WHAT ACTUALLY HAPPENS TO EU DIRECTIVES IN THE MEMBER STATES?

A CROSS-COUNTRY CROSS-SECTOR VIEW ON NATIONAL TRANSPOSITION INSTRUMENTS

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Abstract

This study empirically investigates the transposition patterns of EU directives in all 15 member states and in six major sectors of the economy with a view on analysing the political-economic reasons behind sector and national differences in the legal transposition instruments used. In particular, we model the influence of both national sector importance and governmental constellations on the ratio of primary to totally transposed EU directives. We find that government strength and net EU receipts negatively affect the ratio of primary to total transpositions. Economic sector size plays a positive significant role for primary transposition ratios. However, the direction of the effect changes if we control for other sector characteristics, i.e. sector lobbying potential and technicality.

JEL Code: H11, H70, H83, K40, K33.

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'Because of belated implementation of European directives for functioning electricity- and gas markets, the Commission actually took half a dozen infringement procedures before the European Court of Justice – Spain, Greece, Estonia, Ireland, Portugal and Luxemburg are sued. What is lacking is a joint strategy of the Commission and the national governments. [...] But when the EU-Commissioner for energy matters, Andris Piebalgs, travels through the capitals in order to promote all the directives, proposals and green books by which the Commission aimed to prevent the growing dependence on only a few suppliers, he only raises a laugh. What has been decided upon in Brussels, is ignored, circumvented or delayed in the member states.'

Translated from *DIE ZEIT*, No. 10, March 2, 2006: 23

1 Introduction

European integration does not only depend on the European Union's (EU) decision-making ability but also on the correct, complete and timely implementation of EU-decisions in the member states. The latter aspect of putting EU-law into national practice is all the more relevant as legislative activity in the EU is marked by a clear centralizing trend over the last decade. Today, EU decision-making touches almost every policy area and EU legislative activity amounts to more than 15 000 binding European acts in force[1]. This throws up such important questions as the following: What happens to this bulk of EU legislation in the member states?

At first sight, this issue might appear trivial and self-explanatory as member states have legally obliged themselves to transpose and implement EU directives in a complete, correct and timely manner according to articles 249, III and 10, I of the EC Treaty (ECT). However, national implementation *practice*s reveal a different picture as the above quote by Commission president José Manuel Barroso's spokesperson illustrates.

Given the discrepancy between implementation theory and reality, our paper tries to shed empirical light on the *actual* implementation patterns across member states and policy areas. We thereby focus on EU directives only. Compared to other types of *secondary*, that is non-Treaty, EU law such as regulations or decisions, the implementation procedure for EU directives differs in that EU directives first need to be transposed, i.e. transcribed into national legislation, before they are legally effective and can be put into practice by national administrations, courts and agencies. Regarding their

[1]See Alesina et al. (2005): Tables 4 and 7 on the total number of passed regulations, directives and decisions per period and the total number of these types of legislation in force between 1971 and 2000.

transposition, member state governments are generally free to decide upon the legal instrument(s) as long as the respective legal device(s) serve(s) to fulfil the directive's general objectives and meet(s) the required deadline. One can thereby broadly distinguish between *primary* and *secondary* national transposition devices. *Primary* transposition instrument(s) refer to all national legal devices requiring a parliamentary majority decision. *Secondary* transposition devices comprise all other national legal instruments, usually mere administrative acts.

According to this set up, we conceive the government's transposition decision as a two-step process: In the first step, the government may decide whether it is generally willing to transpose a particular directive or not. Assuming a government's willingness to transpose, the question then becomes, in the second step, whether to transpose via *primary* or *secondary* legislative devices, i.e. whether to get involved into a national parliamentary debate or not. This second step of the government's transposition decision is exactly what our paper aims to analyse. In particular, we intend to investigate the *de facto* ratios of *primary* to total transposition notifications for EU directives adopted between the Single European Act and today. This question is highly relevant from a normative political point of view and complements the debate on the EU's 'democratic deficit' by investigating in how far national parliaments are excluded from the legislative process when it comes to the transposition of EU directives?

For our empirical assessment, we have constructed a unique dataset comprising political-economic indicators and various measures of transposition based on the member states' notifications of transposed EU-legislation, as provided in CELEX Sector 7 by the European Commission. Our dataset not only covers the EU-15 member states on an aggregate level but also six major sectors of their economies and it ranges from 1986 to 2002. This allows us to investigate the member states' transposition performances in a novel fashion, namely with a dynamic cross-country cross-sector view. The sector perspective thereby allows us to consider the specific content of a directive, i.e. the policy area it touches upon, as an additional explanatory factor besides the frequently hypothesised macro-level politico-institutional and economic effects. We find that three factors matter for explaining *primary* transposition ratios: political-institutional constellations, sector characteristics and EU-membership benefits. In particular, governmental control of the parliamentary agenda and net EU receipts have a negative effect on the ratio of *primary* to total transpositions. Economic sector size seems to play a positive significant role for *primary* transposition ratios. However, the direction of the effect changes when we control for other sector characteristics, i.e. sector lobbying potential and technicality.

Our paper is divided into six parts: After a brief discussion of the relevant literature in section 2, we discuss our theoretical approach in section 3. Here, we define the broader theoretical framework. With a view to modelling the transposition of EU directives, we outline the implementation process for the case of EU directives and specify the government's decision path after it has received the directives coming from Brussels. Based on national governments' utilities we derive testable hypotheses about the expected ratios of *primary* to total transposed directives across member states and policy areas. Section 4 draws up our research design. Starting with discussing our data structure, we explain our choice of policy areas before turning to descriptive figures of our dependent variable and describe our econometric model and method. Finally, we present our empirical results in section 5 and summarize our main conclusions in section 6.

2 Related literature

Two strands of the political science literature deal with the transposition and implementation of EU directives, i.e. the issues of *Europeanization* and *compliance*, respectively. *Europeanization* is thereby defined as 'the process of influence deriving from European decisions and impacting member states' policies and political and administrative structures' (Heritier (1995)). *Compliance* generally refers to the fulfilment of EU legislation in the member states.

So far, comparative studies using econometric tools in the area of *Europeanization* mainly concentrate on the *timeliness* of transposing EU directives. Prominent examples are Mastenbroek (2003), Kaeding (2005) and König, Luetgert & Mäder (2005) who investigate the political-economic factors underlying transposition delays from different perspectives. Whereas Mastenbroek (2003) focuses on Dutch transposition delays for 229 directives enacted between 1995 and 1998 using various data sources mainly provided by the Dutch government, Kaeding (2005) concentrates on one particular policy area (transport). He particularily analyses the probability of delay across five member states, namely Germany, Spain, the Netherlands, the UK and Greece. In contrast to Mastenbroek (2003), Kaeding's (2005) data stems from the EU Commission's online-database CELEX. It contains the transposition deficit for all 106 directives of the transport acquis ranging from 1957 to 2004. Mastenbroek's (2003) and Kaeding's (2005) analyses of survival- and cross-section logit models both show that EU-level factors such as the time remaining until the transposition deadline, the initiating EU institution or the applied EU decision-making procedure, influence the

timing of transposition. Kaeding's (2005) study further reveals that a directive's overall level of complexity and the overall amount of EU legislation waiting for transposition both significantly and positively affect delay. With respect to national factors of influence, both authors demonstrate that it is the type of legal instrument used (i.e. law, decree, regulation or circulair) rather than the number of reported transposition instruments which significantly influences transposition delay. However, whereas Mastenbroek (2003) finds a strong effect of the ministry in charge, Kaeding (2005) does not. Additionally, in Kaeding's (2005) analysis the number of governmental coalition parties plays a significant role for the likelihood of timely transposition. König et al. (2005) also employ CELEX-based data for their empirical investigation of the timeliness of transposition. Compared to Kaeding (2005), however, they apply a more comprehensive approach as their dataset contains not only transport directives, but all 1,592 directives adopted between 1984 and 2002 with the respective transposition measures for the fifteen 'old' EU member states. Rather than just looking at a selection of particular member states they look at all EU-15 member states. Moreover, they explore sector differences in transposition timing across four CELEX policy areas, namely agriculture, energy and environment, internal market and common rules. Apart from Mastenbroek (2003) and Kaeding (2005), they also include EU-level and national-level *economic* factors, such as the *amount of net-EU payments* and *value added shares*. They further incorporate preference measures grasping the level of conflict on the EU- and the national stage, such as the 'sector specific core based on maximum distance between member state governments' and the 'sector specific core based on the maximum distance between parties represented in national parliaments'. The results of their preliminary Heckman selection (probit-probit) model reveal that EU-level conflict influences negatively while national conflict positively influences the probability to transpose in the selection equation. The probability of delayed transposition in the second step of the Heckman procedure is positively and significantly affected by the number of notified transposition measures, net-EU receipts and sector value added shares. Besides these, König et al. (2005) find out that more pluralist systems lead to a significantly higher probability for delayed transposition.

The *compliance* literature, deals with infringement procedures initiated by the Commission and litigated in co-operation with the European Court of Justice (ECJ) against member states failing to implement or 'to comply' with EU-law. Thus, *compliance* studies address similar research questions as found in the *Europeanization* literature, but use a different dependent variable for measuring national performances of coping with EU-law. Instead of relying on member state transposition notifications, quantitative *compliance* stud-

ies count member states' expositions to EU infringement procedures. Two especially relevant examples of applied quantitative work within this strand of literature are Börzel, Hofmann & Panke (2005) and Perkins & Neumayer (2007). Börzel et al. (2005) test two competing hypotheses about national non-compliance. On the one hand, the 'management theory hypothesis' supposes non-compliance to be involuntary and mainly due to the lacking *capacity* (i.e. administrative ressources and public support) of a member state. The 'enforcement theory hypothesis' assumes national non-compliance to be fully intended. In particular, the voting power of a member state vis à vis the EU-institutions is assumed to be the dominant factor underlying a government's motivation to comply. Their probit- and survival-analyses uncover that both anticipated factors are statistically relevant for explaining cross-country variances of non-compliance. Like König et al. (2005), Börzel et al. (2005) further control for policy-specific effects and also find strong empirical evidence for their explanatory power. However, Börzel et al. (2005) are so far unable to identify exactly which policy-related aspects are at work.

Perkins & Neumayer (2007) follow a theoretically different approach which seems especially promising. In contrast to previous works in the compliance literature, the authors take on a political-economic perspective assessing the benefits of compliance for a member state. Applying negative binomial estimations for their count dependent variable, i.e. the number of national expositions to infringement procedures, Perkins and Neumayer (2007) find overall support for their main argument that national levels of compliance are influenced by the *benefits* a particular member state derives from the EU, both politically and economically. In particular, the level of intra-EU trade dependence as well as well as per capita voting power in EU institutions are negatively correlated with legal infringements. Surprisingly, but in line with König et al. (2005), Perkins & Neumayer (2007) find a member state's compliance record to *decrease* with rising net-EU receipts.

Besides recent advances, what lacks so far in both discussed literature strands, is quantitative empirical work on *the kind of legal transposition instrument(s) used by the national governments*. The aforementioned papers of Kaeding (2005) and Mastenbroek (2003) merely point to the effect of the *legal instrument used* on *transposition delay*. We ask, however, directly what political-economic factors will make a government opt for *primary* transposition devices given it is willing to transpose. Although neglected in the literature so far, this question seems highly relevant from a normative political point of view. First, the national balance of power could be threatened if, through the process of EU-law transposition, member state executives would administer more and more legislative competences to the cost of national parliaments. This would be the case if national executives would preferably

choose *secondary* transposition devices for a generally increasing number of EU directives. It would be interesting to ask for future research whether EU integration has lead to a 'democratic deficit' on the *national* arena? However, analysing the possible effects behind a government's chosen mode of transposition is far beyond the scope of this paper. Our study aims to provide a first attempt to directly address the national *transposition modes*, i.e. the *de facto* ratios of *primary* to total transpositions respectively. But this is not the only contribution we claim to make. With respect to our research design, we further try to extend on the cross-sector perspectives addressed in König et al. (2005) and Börzel et al. (2005). In doing so, we employ a three-dimensional econometric model grasping not only country- but also sector-specific effects across *five* major sectors of the respective national economies. Looking at transposition performances across policy areas thereby allows us to consider the policy-contents of EU directives. As we suppose that both aspects, policy and polity, play a significant role for a government's transposition rationale, a cross-sector research design appears especially important in order to prevent selection bias. A comparative policy design further avoids getting blind-eyed by the particularities of a single policy area.

3 Towards modelling transposition

3.1 Theoretical set up: the government's transposition decision

Looking at the transposition framework in greater detail, three different types of EU legislation may be distinguished: decisions, regulations and directives. All three are nationally binding[2]. However, the first two come directly into effect in the member states without the need for any national legislation. In contrast, directives must be transposed, that is legally translated and written into national legislation, before the respective *national* administrative bodies can act upon them (see Art. 249 III ECT on the obligation of the member states to transpose and implement directives). In the case of non-compliance by failing either to transpose or to put EU law into practice they risk being sent a letter of formal notice by the Commission as the "guardian of the Treaty" (Art. 211 ECT). Member states can also be officially sentenced by the ECJ, the latter being the last instance of the infringement procedure

[2]Two further types of *secondary* EU legislation, namely recommendations and opinions, are left aside here since they are not binding for the member states.

(Art. 226 and 228 ECT)[3] Further, member states can be held liable to the European citizens if they do not implement EU directives on time or in an incomplete manner (Streinz (2001)).

Regarding the national legal instruments used for transposition, directives may impose specific implementation conditions and objectives, but not the member states' transposition instrument(s) directly. In other words, formally, the choice of transposition instrument(s) remains with the national governments, leaving national technical and legal restrictions aside. In common judicial practice, however, an EU directive may become directly applicable for a member state once the deadline for implementation has passed and certain legal conditions are met. Yet, according to Streinz (2005:158f), in the case of delay it unfolds a so called 'effet utile' only if:

1. the directive is formulated in such a way that individual rights can directly be derived from it, meaning that it does not leave any contextual discretion to the national judicial agencies (self-executive character of a directive), and

2. the content of a directive does not harm a citizen.

In the following we will restrict ourselves to EU directives rather than to EU decisions or regulations. This is for two reasons. First, only for the case of EU directives the issue of transposing EU law into national legislation does arise. EU decisions and regulations come into force directly upon their adoption on the EU level. Second, we find the question on the government's choice of transposition instruments to be empirically relevant and not to be a mere theoretical artifact. As pointed out above, only under very special judicial conditions may EU directives unfold a 'direct effect' in a member state.

Summing up, in the case of EU directives we understand the national implementation procedure as two-fold. It comprises first the process of transposing EU law into national legislation. The second part is the *actual* "implementation" in the sense that national or regional public agencies such as the police, administrative bureaus, offices and courts put the transposed directives into practice. In this paper, our focus lies on the transposition of

[3]According to Falkner, Treib, Hartlapp & Leiber (2005) the whole infringement procedure comprises four stages: 1. Letter of Formal Notice, 2. Reasoned Opinion, 3. Referral to the ECJ (all initiated by Commission), and 4. Judgment by the ECJ. They also point to newer 'internal procedure' documents of the Commission that even allow for additional, non-legal and more promising instruments to bring member state behavior into line with EU law (see COM [2002] 725). For a detailed description of the different stages of the infringement procedure and its effects on implementation in the member states, see Falkner et al. (2005).

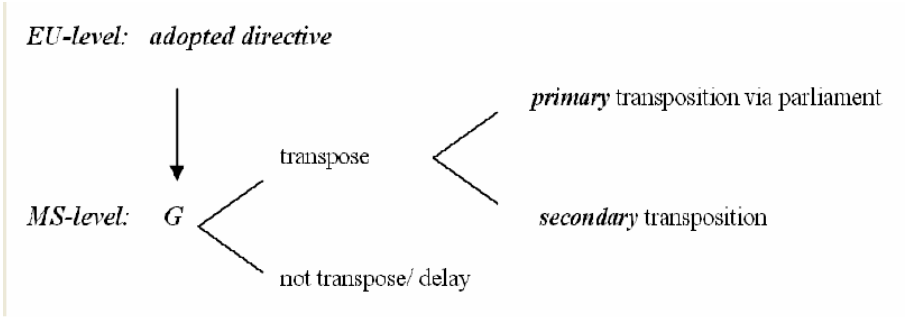

Figure 1: Two-fold transposition decision of a member government (G)

EU directives as starting point of the national implementation procedure. With respect to the legal instrument(s) used for transposition, we suppose the government (G) to follow a two-step decision path as illustrated in 1 below. In the first step, G chooses whether it is generally willing to transpose and implement a particular directive or whether it prefers to not transpose at all or to delay. Then, given it has decided to transpose and implement, G has the possibility to select the appropriate transposition instrument in the second step of the decision path. It may thereby opt for *primary* or *secondary* legislative devices.

According to our definition, *primary legislative devices* comprise all national legislation in the sense of "laws". In other words, we define *primary legislation* as national legal instruments which in some way have to be approved by the respective national parliament. All other national legislative actions that can directly be adopted by the member states' executives are referred to as *secondary legislation*.

This categorization into *primary* and *secondary* transposition instruments may appear rather broad given that the number and types of available legal instruments vary considerably across EU member states. Take for instance Ireland, which notified six different legal devices to the Commission out of which only one requires a parliamentary majority[4]. Whereas in Germany, we count 17 notified transposition instruments out of which we classified two as *primary* in CELEX Sector 7[5]. However, comparing and categorizing all pos-

[4]We collect the following notified transposition devices for Ireland: Act (primary), Regulation (secondary (sec.)), Order (sec.), Notice (sec.), Circular (sec.) and Resolution (sec.).

[5]We collect the following notified transposition devices for Germany: Bundesgesetz

sible national legal devices across 15 member states is a tough judicial task which goes beyond our political-economic perspective[6]. Thus, we leave it with the aforementioned classification as it allows for the theoretically interesting differentiation between mere bureaucratic acts (*secondary* legislation) and laws that need the approval of parliament (*primary* legislation). From a legal point of view, it ought to be mentioned that, a few of the numerous national legal devices do not fall in either of the two categories. Take, for instance, the German "Verordnung": it generally requires a law that authorizes the Federal government, single ministers or the Länder executives to adopt it. However, under certain conditions and for specific policy areas it may additionally need the approval of the upper chamber, the "Bundesrat" (see Art. 80 GG). Further, we ought to keep in mind for the interpretation of our results, that some states may have passed special legislative rules for dealing with EU law. Ireland and the UK, for instance, have done so in the European Community Acts of 1972 providing the general power for implementing Community obligations by means of *secondary* legislation. Related to this, Ireland and the UK each have passed Statutory Instruments Acts which enable their parliaments to delegate legislation to the ministry in charge. For some of the Statutory Instruments, the British and the Irish Houses of Parliament have preserved their rights to annul Statutory Instruments passed by the executive within a given time frame. Thus, although the transposition of EU law via Statutory Instruments require delegation by parliament, they count as *secondary* legislation of the UK and Ireland as they have finally been passed by the ministry in charge. In our dataset, we cannot account for these judicially unclear cases, but restrict *primary legislation* to only those national legislative devices in the sense of national 'laws' that *always* require a majority decision of the lower chamber.

(primary), Landesgesetz (primary), Bundesverordnung (federal, sec.), Landesverordnung (Länder, sec.), Bekanntmachung (federal, sec.), Bekanntmachung (Länder, sec.), Verwaltungsvorschrift(en) und andere Vorschriften (federal, sec.), Verwaltungsvorschrift(en) und andere Vorschriften (Länder, sec.), Anordnung (Reichsanzeiger, sec.), Anordnung (DDR, sec.), Anordnung (Regulierungsbehörden, sec.), Erlaß (federal, sec.), Erlaß (Länder), Runderlaß (federal, sec.), Runderlaß (Länder, sec.), Rundschreiben (sec.), Anweisung (sec.).

[6]See Trantas (1995) for a more comprehensive research guide to 'Comparing Legislative Instruments Across Nations'.

3.2 Assessing the government's (G) utility: costs and benefits of *primary* transposition

3.2.1 Transaction costs (TC)

If a government chooses to go through parliament in transposing a directive coming from Brussels, several difficulties may lie upon its way. Obstacles to parliamentary decision-making may thereby vary across countries and sectors, but can generally be seen as the transaction costs (TC) of *primary* legislation. Döring & Hallerberg (2004) refer to two main factors determining the TC of the dynamics, i.e. the speed, of the legislative process in their recent compendium on the passage of legislation across Western Europe. First, country-specific institutional constraints, such as the number of *veto players* (vps), make the passage of legislation by parliament costly for the government as opposition possibilities increase. Tsebelis (1995) elaborates this effect in his frequently cited veto player theory. Regarding transposition, a positive effect of vps on transposition delay has so far been approved in the empirical studies of Kaeding (2005), König et al. (2005) and Mastenbroek (2003). Second, Döring & Hallerberg (2004) argue that as time is scarce in parliamentary life, legislation always involves opportunity costs (OC) for re-election seeking politicians. Thus, additional TC may arise from the ability of minorities to inflict opportunity costs on the parliamentary majority. We will account for the ability of minority groups to inflict OC on the government by considering sector-specific lobbing effects in the section below. For now, let us hypothesize about the influence of vps on the legal kind of transposition instrument(s):

H1 *The greater the number of veto players within a governmental system, the less the ratio of primary to total transposed directives. (-)*

In the same volume Döring (2004) further tries to link time constraint, the level of controversy entailed in a particular bill and the government's control of the parliamentary agenda to the introduction of restrictive rules by the government. He thereby refers to Henning (1995) and Döring (1995) who have formulated and tested a formal model explaining legislative output across Europe. More particularly, Henning (1995) assumes a majority government to be the monopolist of political decisions in a parliamentary system and derives the somewhat contra-intuitive theoretical prediction that the more a government, due to time-saving prerogatives of agenda control, is principally able to push many legislative measures through, the fewer, yet more controversial bills it is actually inclined to submit to parliament. Empirical tests by Döring (1995) 'approve' this proposition. We agree that

the power distribution in executive-legislative relations plays a crucial role not only for explaining legislative outputs but also for analyzing governments' preferred transposition modes. However, intuitively and from a TC perspective, we argue that for weaker governments the costs of transposing via parliament are generally higher as their chances of pushing a particular bill through the legislative process appear smaller. In particular, coalition governments encompassing a large number of parties appear more prone to inner-executive and legislative opposition as each party may be seen as additional veto player according to Kreppel (1997). As we are unable to decide on the expected effect direction theoretically, our statistical analysis will have to reveal whether the argument of Henning (1995) and Döring (1995) in H2a holds for explaining transposition modes.

H2a *The stronger G relative to the opposition, the less the ratio of primary to total transposed directives. (-)*

H2b *The larger the number of coalition parties, i.e. the greater the fractionalisation of a government coalition, the less the ratio of primary to total transposed directives. (-)*

Regarding the level of controversy entailed in a particular bill, Döring (2004) argues that for G the electoral utility of a controversal bill relative to a consensual one is higher. Underlying this argument is a statement of Olsen (1980) that given the government can determine the agenda it will use the parliament for those matters that it considers most important and wishes to symbolize to the whole population. Assuming that economically important directives are more controversial in the sense that they foster parliamentary or inner-coalition opposition to a higher degree than less important directives thus leads to the following hypothesis from a sector perspective on transposition mode:

H3 *The greater the economic importance of a sector, the greater the ratio of primary to total transposition. (+)*

Further, the timing of transposition within the policy cycle may play a crucial role for governments preferences on transposition mode. Generally, as shown by Döring (2004), marginal costs of additional bills passing parliament tend to increase towards the end of an election period. The raise in marginal costs depends, however, on the controversy level of a particular piece of legislation. We accordingly hypothesize with respect to G's preferred transposition mode:

H4 *The closer the transposition decision is to the end of an election period, the less the ratio of primary to total transposed directives.*

We expect this effect to be even stronger in the case of controversial directives, i.e. economically important directives.

Assessing the costs of *primary* transposition from an economic perspective, market inefficiencies may arise if EU directives are transposed and implemented in an uncoordinated way among member states. This applies to the kind of transposition instrument as well as to uncoordinated timing or delays. With respect to timing, choosing *primary* transposition devices thus appears economically costly for a government. This may particularly be the case for directives touching upon technical issues, which is in sectors such as transport or environment. Thinking e.g. of the construction of a uniform railway system, a quick and coeval harmonization across all member states would clearly bear economic advantages in these areas as intra-EU trade would be facilitated. Hypothesis 5 mirrors this proposition accordingly.

H5 *In rather technical sectors, the ratio of primary to total transposed directives is smaller.*

3.2.2 Lobbying

If an EU directive passes parliament during transposition, not only internal but also opposition external to the law-making process increases by lobbying activities that target parliamentary legislation. The passage of EU legislation in national parliaments offers more time and opportunities for lobbyists to take action on EU laws on behalf of their constituencies. Politicians then have to weigh the special interests of a minority group against the welfare of the median voter. The ability of minority groups to inflict OC on politicians thereby depends on certain systemic or policy-specific features. Again, as stated in H2b, coalition governments seem particularly vulnerable to opposition by lobby groups as lobby costs decrease with the number of parties involved in the government (see Grossman & Helpman (2001)). Regarding policy areas, we suppose lobby groups to be mainly active in sectors for which interests are relatively easy to organize, meaning sectors which are small in group size and pursue clear-cut group interests according to Olson's theory (1957). Thus, in addition to H2b, we hypothesize that:

H6 *The more a sector is subject to lobbyism, the less a government opts for primary transposition devices. (-)*

Given the manifold political-economic costs for a government G to transpose via parliament, it is not surprising that the overall *primary* transposition ratios are rather low (see figures below). What, however, may make G still opt for *primary* transposition? Are there any systematic politico-economic or sector-specific benefits that help explain the observed cross-country cross-sector variations in *primary* transposition ratios?

3.2.3 'Better regulation' benefits

Better, that is more detailed and concrete, administrative instructions insert positive microeconomic effects as they prevent strategic misuse and misinterpretation by firms. Aware of these effects, the Commission has proposed a new better regulation package in March 2005 in order to improve the quality of new legislation and existing rules on the EU- as well as on the national level. It accordingly argues that "common rules across all Member States help business and can lower costs" [7]. Further, in her Communication to the Council and the EP on the Lisbon Strategy the Commission states:

"Better regulation has a significant positive impact on the framework conditions for economic growth, employment and productivity. By improving the quality of legislation, it creates the right incentives for business, cutting unnecessary costs and removing obstacles to adaptation and innovation. The measures foreseen in the 'better regulation' initiatives by the Commission and the Council Presidencies need to be implemented rapidly"[8].

Assuming *primary* legislation to generally be more elaborated and thus to guarantee more precise and detailed rules relative to *secondary* acts, G would accordingly have clear macroeconomic incentives to opt for transposition via parliament. From a sector perspective, this should especially be the case in economically important or rather technical sectors where only precise implementation rules secure the functioning of the Common Market. Thus, H3 would further be strengthened by the better regulation argument, but the anticipated negative effect of sector technicality in H5 would partly be offset. Therefore, we cannot be sure about the expected effect direction in H5 for our statistical analysis.

[7] EU Commission (2006): Improve European and national regulation. Retrieved April 12, 2006, from http://europa.eu.int/growthandjobs/areas/fiche03_en.htm.

[8] COM (2005) 330 final: Communication from the Commission to the Council and the European Parliament, Common Actions for Growth and Employment: The Community Lisbon Programme, p. 7.

3.2.4 EU-membership benefits

A direct way to assess the economic benefits from EU membership is measuring national fiscal transfers from the EU. König et al. (2005) have controlled for the effect of a country's net EU-receipts on transposition timeliness and found a significant *positive* effect on the delay probability of directives. Further, Perkins & Neumayer (2007) develop a theoretical argument on the influence of net EU-receipts on infringement cases. However, against their proposition, and in line with Börzel et al. (2005) they discover a *positive* effect of net EU-receipts on infringement submissions. With respect to transposition modes, we stick to Perkins & Neumayer (2007) and assume that EU fiscal transfers generally lower the costs of complying with EU law. Thus, relative to net EU-payers, we expect *primary* transposition to become cheaper for net EU recipients and hypothesize accordingly:

H7 *The more fiscal transfers a member state receives from the EU, the higher the ratio of primary transposition.*

4 Data structure

4.1 Data source and classification of policy areas

Information for our *dependent variable (DV)* stems from the European Commission's online database CELEX Sector 7. It has been extrapolated and processed by Brooke Luetgert and Lars Maeder according to König et al. (2005). The whole DV dataset contains all of the 2225 adopted EU directives between 1979 and 2003 together with the notices of all 15 EU member states to the Commission on their respective transposition instrument(s). For this paper, we restrict our period of investigation to directives adopted between the signature of the Single European Act (SEA) in 1986 to the latest year available, 2002 respectively. This yields 17*15*5=1275 cases for our three-dimensional cross-country, cross-sector time series analysis.

Defining the policy areas for which we expect variations on cross-sector implementation quotas mainly requires solving a practical data problem:

In order to investigate the effects of political-economic characteristics on *primary* transposition patterns from a sector perspective, we need to match the policy area classifications of our dependent and independent variables. This requires fitting the EU policy areas defined in *Appendix C* of the CELEX Sector 7 database manual with the economic sector division of the OECD STAN Indicators 2002. Table 4 in the appendix demonstrates in detail how this amounts to our final classification of *six* policy domains. We thereby

tried to match the sector contents of the various data sources to a maximum degree but at the same time to prevent overlaps in classes as far as possible[9]. For our empirical analysis, we further had to ensure that our classification scheme comprises a minimum number of observations of our dependent variable per sector. This is why we leave aside some of the smaller but frequently cited sectors such as construction or education.

Thus, turning away from technical drawbacks, our resulting sector division contains *five* of the major policy areas of a national economy. Value added shares add up to more than 95%. The aggregated sector classes still allow for the anticipated variations in sector size and *primary* transposition ratios as will be demonstrated in our descriptive analysis below. For the ease of comparison we further made our selection of policy areas correspond to the empirical literature on EU policy-making as far as possible. Half of our policy areas also appear in Alesina et al.'s (2005) classification scheme. Beyond this, further adjustment of the two classifications for future research is easily possible as both categorizations are based on the CELEX Appendix C manual.

4.2 Dependent variable

As pointed out earlier, we strive to explain the government's *choice* of transposition instrument(s) in our empirical analysis. To do so, we have categorized the various national transposition devices into *primary* and *secondary* legislation. Now, we empirically map the government's transposition decision by taking the *actual* ratios of *primary* to *total* transposition notifications per member state i, sector j and year t as indicator for our DV $COLI_{ij,t}$ *(= choice of legal instrument(s) in member state i and year t for directives touching upon sector j).* Table 5 in the appendix illustrates the construction of our DV in detail. Underlying $COLI_{ij,t}$, is a *directive-based* measure $COLI_{r,ijt}$ which contains information on transposition notifications by member state i within sector j in period t for each directive r. The aggregation of this directive-based measure to our sector-devised DV $COLI_{ij,t}$ proceeds in two steps:

First, we collect information from CELEX Sector 7 for each directive r on all transposition instruments reported by country i within sector j and year t. Based on this information we then create the directive-based ratios of *primary* to total transpositions referring to $COLI_{r,ijt}$ in Table 5. Next, we code a dummy variable $COLI\_d_{r,ijt}$ indicating for each directive r if $COLI_{r,ijt}$

[9]Only in the case of classes five and six the manufacture of coke, refined petroleum products and nuclear fuel could not be further separated.

> 0, i.e. whether the transposition record of a particular directive r *includes* at least one *primary* transposition instrument. Then, in the second step, we aggregate (by taking the mean) the dummy counts of $COLI\_d_{r,ijt}$ for all directives r within a given sector j of country i and year t to a single sector-based *primary* to total transposition ratio, that is our DV $COLI_{ij,t}$. Given, for example, the Commission has passed four directives in 1995 concerning the transport sector in member state i. For directives 1 and 2, member state i reported *only secondary* transposition instruments in 1995 or later. For directive 3, member state i reported six instruments in 1995 or later out of which two were *primary* and four *secondary*. For directive 4, no transposition instruments at all have been reported by member state i. Then, for the transport sector in member state i in 1995, this would yield a *primary* transposition ratio of 1/3 or 0.33 $(= 0 + 0 + 1(+missing)/\,[3(+missing)])$ for our DV $COLI_{ij,t}$.

Our DV measure contains three peculiarities regarding interpretation:

First, to be precise, *the numerater of our DV* $COLI_{ij,t}$ empirically refers to the *number of a member state's transposition notifications* (in a given policy area and a given year) which *include* at least *one primary* legislative transposition instrument, i.e. notifications which involve at least *one* majority decision in parliament. The aggregation of a directive-based transposition measure via our dummy variable $COLI\_d$ becomes necessary as member states may report various transposition instruments for a single EU directive. Simply adding up the transposition instruments reported by member state i in a given sector j and year t would accordingly neglect that some of these instruments may refer to the same EU directive.

Second, by construction, a value of 1 for $COLI_{ij,t}$ may refer to a transposition ratio of 1/1 but also to a ratio of, for instance, 35/35. A value of zero can accordingly mean two things for $COLI_{ij,t}$. For example, a ratio of 0 for Belgium implies 0 *primary* out of 30 notified transposition instruments in 1994 in the agriculture sector, whereas in 1987 in the transport sector a ratio of zero for Belgium means 0 *primary* out of 0 notifications. In order to distinguish between these two cases, we code ratios of 0 *primary* out of 0 notifications as missing values of $COLI_{ij,t}$. Thus, missing values on our DV may result for two reasons: either if no directive has been adopted for a given year, country and sector or if directives lack any transposition notifications, implying that they have not been transposed for most cases[10]. Therefore, by construction, we actually cannot separate cases missing due to transposition inactivity by a member state from cases where nothing had to be transposed

[10]We cannot account for cases in which the member state has actually transposed but "forgotten" to notify transposition.

in the first place. However, for Finland, Austria and Sweden information on $COLI_{ij,t}$ for the years before their accessions on January 1st 1995 is clearly lacking out of the second reason. For the paper at hand, this imprecision on interpreting missing observations appears acceptable as the overall number of missing observations on our DV still remains manageable (about 300 out of 1275 observations).

Third, with respect to timing, note that t refers to the *year* in which a directive has been officially drawn up by the EU Commission. This implies that all transposition notifications referring to a particular directive are assigned to the year in which this directive has been officially drawn up in Brussels. This kind of temporal matching seems adequate for our theoretical set-up assuming that the government decides on transposition as well as the adequate transposition instrument(s) immediately after it has received a directive from Brussels. A given *year* t thus captures the governmental and economic constellations at that point in time which we assume crucial for the government's transposition *decisions*. Regarding time, let us further emphasize that $COLI_{ij,t}$ incorporates only, and *only* those reported transposition measures which have been notified *after* the adoption date of a particular directive. Practically, one finds notifications of transposition instruments dating back until the early 20th century. Again, this time restriction for reported transposition measures suits our theoretical set-up, as we seek to explain the government's transposition reactions *after* it has received a directive from Brussels.

The figures below accordingly display our DV $COLI_{ij,t}$ from three different perspectives: pooled mean *primary* transposition ratios per member state and per sector, *primary* transposition records per member state or sector over time and *primary* transposition ratios by country, sector and year. All graphical illustrations immediately reveal differences in *primary* transposition ratios along the three dimensions of our dataset, i.e. across countries i, sectors j and time t respectively. Complementing the graphs below, Tables 8, 9 and 10 in the appendix demonstrate detailed summary statistics for $COLI_{ij,t}$.

From an overall view on *primary* transposition ratios in the EU in figures 2 and 3, we see that mean *primary* transposition ratios are generally rather small and only differ slightly across time when averaged across countries and sectors. However, once we compare *primary* transposition ratios across sectors and time averaged across member states we get a different impression in figure 5: cross-sector differences become clear both, in absolute values and over time. Apparently, *primary* transposition ratios are highest for *public/ social services* and the *energy/ environment* sector. In addition to the graphs below, summary statistics reveal overall *means* of .25 and .41 for

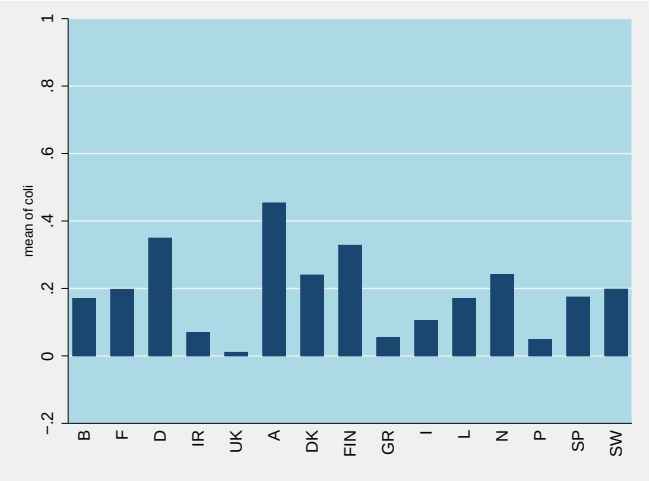

Figure 2: Primary transposition ratios per member state, averaged across year and policy areas

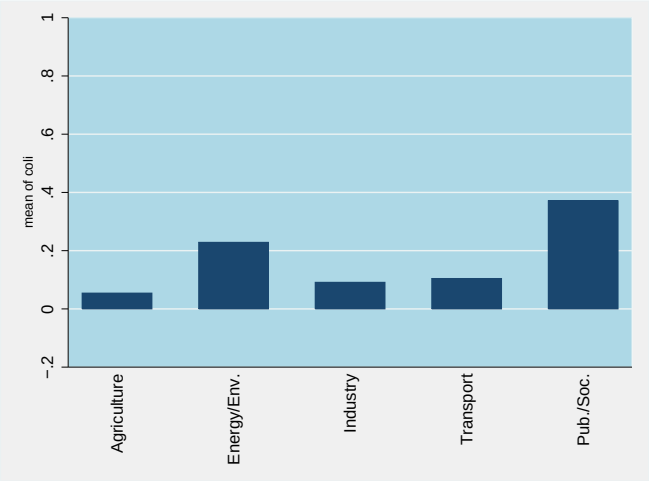

Figure 3: Primary transposition ratios per policy area, averaged across years and member states

Figure 4: Primary transposition ratios per member state and year, averaged across policy areas

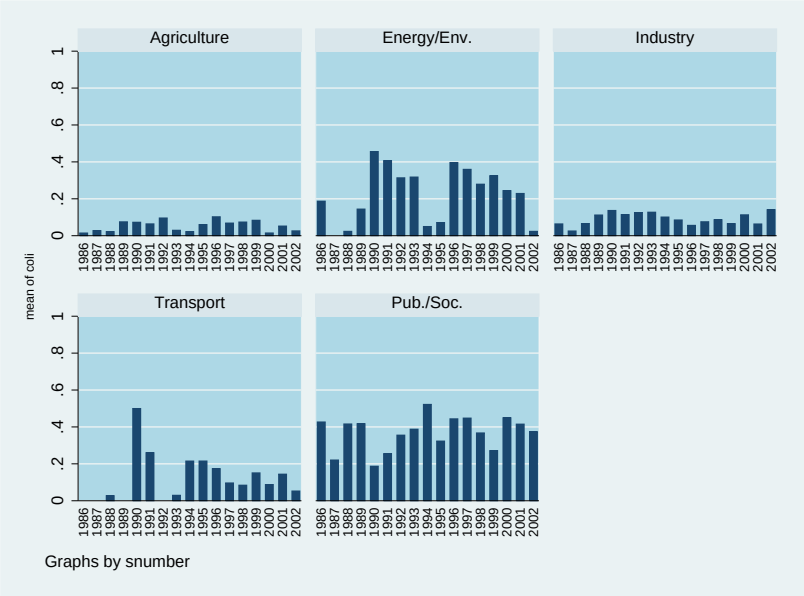

Figure 5: Primary transposition ratios per policy area and year, averaged across member states

Figure 6: Primary transposition ratios per policy area and year for Portugal (P), Spain (SP) and Sweden (SW)

primary transposition ratios in the *energy/environment* sector and *public/ social services*.

Further, take a look at the third kind of figures grasping the full spectrum of variation in our DV from a dynamic cross-country cross-sector view. Regarding *agriculture* and *transport* as frequently cited policy areas (see e.g. figures 10 and 8), *primary* transposition ratios are strikingly high in Germany (D) (mean ratios of .22 and .25 respectively) compared to the other member states. Except Austria (A) reveals an even higher *mean primary* transposition ratio for *agriculture* (.27). With regard to transport, four of the five Scandinavian countries show equally high or even higher *primary* transposition ratios over time resulting in a mean *primary* transposition ratio of e.g. 0.31 for Finland (FIN). This may hint at the proposed effect of national sector importance on *primary* transposition ratios according to H 3. Both, Austria and the Scandinavian countries, generally have a high stake in these two sectors of their national economies. Value added shares (vash) for both of these sectors are among the highest across EU-15 countries whereas for Germany's economy these sectors seem to play a subordinate role (see Table 7 for details on vash).

As said before, for directives touching upon *energy/ environment* issues *primary* transposition rates are generally high. Belgium (B), Germany (D),

Figure 7: Primary transposition ratios per policy area and year for Italy (I), Luxembourg (L) and The Netherlands (N)

Figure 8: Primary transposition ratios per policy area and year for France (F), Germany (D) and United Kingdom (UK)

Figure 9: Primary transposition ratios per policy area and year for Denmark (DK), Finland (FIN) and Greece (GR)

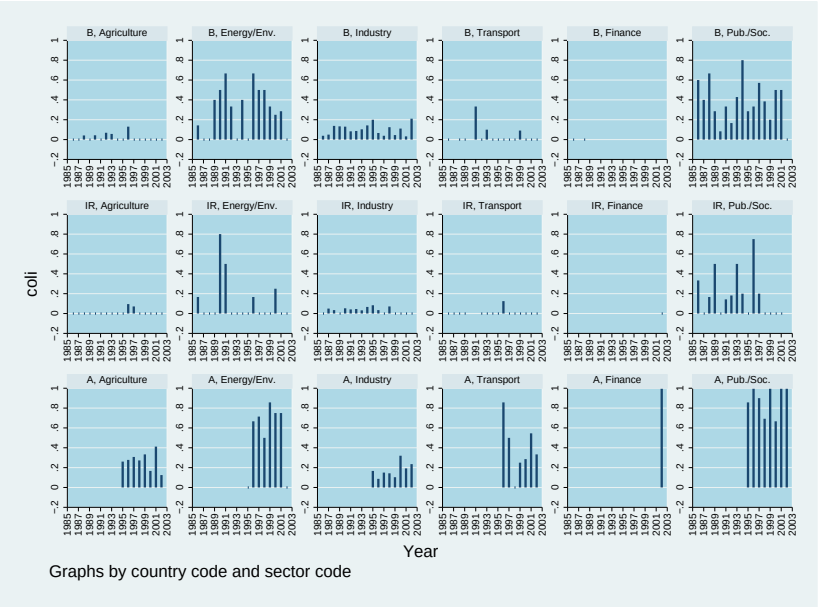

Figure 10: Primary transposition ratios per policy area and year for Belgium (B), Ireland (IR) and Austria (A)

France (F) and Denmark (DK) stand out of our country sample with similarly high *mean* values of .29, .40, .26 and .37. With respect to our theoretical suspicions, relatively high *primary* transposition ratios for the *energy/ environment* sector may seem surprising as value added shares are generally quite low in all national economies. Our regression analysis will have to reveal whether a high number of technical obligations for implementing directives in this policy area inserts a causal effect on the government's preference to transpose via parliament or whether the particularly strong influence of lobby groups in this sector may make the government to preferentially opt for *primary* transposition instruments. Regarding *primary* transposition dynamics, figures 8, 10 and 9 also show differences in timing for this policy area: whereas B and D reveal peak *primary* transposition ratios for most years after 1995, F and particularly DK reach peak values for the early 90s. Following H 4, different policy cycles in B, D, F and DK as well as different government constellations may be accountable.

4.3 Independent variables

4.3.1 Sector characteristics

According to the literature on sector diversification (see e. g. Imbs (2003)), we straightforwardly take value added shares (*vash*) as indicator for *sector size*. Assuming that a larger sector size indicates greater economic and thus political importance of a sector we expect a positive effect on *primary* transposition according to H3. Looking at Table 7 in the appendix, cross-country and cross-sector variations in sector sizes and sector developments over time become apparent at first sight: Generally speaking, the three most important sectors of all economies are the aggregate financial and public and social services as well as total manufacturing industries. Out of these, *finance* has taken the lead in all member states except for *public and social services* in Denmark, Spain and Sweden and *total manufacturing industries* in Finland and Ireland. Following these are *transport services (including storage)* with relatively high shares in Sweden (5.7% in 1994), Denmark (5.6% in 2002) and Finland (7% in 2002). Although trends seem rather similar for these aggregate sectors across EU members, levels differ markedly and confirm the structural changes from industrial to service societies taking place in the member states over the last two decades. Regarding the smaller sectors of EU economies, health and social work as well as public administration services and construction amount to noticeable shares across members differing however in growth rates and absolute levels. Besides these, transport and storage industries play an important role in the Scandinavian countries (Denmark,

group/ sector characteristics	small group size	large group size
high interest specificity	agriculture, transport, energy/ environment	(finance) [12]
low interest specificity	–	public and social services, industry

Table 1: Sector classification according to Olson's (1965) group theory

Sweden and Finland) and Greece. The energy/ environment sector generally seems to play a minor role regarding the size of value added shares as an indicator for sector importance. Shares remain relatively constant between 2% and 4% across member states. According to Imbs (2003), employment shares (empsh) are frequently applied as alternative measure for sector size. We will thus replace *vash* by *empsh* in some of our model specifications. As for *vash*, data for *empsh* stems from the OECD STAN indicators 2002.

In the lack of data on the number of lobby groups active in a particular sector per country, we account for the potential national influence of lobby groups across sectors of the national economies by adding a dummy variable *lobby* to our model specification. In Table 1 below we follow Olson's (1965) group theory to distinguish sectors with a generally higher potential for lobbying activities from sectors with a generally lower potential for lobbying activities. According to Olsen (1965), sectors with high interest specificity and smaller group size have a generally higher potential to organize as sectors in the other categories and are accordingly coded as 1. This is, of course, a very crude measure of sector-specific lobby effects. Future research should clearly aim for a more precise indicator in order to test H5.

Regarding H6, we create a dummy variable *technic* accounting for policy areas with a potentially higher number of directives referring to technical obligations for implementation. Looking at the sectors in our sample, *transport* and *energy and environment* appear to be the rather technical ones and are accordingly coded with 1. As, by construction, *technic* correlates highly with *lobby* we will only add one at a time to our basic estimation model m1 in Table 3.

4.3.2 Political-institutional country-specific features

Testing H1, we include the variable *vps* of Tsebelis' online dataset supposing that more veto players may hinder the government to choose *primary* legislative transposition devices. The number of veto player variable thereby entails the number of coalition parties, but goes beyond it by adding systemic features hindering the legislative process.

According to H2a and H2b two types of measures assess the *strengths of national governments* in our empirical analysis. The first class of indicators tries to capture the position of a government within the respective executive-legislative relationship. Specifically, *govcontrol* indicates a government's agenda-control in parliamentary (legislative) decision-making. Data stems from Döring (1995). Note for the interpretation of our estimation results that higher scores on *govcontrol* refer to less control of the parliamentary agenda by the government. Second, we turn to coalition governments in more detail and take the fracionalisation index *fraccab* from the Cusack/ Engelhardt file collection (2002) as indicator for the degree of fractionalisation within a government. The more coalition parties, i.e. the more fractionalised and weaker a government, the generally less legislative output according to Kreppel (1997)'s analysis and H2b. Due to their contextual correlation we either add *vps* or *fraccab* to our model specification, but not both at the same time.

Following Döring (2004), H4 considers *policy cycles* to play a role for the government's transposition decision. In order to broadly test the effect of policy cycles we include a dummy variable *election* for years in which a parliamentary election takes place in a specific country. Data stems from the variable *wahldatu* in the Cusack/Engelhardt file collection (2002).

4.3.3 EU membership benefits

Assessing the economic benefits stemming from EU membership in proposition H7, we add a variable *neteureceipts*. It measures the yearly amount of fiscal transfers a country is receiving from Brussels minus its budgetary contributions to the EU. Thus, in line with Perkins & Neumayer (2007) we opt for *net* EU transfers rather than for the sum of mere EU transfers, supposing that it is the fact of being a 'net EU recipient' or a 'net EU payer' that makes a difference for a country's transposition rationale. Data was collected from the respective German statistical yearbooks published by DeStatis.

4.3.4 Control variables

Besides our main explanatory variables testing H1-H7, we include control variables to our basic model specification accounting for additional systemic, macroeconomic and EU-level influences.

On top of the veto player variable, we insert *personal* to our model in order to control for system inherent features fostering the level of parliamentary fragmentation. More precisely *personal*, indicates the influence of the personal vote in a voting system according to Hallerberg (2004). It is

an index ranging from 0.2 for The Netherlands to 7.6 for Finland. Hallerberg (2004) argues that the more personalized a voting system is, the greater its parliamentary fragmentation. We thus expect a positive relationship between voting systems with a high influence of the personal vote and *primary* transposition ratios as in more fragmented parliaments effective opposition in plenary would probably become more difficult.

We additionally include logged *gdppcr_ln* in real terms in order to account for the relative wealth of a country. *gdppcr_ln* controls for the alternative hypothesis that administrations of wealthier countries are more developed and more effective and thus able to generally transpose more.

Finally, alternatively to our two measures of sector size *vash* and *empsh*, we add labour costs per employee, *labemp*, to assess a sector's national economic importance. Data stems from the OECD STAN Indicators 2002.

4.4 Estimation model and method

Linking theory to practice, we opt for a generalized linear regression model (GLM) and the quasi-maximum likelihood estimator (QMLE) suggested by Papke and Wooldridge (1996). We find this particular model specification and estimation method adequate for our data structure, especially for dealing with our *bounded fractional dependent variable COLI*. The standard way of handling this kind of dependent variable would be a log-odds transformation of the dependent variable: $\log(y/(1-y))$. However, clearly, this approach does not allow for the dependent variable to be equal to zero or one without further data adjustments. Since our dataset contains many observations on the extremes and especially on zero, Papke and Wooldridge's GLM and QML estimation method seems to be preferable (see Papke & Wooldridge (1996)).

Additional properties of our sample such as its *unbalancedness* including a *large number of missing values of* our dependent variable as well as its *time-series structure* turned out to be less problematic when taking a closer look at the data. In particular, selection bias does not seem to be a real problem as only 22 of the 157 missing observations of our dependent variable are due to non-notification of transposition instruments[11]. All other missing observations indicate that there have been no directives adopted in Brussels needing to be transposed by a member state in a particular sector. As mentioned above, this is the case for Austria, Finland and Sweden before 1995, i.e. their official admission date. The 22 non-notifications further seem to be distributed randomly among member states and sectors as descriptive

[11] In our dataset non-notification of transposition instruments is indicated by anzcoyr2 == 0.

statistics have shown. Thus, in the case of random selection we do not need to fear selection bias.

Regarding the time-series structure of our data, we have further tested for a dynamic model specification and estimated standard Arellano & Bond (1991) dynamic panel regressions. These have revealed that the dynamic effects in our data are not pronounced as the lagged dependent variable turned out insignificant in all model specifications for the one-step Arellano/Bond (1991) estimations. This confirms our model choice, viz. the aforementioned three-dimensional generalized linear model (GLM) which Papke & Wooldridge (1996) formulate as the regression:

$$E(y_{ijt}|x_{ijt}, z_{jt}) = G(x_{ijt}\beta, z_{jt}\gamma) \tag{1}$$

where $j = 1, \ldots, 15$ is the index denoting the member states, $i = 1, \ldots, 5$ that for economic sectors and $t = 1, \ldots, 16$, indicates years, as described above in detail. x_{ijt} is the vector of our set of independent sector specific variables[12] varying across countries and sectors as well as time in the case of *vash, empsh* and *labemp.* z_{jt} stands for our set of politico-institutional and macroeconomic independent variables[13] differing only across countries and time except for the time-invariant dummy variables, i.e. *election.* β and γ indicate the two corresponding sets of parameters to be estimated. Following Papke & Wooldridge (1996), $G(\cdot)$ is a known function satisfying $0 < G(\delta) < 1$ for all $\delta \in \Re$ ensuring that the predicted values of y_{ijt} lies within $[0, 1]$. Importantly, equation (1) is well defined even if y_{ijt} takes on 0 or 1 with positive probability. Usually, $G(\cdot)$ is decided to be a cumulative distribution function (cdf), which most frequently is either the logistic function or the standard normal cdf. In our case we opt for the probit function as the logistic one led to numerical convergence problems for some of our model specifications. The error term entailed by (1) is defined implicitly by $E(\varepsilon_{ijt}|x_{ijt}, z_{it}) = 0$. Further, we add a constant β_0 into our regression as well a linear time trend to control for the non-stationarity of our macroeconomic independent variables.

The coefficients β and γ in (1) can consistently be estimated via non-linear least squares (NLS). However, according to Papke & Wooldridge (1996), heteroscedasticity is likely to be present since $Var(y_{ijt}|x_{ijt}, z_{jt})$ is unlikely to be constant when $y_{ijt} \in [0, 1]$ and thus NLS is not efficient. Papke & Wooldridge (1996) therefore suggest quasi-maximum likelihood estimation by maximizing the Bernoulli log-likelihood function, given by

[12]Respectively: $\{vash, empsh, labemp, technic, lobby\}$.

[13]Respectively: $\{fraccab, govcontrol, election, vps, personal, gdppcr\_\ln, neteureceipts\}$.

$$l_{ijt}(\beta,\gamma) \equiv y_{ijt}\log[G(x_{ijt}\beta, z_{jt}\gamma)] + (1-y_{ijt})\log[1-G(x_{ijt}\beta, z_{jt}\gamma)]. \quad (2)$$

The resulting *Bernoulli-QMLEs* $\hat{\beta}$ and $\hat{\gamma}$ are accordingly given by

$$\max_{\beta,\gamma} \sum_{j=1}^{15}\sum_{i=1}^{5}\sum_{t=1}^{16} l_{ijt}(\beta,\gamma) \quad (3)$$

This estimator is consistent and asymptotically normal *regardless* of the distribution of y_{ijt} conditional on x_{ijt}, z_{it} . Further, it is efficient, see Papke & Wooldridge (1996). In order to additionally account for heteroscedasticity of unknown form, we use robust standard errors in all model specifications presented in Tables 2 and 3.

All our estimations were carried out in STATA 8.2 applying the *xtgee*-command for generalized linear panel estimation. We specify a binomial distribution for our dependent variable, a probit link function and an independent within-group correlation structure.

5 Empirical results

Having discussed our particular GLM model and the appropriate QLME-estimator following Papke & Wooldridge (1996), let us turn to our estimation results. Tables 6 and 10 in the appendix give an overview on variable definitions, data sources and summary statistics which might be useful for following our interpretations. Tables 2 and 3 below displays the estimated effects of our diverse political-economic variables on *primary* to total transposition ratios across countries and sectors. Table 2 includes *netEUreceipts* to the modelspecifications displayed in 3. We chose to display two separate tables as the number of observations changes remarkably in models m1n to m6n, i.e. when *netEUreceipts* is added to models m1 to m6. Models m1 and m1n are the respective basic models. Due to their strong correlation, we subsequently add the sector characteristics *vash*, *empsh*, *lobby* and *technic*. In addition to the models presented in Tables 2 and 3, we provide further estimation results in our STATA do-files which are available from the author upon request. These contain specifications including the number of veto players *vps*, a dummy for bicameral systems as well as legal system dummies. As these variables have turned out insignificant (except for the German and Common law dummy which is not surprising according to the earlier provided descriptive statistics for the UK, Ireland, Austria and Germany), we leave them aside in our final model specifications presented in 2 and 3.

coli	m1n	m2n	m3n	m4n	m5n	m6n
fraccab	0.396	0.403	0.379	0.389	0.444 *	0.462 **
	(0.247)	(0.246)	(0.252)	(0.251)	(0.247)	(0.236)
govcontrol	0.094 **	0.092 **	0.100 **	0.100 **	0.096 **	0.100 ***
	(0.044)	(0.045)	(0.044)	(0.043)	(0.040)	(0.037)
election	-0.103 *	-0.104 *	-0.097	-0.098	-0.094	-0.098
	(0.060)	(0.060)	(0.062)	(0.062)	(0.061)	(0.061)
neteureceipts	-2.55e-05 *	-2.55e-05 *	-2.70e-05 **	-2.72e-05 **	-2.77e-05 ***	-2.68e-05 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
empsh	0 .008 *		-0.003		-0.042 ***	
	(0.004)		(0.006)		(0.010)	
labemp	0.005 ***	0.005 ***	0.008 ***	0.008 ***	0.004 ***	0.005 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
personal	-0.032	-0.032	-0.035	-0.035	-0.042	-0.043
	(0.030)	(0.030)	(0.031)	(0.031)	(0.030)	(0.029)
gdppcrln	0.746 ***	0.740 ***	0.813 ***	0.813 ***	0.659 ***	0.622 ***
	(0.255)	(0.256)	(0.257)	(0.255)	(0.238)	(0.235)
year	0.015	0.014	0.014	0.013	0.016	0.016
	(0.014)	(0.014)	(0.014)	(0.014)	(0.012)	(0.011)
vash		0.006		-0.008		-0.048 ***
		(0.005)		(0.006)		(0.011)
technic			-0.567 **	-0.694 ***		
			(0.254)	(0.249)		
lobby					-1.587 ***	-1.508 ***
					(0.354)	(0.333)
cons	-28.475	-27.982	-26.281	-25.448	-28.961	-29.090
	(28.567)	(28.853)	(27.908)	(27.864)	(23.959)	(23.368)
N of obs	665	666	665	666	665	666
N of groups (country * sector)	71	72	71	71	71	72
Obs per group (avg)	9.4	9.3	9.4	9.3	9.4	9.3
WALD chi2	80.573	77.464	78.516	80.401	117.100	125.283

Table 2: Generalized estimation equation results: including net EU receipts

coli	m1	m2	m3	m4	m5	m6
fraccab	0.465 *	0.483 *	0.436 *	0.454 *	0.504 **	0.545 **
	(0.260)	(0.262)	(0.259)	(0.258)	(0.253)	(0.232)
govcontrol	0.089 **	0.085 **	0.095 **	0.095 **	0.091 **	0.095 ***
	(0.042)	(0.043)	(0.041)	(0.041)	(0.039)	(0.034)
election	-0.111 **	-0.111 **	-0.108 **	-0.108 **	-0.107 *	-0.108 *
	(0.054)	(0.053)	(0.055)	(0.055)	(0.055)	(0.056)
empsh	0.008 *		-0.002		-0.043 ***	
	(0.004)		(0.006)		(0.012)	
labemp	0.005 ***	0.005 ***	0.008 ***	0.008 ***	0.004 ***	0.005 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
personal	-0.056 *	-0.056 *	-0.059 *	-0.059 *	-0.068 **	-0.069 **
	(0.030)	(0.030)	(0.030)	(0.030)	(0.029)	(0.029)
gdppcrln	0.898 ***	0.880 ***	0.975 ***	0.969 ***	0.827 ***	0.773 ***
	(0.244)	(0.246)	(0.249)	(0.245)	(0.223)	(0.214)
year	0.014	0.014	0.013	0.012	0.015	0.015
	(0.014)	(0.014)	(0.014)	(0.014)	(0.012)	(0.011)
vash		0.005		-0.009		-0.053 ***
		(0.004)		(0.006)		(0.011)
technic			-0.570 **	-0.724 ***		
			(0.270)	(0.259)		
lobby					-1.610 ***	-1.617 ***
					(0.395)	(0.329)
cons	-26.100	-25.690	-23.263	-22.182	-26.567	-26.680
	(28.919)	(29.170)	(27.997)	(27.763)	(24.012)	(23.098)
N of obs	740	742	740	742	740	742
N of groups (country * sector)	72	72	72	72	72	72
Obs per group (avg)	10.3	10.3	10.3	10.3	10.3	10.3
WALD chi2	76.230	74.492	81.120	87.030	96.478	108.475

Table 3: Generalized estimation equation results: excluding net EU receipts; *Notes: Displayed are estimated coefficients; asterisks (***, **, *) indicate significance at the usual 1%, 5% and 10% levels, respectively. Both STATA do-files and the dataset are available from the author upon request. We use robust standard errors and include a linear time trend throughout.*

Looking at the estimated coefficients of models m1n-m6n and m1-m6 we find the estimated coefficient signs and sizes to be quite robust across specifications. Only the estimated coefficients of value added and employment shares (*vash* and *empsh*) remarkably change their signs and significance levels across specifications. Apparently, controlling for certain sector specific effects, such as group size and interest specificity in the case of *lobby* or *technicality* of a sector in the case of *technic* affects the estimated coefficient sizes and signs of our sector size measures. Further, some of our political-institutional variables, i.e. *fraccab* and *personal* as well as *election* become statistically insignificant when adding *neteureceipts*. This may be due to a non-random reduction of our sample size. Overall, however, the model fit seems reasonably high looking at the sizes of the *chi2*-tests against the null hypothesis of all coefficients being zero.

Feeling reasonably satisfied with the validity of our statistical analysis, we proceed to interpreting the estimated coefficient signs and significance levels corresponding to our theoretical propositions H1-H7. First, regarding *political-institutional effects* on *primary* to total transposition ratios, we find parliamentary agenda-control by the government, *govcontrol*, to insert the contra-intuitive negative significant effect proposed by Döring (1995) and Henning (1995) and formulated in H2a (remember that higher scores on *govcontrol* indicate *less* governmental control of the parliamentary agenda). Governments with a strong position in the national executive-legislative relationship apparently seem to opt less for transposition via parliament than their weaker counterparts. Further, against our proposition H2b, the effect of cabinet fractionalisation *fraccab* on *primary* transposition ratio turned out positive and significant (except for the models in Table 2). This is, however, well in line with our result on H2a and further strengthens Döring and Henning's (1995) argument. Further surprising on first sight, but in line with these results is a negative effect of a high score on the personal voting index *personal*. Apparently, the more fragmented the national parliament the less the government chooses *primary* legislation for transposition.

Above this, policy cycles seem to play a statistically significant role in most specifications. Corresponding to H4, we find a negative effect of *election* on *primary* transposition ratios. In years in which a parliamentary election takes place, member states apparently transpose less via *primary* legislation.

It remains to mention with respect to the anticipated political-institutional effects that H1 cannot be approved by our empirical investigation. The estimated coefficient of the number of veto-players *vps* turned out with the anticipated negative sign but insignificant and therefore has been left aside in the final model specifications displayed in Tables 2 and 3. STATA-do-files containing these results are, however, available from the author upon request.

With respect to *economic sector characteristics*, we find value added shares *vash* and employment shares *empsh* to assert the anticipated positive and, in the case of *empsh*, significant effect on *primary* transposition ratios according to H3. However, when controlling for technical sectors, i.e. energy/ environment and transport, or sectors with a high potential for lobbying activities, i.e. agriculture, energy/ environment and transport, both of the estimated coefficients change their signs and become highly significant (see models 2 and 3). The estimated negative and significant coefficients of *technic* and *lobby* further support hypotheses H5 and H6. However, our measures for testing H5 and H6 are quite crude making these variables and their interaction with *vash* and *empsh* difficult to interpret. Data quality thus needs to be improved before finally judging hypotheses H3, H5 and H6. Interesting to note is a positive and strongly significant effect of our alternative measure of sector importance, i.e. sectoral labour compensation *labemp*.

Regarding EU-membership benefits, we notice *primary* transposition ratios to decrease the more net transfers a member state receives from the EU. Apparently, net EU receivers prefer transposition via *secondary* legislative devices, are less prone against transposition delays (see König et al. (2005)) and infringement procedures (see Perkins & Neumayer (2007)).

Finally, a country's general wealth approxied by *gdppcr_ln* seems to positively affect the ratio of *primary* to total transpositions.

6 Conclusions

Our study on the member state government's transposition decision reveals that all three hypothesized factors matter for explaining a government's transposition rationale: politico-institutional constellations, economic sector characteristics as well as EU membership benefits. Specifically, we find that *primary* to total transposition ratios *decrease* with the strength of a government, both relative to opposition in parliament and within the government coalition. Governments further seem to opt less for *primary* transposition devices towards the end of an election period and if they are a 'net-recipient' of EU transfers. Wealthier countries, however, generally transpose more via parliament. Regarding policy areas, we find that governments prefer *secondary* transposition for directives touching upon technical sectors or sectors with a high lobbying potential. For directives touching upon sectors with high labour compensations per employee governments, however, seem to preferably choose *primary* transposition devices. Our main sector characteristic, i.e. sector importance, came out playing a significant role for *primary* transposition ratios in most model specifications though the direction of the

effect still needs to be further specified.

These results are innovative since, so far, the transposition and implementation literature lacks a cross-sector view on national transposition performances – though cross-sector analyses on the issue of EU law implementation are common in practitioners' publications as the EU Commission's *Internal Market Scoreboard*. Looking at the results of our first attempt of a cross-sector panel investigation on the government's choice of transposition instrument, strongly suggests paying more attention to sector-specific effects in this research area. Proceeding with single-sector (cross-) national studies one risks selection bias and having a tunnel vision in explaining member states' transposition patterns.

With respect to theory, constructing a full theoretical model explaining first a government's general willingness to transpose EU directives and second a government's choice of transposition instrument remains an exercise left to future research. Although desirable, this was beyond the scope of our empirically focussed study. However, our empirical results may serve to motivate efforts in enhancing theory on these issues. Hopefully, we assist this endeavour by providing a framework structuring the government's decision path and sketching its utility function when it comes to implementing a directive received from Brussels. In this regard, it might further be worthwhile thinking of possible interaction effects between political-institutional and economic sector characteristics, such as government strength and sector saliency.

Concluding, we would like to remark on possible improvements of our data quality and applied econometrics. Besides our effort in presenting a sound projection of the transposition reality, our empirical analysis is limited by the need to collect the data within a reasonable time frame. Future studies should clearly aim at constructing a comprehensive index for 'government strength' according to an elaborated, clear-cut theoretical argument, improving measures on sector-specific lobbying potential and adding EU-level characteristics of directives such as word count, initiating institution and decision-time taken. The categorization of our dependent variable should be worked on and the 'grey-zone' between *primary* and *secondary* transposition instruments further analysed and specified. With respect to our estimations, future analysis could specify the error variance structure directly as an alternative to our use of robust standard errors. This would be a means for modelling theoretically plausible group effects inherent to our data structure. Nevertheless, we find our results useful in that they may open the door to a new political-economic, cross-sector dimension in studies on EU law transposition and implementation by the member states, both from a theoretical and an empirical perspective.

A Tables

joint class		CELEX		STAN		ISIC	
number	name	number	name	number	name	number	description
1	agriculture	3, 4	agriculture and fisheries	1	agriculture, hunting, forestry and fishing	01 to 05	
2	energy/ environment	12,15	energy/environment, consumer and health protection	4 + 18	electricity, gas and water, energy producing activities	10 to 12, 23, 40, 41	mining and quarring, manufacture of coke, refined petroleum products and nuclear fuel; electricity, gas, steam and hot water supply; collection, purification and distribution of water
3	industry	13, 2, 17, 11	industrial policy and internal market	3 + 19	total manufacturing, wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	15 to 37, 23, 50 to 52	manufacturing of food and beverages, etc.; manufacture of coke, refined petroleum products and nuclear fuel; wholesale and retail trade; repairs
4	transport	7	transport policy	7	transport and storage	60 to 63	land, water and air transport
5	public and social services	5, 6	freedom of movement of workers and social policy; right to establishment and freedom to provide services	12 + 13 + 14 + 15	community, social and personal services (- private households) = total services - financial services - transport services	75 to 99, 80,85	public administration and defence, compulsory social security, education, health and social work activities

Table 4: Classification of policy areas

Table 5: Construction of dependent variable (DV)

Variable name	Definition
Directive-based data coded by country, sector and year:	
$x_{r,ijt}(anzprim_{r,ijt})$	the number of *primary* transposition instruments that member state i declared in sector j for directive r at any time after the adoption date t[16] of the directive r (= quasi-continuous number).
$y_{r,ijt}(anzcoyr_{r,ijt})$	the total number of (i.e. *primary* as well as *secondary*) transposition instruments that member state i declared in sector j for directive r at any time after the adoption date t of the directive r (= quasi-continuous number).
$COLI_{r,ijt}$	$(x_{r,ijt}/y_{r,ijt})$ ratio of *primary* to total transposition instruments that member state i declared in sector j for each directive r at any time after the adoption date t of a directive r (= percentage ratio bounded between 0 and 1).
$COLI\_d_{r,ijt}$	$COLI_{r,ijt}$ coded as dummy variable: $COLI\_d_{r,ijt} = \begin{cases} 1 \quad \text{if} \quad COLI_{r,ijt} > 0 \\ 0 \qquad otherwise. \end{cases}$
Sector-based data coded by country and year:	
$COLI_{ijt}$	$\frac{1}{R}\sum_{r=1}^{R} COLI\_d_{r,ijt}$ for the number of directives $r = \{1, \ldots, R\}$ in a given sector j, member state i and year t (= percentage ratio bounded between 0 and 1).

independent variable	hypothesis	expected effects	definition	data source
politico-institutional variables				
vps	H1	-	Number of veto players	Tsebelis, G. online dataset: http://www.polisci.ucla.edu/tsebelis/
govcontrol	H2a	-	Government control of plenary agenda index ranging from 1 "The government alone determines the plenary agenda" to 7 "The Chamber itself determines the agenda"	Döring (1995 a: Table 7.1)
fraccabv	H2b	-	Index of fractionalization of cabinet, ranging from 0 to 0.78.	Cusack/ Engelhardt (2002): The PGL File Collection
election	H4	-	Dummy variable where 1 indicates a parliamentary election in this year for a specific member state; data on election dates stems from the variable wahldatu	Cusack/ Engelhardt (2002): The PGL File Collection
economic sector characteristics				
vash	H3	+	Value added shares relative to the total economy; each industry's value added as a percentage of value added for the total economy	OECD STAN Indicators 2004
empsh	H3	+	Employment shares in the total economy; shows each industry's employment as a percentage of employment for the total economy.	OECD STAN Indicators 2004
technic	H5	-	Dummy for technical sectors where 1 indicates a technical sector, i.e. transport and energy/ environment	Own data
lobby	H6	-	Dummy for sectors with high potential for lobbying activities according to Olson's group theory, i.e. agriculture, energy/ environment and transport.	Own data
EU-membership benefits				
neteureceipts	H7	+	Netrec-Netpay: Net EU Revenues - Net EU Payments; total billions German Mark (DM)	DeStatis: Statistisches Jahrbuch 2002
control variables				
personal		+	Personal vote index indicating the relative incentives of a given system for the personal vote ranging from 0.2 to 7.6 for 18 European states.	Döring/ Hallerberg (2004: Table 1.2)
labemp		+	Labour compensation per employee for the total economy; ratio of labour compensation for a particular industry to the number engaged divided by the ratio of labour compensation for the total economy to the number of persons engaged for the total economy	OECD STAN Indicators 2004
bicam		+	Dummy variable for bicameral vs. unicameral legislatures	CIA: The World Factbook 2005
gdppcr_ln		+	GDP per capita in real terms	Eurostat

Table 6: Operationalisation and data sources for independent variables

4 most important sectors	vash per year in %			change in %	*additional sectors*	vash per year in %			change in %
	1986	1994	2000			1986	1994	2000	
Italy					Italy				
Finance	19.52	22.7	26.02	6.5	Agriculture	4.4	3.2	2.6	-1.8
Industry	42.35	38.81	37.03	-5.32	Transport	5.64	5.66	5.09	-0.55
Public and social services	17.15	18.72	18.55	1.4	Enerty/ Enviroment	1.8	2.32	2.16	0.36
Luxembourg					Luxembourg				
Finance	32.2	38.9	44.4	12.2	Agriculture	1.87	1	0.68	-1.19
Public and social services	15.78	16.3	14.7	-1.08	Transport	..	..	..	..
Industry	36.53	27.08	23.03	-13.5	Enerty/ Enviroment	3.24	2.67	2.12	-1.12
The Netherlands					The Netherlands				
Finance	18.3	22.5	26.4	8.1	Agriculture	4.38	3.59	2.77	-1.61
Public and social services	24.3	23.4	22.08	-2.22	Transport	4.8	4.98	4.75	-0.05
Industry	33.4	32.9	31.24	-2.16	Enerty/ Enviroment	2.22	1.93	1.46	-0.76
Portugal					Portugal				
Public and social services	17.4	23.4	..	6	Agriculture	9.4	5.2	..	-4.2
Industry	43.25	37.87	..	-5.38	Transport	5.6	3.7	..	-1.9
Finance	13.5	17.8	..	4.3	Enerty/ Enviroment	2.93	3.32	..	0.39
Sweden					Sweden				
Public and social services	..	24.5	24.39	-0.11	Transport	5.8	5.7	5.7	-0.1
Finance	19.2	23.7	24.6	5.4	Agriculture	3.99	2.7	1.9	-2.09
Industry	35.4	32.8	34.2	-1.2	Enerty/ Enviroment	3.2	3.3	2.4	-0.8
UK					UK				
Finance	20.1	24.2	27.2	7.1	Agriculture	2.08	1.68	1.02	-1.06
Public and social services	15.28	21.77	21.61	6.33	Enerty/ Enviroment	2.93	7.26	6.3	3.37
Industry	36.7	34.7	32.34	-4.36	Transport	5.2	5	4.9	-0.3
Austria					Austria				
Finance	16.6	20	23.6	7	Agriculture	3.8	2.7	2.3	-1.5
Industry	22.7	19.4	20.5	-2.2	..	..	..	..	..
Public and social services	21	22	19.8	-1.2	..	..	..	..	..
Belgium					Belgium				
Finance	21.4	25.5	27.9	6.5	..	..	..	..	..
Public and social services	24.1	24	24.6	0.5	..	..	..	..	..
Industry	22.5	19.6	1.7	-3.8	..	..	..	..	..
Germany					Germany				
Finance	22	26.9	..	4.9	..	..	..	..	..
Industry	30.6	23.1	..	-7.5	..	..	..	..	..
Public and social services	19.8	21.4	..	1.6	..	..	..	..	..
Denmark					Denmark				
Public and social services	24.5	26.7	26.6	2.1	Transport	4.9	5.4	5.6	0.7
Finance	20.7	23.4	24.3	3.6	Agriculture	5	3.3	2.3	-2.7
Industry	18.5	16.8	15.6	-2.9	..	..	..	..	..
Spain					Spain				
Public and social services	17.8	20.6	20.4	2.6	Agriculture	5.8	4.7	3.2	-2.6
Finance	17.6	18.5	20	2.4	Transport and storage	5.7	5.5	..	-0.2
Industry	23.8	18.3	16.8	-7	..	..	..	..	..
Finland					Finland				
Industry	24.1	23.6	23.5	-0.6	Transport and storage	6.7	7.5	7	0.3
Public and social services	21.1	23.3	21.6	0.5	Agriculture	6.7	5.2	3.5	-3.2
Finance	15.7	19.1	21.4	5.7	..	..	..	..	..
France					France				
Finance	24.6	28.2	30.5	5.9	Health and social work	5.6	6.5	6.8	1.2
Public and social services	21.4	23	23.7	2.3	Construction	5.7	5.5	4.9	-0.8
Industry	32.1	18.3	17.5	-14.6	..	..	..	..	..
Greece					Greece				
Finance	15.2	20.6	21.2	6	..	11.5	10.4	7	-4.5
Public and social services	16.9	19.5	21.1	4.2	..	..	..	..	..
Industry	17.8	14	11.8	-6	..	..	..	..	..
Ireland					Ireland				
Industry	26.1	27.1	32.9	6.8	Agriculture	10	8.5	3.5	-6.5
Finance	16.8	16.4	20.2	3.4	..	..	..	..	..
Community	19.2	21.2	16.2	-3	..	..	..	..	..

Table 7: Value added shares of six selected industries across EU-15 member states 1986-2002, *Source: OECD STAN Indicators 2002*

country	variable	obs	mean	std. dev.	min	max
B	coli	83	.1701218	.2080417	0	.8
F	coli	84	.1971875	.2240417	0	.8
D	coli	84	.3489636	.295219	0	1
IR	coli	82	.0690498	.1575556	0	.8
UK	coli	84	.0102603	.0520107	0	.375
A	coli	39	.4533133	.3235506	0	1
DK	coli	83	.2395225	.249219	0	.8333333
FIN	coli	39	.3278127	.264762	0	1
GR	coli	84	.0537253	.1228025	0	.5
I	coli	83	.1048001	.1780646	0	1
L	coli	83	.1699333	.2198178	0	.8333333
N	coli	83	.2405997	.2492182	0	1
P	coli	85	.0483779	.1309674	0	1
SP	coli	84	.1742519	.205014	0	.6666667
SW	coli	38	.1976922	.2574886	0	1

Table 8: Summary statistics for DV per country

sector	variable	obs	mean	std. dev.	min	max
agriculture	coli	228	.0542153	.0980554	0	.4444444
energy/ environment	coli	226	.2285837	.2616996	0	1
industry	coli	228	.0912993	.0923686	0	.4545455
transport	coli	211	.1044216	.2046249	0	1
pub./ soc. services	coli	225	.3712976	.2915643	0	1

Table 9: Summary statistics for DV per sector

country	sector	variable	obs	mean	std. dev.	min	max
Belgium (B):	agriculture	coli	17	.0200993	.0369066	0	.1304348
	energy/ environment	coli	17	.2928571	.2355369	0	.6666667
	industry	coli	17	.1021314	.0544342	.0322581	.2105263
	transport	coli	15	.0349495	.089064	0	.3333333
	pub./ soc. services	coli	17	.3846693	.2102513	0	.8
France (F):	agriculture	coli	17	.1054094	.1067905	0	.3
	energy/ environment	coli	17	.2610644	.2674043	0	.8
	industry	coli	17	.1193076	.0854179	0	.2857143
	transport	coli	16	.0340278	.0875331	0	.3333333
	pub./ soc. services	coli	17	.4565307	.2125638	0	.75
Germany (D):	agriculture	coli	17	.2168065	.1226996	0	.3793103
	energy/ environment	coli	17	.395098	.3053188	0	.8
	industry	coli	17	.1925789	.1475079	0	.4545455
	transport	coli	16	.2510417	.3302899	0	1
	pub./ soc. services	coli	17	.6835327	.2109072	.3333333	1
Ireland (IR):	agriculture	coli	17	.0098039	.0279937	0	.0952381
	energy/ environment	coli	17	.1107843	.2235246	0	.8
	industry	coli	17	.0301415	.0290875	0	.0833333
	transport	coli	15	.0083333	.0322749	0	.125
	pub./ soc. services	coli	16	.1859172	.2282997	0	.75
United Kingdom (UK):	agriculture	coli	17	.0021008	.008662	0	.0357143
	energy/ environment	coli	17	.0465686	.1101238	0	.375
	industry	coli	17	.0020284	.0083633	0	.0344828
	transport	coli	16	0	0	0	0
	pub./ soc. services	coli	17	0	0	0	0
Austria (A):	agriculture	coli	8	.269479	.0905388	.125	.4117647
	energy/ environment	coli	8	.5297619	.3420863	0	.8571429
	industry	coli	8	.1746913	.0751742	.0869565	.32
	transport	coli	7	.3959493	.2708097	0	.8571429
	pub./ soc. services	coli	8	.8895147	.1406809	.6666667	1
Denmark (DK):	agriculture	coli	17	.0358904	.0534059	0	.1428571
	energy/ environment	coli	16	.3708085	.2636488	0	.75
	industry	coli	17	.1511424	.0923578	0	.3809524
	transport	coli	16	.1666667	.2441159	0	.75
	pub./ soc. services	coli	17	.4765416	.2265119	0	.8333333
Finland (FIN):	agriculture	coli	8	.1416425	.126647	.0588235	.4444444
	energy/ environment	coli	8	.4108631	.2982072	0	.8571429
	industry	coli	8	.1769223	.0867624	.0666667	.3076923
	transport	coli	8	.3059562	.2399388	0	.6666667
	pub./ soc. services	coli	7	.6430891	.2078016	.4285714	1
Greece (GR):	agriculture	coli	17	.003268	.0134742	0	.0555556
	energy/ environment	coli	17	.0656863	.1385027	0	.5
	industry	coli	17	.0332066	.0432659	0	.125
	transport	coli	16	.0208333	.0833333	0	.3333333
	pub./ soc. services	coli	17	.1436975	.1936381	0	.5
Italy (I):	agriculture	coli	17	.0374134	.0813442	0	.2857143
	energy/ environment	coli	17	.220028	.3088604	0	1
	industry	coli	17	.0484386	.0470755	0	.1428571
	transport	coli	15	.0622222	.120097	0	.3333333
	pub./ soc. services	coli	17	.1508891	.1392356	0	.4285714
Luxembourg (L):	agriculture	coli	17	.0065962	.0188584	0	.0645161
	energy/ environment	coli	17	.2172969	.2305993	0	.7142857
	industry	coli	17	.0772761	.062011	0	.2121212
	transport	coli	15	.085	.1455081	0	.4
	pub./ soc. services	coli	17	.453505	.1992053	0	.8333333
The Netherlands (N):	agriculture	coli	17	.0751759	.1019544	0	.3333333
	energy/ environment	coli	17	.2547152	.2384973	0	.75
	industry	coli	17	.1246486	.0808863	0	.3181818
	transport	coli	15	.2494805	.2767577	0	1
	pub./ soc. services	coli	17	.5000233	.249641	0	1
Portugal (P):	agriculture	coli	17	.003268	.0134742	0	.0555556
	energy/ environment	coli	17	.0182073	.0515693	0	.1666667
	industry	coli	17	.0417493	.0457846	0	.1818182
	transport	coli	17	.0735294	.2462961	0	1
	pub./soc. services	coli	17	.1051354	.1310752	0	.4444444
Spain (SP):	agriculture	coli	17	.0178223	.0231801	0	.0625
	energy/ environment	coli	17	.2550654	.1925189	0	.5714286
	industry	coli	17	.0794373	.0656393	0	.2272727
	transport	coli	16	.0473958	.0812927	0	.25
	pub./ soc. services	coli	17	.4640766	.1486564	.2	.6666667
Sweden (SW):	agriculture	coli	8	0	0	0	0
	energy/ environment	coli	7	.2666667	.2099383	0	.5
	industry	coli	8	.1209824	.1314862	0	.4285714
	transport	coli	8	.0805556	.1262329	0	.3333333
	pub./ soc. services	coli	7	.5761905	.2740061	.2	1

Table 10: Summary statistics for DV per country and sector

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