Part II – Methods
Partner Country Method

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# Tax and commercial illicit financial flows

## Suggested methods – trade misinvoicing

<table>
<thead>
<tr>
<th></th>
<th>Partner Country Method (PCM) +</th>
<th>Price Filter Method (PFM) +</th>
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<tbody>
<tr>
<td>Concept</td>
<td>Trade asymmetries</td>
<td>Abnormal prices</td>
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<tr>
<td>Assumptions</td>
<td>Partner’s trade data are accurate</td>
<td>Prices outside price filter -&gt; mispricing</td>
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<tr>
<td>Strengths</td>
<td>Partner country data available also globally</td>
<td>Not rely on partner data</td>
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<td>Limitations</td>
<td>Confounding reasons</td>
<td>Endogeneity of statistical filters</td>
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<tr>
<td>Data sources</td>
<td>Trade data, 6-level HS</td>
<td>Transaction-level data</td>
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<tr>
<td>Mitigation of limitations</td>
<td>Involve Customs experts</td>
<td>Involve Customs experts</td>
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</tbody>
</table>
Trade misinvoicing: PCM +

- Concept and assumptions
  - Top-down method
  - Mirroring trade values by trading partners
    - (EX of A to B) vs (IM of B from A)
    - Assuming a correct value of one partner -> critical!
Trade misinvoicing: PCM +

- Limitations
  - Many factors contribute to trade asymmetries
    - Partner country attribution
    - CIF and FOB valuation
    - Trade systems
    - Time lags
    - Misclassification
    - Statistical measurement errors
    - …
Overcoming limitations

- Compare national data with (major) trading partners
- Use granular national data (focus on prominent flows or products)
- Resolve CIF-FOB differences – apply region/country/commodity specific ratios
- Analyse remaining bilateral asymmetries
- Apply reliability weighting procedure – to address the doubt that larger gap is not misinvoicing
- Validate results using qualitative approach – interviews and consultations with customs and trade experts
Trade mis invoicing: PCM +

• Source data
  – Trade data (value, volume, quantity, price, CIF and/or FOB valuation, trading partner, country of origin/destination, type of flow – IM, EX, reIM, reEX)
  – Collected nationally
  – Granular level

  – International sources:
    • UN Comtrade
    • IMF DOTS
    • UNCTAD Global Transport Costs database
    • OECD ITIC database
Trade misinvoicing: PCM +

Flow chart for analysing and reducing bilateral asymmetries

- Calculation

Source: UNSD (2019)
# Trade misinvoicing: PCM +

- Calculation – trade system

*General trade system - territorial elements and potential imports and exports*

Source: UNSD (2011)
Trade misinvoicing: PCM +

- Calculation – trade system

Special trade system - territorial elements and potential imports and exports

Source: UNSD (2011)
#1 Trade misinvoicing: PCM +

- Calculation – valuation
  - Imports in FOB valuation
  - CIF/FOB ratio
    \[
    CFr_{c,r,p,t} = \frac{IM_{CIF,c,r,p,t}}{EX_{FOB,c,r,p,t}} = \frac{p_{CIF,c,r,p,t} \times q_{IM,c,r,p,t}}{p_{FOB,c,r,p,t} \times q_{EX,c,r,p,t}}
    \]

- Use of specific databases
  - UNCTAD Global Transport Cost
  - OECD ITIC
Trade misinvoicing: PCM +

- Calculation – partner country attribution
  - Challenge: country of export does not know the final country of destination
  - IM
    - Country of origin
    - Country of consignment (country of exports)
  - EX
    - Country of final (known) destination
    - Re-export flows
# Trade misinvoicing: PCM +

## CASE STUDY

### Calculation

*Bilateral inbound trade of mobile phones*

<table>
<thead>
<tr>
<th>Inbound Trade</th>
<th>CAN imports</th>
<th>CHN exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official data</td>
<td>3 329</td>
<td>1 362</td>
</tr>
<tr>
<td>Published asymmetry</td>
<td></td>
<td>1 967</td>
</tr>
<tr>
<td>Adjustment:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>CAN imports of CHN goods from countries of export (consignment) other than CHN</em></td>
<td>1 280</td>
<td></td>
</tr>
<tr>
<td>Adjusted official data</td>
<td>2 049</td>
<td>1 362</td>
</tr>
<tr>
<td>Remaining asymmetry</td>
<td></td>
<td>687</td>
</tr>
</tbody>
</table>

*Source: UNSD (2019)*
Trade misinvoicing: PCM +

- Calculation – remaining asymmetries
  - Time lags in shipments
  - Seasonal trade cycles
  - Coverage
  - Misclassification
  - Measurement errors
  - …
## Trade misinvoicing: PCM +

- **Calculation – remaining asymmetries**

**Adjusting imports of reporting and exports of partner country to calculate the remaining asymmetry**

<table>
<thead>
<tr>
<th>R IMPORTS</th>
<th>P EXPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official data</td>
<td>( IM_{CIF,c,r,p,t} )</td>
</tr>
</tbody>
</table>

### Adjusted Data*

<table>
<thead>
<tr>
<th>ADJUSTMENT</th>
<th>( IM_{FOB,c,r,p,t} )</th>
</tr>
</thead>
</table>

### Additional Adjustments

<table>
<thead>
<tr>
<th>ADJUSTMENT</th>
<th>( IM^{Adj}<em>{FOB,c,r,p,t} = IM</em>{FOB,c,r,p,t} - A_{TS,c,r,p,t} - A_{IT,c,r,p,t} - A_{M,c,r,p,t} - A_{T,c,r,p,t} )</th>
<th>( EX^{Adj}<em>{FOB,c,r,p,t} = EX</em>{FOB,c,r,p,t} - B_{Re-Ex,c,r,p,t} - B_{M,c,r,p,t} )</th>
</tr>
</thead>
</table>

### Remaining Asymmetry

InboundRA = \( IM^{Adj}_{FOB,c,r,p,t} - EX^{Adj}_{FOB,c,r,p,t} \)

*Source: UNSD (2019)*
Trade misinvoicing: PCM +

- Calculation – reliability weighting
  - Large trade gaps may not result from misinvoicing
  - Mitigate risk of unproportionally accounting

\[
w = 1 - \frac{\left| q_{IM,c,r,p,t} - q_{EX,c,r,p,t} \right|}{\max\left(q_{IM,c,r,p,t}, q_{EX,c,r,p,t}\right)}
\]

\[
\text{Inbound}_{c,r,p,t} = w \times \left( \text{IM}_{FOB,c,r,p,t}^{Adj} - \text{EX}_{FOB,c,r,p,t}^{Adj} \right)
\]

\[
\text{Outbound}_{c,r,p,t} = w \times \left( \text{EX}_{FOB,c,r,p,t}^{Adj} - \text{IM}_{FOB,c,r,p,t}^{Adj} \right)
\]
Trade misinvoicing: PCM +

- Calculation – inward IFFs

\[
\text{InwardIFFs}_{c,r,p,t} = \text{Overinvoiced } \text{EX}_{c,r,p,t} + \text{Underinvoiced } \text{IM}_{c,r,p,t}
\]

\[
\text{Underinvoiced } \text{IM}_{c,r,p,t} = -1 \times \min \left( 0, \text{Inbound}_{c,r,p,t} \right)
\]

\[
\text{Overinvoiced } \text{EX}_{c,r,p,t} = \max \left( 0, \text{Outbound}_{c,r,p,t} \right)
\]
Trade misinvoicing: PCM +

- Calculation – outward IFFs

\[
\text{OutwardIFFs}_{c,r,p,t} = \text{Underinvoiced } \text{EX}_{c,r,p,t} + \text{Overinvoiced } \text{IM}_{c,r,p,t}
\]

\[
\text{Overinvoiced } \text{IM}_{c,r,p,t} = \max(0, \text{Inbound}_{c,r,p,t})
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\text{Underinvoiced } \text{EX}_{c,r,p,t} = -1 \times \min(0, \text{Outbound}_{c,r,p,t})
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