



IFC - Central Bank of Armenia Workshop on *"External Sector Statistics"*

Dilijan, Armenia, 11-12 June 2018

An assessment of the existing data collection on financial derivative products¹

Hervé Thoumiand,

Bank of France

¹ This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

An assessment of the existing data collection on financial derivative products

Framework and lessons for a roadmap

Thoumiand Hervé, Head of Financial Intermediaries Division, Balance of Payments Directorate, General Direction of Statistics, Banque de France.

The opinions expressed in this paper do not necessarily reflect the views of the Banque de France.

Improvements in the financial derivatives data collection at the Banque de France

Ten years after the beginning of the financial crisis, international banking statistics allowed for a decisive step forward by providing valuable information on the banking sector. These data, both on a granular and on an aggregated basis, help to monitor closely the trends in the business activity of banks, and to understand for instance the arbitrages on financial markets, or to assess the impact of fiscal regulation changes.

The greatest progress in the understanding of financial flows has been made on the derivative markets: much more information has been collected on options, future/forwards and swaps, beyond the information that was already gathered for the balance of payments (BoP).

However, improvements still need to be made in the collection of the data, for instance for cross border intragroup flows. A better circulation of the data among institutions could also be achieved.

Keywords: banking sector, derivative markets, options, future/forwards and swaps, balance of payments, cross border intragroup flows, international banking statistics, accessibility of data.

Collecting data on derivatives proves to be tricky, as various complex financial instruments are to be handled and as the data collections may differ radically according to their aim.

This article is structured as follows. It first discusses the existing framework at the Banque de France for data collection on derivative products. The concepts and the scopes vary significantly, depending on the purpose of the different collections. The article then identifies possible synergies between these data, though they often remain difficult to compare. Finally, some improvements are suggested in order to maximize the information content of the data and their use by analysts

A large variety of concepts and scopes in the existing framework for data collection on financial derivatives

A first framework set up

When dealing with financial derivatives, we need first to assess specifically which instruments are considered. The 6th Manual of the Balance of Payments published by the IMF (BPM6) defines in its article 5.79 financial derivatives contracts as *"a financial instrument that is linked to another specific financial instrument or indicator or commodity and through which specific financial risk (such as interest rate risk, foreign exchange risk, equity and commodity price risks, credit risk and so on) can be traded in their own right in financial markets"*.

Drawing up an exhaustive list would be worthless, as financial innovation is most of the time leading ahead of the statistical machinery. Consequently, it is preferable to identify hereafter the main families of derivatives, such as Swaps, Forward and Futures, and Options like derivatives¹.

It is also crucial to identify the underlying assets in order to understand movements on financial derivatives markets. The use of large baskets of underlying instruments such as Equity, Fixed Income / Rates, foreign Exchange (Fx), or Commodities proved to be the most efficient way to draw a big picture.

Other dimensions should be taken into account, such as the nature of the transaction market (Over The Counter – OTC vs. organized markets) or the maturity of the instruments; although they may not be as necessary as the two families of information previously exposed.

Statutory accounts as the corner stone of transaction flows

One of the main sources of information on derivatives is the statutory accounts. These data, collected on a social basis (i.e. based on the residence of the unconsolidated business), represent an adequate source to serve the needs of the balance of payments. Article 5.80 and following of the BPM6 stresses that those *"transactions should be treated separately from the values of any underlying items to which they are linked. (...) derivatives contracts are settled by payment of net amounts"*. For instance, premiums on options, forwards bought and sold, non-repayable margins for futures, interest received or paid on swaps are cash settled transactions; all of them are considered as "flows" according to the BPM6 methodology and should therefore be included within the balance of payments.

¹ In accordance with 2008 SNA Financial Instruments Classification, financial derivatives are made of "Forward Type contracts" that includes Swaps, and Options, deferring from Employee stock options (page 84)

These flows show the size of cross-border transactions but provide little information about the risks or benefits associated with such transactions. International Investment Position (IIP) provides more indication on the exposure of a country, in the sense that it shows derivatives contract position, i.e. stocks of derivative contracts, valued at their market value. An articulation of the variation of position is consequently possible, over a period of time. Some indication of the overall exposure is also produced, with the publication of notional amounts, split by currency. However, this overview of the country risk is somehow limited: for instance, neither risk transfer nor the exposure by underlying instrument is requested.

Locational banking statistics (also collected on social basis) should draw more or less the same picture, in which residential risk may also be distorted by intra-group activity that is, in some case, prominent, but so far the recommendation by a Study Group has not been implemented. A first discrepancy between those two sets of data should be underlined here: for the BOP and IIP, about 188 countries are reporting, whereas there are 44 countries reporting for LBS so far.

Although these data are rather homogeneous, the comparison of the different sets of derivatives contracts statistics shows that their approaches vary in concepts and scope; moreover, they proved to be not fully adequate for an overall exposure analysis. For this purpose, banks' consolidated exposures are precious.

Consolidated accounts as the global exposure picture of national banking groups

Discrepancies should be handled when comparing statutory and consolidated accounts. Obviously the perimeter is not the same as the residential criteria is replaced by the nationality criteria; accounting rules also differ (national GAAP vs. IFRS9, newly implemented from the beginning of 2018).

The BIS Consolidated Banking Statistics (CBS) gather valuable information on derivative contracts, on a consolidated basis, and on an immediate risk basis. Derivatives are included among the instruments of banks' funding without additional breakdown. Exposures are also declared on an 'ultimate risk' basis, the gross market value being netted in the case of bilateral agreements. Around 30 countries report for CBS, both on immediate and ultimate risk basis.

CBS data do not provide breakdown by instrument, maturity, currency or counterparty sector (only by counterparty country for ultimate risk). On the contrary, the OTC data collection does, which is very much welcome, though only with a restricted geographical breakdown. To be complete in the description of the derivatives data collections, the implementation of the phase 3 of the Data Gaps Initiative should provide interesting granular information, with crossed dimensions, though limited to the biggest banks (G-SIB).

The purpose of those various statistics is to increase market transparency and thereby help central banks, other authorities and market participants to better monitor activity in the global financial system. Guidelines from the IMF concerning the Balance of Payments and guidelines from the Bank for International Settlements and the Financial Stability Board are however not leaning towards the same purpose: synergies may prove difficult to materialize, as comparability is a challenge when trying to interpret the results.

Synergies between the various datasets of derivatives: the Banque de France experience in compiling data on financial derivatives

A specific organization in order to maximize quality and interpretation

All data collection enquiries that concern banks derivatives are concentrated within the same division of the Banque de France. This allows our analysts to get a comprehensive understanding of the methods and requirements of each data collection. This organization also facilitates the data quality check of the transmitted data.

As previously mentioned, the requested data vary significantly from one data collection to another, in terms of number of reporting entities, scope, periodicity or requested breakdowns. Some data collections are built for very specific table that should be compiled in the Balance of Payments or International Investment Position tables. For example we did not collect until recently overall exposure, i.e. notional amounts, split by foreign currency for instance.

We managed to solve part of this issue, by requesting more information than the basic components each data collection would need: comparisons are in this way facilitated. For instance, we asked, successfully, the financial intermediaries to declare on a voluntary basis the underlying assets for the balance of payments monthly data collection, which is very useful when trying to compare with biannual OTC data collection.

Our colleagues in charge of these data collections can therefore relate and compare movements within the same banking group or the same instrument family, over a comparable period. All in all, one way or another, all or most of the metrics, breakdowns, definition of reporting entities, frequencies, etc., are requested.

This allows us also to carry out analyses that prove to be accurate and useful in describing the derivative contracts markets. Highlights on market movements can be very precise, for instance on the overall evolution of the Credit Default Swaps market, that tended to shrink drastically (we're talking here of notional amounts) over the previous years. Another example would be the standardised Interest Rates Swaps market that is more and more centrally cleared, due to the implementation of a new regulation. However, sometimes, data collections overlap too partially to be comparable.

Many (too many?) sources of data collected for more or less the same goal

Some concepts differ too significantly in our data collections to allow for economies of scale. Progress could be made in this regard. For instance, the perimeters, could be the same for the balance of payments (BOP) / international investment positions (IIP) supervised by the International Monetary Fund (IMF), or for the International Banking Statistics reported to the Bank for International Settlements (BIS), as they are both trying to assess external vulnerabilities of countries.

In order to illustrate those annoying little discrepancies, let's take the example of the value of a derivative contract. Valuation methods matter less than the various metrics related the concept of "market value": the absolute sum or on a contrary a distinction of the absolute values can be expected in two different data collection, either with positive or negative replacement values; the market value can be netted with the same counterparty, or not, depending on what we ask for; or the market value can be required on a gross basis, or netted after legally enforceable netting (Phase 3 I to A of the Data Gaps Initiative), or netted after legally enforceable netting - Basel rules, but after taking account of legally enforceable bilateral netting agreements (CBS). In the end, although these concepts of market value are similar, that are not quite the same and not quite comparable.

Another example shows that the reporting population, i.e. financial intermediaries, may vary from 10 of the biggest banking group on a consolidated basis, up to 1.800 financial intermediary legal entities. Frequencies and metrics are also different from one reporting formular to another: as a central bank, we gather on a monthly basis transaction flows and on a quarterly basis also revaluation positions, market values and notional amounts for the needs of the balance of payments an international banking statistics; on a biannual basis, notional amounts and market values split underlying asset on a restricted panel of group for the so-called "OTC data collection"; and on a triannual basis pretty much the same information, but for a much larger range of financial intermediaries.

Those methodological mismatches are a path we could collectively go down in order to ease a more efficient way to collect data.

Possible way forward

Improvements in the reduction of datagaps are expected

Simplification and automatization of data processing will be a key driver of the statistical framework in the coming years, as computer science is more and more present in our day to day statistical work. Taking the best from the new information technologies, IT systems will allow to merge dissimilar information but also information coming from various sources. Yet it will remain difficult to handle correctly the different sets of data if they are not comparable from a conceptual point of view.

A clarified and harmonised set of concepts could prove very usefully in avoiding to fall through the net. In the matter, the progressive inclusion of derivatives in statistics by a growing number of countries will provide a global approach, more efficient in terms of allocation per country of derivatives books.

Sharing good practices should be fruitful

Collecting statistical data on derivatives contracts is difficult, but we improve everyday our knowledge on this field, in communicating back and forth with the financial actors present on these markets. They explain us the overall mechanisms as well as the recent trends and innovations on the market.

Our knowledge gets even deeper when we talk with our colleagues, from our institution but also from others. The exchange of good practices is indeed a fundamental element of our capacity to follow on a global basis the flows and the overall risk transfer between actors on this market. A coming European Task Force on the subject could lead to instructive results, in particular in terms of guidance on practical aspects, as different practises between countries may hamper the comparability and consequently reduce the usability of the data.

Improvements in the diffusion of the data

Data sharing between institutions, on a bilateral basis, is something that we do; but it is done most the time on good and services, and less frequently on financial flows, especially derivative. This usage should be encouraged: even if it is very much time consuming, results are in most cases very illuminating, in particular when talking of intra group transactions on derivatives.

Data sharing with researchers should also be promoted. But a specific work on the documentation of the concepts should first be done internally, and second among institutions, in order to improve international comparisons. The International Network for Exchanging Experience

on Statistical Handling of Granular Data (INEXDA) framework is one interesting solution, among others, to address this issue and promote the usage of granular data by researchers.



Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

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An assessment of the existing data collection framework and lessons for a roadmap¹

Hervé Thoumiand,

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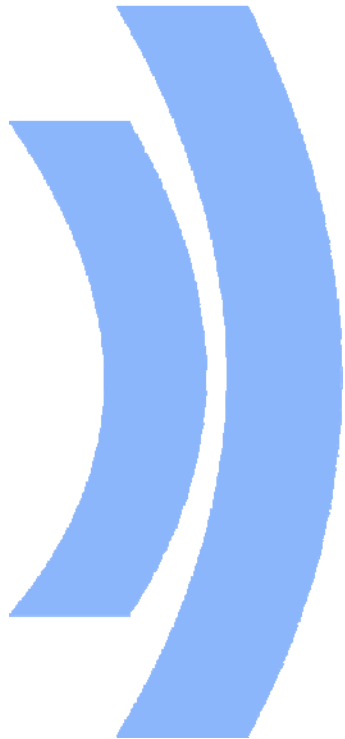
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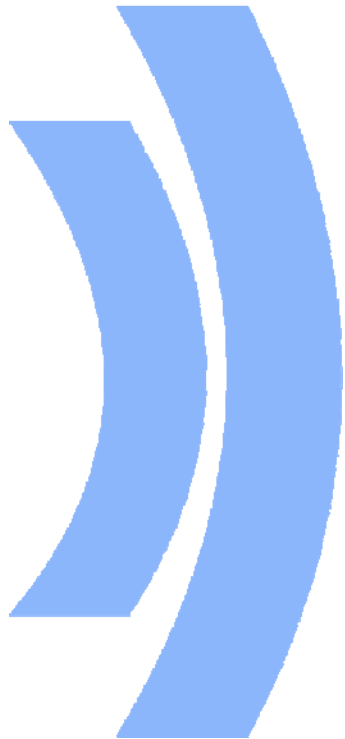
AN ASSESSMENT OF THE EXISTING DATA COLLECTION FRAMEWORK AND LESSONS FOR A ROADMAP

HERVÉ THOUMIAND
FINANCIAL INTERMEDIARIES DIVISION
BALANCE OF PAYMENTS DIRECTORATE
BANQUE DE FRANCE

F18-033 / JUNE 2018



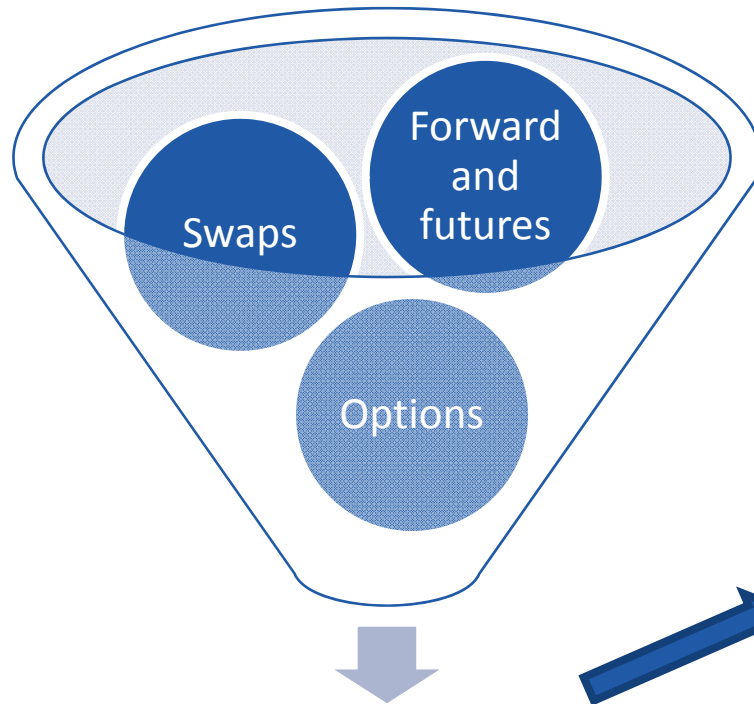
1. Existing framework for data collection on derivatives : a large variety of concepts and scopes
2. Synergies between the different datasets of derivatives : the Banque de France experience in compiling data on financial derivatives
3. Improvements are still to be made



- 1. Existing framework for data collection on derivatives : a large variety of concepts and scopes**
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0 – FINANCIAL DERIVATIVES DATA COLLECTION: WHAT IS ABOUT?



DERIVATIVES



Equity, Rates, Commodities,...



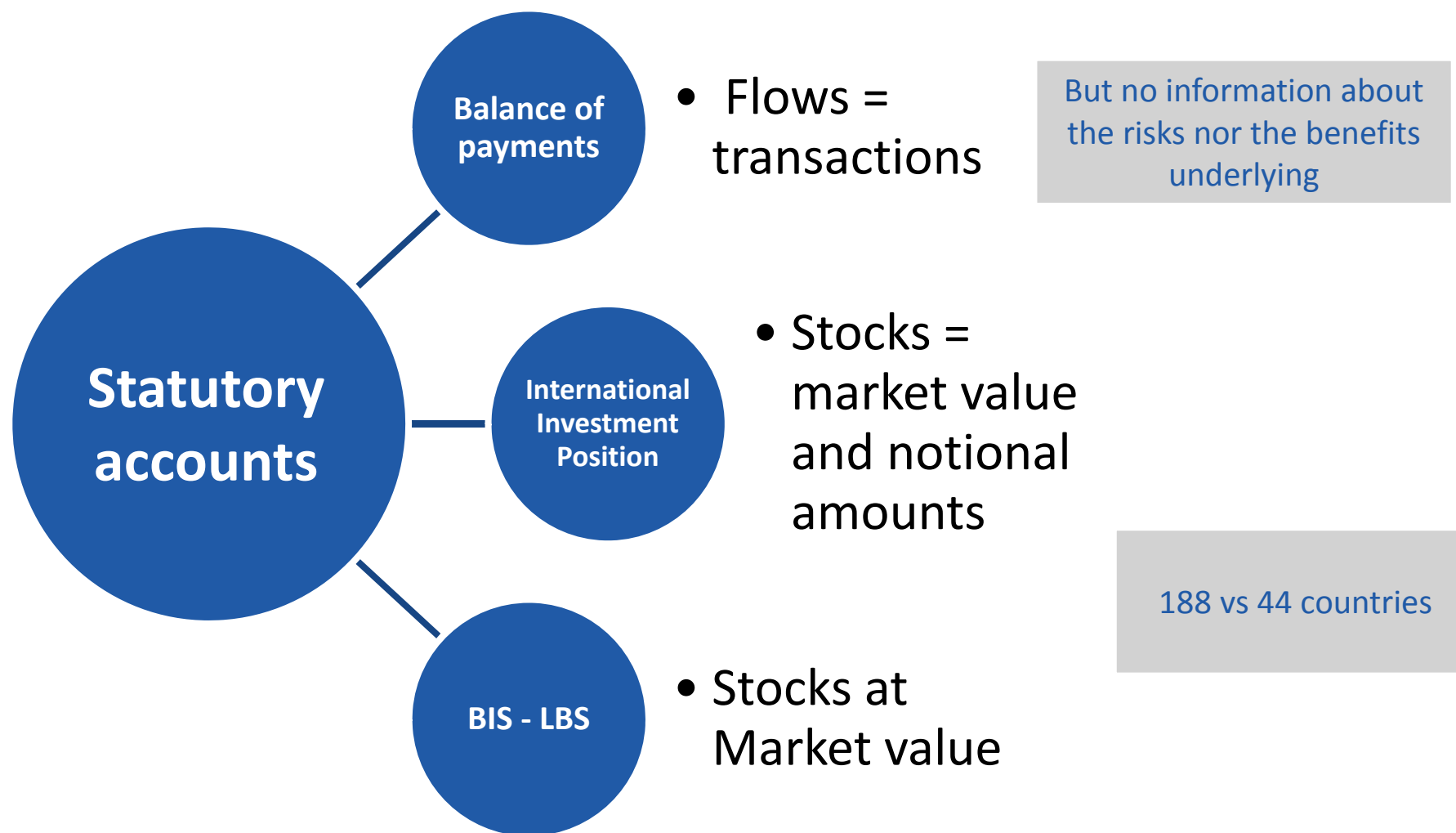
Geographical Breakdown



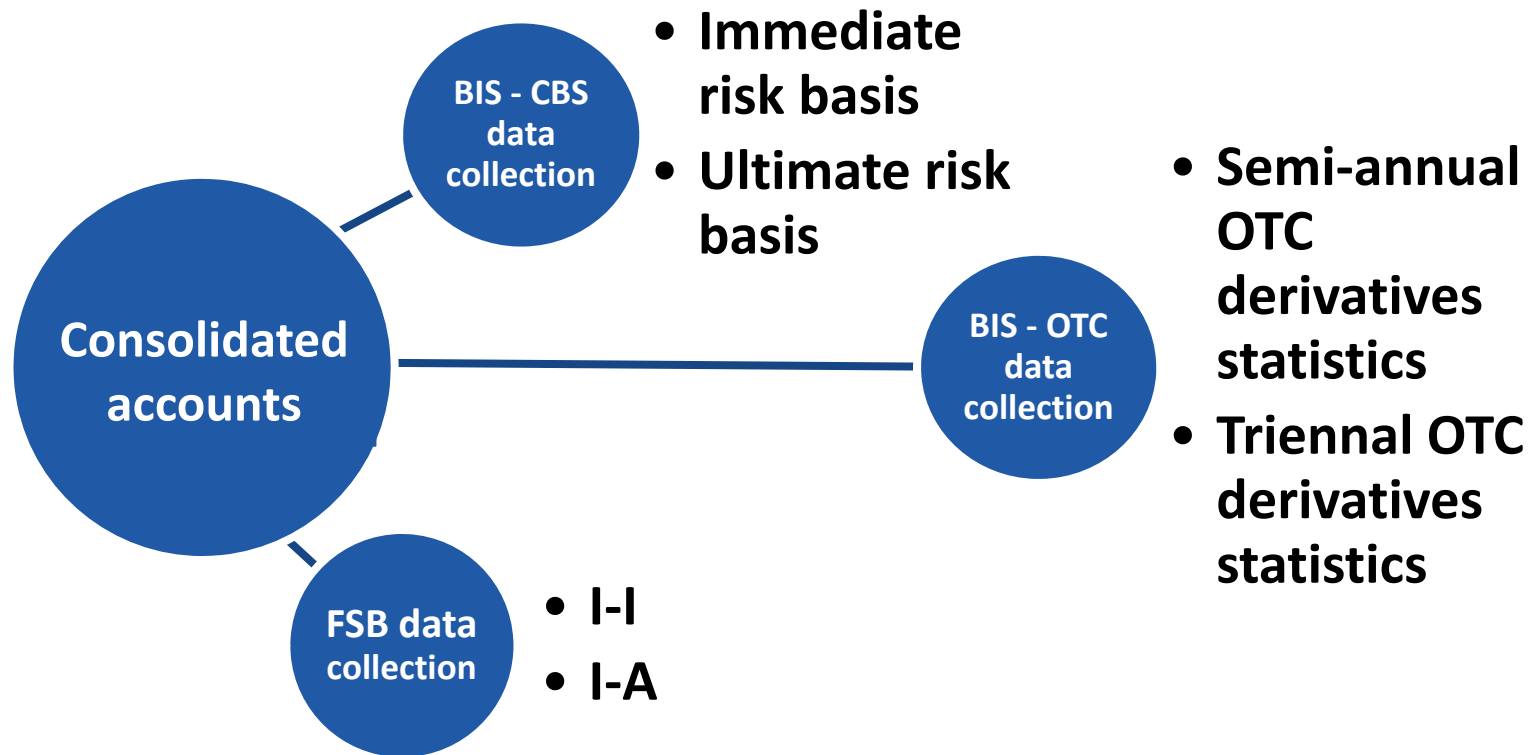
OTC and Organised markets

Comparison of the different sets of the derivatives statistics shows that the approaches vary in the concepts and scope

1 - EXISTING FRAMEWORK FOR DATA COLLECTION ON DERIVATIVES : VARIETY OF CONCEPTS AND SCOPE



1 - EXISTING FRAMEWORK FOR DATA COLLECTION ON DERIVATIVES: VARIETY OF CONCEPTS AND SCOPE



The objective of this reporting is “to obtain reasonably comprehensive and internationally consistent information on the size and structure of the OTC derivatives markets”



1 - EXISTING FRAMEWORK FOR DATA COLLECTION ON DERIVATIVES: VARIETY OF CONCEPTS AND SCOPE

■ On a consolidated basis :

– FSB – Institution-to-Institution “I to I”

- On a weekly submission, the transactions of derivatives receivable (assets) : net value market + CDS' notional values
- On a monthly submission, positions on the gross market value and notional amount + exposures on sovereign CDSs

– FSB – Institution-to-Aggregate “I to A” (Data gaps phase 3)

- On a quarterly basis, data on assets and liabilities on an immediate counterparty basis of which all derivatives (exchanged traded derivatives + centrally cleared OTC + bilateral/uncleared OTC derivatives) with a breakdown by instrument.
- Metrics : Gross fair values (MtM) + notional amounts to facilitate cross-country comparison



1 – FINANCIAL DERIVATIVES DATA COLLECTION: THE INTERNATIONAL GUIDELINES

The stages of implementation of the data collection, on a consolidated basis: the Recommendation II.6 on Derivatives

- BIS to review the derivatives data collected for
 - the International Banking Statistics (IBS) and
 - the semi-annual over-the-counter (OTC) derivatives statistics survey,
- the FSB to investigate the legal, regulatory, governance, technological, and cost issues that would support a future FSB decision on the potential development of a mechanism to aggregate and share at global level OTC derivatives data from trade repositories.



1 – FINANCIAL DERIVATIVES DATA COLLECTION: THE INTERNATIONAL GUIDELINES

The stages of implementation of the data collection, on a consolidated basis: the OTC Survey

- The objective of the reporting exercise is to obtain reasonably comprehensive and internationally consistent information on the size and structure of over-the-counter (OTC) derivatives markets.
 - June 1998 : a regular collection of statistics on derivatives
 - December 2011 : 13 reporting countries.

=> Increase market transparency and thereby help central banks, other authorities and market participants to better monitor patterns of activity in the global financial system.

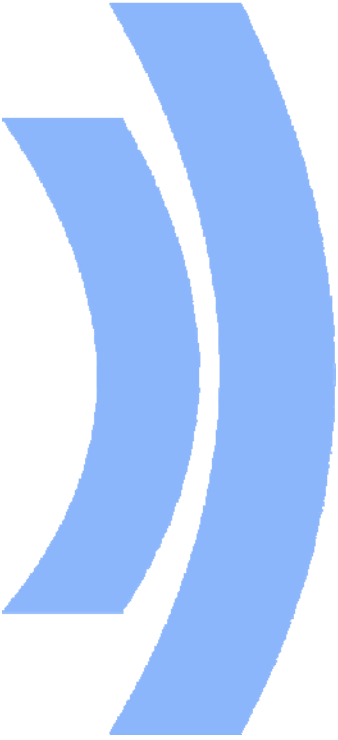


1 – FINANCIAL DERIVATIVES DATA COLLECTION: THE BOP GUIDELINES

The stages of implementation of the data collection, on a statutory basis:

- 2011: a new and specific survey
 - ✓ Market value and reappraisal of the instruments = on a monthly basis

- 2015 – 2017 : enhancements in the data collection
 - ✓ Underlying instruments = on a monthly basis
 - ✓ Stocks data = on a quarterly basis
 - ✓ Notional values = on a quarterly basis

- 
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2 - FINANCIAL DERIVATIVES DATA COLLECTION: THE FRENCH EXPERIENCE

- The existing data vary significantly from one data collection to another :

		Phase II DGI				Phase III DGI
		CBS (quarterly)	OTC Survey (semi annual)	OTC Survey (triennial)		I-A
Perimeter	Entity	Consolidated	Consolidated	part 1: Statutory (turn over)	part 2: Consolidated (amount outstanding) (same as semi-annual OTC survey on a population extended) For the regular , same Template than the semi-annual, li for the nc	Consolidated
	Number of Entities	7 banking groups FR + 3 non-FR	8 banking groups FR	42 Locationnal banks (in 2016)	Regular reporting C regular (
Metrics	Gross Notional Amounts	No only for the CDS held in the banking book	Yes	Yes, pre-novation in april	Yes	
	Gross Fair / Market Value (Stocks)	No Net market value, after legally enforceable netting and bilateral netting agreement (basel rules) both in the banking and the trading book	Yes, Gross Fair value reported post novation = id est (CCP usage)	No	Yes, Gross Fair va novation = id est (CCP usage)	= compensation of assets and liabilities
	Transactions = Margin call, premium (Flows)	No . Immediate Risk: liabilities (if MV<0) . Ultimate Risk : assets (if MV >0 and	No	No	No	No
	Gross Credit Exposure	No	Yes = Derivatives-related counterparty exposures before and after netting arrangements (except CDS)	No	No	No
	Reappraisal	No	No	No	No	No
Breakdown by	market type	Assets: OTC Liabilities: OTC and organised markets	OTC only (incl. Compensated)			Exchange-traded derivatives / Centrally cleared OTC derivatives /Bilateral-uncleared OTC derivatives + sub-categories
	instruments	No	Swaps, Futures/Forwards, Options	Swaps, Futures/Forwards, Options	Swaps, Futures/Forwards, Options, single name or multiline CDS	No
	currency	No	USD, EUR, JPY, GBP, CHF, CAD, SEK and other currencies, in USD equivalent	USD, EUR, JPY, GBP, CHF, CAD, SEK and other currencies, in USD equivalent	24 currencies for FX and 38 currencies for Interest rates	USD , EUR , JPY , GBP , CHF, CNY + other
	residual maturity	No	- one year or less - over one year and up to five years - over five years	- seven days or less - over seven days and up to one year - over one year	- one year or less - over one year and up to five years - over five years	overnight and less than 3 months/ 3 months and less than 1 year / 1 year and over / unknown
	counterparty sector	No	reporting dealers, other financial institutions (and of which CCPs) and non-financial customers	reporting dealers, other financial institutions and non-financial customers, all declined by local/crossborder	reporting dealers, other financial institutions (and of which CCPs) and non-financial customers	No
	underlying asset	No	t rates, equity, Gold, commodity, Credit	Yes (FX, interest rates, equity, Gold, commodity, Credit derivative)	Yes (FX, interest rates, equity, Gold, commodity, Credit derivative)	Yes
	country counterparty	Only for ultimate risk	Yes	No	yes	No

all or most of the metrics, breakdowns, definition of reporting entities, frequencies...are requested



2 - FINANCIAL DERIVATIVES DATA COLLECTION: THE FRENCH EXPERIENCE

Structure and reporting framework

- ❑ **Reporting population** : financial intermediaries (FI): up to 1800 !

- ❑ **Frequency and metrics:**
 - ✓ Monthly: Transactions and Revaluations (other changes in assets and liabilities) of a sample of the main FIs.

 - ✓ Quarterly: Notional amounts, fair value, transactions and stocks (reported in market value) of a sample of the main FIs.

 - ✓ Annually: Stocks of all the others FIs.

Nota Bene : We asked, successfully, the FI to declare on a voluntary basis the underlying asset

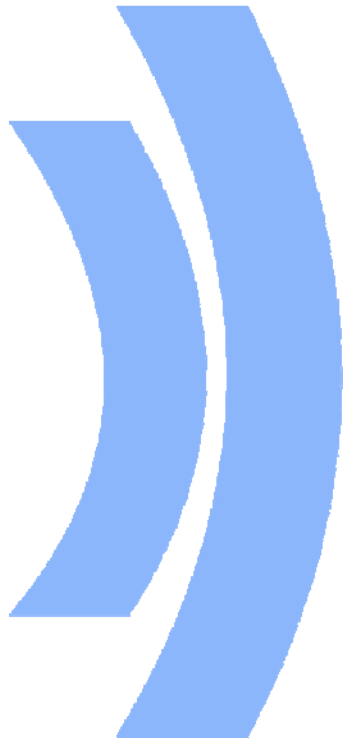


2 - FINANCIAL DERIVATIVES DATA COLLECTION: THE FRENCH EXPERIENCE

Structure and reporting framework

☐ Breakdown by :

monthly flows	<ul style="list-style-type: none">- currency- type of market (OTC or organized markets)- instrument (swap, future, forward, option)- counterpart country- underlying- the direction of the flow (increase or decrease of assets or liabilities)
quarterly stocks	<ul style="list-style-type: none">- currency- type of market (OTC or organized markets)- instrument (swap, future, forward, option)- counterpart country- underlying



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3 – IMPROVEMENTS ARE STILL TO BE MADE

- In the collection of data
 - LBS dataset should be a part of the overall framework
 - Enhancements to the CBS on immediate risk basis :
 - Metrics should cover a wider range of concepts
 - Case of the “market values”
- In the diffusion of the data
 - Between institutions
 - To searchers
- In the documentation of the concepts in order to improve international comparisons