Central banks and external statistics: evolution or revolution?

Paula Menezes,[1] Fausto Pastoris, Carmen Picon-Aguilar, Martin Schmitz, Nuno Silva[2] and Bruno Tissot[3]

Executive summary

Globalisation is posing important challenges to external statistics. The removal of national barriers induced by economic and financial liberalisation has made it harder for statisticians to promptly and correctly capture trade and cross-border financial and capital flows. These measurement challenges have been reinforced in recent decades by rapid digital innovation, the complexity and limited transparency of multinational corporate structures, and the increased importance of global financial centres.

A prominent feature has been the **fragmentation of global production chains**, which has altered the relevance of "traditional" residency-based statistics, while also affecting national economic indicators. Another important consequence of globalisation has been the changing nature of foreign direct investment (FDI): today, dominant FDI transactions are often financial in nature, instead of being motivated by "real production" considerations as in the past.

Promoting constant **interaction between compilers and users of data** is the key to understanding and addressing these kinds of challenges. Such an exchange of views is crucial, not only on a daily basis to respond to urgent requests, but also structurally to address medium- and long-term data requirements. As both producers and users of external statistics, central banks are ideally placed to foster this dialogue and facilitate a mutual understanding of the evolving needs to support policymaking.

One fundamental question is whether the multipurpose analytical tool provided by external statistics should be **simply adapted or radically transformed** to address the above-mentioned issues. The experience of central banks suggests that a progressive and flexible approach might be a preferred option, considering in particular the limited resources devoted to official statistics, competing priorities, and the fact that the challenges faced differ across countries. Another important consideration is that a number of alternative ways can be effectively developed in the medium term to adapt the current external statistics compilation framework.

[1]   Statistics Department, Bank of Portugal (pamenezes@bportugal.pt).

[2]   External Statistics & Sector Accounts Division, Directorate General Statistics, European Central Bank (ECB) (fausto.pastoris@ecb.europa.eu; carmen.picon_aguilar@ecb.europa.eu; martin.schmitz@ecb.europa.eu; nuno.silva@ecb.europa.eu).

[3]   Head of Statistics & Research Support, Bank for International Settlements (BIS), and Head of the Secretariat of the Irving Fisher Committee on Central Bank Statistics (IFC) (bruno.tissot@bis.org).

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First, the ongoing **review of international standards** represents a key opportunity to facilitate the development and compilation of supplementary data to better measure international flows in goods and services, as well as cross-border financial transactions and positions. Particular attention could be devoted to the type of nationality-based information derived from consolidated accounting frameworks, which can usefully complement the residency-based structure underpinning official statistics.

Second, the **infrastructure supporting statistical compilation work** needs to be enhanced. The search for additional information sources should go hand in hand with new compilation methods to increase the scope and quality of the statistics produced. This would also benefit from the development of global identifiers, the better interlinking of the different data sets available, and the increased sharing of information between compilers – including confidential data. In particular, effective data-sharing possibilities are essential to make use of the information collected for administrative/supervisory purposes that is not collected primarily for the compilation of official statistics. At the international level, stronger cooperation among national authorities and with international organisations could also be instrumental to support "mirror data" exercises or compile nationality-based indicators.

Third, official statisticians should devote specific attention to the **analysis of large and global corporate groups/structures**. A key reason has been the ability of such entities to swiftly adapt their global operations in response to business conditions, especially in terms of economic, financial, fiscal and regulatory factors. This calls for the ability to isolate and precisely measure multinational enterprises (MNEs), possibly through the organisation of comprehensive data collections, at both national and international levels.

Fourth, compilers of external sector statistics should be invited to present **more granular data for the aggregates currently compiled** – for instance by separately identifying special purpose entities (SPEs) as well as foreign-controlled corporations in the sectoral accounts, and by providing greater currency composition information. To facilitate this, the production of macro-level statistics would need to better integrate available micro-level sources. And a better use could be made of "alternative" data that are already collected but not integrated into the current central statistical framework.

Fifth, the **FDI concept should be revisited** in order to maintain its relevance as an analytical tool. A better understanding of the (new) role of FDI requires going beyond its standard analysis and promoting different presentations, especially through a better identification of ultimate investors and of the role of SPEs.

Introduction – Globalisation and external statistics

Globalisation poses important challenges to external sector statistics, from their compilation to their use. Reflecting easier and faster transport and communication, increased trade and financial liberalisation, and the establishment of global value chains (GVCs), globalisation could be a cyclical process and may well recede. In particular, the impact of the Covid-19 pandemic remains to be seen and could lead to some corrections down the road. But the difficulties posed to statisticians and policymakers are unlikely to disappear soon, not least because they have been reinforced by digitalisation and the dematerialisation of various economic activities (BIS (2017)).

Against this backdrop, the Bank of Portugal, the European Central Bank (ECB) and the Irving Fisher Committee on Central Bank Statistics (IFC) of the Bank for International Settlements (BIS) organised a conference on "*Bridging measurement challenges and analytical needs of external statistics: evolution or revolution?*" (Lisbon, 17–18 February 2020). Participants from about 70 organisations including central banks, national statistical institutes/offices, international organisations, the private sector and academia convened to jointly analyse current challenges in this area and exchange their experience.

The conference proved to be another important milestone in the **IFC's ongoing work to explore issues posed by external sector statistics to central bank statisticians** – especially in finding appropriate sources, developing new methodological concepts and techniques, compiling policy-relevant indicators and making use of them (IFC (2017a, 2018)). From this perspective, the event provided a welcome opportunity to highlight existing best practices and potential opportunities, as well as to take stock of the challenges to be addressed as a priority in the context of the forthcoming revision of the international statistical standards, particularly as regards the balance of payments (BoP).[4]

A key point, emphasised in the introductory speech by Bank of Portugal Governor Carlos da Silva Costa, is that the best way to understand and address the above issues is to **promote constant interaction between users and producers of statistics**. This is essential, in particular, to explain the concepts behind external sector data, underpin a mutual understanding of the evolving needs, adapt the statistical production chain to address the user demand for new indicators, and facilitate the functioning of the entire network of data compilers, researchers, analysts and policymakers relying on this kind of information.

Yet another fundamental point is whether the multipurpose analytical tool provided by external sector statistics should be simply adapted or radically transformed. In other words, **would a progressive *evolution* be sufficient or is a *revolution* warranted?** The senior panel of users invited at the conference to answer this question provided a mixed view. They acknowledged that the current statistical framework faces a difficult "trilemma": it cannot adequately encompass good data to measure all at the same time globalisation, regional trade aggregates and national

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[4]   In March 2020, the UN Statistical Commission and the IMF Committee on Balance of Payments Statistics (BOPCOM) decided to launch, respectively, the revision of the SNA 2008 (with a specific focus on globalisation; digitalisation; and welfare and sustainability) and of the Balance of Payments and International Investment Position Manual Sixth Edition (BPM6), with a target date of 2025; see also European Commission et al (2009) and IMF (2009).

indicators. But they also felt that the framework could be properly adapted to address the challenges and opportunities brought by the past decades of increased globalisation. The way to go is to focus on a few key areas: taking a global perspective when measuring the footprint of MNEs; extending and reinventing the FDI concept; better measuring ultimate exposures and the transfer of risks across national boundaries; and providing a comprehensive view of the global flow of funds[5] underpinning the functioning of the world economy.

Looking forward, **what should be the medium-term strategy to make progress on all these objectives and enhance the external statistics compilation framework?** In his keynote speech, Philip Lane, member of the ECB Executive Board, outlined the following main action points (Lane (2020)):

(i)   **Enhancing the infrastructure supporting statistical compilation work**. For instance, the use of global identifiers for firms, such as the legal entity identifier (LEI) developed under the auspices of the G20, would bring transparency and facilitate the distinct identification of legal entities and their link to ultimate parents (LEIROC (2016)). Another avenue would be to develop the use for statistical purposes of "alternative" data derived from administrative and business registers (Bean (2016)).

(ii) **Improving the exchange of confidential statistical data, including by reviewing the underlying legal basis.** In the European Union, for instance, current confidentiality frameworks could be adapted to facilitate the sharing of data for statistical purpose within the European System of Central Banks (ESCB)/European Statistical System (ESS).

(iii) **Organising a comprehensive data collection for the largest MNEs.** Reflecting the importance of these firms in the global economy and the associated measurement challenges, one could for instance develop a centralised collection of data covering the top 500 MNEs in the European Union – similar to what is already done for the financial sector as regards the 120 significant and 4,000 less significant banks within the framework of the EU's banking supervision.

(iv) **Enhancing the granularity of the external sector aggregates currently compiled.** This would facilitate the analysis of risk exposures as well as of the activities of purely internationally oriented entities, for instance by separately identifying SPEs as well as foreign-controlled corporations in the sectoral accounts and by refining the breakdown of the non-bank financial sector.

(v)   **Complementing the residency-based framework underpinning the System of National Accounts (SNA) with information derived from consolidated accounting frameworks.** The upcoming revision of the international statistical standards opens up the opportunity to make better use of the consolidated information available for corporate groups. In particular, nationality-based statistics could be developed, by which each affiliate of a given group would be assigned not to its own country of residence but to the country of this group's headquarters. Such an approach would be helpful in analysing the role of MNEs and identifying the transfer of risks as well as ultimate risk exposures (IAG (2015)).

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[5]   See Zhang and Xiuzhen (2019) for a recent measurement exercise of the global flow of funds.

A. Evolution or revolution?

Is the current framework of external statistics outdated?

The challenges brought about by globalisation are manifold (UNECE (2011), OECD (2013)). First, well established statistical concepts have become blurred and may sometimes lead to misinterpretation, for instance due to the impact of sizeable intragroup operations on the measurement of FDI, the consequences of production segmentation on the recording of trade flows, and the implications of MNEs' cross-border operations on economic growth aggregates. Second, complexity is increasing, making it more and more difficult for official statisticians to properly measure important economic developments because of intertwined trade flows, firms' opaque balance sheet structures and complicated financial transactions. Yet a third important challenge is the diminishing ability of traditional economic indicators to answer acute policy questions – to assess, for instance, the impact of global developments on the domestic economy, the associated vulnerabilities for resident units etc. As argued by Withington (2020) in the area of trade, statisticians must not only measure specific variables (eg *what is exported?*), but also need to provide information on the interrelations between economic agents (eg *who is trading with whom?*) and the associated impact (eg *what are the associated vulnerabilities and risks?*). Globalisation is clearly making these tasks more challenging.

While the ebbs and flows of globalisation might be cyclical, the challenges posed to statisticians are unlikely to disappear. In fact, these **challenges may well get bigger.** As analysed by Croce and Langiulli (2020), the emergence of digital currencies has the potential to fundamentally modify money and payment systems – with associated new financial instruments influencing statistical measures in a full range of areas, including international remittances, trade, taxes, banking intermediation etc. Attention has also focused on the difficulties posed to the assessment of countries' external positions, a key source of potential financial crises if history is any guide. One example is how to interpret the very large and growing imbalances in current accounts and net international investment positions (IIPs) recorded over the past few decades. While this could reflect an underlying increase in vulnerabilities, it may also be caused by statistical artefacts. In any case, such issues need to be carefully analysed given the potentially important policy implications that are at stake.

Certainly, official statisticians have made important efforts to try to address these issues. Compared with only a few decades ago, policymakers and researchers have at their disposal richer and more granular external statistics, leading to diversified insights and providing the needed agility to answer new demands. In particular, a wealth of additional information from geographical and sectoral breakdowns has been made available in recent years in non-financial and financial accounts, which can help when studying and assessing the causes and effects of globalisation and related policy implications (IFC (2020b)). For instance, the bilateral geographical information now published by several countries in their BoP data sets can be used to analyse the role of the factors driving financial flows and regional integration, such as gravity and push/pull factors (Mercado (2020)).

Yet important challenges remain, underlining several **shortcomings in the current framework for compiling external statistics**. The recording of the trade balance has become particularly difficult because of the high share of imported products used as inputs in the production of exported goods and services, and the

rising importance of cross-border production arrangements and merchanting (ie goods bought and sold by a resident unit without crossing the merchant's economy). Another limitation relates to the measurement of income in the current account balance. This is linked to the fact that accounting for the external wealth of the residents of an economic territory is increasingly difficult given the growing role of third-party holders of financial assets – in particular, investment funds and global custodians located in offshore financial centres, often characterised by relatively limited statistical infrastructure and strong data confidentiality practices. Moreover, and unlike the methodology followed for FDI,[6] retained earnings may not be allocated to the ultimate holders of other cross-border investments, even if they are reflected in the accumulation of external wealth. Furthermore, while the measurement of IIPs exclusively follows the residency-based SNA approach, information on an ultimate owner basis would be needed to fully understand the true balance sheets and exposures of domestic units. This challenge has been accentuated in recent decades by the increased complexity of cross-border corporate structures and the growing importance of global financial centres hosting firms' headquarters/fund-raising affiliates.

A brand new framework for external statistics?

In view of these challenges, **one may wish to adopt a revolutionary approach and build a new, better-suited framework for external statistics**. As argued in the presentation by Beretta and Cencini (2020), such a conceptual reform could be needed because the statistical principles underlying the SNA framework – especially the double-entry bookkeeping convention, by which all imports of trades and financial transactions should match exports – may not work in practice, due to the heterogeneity in data sources and compilation methods. This has led to a sharp expansion of net errors and omissions in the past few decades, and the related surge in the global current account balance (which should ideally be at zero). One (expensive) proposal would be to compile the BoP based on a bookkeeping account of all the external transactions of a country, with a centralised body being tasked to report all the commercial payments and their related financial operations so as to ensure full accounting identity at all times.

Another revolutionary approach would be to **disregard the current residency-based approach underlying the SNA**, which relies on the assumption that in compiling national GDP, it is possible to adequately define both the decision-making unit and the currency area. However this "triple coincidence" of national territory, decision-making unit and currency area is increasingly being questioned with the fading of the division line between resident and non-resident units (Avdjiev et al (2015)). One alternative approach would be to compile so-called nationality-based statistics – the nationality of a firm being defined as the country of residence of its controlling entity (Tissot (2016)). This would allow corporate balance sheets to be considered on a consolidated basis, by including all the activities performed by groups of a given nationality, independently of the location of their controlled affiliates. Such information could be instrumental in facilitating the monitoring of global, "borderless" corporate indicators and in tracking GVCs, elucidating MNEs' role in channelling investment across borders, and assessing the distribution of financial

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[6]   See SNA 2008 #12.113-21.40 for the specific treatment of undistributed earnings in FDI as reinvested earnings and thus direct investment.

exposures at the global level. For instance, this approach would help to overcome the challenges resulting from the treatment of SPEs as domestic institutional units separated from their foreign parent groups as well as from the assessment of economic ownership in the case of intragroup transfers of intangible assets (eg intellectual property products (IPPs); see SNA 2008, #15.148).

While a number of arguments support radical changes in the framework for external sector statistics, **several factors suggest that a more progressive and flexible approach would be preferable**. A first point relates to resources. There are many pressing priorities for official statistics, and it is not clear whether the benefits of a fundamentally new framework would outweigh its costs. The implementation of current international statistical standards has required important capacity-building efforts, and many countries have yet to adopt the existing manuals. Building a completely new framework would be quite costly and would presumably be considered as a low priority in view of competing policy needs (eg environmental and sustainable development issues, and more recently the consequences of the Covid-19 pandemic).

A second, related point is that the challenges faced by external sector statisticians are not the same across countries, as emphasised by Austin, Quirós-Romero and Ribarsky (2020). The distortions posed by globalisation are particularly felt by the large advanced economies, small open economies, and the most important emerging market economies (EMEs); but these issues may not be so relevant for the less developed countries that are barely involved in globalisation. This **heterogeneity is compounded by very diverse national situations** in terms of resources, available data sources, and statistical literacy; developing a flexible approach would thus appear to be quite effective to adapt to such domestic features.

A third factor to consider is that there are **alternative ways of adapting the current framework** and addressing, at least to some extent, some of the challenges facing external sector statistics. The conference proved a useful opportunity to discuss national experience in this area and highlight the various actions that can be taken to support such an "evolutionary" approach.

Adapting the current framework in an evolutionary way

A first "evolutionary" recommendation to official statisticians is to **focus their analysis on large corporate groups (eg MNEs)**, which have proved to be the key vehicles driving non-financial and financial international integration, and which tend to have complex organisational structures often involving SPEs. As recalled by Orsini and Ambroselli (2020), several European countries have already set up specific "large cases units" (LCUs) that focus on global businesses. The information collected can effectively support the understanding of GVCs and the impact of MNEs on the economy, shedding light on the role played by SPEs in their parent groups' activities, intrafirm investments, and profit-shifting mechanisms (for instance, through changes in the ownership of intangible assets, intragroup interest payments and determination of transfer prices between affiliates). The aim is also to facilitate the national and international harmonisation of statistical methods and techniques when dealing with such large groups and to make more timely "profiler-type" assessments, especially in case of "corporate events" (eg restructuring, merger and acquisition). This information could also be used to compile indicators with systematic

breakdowns between foreign-controlled groups, domestic MNEs and other domestic firms.

A second avenue is to **provide more granular insights to the current framework**, using all the possibilities offered by existing statistical standards to develop and present "sub-item information". For instance, to have more detailed breakdowns for the statistics compiled on imports (eg share of intermediate consumption of foreign goods and services) or on the IIP (eg currency composition, remaining maturity, derivative type – see Bianchi and Bua (2020) for the work conducted to shed more light on the currency composition and use of FX derivatives for Irish investment funds). Similarly, a key objective in Canada has been to develop "more agile external accounts", based on a centralised business register and showing statistics with various perspectives/different components: for instance, trade data reported by importers vs exporters; presentation on a custom basis vs contractual (eg consignee) basis; publication of detailed groupings of key macro indicators (by eg foreign ownership, sector, region etc); etc. In Europe, attention has focused on a more granular analysis of international transactions to better identify the contribution of offshore financial centres in globalisation. Van Limbergen et al (2020) have suggested looking at investment income balances, which should be positive for centres with large net external assets – although this may not always be the case because of the impact of profit-shifting mechanisms (see above).

A further step would be to **make better use of the data that are already collected but not integrated into the central statistical framework** underpinning the compilation of external sector statistics; for instance, information on external debt statistics, reserve assets, FX liquidity etc. Statisticians may in particular focus on making use of the wealth of "untapped" data available, including by building on advanced technologies to collect data from alternative sources (eg internet-based, administrative registers; see IFC (2017b, 2020a)). The key is to follow a "user- centric" approach, so as to focus on the information that could usefully complement existing data sets to respond to users' needs. Of course, assembling a wealth of complementary but disparate information can be challenging. As highlighted by Kupriianova and Osiptsova (2020), this puts a premium on reliable documentation (eg metadata, methodology guidance) and effective data-sharing arrangements, not just with domestic counterparts but also with other countries (see Section C).

Yet a further, perhaps more decisive, step would be to **take the opportunity of the ongoing review of international standards** (eg preparation of the post-BPM6 and SNA 2008 manuals) to facilitate the use of complementary information in the external, and domestic, statistics framework. Cases in point include the consideration of consolidated statistics, the provision of supplementary information by degree of foreign ownership, and indicators on Trade in Value Added (TiVA) to complement gross export figures. As argued by Barseghyan (2020), one way to do so without adding too much complexity to the (already quite detailed) statistical framework is to further develop satellite accounts (see SNA 2008, Chapter 29: "*Satellite accounts and other extensions*"). This might be useful from two key perspectives: first, the complementary data collected are compatible with the underlying SNA-based framework; second, the approach could be flexible and progressively applied depending on actual user needs and resources available – reducing the need for a compulsory, one-size-fits-all framework. The satellite accounts approach would thus be helpful, for instance, to cover the digital economy (eg e-commerce, digital intermediation and production) as well as FDI-related information (eg GVCs, distribution of income). Another example of particular importance for the less

developed economies is the need to compile more comprehensive information on remittances, given the difficulties of capturing the related transactions in the BoP framework (Gaiya (2020)). A specific account could be designed to provide information on the country of origin of these transfers, the financial channels involved, the associated costs and seasonality etc.

B. Addressing users' needs: complementing instead of substituting

One of the stated objectives of the conference was to **bring together users and producers of external statistics** to exchange views on outstanding data needs to support policymaking. Such exchanges are crucial, not only on a daily basis to respond to urgent requests, but also in a longer perspective to address more structural shifts in data requirements.

The **experience of organisations in charge of domestic and international financial surveillance** is particularly insightful from this user perspective. To fulfil their mandates, these institutions are among the most interested in having "fit-for-purpose" external sector statistics. This is particularly true for central banks. As stressed by Lane (2020) in the case of the ECB, the availability of high-quality data on cross-border flows and external positions is crucial to understanding the exposures of domestic entities to potential external shocks as well as policy transmission mechanisms. Similarly, the external position of a financial institution is an important element to consider for supervisory authorities conducting their regular "stress tests" (see Georgiopoulos and Lambert (2020) in the case of Bermuda banks). Turning to those global institutions involved in external surveillance, these rely on external accounts data for their monitoring and assessment exercises – for instance to identify excessive imbalances, as argued by Austin et al (2020) in the case of the International Monetary Fund (IMF), whose key mandate is to promote stability in the global international economy and monetary system.

Of course, user needs are not static and evolve with changes in the economy, reflecting in particular the impact of globalisation and digitalisation. **This does not imply that new statistics should be developed and substitute for existing ones**, but rather that they should be made available in a complementary way.

A first example relates to the **measurement of traded goods**. As argued by Bo and Winther (2020), it is becoming more and more difficult for users to understand and interpret these statistics due to the complex nature of GVCs; for instance, a large part of Denmark's exports does not cross the Danish border, and close interaction between statisticians and economists is needed to interpret published trade data. In addition, important discrepancies have emerged between the various trade statistics compiled, say between BoP and customs data – especially in the euro area, partly reflecting the challenges posed by the existence of large financial centres with a high presence of MNEs. To address such issues, one often needs to look beyond the standard statistical sources available. For instance, di Nino and Ekstam (2020) used the World Input-Output Table data set developed by Timmer et al (2015) to enhance the analysis of the trade surplus registered by euro area financial centres and to

measure the contributions played by "foreign value added".[7] Similarly, it can be useful to consider complementary information to the "standard" BoP framework, such as GVC-based indicators and breakdowns of MNEs' transactions.

A second area where user needs are rapidly evolving relates to the **services account**. Recent developments in Europe show that it is increasingly difficult for users to interpret the related statistics. A key factor has been the role of MNEs' transactions as regards IPPs and their impact on the services component of current account balances (see Section D). In order to carry out meaningful economic analysis, users need to be able to swiftly obtain information on the drivers of such developments to complement the raw statistical data they receive.

Turning to **statistics on financial transactions and IIPs**, user needs have increasingly focused on two areas. One relates to FDI statistics, which should be made available in a more diversified format and for a larger number of countries (Section E). A second area concerns cross-border securities holdings. To gain additional insights into investors' risk exposures, it would be useful to develop a matrix linking ultimate investors and ultimate issuers of financial instruments. For instance, (nationality-based) data on the ultimate exposures of US investors through mutual funds point to a significantly different picture than the one portrayed by residency-based IIPs data – especially because of the impact of those securities issued by emerging market economies' borrowers through an affiliate residing in an offshore centre (Bertaut et al (2020)). Similarly, the BIS banking and international debt securities statistics provide complementary information on both a locational and a nationality basis, helping users to analyse the developments observed in cross-border credit flows and exposures (BIS (2015)).

Overall, a consensus has emerged that new types of data set (eg based on consolidated accounting frameworks and/or on the nationality criteria) need to be developed further, but should in any case be seen as a **complement rather than a substitute for the current residency-based information framework**. At the end of the day, the choice of the relevant data should depend on the specific purpose of the analysis.

C. Compilation practices: looking for new guidelines, sources, tools and sharing arrangements

Another important objective of the conference was to look at the **implications of the above challenges for the compilers of external statistics** and to assess whether the methodological framework remains suitable for the statistical obligations assigned to them – noting that this task is typically delegated to central banks in the vast majority of countries in the world. Clearly, the statistical system always had to adapt to a changing and dynamic world to remain relevant. This also applies to the current situation: globalisation and digitalisation have raised the diversity of (formal and informal) cross-border flows, with the opening of new channels and the setup of inventive financial instruments that need to be correctly captured. To do so, and as noted by Mitreska et al (2020), compilers need to understand the nature, function and purpose of these novelties in order to revise their methodological guides

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[7]   The World Input-Output Database covers 43 countries and 56 sectors (see www.wiod.org/home).

accordingly – for instance, by refining the coverage and classification of financial instruments.

Statisticians also need to **rely more on alternative information** as a complement to their conventional data sources – to incorporate, for instance, payment transactions data derived from settlement systems, or supervisory data. One telling example relates to the measurement of the supply and acquisition of services, which are growing rapidly but are not well captured by the "traditional" statistical apparatus. Enhancing their measurement calls for actively searching alternative sources, available either internally or externally. To this end, Statistics Canada has reduced its primary reliance on surveys as the collection vehicle supporting the compilation of official statistics and embraced an approach mostly based on administrative data (see also Eurostat (2019) for the situation in Europe). In addition, new alternative data sources can be useful for users looking for more timely/frequent indicators, as highlighted during the Covid-19 pandemic (Ducharme et al (2020)).

The search for additional data sources goes hand in hand with **using new compilation methods** to increase the scope and quality of the information produced. Attention has in particular focused on artificial intelligence (AI)/big data tools, such as machine learning, web scraping and other data mining techniques (Wibisono et al (2019)). One relevant example presented by Meinusch and Hessel (2020) relates to the measurement of digital trade in the German BoP: a step-by-step procedure has been set up to compile statistics on digital micro-transactions, using data freely available on the web. It allows for a timely provision of the information needed without requiring the implementation of a costly data collection method, such as household surveys. Yet this experience shows that specific attention should be devoted to quality issues, especially as regards the representativeness (eg sample size) and reputation of internet data sources.

Another implication of the search for new statistical sources is the **need to link different data sets together and hence to facilitate the sharing of information** between compilers, both within and across countries (IFC (2015)).

At the **domestic level**, good data-sharing practices are required to make use of the information collected for administrative purposes but not primarily for the compilation of official statistics. In Spain, the measurement of household assets and liabilities has been greatly enhanced by accessing the records of the Tax Agency (Sánchez (2020)). In Canada, an innovative statistical infrastructure has been set up to maximise the use of existing micro-data sets, put together the various files, ensure a direct connection between detailed granular records and macro aggregates, and develop data linkage techniques[8] (Withington (2020)). This has proved an effective approach from a cost-benefit perspective, by providing economies of scale and more analytical opportunities once the initial investment has been made. A key element behind this strategy was the decision to modernise the way of dealing with confidential data, with a revision in the related requirements to provide for more flexibility.

At the **international level**, stronger cooperation among national authorities and with international organisations can be instrumental for sharing the information that is necessary to enhance the compilation of external sector statistics, with two main

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[8]   That is, bringing together different information sources to create a richer data set with more dimensions.

options. The first is that bilateral data exchanges can enhance the measurement of domestic aggregates by comparing the data on cross-border transactions and positions compiled by two different countries. In Spain, this "mirror data approach" has been useful to enhance the measurement of households´ cross-border bank loans and deposits (Sánchez (2020)).

A second solution is to rely on **data collections organised on a multinational basis**, such as the IMF Coordinated Portfolio Investment Survey (CPIS) (IMF (2018a)) and the BIS international banking statistics (IBS) (BIS (2015)). This information can be useful to both enhance the quality of bilateral BoP and IIP data and fill existing gaps in national statistics by using "mirror" estimates available from other jurisdictions.[9] A multinational approach has also been pursued at the Bank of Greece for implementing a centralised global model to estimate air transport in collaboration with other international organisations and associations, such as the International Air Transport Association (IATA) (Papaspyrou (2020)). Another example relates to the actual measurement of the activities of MNEs. International cooperation has already started in this area, in particular in the OECD context[10] – and also at the BIS for large financial firms (Bese Goksu and Tissot (2018)). In Europe, the Early Warning System (EWS) initiative facilitates information-sharing among the relevant European Statistical System (ESS) members and Eurostat, allowing for the provision of "early warnings" in cases of MNE restructuring events (Eurostat (2020)). The associated sharing of data on the structures and activities of large firms is reported to have significantly helped to enhance the quality of ISTAT's data estimates for Italy (Accoto et al (2020)).

D. Isolating and measuring MNEs

MNEs have played a major role in the growing economic integration of recent decades. A key reason has been their ability to swiftly adapt their global operations in response to the developments taking place in various locations, especially in terms of economic, financial, fiscal and regulatory factors. Their expansion has increased the scale and complexity of cross-border trade and financial flows, reinforcing the measurement challenges brought by globalisation for producers of external sector statistics.

Impact on cross-border flows

Yet the removal of national barriers induced by economic and financial globalisation has made it harder for statisticians to promptly and correctly capture trade and capital cross-border flows. These challenges have been reinforced by rapid digital innovation and the increased complexity and limited transparency in MNE activities. In particular, **the difficulty of dealing with large and growing intragroup flows has altered the measurement of economies' current and financial accounts**. For instance,

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[9]   For the use of mirror data in the case of international financial statistics, see Pradhan and Silva (2019).

[10]   See the global Analytical Database on Individual Multinationals and Affiliates (ADIMA) developed by the OECD (www.oecd.org/sdd/its/measuring-multinational-enterprises.htm), as well as the related guidelines set up to deal with MNEs (OECD (2011)).

statisticians have to deal with the fact that MNEs make an active use of transfer pricing to shift revenues. Compilers will need to establish a market-equivalent price for such intragroup transactions, but this can be almost impossible in practice, especially in the case of the transfer of intangible assets (eg IPPs), and even more so when the transactions are conducted through complex accounting and financial structures.

The resulting uncertainty can **affect the measurement** of the various constituents of the current account, in particular investment income, as well as of the IIP and its components. Examples of such challenges comprise the (in)consistencies of valuation methods across the main functional categories of investment broken down in international accounts; the different treatment of retained earnings depending on these categories; and flows/stocks reconciliation issues. Another issue relates to the impact of corporate events. In particular, cross-border mergers and acquisitions and intragroup restructuring can have a sizeable impact on BoP and IIP indicators (Accoto et al (2020)). Such events are difficult to grasp since they often comprise multiple steps, with the establishment of several corporate layers and the involvement of group entities from different economies.

Lower relevance of residency-based statistics

Another consequence of MNE activities is the fragmentation of production, altering the relevance of the domestic economy concept. In fact, correctly measuring the geographical footprint of MNEs has become increasingly difficult, reflecting a highly globalised world and the growing role played by financial centres in the international allocation of capital (Bertaut et al (2020)). In particular, a number of MNEs have relocated their headquarters into low-tax jurisdictions and offshore financial centres due to regulatory and tax optimisation strategies. As a result, the geographical allocation of bilateral financial flows and positions in external statistics, which is mainly based on the country of incorporation of the affiliated firms involved, may mask the true geography of investors' exposures.

Moreover, MNEs' production chains have **diminished the analytical relevance of measured gross trade flows**. While in the past the goods consumed in one place were either produced locally or imported from another country where they were manufactured, a significant part of the goods exported nowadays comprises foreign-imported intermediate inputs, reflecting the global nature of GVCs intermediated by MNEs. To address this point, traditional statistics on bilateral trade balances may need to be supplemented with additional, more granular measures.

Furthermore, consumers' purchasing habits have rapidly evolved with digitalisation, and a significant part of the provision and sale of services supplied by global firms is now done "online", making their **geographical allocation more challenging**. The air transport industry provides a typical example of this evolution, as most travel tickets are now issued online. This may have many benefits for customers, but it raises issues for statisticians compiling "real economy" statistics. One way to go, as argued by Papaspyrou (2020), is to leverage existing centralised airline data collections and make use of the embedded micro-data level information. Yet making sense of these data from a macro perspective requires setting up innovative tools, developing standardised definitions, and finding ways to allow for an effective exchange of information between compilers.

Distortions in domestic economic aggregates

A final, and related, consequence of the growing economic role played by MNEs is the **potential distortion, from a traditional macroeconomic perspective, of countries' domestic aggregates/indicators**, such as GDP, productivity, and even employment. This is especially the case when MNEs' activities are disproportionately large compared with the size of the domestic economy. Ireland is a textbook case, being a small, open economy, part of the EU and the global markets, and characterised by the operating presence of large foreign multinationals. In recent years, events linked to corporate restructuring and the relocation of IPPs and related global operations by foreign-owned MNEs have raised volatility in Irish domestic demand and GDP, while their impact on underlying economic patterns are presumably smaller (OECD (2016)). This created the need for developing alternative measures/indicators that could be "cleaned" from such effects.

To do so, one needs to **carefully analyse the impact of MNEs on national statistics** by considering additional pieces of information (Osborne-Kinch et al (2020)) – for instance, by collecting market intelligence, developing a specific monitoring of MNEs with so-called LCUs, and analysing case studies as in the context of the European EWS initiative. In particular, this requires MNEs to be precisely isolated and measured, possibly through the organisation of comprehensive and consistent data collections at both the national and the international levels, including a separate breakdown for SPEs.

Yet one consequence for official statisticians producing macro-level statistics is the **need to better integrate the additional micro-level data sources** considered, including entity identifiers, accounting information on corporate structure, and security-by-security/loan-by-loan databases.[11] Such granular information is essential to track MNEs' financial interlinkages, understand the nature and scope of their operations, and assess the associated impact on the economy and the potential risks. It calls for an efficient statistical collection and analytical system to be designed, so as to combine data with different levels of granularity and format (eg structured and non-structured data, for instance textual information).[12]

Another key requirement is to **have effective data-sharing possibilities among statistical compilers**. As noted above, official statisticians require access to timely information on MNEs' corporate events, putting a premium on exchanging with their colleagues in other countries and agreeing on sound and consistent methodologies. This is needed to limit the occurrence of statistical asymmetries that would result from different national approaches. Yet it is also a challenge, because MNEs' operations typically represent "complex cases" for statisticians. In particular, large groups often use SPEs to play very specific roles (eg to hold participations, raise capital, own intellectual property rights etc) under complicated arrangements. As noted by Banhegyi (2020), the correct measurement and analysis of these activities may require

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[11] For the security-by-security (CSDB) and loan-by-loan (AnaCredit) databases developed in Europe, see ECB (2010, 2019).

[12] See IFC (2016) for the opportunities/challenges brought about by the combination of micro and macro data in the financial stability area.

significant judgment,[13] for instance to apply the concept of economic vs legal ownership (which is a key distinction underpinning the assessment of control relationships in the SNA framework). Strong international cooperation is therefore required to avoid excessive differences between countries in applying the related methodologies.

E. The future of foreign direct investment as an analytical tool

Better understanding the (new) role of FDI

The nature of FDI has gone hand-in-hand with the increase in financial integration in recent decades. For many countries today, the **dominant FDI transactions have a mainly financial purpose**, instead of being motivated by "real production" considerations as in the past, when groups' cross-border investment decisions were driven mainly by the establishment of a subsidiary from the ground up ("greenfield investment"). This traditional FDI component still exists, but the entailed volumes are much lower and in many occasions difficult to isolate from the enormous amounts that arise from the restructuring of MNEs and/or the creation of complex financial structures relying on a network of affiliates based in financial centres but with minimal physical presence (Austin et al (2020)). This trend has been reinforced by the shift in global credit intermediation from the banking sector to the debt securities market in recent decades. One particular issue is that borrowing/lending transactions between affiliated entities of the same non-financial corporate are considered as "direct investment", in contrast to the treatment of debt transactions between unrelated parties (and also to similar operations but within financial groups like commercial banks). As a result, the expanding amounts of within-company loans financed through the offshore issuance of debt securities are classified as FDI, whereas they could also be viewed as portfolio flows masked as FDI (Avdjiev et al (2014)).

Reflecting the above developments, the **main countries involved in FDI operations today are frequently small open economies and financial and offshore centres** (in addition to the large advanced economies such as the United States). For example, Luxembourg is among the countries with the largest FDI in terms of transactions and positions, reflecting the specific role played by captive financial institutions (Feuvrier (2020)). Following the current SNA statistical standards, this type of SPE should be considered as an institutional unit if it does not reside in the same economy as its parent, even though it may not act independently (ie when the affiliate is simply a passive holder of assets and liabilities). This makes the economic interpretation of the information compiled quite spurious. A nationality-based presentation of these institutions, ie consolidated with their parents, would likely improve the economical meaning of the FDI data reported for Luxembourg. However, compiling such estimates is challenging for national statisticians, as those entities are usually integrated into complex international structures.

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[13]   In fact, the SNA standards recognise that "there is no common definition of an SPE", although some specific characteristics may apply (eg absence of employees, little physical presence etc); see SNA 2008, #4.55-58. However, the IMF has now published additional guidance on SPEs based on the report of a dedicated Task Force (IMF (2018b)).

Different FDI presentations: all very useful

The standard presentation of FDI statistics is based on showing the country/sector of the immediate counterparty (OECD (2008)). This presentation seems the most convenient for producing internationally comparable figures, but it lacks the relevant information required for other purposes. For instance, policymakers and analysts need to understand the origin of FDI flows, ie who is behind certain investments, in particular when these are in strategic sectors. Likewise, risk analysis considerations require a good understanding of the final destination of residents' investments and exposures. These elements put a premium on **better understanding the various financial and tax considerations influencing FDI decisions as well as the specific channels of the related investments**.

There is also an increased push to look at FDI data on an ultimate basis, with the ultimate investor defined as the one with control over the investment decision. This interest has been reinforced by the growing role played by "pass-through funds"/"funds in transit" associated with FDI flows – ie with funds passing through an enterprise resident in one economy to an affiliate in another economy, so that the funds do not stay in the economy of the affiliate. Hence, an important requirement is to **enhance the presentation of FDI data by ultimate source and destination country** – not least to better illuminate the role played by international financial centres in the expansion of FDI positions and external imbalances observed in recent years.

However, **identifying ultimate investors is not always straightforward**. One way explored by the Bank of Portugal is to rely on network analysis tools to identify/estimate the ultimate direct investors and intermediaries in FDI chains (Lima et al (2020)). In particular, data from the IMF Coordinated Direct Investment Survey (CDIS) (IMF (2015)) can be used to assess investment patterns, identify economies that are frequently involved as intermediaries in FDI flows, and track their evolution over time. Another approach followed at the University of Groningen is gravity modelling (Wacker (2020)). Its application to the different types of FDI data sets available from the IMF, the OECD and UNCTAD suggests, on average, little difference between the immediate and ultimate investor concepts as regards the general picture of global FDI. However, there are important differences for specific country pairs, reflecting that some jurisdictions are mostly acting as intermediaries in global FDI chains.

A particular issue is when the (ultimate) FDI investor behind an inward investment in a country is in fact a resident of the same country. This so-called **"round-tripping"** phenomenon involves in most cases foreign SPEs: for instance, the major routes for round-tripping in Poland's FDI appear to be through Luxembourg, Cyprus and the Netherlands (Makowski (2020)). In principle, this type of investment should be quite neutral for the economy it passes through, as inward and outward flows should be equal. But they may be valued differently because of accounting or fiscal reasons (or simply because of practical measurement difficulties), leading to bilateral asymmetries in statistics and distortions in IIP measurements.

Looking ahead, the above considerations underline the **need to revisit the FDI concept** in order to maintain its relevance as an analytical tool. An enhanced understanding of the (new) role of FDI requires going beyond its standard analysis and promoting different presentations. The way to go is to develop various complementary indicators to assess the development and impact of FDI, provide

more granular details in the statistics published – eg identify better SPEs as well as foreign-controlled corporations and the related control relationships. Needless to say, international cooperation is also essential, not least to correctly track global group structures as well as to facilitate information-sharing and mirror data exercises. Lastly, compilers need to interact closely with users to continuously adjust their statistical offerings to evolving analytical needs.

References

Avdjiev, S, R N McCauley and H S Shin (2015): "Breaking free of the triple coincidence in international finance", *BIS Working Papers*, no 524, October.

Avdjiev, S, M Chui and H S Shin (2014): "Non-financial corporations from emerging market economies and capital flows", *BIS Quarterly Review*, December, pp 67–77.

Bank for International Settlements (2015): "Introduction to BIS statistics", *BIS Quarterly Review*, September, pp 35–51.

——— (2017): *87th Annual Report*, "Understanding globalisation", Chapter VI, pp 97–124.

Bean, C (2016): *Independent review of UK economic statistics*, March.

Bese Goksu, E and B Tissot (2018): "Monitoring systemic institutions for the analysis of micro-macro linkages and network effects", *Journal of Mathematics and Statistical Science*, vol 4, no 4, April.

Ducharme, LM, J Tebrake and Z Zhan (2020): "Keeping economic data flowing during COVID-19", IMF Blog, 26 May.

European Central Bank (2010): *The "Centralised Securities Database" in brief*, February.

——— (2019): *AnaCredit Reporting Manual Part I – General Methodology*, second edition, May.

European Commission, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations and World Bank (2009): *System of National Accounts 2008*.

Eurostat (2019): Building the System of National Accounts – administrative sources, *Statistics Explained*, 13 November.

——— (2020): *An Early-warning System (EWS) for the correct and consistent statistical treatment of restructuring events of multinational enterprise groups and their enterprises in European statistics – Information for national correspondents*, March.

Inter-Agency Group on Economic and Financial Statistics (2015): *Consolidation and corporate groups: an overview of methodological and practical issues*, IAG reference document, October.

International Monetary Fund (2009): *Balance of Payments and International Investment Position Manual – Sixth Edition (BPM6)*.

——— (2015): *The Coordinated Direct Investment Survey Guide – 2015*.

——— (2018a): *Coordinated Portfolio Investment Survey Guide*, Third Edition, September.

——— (2018b): Final Report of the Task Force on Special Purpose Entities, BOPCOM–18/03, October.

Irving Fisher Committee (2015): "Data-sharing: issues and good practices", *IFC Report*, January.

——— (2016): "Combining micro and macro statistical data for financial stability analysis", *IFC Bulletin*, no 41, May.

——— (2017a): "Assessing international capital flows after the crisis", *IFC Bulletin*, no 42, February.

——— (2017b): "Big data", *IFC Bulletin*, no 44, September.

——— (2018): "External sector statistics: current issues and new challenges", *IFC Bulletin*, no 48, November.

——— (2020a): "Computing platforms for big data analytics and artificial intelligence", *IFC Report*, no 11, April.

——— (2020b): "Using financial accounts", *IFC Bulletin*, no 51, February.

Legal Entity Identifier Regulatory Oversight Committee (2016): *Collecting data on direct and ultimate parents of legal entities in the Global LEI System – Phase 1*, March.

OECD (2008): *OECD Benchmark Definition of Foreign Direct Investment (BMD4)*, Fourth Edition.

——— (2011): *OECD Guidelines for Multinational Enterprises,* OECD Publishing.

——— (2013): *Economic Globalisation – Origins and consequences*, April.

——— (2016): *Irish GDP up by 26.3% in 2015?*, October.

Pradhan, S-K and J-F Silva (2019): "Using mirror data to track international banking", *IFC Working Papers*, no 19, December.

Timmer, M, E Dietzenbacher, B Los, R Stehrer and G de Vries (2015): "An Illustrated User Guide to the World Input–Output Database: the Case of Global Automotive Production", *Review of International Economics*, vol 23, no 3, pp 575–605.

Tissot, B (2016): "Globalisation and financial stability risks: is the residency-based approach of the national accounts old-fashioned?", *BIS Working Papers*, no 587, October.

United Nations Economic Commission for Europe (UNECE) (2011): *The impact of globalization on national accounts*.

Wibisono, O, H Ari, A Widjanarti, A Zulen and B Tissot (2019): "The use of big data analytics and artificial intelligence in central banking", *The Capco Institute Journal of Financial Transformation,* Data analytics, 50th edition, November.

Zhang, N and Z Xiuzhen (2019): "Measuring global flow of funds: focus on China, Japan, and the United States", *Economic Systems Research*, vol 31, no 4, pp 520–50.