

Lechner, Susanne; Ohr, Renate

Working Paper

The right of withdrawal in the treaty of Lison: A game theoretic reflection on different decision processes in the EU

cege Discussion Papers, No. 77

Provided in Cooperation with:

Georg August University of Göttingen, Department of Economics

Suggested Citation: Lechner, Susanne; Ohr, Renate (2008) : The right of withdrawal in the treaty of Lison: A game theoretic reflection on different decision processes in the EU, cege Discussion Papers, No. 77, University of Göttingen, Center for European, Governance and Economic Development Research (cege), Göttingen

This Version is available at:

<https://hdl.handle.net/10419/32029>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Number 77 – October 2008

**The Right of Withdrawal
in the Treaty of Lisbon:
A game theoretic reflection on different
decision processes in the EU**

Susanne Lechner
Renate Ohr

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

ISSN: 1439-2305

The Right of Withdrawal in the Treaty of Lisbon:

A game theoretic reflection on different decision processes in the EU¹

Susanne Lechner* and Renate Ohr**

October 2008

Abstract

The ways of decision making within the EU have significantly changed in the last decades: the rule of unanimity has been more and more substituted by majority voting in order to speed up decision-making processes in a Union of 27 heterogeneous member states. A third possibility is now offered by the Lisbon Treaty including a constitutional right of withdrawal: A member state encountering a loss in its benefits caused by a decision made by majority voting may now demand compensating transfers by using the right of withdrawal: It might threaten to leave the EU if the compensation is denied. Are member states becoming as powerful as they are under the rule of unanimity because they use the right of withdrawal as a threat point?

Using a game theoretic approach we show that normally compensating transfers will be lower under majority decisions with exit option compared to decisions requiring unanimity; under certain conditions however transfers could also be as high as in the case of unanimity. In practise, the EU will offer compensating transfers depending on how credible a member state threatens to leave the Union. By using cheap talk a member state may increase the credibility of its outside option and therefore receive higher transfers.

Keywords: *European Integration, Game Theory, Secession*

JEL classifications: *C 70, D 70*

* cege – Center for European, Governance and Economic Development Research, Faculty of Economic Science, University of Goettingen, Platz der Goettinger Sieben 3, 37073 Goettingen, Germany, Email: susanne.lechner@wiwi.uni-goettingen.de, Internet: www.cege.uni-goettingen.de.

** Chair of Economics, esp. Economic Policy, Faculty of Economic Science, University of Goettingen, Platz der Goettinger Sieben 3, 37073 Goettingen, Germany, Email: renate.ohr@wiwi.uni-goettingen.de, Internet: www.economics.uni-goettingen.de/ohr.

¹ The paper has been presented at the 1st Conference Beyond Basic Questions, Georg-August-University Goettingen, September 2008. We would like to thank the participants for their helpful comments.

1. Introduction

For the first time since the foundation of the European Community more than 50 years ago, an explicit option of withdrawal from the Community has been set down in the Treaty of Lisbon, article 50. This act is a novelty since neither in previous treaties the European Union (EU) is based upon details concerning withdrawal processes are laid down, nor does the International Law give any specific guidelines.

In fact, during the integration process that started with the foundation of the European Community no country has withdrawn from the community² However the European integration process faces new challenges due to numerous enlargements: The objectives and institutional regulations set up for the initial Community consisting of six neighboring national economies at a quite similar stage of development are partly losing relevance in a more heterogeneous Community of now 27 member states. Unanimity decision making becomes increasingly difficult. The majority decisions brought in to solve this problem may lead to the scenario of a country being outvoted several times and getting increasingly unsatisfied with the membership conditions. The option of withdrawal might become a serious alternative for this country and at the same time reduce tensions within the Community.

The latest developments during the ratification process for the Treaty of Lisbon also support the importance of a (future) right of withdrawal: The Irish citizens' refusal (still valid so far) of the Reform Treaty as well as the critical attitude of Poland and the Czech Republic have caused discussions showing a wide range of possible consequences with excluding states reluctant to support reforms on one end and founding a new European Union without them on the other.³

The right of withdrawal is a new instrument for the member states which on the one hand helps them to oppose to excessive EU centralization tendencies – which strengthens the principle of subsidiarity⁴ – and that on the other hand can be used as a threat point in order to impede decisions or to at least enforce compensations for a decision taken against their interests. Does this mean that member states have regained a negotiation power comparable to the right to veto or are they becoming even more powerful by threatening to leave? This study

² Referring to the withdrawal of Greenland from the EU, Berglund (2006, pp. 157ff) shows in her essay that a withdrawal from the Union is in principle possible. Since Greenland was no autonomous member state of the EU, Zeh (2004, p.192) however argues that the Greenland action was a member state's reduction in size and therefore not a withdrawal of a member state according to the European Community Law.

³ See Calliess / Ruffert (2006), pp. 638ff.

⁴ See Buchanan / Faith (1987), p. 1031.

provides an answer to the question raised above. It is organized as follows: section 2 first deals with the relevance of a withdrawal by assessing the costs and benefits coming along with EU membership and then refers to the threat of withdrawal. Section 3 presents the model which is applied to three different voting schemes: unanimity voting, majority voting without an exit option and majority voting with an exit option. The obtained results are modified in section 4 by considering information asymmetries. Section 5 concludes.

2. The Relevance of Withdrawal and Threat of Withdrawal

There are economic as well as non-economic reasons for a country to withdraw from an integration area such as the EU. Non-economic factors are, among others, conflicts arising from different attitudes towards religion, language, culture or ethnicity.⁵ Other reasons originate in restricted civil rights or privileges no longer accepted by a state, for example.⁶ This analysis will, however, not concentrate on these non-economic reasons but rather focus on the economic reasons in the broad sense because “[...] economic factors are responsible, at least partially, for the birth of secessionist movements that at first glance seem to be driven purely by nationalistic motives [...]”.⁷

2.1 A Cost-Benefit Analysis of the EU Membership

For every EU member state, the membership brings along economic benefits as well as disadvantages that result in state-specific cost-benefit relations. In case of withdrawal, the membership benefit is lost and can therefore be equated with the (opportunity) costs of a non-membership (outside position). Accordingly, the (opportunity) costs of a membership are based on the benefits resulting from an independent position outside the Community.

A state's benefit from the EU membership is defined (among others) by the following elements:⁸

- **Benefit of the European Single Market:** This concerns trade and specialization gains through unrestricted free trade as well as the improved allocation of resources through the unhindered mobility of the production factors labour and capital within the integration area.

⁵ See Bookmann (1993), pp. 12f.

⁶ See Sunstein (1991), pp. 655f.

⁷ Alexandrakis / Jones (2006), p. 400.

⁸ See Ahrens / Hoen / Ohr (2005), pp. 421ff.

- Benefit of the regional and structural policy: This concerns the financial support by the EU with the aims of reducing regional income differences and establishing convergence.
- Benefit of the Common Agricultural Policy: This concerns a reliable supply with agricultural goods as well as the stabilization of the agricultural markets within the integration area.
- Benefit of the Monetary Union: This concerns the reduction of transaction costs in trade and capital movements due to the common European currency, as well as the omission of exchange rate risks and risk premiums – along with the associated positive allocation effects.
- Benefit of the EU trade policy towards third countries: This concerns the fact that the EU membership results in a stronger bargaining position.
- Benefit that is caused inherently by the EU membership: This concerns, among others, the fact that the member state participates in the integration process, is part of the decision making process with regard to the depth of integration as well as to the admission of new members, has an increased negotiation power towards outsiders and benefits from the Community's protection.

The benefit of the non-membership (opportunity costs of membership) is defined, among others, by the following elements:

- Benefit of independency: This concerns the advantages of a sovereign and autonomic economic policy based on its specific preferences and requirements.
- Benefit of the autonomous use of state revenues: This concerns the fact that no payments to the EU budget have to be made.
- Benefit of an autonomous foreign trade policy: This concerns the fact that specific economic and monetary agreements with third countries are possible and that the advantages of an independent monetary policy can be exploited.

The comparison of benefits between the EU membership and an outside position can therefore be considered to be the decisive element to the question whether a membership (still) maximizes the benefit. With regard to this decision, other one time costs following a withdrawal have to be taken into account (e.g. for re-establishing border controls, replacing

the common European currency by the national currency etc.).⁹ Furthermore, the question whether the EU membership is an advantage to a country becomes relevant on a regular basis since the EU keeps changing the cost-benefit relations of its members by taking various decisions in the course of the enlargement and deepening processes.

Below, the importance of some country-specific criteria fundamentally relevant to the cost-benefit will be analyzed (without further reflecting upon the specific aspects of the individual states): the size and the geographical position of a state, the duration of its EU membership and its economic structures.

With regard to the size¹⁰ of a country, small and large ones can be distinguished. Through the EU membership, small countries are, for example, able to reduce the vulnerability arising out of their size, to position themselves within the community and to exert influence.¹¹ Due to their (former) superiority in numbers within the EU institutions, larger states appreciate small states to become their coalition partners in decision making processes since they have more votes per capita in comparison to large states. Therefore, they receive concessions by their coalition partners¹² that hardly bind any resources.¹³

Another reason for small countries especially benefiting from the Single Market is the fact that their national home market allows significantly less scale economies and product variety. These economic benefits would obviously be lost in case of withdrawal. Bearing in mind, however, that the worldwide free trade is on the rise and thus more and more markets are opened, the economic dependence of small countries on regional trade systems is being reduced¹⁴, which in turn qualifies the costs of withdrawal. Also, the European Single Market has opened in the course of the worldwide free trade process, which means that access to the Single market is to a great extent open to outsiders too. This shows that taking into account merely trade economic aspects, a small state no longer depends on the membership in an integration area these days. However, an integration area offers inherent benefits especially to small states such as a stronger economic bargaining position and economic security¹⁵, which

⁹ In theory, these expenses would have to be discounted over the complete outside position period. However, they are for the most part taken into account immediately because they incur – especially in the politicians' perception of time as short election periods – directly within the period of withdrawal.

¹⁰ Traditionally, four aspects are used to define the size of a country: the size of its territory, the GDP, the population and the military power. Current publications also take into account the economic collaboration connected to the political cooperation with other countries, which leads to a new understanding of "size". See Thorhallsson (2006), pp. 6ff.

¹¹ See Pace (2006), p. 38.

¹² See Rodden (2002), p. 159.

¹³ See Baillie (1998), p. 205.

¹⁴ See Müller / Myllyntaus (2008), p. 16; Alesina / Spolaore (2003), p. 172.

¹⁵ See Wivel (2005), p. 409.

means that they benefit more from the EU membership than large state, which has sufficient (negotiation) powers regardless its EU membership.

With regard to the geographical position of a state, a distinction is made between those situated on the periphery and those situated in the center of an integration area. Arguing on the basis of the New Economic Geography, countries in the center of an integration area that in addition are in close regional neighborhood to each other have less transaction costs, which in turn encourages trade activities and thus increases the trade volume.¹⁶ The position in the center of economic activities leads to a higher income, which is reflected in a rising growth rate of this country. Countries situated on the periphery of economic activities, however, have reduced growth rates since the distance to the center of economic activities is too long.¹⁷ Furthermore, countries situated on the periphery can be restricted in their negotiation power due to their long geographical distance from the center: the representatives of rather remote countries can not attend EU meetings called on short notice and can thus exert less influence.¹⁸ Peripheral countries also form the integration area's outer border and could therefore be the point of intersection between two integration areas. This aspect could become significant if the neighboring integration area offers a higher benefit to the peripheral country than the EU does, which makes a withdrawal seem less unrealistic. Consequently, a country's geographical position within the integration area is an important factor to the cost-benefit relation regarding the EU membership.

With regard to the duration of the EU membership, a distinction can be made between "old" member countries, having joined the Union before the year 2004, and "new" member countries. Countries that have been EU members for a long time have gained more integration profits,¹⁹ which also results from the fact that some types of profits only grow over a longer period of time. Additionally, they benefit from advantages with regard to their negotiation position within the Union and have gained possibilities to exert influence that "new" countries do not have. As a result, "new" countries are confronted with the need to accept rules and regulations set up by the "old" countries (for their own benefit).²⁰ Member countries that joined the EU later do therefore have a cost-benefit structure differing from the other 15 EU countries' cost-benefit structure and even more from the one of the countries that founded the Union.

¹⁶ See Baier / Bergstrand (2004), p. 41.

¹⁷ See Bähr (2008), p. 15.

¹⁸ See Nugent (2006), p. 61.

¹⁹ See Kaitila (2004), p. 28.

²⁰ See Kelstrup (1993), pp. 157f.

Another example for a country-specific aspect is the economic structure, which is defined by the per capita income, by the production and foreign trade structure, by the foreign trade relations to EU partner countries and third countries, by social and political-economic preferences and also by the financial relations to the EU. Every member country makes payments to the common EU budget and receives transfers. In this context, a distinction between net recipient and net contributors has to be made, which again results in different cost-benefit relations of the membership.

On the basis of this quite general scheme, certain predictions on a country's benefit of membership and non-membership can already be made. The results of the four criteria listed above can however differ, rendering it necessary to ascribe the appropriate relevance to each criterion. Additionally, numerous other aspects specific to each country may influence the effects of an EU membership.

2.2 The Relevance of a Threat of Withdrawal

In case exogenous or endogenous factors cause a modification of the cost-benefit relation and the value of a Union membership decreases, the option of a withdrawal becomes relevant. As mentioned before, the latest enlargements could be a reason since they lead to a higher heterogeneity of the member countries with regard to structure and preferences. This heterogeneity is reflected in decision making processes becoming more and more difficult. The Treaty of Lisbon may also cause new conflicts: Due to the enshrined appreciation of decisions based on superior majorities, the danger of member states being outvoted more often and their cost-benefit balance getting out of balance is rising. In case these outvoting situations cumulate it might become difficult for a member state to further participate in the integration process.

These developments can thus lead to a decreased benefit of the EU membership²¹ or to an increased benefit of the non-membership for a specific country. In the latter case, two scenarios are possible: either the benefit of being a sovereign state outside the EU is regarded more valuable than before or the membership in another integration area is regarded more promising with regard to benefit than the membership in the EU. In both scenarios, a withdrawal might be considered.

In case such significant changes in a member country's cost-benefit relation occur, the country will initially try to have the EU compensate these changes. Therefore, the member

²¹ See Farvaque (2000), p. 6.

country will make certain claims and threaten to withdraw in case these claims are not met. The member state thus uses the right of withdrawal as a potential right to veto or as a threat in order to prevent disadvantageous decisions or to receive EU transfers, e.g. compensation payments to accept this initially disadvantageous development as necessary part of the integration process.²²

At the time of a member state asserting its claims, it is – due to existing information asymmetries – not obvious to the EU (being regarded as representation of the other member states) what kind of changes in the cost-benefit relation of the specific state will actually occur. This circumstance may induce a member state to assert unjustified claims in order to raise its own benefit position compared to other member states. With the help of the enshrined withdrawal option, a country can therefore obtain advantages to the account of other member states.

The previous integration process has seen some threats of withdrawal so far: In 1965, de Gaulle and his “policy of the empty chair” threatened to withdraw should the unanimity rule not be enshrined in the Council’s resolution passing proceedings. This threat was preceded by a qualified majority refusal of French agricultural proposals. The European Union and France came to an agreement, the Luxembourg Compromise of 1966, leading to the budget being reallocated in favor of agricultural measures.²³

Great Britain indirectly threatened to withdraw in order to obtain concessions: Since joining the EU in 1973, the country made high payments to the EU budget but was allocated only a small amount out of the agricultural fund composing 75% of the overall budget at that time. Since Great Britain’s agricultural structure only represents a small part of its economy, the country could demand only little money out of the agricultural fund and was additionally more restricted by the Common Agricultural Policy than other member states.²⁴ The EU established a compensation mechanism in 1984 – the so-called British rebate. Thatcher threatened to hold a referendum for continuance in the Union or to withdraw should there be no payment facilities for Great Britain.

²² The numerous package deals and side payments used as instruments in the negotiation processes are two examples of this procedure. The question whether these payments are justified or not shall not be elaborated here.

²³ See Schäfer (2004), p. 217.

²⁴ Great Britain imported many goods from Commonwealth States, which increased duty and agricultural levy payments. Furthermore, consumption was very high with regard to the British GNP, which resulted in higher VAT own resources to be paid to the EU budget. See Euler (2005), p. 456.

The examples listed above as well as the latest developments in the ratification process of the Treaty of Lisbon shed a light on the future relevance on the threat of withdrawal with an explicit withdrawal option at hand.

3. The Model

Our analysis is based on a simple game theoretic approach. We start with an upcoming decision (E) which should be made in the European Union. This decision will increase the benefits (U) for all member states M_i of the EU except of member state M1 whose benefit (U_{M1}) will be reduced if the decision is made.

$$EU \Rightarrow \sum_{i=2}^n M_i \quad U_{EU} \Rightarrow \text{Benefits of all member states of the EU without M1}$$

We assume:

$$(1) \quad dU_{M1}(E) < 0 \quad \text{and} \quad dU_{EU}(E) > 0, \quad \text{with}$$

$$(2) \quad |dU_{EU}(E) > 0| > |dU_{M1}(E) < 0|$$

In case the decision (E) is made member state M1 will demand a compensation (v) that will benefit M1 and harm the EU symmetrically:

$$(3) \quad dU_{M1}(v) > 0 \quad \text{and} \quad dU_{EU}(v) < 0, \quad \text{assuming for simplicity that}$$

$$(4) \quad dU_{M1}(v) = |dU_{EU}(v)|$$

The decision (E) will be made at time $t = 0$. In the next period, at $t = 1$, the decision becomes effective. Based on that the following utility functions can be derived:

$$(5) \quad U_{M1}(t=1) = U_{M1}(t=0) + dU_{M1}(E) + dU_{M1}(v), \quad \text{with}$$

$$U_{M1}(t=0) = \text{Overall benefit of EU membership for M1 in } t = 0$$

$$U_{M1}(t=1) = \text{Overall benefit of EU membership for M1 in } t = 1$$

$$(6) \quad U_{EU}(t=1) = U_{EU}(t=0) + dU_{EU}(E) + dU_{EU}(v), \quad \text{with}$$

$$U_{EU}(t=0) = \text{Overall benefit of EU membership for the remaining member states (EU) in } t = 0$$

$$U_{EU}(t=1) = \text{Overall benefit of EU membership for the remaining member states (EU) in } t = 1$$

We consider three decision-making scenarios:

- a) Decisions requiring unanimity , i.e. individual member states may veto
- b) Majority voting system without exit option
- c) Majority voting system with exit option

3.1 The Rule of Unanimity and the Option to Veto

If the decision requires unanimity, the member state M1 may veto and stop it. As the decision would increase the benefits for almost all member states the EU should offer M1 a transfer (v) compensating M1 for its loss in benefits. The critical point is the amount of the compensation (v) that will keep M1 from using its right to veto. For further insight the situation can be modelled with the help of the ultimatum game in which the following assumptions are made:

- 2 players (EU and M1)
- Both players know each other.
- Both players have complete information with respect to the changes in benefits occurring in the course of the decision.
- The EU is the proposer offering a concrete amount of compensating transfers whereas M1 is the responder who either accepts or rejects.
- The game is played sequentially.
- There is no bargaining.²⁵
- The game is only played once.²⁶

Assuming rational behaviour M1 should accept any offered compensation satisfying the condition $dU_{M1}(v) > |dU_{M1}(E)|$ ²⁷ as a result of this „take-it-or-leave-it game“. The EU should offer the lowest possible amount complying with $dU_{EU}(E) > |dU_{EU}(v)|$, i.e. the benefit of the decision made must be higher than the loss of the provided transfer; if not, the decision will not be implemented. The amount offered is marginally higher than v^* , with v^* leaving the country M1 to be indifferent between vetoing and agreement:

$$(7) \quad dU_{M1}(v^*) = |dU_{M1}(E)|$$

²⁵ In reality this assumption doesn't hold because bargaining takes place in the EU – more than enough. Anyhow, for reasons of simplification we disallow for bargaining.

²⁶ In reality those games are played all the time within the EU, but with changing decisions and changing member states being the responder.

²⁷ See Güth (1995), p. 197.

In that case, the net benefit of the decision and the provided transfer is marginally higher than 0 for member state M1 while the net benefit gain for the EU is at most.

Güth, Schmittberger und Schwarze (1982) carried out some experimental studies showing that players often behave differently to what theory actually suggests: If the proposer offered too little (below 20-30% of the amount to be redistributed), the responder punished him by rejecting the offer – with the consequence that neither of them received anything. In addition the proposer – by its own impetus – also often cared about fairness by offering the responder a higher amount (between 30-50% of the amount to be redistributed).

Taking these results into account the EU²⁸ should offer a compensation (v) consisting of two components ($v^* + x$), with x being a significant additional amount. The highest possible additional payment (x^*) is determined by the condition that the EU is indifferent between implementing the decision and paying the transfer or refrain from it. To ensure a positive benefit from implementing the decision the EU must only offer a compensation x which is lower than x^* .

$$(8) \quad |dU_{EU}(v^*+x)| < dU_{EU}(E), \quad \text{with}$$

$$(9) \quad x < x^* \quad \text{and } x^* \text{ corresponding to: } |dU_{EU}(v^*+x^*)| = dU_{EU}(E)$$

If the EU offers a positive, but too low x, M1 will not accept and veto; the decision benefiting the majority of the member states will not be implemented, though both players would have been better off with the decision and the transfer.²⁹

As a consequence, the rule of unanimity enables M1 to get a compensation (v) consisting of ($v^* + x$), where x increases its benefits additionally at the expense of the other member states: $v^* < v = v^* + x < (v^* + x^*)$, with v^* and $(v^* + x^*)$ defining the respective limits of compensation.

3.2 Majority Voting System Without an Exit Option

Due to the enlargement processes, the rule of unanimity has been more and more substituted by majority voting in order to speed up decision-making in a Union of 27 heterogeneous

²⁸ The experimental studies assume that individuals behave in that way. We adopt that approach for the behaviour of states even though we are aware of possible problems going along with that adoption. Besides that we consider the EU as an individual representing the interests of all member states except of M1. In order to reduce the complexity we refrain from modelling a two-level game where the decision making processes among the remaining member states of what to offer M1 as a transfer is analysed.

²⁹ Thaler (1988) and Roth (1995) present a comprehensive overview on experiments within the framework of ultimatum games. Stahl (2008, 293) discusses some reasons why players act irrational, for example fairness, envy and social preferences.

member states. A decision can be realized despite the opposition of one or more member states. We assume again that a decision (E) benefits the majority of the member states except of M1 which experiences a loss. Based on that there is no need to offer a compensation to M1 ($v=0$) because there is no right of veto:

$$(10) \quad U_{M1}(t=1) = U_{M1}(t=0) + dU_{M1}(E) \quad \text{with} \quad U_{M1}(t=1) < U_{M1}(t=0)$$

$$(11) \quad U_{EU}(t=1) = U_{EU}(t=0) + dU_{EU}(E) \quad \text{with} \quad U_{EU}(t=1) > U_{EU}(t=0)$$

In order to meet concerns of fairness, the EU might offer some kind compensation which is, however, – especially in a one shot game – lower compared to the situation of unanimity rule and ranges between $0 < v = x << (v^* + x^*)$. M1 will accept that offer – in a one shot game – by all means no matter how much it will receive because any rejection will cause harm to it and will not punish the proposer for a too low offer.

3.3 Majority Voting System With an Exit Option

The Treaty of Lisbon now enables member states to withdraw from the Union; M1 may therefore use this outside-option in its negotiation with the EU. If M1 decided to withdraw, the expected utility functions of M1 and the EU would change as follows:

$$(12) \quad U_{M1}(t=1) = U_{M1}(-EU)$$

$U_{M1}(-EU)$ = overall benefit of M1 after having left the EU, with the restriction that $U_{M1}(-EU) < U_{M1}(t=0)$ (because otherwise M1 would not be a member of the EU even now).

$$(13) \quad U_{EU}(t=1) = U_{EU}(t=0) + dU_{EU}(E) + dU_{EU}(-M1)$$

with $dU_{EU}(-M1) < 0$ = The change in the benefits of EU membership for the remaining member states after M1 has left the union.

If M1 decided to leave the integration area, the remaining states would gain less from integration because for example the Single Market becomes smaller, bargaining power with respect to third party countries decreases or it is a net contributor who ceases. These welfare losses are normally the higher the larger the withdrawing country, the longer it has been a member state (especially if it is one of the founding members) or the higher its per-capita income compared to the average.

Indeed M1's outside-option is realistic if $U_{M1}(-EU) > U_{M1}(t=0) + dU_{M1}(E)$ ³⁰, which means that staying in the Union and accepting the decision is less beneficial compared to being a sovereign country again.³¹ In contrast to that, the EU is interested in keeping M1 away from withdrawing as $dU_{EU}(-M1) < 0$.

Against this background, two cases must be distinguished:

Scenario a): $dU_{EU}(E) > |dU_{EU}(-M1)|$

The decision is so favourable to the remaining EU member states that its accompanying benefits are considered higher than the loss they experience after M1 might have left.

Scenario b): $dU_{EU}(E) < |dU_{EU}(-M1)|$

The decision is less favourable to the remaining EU member states as its accompanying benefits do not compensate for the loss they experience after M1 might have left.

Scenario a: The withdrawal of M1 causes only a small loss in the benefits of the EU

If $dU_{EU}(E) > |dU_{EU}(-M1)|$ holds, the EU will implement the decision by all means, even if M1 decided to terminate its membership. But as a withdrawal will reduce the overall benefit, the EU is interested in offering M1 an adequate compensation (v) to prevent the exit. A member state suffering from a decision made by majority voting may now demand compensating transfers by using the right of withdrawal: It might threaten to leave the EU if an adequate compensation is refused.³² M1 as the responder may now effectively influence the behaviour of the EU as the proposer.³³

Our previous ultimatum game will be modified as follows:

Behaving rationally M1 should accept any compensation (v) that complies with:

$$(14) \quad U_{M1}(t=1) = U_{M1}(t=0) + dU_{M1}(E) + dU_{M1}(v) > U_{M1}(-EU) \quad \text{which means that}$$

$$dU_{M1}(v) > -dU_{M1}(E) - (U_{M1}(t=0) - U_{M1}(-EU)) .$$

The transfer should put M1 in the place that being member of the EU is more valuable – at least marginally – to it than the outside option. Therefore the transfer (v) only has to put M1

³⁰ Exactly, we should also include one time exit costs (κ) into our consideration. But we ignore them here as they don't have any severe effects on the results.

³¹ In the case that $U_{M1}(-EU) < U_{M1}(t=0) + dU_{M1}(E)$, i.e. the overall benefit of being a member state of the Union outweighs the benefits of withdrawal despite the loss of benefits caused by the decision, the threat to exit is not credible.

³² See Knez / Camerer (1995), p. 66.

³³ See Fellner / Güth (2003), p. 54.

marginally better off compared to its outside option. A complete compensation based on M1's loss incurred by the decision is not necessary!

The EU, in turn, will offer the lowest possible payment satisfying $|dU_{EU}(v)| < |dU_{EU}(-M1)|$, which means that the offered transfer should reduce the benefits of the EU less than the imminent exit of M1.

Thus the offered transfer would only be marginally higher than v^{**} , with v^{**} resulting from

$$(15) \quad U_{M1}(t=1) = U_{M1}(t=0) + dU_{M1}(E) + dU_{M1}(v^{**}) = U_{M1}(-EU) \quad \text{or}$$

$$(15a) \quad dU_{M1}(v^{**}) = -dU_{M1}(E) - (U_{M1}(t=0) - U_{M1}(-EU))$$

v^{**} symbolizes the amount of the transfer leaving M1 indifferent between withdrawing ($U_{M1}(-EU)$) or staying ($U_{M1}(t=0) + dU_{M1}(E) + dU_{M1}(v^{**})$).

The net change in benefits for M1 based on the decision and the offered transfer is still negative but not serious enough to overcompensate the advantage of EU membership compared to the outside option. The net gain in benefits for the EU, however, based on the decision and the promised transfer is at most. The offered compensation will be lower compared to the decision rule of unanimity as ($v^{**} < v^*$), but it will be higher compared to the majority voting system without exit option, because in that case, rationally, no compensation should be offered.

However, as experiments have shown players may act irrational. M1 may reject an offer considered as too low, though this rejection is leading to a decrease in benefits for both M1 and the EU. In that case, the EU should offer a compensating transfer (v) composed of ($v^{**} + z$) with z being a significant additional amount. But such a compensation will only be offered, if the loss of benefits caused by the transfer is smaller than the loss of benefits caused by an exit of M1. Thus the highest possible premium (z^*) follows from the condition that the EU is indifferent between paying the transfer and accepting the exit of M1. To ensure a compensation offered by the EU the premium z must be, at least marginally, smaller than z^* :

$$(16) \quad |dU_{EU}(v^{**}+z)| < |dU_{EU}(-M1)| \quad \text{with}$$

$$(17) \quad z < z^* \quad \text{and } z^* \text{ corresponding to } |dU_{EU}(v^{**}+z^*)| = |dU_{EU}(-M1)|$$

When referring to experiments in the setting of ultimatum games, it can be concluded that z would be equal to around 30% of the loss the EU experiences if M1 withdrew ($dU_{EU}(-M1)$).

In scenario a, the majority voting system with exit option enables M1 to get a compensation (v) consisting of ($v^{**} + z$) with $v^{**} < v = v^{**} + z < v^{**} + z^*$. This transfer may now even

overcompensate the loss in benefits of M1 in the course of the decision and therefore increase its overall benefit of EU membership. The probability for such a high transfer rises more the higher $|dU_{EU}(-M1)|$ and the lower $|dU_{M1}(E)|$.

Scenario b: The withdrawal of M1 causes a significant loss in the benefits of the EU

If $dU_{EU}(E) < |dU_{EU}(-M1)|$ holds, the EU is willing to do everything that is necessary to avoid M1's withdrawal from the EU because its exit would imply a high loss of benefits for the remaining member states, which would overcompensate the gains from the decision (E).

The amount the EU may afford for compensation is determined by $|dU_{EU}(v)| \leq dU_{EU}(E)$: The benefits caused by the decision must overcompensate the loss in benefits caused by the transfer. If the EU had to pay a higher compensation, the net benefit from realizing the decision and making the compensation payment would become negative; instead of implementing a very costly decision it would be rational then to abandon the decision and to avoid paying any kind of transfer.

Being well informed about the utility function of M1, the EU would be aware of whether there exists a transfer v complying with $|dU_{EU}(v)| \leq dU_{EU}(E)$ and at the same time fulfilling the restriction

$$(14) \quad dU_{M1}(v) > -dU_{M1}(E) - (U_{M1}(t=0) - U_{M1}(-EU))$$

These constraints and the assumption from (4) $dU_{M1}(v) = |dU_{EU}(v)|$ lead to

$$(18) \quad dU_{EU}(E) > dU_{M1}(v) > -dU_{M1}(E) - (U_{M1}(t=0) - U_{M1}(-EU)) \quad \text{or}$$

$$(18a) \quad dU_{EU}(E) > -dU_{M1}(E) - (U_{M1}(t=0) - U_{M1}(-EU))$$

In order to realize the decision the gain in benefits for the EU (caused by the decision) must be higher than the loss in benefits for M1 (caused by the decision) reduced by its previous difference in benefits between membership and outside position.

The inequality (18a) is not fulfilled if:

- EU's benefits from the decision ($dU_{EU}(E)$) are very small and / or
- M1's loss caused by the decision ($dU_{M1}(E)$) is very high and/ or
- M1's loss of withdrawal ($U_{M1}(t=0) - U_{M1}(-EU)$) is very small.

In that case, the EU will not implement the decision as the loss of benefits connected with the necessary compensation payment exceeds the benefits induced by the decision. If the inequality (18a) holds, however, the EU will implement the decision and pay a compensation.

As $|dU_{EU}(-M1)| > dU_{EU}(E)$ determines scenario b, inequality (18a) can be modified:

$$(19) |dU_{EU}(-M1)| > dU_{EU}(E) > -dU_{M1}(E) - (U_{M1}(t=0) - U_{M1}(-EU)).$$

When combining (19) with (9), (15a) and (17) the following inequality can be derived:

$$(20) |dU_{EU}(v^{**}+z^*)| > |dU_{EU}(v^*+x^*)| > dU_{M1}(v^{**}).$$

EU's loss in utility is higher when M1 withdraws than when the decision is implemented and a transfer is offered to M1. If this inequality holds the EU at most can offer a compensation that equals the decision's benefits: $v \leq v^*+x^*$. Here, M1's compensation could be as high as in the case of unanimity voting.

First conclusions:

Using a game theoretical model where the EU acts as the proposer and M1 as the responder and both behave in a pure rational and benefit maximizing way, we could show that compensating transfers will be lower under majority decisions with exit option compared to decisions requiring unanimity. If the rule of unanimity is applied, the minimum compensation v^* depends on M1's loss in benefits caused by the decision. In the majority voting system with an exit option, the minimum compensation v^{**} is also determined by the loss in benefits for M1 but reduced by the difference in benefits between its membership (before the decision) and its outside position.

If the minimum compensation exceeds EU's benefits of the decision, no compensation will be offered: Either the decision will not be implemented because $dU_{EU}(E) < |dU_{EU}(-M1)|$ or the decision will be made and the exit of M1 is accepted because $dU_{EU}(E) > |dU_{EU}(-M1)|$.

Considering experiments with the ultimatum game, it can be argued that M1 will receive higher compensating transfers than theory suggests. The amount the EU is willing to pay at most in the case of majority voting with exit option ($v^{**} + z^*$) can be equal or smaller than the maximum transfer offered in the case of unanimity ($v^* + x^*$). In the case of unanimity the offer depends on the benefits the decision implies for the majority of the members. With the exit option, the offer may also depend on those benefits (if $dU_{EU}(E) < |dU_{EU}(-M1)|$) or on the loss in benefits for all the other member states caused by an exit of M1 (if $dU_{EU}(E) > |dU_{EU}(-M1)|$). In the last-mentioned case the maximum compensation premium is smaller than in the case of unanimity voting. In any case, however, the maximum amounts will not be outbidden.

4. The Effectiveness of the Threat of Withdrawal Considering Information Asymmetries

The outside option's effects on the course of the game and on the extent of possible transfers depends on the benefit loss M1 would suffer due to the decision and which benefit loss the country would suffer in case of withdrawal on the one hand, and on the member state M1's importance with regard to the other members' integration benefits as well as the extend of their benefit growth following the decision (E) on the other hand. The decisive factors are, however, whether the benefit levels are truthfully communicated to the antagonist and whether M1 convincingly signalizes the threat of withdrawal to the EU. The previous assumption that both parties are completely informed about their own and the adversary utility functions shall be abolished in the following, while an information asymmetry between both parties is assumed.

If M1 succeeds in pretending a higher benefit loss due to the decision than it is actually the case, or if M1 succeeds in depicting the outside position more favorable than it would be in reality, the country can achieve higher compensations. Having no withdrawal option, the member country M1 can only react to the EU proposal, while the explicit withdrawal option enables M1 to act strategically by using an ex ante threat of withdrawal, and to manipulate the process (by giving wrong accounts of the own benefit positions),³⁴ which finally results in higher EU proposals.³⁵ M1 can hereby make use of the so called Cheap Talks as “costless and unverifiable lies about private information and incredible threats about future actions”³⁶ leading to negotiation results that could not have been realized without this signal effect.³⁷

From the theoretic perspective, it could be argued that both players anticipate Cheap Talk being used during the negotiations. Therefore, they could ignore any unreliable information and neglect them in the course of the negotiations. Experiments, however, show different results: Responders who either provided wrong information with regard to their outside option or threatened to refuse low proposals – with the consequence that neither the proposer nor the responder would get a “share of the cake” – received higher proposals than those who did not convey any incorrect signals concerning the private information at their disposal or concerning their preferences.³⁸

³⁴ See Koning / Steinel et al. (2007), p. 6.

³⁵ This theoretic result corresponds to experiments made with regard to this aspect. See Schmitt (2003), p. 51.

³⁶ Croson et al. (2003), p. 157.

³⁷ See Farrel (1989), p. 229.

³⁸ See Croson et al. (2003), p. 157.

In a one-shot game³⁹, M1 consequently could benefit to a great extent from reinforcing its threat of withdrawal by using Cheap Talk – it might for example mention its possible intention to negotiate with other integration areas – and thus strengthen its negotiation power towards the EU. If, however, Cheap Talk is revealed as such, which can be especially the case in repeated games, the result is unlikely to be positive.⁴⁰ M1's actions will thus gain credibility if they are “self-signaling” and finally “self-committing”.⁴¹ M1 indeed initiating negotiations with other integration areas, or reducing its payments to the EU budget in order to demonstrate to what extent it is burdened with growing net payments would be regarded as self-signaling strategies. M1 herewith signalizes that a withdrawal would provide a higher benefit, which again raises the credibility of its outside option.⁴²

The self-committing strategy is considered as stronger instrument than the self-signaling strategy: In this case, M1 would already have initiated its withdrawal before even having asserted its compensation claims to the EU, which supports its determination to withdraw.⁴³ If the EU is interested in M1 remaining a member of the integration area it will pay the amount claimed by M1 – whatever it may be. This strategy implies that either M1 is indifferent with regard to its remaining in the EU or withdrawing from it, or that M1 is prepared to take risks, hoping that the EU indeed prefers M1 remaining member of the integration area to its withdrawing.

In case the member state M1 is only aiming at receiving compensations as high as possible it would initially use Cheap Talk – being a cost-effective method – in order to signalize that it regards the benefit of a withdrawal higher than the benefit of remaining in the EU. However, a withdrawal from the EU goes at present along with high economic sunk costs and obstacles⁴⁴, making a withdrawal quite improbable and M1's threat a rather tactical maneuver. It would therefore be appropriate for the EU not to meet M1's compensation claims. Due to existing information asymmetries, however, there is some uncertainty within the EU – maybe reinforced by Cheap Talk – as to whether a withdrawal might be profitable to M1 so that, usually, the EU will offer compensations to M1.

³⁹ In case the game is played repeatedly and both players have experienced the Cheap Talk strategy, Cheap Talk will, on the contrary, have little or even negative effects on the negotiation results since the attempt to deceive may have negative influence on a player's reputation. See Kim (1996), p. 788.

⁴⁰ See Berninghaus / Güth (2003), p. 247.

⁴¹ See Farrell / Rabin (1996), p. 112.

⁴² See Muthoo (2000), p. 159.

⁴³ See Gates / Humes (1997), p. 150.

⁴⁴ A withdrawal can not be initiated without if, for example, certain requirements have to be met beforehand such as a national approval by referendum. It remains therefore debatable whether the mere threat of withdrawal is per se credible. See Schneider (2005), p. 213.

This result reflects for the most part the developments found in reality, where the EU has met member states' compensation claims that were linked to the threat of withdrawal in case of denial.

5. Conclusion

Over the course of the integration process, the decision rules within the European Community have undergone several reforms: Votes that demand unanimity have been gradually reduced in favor of decisions by majority in order to accelerate the decision process in an EU consisting of 27 heterogenic member states, and thus to take into account the overall aim of deepening the integration area. Having enshrined an option of withdrawal, the Treaty of Lisbon now indirectly allows another voting procedure: In case of a majority decision reducing its previous EU membership benefit, a member state can now threaten to withdraw in order to receive compensations for the benefit loss it suffers due to the decision. Does this mean that member states have regained a negotiation power comparable to the right to veto?

A simple game theoretic approach clarified that – pure benefit maximizing behavior and complete information provided – the EU makes higher compensations in case of an unanimity rule (right to veto) than in case of a decision by majority with the right to withdraw. In case of a voting procedure with decision by majority but without withdrawal option, the least amount of compensation is to be expected. Member states do therefore regain negotiation power in majority voting systems with the option to withdraw. However, that power – in terms of the compensation it could receive – is not as high as in the case of unanimity voting.

Taking into account the results of the ultimatum game experiments, a member state which refuses to support a decision by majority can expect higher compensation proposals. In case of a withdrawal option, the maximum amount to be paid by the EU can – under certain conditions, e.g. if the benefit gain connected to the decision is less than the benefit loss following a withdrawal – be as high as it would have been in case of a right to veto. Due to information asymmetries, it will depend on the credibility of a threat to withdraw to which extend the EU will react to such threats and which amount of compensation it will finally pay. By increasing its credibility, e.g. by using Cheap Talk, the member state can thus force up the EU compensation proposal and may receive at most the transfer offered in unanimity voting .

Indeed member states are becoming more powerful due to the withdrawal option and as the past has shown, the EU has repeatedly met member states' claims, giving thus relevance to

the conclusions of our simple model. However, we expect still more insight, extending the model to provide answers to the following questions:

- a) Which results – especially with regard to the amount of compensation claims – can be expected if negotiations between the EU and M1 are allowed?
- b) In which way do the negotiation powers of proposer and responder change if instead of a single country demanding compensation several countries unite in order to assert a joint claim?
- c) What kind of modifications are to be expected when the game is played several times and the results of previous rounds are taken into account? So far, the EU has to a great extent communicated that it will meet compensation claims. It is however debatable whether it can and wants to continue this policy in the long run – especially regarding the fact that the option of withdrawal facilitates claims which – in the form of exceedingly high payments or of decisions that are not enforced – can in the end be detrimental to the Community.
- d) In which way would the results change if the member state acts as proposer and asserts a concrete compensation claim with the EU reacting to it as responder?

References:

- Ahrens, J. / Hoen, H. / Ohr, R. (2005), Deepening Integration in an Enlarged EU: A Club-theoretical Perspective, in: *European Integration*, Vol. 27, pp. 417-439.
- Alesina, A. / Spolaore, E. (2003), *The size of nations*, The MIT Press, Cambridge.
- Alexandrakis, C. / Jones, R. (2006), Secession and exit: an analysis of two competing hypotheses, in: *The Elgar Companion to Public Economics: Empirical Public Economics*, pp. 388-401.
- Baier, S. / Bergstrand, J. (2004), Economic determinants of free trade agreements, in: *Journal of International Economics*, Vol. 64, pp. 29-63.
- Bähr, C. (2008), How does sub-national autonomy affect the effectiveness of Structural Funds?, in: *Kyklos*, Vol. 61 (1), pp. 3-18.
- Baillie, S. (1998), The position of small states in the EU, in: Goetschel, L. (ed), *Small States Inside and Outside the European Union: Interests and Policies*, Kluwer, pp. 193-205.
- Berglund, S. (2006), Prison or Voluntary Cooperation? The Possibility of Withdrawal from the European Union, in: *Scandinavian Political Science*, Vol. 26 (2), pp. 147-167.
- Berninghaus, S. / Güth, W. (2002), Now or later? – Endogenous timing of threats, in: *Theory and Decision*, Vol. 55, No. 3, pp. 235- 256.
- Bookmann, M. (1993), *The Economics of Secession*, Palgrave Macmillan, New York.
- Buchanan, J. / Faith, R. (1987), Secession and the limits of taxation: toward a theory of internal exit, in: *American Economic Review*, Vol. 77, pp. 1023-31.
- Calliess, Ch. / Ruffert, M. (2006), *Verfassung der Europäischen Union. Kommentar der Grundlagenbestimmungen*, München.
- Croson, R. et al. (2003), Cheap talk in bargaining experiments: Lying and threats in ultimatum games, in: *Journal of Economic Behavior and Organization*, Vol. 51, pp. 143-159.
- Euler, M. (2005), EU-Finanzverhandlungen gescheitert: Chance zum Nachdenken, in: *Wirtschaftsdienst* (7), pp. 455-459.
- Farvaque, E. (2000), *Breaking-up a nation, from the inside*, Zentrum für Europäische Integrationsforschung, Bonn, Working Paper B20.
- Farrel, J. (1989), Cheap talk can matter in bargaining, in: *Journal of economic theory*, Vol. 48, pp. 221-237.
- Farrell, J. / Rabin, M. (1996), Cheap talk, in: *The Journal of Economic Perspectives*, Vol. 10, No. 3, pp. 103-118.
- Fellner, G. / Güth, W. (2003), What limits escalation? – Varying threat power in an ultimatum experiment, in: *Economic Letters*, Vol. 80, pp. 53-60.
- Gates, S. / Humes, B (1997), *Games, information, and politics. Applying game theoretic models to political science*, University of Michigan Press.
- Güth, W. / Schmittberger, R. / Schwarze, B. (1982), An experimental analysis of ultimatum bargaining, in: *Journal of Economic Behaviour and Organization*, Vol. 3, pp. 367-388.
- Güth, W. (1994), Zur strategischen Analyse von Verhandlungssituationen: Die nicht-kooperative Theorie der Verhandlungen, in: Dieckheuer, G. (1995), *Beiträge zur angewandten Mikroökonomik*, Springer, pp. 193-221.

- Kaitila, V. (2004), Convergence of real GDP per capita in the EU 15. How do the accession countries fit in?, European network of economic policy research institutes, WP No. 25.
- Kelstrup, M. (1993), Small States and the European political integration, in: Tiilikainen, T. / Petersen, I.B. (eds.), The Nordic countries and the EC, Copenhagen Political Studies Press.
- Kim, J.-Y. (1996), Cheap talk and reputation in repeated pretrial negotiation, in: Rand Journal of Economics, Vol. 27, pp. 787-802.
- Knez, M. / Camerer, C. (1995), Outside Options and social comparison in three-player ultimatum game experiments, in: Games and Economic Behaviour, Vol. 10, pp. 65-94.
- Koning, L. / Steinel, W. / Van Beest, I. / Van Dijk, E. (2007), Dependency and deception in ultimatum bargaining, IACM 2007 Meeting Paper.
- Muthoo, A. (2000), A non-technical introduction to bargaining theory, in: World Economics, Vol. 1, No. 2, pp. 145-166.
- Müller, M. / Myllyntaus, T. (2008), Pathbreakers: Small European countries responding to globalisation and deglobalisation, Peter Lang, Bern.
- Nugent, N. (2006), Cyprus and the European Union: The significance of its smallness, both as an applicant and a member, in: European Integration, Vol. 28 (1), pp. 51-71.
- Pace, R. (2006), Malta and EU Membership: overcoming „Vulnerabilities“, Strengthening „Resilience“, in: European Integration, Vol. 28 (1), 33-49.
- Rodden, J. (2002), Strength in numbers? Representation and redistribution in the European Union, in: European Union Politics, Vol. 3, pp. 151-175.
- Roth, A. (1995), Bargaining experiments, in: Kagel, J. / Roth, A. (eds.), The Handbook of experimental economics, Princeton University Press, pp. 253-348.
- Schäfer, W. (2004), Politische und wirtschaftliche Machtverhältnisse in der EU, in: Apolte, Th. / Caspers, R. / Welfens, P. (eds.), Ordnungsökonomische Grundlagen nationaler und internationaler Wirtschaftspolitik, Stuttgart, pp. 215-225.
- Schmitt, P. (2003), On perception of fairness: the role of valuations, outside options, and information in ultimatum bargaining games, in: Experimental Economics, Vol. 7, pp. 49-73.
- Schneider, F. (2005), Is a federal European Constitution for an enlarged European Union necessary? Some preliminary suggestions using public choice analysis, in: Swiss Political Science Review, Vol. 11, No. 4, pp. 203-225.
- Stahl, D. (2008), Subgame perfection in ultimatum bargaining trees, in: Games and Economic behaviour, Vol. 68, pp. 292-307.
- Sunstein, C. (1991), Constitutionalism and Secession, in: University of Chicago Law Review, Vol. 58 (2), pp. 633-670.
- Thaler, R. (1988), Anomalies: The ultimatum game, in: Journal of economic perspectives, Vol. 2, pp. 195-206.
- Thorhallsson, B. (2006), The size of states in the European Union: Theoretical and conceptual perspectives, in: European Integration, Vol. 28 (1), pp. 7-31.
- Wivel, A. (2005), The security challenge of small EU member states: Interests, identity and the development of the EU as a security actor, in: Journal of Common Market Studies, Vol. 43 (2), pp. 393-412.
- Zeh, J. (2004), Recht auf Austritt, in: Zeitschrift für Europarechtliche Studien, Ausgabe 2, pp. 173-210.

Bisher erschienene Diskussionspapiere

- Nr. 77: Lechner, Susanne, Ohr, Renate: The Right of Withdrawal in the Treaty of Lisbon: A game theoretic reflection on different decision processes in the EU, Oktober 2008
- Nr. 76: Kühl, Michael: Strong comovements of exchange rates: Theoretical and empirical cases when currencies become the same asset, Juli 2008
- Nr. 75: Höhenberger, Nicole; Schmiedeberg, Claudia: Structural Convergence of European Countries, Juli 2008
- Nr. 74: Nowak-Lehmann D., Felicitas; Vollmer, Sebastian, Martinez-Zarzoso, Inmaculada: Does Comparative Advantage Make Countries Competitive? A Comparison of China and Mexico, Juli 2008
- Nr. 73: Fendel, Ralf, Lis, Eliza M., Rülke, Jan-Christoph: Does the Financial Market Believe in the Phillips Curve? – Evidence from the G7 countries, Mai 2008
- Nr. 72: Hafner, Kurt A.: Agglomeration Economies and Clustering – Evidence from German Firms, Mai 2008
- Nr. 71: Pegels, Anna: Die Rolle des Humankapitals bei der Technologieübertragung in Entwicklungsländer, April 2008
- Nr. 70: Grimm, Michael, Klasen, Stephan: Geography vs. Institutions at the Village Level, Februar 2008
- Nr. 69: Van der Berg, Servaas: How effective are poor schools? Poverty and educational outcomes in South Africa, Januar 2008
- Nr. 68: Kühl, Michael: Cointegration in the Foreign Exchange Market and Market Efficiency since the Introduction of the Euro: Evidence based on bivariate Cointegration Analyses, Oktober 2007
- Nr. 67: Hess, Sebastian, Cramon-Taubadel, Stephan von: Assessing General and Partial Equilibrium Simulations of Doha Round Outcomes using Meta-Analysis, August 2007
- Nr. 66: Eckel, Carsten: International Trade and Retailing: Diversity versus Accessibility and the Creation of “Retail Deserts”, August 2007
- Nr. 65: Stoschek, Barbara: The Political Economy of Environmental Regulations and Industry Compensation, Juni 2007
- Nr. 64: Martinez-Zarzoso, Inmaculada; Nowak-Lehmann D., Felicitas; Vollmer, Sebastian: The Log of Gravity Revisited, Juni 2007
- Nr. 63: Gundel, Sebastian: Declining Export Prices due to Increased Competition from NIC – Evidence from Germany and the CEEC, April 2007
- Nr. 62: Wilckens, Sebastian: Should WTO Dispute Settlement Be Subsidized?, April 2007
- Nr. 61: Schöller, Deborah: Service Offshoring: A Challenge for Employment? Evidence from Germany, April 2007
- Nr. 60: Janeba, Eckhard: Exports, Unemployment and the Welfare State, März 2007
- Nr. 59: Lambsdorff, Johann Graf; Nell, Mathias: Fighting Corruption with Asymmetric Penalties and Leniency, Februar 2007
- Nr. 58: Köller, Mareike: Unterschiedliche Direktinvestitionen in Irland – Eine theoriegestützte Analyse, August 2006
- Nr. 57: Entorf, Horst; Lauk, Martina: Peer Effects, Social Multipliers and Migrants at School: An International Comparison, März 2007 (revidierte Fassung von Juli 2006)
- Nr. 56: Görlich, Dennis; Trebesch, Christoph: Mass Migration and Seasonality Evidence on Moldova’s Labour Exodus, Mai 2006

- Nr. 55: Brandmeier, Michael: Reasons for Real Appreciation in Central Europe, Mai 2006
- Nr. 54: Martínez-Zarzoso, Inmaculada; Nowak-Lehmann D., Felicitas: Is Distance a Good Proxy for Transport Costs? The Case of Competing Transport Modes, Mai 2006
- Nr. 53: Ahrens, Joachim; Ohr, Renate; Zeddies, Götz: Enhanced Cooperation in an Enlarged EU, April 2006
- Nr. 52: Stöwhase, Sven: Discrete Investment and Tax Competition when Firms shift Profits, April 2006
- Nr. 51: Pelzer, Gesa: Darstellung der Beschäftigungseffekte von Exporten anhand einer Input-Output-Analyse, April 2006
- Nr. 50: Elschner, Christina; Schwager, Robert: A Simulation Method to Measure the Tax Burden on Highly Skilled Manpower, März 2006
- Nr. 49: Gaertner, Wulf; Xu, Yongsheng: A New Measure of the Standard of Living Based on Functionings, Oktober 2005
- Nr. 48: Rincke, Johannes; Schwager, Robert: Skills, Social Mobility, and the Support for the Welfare State, September 2005
- Nr. 47: Bose, Niloy; Neumann, Rebecca: Explaining the Trend and the Diversity in the Evolution of the Stock Market, Juli 2005
- Nr. 46: Kleinert, Jörn; Toubal, Farid: Gravity for FDI, Juni 2005
- Nr. 45: Eckel, Carsten: International Trade, Flexible Manufacturing and Outsourcing, Mai 2005
- Nr. 44: Hafner, Kurt A.: International Patent Pattern and Technology Diffusion, Mai 2005
- Nr. 43: Nowak-Lehmann D., Felicitas; Herzer, Dierk; Martínez-Zarzoso, Inmaculada; Vollmer, Sebastian: Turkey and the Ankara Treaty of 1963: What can Trade Integration Do for Turkish Exports, Mai 2005
- Nr. 42: Südekum, Jens: Does the Home Market Effect Arise in a Three-Country Model?, April 2005
- Nr. 41: Carlberg, Michael: International Monetary Policy Coordination, April 2005
- Nr. 40: Herzog, Bodo: Why do bigger countries have more problems with the Stability and Growth Pact?, April 2005
- Nr. 39: Marouani, Mohamed A.: The Impact of the Multifiber Agreement Phaseout on Unemployment in Tunisia: a Prospective Dynamic Analysis, Januar 2005
- Nr. 38: Bauer, Philipp; Riphahn, Regina T.: Heterogeneity in the Intergenerational Transmission of Educational Attainment: Evidence from Switzerland on Natives and Second Generation Immigrants, Januar 2005
- Nr. 37: Büttner, Thiess: The Incentive Effect of Fiscal Equalization Transfers on Tax Policy, Januar 2005
- Nr. 36: Feuerstein, Switgard; Grimm, Oliver: On the Credibility of Currency Boards, Oktober 2004
- Nr. 35: Michaelis, Jochen; Minich, Heike: Inflationsdifferenzen im Euroraum – eine Bestandsaufnahme, Oktober 2004
- Nr. 34: Neary, J. Peter: Cross-Border Mergers as Instruments of Comparative Advantage, Juli 2004
- Nr. 33: Bjorvatn, Kjetil; Cappelen, Alexander W.: Globalisation, inequality and redistribution, Juli 2004
- Nr. 32: Stremmel, Dennis: Geistige Eigentumsrechte im Welthandel: Stellt das TRIPs-Abkommen ein Protektionsinstrument der Industrieländer dar?, Juli 2004
- Nr. 31: Hafner, Kurt: Industrial Agglomeration and Economic Development, Juni 2004
- Nr. 30: Martinez-Zarzoso, Inmaculada; Nowak-Lehmann D., Felicitas: MERCOSUR-European Union Trade: How Important is EU Trade Liberalisation for MERCOSUR's Exports?, Juni 2004

- Nr. 29: Birk, Angela; Michaelis, Jochen: Employment- and Growth Effects of Tax Reforms, Juni 2004
- Nr. 28: Broll, Udo; Hansen, Sabine: Labour Demand and Exchange Rate Volatility, Juni 2004
- Nr. 27: Bofinger, Peter; Mayer, Eric: Monetary and Fiscal Policy Interaction in the Euro Area with different assumptions on the Phillips curve, Juni 2004
- Nr. 26: Torlak, Elisa: Foreign Direct Investment, Technology Transfer and Productivity Growth in Transition Countries, Juni 2004
- Nr. 25: Lorz, Oliver; Willmann, Gerald: On the Endogenous Allocation of Decision Powers in Federal Structures, Juni 2004
- Nr. 24: Felbermayr, Gabriel J.: Specialization on a Technologically Stagnant Sector Need Not Be Bad for Growth, Juni 2004
- Nr. 23: Carlberg, Michael: Monetary and Fiscal Policy Interactions in the Euro Area, Juni 2004
- Nr. 22: Stähler, Frank: Market Entry and Foreign Direct Investment, Januar 2004
- Nr. 21: Bester, Helmut; Konrad, Kai A.: Easy Targets and the Timing of Conflict, Dezember 2003
- Nr. 20: Eckel, Carsten: Does globalization lead to specialization, November 2003
- Nr. 19: Ohr, Renate; Schmidt, André: Der Stabilitäts- und Wachstumspakt im Zielkonflikt zwischen fiskalischer Flexibilität und Glaubwürdigkeit: Ein Reform-ansatz unter Berücksichtigung konstitutionen- und institutionenökonomischer Aspekte, August 2003
- Nr. 18: Rühmann, Peter: Der deutsche Arbeitsmarkt: Fehlentwicklungen, Ursachen und Reformansätze, August 2003
- Nr. 17: Suedekum, Jens: Subsidizing Education in the Economic Periphery: Another Pitfall of Regional Policies?, Januar 2003
- Nr. 16: Graf Lambsdorff, Johann; Schinke, Michael: Non-Benevolent Central Banks, Dezember 2002
- Nr. 15: Ziltener, Patrick: Wirtschaftliche Effekte des EU-Binnenmarktprogramms, November 2002
- Nr. 14: Haufler, Andreas; Wooton, Ian: Regional Tax Coordination and Foreign Direct Investment, November 2001
- Nr. 13: Schmidt, André: Non-Competition Factors in the European Competition Policy: The Necessity of Institutional Reforms, August 2001
- Nr. 12: Lewis, Mervyn K.: Risk Management in Public Private Partnerships, Juni 2001
- Nr. 11: Haaland, Jan I.; Wooton, Ian: Multinational Firms: Easy Come, Easy Go?, Mai 2001
- Nr. 10: Wilkens, Ingrid: Flexibilisierung der Arbeit in den Niederlanden: Die Entwicklung atypischer Beschäftigung unter Berücksichtigung der Frauenerwerbstätigkeit, Januar 2001
- Nr. 9: Graf Lambsdorff, Johann: How Corruption in Government Affects Public Welfare – A Review of Theories, Januar 2001
- Nr. 8: Angermüller, Niels-Olaf: Währungskrisenmodelle aus neuerer Sicht, Oktober 2000
- Nr. 7: Nowak-Lehmann, Felicitas: Was there Endogenous Growth in Chile (1960-1998)? A Test of the AK model, Oktober 2000
- Nr. 6: Lunn, John; Steen, Todd P.: The Heterogeneity of Self-Employment: The Example of Asians in the United States, Juli 2000
- Nr. 5: Güßefeldt, Jörg; Streit, Clemens: Disparitäten regionalwirtschaftlicher Entwicklung in der EU, Mai 2000
- Nr. 4: Haufler, Andreas: Corporate Taxation, Profit Shifting, and the Efficiency of Public Input Provision, 1999
- Nr. 3: Rühmann, Peter: European Monetary Union and National Labour Markets, September 1999

Nr. 2: Jarchow, Hans-Joachim: Eine offene Volkswirtschaft unter Berücksichtigung des Aktienmarktes, 1999

Nr. 1: Padoa-Schioppa, Tommaso: Reflections on the Globalization and the Europeanization of the Economy, Juni 1999

Alle bisher erschienenen Diskussionspapiere zum Download finden Sie im Internet unter:
<http://www.uni-goettingen.de/de/60920.html>.