An assessment of euro area households' missing foreign assets[1]

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Abstract:
This paper reviews the methodologies behind estimates of households' "missing" foreign assets contained in key research studies, with a particular focus on the euro area. Recent research studies estimate euro area households' offshore financial assets at 7% to 8% of GDP, while this paper suggests them to be lower at around 3.5% to 5% of GDP. These lower estimates reflect measurement issues and strong assumptions made in research studies, for example due to allocating unrecorded assets entirely to households rather than corporations as well as potential misclassifications between direct investment and portfolio investment. Moreover, there is evidence that households' unrecorded foreign assets have declined in recent years due to global tax transparency initiatives and the incorporation of previously unrecorded offshore assets in official statistics, for instance following voluntary disclosure schemes.

Keywords:
Balance of payments, international investment position, households, offshore wealth

1. Introduction:

This paper reviews the methodologies behind estimates of households' "missing" foreign assets contained in key research studies, with a particular focus on the euro area. It presents various methods to estimate households' foreign assets in Section 2, while Section 3 critically these approaches. Section 4 derives implications for the estimation of euro area aggregates and concludes.

2. Research methods and results

2.1 Discrepancies between global assets and liabilities

The pioneering study of Zucman (2013) on households' unrecorded assets in international investment position (i.i.p.) statistics attributed the excess in global portfolio investment liabilities over assets entirely to households' 'hidden' foreign assets. This rests on the assumption that portfolio investment liabilities, all securities held by direct reporters and those held by households outside offshore financial centres are captured perfectly in official statistics. Under this assumption, the global discrepancy between portfolio liabilities and assets (including securities held as foreign exchange reserves and held by international organisations) corresponds to the financial assets of households held via offshore financial centres. Replicating this methodology and using the latest vintage of the External Wealth of Nations dataset by Lane and Milesi-Ferretti (2018) as well as IMF data a discrepancy of 6.3 trillion (tn) US dollar between global portfolio investment liabilities and assets in 2019 is found (Figure 1).[2] The global discrepancy has significantly declined from its peak of 9 tn US dollar in 2014, which may be attributed to better coverage in the collection of securities, in particular for those held as reserve assets, but may also reflect more stringent efforts to combat tax evasion (see Section 3.3).

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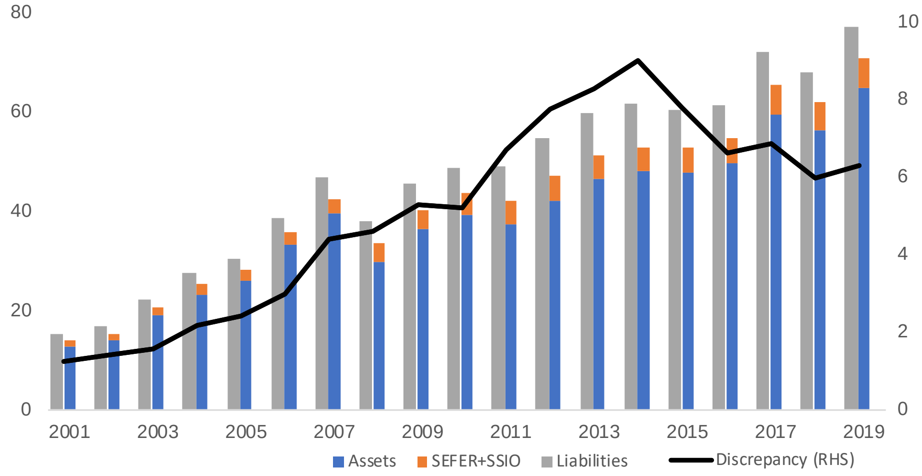
[2] The results presented in Figure 1 are consistent with Zucman (2013) who estimated the discrepancy at 4.5 tn in 2008 and also in line with Alstadsæter, Johannesen and Zucman (2018), Pellegrini, Sanelli and Tosti (2016) and Gervais and Bui Quang (2019).

Figure 1: Global discrepancy between assets and liabilities in international security holdings



Source: Lane and Milesi-Ferretti (2018), IMF Securities Held as Foreign Exchange Reserves (SEFER) and Securities Held by International Organizations (SSIO).

2.2 Using data published by the Swiss National Bank and the BIS

Key data sources in the estimation of households' foreign assets are the datasets on *Securities holdings in bank custody accounts* and *Fiduciary deposits* published by the Swiss National Bank (SNB). Based on these datasets, Zucman (2013) estimated for 2008 that households' offshore wealth held in Switzerland consisted to 25% of (fiduciary) deposits and 75% of securities. He applied these proportions to the global discrepancy in security holdings to compute households' total offshore assets (including deposits).[3]

In order to compute the offshore assets of households resident in a given country Alstadsæter, Johannesen and Zucman (2018) (AJZ) allocate the estimated global amount of offshore wealth using counterpart country information provided by the SNB and the Bank for International Settlements (BIS). First, they estimate on a country-by-country basis the assets held by foreign households in Switzerland. To this end, AJZ focus on holdings of fiduciary deposits which according to Zucman (2013) are likely to "entirely belong to foreign [..] households[4] Including security holdings, AJZ estimate that offshore assets held in Switzerland peaked in 2007 at 2.9 tn US dollar, but have declined to 2.2 tn US dollar in 2015. In 2006-2007, 35% of offshore assets intermediated via Switzerland are attributed by AJZ to the euro area. Second, to estimate the offshore wealth held by households outside Switzerland AJZ use data on bank deposits by non-banks (other financial and non-financial corporations as well as households and NPISH) in a number of offshore financial centres as reported in the locational banking statistics (LBS) of the BIS.[5]

AJZ make several important assumptions: first, the authors derive holdings of securities in custody in a particular offshore centre by applying the same ratio of deposits to securities to all offshore centres. Second, they assume that a country's share in deposits by non-banks in a given offshore centre also applies to the total assets (consisting of deposits plus securities) in this offshore centre. Third, the authors could only access the BIS breakdown which distinguishes banks' deposit liabilities vis-a-vis other banks and non-banks. In an effort to exclude all deposits of non-bank corporations, the authors "estimate" for each offshore centre

[3] By using an equivalent approach at annual frequency, Alstadsæter, Johannesen and Zucman (2018) (AJZ) find global offshore financial assets of 8.6 tn US dollar in 2015, 7.0 tn US dollar of which in securities and 1.6 tn US dollar in deposits.

[4] AJZ use the counterparty country breakdown recorded for 2003 and 2004, i.e. just before the EU Saving Tax Directive entered into force. The underlying rationale is that there was no evidence of EU residents channelling their deposits in Switzerland via intermediary "shell companies" (trusts, foundations and holding companies) resident in tax havens in those years, while this phenomenon increased substantially afterwards. Thus, to 'look-through' shell companies, AJZ assume that the 'true' country distribution of deposits held in Switzerland was observed in 2003-04 and has remained constant afterwards.

[5] Notably, the list of "offshore countries" employed also includes a number of euro area countries and other advanced economies such as the United Kingdom and the United States. AJZ's full list of offshore financial centres that report to the BIS are Austria, Belgium, Bahamas, Bahrain, Bermuda, the Cayman Islands, Curacao, Cyprus, Guernsey, Hong Kong, the Isle of Man, Jersey, Luxembourg, Macao, Malaysia, Panama, Singapore, Switzerland, United Kingdom and United States.

the fraction of deposits that belong to households; these estimates range from 10% in the United Kingdom and United States to 100% in Switzerland. Fourth, AJZ also adjust on an ad-hoc basis the deposits by residents of countries with a high concentration of multinational enterprises (such as the Netherlands and Ireland) to avoid an overestimation of households' foreign assets for these countries.

AJZ estimate that households' assets held in offshore centres outside Switzerland amounted to 3.4 tn US dollar in 2007 and increased to 6.4 tn US dollar in 2015. For 2006-07, 26% of offshore assets intermediated outside Switzerland are attributed to euro area households (83% of which are held in so-called European havens, including a number of euro area countries). Overall, AJZ conclude that out of the global offshore assets (including Switzerland) in 2006-07 (5.6 tn US dollar), 1.8 tn US dollar (i.e. 31%) belong to euro area households.

Bui Quang and Gervais (2019) also use BIS LBS data on cross-border deposits of French non-banks and the SNB dataset on securities in custody. The latter data are employed to apply the aggregate ratio of foreign securities held in custody in Switzerland to foreign deposits in Switzerland to French households' deposits in non-euro area countries. In case the BIS LBS breakdown is only available vis-à-vis non-banks a household share of 1/3 is assumed. Notably, Bui Quang and Gervais (2019) estimate French households' offshore security holdings at around 60 bn US dollar in 2015, compared to 300 bn US dollar by AJZ in 2006-07.

2.3 Net errors and omissions

Another method to gauge households' unrecorded foreign assets is to consider net errors and omission (n.e.o.) in a country's balance of payments (b.o.p.). In line with the b.o.p. identity, negative n.e.o. can be associated with an underestimation of net acquisitions of foreign assets (or an overestimation of the incurrence of foreign liabilities). Pellegrini, Sanelli and Tosti (2016) (PST) show negative n.e.o. at the global level in the period 2008 to 2013 and Bui Quang and Gervais (2019) find the same phenomenon in the French b.o.p. data. Both studies point out that an under-estimation of net acquisitions of foreign assets is more likely the driver and probably due to non-financial corporations and households.[6] As n.e.o. capture transactions, they need to be cumulated over a certain time frame to deliver an estimate of households' unrecorded offshore assets.

2.4 Evidence from voluntary disclosure schemes

An additional approach to estimate unrecorded offshore financial assets is to use information obtained from (ad-hoc) voluntary disclosure/reporting schemes. PST focus on the Italian 2009-2010 voluntary scheme that allowed Italian taxpayers to disclose previously undeclared financial assets and real estate held abroad by repatriating or declaring them. This scheme led to the disclosure of undeclared foreign assets of about €100 billion, triggering statistical revisions in the Italian b.o.p. and i.i.p., mainly for portfolio investment (approximately €60 billion) and bank deposits (€13 billion), in particular held in Switzerland (69%). Comparing these figures to AJZ's estimates, it emerges that between 30% to 50% of Italian households' offshore assets were disclosed in this scheme.

3. Assessment of research studies in a euro area context

In this section, the soundness of the assumptions used in the studies described above is assessed, mainly focusing on the approaches of Zucman (2013) and AJZ.[7]

3.1 Global estimates of offshore assets

As reported in Figure 1 there is a substantial, albeit declining, discrepancy between global asset and (portfolio) liability positions in securities. While the phenomenon of unrecorded external assets is widely established, its full attribution to households is less straightforward:

[6] An overestimation of liabilities on the other hand may arise due to the residual approach of compiling portfolio investment liabilities in which case unrecorded holdings of domestic securities by resident investors would be wrongly attributed to holdings of foreign investors.

[7] AJZ are confident on their global estimate of offshore holdings, but acknowledge the margin of error associated with allocating these to households of specific countries.

first, part of the global asset-liability discrepancy may be accounted for by missing reserve assets due to the still incomplete coverage in the IMF's SEFER.[8] Indeed, the recent decline in the global discrepancy is partly driven by larger security holdings recorded in reserves. Second, securities held in custody abroad may reflect assets of non-financial corporations (NFCs) or even of institutional investors. Bui Quang and Gervais (2019) show – using metadata for the IMF's Coordinated Portfolio Investment Survey (CPIS) – that households are indeed the sector with the largest identified coverage gaps, but coverage issues are also present for NFCs and insurance companies and pension funds. Bui Quang and Gervais (2019) further compute the security holdings of French NFCs held in custody abroad, both inside the euro area (using security holdings data on third-party holdings) and outside the euro area (using adjusted NFC balance sheet information collected by Banque de France) and arrive at a total of 30 bn US dollar of assets not covered by French custodians (equivalent to 5% of NFC's total securities holdings), while they estimate French households' offshore security holdings at around 60 bn US dollar in 2015. Applying these proportions globally would suggest that – out of total unrecorded assets of 6 tn US dollar in 2016 – 2 tn US dollar may be attributed to NFCs rather than households.[9]

Moreover, misclassifications between portfolio equity investment and foreign direct investment (FDI) equity may account for part of the observed discrepancy between global asset and (portfolio) liability positions. The IMF's Coordinated Direct Investment Survey shows a persistent excess of global FDI equity assets over liabilities, amounting to around 2 tn US dollar in 2017. Angulo and Hierro (2017) suggest that this discrepancy may be partly driven by differences in the valuation applied by statistical compilers, as inward FDI valuations tend to be more accurate due to the better information set on these entities available to statisticians.[10] A complementary explanation may however be that some of the globally unrecorded portfolio equity assets are in fact recorded in FDI equity, reflecting a misclassification of the functional category. It is conceivable that a company investing in foreign equity can identify clearly if such an investment exceeds the 10% threshold to be considered as FDI. An entity receiving such an investment may however experience difficulties in identifying if a foreign equity investor exceeds the 10% threshold – in particular if there is a chain of FDI relationships – and hence may misclassify it as portfolio investment. Given the substantial discrepancy between global FDI equity assets and liabilities of around 2 tn US dollar in 2017, such misclassifications may at least partly explain the observed discrepancy.

3.2 Estimates of households' offshore assets in Switzerland

Zucman (2013) and AJZ assume that all foreign securities held in custody in Switzerland by non-residents belong to households. Since 2016 however, the SNB publishes a sector breakdown of these holdings which reveals that at its peak in 1999 63% of the securities in custody could be attributed directly to foreign private customers (i.e. households). Since then, the household share declined substantially to around 24% in 2017, while the share of institutional investors increased from 26% to 72%. Even though it appears convincing that some of the institutional custody account holders are ultimately private customers (e.g. via asset management institutions set up in offshore financial centres), a household share of 100% as assumed by AJZ seems disproportionate, in particular as global banks' business models may well include the use of Swiss banks as intermediate custodians.[11] Using the approach applied by AJZ for the attribution of household deposits to countries (i.e. keeping it at 2003-04 levels before the adoption of the EU Savings Directive which triggered the move from household owners to offshore shell companies) may suggest that households account for around 55% of the securities held in custody, if ownership via shell companies is included.

[8] A (likely minor) part of the gap between global portfolio investment liabilities and asset may be accounted for by countries that do not report any i.i.p. data.
[9] Similarly, estimates relying on cumulating net errors and omissions may reflect unrecorded net acquisitions of foreign assets by other sectors than households or compilation problems associated with other functional categories apart from portfolio investment.
[10] An additional factor is that in some jurisdiction it might be easier to ensure that an investing entity is covered in the reporting population than is the case for an entity receiving inward direct investment.
[11] For global banks it is very likely that the bulk of their security holdings are recorded in official statistics.

Similarly, as described in Section 2.2, AJZ make ad-hoc assumptions on the household share in non-bank deposits, which may not be accurate in some cases. For example for non-bank deposits in Switzerland AJZ assume a household ownership share of 100%, while according to BIS LBS data it amounts to around 50% in recent years.

Table 1: Estimates of foreign households' assets held in Switzerland
Billion of US dollars for 2014

	Method	Securities	Deposits	Total	*of which EA*
(1)	Alstadsæter, Johannesen and Zucman (2017)	2,174	167	2,342	822
(2)	Reported by SNB and BIS	539	184	724	254
(3)	Securities (55% HH share), Deposits (as reported)	1,087	184	1,271	446
(4)	Sec. (55% HH share), Dep. (non-bank, 55% HH share)	1,087	198	1,285	479
(5)	Sec. (100% HH share), Dep. (non-bank, 100% HH share)	1,976	361	2,337	791

Notes: HH stands for households.
Source: AJZ, Swiss National Bank, BIS and own computations.

Table 1 computes the amount of offshore financial assets held in Switzerland under different assumptions and benchmarks them with those estimated by AJZ (2.3 tn US dollar, row 1) for 2014. Using exclusively reported data on household counterparts gives an estimate of 0.7 tn US dollar (i.e. around 30% of AJZ's estimate, row 2). In the third row a household share of 55% for securities is imputed providing estimated households' offshore assets in Switzerland of 1.3 tn US dollar. A similar estimate is also obtained with the assumption of a 55% share by households applied to deposits by non-banks (fourth row). In the fifth row it is assumed that all custody accounts and deposits by non-banks in Switzerland belong to households, which is in line with AJZ's assumption and yields the same headline estimate (2.3 tn US dollar) as in AJZ, however with a slightly larger share for deposits.
Table 1 also provides estimates of euro area households' assets held in Switzerland. AJZ estimate the euro area share at 35% (for 2007) and the same percentage is found in reported data. If applied to AJZ's estimate of total offshore assets in Switzerland this suggests around 800 bn US dollar of euro area households' assets in Switzerland (row 1). Applying it to the estimates in rows 2 to 4 gives a range for euro area households' assets held in Switzerland from 254 to 479 bn US dollar. The assumption of households accounting for 100% of securities in custody and deposits by non-banks is rather heroic, while on the lower end a full reliance on reported data likely misses the impact of pass-through holdings via shell companies based in offshore centres. Thus, a conservative estimate for euro area households' offshore assets in Switzerland in 2014 may be around 500 bn US dollar. Extrapolating 2014 values using the dynamics observed for securities in custody and deposits suggest that they have hovered around this level since then.[12]

3.3 Estimates of households' offshore assets outside Switzerland

The analysis by AJZ – in particular the country allocation of offshore assets – is based on 2007 estimates and thus misses important global and country-specific developments. Global deposits by households fell by around 25% since their peak in 2008 which however masks substantial heterogeneity across offshore centre.[13] Several studies have identified international initiatives to tackle households' tax evasion – including the OECD's automatic exchange of information (AEOI) – as major drivers of falling deposits in offshore financial centres (e.g. Johannesen and Zucman, 2014; Benetrix, Emter and Schmitz, 2021).
Euro area households' offshore deposits outside Switzerland are estimated to have fallen by more than 25% since 2008 and have hovered around 60 bn US dollar since 2014. Using Zucman's (2013) and Bui Quang's and Gervais' (2019) method of extrapolating from deposits

[12] This paper does not make an attempt to quantify the amount of unrecorded foreign assets held by other euro area resident sectors, in particular non-financial corporations.
[13] The decrease was particularly pronounced for deposits held in Switzerland and in a number of offshore centres (by around 50%), while households' deposits increased in Hong Kong and Macao. The increase observed for Hong Kong and Macao is however due to factors other than tax evasion and almost exclusively driven by residents of mainland China.

to securities held in custody by applying the ratio between the two statistics recorded for Switzerland (around 5.5) would suggest that euro area households' securities held in offshore custody accounts amount to around 330 bn US dollar and total assets (including deposits) to around 390 bn US dollar in 2014. Having said this, applying Switzerland's ratio to all offshore centres might be misleading, as custody services may be an idiosyncratic specialisation of Swiss banks rather than being provided in all offshore centres. To illustrate the importance of this assumption, a ratio of 1 –which is based on the premise that households use offshore centres to the same extent to place deposits as for holding securities in custody – would imply euro area households' offshore assets (outside Switzerland) of 120 bn US dollar.

4. Implications for estimates of euro area households' offshore assets

Using the estimate for euro area households' assets held in Switzerland of 500 bn US dollar and adding an estimated 390 bn US dollar held in other offshore centres leads to a total estimate of extra-euro area household assets of around 900 bn US dollar or 800 bn euro in 2017 (which would decline to 540 bn euro if a security to deposit ratio of 1 is applied for assets outside Switzerland). In addition, assuming the ad-hoc assumption of Zucman (2013) that 20% of these assets are recorded in official statistics, the estimate is in a range of 430 to 640 bn euro for 2017 (i.e. 3.5% to 5% of GDP; 1.7% to 2.5% of euro area external assets recorded in the i.i.p.; and, 1.8% to 2.7% of households' total financial assets recorded in the euro area sector accounts), compared with AJZ's estimate of 7% to 8% of GDP in 2006-2007.

Having said this, available estimates of households' offshore financial assets only capture financial assets in the form of securities and deposits, disregarding other potentially unrecorded financial assets such as insurance and pension schemes, as well as non-financial assets – in particular real estate abroad (which is recorded as FDI in the i.i.p.).

Overall, this paper suggest that euro area households' unrecorded offshore financial assets are likely smaller than estimated in previous studies and thus within a statistically reasonable level of error with no major negative impact on the analytical value of the existing statistics. Nevertheless it is important to continue working to improve b.o.p./i.i.p. statistics for the household sector, e.g. by making use of the sector breakdown reported in the BIS LBS and by seeking access to the data national tax authorities receive via the AEOI. Moreover, a close dialogue with academic researchers is needed to benchmark the information available in official statistics vis-à-vis those obtained from more experimental approaches.

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