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The economic implications of voting requirements for the establishment of the European Monetary Union

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**Wirtschaftswissenschaftliche Fakultät
der Eberhard-Karls-Universität Tübingen**

**The Economic Implications of Voting
Requirements for the Establishment of the
European Monetary Union**

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*Tübingen University** *Bayreuth University*

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The European Council selects the EMU participants by a vote with a qualified majority. These voting requirements influence the benefit-cost-considerations of the EU states and may make it necessary to loosen the convergence criteria and/or to grant side payments, in order to achieve the necessary number of votes. However, not even making use of these options can guarantee the realization of a monetary union in every case. For this reason, supporting economic and institutional measures, such as convergence programs and the so-called stability pact, which diminish the binding character of the voting requirements, are of great importance.

Classification codes: D71, F33, F36, F42, H87.

*Key words: European Monetary Union, voting requirements,
convergence, stability concessions, side payments.*

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I. Introduction*

On the way to European Monetary Union (EMU), the selection of the participating countries, the "ins", will be one of the most important decisions. The Maastricht Treaty provides for a multiple step procedure in picking EMU members. First, the European Commission and the European Monetary Institute examine which of the EU countries have achieved a sustainable degree of convergence, based on the four well-known convergence criteria: a high degree of price stability, a sustainable fiscal position, stable exchange rates in the European Monetary System and low long-term interest rates (Art. 109j (2) TEC - Treaty establishing the European Community). While the inflation and interest rate criteria are formulated relatively straightforwardly in the Maastricht Treaty, the exchange rate and especially the fiscal criteria - containing a deficit and a debt reference value - are rather vague (see European Monetary Institute (1995) for a practical application).¹ The selectivity of the four convergence criteria may be further weakened, as the reports by the EU Commission and the EMI should also take into account other relevant factors, such as the development of the ECU, the results of the integration of markets, and the current account (Art. 109j (1) TEC).

Based on these reports, the Council proposes to the heads of state or government, which of the EU countries should participate in the EMU. Finally the European council votes with a qualified majority, on which countries "... fulfill the necessary conditions for the adoption of the single currency" (Art. 109j (4) TEC). Required are 62 of 87 votes (Art. 148 TEC).² Thus, the blocking minority is 26 votes. The countries, which currently exceed the reference values by the widest margin, namely Greece, Italy, Portugal and Spain, have combined a total of 28 votes and can form a blocking minority. Therefore they can obstruct the decision on the members of the monetary union.

These and other countries which do not meet the reference values of the Maastricht Treaty can use their bargaining power in basically two different ways. They can try to accomplish a soft interpretation of the convergence criteria in order to qualify themselves for a (large) monetary union, or they can try to obtain side payments for their consent to a (small) monetary union in which they do not take part, at least not from the beginning.

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¹ E.g., a country's budget deficit can be considered to be not excessive either if the deficit/GDP ratio is beyond the reference value of 3% or the ratio is higher but "has declined substantially and continuously and reached a level that comes close to the reference value, or, alternatively, the excess ... is only exceptional and temporary and the ratio remains close to the reference value" (Art. 109j (1) TEC). Accordingly, there are different possibilities for complying with the debt criterion.

² France, Germany, Italy, and the United Kingdom have 10 votes each, Spain 8, Belgium, Greece, the Netherlands, and Portugal 5, Austria and Sweden 4, Denmark, Finland, and Ireland 3, and Luxemburg 2. In relation to their size, small countries have a relatively large number of votes. For an early analysis of vote allocation see Olson and Zeckhauser (1966); for an application with reference to a currency union, Casella (1992).

The voting behavior of EU countries is likely to be influenced by cost-benefit-considerations of alternative EMU membership compositions, along the lines of the traditional theory of optimum currency areas (OCA) and the "new view" based on credibility issues (see Tavlas (1994), De Grauwe (1996)).³ For a hard currency country with a strong preference for low inflation, there is, on the one hand, an incentive to admit all the other countries to the monetary union because the benefits of a single currency, i.e. the omission of the transaction costs between currencies and of the exchange rate risk, increase with the number of participating countries. On the other hand, the costs of a common currency area in form of stability risks and reputation loss is likely to rise as more countries which exceed the reference values of the Maastricht Treaty participate. Countries that are excluded from EMU face two types of disadvantages. They do not share the advantages of the abolishment of different currencies and they do not profit from the low inflation reputation of hard currency countries. In addition to these economic considerations, there might also be a loss of political benefits, as a monetary union is seen as a necessary step towards political integration.

The relative importance of these economic and political factors is at the heart of the current debate on the convergence criteria. On the one side, advocates of a so-called tough interpretation of the Maastricht Treaty emphasize economic elements in the selection of EMU participants. They want the convergence criteria to be applied as strictly as possible and want to restrict the political leeway in the final vote of the heads of state or government. This view is especially in Germany predominant. On the other side, proponents of a soft or flexible interpretation see the convergence criteria only as a point of reference and emphasize the political nature of the selection decision.

The paper addresses this question of selecting EMU members. We identify two principal factors in the decision process: (1.) the costs and benefits which the individual countries attribute to alternative EMUs ("hard-core", medium-sized, all EU members), (2.) the binding institutional restrictions, i.e. the distribution of votes in the Council and the minimum vote requirements. We examine how minimum vote requirements can lead to a suboptimal size of the EMU and can threaten the feasibility of a multi-speed monetary union. The analysis elucidates that - opposite to a widely held view - the convergence criteria do not constitute binding restrictions because they are formulated so vaguely. Nevertheless the convergence criteria play an important role; their relevance is determined endogenously in the membership decision.

In the economic literature, the costs and benefits of a monetary union are typically evaluated in the framework of the theory of optimum currency area without referring to the institutional

³ For a discussion of both OCA and credibility aspects see Winkler (1996).

aspects of the selection process (e.g. Emerson et al. (1992), de Grauwe (1994)). Conversely, voting procedures of the EU are mostly studied without reference to specific decisions (e.g. Widgren (1994), Kirman and Widgren (1995)). Attempts to combine these two aspects are made by Alesina and Grilli (1993), who study the feasibility of a monetary union in a median voter model, and Martin (1995). Casella (1992) examines the role of country size and interstate voting allocation within a currency union.⁴ While related to this work, our paper aims at explicitly incorporating the institutional EU framework for the EMU membership decision, especially the relevant voting rule.

The paper is organized as follows: section II introduces the analytical framework of modelling the EMU selection process. Section III provides the calculus for determining the optimal composition of the EMU under the voting rule. Section IV discusses the implications of the voting requirements, whereas the following section analyzes economic and institutional options which slacken the binding character of the voting restrictions. Finally, section VI offers some conclusions.

II. The analytical framework of the EMU selection process

The following analysis distinguishes two groups of EU countries. The so-called core group is comprised of the countries which fulfill the convergence criteria in their tough interpretation. The remaining countries which do not meet these standards constitute the "external group". The members of the core group are likely to be the economically most interesting partners for the external group countries. By forming a monetary union with the core group, these countries could not only achieve the benefits emphasized by the traditional OCA theory, such as a reduction in transaction costs and abolishment of exchange rate risks, but they can also attain a higher reputational gain than with any other set of countries within the EU. Therefore, the countries of the external group have an unambiguous preference for a monetary union with the core group.⁵

Contrarily the core group countries are likely to face a loss of reputation if they form a monetary union with weak currency countries (De Grauwe (1996)). Hence, the core group will only enter a currency union with external group countries if the costs of the reputational loss are overcompensated by other benefits, e.g. the abolishment of foreign exchange

⁴ Bindseil (1996) analyzes implications of the allocation of voting rights in the Council of the European Central Bank (using the Shapley value concept and stochastic structures).

⁵ Such a preference of the weak currency countries in favour of a cooperation with hard currency countries became apparent during the EMS crisis in July/August 1993, when the French proposal to diminish the speculation pressure within the EMS by an exit of the D-Mark was rejected by other EMS members. Instead, the exchange rate ranges were widened, see Münster (1993). However, as Martin (1995) shows, the incentives for participating in the EMU decrease as a country becomes more similar to the core group, because the reputation gain from joining the EMU becomes smaller compared to the costs of EMU membership, namely the loss of monetary independence.

transactions or progress in European political integration. The core group might also admit external group countries to the monetary union to gain enough votes to meet the minimum vote requirements.

If the core group is interested in a currency union, the following institutional aspects become relevant. In the case that the core group countries do not have the qualified majority within the European Council, they must induce a sufficient number of external group countries to contribute to the formation of a majority. For the core group, two options exist:

- a softer interpretation of the convergence criteria which would lead to more members in the currency union, implying additional votes for the membership selection process (option "stability concessions"),
- transfers to external group countries as a compensation for their contribution to the majority forming and their simultaneous renunciation of currency union membership (option "compensation payments").

The number of the additional votes (n) the core group gains from the external group depends on the extent to which the core group makes concessions with respect to the convergence criteria and on the level of side payments it uses for vote purchasing. The additional vote function, $n=n(x,Z)$, can be expressed in terms of the concession intensity x and the transfer level Z .⁶ The x -vector is comprised of the partial concession intensities (x_a, \dots, x_d) , i.e., the extent to which the convergence variables (a, \dots, d) differ from the reference values according to the tough interpretation of the Maastricht Treaty. If, for example, convergence variable a denotes the deficit criterion of 3% (referring to GDP) then an x_a -value of 100 per cent implies a concession in which the deficit may amount to up to 6% of GDP. Countries of the external group, which exceed the 3%-quota but which fulfill the 6%-limit can thus qualify for the monetary union and will increase the number of votes of the core group by $n(x_a)$ additional votes. Similar considerations hold for the other convergence criteria. The specific partial $n(x)$ -functions are determined according to the degree of convergence which the countries of the external group have reached in the individual policy fields (a, \dots, d) . The shapes of the individual curves will generally vary across the individual convergence criteria: granting a concession of 50% in the case of the deficit criterion ($x_a=50$) will generally lead to a different number of additional votes than a 50% concession with regard to the inflation standard ($x_b=50$). For example, in the current situation a slight relaxation of the inflation standard will lead to a larger number of countries qualified ex post than an equal relaxation of the debt reference value.

⁶ Strictly speaking the (partial) additional vote functions are step-functions. Nevertheless we assume the functions to be continuous and differentiable. The same holds for the benefit and cost function introduced later.

The core group can not only obtain additional votes by granting stability concessions x , but also by making side payments Z . The core group evaluates for each external group country how many transfers it requires for voting according to the core group's concept and for simultaneously not participating in EMU. Based on this information, the $n(Z)$ -function forms the curve of the transfer-induced additional votes (reflecting cost-minimizing transfer use). The side payments for the votes of the external group countries include financial and non-financial transfers. The cohesion funds would be an example for direct financial transfers, as it was established to secure the approval of the Mediterranean countries and Ireland to the Maastricht Treaty. Side payments could also be made in the form of indirect financial transfers by an increase of the funds for common EU policies, e.g., in the fields of agriculture or science and technology. In addition, there is a variety of possibilities for non-monetary transfers such as concessions of the core group countries in traditional EU policy fields, for instance competition policy, and newly envisaged areas such as a common foreign and security policy. It could also include concessions in institutional issues, such as the eastern enlargement of the EU. The intergovernmental conference which is to revise the Maastricht Treaty currently might provide the institutional framework for such package deals. Obviously, non-monetary transfers have to be expressed in monetary units (evaluation) in order to be comparable with monetary side payments.

The (gross) utility function B_i of an individual country i of the core group results from the benefits of sharing a common currency with other countries. These benefits increase along with the size of the common currency area. Therefore the utility increases with the number of countries which qualify for the monetary union due to the stability concessions. Since the country size corresponds approximately to the number of votes of the EU countries, the relationship $B_i = B_i(n)$ with $dB_i/dn > 0$ holds. For simplicity we assume linear marginal utility: $d^2B_i/dn^2 = 0$. Obviously only those additional votes which are realized through stability concessions x and thus induce additional EMU members influence gross utility B_i . In contrast, additional votes achieved through side payments Z are irrelevant in this context because they do not lead to a greater common currency area. Thus, the relationship $B_i = B_i(n(x))$ holds. The more stability concessions are granted the greater the number of participants in the monetary union will be and, therefore, the higher the (gross) utility from the common currency area. The utility functions of the individual core group countries can, however, differ greatly. Large and relatively closed countries such as United Kingdom and Germany probably value the economic benefits of an increased currency area to a lesser extent than smaller and more open countries such as Belgium and the Netherlands. Therefore larger countries might prefer to achieve the necessary additional votes through side payments rather than a softer interpretation of the convergence criteria.

The core group will not only benefit from an expansion of the currency area through the granting of concessions. Admitting a weak currency country can also lead to a loss of reputation for the core group and the risk of additional asymmetric shocks. These concession costs C_i tend to increase with the size of the external group country which has qualified ex post due to the slackening of the convergence criteria. As in the case of the gross benefits, the costs are a function of the number of additional votes achieved through granting concessions x , so that the chained partial cost function $C_i=C_i(n(x))$ holds, with $dC_i/dn>0$. Increasing marginal concession costs seem to be most plausible ($d^2C_i/dn^2>0$). The concession costs can differ greatly across the convergence criteria. For example, the granting of a 50% concession with regard to the inflation criterion may be associated with a different number of ex post qualified countries, and therefore additional votes, than an equivalent concession level with regard to the deficit criterion. In addition, the cost impact of a specific concession level will vary between the core group countries, because of different preferences, e.g. for monetary and fiscal stability. If the core group chooses the option "vote purchases", the costs for the individual countries are a function of the national transfer burden $z_i=\mu_i Z$. This function is comprised of the total transfers to be made by the core group, Z , and the national share of financing μ_i so that the partial cost function $C_i=C_i(\mu_i Z)$ holds.⁷ Thereby, the same national transfer amount $\mu_i Z$ can induce different compensation costs C_i between the core group countries, because of differences in total population, for instance. In general, the exclusive allocation of side payments to a specific country may cause problems because other countries may also profit from compensation measures via external effects, e.g. the build up of EU funds which can also be claimed by other countries. Similar externalities may also occur on the financing side. Adding together both partial cost functions yields the total cost function of a core group country, $C_i(n(x), \mu_i Z)$.

III. The EMU selection process under voting requirements

Based on the derived national utility and cost functions, as well as the so-called additional vote function (n-function), the core group decides whether or not to form a monetary union, and if so, under what conditions. Within the core group's optimization calculus, the utility and cost functions of its m members are taken into account according to the country specific weights α_i which may reflect the relative size of their population or their economic importance.⁸ In choosing the EMU members, the core group's optimization problem will be to maximize the sum of the weighted national welfare functions of the core group members

⁷ Hence the complete financing of the vote purchasing transfers by the core group is implicitly assumed. An alternative would be to include the additional members from the external group in the financing of side payments so that the transfer burden of a core country would be reduced from $z_i=\mu_i Z$ to $z_i=\mu_i \beta Z$ (with $0<\beta<1$), assuming that $\beta'(x)<0$.

⁸ See Casella (1992) for an analysis of the distribution of power between small and large countries in a monetary union.

subject to the minimum vote requirement: in addition to its own votes the core group has to secure the necessary minimum number of *additional* votes (n_{\min}) to achieve the qualified majority relevant for the EMU membership decision.⁹

$$(1) \quad \max_{x,Z} \sum_{i=1}^m \alpha_i [B_i(n(x)) - C_i(n(x), \mu_i Z)] \quad \text{s.t.} \quad n(x, Z) = n_{\min}$$

$$\text{s.t.} \quad \sum_{i=1}^m \alpha_i = 1, \quad \sum_{i=1}^m z_i = \sum_{i=1}^m \mu_i Z, \quad x = (x_a, \dots, x_d).$$

Using this approach, the optimal allocation between compensation transfers and the stability concessions can be derived. In the optimum, the following first-order conditions must hold:

$$(2a) \quad \sum_{i=1}^m \alpha_i \left[\left(\frac{dB_i}{dn} - \frac{\partial C_i}{\partial n} \right) \cdot \frac{\partial n}{\partial x} \right] - \lambda \frac{\partial n}{\partial x} = 0,$$

$$(2b) \quad \sum_{i=1}^m \alpha_i \mu_i \frac{\partial C_i}{\partial z_i} + \lambda \frac{\partial n}{\partial Z} = 0,$$

$$(2c) \quad n(x, Z) - n_{\min} = 0.$$

This leads to the following relation between the various stability concessions and the level of compensation payments:

$$(3) \quad \sum_{i=1}^m \alpha_i \frac{\left(\frac{\partial C_i}{\partial n} - \frac{dB_i}{dn} \right) \cdot \frac{\partial n}{\partial x_a}}{\frac{\partial n}{\partial x_a}} = \dots = \sum_{i=1}^m \alpha_i \frac{\left(\frac{\partial C_i}{\partial n} - \frac{dB_i}{dn} \right) \cdot \frac{\partial n}{\partial x_d}}{\frac{\partial n}{\partial x_d}} = \sum_{i=1}^m \alpha_i \mu_i \frac{\frac{\partial C_i}{\partial z_i}}{\frac{\partial n}{\partial Z}}.$$

If one assumes that the n_{\min} -restriction is mathematically binding, the marginal net concession costs in the individual concession fields (a,...,d) as well as the marginal compensation costs induced by vote purchasing must be equal. The core group will only accept a common currency area if its realization implies a positive total welfare level. In this context, one has to take into consideration that - due to the mathematical binding of the additional vote restriction - in the optimum, a negative marginal welfare is achieved, a fact

⁹ We assume that the vote constraint is mathematically binding and that the functions' properties ensure the existence and uniqueness of the optimum.

which is reflected by the equalization of the relative (net) marginal costs.¹⁰ If n_{\min} were not binding, only the various concession options would be relevant as policy parameters because only these options contain a positive net benefit potential.

From the point of view of the core group, the external group could be split up into the following three subgroups. The first subgroup of countries enters the monetary union because of a soft interpretation of the convergence criteria ("stability concessions"). These countries constitute the common currency area together with the core group. A second subgroup receives transfers for their voting contribution and their membership renunciation ("compensation payments"). A third subgroup does not participate in the currency union because the necessary stability concessions would be too costly for the core group. In addition, they do not even get compensation payments as their transfer claims for an appropriate voting behavior are too high.

Converting equation system (2) yields:

$$(4) \quad \lambda = \sum_{i=1}^m \alpha_i \left(\frac{dB_i}{dn} - \frac{\partial C_i}{\partial n} \right) = - \sum_{i=1}^m \alpha_i \mu_i \frac{\partial C_i}{\partial z_i} \frac{\partial Z}{\partial n}.$$

The value of the Lagrange multiplier expresses how much the optimal weighted welfare level of the core group increases if the minimum vote constraint n_{\min} is loosened marginally (implying a decrease of n). n_{\min} is lower, firstly, if the core group is bigger and has more votes at its disposal or, secondly, if the institutional majority requirements are relaxed, e.g., a switch from a qualified to simple majority rule. The welfare gain results from the net utility gains due to lower stability concessions and from cost reductions due to diminished (or less expensive) vote purchasing, as expressed in the two terms in (4). Here it is implicitly assumed that the voting requirements are mathematically binding in the starting situation.

IV. The implications of voting requirements

Figure 1 shows the relationship between voting requirements, the additional vote function, the benefit and the cost function. To simplify the presentation, we restrict the graphical analysis to the case of only one (concession) option, such as the slackening of the deficit limit. It is assumed that the concession costs of the core group $C = \sum_i \alpha_i C_i(x_a)$ are convex in the concession intensity. With respect to the gross utility function of the core group, $B = \sum_i \alpha_i B_i(x_a)$, little can be said a priori: therefore a linear form is assumed. The same holds for the $n(x_a)$ -curve. The cost and gross utility curves are expressed as direct functions of x_a , not indirectly via $n(x_a)$.

¹⁰ This includes the case in which the introduction of a common currency would have an overall negative welfare effect and, therefore, would not be beneficial for the core group.

Figure 1 depicts different utility-cost-constellations. In general a monetary union will not be set up in the case that the concession induced costs of the core group exceed the corresponding benefits, which means the net benefit of the stability concession is globally negative. This situation is shown by the dashed C^k -curve. However, if an interval of concession intensities implying positive net benefits exists, then a currency union between the core group and individual countries of the external group might be profitable. Whether a (small or big) currency union will be established depends on the economic and fiscal conditions in the external group countries (represented by the n -curve) and the level of the voting restrictions n_{\min} .

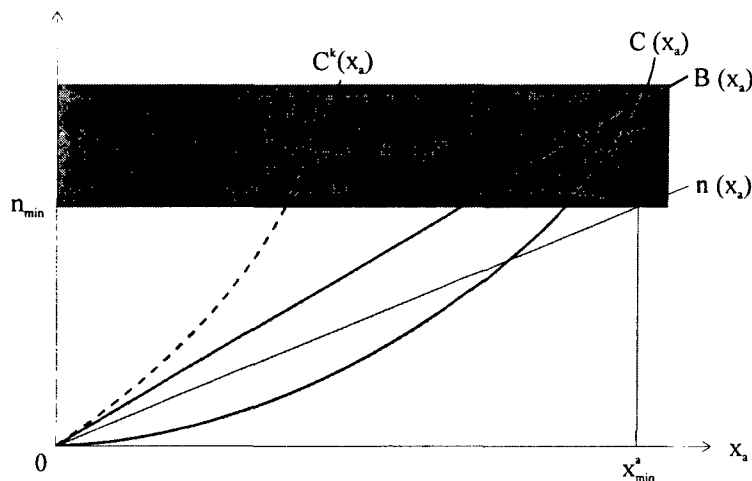


Figure 1: Voting requirements and the profitability of the European Monetary Union

How will alternative majority rules influence the participation structure, and therefore the size of the currency union? The n_{\min} -level drawn in Figure 1 characterizes the borderline case in which the core group would have to grant the stability concession x_a^{\min} , in which case concession benefits and costs are exactly equal.¹¹ If the minimum number of votes necessary for the achievement of the currency union is higher than the n_{\min} -level depicted in Figure 1, a more intensive concession x_a would be required. This would imply a negative net benefit for the core group. At such high n_{\min} -levels, a currency union will not be established. In the case of less strict voting requirements, i.e., the minimum number of additional votes is below the n_{\min} -level of Figure 1, a currency union can be realized by granting concessions. The core group can restrict itself to smaller stability concessions because it needs less additional votes. Loosening the vote requirements makes a currency union more feasible and a currency union which is already profitable under a more rigorous voting rule might be realized with fewer concessions and hence, at a higher welfare level for the core group. Choosing the EMU participants by qualified majority instead of unanimity, the general rule for Council decisions

¹¹ The concept of the minimum concession level $x_a^{\min} = x_a(n_{\min})$ only holds for the case of one (concession) option. In the multi-option-case the transfer level Z and the single concession levels x_a, \dots, x_d must contribute together to the fulfillment of n_{\min} . The adequate Z and x levels are determined by the optimization calculus (1).

leads to a smaller monetary union, tending more to stability and makes a multiple-speed process of monetary integration more likely. These tendencies would be further strengthened through the reform suggested by de Grauwe (1996). He proposes that the individual EU countries and not the Council decide for themselves voluntarily and without any voting requirements whether they want to join a monetary union. In contrast, the application of the unanimity rule would work against such a differentiated integration process: either a big union or no currency union at all would be set up.¹²

In this context a particular empirical aspect is of interest relating to the role of the voting requirements. The analysis so far has distinguished between two groups of countries: the core group, the "*ins*", and the external group, which wants to join the monetary union (*involuntary outs*). In the Maastricht process a third group of countries has evolved with Denmark and the United Kingdom. These countries, while likely to fulfill the convergence criteria, do not want (at the moment) to join EMU (*voluntary outs*). For these countries the potential advantages of monetary integration apparently do not balance out the costs such as the loss of monetary independence. Both countries will nevertheless participate in the selection of the EMU members, however not as part of the core group. This strengthens the binding character of the voting requirements. The two countries will have 13 votes at their disposal, half the blocking minority. Both countries could ask for concessions from the core group for not blocking the selection process. These concessions, however, can only be in the form of side payments, as stability concessions can only influence the voting behavior of involuntary outs which want to participate in the monetary union. The transfers could also be non-financial, such as agricultural political concessions to the United Kingdom in the BSE issue. The possibility of opting-out makes the EMU less beneficial for the core group (the "*ins*") and improves the bargaining position of the "*opt-outs*".

V. Loosening the binding character of voting requirements

We turn now to those countries which would be "*involuntary outs*" (the external group) if the EMU selection process were carried out today. What is the importance of the convergence success these countries could achieve in the time remaining before the actual EMU decision for the binding character of the voting requirements?¹³ If some of these countries achieve *total* convergence the core group becomes larger than originally expected before the final spurt of the convergence process started. As a result, the number of additional votes n_{\min} necessary for achieving the majority is less than without this convergence success.¹⁴ Hence,

¹² See Kirman and Widgrén (1995) for a discussion of the EU voting procedures, Baldwin (1994) for an application in the context of EU enlargement.

¹³ Dourven and Engwerda (1995) provide a theoretical analysis on how individual EU countries can be motivated to attain the highest possible degree of convergence.

¹⁴ The larger core group also implies the reduction of the external group which leads to a modification of the utility, costs and additional vote functions of the core group. Furthermore, the utility and costs functions of the

the voting requirements become less binding. It is likely that some countries achieve only *partial* convergence until the EMU membership decision, i.e. they come closer to fulfilling the convergence criteria while not reaching the reference values completely. Because of their convergence efforts these external group countries could be admitted to the EMU with relatively small stability concessions compared to the situation without such (partial) convergence success. Therefore each concession intensity is associated with a higher number of concession-induced votes. This implies a leftward rotation of the $n(x)$ -curve, resulting in a smaller binding effect of the voting requirements. Along with the rotation of the additional vote curve, the utility curve and the concession-induced cost curve rotate to the left as well, because they are functions of $n(x)$. The total as well as the partial convergence successes lead to a leftward rotation of the $n(Z)$ -curve because the larger core group is no longer so strongly dependent on vote purchasing and, therefore, has improved its bargaining position relative to the potential transfer receiving countries. Each level of side payments Z is now associated with a higher number of transfer-induced additional votes $n(Z)$ than before the convergence process. These impacts of the convergence success contribute that the voting requirements no longer affect the selection process so negatively. Therefore, monetary unions which were up to now not profitable for the core group become profitable or their efficiency level is increased.

Institutional measures which reduce the concession costs $C_i(n(x))$ work in the same way. For instance the so-called "stability pact" has been proposed to secure economic stability after the start of EMU. According to this proposal, EMU participants have to obey strict fiscal deficit limits. Failure to comply with these limits shall result in sanctions. While these limits will apply only after the EMU has started, they can also influence the selection process. If EMU members must take into account deficit limits (membership conditions), the compliance with fiscal convergence criteria (entry conditions) before the establishment of EMU might be considered to be not as important by the core group. The perceived costs of a softer interpretation of the fiscal convergence might be smaller: the $C(x_a)$ -curve will rotate downwards. As a result, the welfare gain through the EMU would be greater and it would more likely that the optimal EMU size - with the minimum vote requirement not being binding - would be realized. Strengthening the commitment of the European Central Bank to price stability, as proposed by De Grauwe (1996), would work in a similar direction. The core group might be more willing to concede to a softer interpretation, especially of the inflation criteria, because the expected costs of such a concession would be smaller. This effect, as well as the impact of the stability pact causes the voting requirement to have a weaker binding character.

previous core group enters into the optimization calculations with a lower weight because the core group now has more members than previously.

VI. Conclusions

The previous analysis investigated the relevance of the voting requirements for EMU membership. If the convergence process within the EU is not sufficiently advanced at the time of the decision at the beginning of 1999, the requirement of a qualified majority may necessitate the granting of stability concessions and/or compensation transfers. Considering the voting requirements, the following scenarios become relevant for the core group of countries which fulfills the convergence criteria:

- Agreement to a *large* monetary union in order to realize the advantages which a large common currency area provides. However, such a monetary union is only beneficial if the necessary stability concessions do not imply costs in the form of stability risks which are unacceptably high.
- Realization of a *small* monetary union with modest stability concessions by means of vote purchasing transfers to weak currency countries in order to guarantee the necessary number of votes in the European Council.
- Renunciation of the EMU if the costs of stability concessions and/or side payments exceed the benefits of a common currency ("*no* monetary union").

As a fourth option it has been suggested that the establishment of the EMU should be postponed if only a few countries meet the convergence criteria at the beginning of 1999 (Dini (1995)). From the point of view of the core countries, such a delay would have the advantage that possibly more countries would fulfill the convergence criteria or would miss the target values by a smaller degree.¹⁵ The price of the common currency in the form of stability concessions and/or side payments would be lower. At the same time, the benefits of a common currency area would be smaller because of the delayed abolishment of the national currencies. In addition, there is the risk that the process of monetary integration will be stopped completely and the potential benefits of a monetary union cannot be realized at all. This might cause even hard currency countries to hold on to the agreed EMU beginning in January 1999, in spite of relatively high stability concessions and side payments.

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¹⁵ For these scenarios the results derived in section V hold analogously.

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