ECONOMIC INTEGRATION AND CORRUPTION:

the Corrupt Soul of the European Union[*]

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Abstract

We study the link between corruption and economic integration. Integration is modeled by a common regulation for public procurement. We show that integration resolves a terms-of-trade-driven prisoner's dilemma and will always take place in the absence of corruption. Corruption may destroy the incentives for integration. If the propensities to corruption are too different, the more honest country, which benefits less from integration, will not be willing to join the union. This difference in corruption propensities can be offset by a difference in efficiency. We also show that integration has the positive effect of reducing corruption.

Keywords: Corruption, procurement, economic integration

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1 Introduction

On the 28th of September 2000, the Danes rejected the Euro in a referendum (53% No, 47% Yes). Given Denmark's monetary history of an 18-year ¯xed-rate currency policy (tied to the Deutsch Mark and, since 1999, to the Euro), it is hard to believe that the Danes feared the Euro. As Detnews.com on October 1st 2000 wrote: \........the real question was not the money, it was the criterion and speed of European Integration". Indeed, a national survey held after the referendum revealed that 37% of the no-voters favor less integration while 23% have a lack of con¯dence in the European institutions; 33% fear for the Danish identity (c.f. Bering (2000)).

Denmark's behavior shows that popular support for integration is not only a function of economic calculations. Denmark has bene¯tted from being a member of the European Union (EU). This is even believed by the Danish people themselves.[1] Popular support for integration also depends on the interplay between national and supranational politics. The Danish value their political system, they have a well-functioning welfare state (social expenditure in 1995 exceeded 34% of the GDP) where corruption is basically inexistent. Therefore, the opportunity cost of the Danish to transfer sovereignty to Europe is high.

This paper formalizes the idea that economic integration is more attractive for countries with internal problems and little trust in their national government than for well-functioning countries. We will use corruption to model these internal problems. Corruption is highly correlated with other \bad country" variables, such as minimal accountability of political parties, a badly functioning juridical system etc. Moreover, recent empirical studies con¯rm the negative e®ects of corruption, especially on growth: corruption reduces the amount of private investment (Mauro (1995)), the quality of public investment (Tanzi and Davoodi (1997)) and the investment in human

[1] In (Eurobarameter) public opinion surveys of the European Commision the Danish consistently belong to those populations that give the most positive response to the question whether or not they believe their country to have bene¯tted from being a member of the EU on average. In the survey which was collected at the same time as the referendum on the Euro was held (Eurobarometer 54), 65% of the Danish believe to have bene¯tted from EU membership while 23% believe not to have bene¯tted. Only Greece, Ireland, Luxemburg and Portugal gave a more positive response to the bene¯t question. The percentage of people who believe their country bene¯ts from the EU is 72% in Greece, 86% in Ireland, 70% in Luxembourg and 69% in Portugal. 14% in Greece, 6% in Ireland, 16% in Luxembourg and 14% in Portugal believe that their country does not bene¯t from EU membership.

capital (Mauro (1998)).

For the sake of tractability we will study a two country model and only allow for corruption in public procurement.[2] Public procurement is an important part of a country's economic activities (between 10% ¡ 20% of GDP in most industrial countries)[3] and is a sector very prone to corruption: usually the sums of money involved are very big and the government is often the only buyer; asymmetric information makes favoritism di±cult to detect.

In our model, the citizens delegate to the government agent the responsibility to implement public procurement contracts. The commodity or public project can either be bought from a local ¯rm at a ¯xed price (sole-source procurement) or it can be purchased through international competitive bidding. On the one hand, the competitive bidding decreases the expected purchase cost. On the other hand, it involves a ¯xed organizational cost that is private information of the government agent. Competitive bidding is optimal, if its organizational cost is low compared to the size of the project. Fixed price purchase is otherwise optimal.[4] However, our government agent is self-interested and therefore corruptible. She might misrepresent these organizational costs and favor a local producer in exchange for a bribe if this maximizes her revenue. The citizens, i.e. the voters, decide the discretion of the government; they use the political system to control the government through the determination of a threshold (the size of the public project above which the government is obliged to organize international competitive bidding). The voters are both taxpayers and shareholders of the domestic ¯rm. They are thus concerned both with taxes and with pro¯t of the domestic ¯rm. They pay the same taxes but di®er in the amount of shares of the domestic ¯rm they own. In this context, the median voter approach is valid and his choice is implemented. Under this set of assumptions we show, that the higher a country's propensity for corruption, the lower the discretion granted to government agents. This is intuitive, since the

[2] Rose-Ackerman's (1975) seminal paper on corruption also concentrated on public procurement.

[3] The cost of public projects administrated by the European Union is around 720 000 millons of Euros every year, which corresponds to 11.5% of the GDP of the member states in 1994 and is equivalent to the economy of Spain, Danemark and Belgium together.

[4] Various factors may justify choosing sole source procurement instead of competitive procurement. The administrative cost is lower, sole source procurement is faster and there might be positive strategic e®ects, e.g. repeated sole source procurement might reduce moral hazard problems due to the threat of awarding future projects to foreign ¯rms. For more details see Marshall et al. (1994) who moreover provide empirical evidence on the use of sole source procurement in the private sector.

cost of foregoing the private information of the government is lower for a more corrupt country.

If countries decide to form a union, they adopt a common legislation on procurement. In the present context, the median voters of the countries negotiate a common threshold above which each domestic government is obliged to organize a competitive bidding. This approach mimics the existing legislation on public procurement in the European Union: the member countries are obliged to use an international contest if the size of the public project exceeds the following limits: 200.000 Euros for service contracts and 5 million Euros for public works (for more details see the Green Book of Public Contracting in the European Union).

In our model popular support for the union depends on both economic calculations and the interplay between national and supranational politics. On the one hand, the economic union helps to escape a terms of trade-driven prisoner's dilemma. As in the standard literature, domestic governments only care about the pro¯t of the national ¯rms. This leads to protectionism imposing a negative externality on the other countries. An economic union internalizes this externality. On the other hand, the use of supranational policies to avoid protectionism also reduces the discretion of domestic governments; the common threshold is lower than all individual thresholds. Lower discretion leaves less room for corruption, hence is valued more by countries that have little trust in their national government.

The above argument summarizes the main idea of the paper and also applies to more general setups. Allowing for corruption in the private sector or political corruption would lead to similar results. The union will favor competition (e.g. by limiting tari®s or by reducing government subsidies to national ¯rms), thereby reducing the stake for corruption. This is all that is required for our model to work, and is a feature not restricted to public procurement. Therefore, our simpli¯cation to consider only public procurement does not seem very restrictive.

If there is no corruption, countries will always form a union in our model, since the union helps to solve the terms of trade driven prisoner's dilemma. However, a di®erence in corruption propensities can hinder union formation. The more corrupt country is more eager to establish a low common level of discretion, since it is less costly for this country to ignore the private information of its government and its gains from trade are larger. In general, the new threshold of discretion is more binding for the less corrupt country, which is now obliged to use competitive procurement much more often than without the union. Therefore, the less corrupt country will not join the union if the di®erence in corruption propensities between the two countries is too big. However, this di®erence in corruption can be o®set by a di®erence in e±ciency, if the less corrupt country has a technological advantage and therefore bene¯ts more from trade.

From this theoretical model we obtain two testable hypotheses: (i) the more corrupt country will be more in favor of economic integration since it bene¯ts more from integration. (ii) the willingness to accept new members into the union is decreasing in the level of corruption of the potential new member. We test these hypotheses for the European Union using panel data. We use the corruption perception index of Transparency International and the standard Eurobarometers as our data-source for support of integration. The empirical results seem to be consistent with the model; but we have to bare in mind that we only have few subjective data points available. Our empirical results are therefore only indicative and future empirical research is called for. Our model also suggests that corruption is higher in countries where domestic ¯rms are sheltered from foreign competition. This hypothesis has already been tested empirically and has been con¯rmed by Ades and Di Tella (1999).

Our model on corruption is related to the literature on favoritism in public procurement and the literature on the formation of economic unions and preferential trade agreements. The ¯rst paper explaining favoritism in public procurement is McAfee and McMillan (1989) using the Myerson (1981) theory of optimal auctions. This theory shows that discrimination in favor of the more disadvantaged bidders can promote competition. McAfee and McMillan (1989) argue that if the domestic ¯rms are less e±cient, this theory directly leads to domestic favoritism. Branco (1994) objected to this argument since it would imply some cases of favoritism towards less e±cient foreign ¯rms which are not observed empirically. In his model a utilitarian government cares not only about the procurement price but also about the pro¯t of the domestic ¯rm. The resulting optimal procurement mechanism leads to favoritism towards domestic ¯rms. La®ont and Tirole

(1991) relate favoritism with collusion. In their model the public project is characterized by its quality and price. The principal delegates the control of quality to the agent. The agent can collude with one firm and misrepresent his information about the quality in favor of this firm. If we assume that collusion with the domestic firm is most likely, this implies favoritism towards the domestic firm. Using a similar model, Vagstad (1995) introduces a superprincipal (e.g. an economic union) into a context where governments care about domestic profits, as in Branco (1994). As in our model, the role of the superprincipal is to reduce favoritism in order to internalize the trade externalities. The optimal policy of the superprincipal is to reduce the discretion of the domestic government by lowering the weight of the private information of governments in the procurement process. The contribution of our paper to this literature is to endogenize the existence of this superprincipal.

Our paper shares with the literature on the formation of an economic union that the union helps to escape a terms-of-trade-driven prisoner's dilemma.[5] This paper shows that technological differences on their own cannot destroy the incentives to form a union. However, differences in corruption propensities may do so. To our knowledge, this negative aspect of corruption has not been analyzed before. But, if a union is formed among potentially corrupt countries, the union does not only increase trade but also helps to reduce corruption, although the reasons why the union is formed are purely economical in our model. In contrast, some papers (e.g. Grossman and Helpman (1995), Krishna (1997), Maggi and Rodriguez-Clare (1998)) also consider political motives for the formation of preferential trade agreements. In those models the political pressure is exerted by special interest groups that lobby for protection, i.e. try to avoid the country opening up to trade. In those models trade agreements provide a way for the government to credibly distance itself from the lobbies. This reduces the payments from the lobbies to the government, which is similar to our model in which the union reduces bribe payments. Although we use the term corruption, our model captures rent-seeking activities in general.

The remainder of the paper is organized as follows: In section 2 the general model is described

[5] For a nice literature review on preferential trade agreements see Bhagwati et al. (1998).

and solved for the case of homogeneous firms, i.e. both countries have access to the same production technology. This section isolates the effects on the desirability of an economic union due to different propensities for corruption. Section 3 discusses the case of heterogeneous firms and shows how a difference in honesty can be compensated with a difference in efficiency making the formation of a union more feasible. Section 4 tests our theory for the European Union. Section 5 concludes. All proofs are relegated to a technical appendix.

2 The model

We set up a simple two-country model to study the implication of corruption for the desirability of an economic union. The countries are called A and B. There is one single firm in each country. The citizens (voters) delegate to their domestic government the responsibility to implement procurement contracts, which have to be fully financed by collecting taxes t from domestic residents. The size of the procurement project $q \in \left[\underline{q}; \overline{q}\right]$ is determined by a random draw from the distribution function $g(q)$. Firm $i \in (A; B)$'s total cost of contracting the project is $c_i(q) = c_i q$, where $c_i \in \{\underline{c}; \overline{c}\}$ is the marginal cost. Firm i has low marginal cost $\underline{c}$ with probability α_i and high marginal cost $\overline{c}$ with probability $1 - \alpha_i$. The price of the project depends on its cost and the procurement process used by the government. The government can either buy the project at the high-cost price $\overline{c}q$ from the domestic firm or sell the project on the international market by organizing a second-price auction. Competitive bidding decreases the expected purchase cost. However, it involves a fixed organizational cost k; which is a random variable. This organizational cost captures administrative costs, costs for publicity and costly delays. The exact organizational cost depends on the type of the project: for example, delays are more costly, the more urgent is the project. As in Auriol (1998) and Marshall et al. (1994) we assume that the exact cost of organizing the auction is private information of the domestic government and will be low ($\underline{k}$) with probability δ and high ($\overline{k}$) with probability $1 - \delta$. We normalize $\underline{q} = 0$ and $\underline{k} = 0$; we refer to $\overline{k} = k$. This normalization is without loss of generality.

The government agent has to choose which procurement process to use. By assumption it is always cheaper to organize an auction for low organizational costs $\underline{k}$.[6] For high organizational costs $\overline{k}$ it might be cheaper to simply award the project to the domestic ¯rm. The latter depends on the size of the project. For very large projects competitive bidding is always cheapest. Voters partially control the government's decision through the determination of a threshold q^{*} on the size of the public project beyond which competition on the international market is required. In other words, for $q > q^{*}$, the government is obliged to organize the second-price auction. For $q < q^{*}$, the government can choose between sole-source or competitive procurement. In the latter case, an honest government agent will make optimal use of her private information and organizes an auction if and only if the organizational cost is low.[7] However, government o±cials are self-interested and might not be honest if corruption maximizes their expected utility. If the organizational cost is low $\underline{k}$; a corrupt o±cial makes a take-it-or-leave-it bribe demand to the domestic ¯rm. If no bribe is paid, the project goes to the second-price auction. If the bribe is paid, the corrupt o±cial awards the project to the domestic ¯rm pretending that the cost of organizing the auction is high $\overline{k}$. In this case capture occurs.[8] If a bribe demand is made, the government o±cial pays an idiosyncratic cost β which is uniformly distributed in each country with: $\beta \sim [0; \overline{\beta}_i]$,where $\overline{\beta}_i$ is country speci¯c and a measure of social honesty of country i.

Voters use the political system to limit the discretion of the government. They are both taxpayers and shareholders of the domestic ¯rm. They are thus concerned both with the taxes t needed to ¯nance the cost of the procurement project and the pro¯ts Π of the domestic ¯rm. They pay the same tax, but di®er in the proportion μ of shares of the domestic ¯rm they own.

[6] To simplify the presentation we assume that it is cheaper to organize the auction whenever $\underline{k}$ even for the smallest project, i.e. $\alpha^2[\overline{c} - \underline{c}]\underline{q} \geq \underline{k}$. Notice that this condition is trivially satis¯ed given the above normalizations.

[7] We refer to this decision as optimal because it maximizes the utility of the median voter as will be seen later. This decision does not coincide with the decision a utilitarian social planner would implement nor does it coincide with cost minimization. In other words, we assume that there is no con°ict of interests between an honest government agent and the median voter.

[8] We do not consider the problem of distortion, i.e. the possibility that the government agent pretends that organizational costs are low when they are high. Allowing for distortion would not a®ect the qualitative results of the paper. Under distortion the government agent makes a bribe demand to the domestic ¯rm claiming low organizational costs and threatens to organize an auction if the bribe is not paid. We do not think that this story is convincing, since ex post organizational costs are observable once the auction has been organized. A high cost auction would clearly indicate the attempt of distortion and could be punished. Without the possibility to carry out the threat to organize the auction, the government agent does not have any bargaining power and cannot extract any bribe from the domestic ¯rm.

The possession of shares can be interpreted more widely as a measure of how much a citizen is directly affected by the profits of the domestic firm. For example, some citizens are employers or employees of the domestic firm while others are politicians or government agents. We assume that voters are uniformly distributed on a line segment: $\theta_i \sim U[0;1]$. The location $\theta_i \in [0;1]$ of voters determines the number of shares of the domestic firm they own. The distribution of shares is linear and increases with voter's location, i.e. it is highest for $\theta_i = 1$. Hence, there will be some location $\bar{\theta}$ such that all voters located at $\theta_i < \bar{\theta}$ have no shares and all voters $\theta_i > \bar{\theta}$ have $\frac{2(\theta_i - \bar{\theta})}{(1-\bar{\theta})^2}$ shares. We assume that $\bar{\theta} < \frac{1}{2}$. This implies that more than half of the population cares about the profits of the domestic firm. Under these assumptions the median voter approach is valid. The median voter is located at $\theta_i = \frac{1}{2} > \bar{\theta}$ and therefore owns $\mu_M = \frac{2(\frac{1}{2} - \bar{\theta})}{(1-\bar{\theta})^2}$ shares of the firm. Since $\mu_M < 1$ always, the median voter cares more about the total cost of the project than the profits of the domestic firm.

In the absence of an economic union, the median voter of each county chooses the level of discretion of his own country by maximizing $-t + \mu_M \Pi^D$, where Π^D is the expected profit of the domestic firm in its home country. If an economic union is formed, the median voters of the two countries negotiate a common level of discretion for both countries. Any common level of discretion that is efficient and individually rational will be considered as a feasible outcome of the negotiations.

We now summarize the time sequence of the model: In step 1, the discretion of the government q^* is determined through the political process. In step 2, nature chooses the characteristics of the government agents, of the procurement project and of the firms in each country. The size of the procurement project q_i becomes public information. β_i and k_i are private information of each government and c_i is the private information of each firm. In step 3 (procurement stage), the government has to procure the public project according to the contract law (level of discretion) that was determined in step 1. Figure 1 summarizes the timing of the model. Only step 1 (the political process) depends on whether or not a union is formed.

Introduce Figure 1: Timing of the Model around here

The model will be solved by backward induction. First we have to determine the probability of corruption, second the expected cost of the public project and, finally, the discretion chosen in a union and in the absence of a union.

The probability of corruption

Corruption can only arise when the size of the project is below the level of discretion q^* granted to the government and the cost of organizing the auction is low. For the sake of simplicity we assume that the government has all the bargaining power and none of the surplus of corruption is lost.[9] The corrupt official knows that a high cost firm $\bar{c}$ cannot pay any positive bribe. He will therefore ask for a bribe which makes the low cost firm $\underline{c}$ indifferent between rejecting or accepting the bribe. The ex-ante (expected) profit of the low cost firm $\underline{c}$ if the bribe demand is rejected equals its expected profit in the second price auction, namely $(1 - \alpha_j)[\bar{c} - \underline{c}]q$. If the firm were directly awarded the project (without any bribe demand) it would make profits $[\bar{c} - \underline{c}]q$. The difference between the latter and the expected profit in the auction determines the bribe demand which is $\alpha_j[\bar{c} - \underline{c}]q$. Given this bribe demand, a government official will be honest (dishonest) if the surplus from corruption is smaller (bigger) than his personal cost of being corrupt β. We assume that the government has to incur this personal cost if a bribe demand is made, independently of its being accepted. Hence for $\forall\beta < \alpha_i\alpha_j[\bar{c} - \underline{c}]q$, corruption occurs, while for $\forall\beta > \alpha_i\alpha_j[\bar{c} - \underline{c}]q$ the government official will be honest.[10] Using this cut-off point and the fact that the distribution of β is uniform, we can characterize the probability of corruption $\gamma_i(q)$ in country i as:

$$\gamma_i(q) = \frac{\alpha_i\alpha_j[\bar{c} - \underline{c}]q}{\bar{\beta}_i}$$

Notice that $\gamma_i(q)$ is increasing in the size of the public project q and decreasing in the social level of honesty $\bar{\beta}_i$ of country i. We can also compute the aggregate probability of corruption Γ_i given

[9] This assumption is not essential for the results of the model.

[10] We do not consider the possibility that the salary of the government agent depends on the total cost of the public project, i.e. that the government agent can appropriate some of the cost savings implied by the optimal procurement decision. Allowing for this possibility would obviously reduce the level of corruption but it does not modify the qualitative results of the paper.

a level of discretion q_i^*

$$\Gamma_i = \int_0^{q_i^*} \gamma_i(q)g(q)dq = \int_0^{q_i^*} \frac{\alpha_i\alpha_j[\bar{c} - \underline{c}]q}{\beta_i} g(q)dq$$

The higher the discretion threshold of the government q_i^*, the higher the aggregate probability of corruption. A higher threshold level of discretion provides more opportunities for corruption. Moreover, the stake for collusion is larger. Trivially, if both countries have a common discretion threshold, the country with a higher level of social honesty β_i will be less corrupt.

The procurement stage

We now characterize the expected cost of the procurement project. We distinguish two cases:

1. If $q > q^*$, the government has to organize a second price auction. The expected cost of the project is:

   $$(\bar{c} - \alpha_i\alpha_j[\bar{c} - \underline{c}])\, q + (1 - \delta)k:$$

   The result of the auction will be a marginal price of $\underline{c}$ if and only if both firms have low cost. Therefore the expected price of the auction is $(\bar{c} - \alpha_i\alpha_j[\bar{c} - \underline{c}])\, q$. Additionally, the government will have to pay the cost of organizing the auction.

2. If $q < q^*$, the government can choose whether to use competitive or sole source procurement leading to the following expected cost of the project:

   $$(1 - \delta)\bar{c}q + \delta\left[\gamma_i(q)\bar{c} + (1 - \gamma_i(q))\,(\bar{c} - \alpha_i\alpha_j[\bar{c} - \underline{c}])\right] q:$$

   If organizing the auction is very costly, the project will be granted to the domestic firm at a price of $\bar{c}q$. Otherwise, there is scope for corruption. With probability $(1 - \gamma_i)$, the official is honest and the expected price of the auction is $(\bar{c} - \alpha_i\alpha_j[\bar{c} - \underline{c}])\, q$: With probability γ_i, the official is corrupt and always asks for a bribe resulting in a high price $\bar{c}q$. If the domestic firm is low cost, the bribe will be paid; otherwise the project is auctioned on the international market resulting in a high price since the domestic firm is high cost.

Therefore, the expected cost, t, of the procurement stage is:

$$
\begin{aligned}
t &= \int_0^{q_i^*} \delta[\gamma(q)\bar{c} + (1-\gamma(q))(\bar{c} - \alpha_i\alpha_j[\bar{c} - \underline{c}])]qg(q)dq \\
&\quad + \int_0^{q_i^*} (1-\delta)\bar{c}qg(q)dq + \int_{q_i^*}^{\bar{q}} [[\bar{c} - \alpha_i\alpha_j[\bar{c} - \underline{c}]]q + (1-\delta)k]\, g(q)dq \\
&= [\bar{c} - \alpha_i\alpha_j[\bar{c} - \underline{c}]]\, q_M + \int_0^{q_i^*} [1 - \delta(1-\gamma(q))]\,\alpha_i\alpha_j[\bar{c} - \underline{c}]qg(q)dq + \int_{q_i^*}^{\bar{q}} (1-\delta)kg(q)dq
\end{aligned}
$$

where q_M is the expected average size of the project.

This expression captures the main trade-off faced by the median voter when choosing the level of discretion q^*. On the one hand, a higher level of discretion increases the cost of corruption (first integral). On the other hand, it reduces the organizational costs (second integral).

We can also characterize the ex ante expected profit of firm i in country i, which we will refer to as Π_i^D, and the ex ante expected profit of firm i in country j, which we will refer to as Π_i^F.

$$
\begin{aligned}
\Pi_i^D &= \int_0^{q_i^*} [\delta\alpha_i(1-\alpha_j)[\bar{c} - \underline{c}]q]\, g(q)dq + \int_0^{q_i^*} (1-\delta)\alpha_i[\bar{c} - \underline{c}]qg(q)dq \\
&\quad + \int_{q_i^*}^{\bar{q}} \alpha_i(1-\alpha_j)[\bar{c} - \underline{c}]qg(q)dq \\
&= \alpha_i(1-\alpha_j)[\bar{c} - \underline{c}]q_M + \int_0^{q_i^*} (1-\delta)\alpha_i\alpha_j[\bar{c} - \underline{c}]qg(q)dq
\end{aligned}
$$

Π_i^D increases with the domestic level of discretion q_i^*, since the higher q_i^*, the more likely it is that the project is awarded to the domestic firm by sole-source procurement. Notice that Π_i^D is independent of the level of corruption.[11]

$$
\begin{aligned}
\Pi_i^F &= \int_0^{q_j^*} \delta\alpha_i(1-\alpha_j)[\bar{c} - \underline{c}]qg(q)dq + \int_{q_j^*}^{\bar{q}} \alpha_i(1-\alpha_j)[\bar{c} - \underline{c}]qg(q)dq \\
&= \alpha_i(1-\alpha_j)[\bar{c} - \underline{c}]q_M - \int_0^{q_j^*} (1-\delta)\alpha_i(1-\alpha_j)[\bar{c} - \underline{c}]qg(q)dq
\end{aligned}
$$

Π_i^F decreases with the foreign level of discretion q_j^* because international contests are less likely.

The choice of discretion

[11] This result is a direct consequence of our assumption that the corrupt government has all the bargaining power and therefore appropriates all the surplus from corruption. This simplifying assumption does not affect the main results of the paper.

The level of discretion is chosen given the expected costs of the procurement stage and the expected profit of the firms. We will now analyze the choice of q^* in the absence of a union and then move to the analysis in case a union is formed. For the time being, we assume that countries may differ in the social level of honesty β but have access to the same production technology, i.e. firms are homogeneous in the sense that $\alpha_i = \alpha_j = \alpha$. This simplification allows us to isolate the effects of different propensities for corruption on the desirability of an economic union. The case of heterogeneous firms will be analyzed in Section 4. Without loss of generality we assume that $\beta_A \geq \beta_B$.

2.1 Homogeneous firms without a union

In the absence of a union, each country votes for its own q^* by maximizing the utility of the median voter. The median voter, as a taxpayer, is concerned about the cost of the procurement project and also about the profits of the domestic firm, since he owns μ_M shares of the firm. Hereafter, we will write μ instead of μ_M for notational simplicity. We denote by $U_i(q_i; q_j) = -t_i(q_i) + \mu\Pi_i^D(q_i) + \mu\Pi_i^F(q_j)$ the expected utility of the median voter in country i when the level of discretion is q_i in country i and q_j in country j. In the absence of a union, the median voter has no influence on the level of discretion in the foreign country and therefore takes it as given. His maximization problem therefore reduces to:

$$\max_{q_i} -t_i + \mu\Pi_i^D.$$

The first order condition (FOC) for the median voter is:

$$\alpha^2[\bar{c} - \underline{c}]q_i^* - (1-\delta) - \left(\frac{\delta\alpha^2[\bar{c} - \underline{c}]q_i^*}{\beta} + \mu(1-\delta)\right) + (1-\delta)k\, g(q_i^*) = 0 \tag{1}$$

It is easy to see that the problem is concave ($\frac{\partial^2 U}{\partial q_i^2} < 0$). As a benchmark we will consider what happens without corruption. Corruption will disappear if $\beta \to \infty$. The optimal level of discretion without corruption q^{*NC} is just

$$q^{*NC} = \frac{k}{\alpha^2[\bar{c} - \underline{c}](1-\mu)}.$$

The level q^{*NC} is easily interpreted. $\alpha^2[\bar{c} - \underline{c}](1 - \mu)q^{*NC}$ is the expected saving for the median voter in the procurement price if an auction is organized, while k is the cost of organizing the auction. Therefore, for $q > q^{*NC}$ it is always optimal to organize the auction, while for $q < q^{*NC}$ it is optimal to use sole-source procurement when the cost of organizing the auction is high. q^{*NC} is increasing in the cost of organizing an auction. The level q^{*NC} is also increasing in the number of shares μ the median voter owns, because the profits of the domestic firm increase in the level of discretion. The level q^{*NC} is decreasing in the efficiency of firms; the better the technology (higher α), the bigger the expected benefits from organizing an auction, since it is more likely that competition will reduce the procurement price.

We now come back to the general case with corruption where $\beta < 1$. Using the implicit function theorem it can be shown that the above comparative static results are also valid for q^*_i implicitly defined in equation (1). Proposition 1 shows how corruption affects the median voter's choice of discretion.

Proposition 1 (i) The level of discretion with corruption is lower than without corruption.

(ii) The level of discretion is increasing in the social level of honesty, i.e. if $\beta_A > \beta_B$, then $q^*_A > q^*_B$.

Part (i) of Proposition 1 tells us that corruption has a shadow cost, namely the private information of the government agent is not used optimally. This idea was nicely presented by Banfield (1975):

> "[N]arrowing discretion [...] while preventing the agent from doing (corrupt) things that are slightly injurious to the principal it may at the same time prevent him from doing (non-corrupt) ones that would be very beneficial to him. If simply to prevent corruption an agent is given a narrower discretion than would be optimal if there were no corruption, whatever losses are occasioned by his having a sub-optimal breadth of discretion must be counted as costs of preventing corruption."[12]

[12] Banfield (1975), p. 590

Part (ii) of Proposition 1 holds for a similar reason: the bigger the level of social honesty, the bigger the opportunity cost to disregard the private information of the government concerning the organizational cost of the auction and therefore the higher the discretion.

Proposition 1 does not tell us how social honesty affects the aggregate probability of corruption. On the one hand, the more corrupt country ties its government's hands more firmly and thereby reduces its aggregate probability of corruption Γ_i. On the other hand a lower level of social honesty increases the aggregate probability of corruption Γ_i. Which effect dominates, depends on the exact distribution of $g(q)$. Corollary 1 shows that if $g(q)$ is uniform, a lower level of social honesty implies a higher aggregate probability of corruption.

Corollary 1 If $\bar{\beta}_A > \bar{\beta}_B$ and $g(q)$ is uniform, then $\Gamma_B > \Gamma_A$.

2.2 An economic union with homogeneous firms

If countries A and B form a union they fix a common maximum level of discretion[13] q_U^*, which is determined in bilateral negotiation. We consider any level of discretion q_U^* as a possible outcome of the bilateral negotiation if it is feasible according to the following definition.

Definition 1 q_U^* is a feasible outcome of the bilateral negotiation if it satisfies the following two conditions:

1. efficiency:

   there exists a $\sigma \in (0,1)$ such that $q_U^* \in \arg\max\{\sigma U_A(q_U, q_U) + (1-\sigma)U_B(q_U, q_U)\}$

2. individual rationality (participation constraint):

   $U_i(q_U^*, q_U^*) \geq U_i(q_i^*, q_j^*)\ \forall i, j \in \{A, B\}$

Definition 1 states that the union should be efficient and that no participant should be made worse off by joining the union. These requirements are satisfied by most bargaining schemes.

[13] This model fits the case of the European Union very well (see introduction).

Let $q_i^{**} \in \arg\max \{U_i(q; q)\}$ denote the ideal outcome of the negotiation concerning a joint level of discretion for country i. q_i^{**} is the solution of the following problem:

$$\max_q -t_i + \mu(\pi_i^D + \pi_i^F)$$

The first order condition for q_i^{**} is:

$$\alpha^2[\bar{c} - \underline{c}]q_i^{**} \quad - (1 - \delta) - \frac{\delta\alpha^2[\bar{c} - \underline{c}]q_i^{**}}{\beta} + \mu(1 - \delta) - \mu(1 - \delta)\frac{(1 - \alpha)}{\alpha} + (1 - \delta)k \; g(q_i^{**}) = 0 \tag{2}$$

Concavity is proved easily. As before, we first look at the benchmark case without corruption $(\beta \to 1)$ and its cut-off point q_i^{**NC},which can be written as

$$q^{**NC} = \frac{k}{\alpha^2[\bar{c} - \underline{c}](1 - \mu\frac{2\alpha-1}{\alpha})}:$$

Since $\frac{2\alpha-1}{\alpha} < 1$, $q^{**NC} < q^{*NC}$. When choosing a common level of discretion for both countries the median voter has some influence on the profits of the domestic firm abroad. The typical negative trade externality when countries act in isolation is now internalized.

In this section we are assuming that the only difference between countries is their social level of honesty. Hence, in the benchmark case without corruption both countries are identical and both median voters would choose the same common level of discretion q^{**NC}. Therefore, there is no conflict of interest and the union will always be formed. The next proposition states this result.

Proposition 2 (i) Without corruption $(\beta \to 1)$ a union will always be formed.

(ii) The common level of discretion in the union is q^{**NC}.

With corruption $(\beta < 1)$, there can be some conflict of interest. Lemma 1 characterizes the ideal level of discretion in a union for country i for the general case.

Lemma 1 (i) $q_i^{**} < q_i^{*}$

(ii) $q_i^{**} < q^{**NC}$

(iii) Let $\beta_A > \beta_B$. Then $q_A^{**} > q_B^{**}$: The higher the social level of honesty, the higher the ideal level of common discretion.

Since the median voter can affect the profits of the domestic firm abroad, he would choose a lower level of discretion to benefit from increased possibilities of trade (Part (i) Lemma 1). This ideal level of discretion is lower than the discretion in the absence of corruption due to the shadow cost of corruption mentioned in Proposition 1 (Part (ii) Lemma 1). The final. part of Lemma 1 shows how different levels of propensities towards corruption can cause a potential conflict of interest between countries. The more honest country would set a higher level of discretion, since it is more costly for this country to disregard the private information of its government. Given this potential conflict of interest, a union might not be formed. To understand whether a union is possible, Lemma 2 characterizes the necessary conditions for the possible outcomes of the bilateral negotiations q_U^* according to Definition 1 and Lemma 1.

Lemma 2 For $\beta_A > \beta_B$ any possible outcome q_U^* of the bilateral negotiations must satisfy the following conditions:

1. $q_B^{**} < q_U^* < q_A^{**}$
2. $q_U^* < q_B^* (< q_A^*)$

The first condition is implied by the requirement of efficiency in Definition 1. The second condition is due to the participation constraint of the less corrupt country. If $q_U^* > q_B^*$, the less corrupt country would not have any benefits from trade if a union is formed, since country B would not increase its openness towards trade. At the same time, country A would have to pay the cost of reducing its discretion.

Since $q_U^* < q_B^*$ Corollary 2 is immediate.

Corollary 2 The aggregate probability of corruption Γ_i is lower in a union than without a union in both countries and $\Gamma_A < \Gamma_B$ for $\beta_A > \beta_B$.

The union promotes competition by decreasing the level of discretion of both governments. This leaves less scope for corruption. Since the level of discretion is the same for both countries, the aggregate probability of corruption is smaller in the country with a higher level of social honesty. The promotion of trade has the positive effect of reducing corruption. This suggests that the union is more valuable for the country with a higher propensity for corruption. Proposition 3 states this result.

Proposition 3 If a union is created, the more corrupt country benefits more than the less corrupt country. Hence for $\beta_A > \beta_B$ country B benefits more than country A.

The reduction of discretion is more costly for a country that has more confidence in its government, since a lower level of discretion reduces the possibility of using the private information of the government in an efficient way. Moreover, the benefits from increased competition (trade) are larger for the more corrupt country because the reduction in discretion is larger for the less corrupt country. (Recall that $q_A^* > q_B^*$.) Since the benefits from increased trade are smaller for the less corrupt country, they might not outweigh its cost of reducing the level of discretion. In this case, the less corrupt country will not join the union. Proposition 4 characterizes the conditions when this happens.

Proposition 4 For $\beta_A > \beta_B$ there exists a $\overline{\beta}_B^* < \overline{\beta}_A$ such that $\forall \beta_B < \overline{\beta}_B^*$ no union is possible. In other words, if country B is too corrupt, country A will not agree to form a union.

The more corrupt country B is, the lower the level of discretion required for the formation of an economic union. If country B is too corrupt, country A is better off without a union: since the level of discretion in country B is already low, the benefits from trade are very small for country A while the cost of ignoring the private information of its domestic government is large. Therefore we can conclude that corruption can destroy the incentives to form a union. Nevertheless, we point out that it is not the existence of corruption as such, but rather the difference in the propensity of corruption that hinders the union formation. If both countries have the same propensity of corruption, they would be identical in all respects and the union would always be formed, since it would internalize the negative trade externality imposed by the choice of the median voters without a union. In the next section we analyze how these results change if countries also differ in another aspect, namely in the level of efficiency of their firms.

3 Heterogeneous firms

We come back to the more general model with heterogeneous firms $\alpha_A \neq \alpha_B$. We introduce the following parameterization for the cost difference with $\omega \in (\alpha; \frac{1}{\alpha})$ being a constant.[14]

$$\alpha_A = \omega\alpha \tag{3}$$

$$\alpha_B = \frac{1}{\omega}\alpha \tag{4}$$

With this parameterization $\alpha_i\alpha_j = \alpha^2$ and $\alpha_A(1-\alpha_B) = \alpha(\omega-\alpha)$ and $\alpha_B(1-\alpha_A) = \alpha\left(\frac{1}{\omega}-\alpha\right)$. If $\omega > 1$ country A is more efficient than country B.

Lemma 3 *With the parameterization (3) and (4), the difference in efficiency between country A and B does not affect their level of discretion chosen in the absence of a union.*

In other words, the cost parameterization was chosen in such a way that, without a union differences in the level of discretion, are solely caused by differences in corruption propensities. This choice was made to facilitate comparison; the parameterization allows us to disentangle the incentives for the union formation due to cost differences from the incentives due to differences in levels of social honesty. We now proceed to characterizing the ideal point for a common level of discretion of each country. Again, this ideal point $q^{**}_{\alpha_i} \in \arg\max\{U_i(q;q)\}$ is the solution to the following maximization problem.

$$\max_q \; -t_i + \mu(\pi_i^D + \pi_i^F)$$

The first order condition for $q^{**}_{\alpha_i}$ is:

$$\alpha^2[\bar{c}-\underline{c}]q_i^{**} - (1-\delta) - \frac{\delta\alpha^2[\bar{c}-\underline{c}]q_i^{**}}{\bar{\bar{\ }}_i} + \mu(1-\delta) - \mu(1-\delta)\frac{(1-\alpha_j)}{\alpha_j} + (1-\delta)k\, g(q_i^{**}) = 0 \tag{5}$$

[14] We do not consider $\omega = \alpha$ or $\omega = \frac{1}{\alpha}$ because the less efficient country will not benefit from increased competition (trade) with this parameters, i.e. no union will be possible.

It is easy to see that in the benchmark case without corruption $\beta_i \to \infty$ the ideal point is

$$q_{\alpha_i}^{**NC} = \frac{k}{\alpha^2[\bar{c} - \underline{c}](1 - \mu \frac{2\alpha_j - 1}{\alpha_j})}.$$

The lower the level of efficiency in country j, the lower the ideal point in country i. The more efficient country wants more openness towards trade: its efficiency advantage increases its probability of winning the international competition. The same intuition holds with corruption if $\beta_A = \beta_B$.

Lemma 4 In the absence of corruption ($\beta_i \to \infty; \beta_j \to \infty$) or if $\beta_A = \beta_B$, the more efficient country chooses a lower ideal point for the common level of discretion. If the union is formed, the more efficient country benefits more from the union.

Without a union, both countries choose the same level of discretion. If a union is formed, both countries can also influence the foreign profits of their domestic firms, which induces them to choose a lower level of discretion than in the absence of a union. Since the more efficient country is more likely to win the auction, it benefits more if the level of discretion is reduced.

For the case of homogeneous firms we have shown that if there is no conflict of interest, either because there is no corruption (Proposition 2) or because the propensities for corruption are the same (Proposition 4), a union will always be formed. These results might appear to be the result of the fact that without a conflict of interest due to corruption countries were identical. In the case of heterogeneous firms there is always a potential for a conflict of interest. Nevertheless, Proposition 5 shows that differences in efficiency do not hinder the union formation.

Proposition 5 In the absence of corruption ($\beta_i \to \infty; \beta_j \to \infty$) or if $\beta_A = \beta_B$ a union will be formed for $\forall \mu$.

The underlying intuition is the following. Any decrease in discretion is more beneficial for the more efficient country. The less efficient country is willing to reduce discretion in the union to some extent to internalize the negative trade externality. A union is always possible since the more efficient country prefers the less efficient country's ideal point for the union to the status quo (no union). Hence, the potential conflict of interest caused by differences in efficiency does not destroy incentives for integration. We will now examine what happens if countries also differ in their propensities towards corruption. We start by characterizing the countries' ideal outcomes of bilateral negotiations.

Lemma 5 Let $\bar{\beta}_A > \bar{\beta}_B$.

(i) If $\omega < 1$, $q_B^{**} < q_A^{**}$ always.

(ii) If $\omega > 1$ it is ambiguous which country chooses a lower cutoff point as its ideal outcome of bilateral negotiations.

In part (i) of Lemma 5 the more corrupt country is also more efficient. This country wants a smaller joint level of discretion because it benefits more from increased trade and is more willing to disregard the private information of its government. The incentives to reduce discretion due to the efficiency advantage and due to corruption reinforce each other. In part (ii) of Lemma 5 the more corrupt country is less efficient. Which country is more willing to reduce discretion depends on the relative weights of the incentives to reduce discretion due to corruption and due to efficiency.

Compared to the case of homogenous firms, if $\omega < 1$ the conflict of interest between the two countries is aggravated. If $\omega > 1$ the conflict of interest is mitigated since the country that is more reluctant to reduce discretion (the less corrupt country) benefits more from trade. Proposition 6 extends Proposition 4 to the case of heterogeneous firms, and shows that differences in efficiency complicate the union formation if $\omega < 1$ and facilitate the union formation if $\omega > 1$.

Proposition 6 For $\beta_A > \beta_B$ there exists a $\bar{\beta}_B^*(\omega) < \bar{\beta}_A$ such that $\forall \beta_B < \bar{\beta}_B^*(\omega)$ no union is possible. $\bar{\beta}_B^*(\omega)$ decreases if ω increases.

The more efficient country A is, the higher are its benefits from increased trade. These increased gains from trade allow country A to accept higher corruption in the partner country. In other words, a difference in honesty can be compensated by a difference in efficiency increasing the set of parameters for which a union is possible.

Technological di®erences between countries may produce a con°ict of interest related to the choice of the common procurement legislation but they do not destroy the incentives to form a union. In contrast, di®erences in propensities of corruption can hinder the union formation. If, however, the less corrupt country is more e±cient the union formation is more likely compared to the case in which ¯rms are homogeneous.

4 Empirical Evidence

The following two testable hypotheses can be derived from our theory:

Hypothesis 1 More corrupt countries are more favorable towards integration.

Hypothesis 2 The more corrupt a country, the less acceptable its membership in the union.

We will test these hypotheses for the case of the European Union. We will ¯rst describe our data sources, then justify the econometric model we use and ¯nally report the regression results.

4.1 Data sources

Corruption

We use the Transparency International Corruption Perceptions Indices (CPI) as a measure for the degree of corruption. The index ranges between 10 (clean) and 0 (highly corrupt). CPI is based on di®erent surveys that measure corruption within countries by gathering data about the subjective perception of corruption (for details see e.g. Lambsdor® (1999)).[15] For a country to be included in CPI, at least 3 di®erent reliable surveys are required. Given that some surveys are not updated every year and new reliable surveys are created, the basket of surveys used to calculate CPI is continuously changing. Since the sources show a high degree of correlation, the impact of changes in surveys used (which implies changes in samples and methodologies) on outcomes

[15] Notice that our theoretical model excludes the possibility of bribing in other country and therefore requires a measure for corruption that excludes bribery in foreign countries. The degree of corruption practiced by nationals outside their country is not included in CPI.

seems to be small. The composite index CPI is derived by standardizing each of the sources and assigning equal weights to all sources included in the index. Typically, these sources are based on the following two definitions of the degree of corruption (see Lambsdorff (1999)): (i) the frequency of corrupt acts and (ii) the amount of bribes paid. Although theoretically these measures could be very different, the high correlation between surveys using the two different definitions suggests that these measures turn out to be very similar in practice. In general, the correlation between sources tends to lie above 0.8 (see Lambsdorff (1999)). By combining different data sources into a single index, CPI lowers the probability of misrepresenting a country considerably. As a measure for the reliability of each country's score, CPI includes the standard deviation (variance) σ of each score and the number n of sources used in the calculation. This allows to calculate a proxy for the standard error of the mean score as suggested by Lambsdorff (1999), namely:

$$SE = \frac{\sigma}{\sqrt{n - 1}}$$

In Appendix B.1 this proxy (SE) and CPI is reported for the countries of the European Union for 1995-1997 which is the period we analyze. Belgium and Luxembourg will be excluded from our regression since CPI did not separate these two countries before 1997.[16]

ProEuropeanness

Our data source for ProEuropeanness are the Standard Eurobarometer surveys. These public opinion surveys are conducted on behalf of the European Commission twice a year. The regular sample size is 1000 people per country aged fifteen years and over.[17] While a set of identical questions is asked in each Member State in each survey, the set of questions differ with different surveys. The following two questions are of interest for our theoretical model:

1. (the second question of) the socalled Eurodynamometer, namely: “Which (speed of European Unification) corresponds best to what you would like?"

[16] The index differs considerably for both countries when separate indices are available.

[17] Exceptions are Germany (1000 in former East and 1000 in former West Germany) and UK (1000 in Britain and 300 in Northern Ireland).

Responses can be graduated from 1=standstill to 7=as fast as possible.

2. support for enlargement of the European Union: \For each of the following countries are you in favor or not of it becoming part of the European Union in the future?"

   Three answers are possible (i) in favor, (ii) against, (iii) don't know.

Questions 1 addresses each country's support for the European Union and therefore is a measure for ProEuropeanness (hypothesis 1).[18] Evidence for our theory would be found, if more corruption implied more ProEuropeanness. Question 2 addresses the acceptability of a new country. Our theory predicts, that a country is more acceptable on average, the less corrupt the country (hypothesis 2).

Other Variables of Interest

It is obvious, that the level of proEuropeanness of a country is not only determined by its level of corruption. However, we are not interested in providing a full model that captures all potential relevant variables; we would only like to examine our two hypotheses. Hence, we are mainly interested in the sign and signi¯cance of the regression parameters and not in obtaining a high R^2. To exclude a variable that in°uences a country's attitude towards integration from the regression will only be problematic for testing our hypotheses if this variable is caused by a third variable that also a®ects the level of corruption. To avoid these potential problems we also consider transfers to and from the union and log GDP per capita (in Ecus or in purchasing power standards (PPS)). The underlying data is taken from Eurostat 2000.

[18] Alternatively we could have used the membership question as a measure for ProEuropeanness. This question asks: \Generally speaking, do you think that (our country's) membership of the European Union is....?" Four answers are possible: (i) a good thing, (ii) a bad thing. (iii) neither good not bad, (iv) don't know.

We chose to use the Eurodynameter and not the membership question because the former is entirely quantitative and easily interpreted. With the membership question it is not clear what the exact measure of ProEuropeanness is: is it the percentage of people who think that membership is a good thing or is it the di®erence of people who like and people who dislike membership? Also, the possibility to answer: \I don't know" leaves us with some data that is di±cult to interpret. Given that it was also possible to answer that membership is neither good nor bad, \I don't know" cannot be interpreted as indi®erence. Moreover, the Eurodynameter addresses integration, hence a common legislation, directly which seems to be the more relevant question than membership per se for our study on how domestic corruption a®ects the desire for integration.

4.2 The econometric model

We would like to consider the following equation:

$$y_{it} = \alpha_i + \beta' x_{it} + \varepsilon_{it}$$

where there are K exogenous regressors in x_{it}, not including the constant term, and α_i is an individual (fixed) effect, which is country-specific and taken to be constant over time, t. α_i measures influences on the degree of proEuropeanness beyond those captured by the regressors. It captures for example historical reasons for being more or less favorable towards the European Union.[19] Our panel has too few time periods to be able to estimate α_i. Hence, we were faced with two choices: (i) to estimate the regression in levels, in which case we would estimate

$$y_{it} = \bar{\alpha} + \beta' x_{it} + \varepsilon_{it} + (\alpha_i - \bar{\alpha})$$

where $\bar{\alpha} \equiv E(\alpha_i)$ and the error term becomes $\eta_{it} = \varepsilon_{it} + (\alpha_i - \bar{\alpha})$ or (ii) take first differences, eliminating the fixed effects. Estimation in levels is problematic if the individual effects are correlated with the regressors. But if $E(x_{it}(\alpha_i - \bar{\alpha})) = 0$ OLS is consistent. Estimating in differences creates other complications, e.g. a lot of cross-sectional variation in the data may be lost and measurement error biases magnified. We choose to use OLS, i.e. to estimate the model in levels for the following reasons: (i) a priori it seems that the effect on proEuropeanness of α_i is not correlated with corruption. We cannot think of any variable omitted in the model that explains both the deviations of α_i from its mean and the level of corruption. Hence, the assumption $E(x_{it}\eta_{it}) = 0$ is reasonable. (ii) losing cross-sectional variation is a real concern in our data. For each country the data typically varies very little from one year to another. (iii) Given that our data for ProEuropeanness, support for enlargement and corruption are based on opinion surveys, the data is not too reliable and we are likely to be in the situation where measurement errors are magnified when estimating in first differences. Moreover, there is a slight concern on the comparability of the CPI over different years since the surveys used to calculate the CPI vary

[19] Germany is a clear example for which historical reasons increase its overall enthusiasm for a European Union since supporting integration is a signal for the desire for peace.

every year. Hence, some of the variations in the CPI might simply be caused by the change in the basket of surveys used to calculate the CPI, and this bias is worse in a regression in ¯rst di®erences.[20]

4.3 Regression results

We run two sets of regressions with DPD98 for Gauss (Arellano and Bond (1998)). DPD98 has the nice feature that it can work with unbalanced panels.[21] In both sets of regressions we will use OLS. Given that our error terms will be serially correlated, since the ¯xed e®ect is captured in the error term, we will use robust estimates (robust to heteroskedasticity).

The ¯rst set of regressions aims at testing hypothesis 1 (the more corrupt a country, the more proEuropean it is). The second set aims at testing hypothesis 2 (the more corrupt a non-member country, the less likely it is to be accepted in the union by the member countries). Given the few data points available, the regression results should be taken as indicative only.

4.3.1 Explaining the level of ProEuropeanness

We run a set of regressions in which the dependent variable is each country's average Eurodynameter for the years 1995-1997 taken from the Standard Eurobarometers 44, 46 and 48 (see Appendix B.2 for the underlying data). All our regressions corroborate the prediction of our theory: the more corrupt a country, the more favorable towards integration.

Our ¯rst regression uses only corruption and the constant ® as explanatory variables.

variable	coe±cient	t-statistic	p-value
constant	6.8085	38.05	0.000
CPI	-0.290774	-9.038	0.000

[20]To see this point, notice that the level of corruption we observe is true corruption plus a shock $°_{it}$. Given the nature of the data it is reasonable to assume that $E(°_{it}) = 0$ and $E(°_{it}°_{i't'}) = 0$ 8i; t; i'; t'. For the sake of simplicity assume that the only explanatory variable is corruption. Then our equation becomes: $y_{it} = ® + ¯(x_{it} + °_{it}) + ´_{it}$ ¡ $¯°_{it}$ where the new error term $v_{it} = ´_{it}$ ¡ $¯°_{it}$. Given the measurement error, the estimator in levels will be biased. The bias depends on the relative variance between x_{it} and $°_{it}$. This ratio will be larger in ¯rst di®erences, since there is positive serial dependence in x_{it} but not in $°_{it}$.

[21]This is crucial for our second set of regressions since the data on support of enlargement and corruption for non-EU countries is very incomplete. The enlargement question is not asked in all Eurobarometers. Moreover, it is not asked for the same set of possible new members.

Regression 1: explanatory variables α and CPI

$R^2 = 0.6112$

To make sure that the omitted individual effect $\alpha_i - \alpha$ is not correlated with the regressors, we run more regressions including two other variables that might influence the level of ProEuropeanness and corruption, namely log GDP per capita and transfers from the union. The second regression adds transfers and log GDP per capita in purchasing power standards (PPS), the latter being replaced by log GDP in Ecus in the third regression.

variable	coefficient	t-statistic	p-value
constant	5.684895	1.273	0.203
CPI	-0.259352	-6.142	0.000
transfer	1.003327	4.145	0.000
log GDP(PPS)	0.084292	0.177	0.860

Regression 2: explanatory variables α, CPI, transfers and log GDP(PPS)

$R^2 = 0.6989$

variable	coefficient	t-statistic	p-value
constant	10.0039	4.48	0.000
CPI	-0.214	-3.707	0.0002
transfer	0.7146	2.1899	0.0285
log GDP(Ecu)	-0.39031	-1.4927	0.1355

Regression 3: explanatory variables α, CPI, transfers and log GDP(Ecus)

$R^2 = 0.712$

Since log GDP is never significant,[22] our fourth and final regression drops log GDP as an explanatory variable.

variable	coefficient	t-statistic	p-value
constant	6.482002	33.08	0.000
CPI	-0.255394	-8.58	0.000
transfer	0.974775	3.87	0.000

Regression 4: explanatory variables α, CPI and transfers

$R^2 = 0.699$

[22] If we regress the desired speed of integration on corruption and log GDP per capita only, the latter is significant and our main result (negative highly significant coefficient for CPI) is unaffected.

All regressions con¯rm that CPI is negatively a®ects the desired speed of integration.[23] Since a higher CPI means less corruption, more corrupt countries are more favorable towards integration.[24]

4.3.2 Acceptability as a new member

We will test hypothesis 2 in an unbalanced panel for the period 1996-1999. The data for acceptability of new members (reported in Appendix B.3) has 3 possible answers: (i) in favor, (ii) against and (iii) I don't know. In the following analysis the percentage of \I don't know" will be ignored. Several regressions will be run where the dependent variable is either (i), referred to as EU15+, (ii), referred to as EU15¡, or the di®erence between (i) and (ii), referred to as EU15. We will use corruption and a constant term as the only regressors.

A close look at the data reveals that in 1998 the EU countries were generally more in favor of accepting new countries.[25] That is why we run the regression with and without a dummy for 1998.

Dependent V.	explanatory V.	coe±cient	t-statistic	p-value
EU15+	constant	16.023876	7.28	0.0000
	CPI	5.982781	15.81	0.0000
EU15¡	constant	54.667310	20.68	0.0000
	CPI	-4.575050	-11.78	0.0000
EU15	constant	-38.863402	-7.94	0.0000
	CPI	10.588555	13.89	0.0000

Including the year dummy for 1998 we get:[26]

[23] Due to the measurement error the coe±cient of CPI is upwards biased, i.e. it should be bigger in absolute terms and even more signi¯cant. This is con¯rmed in regressions in which we control for the measurement error namely by running separate regressions in instrumental variables for each year using as instruments CPI of the other years (uncorrelated with the measurement error).

[24] Similar results are found in Sanchez-Cuenca (2000) in an OLS regression for 1995.

[25] There is no standard explanation for this. One reason might be that it became known which countries were admitted into the Euro.

[26] Regressions with dummies for all years reveal that the other time dummies are insigni¯cant.

	explanatory V.	coe±cient	t-statistic	p-value
EU15+	constant	12.433031	6.8	0.0000
	CPI	6.389219	17.13	0.0000
	1998(dummy)	6.030902	3.37	0.000748
EU15 ¡	constant	59.180956	28.48	0.0000
	CPI	-5.085937	-15.55	0.0000
	1998(dummy)	-7.580763	-5.21	0.0000
EU15	constant	-47.050969	-11.98	0.0000
	CPI	11.510282	16.655	0.0000
	1998(dummy)	13.751192	4.235	0.000023

The regressions indicate that less corrupt countries have better chances to be admitted as new members into the European Union. This is re°ected in both, the percentage in favor and the percentage against. The less corrupt a country, the more people in the EU are in favor of admitting the country into the union and the less people are against.

For 1999 we were also able to run a cross-country regression of the share of population in the country x that favors admitting country y in the EU on the corruption gap between country x and country y. As country x we used the EU countries and as country y: Czech Republic, Slovakia, Poland, Hungary, Romania, Slovenia, Estonia, Latvia, Lithuania, Bulgaria, Switzerland., Norway and Turkey. The result is consistent with our hypothesis 2: The bigger the corruption gap, the smaller the proportion of people willing to admit the potential new entrant (the coe±cient on the corruption gap is -2.2370 with a t-statistic of -2.862 and p-value 0.004. The regression has 180 degrees of freedom.).

5 Conclusion

Although corruption usually transcends the national level,[27] theoretical research on corruption has mainly concentrated on the domestic perspective. In the present paper we studied the link between corruption and some aspects of trade, namely international public procurement. In particular, we study the incentives of countries to form an economic union. In the absence of a union, each country decides its own procurement law, ignoring the e®ect of this law on the

[27] International organizations have long recognized that corruption is a supranational problem: e.g. OECD countries recently approved the \Convention on Combating Bribery of Foreign Public O±cials in International Business Transactions".

other country. When a union is formed, this externality is internalized, resulting in a lower level of discretion for domestic governments. The reduction in discretion leads to a lower level of corruption. Therefore, the promotion of trade has the positive e®ect of reducing corruption. This positive e®ect is more valuable for the country with a higher propensity for corruption, which is therefore the main supporter of the economic union. However, the more honest country will not join a union if the propensities of corruption are too di®erent. On the one hand, the reduction in discretion is more costly for the more honest country, where the government is trusted to make the right decision. On the other hand, the status quo without a union is more favorable for the more honest country (with more opportunities for trade), since the corrupt country chooses a lower level of discretion and therefore is more open to trade. Therefore, corruption can hinder the union formation.

If countries di®er not only in their propensities for corruption but also in their technological capabilities, a big di®erence in propensities for corruption can be o®set by a di®erence in e±ciency, making a union formation more likely. This result might be important, since in general less corrupt countries tend to be more e±cient.

Our empirical analysis for the case of the European Union seems to be consistent with the above results. It is left for future research to check whether or not the results carry over to other existing economic unions. We expect this to be the case for Mercosur (Argentina, Brazil, Paraguay and Uruguay). Chile was a potential member of Mercosur, but did not want to join to keep its discretion over trade policies with third countries. This attitude ¯ts very well with our theory given the di®erence in corruption levels (CPI for 1999 Brazil: 4.1, Uruguay: 4.4, Argentina:3.0, Paraguay:2.0 and Chile: 6.9).

In our empirical analysis we showed that more corrupt non-member countries are less acceptable as new members to the European Union. We did not study whether these non-member countries would like to join the union because we do not have the necessary data. The Economist (May 13th 2000) dedicated an article to this question with the following title that speaks for itself: \Central Europe wants to join the EU........but the Swiss still have doubts." CPI reveals that

Switzerland is by far less prone to corruption than countries in Central Europe (see appendix B.3).

Many economic consequences of integration are achieved through political means. Common legislation and supranational and intergovernmental institutions are political mechanisms that imply changes to the political system of member states of an economic union, since some sovereignty has to be transferred to the supranational level. Models of economic integration have mainly focused on purely economical aspects. While our model clearly follows the instrumental approach - support for integration is a function of its costs and benefits - we also consider that countries with better functioning political systems might be more reluctant to transfer sovereignty. To our knowledge this is the first model to formalize this institutional hypothesis.

A Mathematical Appendix

Proof of Proposition 1

Using the implicit function theorem in the FOC (equation (1)),we obtain

$$\frac{\partial q_i^*}{\partial \beta} = -\frac{\frac{\partial^2 U}{\partial q_i \partial \beta}}{\frac{\partial^2 U}{\partial q_i^2}} > 0.$$

This conclude the proof since the case without corruption is equivalent to $\beta \to \infty$. ■

Proof of Corollary1

If $g(q)$ is uniform, then $\Gamma_i = \int_0^{q_i^*} \frac{\alpha^2[\bar{c} - \underline{c}]q}{\beta_i}\frac{1}{\phi}dq = \frac{\alpha^2[\bar{c} - \underline{c}]}{\beta_i}\frac{q_i^{*2}}{2\phi}$. Therefore, $\Gamma_B > \Gamma_A$ if and only if $\frac{q_A^{*2}}{\beta_A} < \frac{q_B^{*2}}{\beta_B}$. Subtracting the FOC of the medium voter (equation (1)) in country B divided by $g(q_B^*)$ from the FOC of the medium voter in country A divided by $g(q_A^*)$ we obtain:

$$-(1-\delta)(1-\mu)\alpha^2[\bar{c} - \underline{c}](q_A^* - q_B^*) = \delta\left[\alpha^2[\bar{c} - \underline{c}]\right]^2 \left[\frac{q_A^{*2}}{\beta_A} - \frac{q_B^{*2}}{\beta_B}\right]$$

Since $q_A^* > q_B^*$, the left hand side is negative, which implies that $\frac{q_A^{*2}}{\beta_A} < \frac{q_B^{*2}}{\beta_B}$. ■

Proof of Proposition 2

In absence of corruption $U_A(q_U; q_U) = U_B(q_U; q_U)$. $q_U^* = q^{**NC} \in \arg\max\{U_i(q_U; q_U)\} \forall i; j \in \{A; B\}$ satisfy trivially the two requirement to be a feasible outcome of the bilateral negotiation: efficiency and individual rationality.

1. $q^{**NC} \in \arg\max\{\sigma U_A(q^{**NC}; q^{**NC}) + (1-\sigma)U_B(q^{**NC}; q^{**NC})\}$ is satisfied since $U_A(q_U; q_U) = U_B(q_U; q_U)$ and $q^{**NC} \in \arg\max\{U_A(q_U; q_U)\}$:
2. $U_i(q^{**NC}; q^{**NC}) \geq U_i(q^{*NC}; q^{*NC})\ \forall i; j \in \{A; B\}$ is satisfied since $U_A(q_U; q_U) = U_B(q_U; q_U)$ and $q^{**NC} \in \arg\max\{U_A(q_U; q_U)\}$:

■

Proof of Lemma 1

(i) Immediate from comparing the first order condition of a union (equation (2)) with the FOC in the absence of a union (equation (1)).

(ii) and (iii) Using the implicit function theorem it is easy to see that $\frac{\partial q_i^{**}}{\partial \beta_i} > 0$. ■

Proof of Lemma 2

Efficiency requires the following first order condition of q_U^*

$$\alpha^2[\bar{c} - \underline{c}]q_U - (1-\delta) - \frac{\delta\alpha^2[\bar{c} - \underline{c}]q_U}{2}\frac{\sigma\beta_A + (1-\sigma)\beta_B}{\beta_A\beta_B} + \mu(1-\delta)\frac{2\alpha - 1}{\alpha}\Big) + (1-\delta)k\Big)g(q_U) = 0 \qquad (6)$$

Equation (6) is identical to equation (2) except for one term: in equation (6) $\frac{\delta\alpha^2[\bar{c} - \underline{c}]q_U}{2}\frac{\sigma\beta_A + (1-\sigma)\beta_B}{\beta_A\beta_B}$ appears instead of $\frac{\delta\alpha^2[\bar{c} - \underline{c}]q_U}{2}\frac{1}{\beta_i}$: Hence, condition 1 follows from the following inequality

$$\frac{1}{\beta_A} = \frac{\beta_B}{\beta_A\beta_B} < \frac{\sigma\beta_A + (1-\sigma)\beta_B}{\beta_A\beta_B} < \frac{\beta_A}{\beta_A\beta_B} = \frac{1}{\beta_B}:$$

Condition 2 is derived from the participation constraint of the less corrupt country. If $q_U^* > q_B^*$ then $U_A(q_U^*; q_U^*) < U_A(q_A^*; q_B^*)$ since $q_A^* \in \arg\max\{U_A(q; q_B)\}\ \forall q_B$ and $U_A(q; q_B)$ decreases in q_B. ■

Proof of Corollary 2

Immediate given Lemma 2 ■

Proof of Proposition 3

By Lemma 2 we know that $q_U^* < q_B^*$. We need to show that $U_A(q_U^*; q_U^*) - U_A(q_A^*; q_B^*) < U_B(q_U^*; q_U^*) - U_B(q_B^*; q_A^*)$: In order to do so we add and subtract $U_A(q_B^*; q_B^*)$ to the left hand side of the inequality and $U_B(q_B^*; q_B^*)$ to the right hand side. We obtain:

$$\begin{aligned} & U_A(q_U^*; q_U^*) - U_A(q_B^*; q_B^*) + U_A(q_B^*; q_B^*) - U_A(q_A^*; q_B^*) \\ < \; & U_B(q_U^*; q_U^*) - U_B(q_B^*; q_B^*) + U_B(q_B^*; q_B^*) - U_B(q_B^*; q_A^*) \end{aligned} \quad (7)$$

A sufficient condition for (7) to hold is that the following two inequalities are satisfied.

$$U_A(q_B^*; q_B^*) - U_A(q_A^*; q_B^*) < U_B(q_B^*; q_B^*) - U_B(q_B^*; q_A^*) \quad (8)$$

$$U_A(q_U^*; q_U^*) - U_A(q_B^*; q_B^*) < U_B(q_U^*; q_U^*) - U_B(q_B^*; q_B^*): \quad (9)$$

(8) is immediate given $q_A^* \in \arg\max\{U_A(q; q_B)\} \; \forall q_B$; $U_A(q_B^*; q_B^*) - U_A(q_A^*; q_B^*) < 0$, and given that $U_B(q_B; q_A)$ is decreasing in q_A, $U_B(q_B^*; q_B^*) - U_B(q_B^*; q_A^*) > 0$

In order to show (9) we calculate $U_i(q_U^*; q_U^*) - U_i(q_B^*; q_B^*)$:

$U_i(q_U^*; q_U^*) - U_i(q_B^*; q_B^*) = \int_{q_U^*}^{q_B^*} [1 - \delta(1 - \gamma_i(q))] \alpha^2 [\bar{c} - \underline{c}] q g(q) dq -$
$\int_{q_U^*}^{q_B^*} (1 - \delta) k g(q) dq - \int_{q_U^*}^{q_B^*} (1 - \delta) \alpha^2 [\bar{c} - \underline{c}] q g(q) dq + \int_{q_U^*}^{q_B^*} (1 - \delta) \alpha (1 - \alpha) [\bar{c} - \underline{c}] q g(q) dq$

We wish to show:

$$U_A(q_U^*; q_U^*) - U_A(q_B^*; q_B^*) - U_B(q_U^*; q_U^*) + U_B(q_B^*; q_B^*) < 0 \quad (10)$$

Using the above expression, (10) becomes:

$$\begin{aligned} & \int_{q_U^*}^{q_B^*} [1 - \delta(1 - \gamma_A(q))] \alpha^2 [\bar{c} - \underline{c}] q g(q) dq - \int_{q_U^*}^{q_B^*} [1 - \delta(1 - \gamma_B(q))] \alpha^2 [\bar{c} - \underline{c}] q g(q) dq \\ = \; & \int_{q_U^*}^{q_B^*} [\delta(\gamma_A(q) - \gamma_B(q))] \alpha^2 [\bar{c} - \underline{c}] q g(q) dq \\ > \; & 0 \text{ since } \gamma_A(q) < \gamma_B(q) \end{aligned}$$

This concludes the proof. ■

Proof of Proposition 4

Given $q_A^* \in \arg\max\{U_A(q; q_B)\}\ \forall q_B$, and $q_A^{**} \in \arg\max\{U_A(q; q)\}$ we can define the following cutoff point $\hat{q}_B$ for the level of discretion chosen in the domestic context by country B reflecting $\bar{\beta}_B$:

$$U_A(q_A^*; \hat{q}_B) = U_A(q_A^{**}; q_A^{**})$$

where $U_A(q_A^{**}; q_A^{**})$ is the maximum expected utility that the median voter of country A can obtain by forming a union with B. Given that $U_A(q_A^*; q_B)$ is decreasing in q_B; if $q_B^* < \hat{q}_B$, no union can be formed; the union violates country A's participation constraint. Define $\bar{\beta}_B^*$ as the level of social honesty of country B that results in $q_B^* = \hat{q}_B$; where $q_B^* \in \arg\max\{U_B(q; q_A)\}\ \forall q_A$. We know that $\frac{\partial q_B^*}{\partial \bar{\beta}_B} > 0$, hence $\bar{\beta}_B < \bar{\beta}_B^*$ implies $q_B^* < \hat{q}_B$ and therefore country A's participation constraint is violated for $\forall \bar{\beta}_B < \bar{\beta}_B^*$. ■

Proof of Lemma 3

The first order condition with heterogeneous firms in the absence of a union is:

$$\alpha_i \alpha_j [\bar{c} - \underline{c}] q_i^* - (1 - \delta) - \frac{\delta \alpha_i \alpha_j [\bar{c} - \underline{c}] q_i^*}{\bar{\beta}_i} + \mu (1 - \delta)^{\gamma} + (1 - \delta) k^{\gamma} g(q_i^*) = 0 \qquad (11)$$

Given (3) and (4), $\alpha_i \alpha_j = \alpha^2$, hence the FOC for heterogeneous firms (equation (11)) is identical to the FOC of homogeneous firms (equation (1)) in the absence of a union. ■

Proof of Lemma 4

Without loss of generality let country A be more efficient, i.e. $\omega > 1$. Assume $\bar{\beta}_A = \bar{\beta}_B$. The case without corruption ($\bar{\beta}_A \to 1$ and $\bar{\beta}_B \to 1$) is just a special case of $\bar{\beta}_A = \bar{\beta}_B$.

(i) We will first show that the more efficient country chooses a lower q_i^{**}. The FOC for the ideal point of a common level of discretion for country i with heterogeneous firms has been derived in equation (5). Equation (5) for country A differs from equation (5) for country B in only one term: we have to compare $\frac{(1-\alpha_B)}{\alpha_B} = \frac{\omega - \alpha}{\alpha}$ (country A) with $\frac{(1-\alpha_A)}{\alpha_A} = \frac{1-\omega\alpha}{\omega\alpha}$ (country B). $\frac{\omega-\alpha}{\alpha} > \frac{1-\omega\alpha}{\omega\alpha}$ if $\omega > 1$. Hence $q_A^{**} < q_B^{**}$

(ii) We will now show that $U_A(q_U; q_U) - U_A(q_A^*; q_B^*) > U_B(q_U; q_U) - U_B(q_B^*; q_A^*)\ \forall q_U \in [q_A^{**}; q_B^{**}]$; i.e. the more efficient country benefits more from a union. To prove that country A benefits more is equivalent to proving that

$$U_A(q_U;q_U) - U_B(q_U;q_U) > U_A(q_A^*;q_B^*) - U_B(q_B^*;q_A^*) \forall q_U \in [q_A^{**};q_B^{**}]$$

This holds if $U_A(q;q) - U_B(q;q)$ is decreasing in q since $q_A^* = q_B^*$ for $\beta_A = \beta_B$ and $q_U < q_A^* = q_B^*$ (see equation (11)). Notice that

$$U_A(q;q) - U_B(q;q) = cte - \int_0^q \mu(1-\delta)^2[\bar{c} - \underline{c}]\frac{\omega^2 - 1}{\omega}\alpha q g(q)$$

which is obviously decreasing in q. ■

Proof of Proposition 5

Let $\omega > 1$ and $\beta_A = \beta_B$. The case without corruption ($\beta_A \to 1$ and $\beta_B \to 1$) is just a special case of $\beta_A = \beta_B$. Since $q_B^{**} \in \arg\max U_B(q;q)$, it is the case that $U_B(q_B^{**};q_B^{**}) > U_B(q_B^*;q_A^*)$. This and part (ii) of Lemma 4 implies that $U_A(q_B^{**};q_B^{**}) > U_A(q_A^*;q_B^*)$. Therefore, q_B^{**} is always a possible outcome for q_U. ■

Proof of Lemma 5

By lemma 1 if $\alpha_A = \alpha_B$ and $\beta_A > \beta_B$, $q_B^{**} < q_A^{**}$. By lemma 5 if $\beta_A = \beta_B$ the more efficient country chooses a lower q_i^{**}. If $\omega < 1$, the two effects reinforce each other, hence $q_B^{**} < q_A^{**}$. If $\omega > 1$ the two effects go into different directions, therefore the ambiguity. ■

Proof of Proposition 6:

Country A will not form a union for any q_B^* such that:

$$\underbrace{-t_A(q_A^*) + \mu\Pi_A^D(q_A^*;\omega)}_{W_1(q_A^*;\omega)} + \underbrace{\mu\Pi_A^F(q_B^*;\omega)}_{W_2(q_B^*;\omega)} > \underbrace{-t_A(q_A^{**}) + \mu\Pi_A^D(q_A^{**};\omega) + \mu\Pi_A^F(q_A^{**};\omega)}_{W_3(q_A^{**};\omega)}$$

or equivalently

$$W = -\int_{q_A^{**}}^{q_A^*} 1 - \delta\left(1 - \frac{\alpha^2[\bar{c} - \underline{c}]q}{\beta_A}\right)\Bigg]\alpha^2[\bar{c} - \underline{c}]qg(q)dq + \int_{q_A^{**}}^{q_A^*}(1-\delta)kq(g)dq$$
$$-\mu\int_{q_A^{**}}^{q_B^*}(1-\delta)\alpha(\omega-\alpha)[\bar{c} - \underline{c}]qg(q)dq + \mu\int_{q_A^{**}}^{q_A^*}(1-\delta)\alpha^2[\bar{c} - \underline{c}]qg(q)dq > 0$$

$W = 0$ defines $\bar{q}_B^*$ which corresponds to a $\bar{\beta}_B^*(\omega)$. By the implicit function theorem:

$$\frac{\partial \bar{\beta}_B}{\partial \omega} = -\frac{\frac{\partial W}{\partial \omega}}{\frac{\partial W}{\partial \bar{\beta}_B}} = -\frac{\frac{\partial W_1(q_A^*;\omega)+\partial W_2(q_B^*;\omega)-\partial W_3(q_A^{**};\omega)}{\partial \omega}}{\frac{\partial W_1(q_A^*;\omega)+\partial W_2(q_B^*;\omega)-\partial W_3(q_A^{**};\omega)}{\partial \bar{\beta}_B}}$$

The numerator can be rewritten as

$$\frac{\partial W(\omega)}{\partial \omega} = -\mu \int_{q_A^{**}}^{q_B^*} (1-\delta)\alpha[\bar{c} - \underline{c}]\, q g(q) dq < 0$$

The denominator can be calculated explicitly as:

$$\underbrace{\frac{\partial W_1(q_A^*;\omega)}{\partial q_A^*}}_{=0} \frac{\partial q_A^*}{\partial \bar{\beta}_B} + \underbrace{\frac{\partial W_1(q_B^*;\omega)}{\partial q_B^*}}_{<0} \underbrace{\frac{\partial q_B^*}{\partial \bar{\beta}_B}}_{>0} - \underbrace{\frac{\partial W_1(q_A^{**};\omega)}{\partial q_A^{**}}}_{=0} \frac{\partial q_A^{**}}{\partial \bar{\beta}_B} < 0$$

Hence

$$\frac{\partial \bar{\beta}_B}{\partial \omega} < 0$$

■

B Data Appendix

B.1 Corruption in the EU

The following table summarizes the corruption perception index (source: Transparency International) The corruption perception index varies between 0 and 10. The higher the index, the less corrupt a country. Luxembourg is omitted.

	1995		1996		1997	
country	CPI	SE	CPI	SE	CPI	SE
A	7.13	0.35	7.59	0.29	7.61	0.38
B					5.25	0.81
D	8.14	0.46	8.27	0.33	8.23	0.28
DK	9.32	0.06	9.33	0.30	9.94	0.33
E	4.35	0.93	4.31	0.70	5.9	0.60
F	7.0	1.05	6.96	0.56	6.66	0.39
FIN	9.12	0.15	9.05	0.21	9.48	0.24
GR	4.04	0.74	3.42	0.82	5.35	0.70
I	2.99	1.52	5.01	0.98	5.03	0.64
IRL	8.57	0.45	8.45	0.30	8.28	0.55
NL	8.69	0.46	8.71	0.22	9.03	0.21
P	5.56	0.47	6.53	0.48	6.97	0.50
S	8.87	0.19	9.08	0.25	9.35	0.23
UK	8.57	0.24	8.44	0.20	8.22	0.53

B.2 Eurodynameter

The Eurodynameter ranges from 1=stillstand to 7= as fast as possible. The table below reports the country averages. The data is taken from the Standard Eurobarometer 44, 46, and 48.

	integration		
country	1995	1996	1997
A	3.95	4.73	4.56
B	4.59	4.47	4.42
D	4.28	4.03	4.1
DK	3.92	3.64	4.42
E	5.41	5.32	5.39
F	4.82	4.59	4.86
FIN	3.9	3.73	3.84
GR	5.7	5.41	5.59
I	5.63	5.54	5.58
IRL	5.1	5.0	4.88
NL	4.9	4.56	4.86
P	5.15	5.53	5.72
S	3.82	3.71	3.89
UK	4.41	3.85	3.51

B.3 Support for enlargement and corruption

We can also examine support for enlargement of the European union. Our theory predicts, that the more corrupt the country that wants to be a new member, the less welcome it is, since it is the more corrupt country that benefits most.

	1999		1998		1997		1996	
	CPI	EU15	CPI	EU15	CPI	EU15	CPI	EU15
Switzerland	8.9	70-13	8.9		8.61	72-12	8.76	72-14
Norway	8.9	70-12	9.0		8.92	69-13	8.87	70-15
Slovenia	6.0	32-42		39-35		34-39		34-43
Estonia	5.7	36-38	5.7	41-32		36-37		37-40
Hungary	5.2	46-31	5.0	53-24	5.18	49-28	4.86	51-30
Czech R.	4.6	40-35	4.8	48-28	5.2	43-33	5.37	44-36
Poland	4.2	43-35	4.6	49-29	5.08	46-33	5.57	49-33
Lithuania	3.8	35-39		41-33		35-37		37-40
Slovak R.	3.7	35-39	3.9	43-32		36-38		38-41
Turkey	3.6	29-47	3.4		3.21	32-45	3.54	36-44
Latvia	3.4	35-38	2.7	41-32		36-37		38-39
Bulgaria	3.3	35-40	2.9	42-33		37-37		37-42
Romania	3.3	33-43	3.0	39-37	3.44	35-42		38-42

The data for EU15 is taken from Eurobarometers 51, 49, 47, 45. The first value refers to percentage in favor, the second refers to percentage against.

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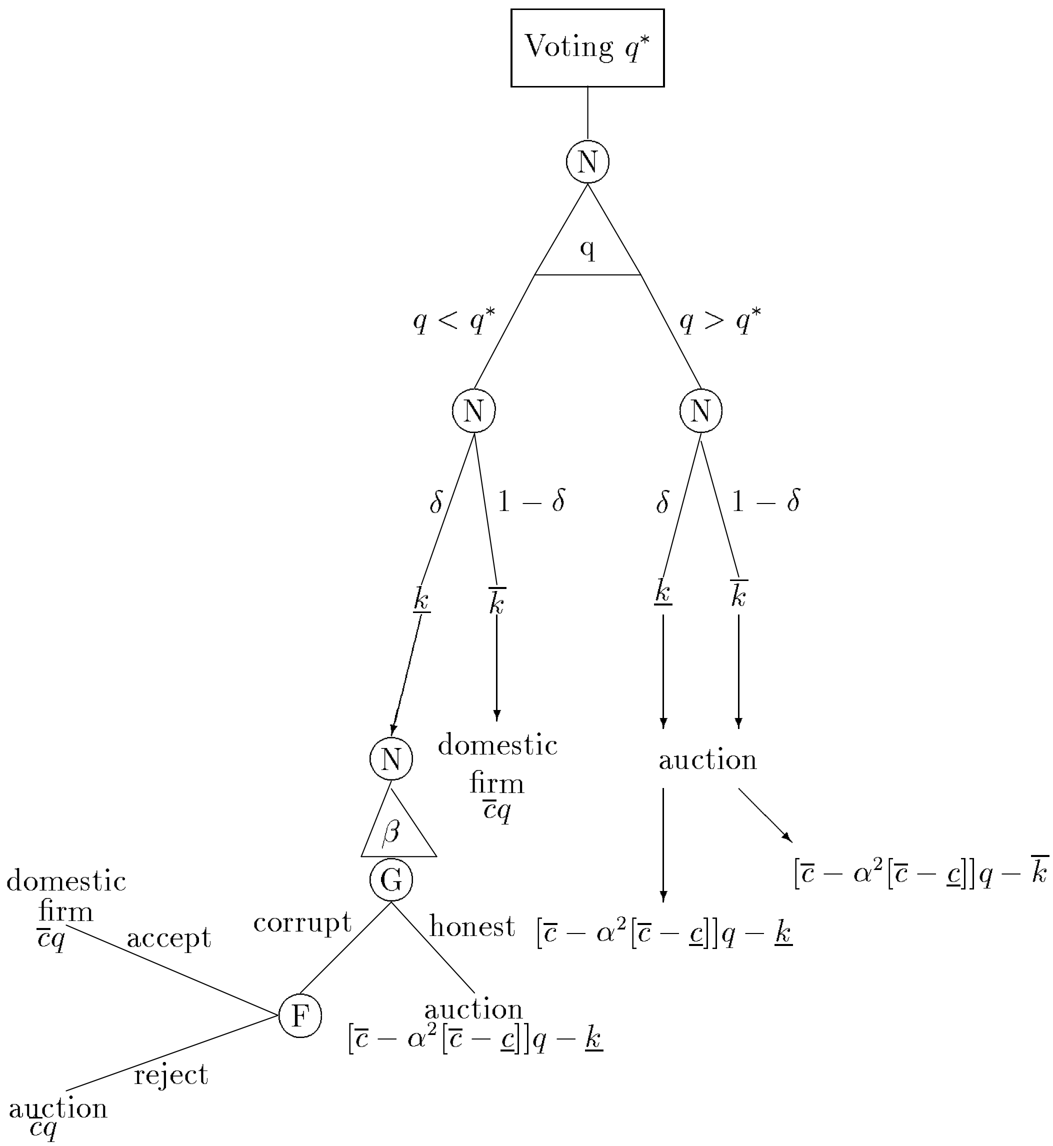

Figure 3: Timing of the model: N=move by nature, G=government, F=firm