



# Derivatives data at Banco de Mexico: Its structure and uses

Session: Central Bank Sources and Uses of Derivative Statistics

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BANCO DE MÉXICO

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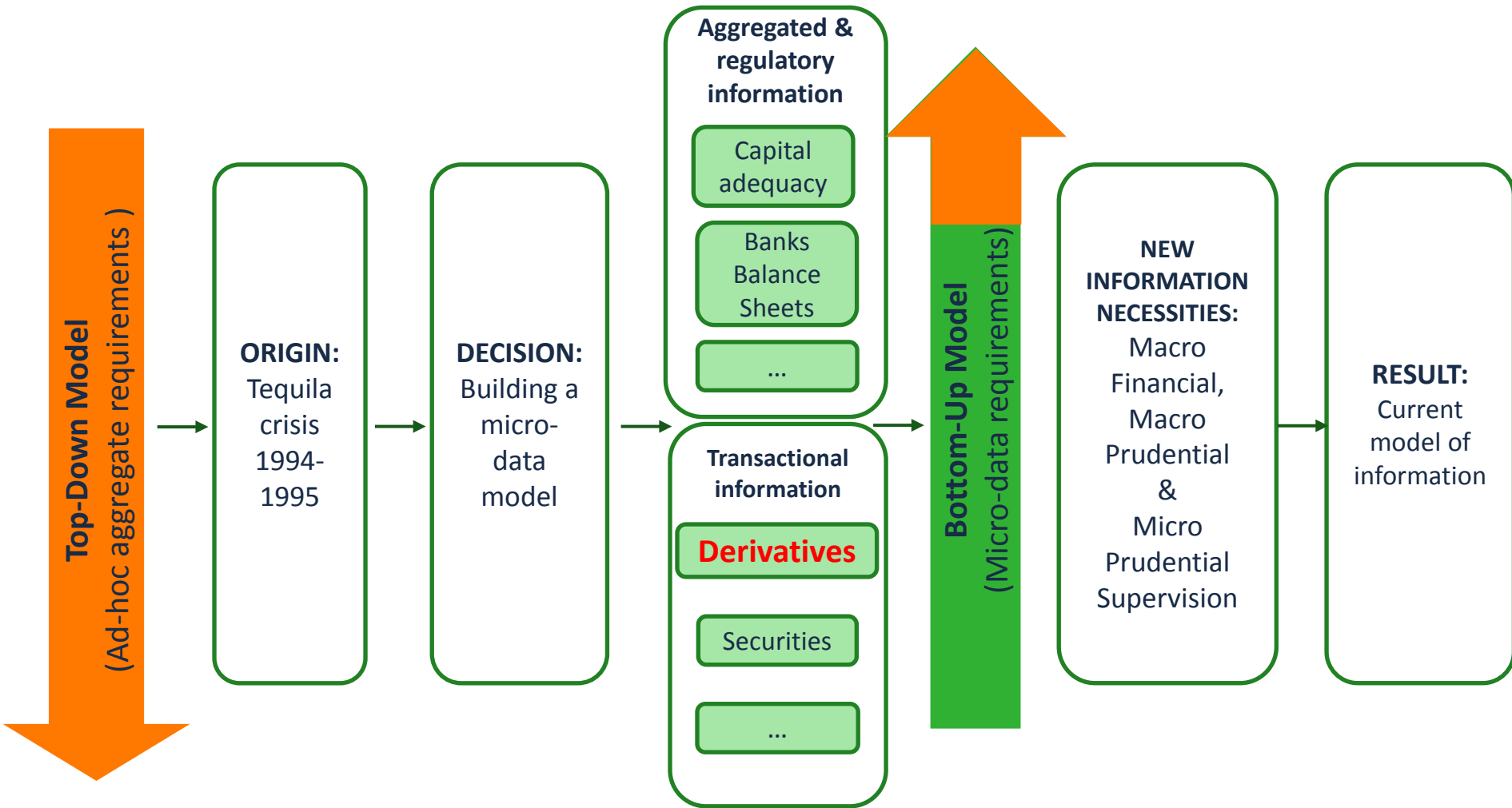
# Disclosure

***The views and conclusions presented here are responsibility of the author and do not necessarily reflect those of Banco de Mexico.***

# Introduction

- The global financial crisis of 2008 unveiled weaknesses in the task of financial authorities to identify and monitor risks undertaken in derivatives market. In some countries, OTC derivatives market instead of mitigating risks, contributed to its propagation, particularly by increasing uncertainty of risk positions and the lack of information of these transactions and its counterparties involved.
- To contribute in mitigating these risks, the G20 has promoted some international initiatives. Particularly in derivatives market, promoted the initiative that all OTC derivative transactions shall report to trade repositories (TRs), providing to financial authorities a new set of data for risk monitoring and research.
- On this matter, Banco de Mexico has been collecting daily all derivatives transactions traded by banks and brokerage houses in both OTC and Exchanges, for more than ten years .

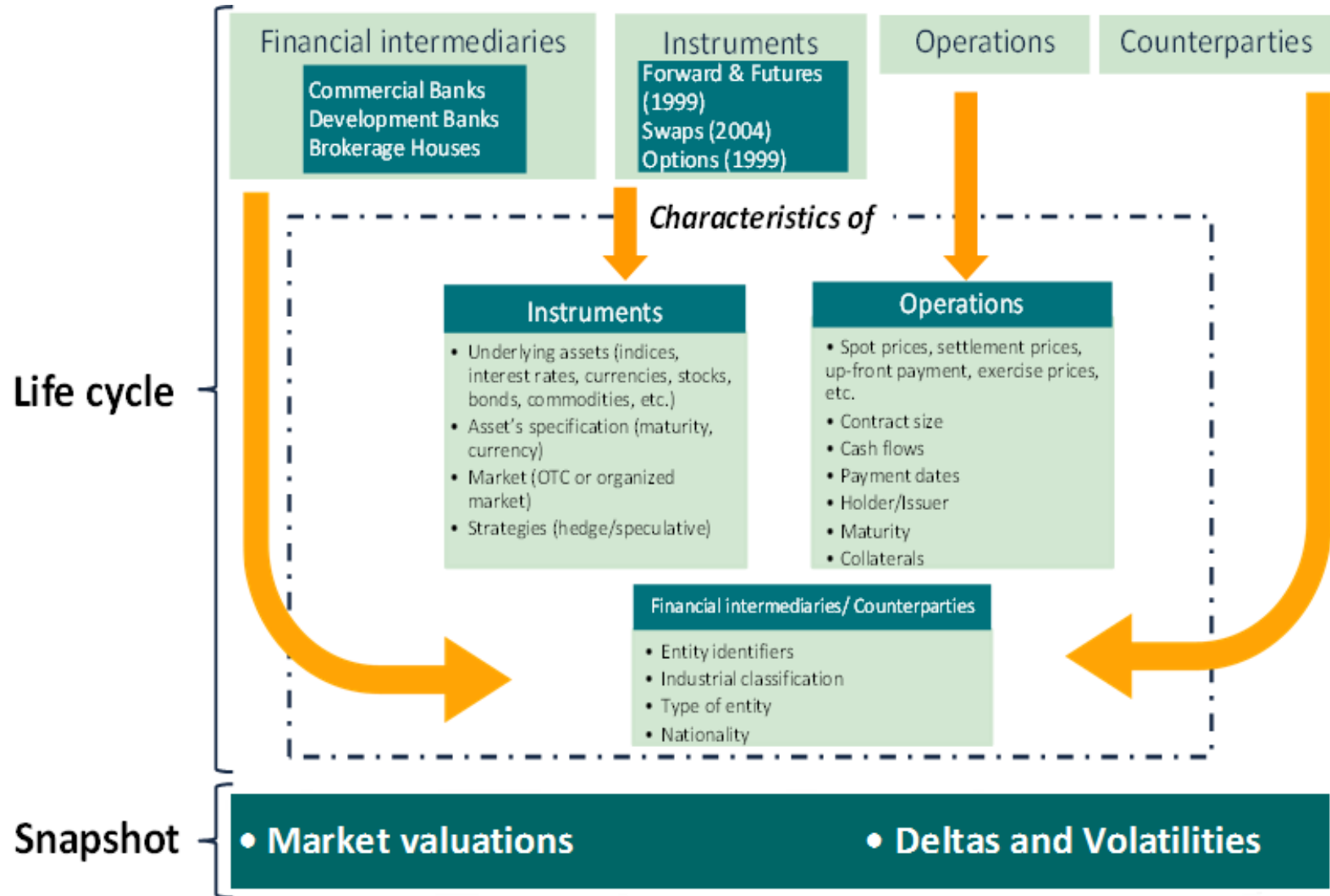
# Financial Information Model: Derivatives



# Financial Information Model: Derivatives

- Banco de Mexico has a wide coverage in derivatives transaction information, just missing trades of unregulated financial institutions and the transactions of nonfinancial entities with foreign counterparties.
- The daily data collected includes the information of all terms in the trade date and all changes in the life cycle of every transaction, including characteristics of the instrument, the underlying, counterparties, collaterals, among others. In addition, there is a snapshot collection that includes characteristics as the market valuation and “deltas” (in the case of options) of all outstanding transactions in a monthly (weekly from October onwards) basis.
- This richness of data and the data management allows Banco de México to perform the function of Trade Repository (TR) for these transactions.

# Financial Information Model: Derivatives



# Uses of the Data

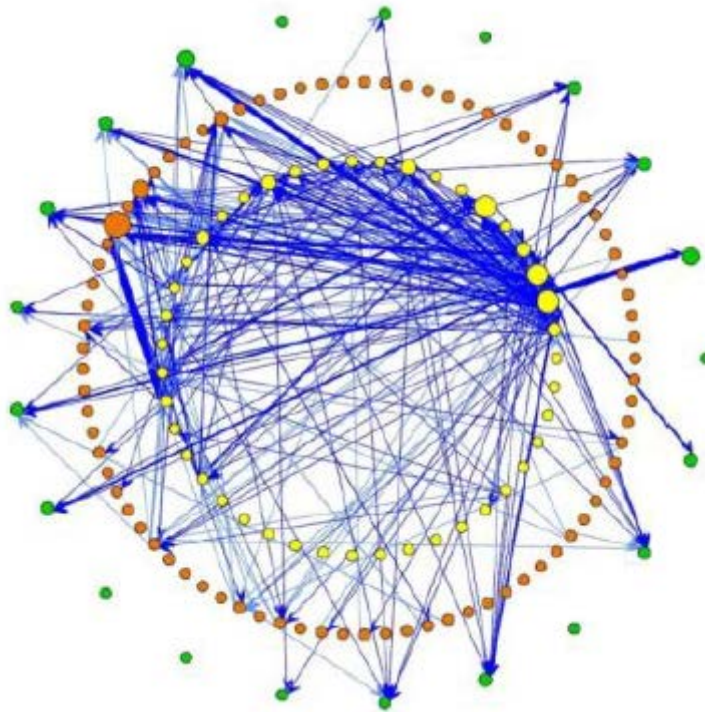
- Micro-data on derivatives in Banco de Mexico, have different uses, mainly of market surveillance and financial stability:
  - Monitoring the functioning of the market and compliance of regulation;
  - Detailed of all derivatives transactions involved in the regulatory framework of Capital Adequacy Ratio and Liquidity Coverage Ratio requirements, FX positions and currency and maturity mismatches, among others;
  - Analysis of credit risk, which considers all risk positions of a given financial institution with its counterparties; and
  - Analysis of market risk of the portfolio of financial institutions by type of instrument and underlying.



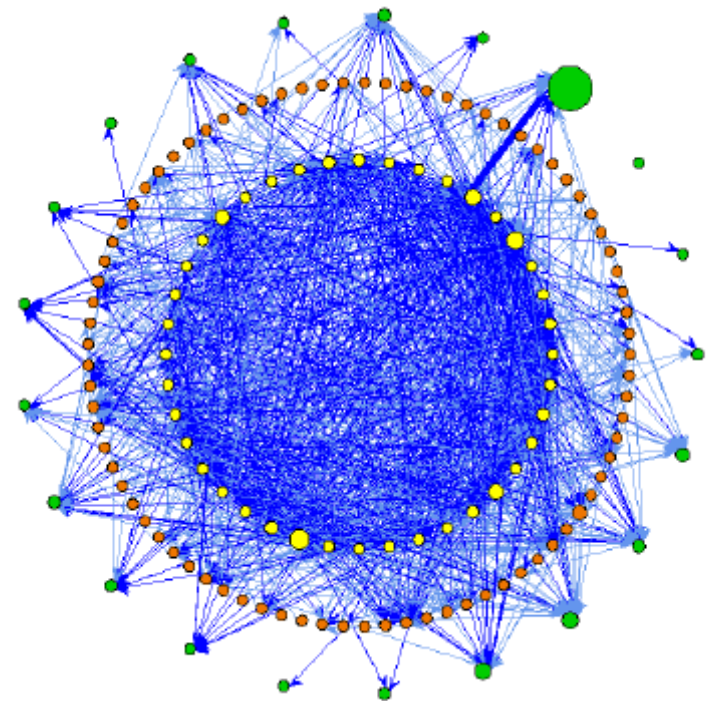
# Uses of the Data: Systemic Network Contagion

- Also richness of micro-data has allow developing models for analyzing systemic risk arising from the network of daily exposures.

Exposures in Derivatives



All Interfinancial Exposures



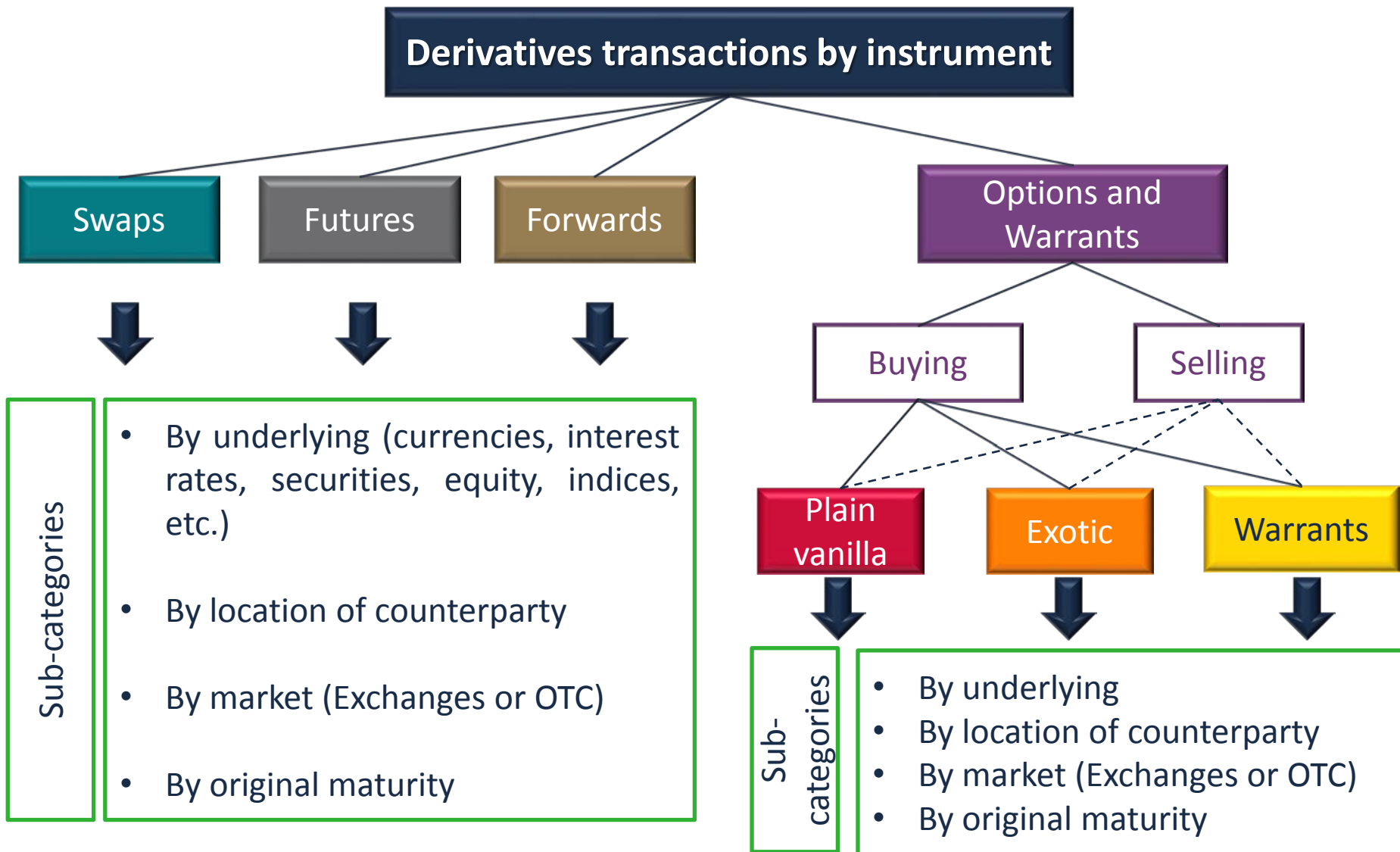
Inside circle (●) Banks; middle circle (●) Pension and Investment Funds; outside circle (●) International Banks.  
Arrows represents **expositions** **exposures** between institutions.



# New Statistics on Derivatives to be published

- Nonetheless, the generation of statistics using this information has been underdeveloped.
- Demand for information of derivative market has increased, after the shrinkage that these trades with the 2008 crisis and the recent recovery and change in composition towards OTC trades.
- The change in regulation on these markets has increase the need of public information.
- Banco de Mexico has a project of generating new statistics to increase market transparency and to improve monitoring of these markets and institutions. The first phase (turnover) includes a set of daily statistics for period January 2007 to 2015.
- Turnover and outstanding operations statistics are organized, firstly, by instrument and then a breakdown by: i) underlying assets, ii) characteristics of the counterparty, iii) type of market and iv) original maturity.

# Structure of derivatives turnover traded by banks and brokerage houses (Exchanges and OTC)



# Classification of data series on turnover of derivatives traded by banks and brokerage houses (Exchanges and OTC)

## ➤ By instrument and underlying

Underlying	Swaps	Futures	Forwards	Options (plain vanilla)	Exotic Options	Warrants
Interest rates	✓	✓	✓	✓	✓	✓
Equity or Indices		✓	✓	✓		
Debt securities		✓	✓	✓		
Currencies		✓	✓	✓		
Commodities		✓	✓	✓		
Other derivatives					✓	
Others	✓	✓	✓	✓	✓	✓

## ➤ By location of counterparty and Market

### - Counterparties with Mexico residence

- Financial entities
- Non-financial entities

### - Counterparties with foreign residence

- Financial entities
- Non-financial entities

## ➤ By original maturity

### In days

From 1 to 7	From 1,097 to 1,461
From 8 to 31	From 1,462 to 1,827
From 32 to 92	From 1,828 to 2,557
From 93 to 184	From 2,558 to 3,653
From 185 to 366	From 3,654 to 5,479
From 367 to 731	From 5,480 to 7,305
From 732 to 1096	More than 7,306

# Banks and Brokerage Houses Derivative Positions

## TYPE OF POSITIONS

Long Position

Short Position

Net Position

## DERIVATIVE INSTRUMENTS

Swaps

Futures and Forwards

Options and Warrants

## CLASSIFICATION OF DATA SERIES

### I. Underlying Assets

Interest rates

Securities

Equity

Stock Price Indexes

Others

### III. Currency

Domestic (MXP)

Foreign (FX)

#### With Mexico residence

- Financial entities (Commercial Banks, Pension Fund, MexDer)
- Non Financial entities (Enterprises, Persons)

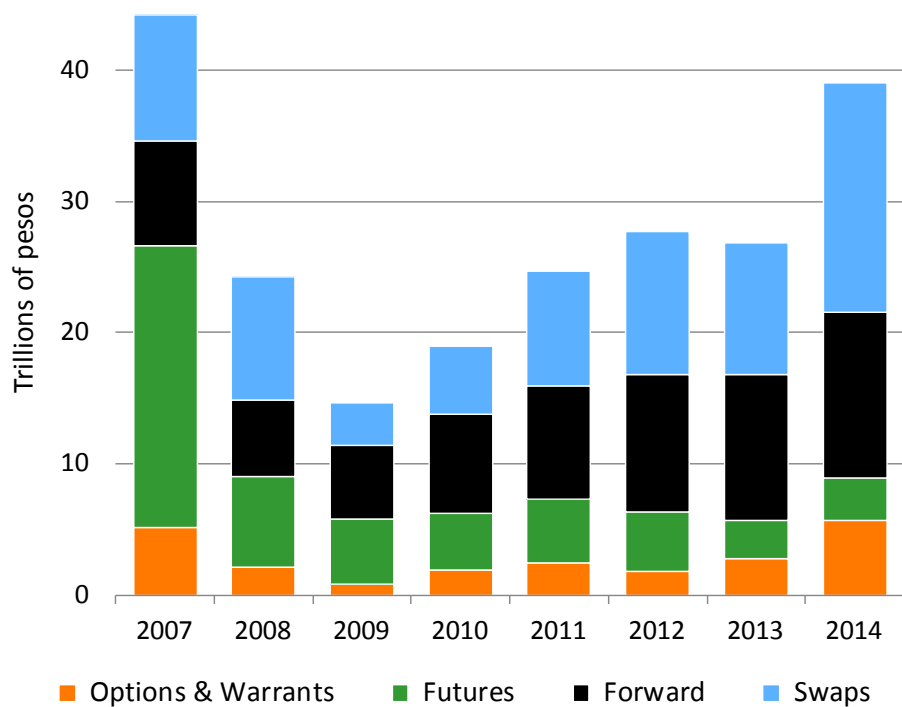
#### With foreign residence

- Financial entities (Commercial Banks, Exchange Markets)
- Non Financial entities (Enterprises, Persons)

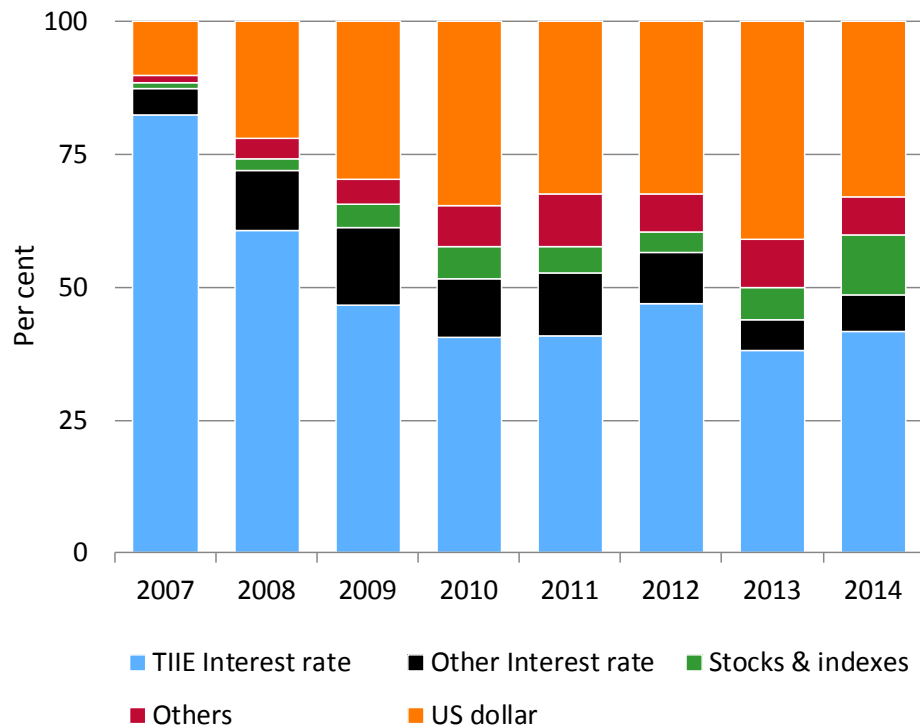
### II. Counterparty

# Derivatives turnover (Banks and Brokerage Houses)

## By instrument

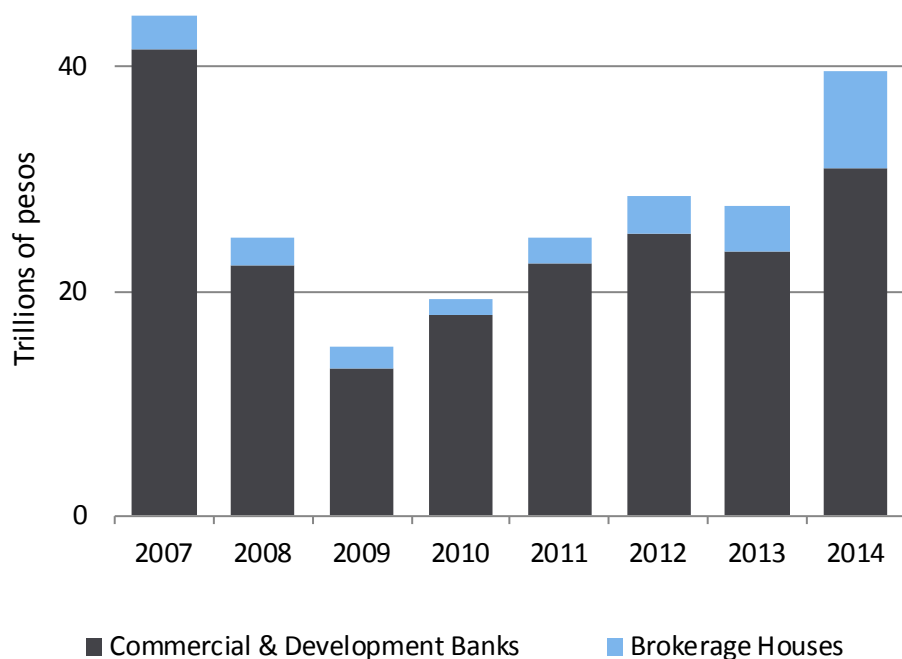


## By type of underlying

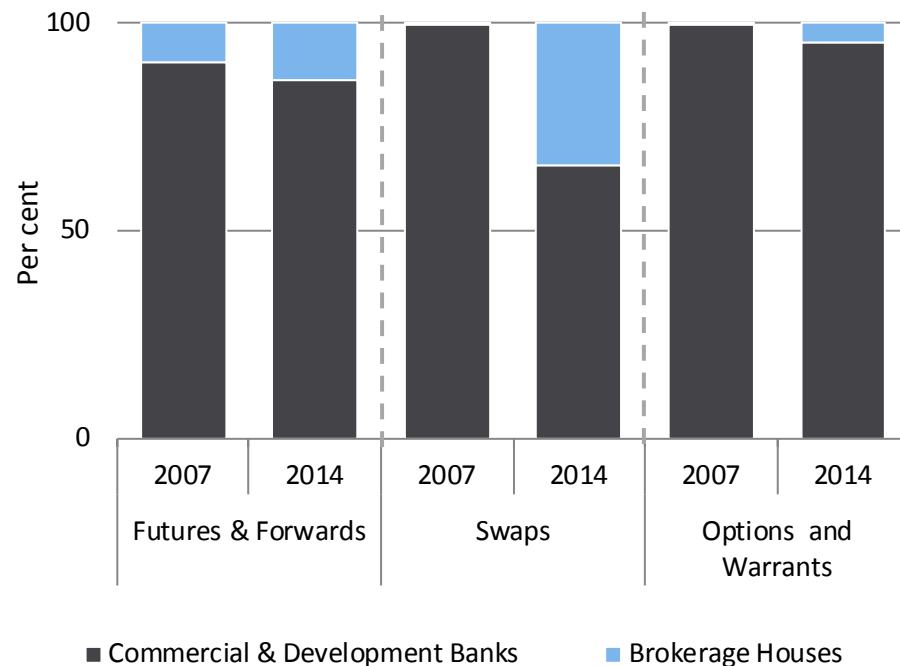


# Derivatives turnover (Banks and Brokerage Houses)

## By type of financial institution

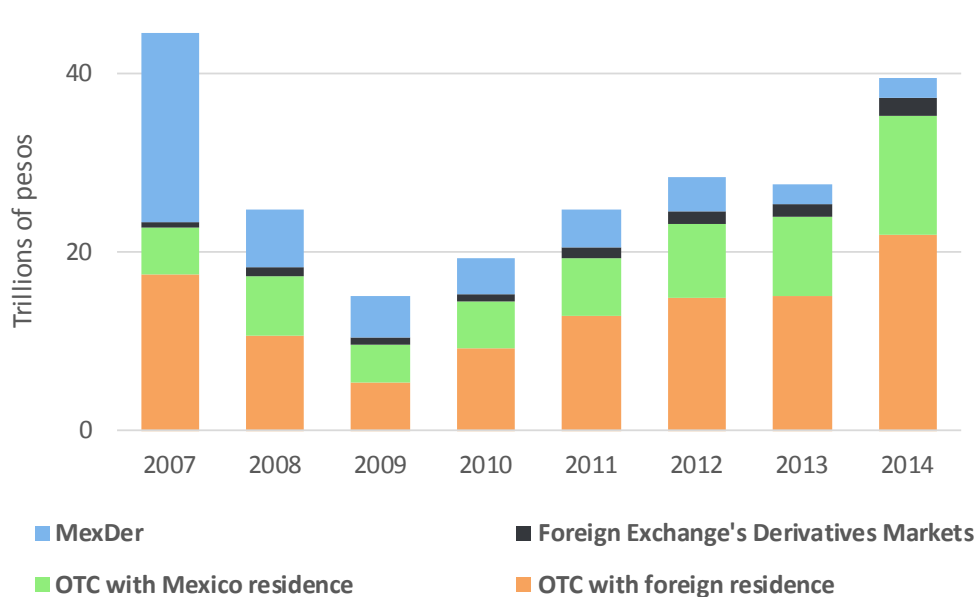


## By instrument and financial institution

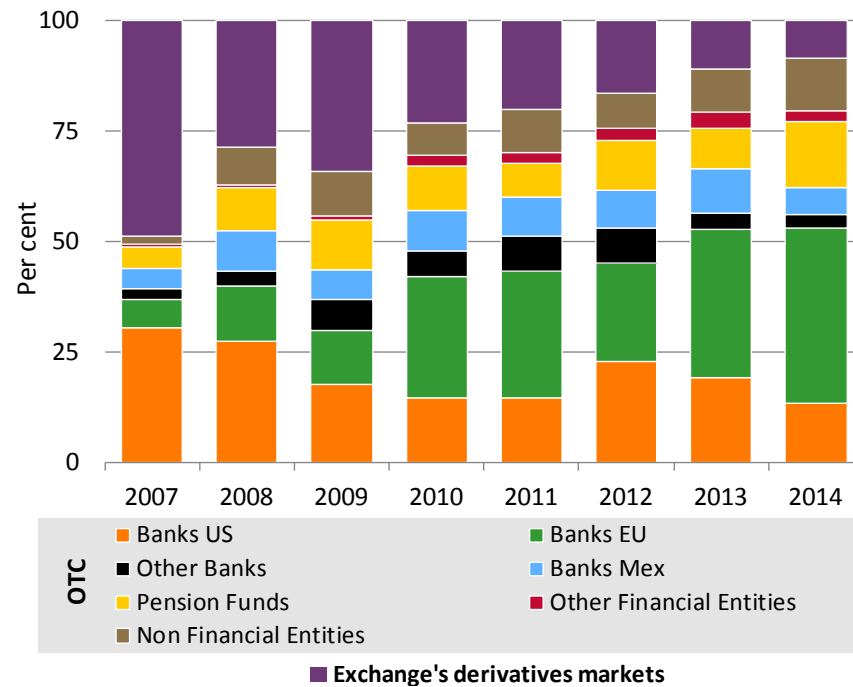


# Derivatives turnover (Banks and Brokerage Houses)

## By type of market



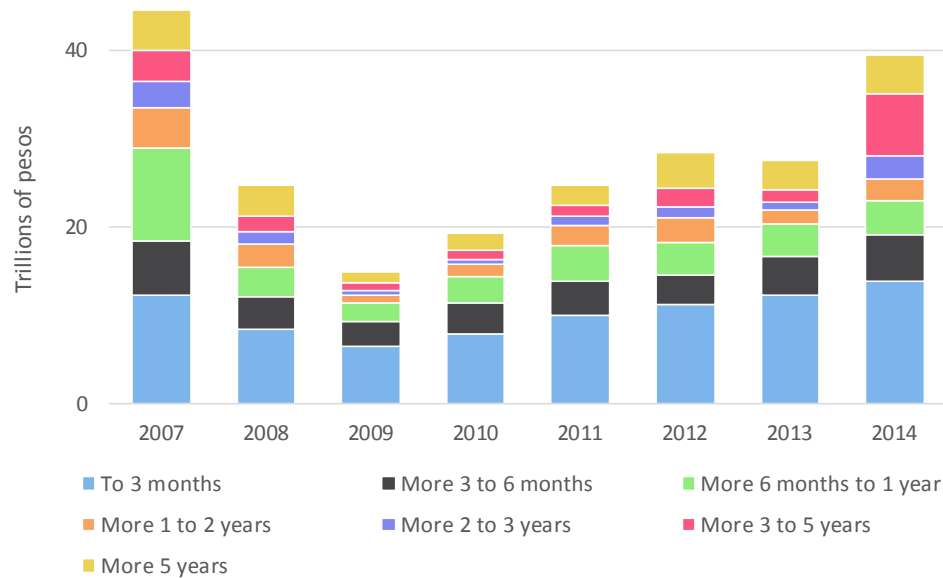
## By type of counterparty



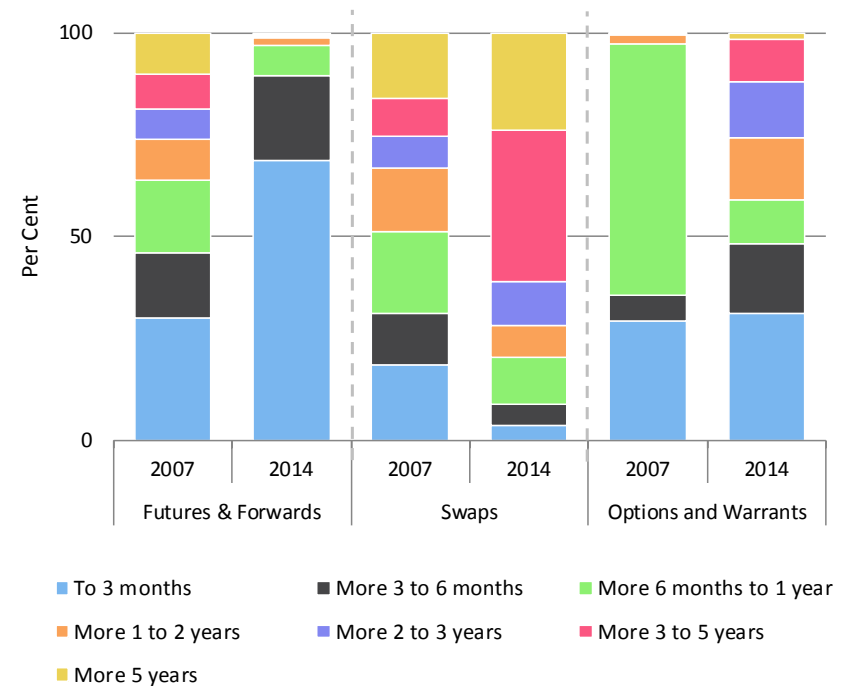


# Derivatives turnover (Banks and Brokerage Houses)

## By original maturity



## Instruments by original maturity



# Final Remarks

- Micro-data on derivatives and other financial instruments, provides flexibility to generate information required for different users in central banks and by market participants and analysts.
- In the case of Mexico, complete information on exposures of financial institutions to all derivative markets, allows the development of innovative network analysis, among other financial stability uses.
- With the new derivative statistics it is possible to improve the knowledge of this market, monitoring market changes, determine aggregate exposures by sectors and improve transparency for all market participants.
- With the establishment of TRs in the main economies, information on derivatives will become widely available, reducing risks and improving the analytical capabilities of central banks and other financial authorities.



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