Why Does the Doha Development Agenda Fail? And What Can be Done? A Computable General Equilibrium-Game Theoretical Approach

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Setting the stage
## Trade negotiations under the WTO

<table>
<thead>
<tr>
<th>Place</th>
<th>Date</th>
<th>#</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>Dec. 1996</td>
<td>130</td>
<td>New issues for the WTO (Investisssment, Public Procurement, Trade Facilitation, Competition)</td>
</tr>
<tr>
<td>Geneva</td>
<td>May 1998</td>
<td>134</td>
<td>Next round preparation, role of NGO</td>
</tr>
<tr>
<td>Seattle</td>
<td>Nov. 1999</td>
<td>136</td>
<td>Failure in launching the new round</td>
</tr>
<tr>
<td><strong>Doha</strong></td>
<td>Nov. 2001</td>
<td>145</td>
<td><strong>The Doha Development Agenda is launched</strong></td>
</tr>
<tr>
<td>Cancun</td>
<td>Sept. 2003</td>
<td>146</td>
<td>Failure to reach agreement on the modalities</td>
</tr>
<tr>
<td>July 2006</td>
<td></td>
<td></td>
<td>Pascal Lamy suspended trade talks <em>sine die.</em></td>
</tr>
<tr>
<td>Geneva</td>
<td>July 2008</td>
<td></td>
<td>Failure of a one week mini-ministerial after several issues of draft modalities between Dec 07 and July 08</td>
</tr>
</tbody>
</table>
The Doha Round stalemate: a source of disappointment for top trade experts

Oxford English Dictionary (since 2001)
Doh[a]! “expressing frustration at the realization that things have turned out badly or not as planned, or that one has just said or done something foolish.”
Homer Simpson: “D’oh™[a]!”
Several questions at stake

• Can we explain the failure of the Doha Round relying on economic theory?

• Can we investigate potential solutions to this dead-end?

• Can we understand the role of coalitions in the WTO context?
General context

• Focus on the 2003 Cancun situation

• By the way, this study has been done in early 2004 for the European Commission

• Innovative approach combining CGE analysis and Game Theory
Methodology
Overview

Defining Scenarios
- **Goal**: Creating 143 scenarios by combining different pillars in the negotiations
- **Tool**: MAcMapHS6 v1 and Bound tariff databases

Simulating Scenarios
- **Goal**: Assessing the economic impacts on the 143 scenarios to define countries’ payoffs
- **Tool**: MIRAGE CGE and the GTAP 6 database

Finding Scenario outcomes
- **Goal**: Finding the outcome of the bargaining process in different game configurations
- **Tool**: Nash Bargaining Game Theory
Methodology

1- Building scenarios
## Negotiation space

<table>
<thead>
<tr>
<th>Domain</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value Services</td>
<td>NAMA</td>
<td>AMA</td>
<td>Exp. Subsidies</td>
<td></td>
</tr>
<tr>
<td>0 Status-quo</td>
<td>Status-quo</td>
<td>Status-quo</td>
<td>Status-quo</td>
<td></td>
</tr>
<tr>
<td>1 Reduc. by 50%</td>
<td>a=10%</td>
<td>a=25%</td>
<td>Reduc. by 75%</td>
<td></td>
</tr>
<tr>
<td>2 n.a.</td>
<td>a=10%+SDT</td>
<td>a=25%+SDT</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>3 n.a.</td>
<td>a=5%</td>
<td>a=15%</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>4 n.a.</td>
<td>a=5%+SDT</td>
<td>a=15%+SDT</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>5 n.a.</td>
<td>o-o</td>
<td>Linear formula + SDT</td>
<td>n.a.</td>
<td></td>
</tr>
</tbody>
</table>

- Focus on market access
- Swiss formula with coefficient $a$ assumed in most of the cases
- 143 scenarios + Status-quo
- Scenario codification $sABCD$
Scenario implementation

• Goods
  ▫ Implemented at the HS6 level
  ▫ MAcMapHS6v1 (see Bouet and al, 2008) applied tariffs database
  ▫ Bound tariffs dataset (see Bchir, Jean and Laborde, 2006)

• Services
  ▫ Homogenous *ad valorem* equivalent import duties on business services of 20%
Tariff cut implementation

- Binding overhang
- Preferential Margins
- MFN
- Applied
- Bound level
Methodology

2- the CGE framework
The MIRAGE Framework

- A multi-country, multi-sector CGE
- Features of the version used:
  - Static
  - Perfect competition
  - No Government, only one representative agent
  - CES-LES Final Demand function
  - Take into account TRQ rents
- Current account fixed as a share of world GDP
- Used GTAP 6 database
- See Decreux and Valin (2007)
MIRAGE - Supply side

Production of good $i$ in region $r$ $Y_{i,r}$

Leontief

Intermediate consumption $IC_{i,r}$

Value Added $VA_{i,r}$

$CES \sigma_{IC}$

$CES \sigma_{VA}$

Good 1 $IC_{i,1,r}$

Good j $IC_{i,j,r}$

Good J $IC_{i,J,r}$

Unskilled Labor $L_{i,r}$

Land $T_{i,r}$

Natural Resources $RN_{i,r}$

Skilled Labor and Capital

$CES \sigma_{CAP}$

Skilled Labor $H_{i,r}$

Capital $K_{i,r}$
MIRAGE - Demand side

- Demand for good $i$ produced in type $u$ regions
  - CES $\sigma_{U,E}$
    - Local good $D_{u,s}$
    - Foreign good $M_{u,s}$
      - CES $\sigma_{M,F}$
        - Produced in region $1$ type $u$: $DEM_{u1,s}$
        - Produced in region $r$ type $u$: $DEM_{ur,s}$
        - Produced in region $R$ type $u$: $DEM_{uR,s}$

- Demand for good $i$ produced in type $v$ regions
  - CES $\sigma_{V,E}$
    - Produced in region $1$ type $v$: $DEM_{v1,s}$
    - Produced in region $r$ type $v$: $DEM_{vr,s}$
    - Produced in region $R'$ type $u$: $DEM_{vR,s}$
Aggregation: 23 sectors x 25 regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Coalition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>G22/Cairns</td>
</tr>
<tr>
<td>Australia</td>
<td>Cairns</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>G90</td>
</tr>
<tr>
<td>Brazil</td>
<td>G22/Cairns</td>
</tr>
<tr>
<td>Canada</td>
<td>Cairns</td>
</tr>
<tr>
<td>Chile</td>
<td>G22/Cairns</td>
</tr>
<tr>
<td>China</td>
<td>G22</td>
</tr>
<tr>
<td>CIS</td>
<td>G10</td>
</tr>
<tr>
<td>EFTA</td>
<td>G10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>Coalition</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU25</td>
<td>G22</td>
</tr>
<tr>
<td>India</td>
<td>G22</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Cairns</td>
</tr>
<tr>
<td>Japan</td>
<td>G10</td>
</tr>
<tr>
<td>Korea_Tw</td>
<td>G10</td>
</tr>
<tr>
<td>MeditCount/</td>
<td>G90</td>
</tr>
<tr>
<td>Mexico</td>
<td>G22</td>
</tr>
<tr>
<td>NewZealand</td>
<td>Cairns</td>
</tr>
<tr>
<td>RoAsia</td>
<td>G22</td>
</tr>
<tr>
<td>RofCentAm</td>
<td>G22</td>
</tr>
<tr>
<td>RofSouthAm</td>
<td>G22</td>
</tr>
<tr>
<td>ROW</td>
<td></td>
</tr>
<tr>
<td>SouthAfrica</td>
<td>G90/G22/Cairns</td>
</tr>
<tr>
<td>SubSahAf</td>
<td>G90</td>
</tr>
<tr>
<td>Thailand</td>
<td>G22/Cairns</td>
</tr>
<tr>
<td>USA</td>
<td>G22/Cairns</td>
</tr>
</tbody>
</table>

Try to identify key players
Methodology

3- Game theory tools
Defining the negotiators’ objective

Four indicators are considered in this study:

• The Hicksian equivalent variation of the representative agent. This indicator means that governments are maximizing national welfare;
• Real Gross Domestic Product (GDP) is often cited as an objective by negotiators;
• The exports growth is a mercantilist objective, frequently quoted by negotiators;
• The terms of trade is another mercantilist objective, but it implies that trade is a zero-sum game.
The Nash Bargaining solution

- The $1 game
- Fulfils a set of good properties (axiomatic theory)
- Solutions depend on:
  - Payoffs
  - Threat points (to be defined, here status-quo)
  - Bargaining powers
    - Unweighted case (1 player/region, 1 vote)
    - Economic weights (share in world GDP)
    - “Democratic” weights (1 country, 1 vote)
Formulation

- Without transfers, to choose a scenario $s$ as

$$s^* \in \text{Arg}_{s \in S} \text{Max}G(s) = \prod_{m}(W^m(s) - W_0^m(s))^\alpha_m$$

s.t. the participation constraint of every player $m$

$$W^m(s^*) - W_0^m \geq 0, \forall m$$

- With transfers, the objective is

$$s^* \in \text{Arg}_{s \in S} \text{Max}G(s) = \prod_{m}(W^m(s) + T^m - W_0^m)^\alpha_m$$

$$\sum_{m} T^m = 0$$

s.t.

$$W^m(s^*) - W_0^m \geq 0, \forall m$$
Looking at coalitions

- We will focus on
  - G-10
  - G-20
  - G-90
- We do not allow for transfers between members
- We assume Nash Bargaining among members

From Jean and Fontagne (2003)
The coalitions

- Difficulty to justify coalitions in the WTO context (unanimity principle):
  - Chae and Heidhues (2002) “Bargaining between groups”: problem of heterogeneity inside the group. Geometric average of the utility of the members
  - Manzini and Mariotti (2005) “Alliances and negotiations”. Alliance: members should have the same ordinal preferences, not necessarily the same intensity. Optimal Delegation.
  - **Joint bargaining paradox** of John C Harsanyi (1977) (loose One right to talk)

- Potential reasons:
  - *For technical expertise (Fixed cost)*
  - For escaping retaliation
  - For being listened by the major players (power to say “NO”


Results
World Optimum

<table>
<thead>
<tr>
<th></th>
<th>With liberalization in services</th>
<th>Without liberalization in services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal scenario</td>
<td>s1531</td>
<td>s0531</td>
</tr>
<tr>
<td>Eq. Variation</td>
<td>$105.05bn or +0.33%</td>
<td>$93.8bn or 0.29%</td>
</tr>
<tr>
<td>Real GDP</td>
<td>$127.21bn or 0.41%</td>
<td>$114.99bn or 0.37%</td>
</tr>
</tbody>
</table>

Note:  s1531 implies liberalization in services (1), the strongest liberalization (a=5%) in NAMA including the o-o in textile and wearing (5), the strongest liberalization (a=15%) in AMA (3) and the reduction of export subsidies. s0531 is the same scenario without services liberalization.
An uneven gain
Nash bargaining outcome

<table>
<thead>
<tr>
<th>Equivalent variation</th>
<th>GDP weighted</th>
<th>GDP unweighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unweighted</td>
<td>s1000</td>
<td>s1000</td>
</tr>
<tr>
<td>“Democratic”</td>
<td>s1000</td>
<td>s1551</td>
</tr>
</tbody>
</table>

Note: s1000 is a status-quo with only a liberalization in services (a net gain for everyone in our modeling).

s1510 implies liberalization in services (a=5%), including the 0-0 in textile, a moderate liberalization (a=25% + SDT) in AMA and no export subsidies reduction. s1520 differs from s1510 by the introduction of SDT in agriculture. On the opposite, s1530 is the same scenario but the AMA liberalization is the strongest (a=15%, no SDT).

s1551 implies liberalization in services (a=5%), the strongest liberalization (a=5%) in NAMA including the 0-0 in textile and wearing (5), the weakest liberalization (linear reduction) in AMA and the reduction of export subsidies. s0531 is the same.
Investigating potential solutions

A. Limiting the number of players
B. Allowing side payments
C. Extending the scope of negotiations
A- Too many players: let’s exclude the smallest

Sally (2004): "Stated baldly: only a minority of the WTO members have the bargaining power and capacity to advance negotiations. These are the OECD countries and about a score or so of advanced developing countries (most of them in the G20). Hence the key liberalizing and rule-making deals in the WTO must be done by the 30-plus countries (counting the EU as one) that accounts for over 80% of international trade and an even bigger share of foreign direct investment"

<table>
<thead>
<tr>
<th>Exclusion threshold</th>
<th>Equivalent variation</th>
<th>real GDP</th>
<th>Exports</th>
<th>Terms of trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>1</td>
<td>31</td>
<td>39</td>
<td>0</td>
</tr>
<tr>
<td>&lt; 2% of world GDP</td>
<td>59</td>
<td>47</td>
<td>142</td>
<td>0</td>
</tr>
<tr>
<td>&lt; 3% of world GDP</td>
<td>60</td>
<td>47</td>
<td>142</td>
<td>0</td>
</tr>
<tr>
<td>&lt; 4% of world GDP</td>
<td>87</td>
<td>47</td>
<td>142</td>
<td>112</td>
</tr>
</tbody>
</table>

It’s efficient but it should be a Development Round...
B- Allowing side payments
Pattern of Transfers - USD bn

Unweighted vs GDP weighted
C- Impact of an extension of the negotiation domain (IR)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Dimension</th>
<th>Card of the scenarios set</th>
<th>Card of the IR set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>All players at 2% of world GDP</td>
<td>Exclusion at 4% of world GDP</td>
</tr>
<tr>
<td>Services</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Industry</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Export subsidies</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>All dimensions</td>
<td>143</td>
<td>1</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>87</td>
</tr>
</tbody>
</table>
Understanding the role of coalitions

A- How to assess the effects of coalitions?
B- G20
C- G90
D- Effects on the EU and the US
How to assess the effects of coalitions?

- We assume that all players below 4% of world GDP are excluded.
- If a coalition reaches this threshold, all its members participate in the negotiations.
  - Their individual participation constraint limits the set of feasible outcomes.
  - Their weights impact the decision.
- We compute the outcome of the game in all configurations:
  - Triad (Japan, USA, EU) = no coalition
  - Triad + G10, Triad + G20, Triad + G90
  - Triad + G10 + G20, Triad + G20 + G90
  - Triad + G10 + G20 + G90
- We compare the gains for every player when a coalition appears to the relevant reference situation.
Effects of the G20 coalition on its members’ payoffs when it faces the Triad.$ Bn.
Effects of the G90 coalition on its members’ payoffs when it faces the Triad.$ Bn.
Additional remarks

• The G10 is beneficial to its members when it faces the Triad alone, even (and especially in the GDP weighted case) for Japan
• The G20 is always beneficial to its members except facing the G90
• The G90 is always detrimental for South Africa
• Mediterranean countries find interests in the G90 only if the Triad faces no other group.
Effects of the coalitions on the US and the EU. $ Bn.

<table>
<thead>
<tr>
<th></th>
<th>EU25</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDP weights</td>
<td>Unweighted</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>-5</td>
</tr>
<tr>
<td></td>
<td>-10</td>
<td>-10</td>
</tr>
<tr>
<td></td>
<td>-20</td>
<td>-20</td>
</tr>
<tr>
<td></td>
<td>-30</td>
<td>-30</td>
</tr>
</tbody>
</table>

- Triad + G-10
- Triad + G-20
- Triad + G-90
Conclusions

Is our analysis validated by the evolution of negotiations?
1 - The Doha round is still difficult to conclude

- Failure of the 2008 mini-ministerial
- Failure of the organization of a ministerial meeting in Geneva in December 2008
- No clear schedule for 2009
- The DDA is still not a priority for the US (weak gains).
2 - The small players are excluded from trade talks

• The Hong Kong declaration has proposed:
  ▫ No liberalization required for the LDCs
  ▫ A LDC initiative to provide new market access opportunities for these countries’ exports

• Subsequent modalities has created a *de facto* category for Small and Vulnerable economies leading to no liberalization for such countries
3- Aid For Trade as a side payment

- Will target in priority
  - LDCs
  - SVEs

- Will help to compensate Preference Erosion
4 - Flexibility is introduced

• To take care of different country specificities
• by limiting liberalization
  ▫ Sensitive and special products

Or
• By deepening liberalization
  ▫ Sectoral initiative

And
• Taking care of regional integration schemes
  (MERCOSUR, SACU, CARICOM, CEMAC)
5- Coalitions have shaped the negotiations

- G-20 remains the main player but its heterogeneity has led Brazil and India to go in a different direction in July 2008
- Snapshot on the evolution of agricultural negotiations

![Average cut rate on bound tariffs](chart)

Source: Laborde, 2008