The Strategic Euro Laggards

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Normative criteria for the international unions

1. macroeconomic costs and benefits (OCA criteria for monetary unions)
   - price and output level convergence
   - business cycle correlation

2. the optimal size of nations (Alesina, Spolaore 2003); echoes classic Oates’
   de/centralization criteria (Oates 1972, 2005)
   - spillovers (factor mobility, financial and trade integration)
   - heterogeneity (asynchronous shocks)
   - yardstick competition

Are there other (non-macroeconomic) determinants of entry?
Positive microfoundations of monetary unions

1. interest group analysis
   - the political economy of exchange rate (Broz and Frieden, 2001; Frieden, Ghezzi and Stein, 2001; Frieden 2002)
   - interest of large banks in joint financial regulation and financial integration (Grüner and Hefeker 1996)

2. club conditionality brings domestic policy benefits (e.g., reforms in the labor market and public spending) to the conservative incumbents (Dyson, 2006; Donnelly, 2005; two-level games)

3. intergovernmental bargaining upon entry
   - currency crisis threat (Fahrholz 2007, J Theoretical Pol); compensations extracted by crisis behavior in the ERM II (unlikely given risks of the intentional crisis behavior, cf. LeBlang, 2003; Eichengreen and Rose, 2003)
   - coordination with the private sector, and signals to the investors
Key idea

Entry is endogenous to the private sector expectations through (i) the total value of entry and (ii) the bargaining position of the entering government.

Aims

1. Model interactions between the private sector entry expectations and the gov’t entry decision.
   - multiple equilibria
   - hold-up problem

2. Identify tools through which the gov’t improves its bargaining position.
   - policy commitment
   - imperfect preparatory effort
   - capacity constraint upon anticipatory investments
   - strategic delay
Hold-up: Pro-entry expectation of the private sector lead to investments that decrease the option value of no-entry, hence worsen the bargaining position of the entrant. (Wallner 2003, J Pub E)

Key features

- continuum of competitive firms (or a representative firm)
- positive productivity shock of entry
- revenue-seeking government
- non-economic benefit of maintaining status quo/autonomy (cf., Angeletos, Hellwig, Pavan 2007, JPE)
- small open economy
- constant corporate profit tax
- constant bargaining power of the club and the gov't

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1 ‘European monetary unification is the Trojan horse for overall harmonization of economic rules, policies and laws in EU.’ (Klaus, 2003)
The setup

- **players**: C (club), G (gov’t), F (firms)
- **G’s status quo valuation**: \( \theta_i \in \mathbb{R}, G(\theta) \in [0, 1], g(\theta) := G_\theta(\cdot) \geq 0 \)
- **entry (G)**: \( e \in \{0, 1\} \)
- **the firm’s expectation of entry**: \( \xi \in [0, 1] \)
- **investments (F)**: \( k \geq 0 \)
- **production function**: \( af(k), f_k > 0, f_{kk} < 0 \)
- **positive productivity shock**: \( 0 < a < \bar{a} \)
- **exogenous interest rate**: \( r > 0 \)
- **optimal investment**: \( K(\xi), K_\xi > 0 \)
- **minimum, maximum**: \( K(0), K(1) \)
- **constant corporate profit tax**: \( \tau \in (0, 1) \)
- **firms’ extra after-tax profits**: \( (1 - \tau)(\bar{a} - a)f(k) > 0 \)
  - i) surplus: \( s(k) := (1 - \tau)\bar{a}f(k) - rk \)
  - ii) loss avoided: \( l(k) := rk - (1 - \tau)af(k) \)
- **gov’t extra tax revenues**: \( \tau(\bar{a} - a)f(k) > 0 \)
  - i) surplus equivalent: \( S(k) := s(k)\frac{\tau}{1-\tau} \)
  - ii) loss avoided equivalent: \( L(k) := l(k)\frac{\tau}{1-\tau} \)
- **ex ante, ex post extra revenues**: \( S(k), W(k) := S(k) + L(k) \)
**Surplus** $s(k)$ **and loss avoided** $l(k)$

![Graph showing surplus and loss avoided functions](image)
Fixed prize shares occur in bargaining with alternating offers and a constant risk of breakdown, \( q \in (0, 1) \), where the club starts first (w.l.o.g.).

- **power of the government**: \( \alpha = (1 - q)/(2 - q) \in (0, 1/2) \)
- **power of the club**: \( 1 - \alpha \in (0, 1) \)
- **gov’t type is revealed**: \( \theta_i \)
- **entry prize**: \( S(k) + L(k) - \theta_i \)
- **ex post participation constraint**: \( \theta_i \leq W(k) - L(k), 0 \)
- **disagreement points (G,C)**
- **payoff of G**: \( \alpha(S(k) - \theta_i) - (1 - \alpha)L(k) \geq 0 \)
- **payoff of C**: \( (1 - \alpha)(S(k) + L(k) - \theta_i) \geq 0 \)
- **ex ante participation constraint**: \( \theta_i \leq W(k) - \frac{L(k)}{\alpha} \)
Benefits

ex ante participation  \( \theta_i \leq W(k) - \frac{L(k)}{\alpha} \)

ex post participation  \( \theta_i \leq W(k) \)

positive net surplus  \( \theta_i \leq S(k) \)
Benefits

1. For any participating gov’t, bargaining shrinks value by \( \frac{L(k)}{\alpha} \).

2. Immiserization occurs for intermediate types \( W(k) - \frac{L(k)}{\alpha} < \theta_i < W(k) \).

3. The payoff of any participating gov’t is maximized for \( k := K(\alpha) \).
   - For \( \xi \in [0, \alpha] \), firms and gov’t have common interests (complementarity zone).
   - For \( \xi \in [\alpha, 1] \), firms and gov’t have opposite interests (hold-up zone).

4. The first-best allocation is \( k = K(1) \) and \( \theta = S(K(1)) \).
Single period, simultaneous game

Best responses

- participation threshold (b.r. of gov’t): \( \theta(k) = W(k) = (\bar{a} - a)f(k) \)
- expected entry, investments (b.r. of firms): \( \xi = G(\theta), K(\xi) = K(G(\theta)) \)

Shapes

- concave for \( G \): \( \theta_k = (\bar{a} - a)f_k(k) > 0, \theta_{kk} = (\bar{a} - a)f_{kk}(k) < 0 \)
- concave/convex for \( F \): \( K_\theta = K_\xi \cdot g(\theta) > 0, K_{\theta\theta} = K_{\xi\xi} \cdot g(\theta) + K_\xi \cdot g_\theta \leq 0 \)
  where we use \( K_{\xi\xi} < 0 \)

  » For uniform distribution, \( K_\theta \) always concave: unique eq. \( \hat{\theta} \)
  » For distributions with small variance, possibility of convexity in \( K_\theta \):
    possibility of multiple eq. (moderate pessimism, moderate optimism)
Illustration
Tool 1: Gov’t leadership in pure strategies

Timing

1. Gov’t commits to entry or no-entry, $e \in \{0, 1\}$, by an eq. threshold $\theta_G$.
2. Firms observe $e$ and install $K(e) \in \{K(0), K(1)\}$.
3. Gov’t realizes $e$. The decision does not have to been ex-post optimal.

$$\theta_G = W(K(1)) - \frac{L(K(1))}{\alpha}$$
Analysis

1. It is unclear whether the country more or less likely enters, \( \hat{\theta} \geq \theta_G \).
2. Expected investments may increase or decrease,
   \[ K(G(\hat{\theta})) \geq G(\theta_G)K(1) + (1 - G(\theta_G))K(0). \]
3. Under identical threshold \( (\bar{\theta} = \theta_G) \), improved precision decreases expected investments; by concavity \( K_\xi \), a lottery \( (\xi, 1 - \xi) \) over \( K(1), K(0) \) produces less than \( K(\xi) \).
4. Monotonic welfare analysis, if ex ante benefits grow
   + extremely low (pro-entry) types gain extra payoff
   + low types keep entering, and avoid immiserization
   + intermediate types begin to enter and improve upon zero payoff
   0 high types don’t enter like before
5. Non-monotonic welfare analysis, if ex ante benefits fall
   - extremely low types have positive but lower payoff
   - low types no longer enter, but maintain at least zero payoff
   + intermediate types don’t enter and avoid immiserization
   0 high types keep staying out
Tool 2: Gov’t leadership in mixed strategies

Timing

1. Gov’t exerts preparatory effort, \( e \in [0, 1] \).
2. Firms observe \( e \) and install \( K(e) \).
3. Club approves entry with probability \( e \) and rejects with \( 1 - e \).

\[
\theta_M = W(K(\alpha)) - \frac{L(K(\alpha))}{\alpha}, K(\alpha) = \max_k W(k) - \frac{L(k)}{\alpha}
\]

Analysis

1. Participating policy-makers announce \( e = \alpha \), non-participating \( e = 0 \).
2. \( \theta_M \geq \max\{\hat{\theta}, \theta_G\} \)
3. Each policy maker is weakly better off.
4. It is an external randomization device that serves to the benefit of policy makers (commitment itself is not sufficient; it only avoids immiserization, but otherwise may pronounce hold-up problem).
Tool 3: Complementary capacities

**Idea:** Factors of production are complementary, and their installing requires different timing (e.g., time to build logistic centers and office buildings vs. time to hire staff).

- **2 periods (pre-electoral commitments, post-electoral policies)**
  - \( t = 1 \) simultaneous game (parties decides on entry, by threshold \( \theta_C \), and firms install capacity \( \bar{K} \)); cost of capacities translates into lower profits and lower tax revenues in this period
  - \( \theta_i \) is revealed (elections), entry is determined
  - \( t = 2 \) no entry: firms do not use the capacities, and \( k = K(0) \); entry: firms employ factors up to \( k = \bar{K} \), and entry bargaining takes place

- **effects**
  - The firms have again \( K(\xi), K_\xi > 0 \) investment function, reflecting the unit cost of the capacities and their expected use.
  - Bargaining considers only benefits in \( t = 2 \).
  - The gov’t in \( t = 1 \) can always commit to zero payoff through committing to no entry (firms then don’t use capacities and *nothing is lost* in \( t = 2 \)). \( \Rightarrow \) The gov’t uses *ex ante participation constraint*.
  - Substitutable factors move the case towards ex post constraint.
A common shock to status-quo valuation depressing the distribution $G(\theta)$ (less pro-entry politicians) decreases $\xi(\theta)$, hence $K(\theta)$ falls down. This may either i) increase $\theta$ (centrists more willing to enter) or ii) decrease $\theta$ (centrists less willing to enter).
Summary

A single-period-entry setup combines i) complementarity and ii) hold-up.

1. Multiple equilibria are more likely for countries with low polarization.
2. Hold-up implies ‘immiserization’ for intermediate types (recall the difference between ex post and ex ante participation constraint).
3. Tools to remedy hold-up problem (e.g., policy commitments) may produce extra domestic conflict.
4. The best for all policy makers is to leave randomization to Nature (monetary policy experts complain about ‘the art of chasing too many rabbits’, but ambiguity is to the benefit of all policy makers).
5. With capacity constraints, equilibrium may feature strategic complementarity but also strategic substitutability, which yields non-monotonicities in comparative statics.
Tool 4: Strategic delay

1. Intermediate policy-makers intentionally delay entry.
2. Delay serves as a signal of high $\theta$, hence of unwillingness to enter in the future.
3. Anticipatory investments of the private sector decrease, thus the option value of no-entry increases, and the expected government's payoff in bargaining with the club increases.
4. This increase in the future period wipes out losses of no-entry in the current period.
5. The intermediate policy-makers eventually enter.
Effects of delay

- types entering in period 1: $\theta_i \leq \hat{\theta}_1$
- types remaining: $\theta_i > \hat{\theta}_1$, $G_2(\theta) \leq G_1(\theta)$, hence $K_2(\theta) \leq K_1(\theta)$
- standard (concave) entry function in period 2: $\theta_2(k) = \theta(k)$
- for stable eq., both $K$ and $\theta$ drop in $t = 2$ if compared to the single-period case
The game
Beliefs
- period 1: $G_1(\theta), K_1(\theta)$
- period 2, no entry: $\theta \geq \hat{\theta}_1 : G_2^0(\theta) \leq G(\theta), K_2^0(\theta) \leq K_1(\theta)$
- period 2, entry, failed bargaining: $\theta \leq \hat{\theta}_1 : G_2^F(\theta) \geq G_1(\theta), K_2^F(\theta) \geq K_1(\theta)$

Corollary: $K_2^0 < K_2^F$, $\hat{\theta}_2 := \theta_2^0 < \theta_2^F$

Period 2 bargainings ($B_2^0, B_2^F$)
- disagreement: $-L(K_2), 0$
- prize: $W(K_2) - \theta_i$
- ex post constraint: $\theta_i \leq \theta_2(K_2) = W(K_2)$
- payoff: $\delta \{ \alpha[W(K_2) - \theta_i] + L(K_2) \}$

Both ($\theta_2, K_2$) pairs are determined exactly like in a single-period case.

Period 1 bargaining ($B_1$)
- disagreement depends on the expected payoff for failed bargaining (will there be extra bargaining or not?)
- payoff consists of ex post benefits in $t = 1$, and (if extra bargaining) ex ante benefits in $t = 2$ (minus autonomy values if entry)
Characterization of delay equilibrium

1. Extra bargaining expected for all failed deals ($\theta_i \leq \hat{\theta}_1$), as $\hat{\theta}_1 < \hat{\theta}_2^E$.
   - disagreement: $-L(K_1) + \delta\{\alpha [W(K_2^F) - \theta_i] - L_2^F\}, \delta(1 - \alpha) [W(K_2^F) - \theta_i]$
   - prize: $W(K_1) - \theta_i + \delta\{S(K(1)) - S(K_2^F)\}$

2. Strategic delay: $\hat{\theta}_1 < \hat{\theta}_2$

3. With $\hat{\theta}_1 < \theta_2^F$ and $G_2^F(\hat{\theta}_1) = 1$, we have $K_2^F = K(\theta_2^F) = K(1)$ (irrespective of disagreement in period 1, firms expect entry with certainty and install $K_2 = K(1)$, hence there is no difference between agreeing or not agreeing).

4. Thus, we have a clear tradeoff of strategic delay:
   - plus improve future hold-up: $\left[ W(K_0^2) - \frac{L(K_0^2)}{\alpha} \right] - \left[ W(K(1)) - \frac{L(K(1))}{\alpha} \right]$
   - minus lose current bargaining prize: $W(K_1) - \theta_i$

   $$\theta_1(K_1) = W(K_1) + \delta \left\{ \left[ W(K(1)) - \frac{L(K(1))}{\alpha} \right] - \left[ W(K_2^0) - \frac{L(K_2^0)}{\alpha} \right] \right\}$$

5. A necessary condition for strategic delay is $\theta_1(K) \ll \theta_2(K)$, thus the gain must be positive and sufficiently large to make the second part negative.
Illustration
Summary

1. Strategic delay is a feasible option, if
   - hold-up is sufficiently strong,
   - and equilibrium improvement of hold-up is sufficiently large.

2. The improvement is a largely parametrical issue, and depends, among others, on properties of the distribution functions. This makes it difficult for testing.

3. Another effect of strategic delay can be equilibrium switch to a more pessimistic equilibrium.
Evidence on multiple types: content analysis (CZ)

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<thead>
<tr>
<th>Group/Message content</th>
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<td>President, Advisors</td>
<td>4 (80 %)</td>
<td>1 (20 %)</td>
<td>-</td>
<td>-</td>
<td>5</td>
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<td>National Central Bank</td>
<td>10 (45 %)</td>
<td>11 (50 %)</td>
<td>1 (5 %)</td>
<td>-</td>
<td>22</td>
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<tr>
<td>Ministers, Senior Officials</td>
<td>9 (40 %)</td>
<td>7 (30 %)</td>
<td>7 (30 %)</td>
<td>-</td>
<td>23</td>
</tr>
<tr>
<td>Financial/Bank Analysts</td>
<td>6 (43 %)</td>
<td>-</td>
<td>3 (21 %)</td>
<td>5 (36 %)</td>
<td>14</td>
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<tr>
<td>Commercial Unions</td>
<td>-</td>
<td>1 (10 %)</td>
<td>4 (49 %)</td>
<td>5 (50 %)</td>
<td>10</td>
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<tr>
<td>Opposition</td>
<td>-</td>
<td>-</td>
<td>4 (21 %)</td>
<td>15 (79 %)</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>29</td>
<td>20</td>
<td>19</td>
<td>25</td>
<td>93</td>
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</table>

Notes:  
−− Strong conditionality. An explicit precondition to the entry is either real convergence, or major reforms towards public finance sustainability.  
− Delay. Entry is not topic of the day. Only implicit about conditionality. Leave the issue to experts.  
+ Weak pro-entry. Only minor fiscal adjustments desirable, no explicit link to the long-term sustainability. Commit to timing or maintain commitment of the previous cabinet.  
Data: Signed articles, interviews, or direct quotes in Hospodářské noviny (www.ihned.cz).  
Further evidence on polarization

**Table:** When do you prefer the Czech Republic to adopt euro?

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<th>before 2011</th>
<th>2011–2012</th>
<th>after 2012</th>
<th>never</th>
<th>Total</th>
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<tr>
<td>Votes</td>
<td>860</td>
<td>209</td>
<td>316</td>
<td>743</td>
<td>2128</td>
</tr>
<tr>
<td>Share</td>
<td>40 %</td>
<td>10 %</td>
<td>15 %</td>
<td>35 %</td>
<td>100 %</td>
</tr>
</tbody>
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Topics for discussion

Given “immutable entry conditions” (Eichengreen and Frieden 2000), are there elements of intergovernmental bargaining for EMU entry?

1. Veto power of the club
   - ambiguity and reconsideration of criteria

2. Redistribution of benefits
   - linkages across policy dimensions, allowed by EU institutions (Treaty renegotiations, transfer payments, CAP reform, common security and defense; Slapin 2008)
   - EMU decisions vested with high-level representatives (PM), not with strategically delegated low-level representatives (National Bank, minister of finance; Harstad 2007, 2008)
   - puzzle in the literature on the allocation of the EU expenditures via voting weights for NMS (Kauppi and Widgren 2007)

3. The effective option of delaying entry
   - case of SWE