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Sequencing in Customs Union Formation: Theory and Application to Eurasian Customs Union

Aidos Alimbekov¹

Eldar Madumarov²

Gerald Pech³

KIMEP University

ABSTRACT

In the model of economic integration by Aghion/Antràs/Helpman (2007) a formateur offers sequential negotiations rather than multilateral negotiations in order to exploit negative externalities on countries which join at a later stage. This explains economic integration over time. The result, however, is not robust to extending the menu of available bargaining protocols. With an open-rule protocol the formateur can effectively threaten to unleash negative externalities without carrying out this threat. The formateur prefers the open-rule protocol unless bargaining is sufficiently time consuming and the discount factor is sufficiently small. Our model explains the sequential formation of Eurasian Customs Union.

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¹ Department of Economics, KIMEP University, Almaty, Kazakhstan email: alimbekov_aidos@mail.ru

² Department of Economics, KIMEP University, Almaty, Kazakhstan, email: madumarov@kimep.kz

³ Corresponding author: Department of Economics, KIMEP University, Almaty. email: gp@geraldpech.net.

1. Introduction

The question of what drives economic and political integration over time has attracted considerable interest both by economists and political scientists. A central concern of this literature is the question of which sequences of integration moves are feasible and, if feasible, desirable or likely to happen.⁴ Aghion, Antràs and Helpman (2007) have recently proposed an agenda-setter model of sequencing in creating customs union in a world where the creation of an integrating bloc has externalities on nonmember states.⁵ As exposure to externalities strengthens (if positive) or weakens (if negative) the bargaining position of nonmember states relative to the agenda-setter when they consider an invitation to join the integrating bloc in a later round, the agenda-setter – or formateur – has preferences over the order in which other countries are invited to participate in negotiations over the formation and extension of customs union: Under a sequential bargaining procedure a core-customs union forms in the first round and an accession candidate is invited to join in the following round. Under a multilateral bargaining procedure all countries are invited to join in the same stage. Sequential bargaining is preferred when one accession candidate suffers negative externalities from the formation of a core customs union because the accession candidate's default pay-off is reduced compared to the status quo outcome. While under weak conditions at the endpoint of this bargaining process efficiency is achieved, Aghion, Antràs and Helpman (AAH) suggest that along the path to this outcome temporary inefficiencies are incurred as the formateur trades efficiency losses against strengthening her bargaining position. Gomes/Jehiel (2005) have shown that – depending on the bargaining protocol – bargaining among fully rational agents in the presence of externalities may result in inefficiencies.⁶

⁴ For a recent overview see Baldwin (2012).

⁵ Aghion, Antràs and Helpman focus on free trade agreements but suggest that their results are applicable to customs union formation. Clearly, with the more complex policy choices in a customs union there is precisely the scope for compensation between members for which their transferable utility model is a reasonable approximation.

⁶ Acemoglu/Egorov/Sonin (2012) have noted that this result may not hold in an environment with transfers.

This result, however, crucially depends on the set of available bargaining protocols. The formateur is forced to propose against the current status quo, so in order to raise any scenario as a threat she has to turn this scenario into the current status quo before bargaining can proceed any further.⁷ That this restriction may affect the outcome can be seen by recognizing that we can choose pay-offs such that forming a core customs union with negative external effects represents a credible threat.⁸ If such a threat could effectively be raised in the course of bargaining, it would not have to be carried out in equilibrium when all parties are rational and farsighted. The AAH model, however, assumes that any such threat cannot be raised in the multilateral bargaining scenario – where the alternative to acceptance is the status quo – but only in the sequential bargaining scenario where it is assumed that the threat is also being carried out.

If we allow instead the proposal maker to choose a bargaining protocol where an offer which is accepted by another accession country becomes the default outcome for the next bargaining move – a protocol which is similar to Baron/Ferejohn’s open-rule protocol – the final outcome preferred by the formateur is immediately accepted.⁹ We argue that the formation of Eurasian Customs Union took place in a setting in which the formateur – Russia – was in a position to either choose sequential formation of the union or only to threaten to do so. Moreover, the pay-offs of the countries involved were such that for Russia sequential bargaining was preferred to multilateral bargaining but without further restrictions would have been dominated by the open-rule bargaining protocol. Hence, the choice of a sequential bargaining protocol – or formation of a core-customs – requires explanation.

⁷ This assumption effectively avoids the consequences of sub-game perfection, see Pech (2015).

⁸ AAH only assume grand-coalition super-additivity, i.e. the grand coalition gives a greater aggregate pay-off than the status quo. Forming the core-customs union is credible – i.e. it is preferred by its members to the status quo before negotiations start – if the game is also super-additive for finer coalition structures. Note that in the sequential bargaining scenario of AAH, a threat which would otherwise be non-credible becomes credible by carrying it out. This is a rather interesting twist of the story but not the central aspect of the AAH model.

⁹ This qualification has already been noted by Gomes/Jehiel (2005).

In our paper we demonstrate that sequential bargaining may dominate open-rule bargaining if bargaining takes time. In order to introduce this particular bargaining friction, we have to explicitly introduce time into the model. If bargaining under the open-rule protocol in the presence of negative externalities is sufficiently time consuming or comparatively costly, the formateur prefers sequential negotiations over the open-rule protocol and multilateral negotiations, confirming the prediction of the AAH model. More generally, the formateur has to trade the inefficiency of actually forming the core-customs union rather than the full union against the inefficiency from continuing bargaining while forsaking the (more modest) gains from forming the core-customs union immediately.

Section two of this paper gives an overview of the literature. Section three develops a variant of the AAH model in a customs union context. Section four introduces different bargaining protocols and derives our main result. In section five we apply our results to the formation of the Eurasian Customs Union and of the German Customs Union (Zollverein). Section six concludes.

2. Literature Review

Our theoretical model is based on Aghion, Antràs and Helpman (2007) who present a theory of optimal sequencing in regional integration. They develop a characteristic function bargaining game where a leading country or formateur has agenda setting power and decides between forming a union in one round of multilateral bargaining or, alternatively, sequentially extending a core union by adding new members. Under a relatively weak condition – that grand coalition superadditivity holds – the largest coalition eventually forms. Moreover, they show that if the formation of a core union exerts negative externalities on potential accession candidates, the agenda setter proposes to form a core union before fully integrating.

Sen and Biswas (2015) share with our paper a focus on explaining sequencing and also identify the restriction on available bargaining protocols as a shortcoming of the AAH paper. In a static

framework, they introduce a variant of the multilateral bargaining protocol where the rejection of an offer does not result in the breakdown of negotiations but in the formation of a coalition of all who approve. They show that in the presence of positive externalities the agenda setter will prefer the sequential bargaining protocol to their variant of the multilateral bargaining protocol.¹⁰

Baldwin (2012) provides a general dynamic framework in which he addresses issues of sequencing within a theory of economic and political integration. His main interest is in identifying the dynamic mechanisms by which integration changes the conditions for further integration and thus results in a self-sustained process of enlargement and deepening regional trade agreements. Our own framework, although it explicitly incorporates a time dimension, analyses incentive effects of different sequencing choices within a stationary environment. It thus provides an important link between the atemporal AAH model and a full dynamic framework.

A related strand of literature on sequencing has focused on the question of whether customs union is a first step or rather a stumbling block on the path to worldwide free trade. Yi (2000) shows that world-wide free trade is a possible end point of a process of forming, extending or merging regional preferential trading blocs. Saggi and Yildiz (2011) derive conditions under which the availability of bilateral trade-agreements facilitates the free trade outcome or is compatible with an alternative equilibrium. Yi (1997) provides conditions under which free trade is stable and Furusawa/Konishi (2005, 2007) are interested in stability of bilateral free-trade agreements.

¹⁰ Sen/Biswas also argue that in the case of negative externalities the agenda setter will prefer the modified multilateral bargaining protocol to the sequential bargaining protocol. Yet their analysis of this case appears to rest on the assumption that after receiving an offer both responders believe with probability one that the other responder will accept the offer, yet it remains unclear how these beliefs can be supported in equilibrium. [The appendix provides a more detailed discussion of this point so that the referees can verify our claim in this footnote].

3. Welfare Effects of Customs Union Formation

We assume that before transfers country i 's decision maker realizes a utility flow

$$w_i(\Gamma, \mathbf{t}) = v_i(\mathbf{t}_i) + x_i(\mathbf{t}_{-i}) - m_i(\mathbf{t}_i) + p_i(\Gamma), \quad (1)$$

where v_i is consumption benefit excluding consumption of the numeraire good, $x_i - m_i$ is the trade surplus which is settled by transferring the numeraire good and $p_i(\Gamma)$ is a political benefit which i realizes with coalition structure Γ . \mathbf{t}_i is a vector of tariffs imposed by country i and $\mathbf{t}_{-i} = (\mathbf{t}_1, \dots, \mathbf{t}_{i-1}, \mathbf{t}_{i+1}, \mathbf{t}_n)$. Furusawa and Konishi (2005) derive (1) from a quasi-linear utility function of a consumer who has preferences over a differentiated good. Moreover, there is a numeraire good of which we assume that it can be costlessly transferred. An alternative motivation of (1) can be given in terms of a political cost function where political pressure exercised by customers and export- and import substitution industry is proportional to the potential gain or loss which the pressure groups experiences from a policy change.¹¹ The political benefit variable p_i captures non-economic motives and is likely to depend only on the coalition of which a country is member. The political benefit of joining a customs union may be negative as it results in a loss of sovereignty or positive as it increases prestige.

The overall effect of forming a customs union on the welfare of its members is ambiguous: Consider the situation of a country which finds its external tariffs increase after joining. As imports from third countries decrease, the trade surplus $x_i - m_i$ improves but consumption utility is negatively affected. The trade surplus or deficit with other members of the customs union may increase or decrease as tariffs between members are reduced to zero. Even if some countries experience a welfare loss from customs union creation, the customs union is feasible as long as the winners can afford to compensate the losers.

We define $w_S(\Gamma) = \sum_{i \in S} w_i(\Gamma)$ as aggregate welfare of coalition S given a partition

$\Gamma = \{S_1, \dots, S_m\}$ of the set of players N . w satisfies grand coalition superadditivity (or GC superadditivity) if

$$w_N(\{N\}, \mathbf{t}') \geq w_{N-R}(\{N-R, R'\}, \mathbf{t}) + w_R(\{N-R, R'\}, \mathbf{t})$$

¹¹ See Baldwin (2012) for a discussion of how economic integration affects such interests.

for all R and all partitions R' of R .¹² It satisfies superadditivity if the condition

$$w_{S \cup T}(\{S \cup T, R\}, \mathbf{t}) \geq w_S(\{S, T, R\}, \mathbf{t}) + w_T(\{S, T, R\}, \mathbf{t})$$

holds for all non-overlapping subcoalitions S , T and R of N and for some admissible tariff choice \mathbf{t}' for a customs union $S \cup T$. Throughout our paper we follow AAH in assuming that GC superadditivity holds. The stronger condition of superadditivity is imposed to derive our comparative result of proposition 3.

A sufficient set of conditions for aggregate welfare to be superadditive is that political benefits and costs do not punish integration and each country is characterized by a representative consumer with quasi-linear utility function and taste for variety, each country produces one industrial good and tariff revenue and profits are distributed to the consumer (Yi, 1996).

4. Bargaining over Customs Union under Different Protocols

This section extends the model of Aghion, Antràs and Helpman (2007). We confine ourselves to their original three-player model to which we add an explicit temporal structure. For simplicity, we assume that players have an identical discount factor $\delta < 1$ with which they discount their future utility flow w_i . Let $W_i = \frac{\delta}{1-\delta} w_i$ denominate the present value of an infinite utility flow w_i . Player 1 is the formateur and 2 and 3 are followers. Each round of the bargaining game consists of an offer by the formateur and decisions to accept or reject by the responders. An offer consists of a coalition which the formateur wishes to form and the policy vector she wants to implement for this coalition. If an offer is rejected, a default outcome is realized.

Our – and ultimately AAH's – argument¹³ rests on the assumption that forming a core customs union and selecting a policy vector for it has negative external effects on the left-out country and will affect the left-out country's bargaining position when negotiating over accession to the union.¹⁴ In this situation the formateur could be tempted to announce a policy which mini-

¹² For the results below it is sufficient that GC superadditivity holds for all cases where the “integrating core” $N - R$ includes the formateur.

¹³ In their formal model, AAH only discuss free-trade agreements and, therefore, do not encounter the problem of policy selection.

¹⁴ Saggi, Woodland and Yildiz (2013) demonstrate in a symmetric three-country model with linear demand and competition between export countries that formation of a customs union between two countries results in a worse

mizes the pay-off of the left-out country. If the left-out country assumes that in the absence of an agreement this minimizing policy is going to remain in place in the future, it will perceive its bargaining position to be weakened accordingly. The policy, however, is not credible if policies – other than coalition structures – can be renegotiated at no cost.¹⁵ Henceforth, we shall make the assumption that a policy announcement for any coalition has to be credible, i.e. that it maximizes short term total welfare.

4.1 The Basic Multilateral Bargaining Model – Closed-Rule Protocol

In the multilateral bargaining scenario we assume that there is one round of bargaining where the formateur makes an offer to a coalition. If the offer is rejected by at least one player, the default outcome is realized for an indefinite length of time. The default outcome is the status quo coalition structure Γ^0 consisting of singletons and associated with welfare levels $W_i(\Gamma^0, \mathbf{t}^0)$, $i=1,2,3$. In order to introduce some terminology to which we want to refer later, we call this bargaining protocol a closed-rule protocol following Baron/Ferejohn (1989).¹⁶ In equilibrium, the formateur has to offer each responder their default pay-off so that she herself realizes the residual pay-off. Because of superadditivity, the formateur cannot do better than making an offer to the grand coalition, so her pay-off is

$$\Pi^{Mult} = W_N(\Gamma^N, \mathbf{t}) - \sum_{i \in \{2,3\}} W_i(\Gamma^0, \mathbf{t}^0) \quad (2)$$

which is the total pay-off for the grand coalition N , $W_N(\Gamma^N, \mathbf{t})$, after paying all other members their stand-alone value $W_i(\Gamma^0, \mathbf{t}^0)$. If the game exhibits superadditivity, Π^{Mult} is at least as great as the formateur's stand-alone pay-off $W_1(\Gamma^0, \mathbf{t}^0)$ and forming a customs union by multilateral bargaining is feasible.

4.2. Sequential Bargaining

In the case of sequential bargaining, the formateur approaches one of the other countries first – we assume that this is country 2 – and makes an offer. If the offer is rejected, the default

outcome for the left-out country than a multilateral agreement.

¹⁵ Renegotiations may take the form of the formateur offering a policy vector and a transfer payment as a take-it-or-leave-it offer against the status quo policy.

¹⁶ This is also the bargaining protocol underlying the analysis of Gomes/Jehiel (2005) to which AAH refer.

outcome is realized which is the coalition structure Γ^0 with associated welfare levels $W_i(\Gamma^0, \mathbf{t}^0)$, $i=1,2,3$. If the offer is accepted, the coalition is formed resulting in the coalition structure $\Gamma=\{\{1,2\},\{3\}\}$ with welfare levels $W_i(\Gamma, \mathbf{t}')$ where \mathbf{t}' is the credible policy proposal vector for coalition $\{1,2\}$.

In the next round of the game country 3 is approached and an offer is made. We assume that if the new offer includes country 2 as coalition member it has the right to veto the offer.¹⁷ If the offer is rejected or vetoed, the status quo coalition structure Γ is realized. The bargaining moves are illustrated in figure 1 where we assume that the first move is a procedural move by which the formateur decides whether she wants to follow sequential negotiations by making an offer to 2 first or to follow multilateral negotiations by making an offer to $\{2,3\}$.

Clearly, the intended interpretation of the bargaining moves in the AAH model is that forming a coalition takes time and the core customs union actually forms. We, therefore, assume that after the first proposal has been accepted or turned down, this state prevails for one period with utility enjoyed during this period evaluated at $\delta w_i = (1 - \delta) W_i$.¹⁸ After the formateur has submitted her second proposal in period two, the utility flow associated with rejecting or accepting the proposal is realized indefinitely.

Assume a policy proposal \mathbf{t}' together with coalition structure $\Gamma=\{\{1,2\},\{3\}\}$ has been accepted by 2 in the first period. So 1 needs to offer 2 and 3 their respective default pay-offs $W_2(\Gamma, \mathbf{t}')$ and $W_3(\Gamma, \mathbf{t}')$ to accept forming the grand coalition. In the first period, 1 needs to offer 2 her default pay-off $W_2(\Gamma^0, \mathbf{t}^0)$.¹⁹ The formateur receives the discounted residual pay-off

$$\Pi_1^{Seq} = (1 - \delta)[W_{\{1,2\}}(\Gamma', \mathbf{t}') - W_2(\Gamma^0, \mathbf{t}^0)] + \delta[W_N(\Gamma^N, \mathbf{t}) - W_2(\Gamma^0, \mathbf{t}^0) - W_3(\Gamma', \mathbf{t}')] \quad (3)$$

where \mathbf{t} is the credible policy vector for the grand coalition which coincides with the credible policy in (2): Policies in \mathbf{t} only depend on the coalition structure and not on the pay-off distribution as any transfer is lump sum and not included in \mathbf{t} . By GC superadditivity, the term in the second bracket on the left-hand-side of three is positive and the formateur wants to form the

¹⁷ AAH make the alternative assumptions that the formateur can commit to guarantee an outcome or that she offers a conditional transfer.

¹⁸ We essentially assume that there is a constant utility flow which is continuously discounted at the discount rate $r=1/\delta - 1$, see part A of the appendix for details.

¹⁹ As there are maximally two rounds of bargaining, after a rejection in the first period, the formateur has to offer the grand coalition in the second period where every player other than the formateur realize their default pay-off from remaining in Γ^0 .

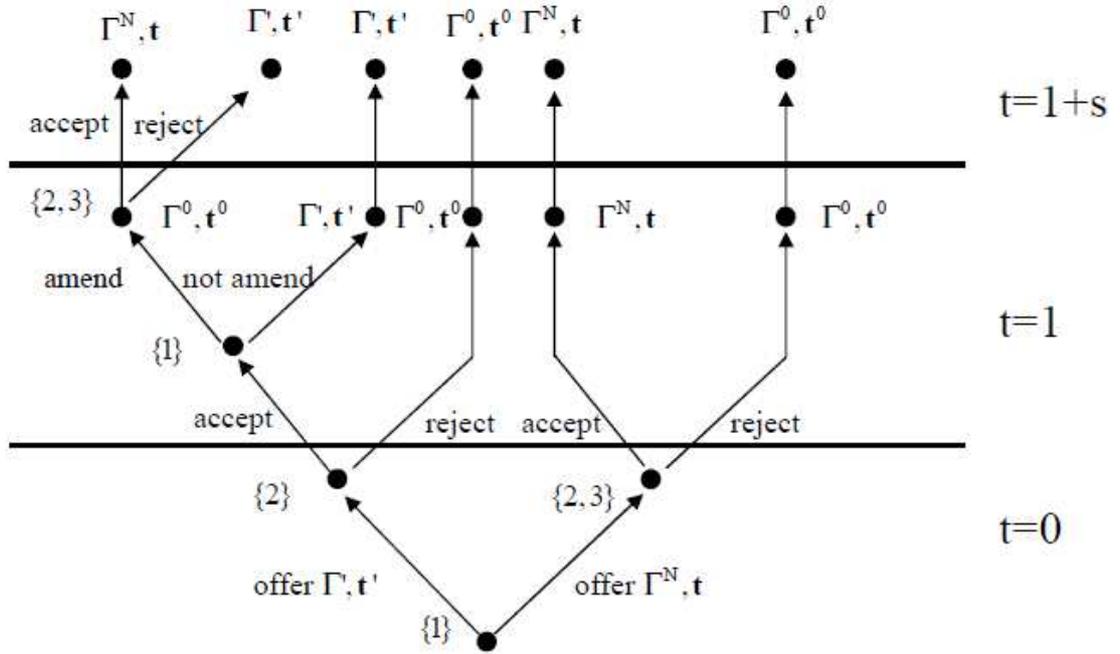


Figure 1: Multilateral versus sequential bargaining

grand coalition when the core customs union has formed in the first step. Yet it is unclear whether the core custom union forms or the formateur prefers to stay with the status quo partition Γ^θ .

While under superadditivity the core customs union is preferred to the status quo partition Γ^θ , this is not ensured by assuming GC superadditivity alone and the grand coalition may fail to form for δ sufficiently small.

Proposition 1: *If superadditivity holds the grand coalition forms under multilateral and sequential bargaining. If GC superadditivity holds but superadditivity does not, sequential bargaining may fail to be a path to forming the grand coalition but multilateral bargaining still is.*

Note that once the core customs union has formed, possibly by mistake, under the sequential bargaining institution the formateur still prefers the grand coalition to form under GC superadditivity. Comparing (2) and (3) shows that the formateur is better off under sequential than multilateral bargaining if

$$(1 - \delta)[W_N(\Gamma^N, t) - W_3(\Gamma^0, t^0) - W_{\{1,2\}}(\Gamma', t')] < \delta[W_3(\Gamma^0, t^0) - W_3(\Gamma', t')] \quad (4)$$

The expression in square brackets on the left-hand side of this inequality is the gain or loss from not forming the grand coalition in the first period in the absence of externality. It may be positive or negative.²⁰ The expression in square brackets on the right-hand side of this inequality is the absolute value of the externality which 3 suffers if the coalition of 1 and 2 forms. For $\delta \rightarrow 1$, the externality term dominates and the inequality collapses to $W_3(\Gamma, t') < W_3(\Gamma^0, t)$ which is fulfilled whenever forming a coalition between 1 and 2 has a negative externality on country 3. Thus, we obtain the AAH result in the limit:

Proposition 2: *If patience exceeds some critical level $\underline{\delta} < 1$ and there are negative coalition externalities from forming a smaller union on at least one potential entrant, the formateur prefers sequential negotiations over multilateral bargaining.*

The AAH model thus predicts sequencing when the efficiency loss which the formateur suffers is smaller than her long term gain from realizing a better bargaining outcome. Clearly, any such result raises the question of why agents are not able to agree on a Pareto-better outcome and why a scenario which represents a credible threat may unfold in equilibrium.

4.3. Multilateral Bargaining: Open-rule Protocol

Baron/Ferejohn (1989) in their seminal paper consider an open-rule protocol as an alternative to a closed rule-bargaining protocol in legislative decision making.²¹ With an open rule, a proposer may make an amendment to the proposal on the floor or – by moving the previous question – she may force a vote on the proposal. Making an amendment, results in moving to the next legislative session. In order to match the open-rule protocol to a bargaining situation with highly unequal bargaining power we need to introduce some assumptions: Only the formateur can make or amend a proposal, i.e. her selection probability as proposal maker is 1 in each round. Proposals are accepted if the coalition which is included in this proposal accepts the proposal. Moreover, the proposal on the floor once accepted by the coalition it includes becomes the status quo which any amendment is voted against. By this last assumption, the status quo assumes the role of de-

²⁰ Assume $W^N = \sum_{i=1,2,3} W_i(t^0, T^0)$ and $W_{\{1,2\}} > W_1 + W_2$. In this case, the core union may be stable but with GC superadditivity 1 wants to exploit the externality on 3 to form the grand coalition.

²¹ The open-rule protocol with no bargaining frictions coincides with a general spot contract discussed in Gomes/Jehiel (2005), i.e. in the scenario where a contract is not rejected if it is accepted by a subset of agents.

fault outcome from continuing bargaining in the Baron/Ferejohn model. This bargaining protocol allows the formateur to make a proposal which may later be amended within the ongoing bargaining process rather than actually implementing it. Effectively, this enables the formateur to make a threat which she does not have to carry out if the other party gives in.

As a measure of bargaining frictions in negotiations we define a variable s which measures the time elapsed between two rounds of bargaining with $s=1$ in the case where bargaining takes as much time as the formation of the customs union and $s=0$ in the case where bargaining is frictionless and takes no time at all.²²

Bargaining takes place as follows (see figure 2): The formateur makes an offer against the default outcome (Γ^0, \mathbf{t}^0) . She has to choose between offering the grand coalition or to offer 2 the core customs union (Γ', \mathbf{t}') . Recall that \mathbf{t}' is the credible policy proposal which maximizes aggregate pay-off of for the coalition of 1 and 2.

In the case where she offers the grand coalition, the offer is either accepted in which case (Γ^N, \mathbf{t}) is realized with corresponding pay-off Π^{Mult} and no amendment is proposed. Or the offer is rejected in which case the status quo prevails throughout. If she offers (Γ', \mathbf{t}') and it is accepted, the formateur has to decide in $t=1$ whether to make an amendment to this proposal, i.e. propose the grand coalition or to implement the already accepted core customs union. If she makes an amendment, she moves to the next bargaining session. In the meanwhile, the core customs union is not implemented and the status quo prevails for a time period of length s . If the offer (Γ^N, \mathbf{t}) is accepted, it is implemented in $t=1+s$, otherwise (Γ', \mathbf{t}') prevails.

In equilibrium, all offers are accepted and, along the path where an amendment can be made, GC superadditivity ensures that the formateur can do no better than to propose the amendment. Thus, solving the game comes down to solving the decision problem of the formateur whether to choose the two-step procedure or to initially propose the grand coalition. With negative externalities, the long-term pay-off is greater with the two-step procedure but it has to be traded against spending time in bargaining during which the formateur only receives her default pay-off.

If players are sufficiently patient, the two-step procedure will be selected under open-rule bargaining. Moreover, we can compare the scope for open-rule bargaining to the sequential bar

²² s is the time it takes to negotiate a separate agreement with one country rather than reaching an agreement in the first round of bargaining under the open-rule or closed-rule (multilateral) bargaining protocol. This notion of s captures the bargaining situation encountered in our case study in section 5.1.

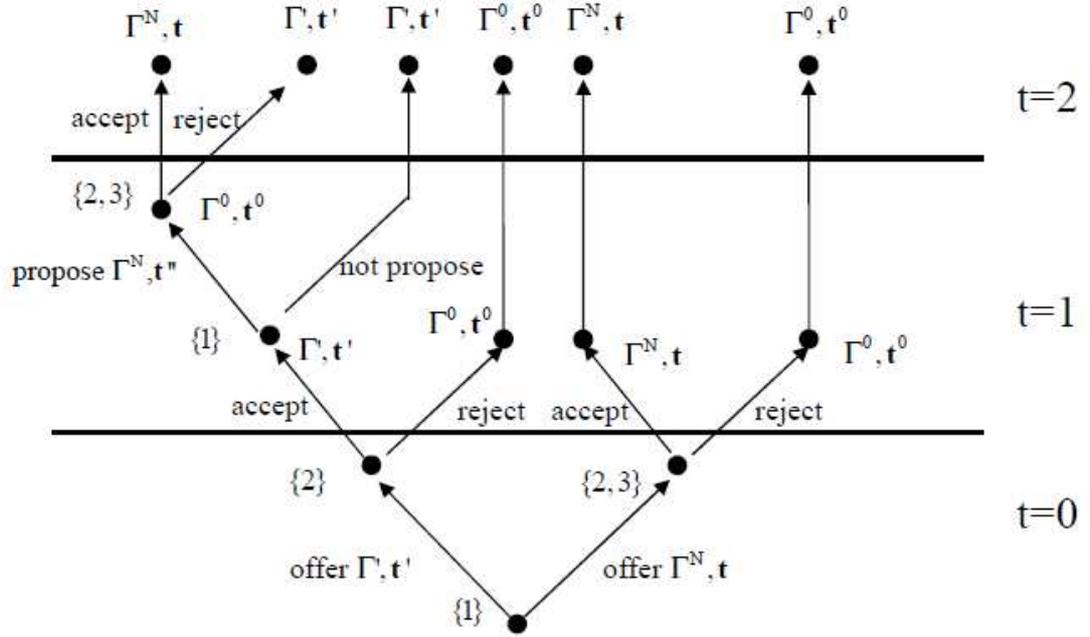


Figure 2: Bargaining under an open-rule protocol

gaining model introduced above. Both procedures result in the same long-term pay-off – at least if the two-step procedure is selected under an open rule – but while time spent with the lower short-term pay-off may be shorter under the open-rule protocol, the short-term pay-off is lower under the open-rule protocol.

In the appendix we show that the following proposition characterizes the decisions of the formateur:

Proposition 3: *Assume that superadditivity holds and that forming a coalition of two has negative externalities on a potential entrant. There is some critical value $s^*(\delta) \in (0, 1)$ such that, given δ , the formateur strictly prefers the open-rule bargaining protocol to sequential bargaining if $s < s^*$. For δ sufficiently high and s sufficiently low, the formateur prefers open-rule bargaining over all other bargaining institutions, in particular this is the case when bargaining is frictionless (i.e. $s=0$), irrespective of δ . Sequential bargaining is preferred for s sufficiently large and δ sufficiently low.*

Proof: See appendix.

Open-rule bargaining may reduce the efficiency loss involved in the sequential coalition formation process: If bargaining is frictionless ($s=0$) and there are negative externalities, the formateur prefers the open-rule bargaining protocol to sequential bargaining and to multilateral bargaining: The open-rule protocol allows the formateur to credibly announce the threat of forming the core customs union coalition but she does not have to execute the threat in order to ensure a higher pay-off for herself. Sequential bargaining is preferred when s is large and the cost of having to wait for the grand coalition to form is relatively small compared to forming the core customs union immediately, i.e. for δ sufficiently small.

If GC superadditivity holds but superadditivity does not, the open-rule bargaining is preferred to sequential bargaining for all δ for s sufficiently large.²³ In this case, the formateur's stand alone value is greater than her value in the core customs union and it is an advantage for her, not to have to form it.

5. Applications

5.1 Eurasian Customs Union

The formation of Eurasian Customs Union, later superseded by the Eurasian Economic Union,²⁴ presents a strategic situation where one country – Russia – was the only credible leader and the set of candidates was more or less predetermined.²⁵ This put Russia in a position where it could effectively choose between protocols. An initial attempt at forming customs union was launched in 1996 with Russia, Belarus, Kazakhstan, Tajikistan, Kyrgyzstan and later Uzbekistan as prospective members. In 2007, Russia, Belarus and Kazakhstan signed the Dushanbe agreement on the Single Customs Area which resulted in the formation of the core customs union in 2010. Of the original six countries Uzbekistan withdrew. Another country, Armenia, joined the Eurasian Union in January 2015. After extensive negotiations, Kyrgyzstan signed an accession treaty in May 2015 while at the time of writing this article Tajikistan had yet to join. Following 2010, the latecomers – Kyrgyzstan, Tajikistan and Armenia – had suffered from decline of their

²³ In equation (6) in the appendix we have $W_1(\Gamma^0, \mathbf{t}) > W_{\{1,2\}}(\{1,2\}, \mathbf{t}') - W_2(\Gamma^0, \mathbf{t})$ so open rule is preferred to sequential bargaining for s close to 1 and all δ and for δ close to zero and all s .

²⁴ See the overview in Tarr (2015).

²⁵ The countries which eventually joined had – with the exception of Armenia – been at the bargaining table since 1996. Only Russia has the economic clout to compensate other countries in a customs union. The Central Asian Union which comprises most of the smaller member countries of the customs union is at a much more modest scale.

exports to other CIS countries relative to nonmember countries from the region²⁶ which is consistent with the AAH model. Because, unlike Armenia, Kyrgyzstan had been a candidate from the outset, its late accession is a particular compelling case for the study of strategically motivated sequencing.

From the outset, Kyrgyzstan was expected to lose economically from customs union membership which involved increasing the external tariff mostly to Russian levels (see Winer, 2013): Its re-export industry and its textile industry benefitted from a favorable customs regime with the rest of the world which had made Kyrgyzstan a main point of entry for imports into the CIS region – an advantage it was going to lose with accession (Keene, 2013). Yet exclusion from the customs union had a similar detrimental effect. So once the core customs union had formed, for Kyrgyzstan to stay outside or to join were comparably bad options, an observation shared by its president Atambaev who famously declared that accession to the customs union was the “lesser of two evils”.²⁷ Yet the fact that accession eventually occurred suggests that Russia and Kyrgyzstan could have done at least as well by advancing the eventual settlement. Bargaining frictions offer a potential explanation for the delay.²⁸ An initial obstacle to accession was the reluctance of Atambaev’s predecessor, Bakiyev, to forge closer ties with Russia. After Bakiyev had stepped down in April 2010 following social unrest, the new government which had won the election on a program of closer ties with Russia applied for customs union membership within one year (Buckley, 2011). Subsequently, it took another four years to conclude negotiations with Kyrgyzstan’s WTO membership a complicating factor (see Keene, 2013, Tarr, 2015).

5.2 Zollverein (German Customs Union)

As Ploeckl (2010) argues, the strategic situation in Germany in the first half of the 19th century put Prussia in a similarly strong position in the process of forming the German Customs Union (Zollverein). The idea of forming a customs union encompassing all the states of the German Bund was voiced as early as 1819 by Friedrich List in a petition to the German Bundestag in Frankfurt. Also, Prussia, as the largest market, was in a natural position to lead and was also the first state to take initial steps with its own customs reform of 1818.

²⁶ This claim is verified in part B of the appendix [not for publication].

²⁷ This dilemma is described in Moldashev (2011) and Pavlov (2012).

²⁸ Alternative explanations are myopia on the side of the Kyrgyz electorate or the need to build the physical infrastructure to support the extended customs union.

Different steps in the coalition formation process point to the successful exploitation of coalition externalities by Prussia. One case in point is the accession of Hesse-Cassel in 1831 following the earlier accession of Hess-Darmstadt: Hesse-Cassel suffered from higher border tariffs imposed by Hess-Darmstadt and experienced declining living standards which contributed to civil unrest in 1830.²⁹ Yet while the decision to accede to the Zollverein can be conclusively explained by the AAH model, the observation that other German states set up competing organizations to the Zollverein suggests that a Prussian option to form a core customs union was not perceived as a strong threat by the other German states. In these circumstances, carrying out sequential steps towards integration appears to be the only option which had been available to Prussia.

6. Conclusion

In this paper we have extended Aghion, Antràs and Helpman's (2007) agenda-setter model of sequencing in economic integration by adding an explicit time dimension and weakening the assumption of a fixed menu of bargaining protocols from which the agenda setter can choose. If time is modelled explicitly, a sequential formation of the union incurs a cost. Moreover, if the agenda setter can select an open-rule protocol where the formation of a core-customs union can be raised as a threat in the bargaining process, the agenda setter prefers the open-rule procedure to the sequential bargaining procedure whenever bargaining is friction-less. Sequencing is preferred to open-rule bargaining, if the time to reach an agreement within the open-rule negotiations is sufficiently long or comparatively costly because during the bargaining process, the agenda setter foregoes benefits from forming the core customs union.

We have shown that of two historical cases which lend support to the AAH model, the formation of the German Zollverein and the formation of Eurasian Economic Union, the latter presents a case where the formateur – Russia – could have plausibly exercised a choice over bargaining protocols, suggesting bargaining frictions as a likely reason why it chose to form a core customs union.

²⁹ Hesse-Darmstadt had approached Prussia already in 1825 after Prussia's external tariff had hit its core industries (Mattli, 1999).

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Appendices

Appendix A: Proof of Proposition 3

We assume that bargaining for a length of time s delays realization of the long term pay-off \hat{W} by s . Let w^0 be the utility flow in period 1. Continuous discounting at the rate of time preference r gives

$$W^0 = w^0 \int_0^s e^{-rt} dt + e^{-rs} \hat{W}, \text{ where } w^0 \int_0^s e^{-rt} dt = \frac{w^0}{r} (1 - e^{-rs}) = W^0 (1 - \delta^s).$$

Thus, if the formateur makes an offer to 2 first and receives her stand-alone pay-off for a length of time s , her expected pay-off under open-rule protocol is

$$\Pi^{OR} = (1 - \delta^s) W_1(\Gamma^0, \mathbf{t}) + \delta^s [W_N(\Gamma^N, \mathbf{t}) - W_2(\Gamma^0, \mathbf{t}) - W_3(\Gamma', \mathbf{t}')]. \quad (5)$$

Denoting the long-term pay-off under sequential bargaining

$$\hat{\Pi}^{seq} = W_N(\Gamma^N, \mathbf{t}) - W_2(\Gamma^0, \mathbf{t}^0) - W_3(\Gamma', \mathbf{t}')$$

we can rewrite (5) as $\Pi_1^{OR} = (1 - \delta^s) W_1(\Gamma^0, \mathbf{t}^0) + \delta^s \hat{\Pi}^{seq}$. If the formateur makes the initial offer to $\{2,3\}$, she receives the same expected pay-off as with multilateral bargaining under a closed-rule protocol. Hence, she prefers making an offer to 2 if

$$\Pi^{OR} > \Pi^{Mult} \quad (A)$$

where Π^{Mult} is given by (2). She prefers bargaining under an open-rule protocol with the first offer going to 2 over sequential bargaining if

$$\Pi^{OR} > \Pi^{seq} \quad (B)$$

where Π^{Seq} is given by (3). Using (B), we can define the difference Δ by which open-rule bargaining in two steps fares better for the formateur than sequential bargaining:

$$\Delta = (\delta^s - \delta)\hat{\Pi}^{Seq} + (1 - \delta^s)W_1(\Gamma_0) - (1 - \delta)[W_{\{1,2\}}(\Gamma', \mathbf{t}') - W_2(\Gamma^0, \mathbf{t}^0)] \quad (6)$$

Noting that superadditivity implies $W_1(\Gamma^0, \mathbf{t}) \leq W_{\{1,2\}}(\{1,2\}, \mathbf{t}) - W_2(\Gamma^0, \mathbf{t})$ we find that for $\delta < 1$ the difference Δ is negative for $s=1$, i.e. $\Pi_1^{Seq} > \Pi_1^{OR}$. Because we had assumed negative externalities and, hence $\hat{\Pi}^{Seq} > W_{\{1,2\}}(\{1,2\}, \mathbf{t}') - W_2(\Gamma^0, \mathbf{t}^0)$, the difference is positive for $s=0$ and monotonically decreases for $0 < s < 1$. This proves that $s^*(\delta) \in (0,1)$.

Comparing (A) and (B), it is immediate that if the formateur prefers open-rule bargaining to sequential bargaining and sequential bargaining to multilateral bargaining, she also prefers the two-step open-rule bargaining procedure which secures Π^{OR} to making an offer to the grand coalition which secures a pay-off of Π^{Mult} . Recall that she prefers sequential over multilateral bargaining when (4) holds or

$$\Pi^{Seq} > \Pi^{Mult}. \quad (C)$$

Hence, for $\delta > \underline{\delta}$, (B) implies (A) and for $\delta < \underline{\delta}$, (A) implies (B). This proves the last two statements in proposition 3. We summarize our results in the following graph:

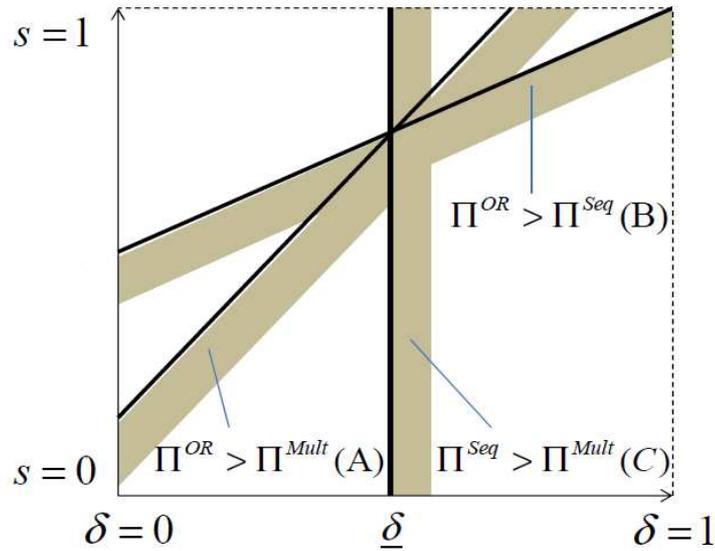


Figure 4: Time preference and length of bargaining round under open-rule protocol and I 's preference for sequential, multilateral and two step open-rule protocol bargaining (schematic).

Appendices B and C are for the referees to verify claims in the footnotes. They are not intended for publication

Appendix B: Measuring the Effect of Customs Union Formation on Latecomers

In this section we estimate the differential impact of customs union on exports for CIS countries whose entry to the customs union has been delayed compared to those who are expected to remain outside of the core customs union. A negative effect of the customs union indicates an externality³⁰ and weakly supports the AAH model in the sense that it is consistent with an interpretation that externalities play a role in sequencing. The finding that the actual composition of the core customs union also maximizes overall external effects would strongly support the AAH model: It would be compatible with a strategic choice in core customs union formation. Yet such

³⁰ Measuring the proper effect would require a comparison between actual performance and performance without the core customs union which is a counterfactual.

a statement would require observing or simulating external effects for different compositions of core customs unions among the candidates.

As a proxy for a country's welfare we construct an index of its annual exports into the CIS region for the period 2001 – 2014 using data from the cisstat.org website. In order to deal with problems from serial correlation (see Bertrand, Duflo, Mullainathan, 2004) we collapse our time series into two parts by calculating average exports into the CIS region before and after the introduction of the Customs Union in 2010, so we are dealing with a panel of length two. The equation which we estimate is:

$$\overline{EXP}_{it} = \beta_0 + \beta_1 CU + \sum_{s=2,\dots,6} \beta_s CD_i + \beta_7 CU \times I_i$$

where \overline{EXP}_{it} is the average value of the export index for country i in the pre- and the post customs union period ($t=1,2$), CU is a dummy variable for customs union which takes the value 1 for the subsample starting in 2010, CD_i is the country fixed effect and I_i is a dummy which is 1 if the country is a latecomer in the customs union (i.e. Tajikistan (TAD), Kyrgyzstan (KY) or Armenia(ARM)) and 0 if the country as of now is not expected to join the customs union (i.e. Ukraine, Azerbaijan, Moldova). The parameter β_7 is a difference-in-difference estimator for expected customs union membership. We do not estimate the effect on customs union members because their situation as insiders is fundamentally different from the situation of an outsider.

Table 1 reports our results:

Dependent Variable: \overline{EXP}_{it}

Method: Least Squares

Date: 05/03/15 Time: 17:39

Sample: 1 12

Included observations: 12

$\overline{EXP}_{it} = \beta_0 + \beta_1 * CU + \beta_2 * TAD + \beta_3 * KY + \beta_4 * ARM + \beta_5 * MOL + \beta_6 * AZ + \beta_7 * (KY + TAD + ARM) * CU$

	Coefficient	Std. Error	t-Statistic	Prob.
β_0	238.1018	96.99498	2.454785	0.0701
β_1	289.1980	96.99498	2.981577	0.0407
β_2	-166.0115	137.1716	-1.210246	0.2928
β_3	0.672807	137.1716	0.004905	0.9963
β_4	49.87698	137.1716	0.363610	0.7346
β_5	-179.2669	118.7941	-1.509056	0.2058
β_6	383.8645	118.7941	3.231343	0.0319
β_7	-235.6465	137.1716	-1.717896	0.1609
R-squared	0.921567	Mean dependent var	338.6452	
Adjusted R-squared	0.784308	S.D. dependent var	255.7868	
S.E. of regression	118.7941	Akaike info criterion	12.62738	
Sum squared resid	56448.15	Schwarz criterion	12.95065	
Log likelihood	-67.76429	Hannan-Quinn criter.	12.50770	
F-statistic	6.714100	Durbin-Watson stat	2.690579	
Prob(F-statistic)	0.042389			

Table 1

The coefficient β_1 of the CU variable is positive and significant at the 5% level. The coefficient of the difference-in-difference term for the latecomers, β_7 , is negative although not significant.³¹ We can show that for the latecomers the value of the export index before CU formation is not statistically different from the index after CU formation, so they lost out on the positive experience of the region after the customs union was formed in 2010.

Appendix C, Illustration of Our Argument in Footnote 10

³¹ We also ran the difference-in-difference estimation for each country separately. The coefficients for Tajikistan, Kyrgyzstan, Armenia and Moldova are negative, the coefficients for Ukraine and Azerbaijan positive, and for the latter significant at the 10% level.

Players 1, 2 and 3 negotiate over setting up a free-trade agreement with 1 as the agenda setter (c in the notation of Sen/Biswas). Assume that 2 and 3 receive an offer to form the grand coalition. In Sen and Biswas's scenario, the grand coalition forms if both accept but if only one of them accepts, the accepting agent forms a coalition with the agenda setter and the other agent stays a singleton. Only if both reject do they continue with the status quo. Sen and Biswas argue that in equilibrium a player accepts the offer to join the free-trade agreement if she is promised at least the pay-off she receives as a singleton when the other players sign a free-trade agreement.

To analyse this claim, denominate the pay-off for the outsider $w_i^F = w_i(\Gamma = \{i, \{j, k\}\})$, a player's pay-off with the status quo $w_i(\Gamma^0)$ and $w_N(\Gamma^N) = \sum_i w_i(\Gamma^N)$ the total pay-off for the grand coalition. $P(i)$ is the pay-off offered to responder i and the agenda setter's pay-off if the grand coalition is accepted is $P_{accept}(1) = w_N(\Gamma^N) - P(2) - P(3)$. In particular we assume negative externalities, that is $w_i^F < w_i(\Gamma^0)$, $i = 2, 3$.

Assume 3 accepts. If 2 also accepts, the outcome is $\{\Gamma^N\}$ with pay-offs for the responders $(P(2), P(3))$ while if 2 rejects the outcome is $\Gamma = \{2, \{1, 3\}\}$ with pay-offs $(w_2^F, P(3))$. Assume 3 rejects. If 2 accepts, the outcome is $\Gamma = \{2, \{1, 3\}\}$ with pay-offs for the responders $(w_2^F, P(3))$ while if 2 rejects the outcome is $\{\Gamma^0\}$ with pay-offs $(w_2(\Gamma^0), w_3(\Gamma^0))$.

Sen and Biswas claim that in equilibrium, pay-offs offered by 1 are $P(2) = w_2^F$ and $P(3) = w_3^F$. So assume this is the offer received. Each responder has to assess this offer and to decide on whether to accept or reject. This gives rise to the following acceptance game:

	3 accepts	3 rejects
2 accepts	$P(2), P(3)$	$P(2), w_3^F$
2 rejects	$w_2^F, P(3)$	$w_2(\Gamma^0), w_3(\Gamma^0)$

The acceptance game has two Nash-equilibria: (2 accepts, 3 accepts) and (2 rejects, 3 rejects).

Which one will be played?

Assume 2 believes that 3 accepts with $\text{Prob}(3)$ and 2 believes that a accepts with $\text{Prob}(2)$. So 2 will accept if

$$P(2) \geq \text{Prob}(3) w_2^F + (1 - \text{Prob}(3)) w_2(\Gamma^0)$$

and b will accept if

$$P(3) \geq \text{Prob}(2) w_3^F + (1 - \text{Prob}(2)) w_3(\Gamma^0)$$

Because $P(i) = w_i^F$ and $w_i^F < w_i(\Gamma^0)$ for $i = 2, 3$, 2 and 3 will only be willing to accept if they assign a probability of 1 to the event that the other agent accepts. Thus, (reject, reject) Pareto-dominates and also risk-dominates (accept, accept).

Now consider 1's problem. If 1's offer is rejected by both agents, she ends up with $w_1(\Gamma^0) < P_{\text{accept}}(1)$. Assume that 1 thinks that 2's and 3's subjective beliefs are equally distributed on $[0,1]$. In this case, her subjective probability of having her offer of $P(2)$, $P(3)$ rejected is one, so clearly the offer is not compatible with equilibrium.