Whither Panama?

Constructing a consistent and balanced World SUT system including international trade- and transport margins

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Whither Panama?

- **International Trade & Transport margins**
- Large international IO data bases and models (GTAP, WIOD) account for international trade & transport margins as a wedge between cif and fob prices (cif typically as mark-up on fob prices);
- the supply of such services, though, seems to be relegated to the rest-of-the-world, which is typically not covered by such models (the „Panama-assumption“);
- With WIOD as probably the most comprehensive data base of SUTs to date, we feel to be in a position to address this issue in a more consistent way.
Whither Panama?

• about this presentation:
  • We want to present some ideas on the derivation of „consistent“ international trade and transport costs (wedge between fob and cif);
  • „consistent“: like in the case of national trade&transport margins (when moving from UsePP to UseBP), they are linked back to the sectors which produce these services;
  • we will also show the construction of SUT for ROW (for 2005) through which this consistency is brought about for these trade and transport services (as well as all other commodities and services).
International Transport Costs

• „TIR services“ – International trade and transport costs/margins
• represent the wedge between fob and cif prices
• typically: mark-up on fob prices
  – price transmission mechanism accounted for
  – but: where are TIRs produced?
  – estimated at 5-8% of commodity trade value - amounts to 500-1.000 bn US$....

• „Panama assumption“
  – Panama has largest merchant fleet (6,379 vessels); more than 80% foreign owned (half of which are Japanese); „flag of convenience“
  – UNSD: Panama‘s transport sector‘s share of GDP is somewhat above average (16 vs. 9%);
    => contributes 2,5 bn US$ of TIR services (in VA)
  – this is not nearly enough..... we need other sources for TIR services
International Transport Costs

- from Producer Price (in exporting country) to Purchaser Price (importer):

\[ X_{fob} \]

\[ M_{cif} \]

\[ TIR \]
International Transport Costs

• Exports in fob enter import country as a

  \[ \text{composite good } M_{\text{cif}} = \text{good itself } X_{\text{fob}} \text{ plus TIR} \]

• if fob concept is correctly applied, TIR services are explicitly exported – but they are nowhere explicitly imported....
  (only implicitly, via the composite good \( M_{\text{cif}} \))

• => the net export of TIR services (at purchaser prices) at the world level represents total TIR supply!
TIR

- what are those TIR services:
  - margins table in SUT: 50, 51, 52 (trade) 60-63 (transport)
  - by definition, retail trade should be consumed at the place of production -> 51; 60-63
  - WIOD Countries show net export pattern which fits very nicely:

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TIR

- Net exports of TIR services of WIOD countries amount to 
  ~ 500 bn US$

- what about the Rest-of-the-World (ROW)?
  - no SUT for ROW in WIOD
  - start constructing one....
  - data sources: UNSD, WIOD, (PWT)
SUT - ROW

• UNSD: data on sectoral Output and VA for some 210 countries
  » Agriculture, hunting, forestry, fishing (ISIC A-B)
  » Mining, Manufacturing, Utilities (ISIC C-E)
  » Manufacturing (ISIC D)
  » Construction (ISIC F)
  » Wholesale, retail trade, restaurants and hotels (ISIC G-H)
  » Transport, storage and communication (ISIC I)
  » Other Activities (ISIC J-P)
  » (Imports of goods and services)

• plus Final Demand components
  » Household consumption expenditure (including Non-profit institutions serving households)
  » General government final consumption expenditure
  » Gross capital formation
  » Gross fixed capital formation (including Acquisitions less disposals of valuables)
  » Changes in inventories
  » (Exports of goods and services)
SUT - ROW

- from world totals, subtract WIOD countries -> ROW totals (7 sectors, 5 final demand)
- use structural SUT information from WIOD countries which are „as similar to ROW as possible“
  - BRA, IDN, IND, MEX
- combine UNSD totals with this structural information
- -> „preliminary SUT for ROW“
- (later, we will modify this preliminary SUT);
- only for TIR services, we take it at face value!
total TIR

• Surprise: net exports of TIR services in the preliminary ROW-SUT show no contribution to TIR world total by ROW
  – ROW even seems to be slight net importer of TIR services by ~ 7 bn US$ ...
  – but: largest shipping lines as well as largest logistics companies are all from WIOD countries

• so, combining TIR net exports from WIOD and ROW we estimate world supply of TIR services at

  487 bn US$ in 2005

  – about 5% of world manufactured exports
cif-fob correction

balancing problem for trade in manufactured goods (only these are assumed to carry TIR) might be posed thus:

- boundary values $M_{\text{cif}}$ and $X_{\text{fob}}$
- sum total TIR
- starting values for trade linkages
- starting values for TIR matrix

incomplete problem!

we do not know about $M$ and $X$ of ROW.... a „normal“ RAS procedure is not possible
cif-fob correction - manufacture

- boundary values $M_{cif}$ and $X_{fob}$ for the WIOD countries are known;
- also, we know the sum total for TIR;
- starting values for the trade linkages are informed by COMTRADE
- we take starting values for the matrix of TIR markups from a panel-econometric analysis of COMTRADE data (2002-2009);

- Solution process:
  - iteratively, we adapt the (unknown) $M_{cif}$ and $X_{fob}$ of ROW in such a way that the trade matrix is balanced
     - to prevent the algorithm from settling on a „ROW-only“ solution to world trade, we fix ROW's share in world trade for total exports of manufactured goods at 12% (based on COMTRADE data). The commodity structure of these 12%, however, is NOT fixed in the process!
  - scale trade flows to $M_{cif}$ and $X_{fob}$
  - modify TIR matrix w.r.t. the new trade linkages (keeping relative TIR markups constant) and scale to total TIR
disaggregation of TIR services

- in the last steps, we have derived a matrix of total TIR flows between countries;

- now: need to disaggregate to the TIR services 51, 60-63

- can be done via a simple RAS: boundary values are given by
  - totals of net exports of each of the 5 services at the world level;
  - each element of the TIR matrix (commodity x country x country)

- starting values: „useful“ information is sparse; we used EUROSTAT‘s COMEXT (by mode of transport) to get some idea about transport modes for different commodities.

- Nevertheless, starting values were to a substantial degree the result of „informed guesswork“ and plausible (?) assumptions....
cif-fob correction - services

- similar setup, without TIR
  - assume: cif=fob for services

- starting values from Balance of Payments database (BoP)

- in the case of TIR services 51, 60-63: we first decompose manufactured cif-imports into imports in fob-imports plus TIR services;

- these implicit „imports“ of TIR services, then, are added to the „official“ imports of these services as recorded in the SUTs.
Rest-of-the-World - SUT

- As a specific result from previous exercise, we have $M_{cif}$ and $X_{fob}$ vectors for ROW

- Revert to our „preliminary“ SUT used in the very beginning (to derive the net exports of TIR services…..):
  - we adapt this preliminary SUT (using RAS) such that the $M_{cif}$ and $X_{fob}$ vectors are feasible;
  - initial structure: average of BRA, IDN, IND, MEX
  - boundary values: „as close as possible“ to UNSD data
    - Make side: +/- 1% of UNSD data
    - Use Side: +/- 5% of UNSD data
Results – credit and debit

- **CREDIT:**
- **for the year 2005:**
- Consistent trade matrix including matrix of international trade & transport costs
- Complete set of SUTs for the „whole world“
  - taking 40 WIOD country SUTs from WIOD database without any changes;
  - ROW-SUT, informed by UNSD data, ensures balance of supply and demand for all commodities and services at the world level.
Results – credit and debit

- **DEBIT:**
  - assumptions have a degree of „ad-hoc-ness“
    - disaggregation of TIR services;
    - derivation of ROW-SUT – still preliminary
      - it is „a“ SUT for ROW rather than „the“ SUT of ROW...
  - **ONLY for year 2005**

.......... expect an update at the IIOA 2012 in Bratislava .......

........................................... Thanks ...........................................