              |                               |
| Gov.exp.*Corporatism | -0.008<br>(3.17)**<br>[-1.38]                                      |                               |                               |                               |                              |                               |
| Trust                |                                                                    | 0.073<br>(2.16)*<br>[0.72]    |                               |                               |                              |                               |
| Gov. exp* Trust      |                                                                    | -0.001<br>(2.14)*<br>[-0.91]  |                               |                               |                              |                               |
| Civic norms          |                                                                    |                               | 0.129<br>(0.62)<br>[0.20]     |                               |                              |                               |
| Gov. exp. * CIVIC    |                                                                    |                               | -0.005<br>(1.15)<br>[-1.77]   |                               |                              |                               |
| Groups               |                                                                    |                               |                               | -1.011<br>(0.65)<br>[-0.22]   |                              |                               |
| Gov. exp.*Groups     |                                                                    |                               |                               | -0.014<br>(0.44)<br>[-0.18]   |                              |                               |
| Olson groups         |                                                                    |                               |                               |                               | -1.531<br>(0.46)<br>[-0.18]  |                               |
| Gov. exp. * O-groups |                                                                    |                               |                               |                               | -0.019<br>(0.27)<br>[-0.11]  |                               |
| Putnam groups        |                                                                    |                               |                               |                               |                              | -0.939<br>(0.37)<br>[-0.12]   |
| Gov. exp. * P-groups |                                                                    |                               |                               |                               |                              | -0.027<br>(0.56)<br>[-0.21]   |
| Constant             | 0.054<br>(3.11)**                                                  | 0.058<br>(2.86)**             | 0.034<br>(0.41)               | 0.098<br>(4.61)**             | 0.087<br>(4.31)**            | 0.093<br>(4.78)**             |
| Observations         | 328                                                                | 294                           | 320                           | 320                           | 320                          | 320                           |

+ significant at 10% level; \* significant at 5% level; \*\* significant at 1% level;

Newey-West t-statistics in parentheses. **b**-coefficients in square brackets.

**Table 6 Rent-seeking and institutions of conflict-management in the eighties and nineties. Growth regressions and institutions (1981-1995). Dependent variable: GDP per capita growth, 14 EU countries, Newey-West t-statistics in parentheses**

|                                | Dependent variable: GDP p.c. growth, 10 years moving average panel |                               |                               |                              |                               |                               |
|--------------------------------|--------------------------------------------------------------------|-------------------------------|-------------------------------|------------------------------|-------------------------------|-------------------------------|
|                                | (20)                                                               | (21)                          | (22)                          | (23)                         | (24)                          | (25)                          |
| Standard explanatory variables | ...                                                                | ...                           | ...                           | ...                          | ...                           | ...                           |
| Inequality (GINI)              | -0.094<br>(4.66)**<br>[-0.56]                                      | -0.078<br>(4.06)**<br>[-0.39] | -0.087<br>(3.91)**<br>[-0.46] | -0.088<br>(2.03)*<br>[-0.46] | -0.035<br>(1.76)+<br>[-0.18]  | -0.156<br>(6.91)**<br>[-0.82] |
| Corporatism                    | 0.446<br>(2.66)**<br>[2.07]                                        |                               |                               |                              |                               |                               |
| Gov.exp.*CORP                  | -0.010<br>(2.92)**<br>[-2.73]                                      |                               |                               |                              |                               |                               |
| Trust                          |                                                                    | 0.240<br>(3.34)**<br>[3.46]   |                               |                              |                               |                               |
| Gov. exp. * Trust              |                                                                    | -0.005<br>(3.40)**<br>[-4.39] |                               |                              |                               |                               |
| Civic norms                    |                                                                    |                               | 0.616<br>(1.88)<br>[1.37]     |                              |                               |                               |
| Gov. exp. * Civic norms        |                                                                    |                               | -0.014<br>(1.99)+<br>[-5.89]  |                              |                               |                               |
| Groups                         |                                                                    |                               |                               | 2.883<br>(0.91)<br>[0.92]    |                               |                               |
| Gov. exp. * Groups             |                                                                    |                               |                               | -0.066<br>(1.21)<br>[-1.38]  |                               |                               |
| Olson groups                   |                                                                    |                               |                               |                              | 26.969<br>(2.96)**<br>[4.45]  |                               |
| Gov. exp. * Olson groups       |                                                                    |                               |                               |                              | -0.496<br>(2.92)**<br>[-4.46] |                               |
| Putnam groups                  |                                                                    |                               |                               |                              |                               | -13.768<br>(2.01)*<br>[-2.78] |
| Gov. exp. * Putnam groups      |                                                                    |                               |                               |                              |                               | 0.195<br>(1.68)<br>[2.53]     |
| Constant                       | 0.069<br>(3.46)**                                                  | 0.011<br>(0.39)               | -0.138<br>(1.12)              | 0.072<br>(2.00)*             | -0.056<br>(1.12)              | 0.146<br>(5.63)**             |
| Observations                   | 84                                                                 | 72                            | 78                            | 78                           | 78                            | 78                            |

+ significant at 10% level; \* significant at 5% level; \*\* significant at 1% level;

Newey-West t-statistics in parentheses. **b**-coefficients in square brackets.

## 4 Conclusion

As has been argued in earlier papers, high-quality institutions of conflict management can serve to mitigate the negative effects of adverse external shocks and social conflict on long-run economic growth by inducing agents to behave more cooperatively. One of the main contributions of the paper is to model both benefits (production-enhancing cooperation) and costs (taxes and rent-seeking) of conflict-management institutions like corporatism and trust in the context of a simple growth model. The quality of an institution is determined by the dominance of one of the two factors. For institutions prone to rent-seeking, a non-linear relationship impact on growth is the theoretical prediction. With a growing degree of corporatism, for example, the behavior of the growth rate depends on when and how strong rent-seeking and disincentive effects set in. On the empirical side we have analyzed the growth experience of 14 EU countries (all except Luxembourg) using a panel for 1961-1995. The standard variables (initial GDP, educational expenses, population growth rate, investment rate and the size of the government) generally have the expected signs and are significant determinants of growth. The evidence shows that neo-corporatism as such has had positive effects on long-run growth in the EU, as had trust. Both bring about significant rent-seeking costs, though, which in total sometimes dominate the positive effects. The costs of corporatism and trust in Europe have become especially apparent in the eighties and nineties. Less conclusive results are derived for other institutions, although the overall evidence suggests that strong group activity, in particular in rather pure distributional coalitions, is bad for growth. The purely growth-promoting institution of conflict management remains to be found.

Much more can be done in this field. First, better and if possible time-varying indices of the different institutions are needed. Since the degree of corporatism seems to have decreased in most European countries in the 80s and 90s, and growth rates were generally lower in that period, we do not expect the results to change. Still, some insights might be gained from such an extension of the database. Second, this would in particular allow more accurate development and testing of theories of institutional change and economic performance. This is a field where researchers have just begun to produce formal models. Third, research should also concentrate on the effects of certain institutions on the efficiency of use of given production factors, thus testing directly one of the model's assumptions.

### A.1 Data description

**Table 7 Data set structure: A panel for 14 EU countries 1961-1995, 10 years moving averages (truncated table)**

| Country | Start of period | Dependent variable: GDP Growth    | Explanatory variable: Investment rate      | Other explanatory variables              |
|---------|-----------------|-----------------------------------|--------------------------------------------|------------------------------------------|
| Austria | 1961            | average growth 1961-1970, Austria | average investment rate 1961-1970, Austria | average of other vars 1961-1970, Austria |
|         | 1962            | average growth 1962-1971, Austria | average investment rate 1962-1971, Austria | average of other vars 1962-1971, Austria |
|         | ...             | ...                               | ...                                        | ...                                      |
|         | 1986            | average growth 1986-1995, Austria | average investment rate 1986-1995, Austria | average of other vars 1986-1995, Austria |
| Belgium | 1961            | average growth 1961-1970, Belgium | average investment rate 1961-1970, Belgium | average of other vars 1961-1970, Belgium |
|         | 1962            | average growth 1962-1971, Belgium | average investment rate 1962-1971, Belgium | average of other vars 1962-1971, Belgium |
|         | ...             | ...                               | ..                                         | ...                                      |
|         | 1986            | average growth 1986-1995, Belgium | average investment rate 1986-1995, Belgium | average of other vars 1986-1995, Belgium |
| ...     | ...             | ...                               | ...                                        | ...                                      |

The following table shows the corporatism index used in the main specification regressions.

**Table 8 Corporatism index used in the empirical part of the paper**

|                | CORP |
|----------------|------|
| Austria        | 15   |
| Belgium        | 9    |
| Denmark        | 12   |
| Finland        | 10   |
| France         | 7    |
| Germany        | 14   |
| Greece         | 5    |
| Ireland        | 7    |
| Italy          | 4    |
| Netherlands    | 10   |
| Portugal       | 6    |
| Spain          | 4    |
| Sweden         | 12   |
| United Kingdom | 5    |

For all countries except Greece, Ireland, Portugal, and Spain, this is Tarantelli's (1986) index. For these countries, the relative ranking used by Henley and Tsakalotos (1993) was used to determine their respective values. We also performed a sensitivity analysis with respect to different values for the corporatism variable. We rated the four countries with missing values up to two points more corporatist than in the above table. The results presented in the main part of the paper do not change substantially either in size or in significance, however.

**Table 9** Descriptive statistics of variables

| Variable                 | Obs | Mean     | Std. Dev. | Min       | Max      |
|--------------------------|-----|----------|-----------|-----------|----------|
| GDP per capita growth    | 374 | .0264942 | .0127114  | .003317   | .0743141 |
| Log Initial GDP          | 378 | 2.437718 | .5182782  | .6877642  | 3.251375 |
| Tot Shock                | 378 | .0103818 | .0067303  | 0         | .0426415 |
| Government expenditures  | 328 | 44.15765 | 8.865565  | 22.13     | 62.38    |
| Population growth        | 378 | .0050609 | .004582   | -.0054018 | .0293263 |
| Educational expenditures | 378 | .0528003 | .0132184  | .0240095  | .0750064 |
| Fixed capital formation  | 364 | .2271727 | .0331414  | .1641688  | .3066516 |
| EU membership            | 378 | .5791005 | .4649089  | 0         | 1        |
| Trade                    | 374 | .5106208 | .2443772  | .1647833  | 1.218383 |
| Centralized              | 378 | .6518519 | .4071109  | 0         | 1        |
| Corporatism              | 378 | .0857143 | .035647   | .04       | .15      |
| Groups                   | 351 | .0073    | .002458   | .004      | .0111    |
| Olsonian Groups          | 351 | .0026308 | .0012748  | .0006     | .0053    |
| Putnam Groups            | 351 | .0030538 | .0015567  | .0014     | .0064    |
| Trust                    | 324 | .3699167 | .1156396  | .214      | .572     |
| GINI                     | 378 | .2939184 | .0454048  | .227316   | .3767    |
| Shock*GINI*Corporatism   | 378 | .0002486 | .0001748  | 0         | .0010435 |
| Government*Corporatism   | 328 | 4.011773 | 1.974517  | .9908     | 7.4856   |
| Shock*Corporatism        | 378 | .0008631 | .0005724  | 0         | .0029849 |
| GINI*Corporatism         | 378 | .0240845 | .0075051  | .010168   | .0349875 |

## A.2 Robustness tests of the main specification

The results presented in the previous section hold up against varying specifications suggested by theoretical considerations. One change in the specification we tried was to include a dummy  $COMMON_{it}$ , that is equal to one for all years after the introduction of the common market in 1990. This variable is meant to capture the structural changes in European economies during that time. Another motivation for this specification change was that often trade appeared to have had a negative effect on growth, a result that was somewhat disturbing and merited further attention. An interaction term with  $TRADE_{it}$  was also included ( $FT_{it} = TRADE_{it} * COMMON_{it}$ ). Both  $COMMON_{it}$  and  $TRADE_{it}$  are usually insignificant,

but the interaction term has a positive significant effect on growth, suggesting that for more open countries the introduction of the common market had positive growth effects. The results for the institutional variables do not change.

Non-inclusion of the *INVEST* variable because of endogeneity concerns does not change the results either. If one leaves out *GOVTEXP*, the significance and magnitude of the institutional variables rise sharply, indicating an important relationship between institutions and government. Studies that do not include the government as an explanatory variable may thus sometimes be flawed. We noted in the theoretical part that country size may matter. Econometrically, this can be checked by adding an interaction term including the size of the country and the degree of corporatism. Our estimations indicate no evidence for this hypothesis; the interaction term is almost always completely insignificant.

We have also performed additional tests for time-sensitivity, taking away one year at a time either from the beginning or the end of the sample period. The overall result to emerge is that the coefficients are relatively stable and continue to exhibit the same characteristics as in the main text. One interesting result is that for periods after the mid-70s, corporatism alone is not significant whereas it becomes strongly significant when the additional control variable *GOVCORP* is introduced. This suggests that in those years, rent-seeking behavior and the costs of corporatist systems became more important.

Finally, we used other estimation techniques. Both FGLS and random effects estimation generally and qualitatively lead to the same results, strengthening our confidence in the correctness of our estimations.

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