Applying method #6
Some additional aspects

Bojan NASTAV
Contents

• Hidden security assets in BOP
• Case study – European Commission (2019)
• Data sources
• Additional literature
Hidden security assets in BOP

• Bank of France identifies hidden securities assets in the BoP

Source: Gervais and Quang (2018)
Hidden security assets in BOP

- Financial assets are well collected except for the part that is owned by households in offshore centres

*Differences between nationally-compiled liabilities and liabilities derived from counterparts assets*

*Source: Gervais an Quang (2018).*
Hidden security assets in BOP

• Caution using the methodology for statistical purposes!
  • Adjustments to methodologies prior to use in statistical compilation
  • Data limitation -> short time series
  • Single source for inconsistencies?

• Solution?
  • Sharing data – safely and in line with considerations of official statistics
Case study

• Estimating International Tax Evasion by Individuals (European Commission, 2019)

https://op.europa.eu/en/publication-detail/-/publication/10854d45-f549-11e9-8c1f-01aa75ed71a1
Case study

• Data Used for Estimating Offshore Wealth

\[ \text{off } \text{Fin}W_{G,t} = \text{off } \text{PFW}_{G,t} + \text{Deposits}_{G,t} \]

• Data on international portfolio securities
  • IMF Coordinated Portfolio Investment Survey (CPIS)
  • IMF International Investment Position (IIP)
  • External Wealth of Nations Mark II database (EWN)

• Limitations: coverage and/or bilateral data does not exist (rather, ROW)
# Case study

## Table 18. Examples of Data Availability on Assets in IIP, CPIS and EWN

<table>
<thead>
<tr>
<th></th>
<th>Situation 1: the 3 databases are consistent</th>
<th>Situation 2: IIP, CPIS and EWN are inconsistent</th>
<th>Situation 3: only IIP is available (and reported in EWN)</th>
<th>Situation 4: only CPIS is available</th>
<th>Situation 5: only EWN is available</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Denmark</td>
<td>UK</td>
<td>Morocco</td>
<td>The Bahamas</td>
<td>United Arab Emirates</td>
</tr>
<tr>
<td>IIP</td>
<td>251,885</td>
<td>3,318,834</td>
<td>178</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Equity and Investment Fund Shares</td>
<td>132,047</td>
<td>1,653,362</td>
<td>171</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Debt securities</td>
<td>119,838</td>
<td>1,665,472</td>
<td>8</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>CPIS</td>
<td>251,884</td>
<td>3,140,509</td>
<td>N/A</td>
<td>19,678</td>
<td>N/A</td>
</tr>
<tr>
<td>Equity and Investment Fund Shares</td>
<td>132,046</td>
<td>1,366,482</td>
<td>N/A</td>
<td>1,067</td>
<td>N/A</td>
</tr>
<tr>
<td>Debt securities</td>
<td>119,838</td>
<td>1,774,028</td>
<td>N/A</td>
<td>18,611</td>
<td>N/A</td>
</tr>
<tr>
<td>EWN</td>
<td>132,047</td>
<td>1,490,828</td>
<td>171</td>
<td>1,067</td>
<td>302,761</td>
</tr>
<tr>
<td>Equity and Investment Fund Shares</td>
<td>277,808</td>
<td>7,314,943</td>
<td>14,092</td>
<td>397,986</td>
<td>181,669</td>
</tr>
<tr>
<td>Debt (incl. debt securities + other debt)</td>
<td>119,838</td>
<td>1,564,036</td>
<td>8</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Of which debt securities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: 2006, end of period, current millions of US$.*
Case study

• Data corrections to assess the global portfolio assets and liabilities

\[
off_{FW,G,t} = \sum_i IPF_{liabilities_{i,t}} - \sum_i IPF_{assets_{i,t}}
\]

• Supplement CPIS data with IIP and EWN

• Corrective strategies for missing years / countries
  • Netherlands’ Special Financial Institutions sector
  • Cayman mutual fund sector – share of US securities in the portfolio of the Cayman Islands is estimated using a gravity model
  • ...

\[
\log(1 + A_{i,t}) = \phi_i + \theta_t + \beta Z_{i,i,t} + \gamma X_{i,t} + \epsilon_{i,i,t}.
\]
## Case study

<table>
<thead>
<tr>
<th>Year</th>
<th>Raw CPS assets</th>
<th>Correction for CPIS reporting countries</th>
<th>Cayman Islands non-bank sector</th>
<th>Correction for non-CPIS reporting countries</th>
<th>Total securities assets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Missing years</td>
<td>Netherlands correction</td>
<td></td>
<td>China</td>
<td>Middle-East oil exporters</td>
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<tr>
<td>2001</td>
<td>12,718</td>
<td>12</td>
<td>24</td>
<td>182</td>
<td>213</td>
</tr>
<tr>
<td>2002</td>
<td>14,148</td>
<td>28</td>
<td>19</td>
<td>227</td>
<td>288</td>
</tr>
<tr>
<td>2003</td>
<td>19,221</td>
<td>21</td>
<td>3</td>
<td>346</td>
<td>405</td>
</tr>
<tr>
<td>2004</td>
<td>23,489</td>
<td>5</td>
<td>1</td>
<td>533</td>
<td>611</td>
</tr>
<tr>
<td>2005</td>
<td>26,032</td>
<td>0</td>
<td>2</td>
<td>584</td>
<td>814</td>
</tr>
<tr>
<td>2006</td>
<td>33,102</td>
<td>0</td>
<td>5</td>
<td>871</td>
<td>1,774</td>
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<tr>
<td>2007</td>
<td>39,304</td>
<td>0</td>
<td>3</td>
<td>1,186</td>
<td>1,585</td>
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<tr>
<td>2008</td>
<td>31,041</td>
<td>0</td>
<td>0</td>
<td>990</td>
<td>1,907</td>
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<tr>
<td>2009</td>
<td>37,523</td>
<td>0</td>
<td>2</td>
<td>1,086</td>
<td>2,330</td>
</tr>
<tr>
<td>2010</td>
<td>40,604</td>
<td>0</td>
<td>2</td>
<td>1,219</td>
<td>2,791</td>
</tr>
<tr>
<td>2011</td>
<td>36,359</td>
<td>0</td>
<td>2</td>
<td>1,470</td>
<td>3,099</td>
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<tr>
<td>2012</td>
<td>43,630</td>
<td>0</td>
<td>3</td>
<td>1,598</td>
<td>3,320</td>
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<tr>
<td>2013</td>
<td>47,768</td>
<td>0</td>
<td>0</td>
<td>1,873</td>
<td>3,889</td>
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<tr>
<td>2014</td>
<td>48,683</td>
<td>0</td>
<td>0</td>
<td>2,047</td>
<td>3,913</td>
</tr>
<tr>
<td>2015</td>
<td>49,731</td>
<td>0</td>
<td>0</td>
<td>378</td>
<td>3,425</td>
</tr>
<tr>
<td>2016</td>
<td>51,469</td>
<td>67</td>
<td>1</td>
<td>480</td>
<td>3,225</td>
</tr>
</tbody>
</table>

| Nb of countries included in the estimations or correction | 72 | 8 | 1 | 1 | 1 | 1 |
| Estimation using the US securities held by China (TIC data), IIP of China and reserves published in IFS |
| Extrapolation for 2015-2016; IIP for 68 countries and CPIS ratio for 64 countries |

| Notes on the estimation strategies |
| Use of CPIS database | Extrapolation with ratio | Comparison with the IIP published by the DNB |
| Estimation using the US securities held by China (TIC data), IIP of China and reserves published in IFS |
| Estimation using the US securities held by IIP (TIC data) and gravity model |
| Use of EWN estimates, extrapolations when no portfolio asset debt estimates, and IIP and extrapolation ratio for 2015 and 2016 |
## Case study

<table>
<thead>
<tr>
<th>Year</th>
<th>EWN liabilities</th>
<th>IIP liabilities (not included in EWN)</th>
<th>No debt data</th>
<th>Missing Years</th>
<th>Netherlands corrections</th>
<th>raw CPIS derived liabilities &gt; reported liabilities</th>
<th>Non EWN countries</th>
<th>Other Small Financial Centres (incl. Cayman Islands)</th>
<th>International organisations</th>
<th>Total securities liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>14,590</td>
<td>0</td>
<td>1</td>
<td>439</td>
<td>0</td>
<td>265</td>
<td>246</td>
<td>1</td>
<td>153</td>
<td>389</td>
</tr>
<tr>
<td>2002</td>
<td>13,925</td>
<td>0</td>
<td>0</td>
<td>355</td>
<td>0</td>
<td>326</td>
<td>192</td>
<td>1</td>
<td>155</td>
<td>449</td>
</tr>
<tr>
<td>2003</td>
<td>21,425</td>
<td>0</td>
<td>0</td>
<td>720</td>
<td>0</td>
<td>18</td>
<td>274</td>
<td>1</td>
<td>159</td>
<td>517</td>
</tr>
<tr>
<td>2004</td>
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<td>0</td>
<td>914</td>
<td>0</td>
<td>252</td>
<td>431</td>
<td>3</td>
<td>214</td>
<td>573</td>
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<tr>
<td>2005</td>
<td>29,525</td>
<td>0</td>
<td>0</td>
<td>1,015</td>
<td>0</td>
<td>0</td>
<td>451</td>
<td>3</td>
<td>255</td>
<td>563</td>
</tr>
<tr>
<td>2006</td>
<td>37,187</td>
<td>0</td>
<td>0</td>
<td>1,309</td>
<td>0</td>
<td>0</td>
<td>453</td>
<td>4</td>
<td>559</td>
<td>603</td>
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<tr>
<td>2007</td>
<td>45,059</td>
<td>0</td>
<td>0</td>
<td>1,607</td>
<td>0</td>
<td>0</td>
<td>453</td>
<td>5</td>
<td>709</td>
<td>672</td>
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<tr>
<td>2008</td>
<td>36,370</td>
<td>0</td>
<td>0</td>
<td>2,128</td>
<td>0</td>
<td>0</td>
<td>264</td>
<td>2</td>
<td>272</td>
<td>673</td>
</tr>
<tr>
<td>2009</td>
<td>43,801</td>
<td>0</td>
<td>0</td>
<td>1,241</td>
<td>0</td>
<td>0</td>
<td>261</td>
<td>3</td>
<td>255</td>
<td>821</td>
</tr>
<tr>
<td>2010</td>
<td>46,812</td>
<td>8</td>
<td>1</td>
<td>1,253</td>
<td>0</td>
<td>5</td>
<td>497</td>
<td>3</td>
<td>313</td>
<td>916</td>
</tr>
<tr>
<td>2011</td>
<td>46,737</td>
<td>11</td>
<td>1</td>
<td>1,169</td>
<td>0</td>
<td>5</td>
<td>654</td>
<td>3</td>
<td>280</td>
<td>1,073</td>
</tr>
<tr>
<td>2012</td>
<td>52,231</td>
<td>13</td>
<td>1</td>
<td>1,231</td>
<td>0</td>
<td>18</td>
<td>882</td>
<td>3</td>
<td>254</td>
<td>1,374</td>
</tr>
<tr>
<td>2013</td>
<td>56,978</td>
<td>20</td>
<td>0</td>
<td>1,210</td>
<td>0</td>
<td>15</td>
<td>1,334</td>
<td>4</td>
<td>309</td>
<td>1,490</td>
</tr>
<tr>
<td>2014</td>
<td>58,785</td>
<td>29</td>
<td>0</td>
<td>992</td>
<td>0</td>
<td>75</td>
<td>1,514</td>
<td>7</td>
<td>294</td>
<td>1,522</td>
</tr>
<tr>
<td>2015</td>
<td>54,012</td>
<td></td>
<td></td>
<td>4,059</td>
<td>0</td>
<td>0</td>
<td>2,098</td>
<td>6</td>
<td>332</td>
<td>1,494</td>
</tr>
<tr>
<td>2016</td>
<td>54,551</td>
<td></td>
<td></td>
<td>4,269</td>
<td>0</td>
<td>20</td>
<td>2,472</td>
<td>7</td>
<td>343</td>
<td>1,527</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nb of countries included in the estimations or correction</th>
<th>211</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Notes on the estimation strategies</th>
<th>Use of EWN values</th>
<th>Use of last IIP report to update EWN and complete for 2015 and 2016</th>
<th>Use of CPIS-derived liabilities to complete portfolio debt data</th>
<th>Use of evolution ratio for missing years</th>
<th>Comparison with the IIP published by the DNB</th>
<th>Comparing the estimated securities liabilities and take the max</th>
<th>Use of CPIS-derived liabilities</th>
<th>Estimation from the SEFER-derived equity liabilities and the data on international debt from the BIS</th>
</tr>
</thead>
</table>


Case study

- Breakdown by country of ownership
  - Adjustments made using outgoing FDI/GDP to account for individuals/entities
  - Larger FDI -> more corporate deposits
  - Outgoing cross-border deposits

\[ d_{i,t} = w_{i,t} \ast d^{bis}_{i,t} \]

\[ w_{i,t} = \frac{3}{2} \frac{gdp_{i,t}}{\sum gdp_{i,t}} + \frac{1}{2} \frac{fdi_{i,t}}{\sum fdi_{i,t}} \]
Case study

• Rates of return on capital
  • Rates of return on portfolio securities calculated from data on 14,000 mutual funds
  • Vs. MSCI World Index

![Figure 5. Average Rates of Return of Mutual Funds](image)
Case study

Figure 6. Estimated Global Offshore Wealth (Billions of US$)
## Case study

<table>
<thead>
<tr>
<th>Database</th>
<th>Source</th>
<th>Description</th>
<th>Step in the methodology</th>
<th>Use in the methodology</th>
<th>Limitations</th>
<th>Statistics of interest</th>
<th>Metadata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinate Portfolio Investment Survey (CPS)</td>
<td><a href="https://data.imf.org/Supplementary/Default.aspx?c=92&amp;d=416434&amp;m=461476&amp;s=550550369784">IMF statistics</a></td>
<td>General information - Data on bilateral international portfolio asset position; Voluntary data collection; Augmented by SSI0 and SIIFER. - IMF derives aggregate portfolio liabilities for all economies (reporters and non-reporters).</td>
<td>Step 1: Main database</td>
<td>- Main source for portfolio investment asset; use of aggregated data by country (equity and debt) - Use of bilateral data for estimation of gravity model; Derivation liability to complete data for portfolio investment liabilities (for some small countries and for equity liabilities of international organizations); Marginal uses to compute ratio to extrapolate from other incomplete databases (e.g., SSI0 for 2017/2018).</td>
<td>Not all countries are reporting or reported for each year (only 61 countries reported each year between 2001 and 2016). - Survey only on portfolio assets; liabilities are only derived from the reported asset.</td>
<td>Aggregate portfolio investment assets by countries - Bilateral portfolio investment assets - Derivation portfolio investment liabilities - Portfolio reserves (SSI0 and SII0).</td>
<td>Available metadata by country (but not for all countries).</td>
</tr>
<tr>
<td>The External Wealth of Nations database (EWN)</td>
<td><a href="http://www.ssrn.com/abstract=795356">Lane and Milesi-Ferretti (2007)</a></td>
<td>Comprehensive information - Extent of the IIP by countries; Use of CRIUS data to extend IIP as well as other estimation techniques to cover more countries; Data on International portfolio investment, direct investment, other investments, and reserves.</td>
<td>Step 1: Main database</td>
<td>- Main source for portfolio investment liabilities; - Complementary sources for portfolio investment assets; - Marginal uses to complete data (e.g., reserves for Iran and GDP of some countries for gravity model).</td>
<td>No update after 2014. - Not only raw data but estimations; - When countries are not reporting their IIP to the IMF, no breakdown between portfolio debt and other claims. - For some small countries and IPIs, data are not necessarily reliable.</td>
<td>Portfolio equity assets and liabilities; Portfolio debt assets and liabilities; FX reserves minus gold; GDP.</td>
<td>Available metadata by country to explain the estimation techniques for each variable.</td>
</tr>
</tbody>
</table>
Case study

| International Investment Positions (IIP) | Data: | Downloadable online as Excel or CSV files.
| Bank for International Settlements (BIS) | Statistics Sources: | [source link] (http://www.bis.org/statistics/)
| | Data: | Downloadable online as Excel or CSV files.
| | | [source link] (http://www.bis.org/statistics/database/)
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| | | [source link] (http://www.bis.org/statistics/database/)
| | | Data Online: scrolling database, downloadable.
| | | [source link] (http://www.bis.org/statistics/database/)
| | | Data Online: scrolling database, no downloadable.
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Data

- Data (un)availability is key
- Granular data from Central Bank
- International data sources
  - Official statistics
  - Unofficial statistics
  - Investigative journalist data
Data

• BIS Locational banking statistics:  
  https://www.bis.org/statistics/bankstats.htm

• IMF Balance of Payments Statistics (BOPS):  
  https://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52

• IMF Coordinated Portfolio Investment Survey (CPIS):  
  https://data.imf.org/?sk=B981B4E3-4E58-467E-9B90-9DE0C3367363

• IMF International investment positions (IIP):  
  https://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52
Data

• TJN Financial Secrecy Index: https://fsi.taxjustice.net/en/
• Openlux: https://www.occrp.org/en/openlux/
• ICIJ: https://offshoreleaks.icij.org/
• FinCEN: https://www.icij.org/investigations/fincen-files/explore-the-fincen-files-data/
• Aleph: https://docs.alephdata.org/how-aleph-is-used
Additional literature


https://stats.unctad.org/iiffs