



**keynote speech by Louis-Marc Ducharme¹, Chief Statistician and Data Officer,
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“Globalization: The Old and New Statistical Challenges, a Possible Roadmap”

Section I: Challenges for Statisticians, Old and New

Cross Sectoral Aspects

In the past decades, advances in technology and communication, increasing free capital movements and dominance of multinationals as well as reductions in shipping costs have redefined global production. With firms re-organizing themselves to maximize efficiency and minimize taxation, globalization has brought more trade, capital flows and movement of people across borders. Globalization has led to tighter integration of economies worldwide. Adequately measuring the magnitude of this process, across its many different dimensions, poses a real challenge as it complicates the understanding of economic statistics .

This is a problem for policy-making, and it has two facets: first, it complicates economic measurement. Why? Largely because the production of our bread and butter statistics is nationally focused and based on residency. But there is another issue: Globalization creates a need for new and enhanced statistics, because its implications undermine the meaningfulness of the indicators we produce and use.

The reason why it is challenging for us is that the principles under which we operate are put into question. Let me give you four examples.

1. **Residence:** traditionally our measurement is residence-based, and classifies institutional units by location linked to “predominant economic interest”. Yet companies are becoming global and run their activities across multiple jurisdictions. I will bring you two examples of the global value chain (GVC) that show what we are dealing with as far as complexity, and what they bring, offshoring, contract manufacturing and other transfer pricing, which create a smoke screen for statisticians.

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2. **Entities:** macroeconomic statistics generally relate to well-defined entities like territories, goods, corporations, natural persons. In this era of globalization and digitalization immaterial entities flourish. Intangible assets like intellectual properties, networks, ideas or data have a massive role in our economic systems, and they are immaterial. We have dealt with Intellectual Property (IP) in the recent revision to the System of National Accounts (SNA), but still need to tackle data as an intangible asset.
3. **Classifications:** The statistical framework is organized using classifications that are influenced by a vision of the world where manufacturing dominates. Sectoral approaches are also challenged: globalization is cross-sectoral by nature as the operations of large multinational enterprises intermingle trade in physical good, in services, IP and financing operations.
4. **Speed.** The last and probably most disruptive challenge to our traditional ways. Statisticians are meticulous and focused on reliability/accuracy versus time of delivery. Manual updates and methodological discussions are protracted processes that span over long periods. This time has to be different and we have to adapt to a fast-changing environment. The speed at which the world economy changes with globalization outpaces considerably the speed at which our measurement rules are adjusted.

I will today try to take stock of these challenges and see how they play out to varying degrees across sectors. Although some of these challenges are more pronounced for some sectors, we all recognize the interconnected nature of macroeconomic statistics and the fluidity of the sectoral breakdowns—especially between the domestic and the external sector. I will also look into the different implications of these challenges for advanced economies and low-income economies. Finally, I will review ongoing initiatives dealing with these challenges, with a focus on the IMF contribution. I will also formulate a couple of suggestions to move forward this agenda.

Challenges for National Account, and External Sector Statistics

I will start with National Accounts and the External Sector statistics. The SNA was developed to measure the activities of enterprises and individuals with a primary focus on interactions with other domestic actors (enterprises, individuals and the government) and some enterprises and individuals undertaking international transactions. With globalization, many of the activities of domestic/resident firms may be undertaken by nonresident entities which may lead to distortions in the measurement of both GDP estimates and balance of payments statistics.

Globalization has resulted in the integration of domestic economic structures with the economic structures of other countries. Therefore, with the increase in the vertical integration of firms and the growth of Multi-National Corporations (MNCs)—operating across multiple economies, but sharing intellectual property within a single management structure—it is becoming increasingly difficult to clearly delineate and allocate the activities of firms to specific economies. GVCs pose an acute challenge to compiling and interpreting the traditional national accounts and external sector statistics indicators. The expansion of GVCs has led to increase trade in intermediate products, intra-firm trade, foreign direct investment, as well as to new forms of trade finance. E-commerce and digitally delivered products and services is another example of practical challenge to BoP compilers, a topic that we discussed at length in our recent IMF Board Paper on [measuring the digital economy](#).

Foreign direct investment is one building block of GVCs. To maximize production efficiency and take advantage of the most beneficial tax regimes, investment decisions of MNCs, through outsourcing and offshoring activities, have resulted in complex foreign direct investment relationships. This in turn has complicated the identification of ownership of production and value-added allocation to the economy of the owner. The structure and relative size of international trade in goods and services has changed significantly with the increase in the international trade in, and use of IP products and other knowledge based products without a fixed physical location. Knowledge based products facilitate factory-less production and contract manufacturing. Furthermore, globalization has seen an increase in international merchanting, where goods are exported from one economy to another, with the merchant owning the good being resident of a third economy.

Thus, the existing, conventional measures of international trade in goods, based on residency principle, may not take account of the significant inputs of raw materials and intermediate goods from various countries. The ownership of these inputs—as well as the intellectual property built into the final product—may be owned by a firm not resident in the economy where production happens.

Transfer pricing between affiliates complicates the valuation of production and the distinction between transactions in goods and services from income flows. Depending on transactions, these flows may be priced above or below prevailing market prices to maximize profits based on difference in tax regimes across jurisdictions.

The growth in MNCs has also led to an increase in the use of special purpose entities (SPE) to route the financing of global activities. These SPEs may be registered in different jurisdictions from where management resides or where production takes place, hence complicating the analysis of the financing leg of globalization.

Challenges for Government Finance Statistics (GFS) and Monetary Finance Statistics (MFS)

Another challenge that has emerged is to our understanding of public finance. GFS compilation has been faced with the growing complexity of government financing operations afforded by the globalization of finance.

Innovative off-balance-sheet financing channels have been increasingly used during the financial crisis, for instance with the creation of SPEs and bank restructuring agencies, by on-lending FX-denominated loans or capital injections. These operations have made the delineation of general government units and public corporations become a challenge for GFS compilers. The increasing number of special purpose vehicles, sometimes non-resident non-governmental entities conducting quasi-fiscal activities have exacerbated transparency issues related to government operations and debt recording.

This is no less pertinent for Low Income Countries (LIC) where Public Private Partnerships (PPPs) with nonresident private sector entities (e.g. Chinese corporations) are adding to transparency issues and stretching the already-thin statistical capacities of these countries to establish SPE registers.

The increasing globalization of finance and the financial crisis have created a new statistical landscape for monetary and financial statistics. Global external assets and liabilities of the financial

sector have increased fivefold relative to world GDP since 1990. This surge has revealed informational gaps, such as those the G20 Data Gap Initiative is tackling. Furthermore, the need to support central banks colleagues financial stability analyses creates new needs for granular statistical information.

An example of that is the work done by some Eurosystem National Central Banks and NSOs that started collecting loan-by-loan information extended by credit institutions to companies and other legal entities based on credit registers. Detailed information on bank lending and credit risk is useful for monetary policy analysis and operation, financial stability and economic research. Unique identification of all counterparties allows for a meaningful calculation of the total indebtedness of a borrowing company vis-à-vis all its lenders (credit institutions). Following the financial crisis, several data initiatives have sought to strengthen macroprudential oversight and the prevention of systemic risk. In this context, the IMF has developed the Financial Soundness Indicators (FSIs) which are collected and disseminated to support macroprudential analysis.

Although the tendency is to focus on the collection of granular data many challenges remain on data sharing and confidentiality.

The Two Sides of Globalization Challenges: AEs vs. LICs

In this era of interconnectedness, the IMF faces the challenge of assisting countries to develop new concepts and best measurement practices to ensure that data are accurate, relevant and internationally comparable. At the same time, the IMF is confronted with the hard reality that economies have varied degrees of statistical sophistication. Statistical systems in fragile and LICs can be weak. Most macroeconomic statistics compiled in these countries are collected through national processes supported by the infrastructure of the national statistical system. Dedicated national compilers often work under difficult conditions. Therefore, generating credible, timely and comprehensive data for evidence-based policy making can be strenuous.

Conversely advanced economies have started building new statistical initiatives and are leaning on new technologies to allow data sharing among users or institutions. LICs need to join the bandwagon and for this to happen, capacity building activities should not only be geared towards raising the supply of statistics but equally the demand for statistics. Political awareness is needed and should be fostered not only to encourage the production of policy-relevant data, but also to share them within and between countries. Countries should be encouraged to develop capacity in line with new needs and better use of these data.

Migration also remains a feature of globalization. Data on migration and remittances unfortunately have serious pitfalls. Data are often missing, lagging, or poorly comparable owing to the use of different definitions and no consistent collection. The legal frameworks differ between countries and remittances data are collected as part of the cross-border statistical framework. These statistics are often built upon national administrative processes, such that reliability and comparability of records over time can be compromised. Capturing data on irregular flows of migrants and remittances remains a relevant policy need, as in some countries remittances can be higher than 20 percent of national disposable income. For these countries, GDP data needs to be presented with reliable disposable income estimates and hence accurate remittance estimates.

Section II: Setting the Global Statistical Agenda to Address These Challenges

The Roadmap: Defining an Agenda to Address these Challenges Sector per Sector

Now how does the statistical community go about addressing these challenges to forge the roadmap of the coming years?

National Account and External Sector Statistics

There are ongoing efforts at the international agency level in collaboration with national statistical agencies. For instance the OECD will create and lead, in coordination with IMF, a Working Group to identify components in the balance of payments framework that are relevant for developing indicators on GVCs. In addition, the IMF is preparing a proposal on how to measure trade finance focusing on Fintech-related modalities for discussion at the BOPCOM. International efforts coordinated by the UN Statistical Commission have been channeled through an **Expert Group on International Trade and Economic Globalization Statistics** to address the measurement challenges from globalization. Its main task is to develop a handbook on GVCs measurement.

Closer collaboration in data collection and exchange among NSOs would require a rethink of the legal framework that governs the activities of compiling agencies. The strict confidentiality provisions embedded in statistical legislation often prohibits data sharing. Technology could be one way to tackle these issues, as we will see later.

The development of a strategy to collect data on firms at the international level has to be the cornerstone of future initiatives. Therefore, rather than focusing on collecting data firstly for a specific economic territory and then identifying the firms operating the territory, the focus could be first on identifying the MNCs from which data should be collected and then identifying the economies in which they operate. This new approach to data collection may therefore raise the issue of who should be responsible for collecting the data at the international level? Some argue that there a role here for IOs to support the work of NSOs by facilitating data collection from MNCs.

Another area of development is to improve the coverage of SPEs. With financial globalization, the volume and complexity of such structures have increased significantly . SPEs are incorporated in certain jurisdictions to take advantage of different legal and tax regimes. With cross-border interconnectedness increasing, SPEs' activities have grown to such an extent that they make it increasingly hard to disentangle the complex interlinkages existing between offshore entities, banking systems, and domestic economies. The BOPCOM in October 2016 supported a stronger involvement of the IMF in better covering SPEs in external sector statistics, and created a Task Force on SPEs with a two-year mandate of developing a statistical strategy for addressing existing data gaps, assessing the data collection approach and the need to disseminate internationally-comparable statistics. The Task Force will present two proposals at the upcoming BOPCOM meeting: a separate identification of SPEs-related cross-border flows and positions, with a view to distinguish "round tripping" vehicles and to ensure comprehensive coverage and a clearer definition of SPEs.

The IMF has also tried to experiment this centralized approach. To improve the availability of data on capital movements and as part of the efforts to enhance the Coordinated Portfolio Investment

Survey (CPIS), we have put forward to the BOPCOM a proposal of establishment of a centralized exchange to improve the sectorization of nonresident issuers. These data on securities would be broken down by (i) economy and sector of the holder, and (ii) economy and sector of the issuer. Following the IMF's proposal, the ECB and the US Federal Reserve Board conducted a pilot exercise to exchange data on securities and issuer sectors.

Monetary and Financial Sector Statistics

One important unfinished business from the Great Financial Crisis is the need to understand the shadow banking system and how it contributes to credit creation, and hence to cross border macrofinancial risk. This is still largely uncharted territory and the questions we must answer are related to its size, potential data sources and risk measures . Cryptocurrencies are also in the vanguard of the new statistics digital era. According to the Global Cryptocurrency study as of April 2017, the market value of all cryptocurrencies was USD27 billion and is still growing. The Fintech sector will make use of cryptocurrencies to challenge the traditional business model system in banking. Our challenge is to make sure that the asset and liabilities that will be created by these new players will be accounted for to inform adequately policy-makers in charge of financial stability.

Encouraging Data Sharing Between Countries, Big and Small

In an increasingly globalized and interconnected environment, sharing detailed information can be mutually beneficial for countries. This can be a step towards better informed decision-making and closing the gap between advanced countries with advanced data collection infrastructure and countries with limited collection capacity. It would be equally rewarding for countries with effective compilation frameworks, but dealing with a very open economy and substantial involvement of foreign owned multinational entities (as a share of value added).

The G-20 Data Gaps Initiative (DGI)² is an important promoter of data sharing work on the global stage. To promote sharing and accessibility of granular data, the IMF and Eurostat, in collaboration with Bundesbank, conducted in 2017 a thematic workshop on data sharing. The workshop aimed at creating a platform where participating economies exchanged practical experiences on data sharing with focus on key legal and administrative obstacles, , confidentiality, and possible approaches to overcome them. It concluded with seven recommendations to facilitate countries' efforts on data sharing. As a follow-up to the 2017 workshop, a data sharing questionnaire was prepared and will be soon circulated to the G-20 economies. Feedback to the questionnaire will be discussed at the 2019 DGI Global Conference.

The IMF has taken other initiatives to encourage data sharing. A workshop on the Coordinated Direct Investment Survey (CDIS) Bilateral Asymmetries on November 2017 brought together twenty-

² In September 2015 the G-20 Finance Ministers and Central Bank Governors launched the second phase of the DGI (DGI-2). Given the importance of data sharing, the DGI-2 includes a new recommendation, Recommendation II.20 on promotion of data sharing by G-20 economies.

two countries to facilitate bilateral exchange of information on direct investment to reduce bilateral asymmetries.

Connecting the Statistical Dots of the Global Value Chain

Another promising set of initiatives focus on the use of microdata to connect the dot on large multinational activities. The goal is to achieve a comprehensive and transversal picture of the economy of the GVC. The IMF will not be directly involved in these initiatives. They show a way forward, but we must recognize that they will be faced with considerable obstacles like data collection, and confidentiality restrictions. We have discussed the obstacles related to new and innovative data sources in our SDN on the [statistical implications of Big Data](#) so I won't repeat them, but I would stress that for these reasons these initiatives are probably more a very long-term endeavor than a near-term objective.

The international fragmentation of the production process and the growth of MNCs highlights the need for more granular data to evaluate the interconnectedness among economies. The joint OECD – WTO Trade in Value-Added (TiVA) initiative seeks to measure the value added by each country in the global production of goods and services. TiVA therefore attempts to provide indicators on the domestic and foreign value-added content of gross exports by industry; the services content of gross exports, and the participation in GVCs through intermediate imports and domestic value added in partners' exports.

Eurostat is creating a network of business registers for EU member countries that focusses on MNCs. Eurostat's micro-data linking projects combine existing datasets with new data collection to deliver new information. Other initiatives include the United Nations Statistical Commission project to develop of a global enterprise group register to help national statisticians better understand business strategies and the relationship between enterprises in various economies.

Availing of New Technological Opportunities to Address Data Sharing Challenges

Connecting these dots requires cooperation between compilers, but we all know that confidentiality issues gets in the way of data sharing. One of the main challenges of globalization is to develop technologies to allow the sharing of data between different users while ensuring that data confidentiality is being preserved.

Distributed Ledger Technology (DLT) is an example of new technological developments which could overcome confidentiality issues when sharing the data among a restricted or a wider audience of users. A distributed ledger is a record of information, or database, that is shared across a given network of users. The information contained in those databases is shared among a limited set of users using a central validation system. From a technical perspective it could be used, for example, to record transactions across different locations. Blockchain is the technology which is behind DLT, it uses complex mathematical cryptography algorithms to spread data across a network of connected computers, thus ensuring confidentiality of the data. DLT has some interesting technical features advantages: i) it can provide easy tracking of market and financial contracts stored in the ledger, ii) improves efficiency by reducing the number of intermediaries involved on a transaction, iii) improves regulatory reporting, iv) increases transparency v) reduces costs of recording contracts.

These last three characteristics do appeal to statisticians. That's why DLT is currently being tested and investigated

While this technology appears promising, there are many factors could pose potential barriers to the widespread uptake and use of DLTs. The technology is not yet mature; and there are legal, operational and governance issues.

A great case study: Ireland

Ireland is the “Poster child” of this discussion. This country is faced with each and any of these issues. Ireland has it all: large footprint of multinationals, redomiciled entities, contract manufacturing, offshoring, complex GVCs, large digital sector, intellectual property relocation and tax optimization. This conjunction of factors has resulted in dramatic episodes like the 20 percent upward revision of 2015 GDP initial estimates. The Irish authorities summoned an Economic Statistics Review Group, in cooperation with other IOs including the IMF, and much efforts have been put into addressing these problems. Most of the group recommendations have been implemented now. They included the development of new classifications, extended accounts to breakdown NFCs accounts between MNEs and domestic corporations and the creation of new variables to capture the impact of significant transactions in capital assets (intangible). Among them the main innovation is the GNI*, a Gross National Income adjusted for the earnings of re-domiciled firms and for the depreciation of categories of foreign-owned domestic capital assets (IP capital). With hindsight, we can say that Irish authorities have used an effective approach, by consulting widely, and coming up with simple, but pragmatic measures to dissipate somewhat the “fog” of globalization and allow well-informed economic policy-making.

Conclusion

To sum-up all this I would say that the roadmap is twofold:

1. There is a roadmap for advanced economies with well-established statistical capacity. This one will go through the steps we just discussed: better mapping of the economic footprint of the key players of globalization, i.e. tracing better MNEs trading activities along the GVC, and the related cross-border financing. This will be supported by ad hoc adjustments to our reporting frameworks, of the kind that our Irish colleagues successfully implemented. The coming update of the SNA will provide an important opportunity to catch up. It will also require more collaboration between peers, more data sharing, but also leveraging technology to make these exchanges of information seamless and consistent with our duty to protect confidentiality. This is a tall order, but meetings like the one definitely help.
2. Then there is another roadmap for our colleagues who are still building statistical capacity in LIC and emerging countries. This changing landscape is a great opportunity for them to adjust their statistical apparatus to globalization. Instead of fixing their framework, they can decide to leapfrog to the most advanced techniques, bank on new and innovative data sources rather than going through the process of deploying traditional statistical surveys, that are lengthy, costly and show declining response rates. The use of administrative data, of technology-enabled innovative data collection and sharing solutions will help them to hopefully achieve in a couple of years what our predecessors took decades to achieve.

As you can see there are still a lot of challenges ahead of us, but statisticians are among the few who still believe in the merit of multilateralism, so there is hope.