Uses and classification of financial information: A Map of Financial Information
1ra. Reunión del Foro de Información Financiera. CEMLA

June 2015
Introduction

Financial Information in Central Banks

Traditional Monetary and Price Stability

\[ MD(i) = MS(i) \]
 Monetary Aggregates

\[ AD(p) = AS(p) \]
 Credit Aggregates
 Balance of Payments
 Flow of Funds

Interest Rate Curve
 Relevant Interest Rates

Exchange Rate Information
 Nominal Exchange Rates
 Real Exchange Rates

Market Monitoring

Micro Prudential Supervision

Item-by-Item
 Life Cycle

Risk Positions
 Snap Shot

Aggregated
 Detailed Info
 Micro Data
Introduction

ORIGIN: Tequila crisis 1994-1995

DECISION: Building a high granularity model

RESULT: Current model of information

Aggregated & regulatory information
- Capital adequacy
- Banks Balance Sheets
- ...

Transactional information
- Derivatives
- Securities
- ...

Top-Down Model

Bottom-Up Model
## Introduction

### Financial Information Model

Collected by BANCO DE MEXICO, directly from the institutions: Commercial banks, development banks, brokerage houses, exchange houses, other regulated financial entities.

Other financial authorities (CNBV, CNSF, CONSAR), price vendors, securities depository, credit card switches, exchanges, etc.

<table>
<thead>
<tr>
<th>Microdata (Transactional or very detailed information)</th>
<th>Aggregated (Granularity according to the type of information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>Financial Products and Services</td>
</tr>
<tr>
<td>Foreign Exchange Ops.</td>
<td>Ratings, prices, indices, interest rates, economic and</td>
</tr>
<tr>
<td>FX Claims and Liabilities</td>
<td>financial variables and risk factors</td>
</tr>
<tr>
<td>Derivatives</td>
<td>Demand deposits</td>
</tr>
<tr>
<td>Securities (Repo / Buy – Sell / Security Lending)</td>
<td>Capital adequacy</td>
</tr>
<tr>
<td>Interbank Loans</td>
<td>Regulated intermediaries’ financial statements</td>
</tr>
<tr>
<td>Time Deposits</td>
<td></td>
</tr>
<tr>
<td>Credit &amp; debit card transactions (switches)</td>
<td></td>
</tr>
<tr>
<td>Pension and Investment funds' investment portfolio</td>
<td></td>
</tr>
<tr>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>Commercial loans</td>
<td></td>
</tr>
<tr>
<td>Mortgages</td>
<td></td>
</tr>
<tr>
<td>Equities holdings</td>
<td></td>
</tr>
<tr>
<td>Credit bureau</td>
<td></td>
</tr>
<tr>
<td>Bi-monthly</td>
<td></td>
</tr>
<tr>
<td>Consumer loans (credit card, auto, personal, wage, etc.)</td>
<td></td>
</tr>
<tr>
<td>Quaterly</td>
<td>Retail payment systems</td>
</tr>
</tbody>
</table>
Introduction

• Richness of micro-data without a clear vision of an integrated model resulted in a case-by-case response to users’ requests.

• In addition, in recent years the extraordinary increase in new data requirements has forced a revision of the model since it has become evident:
  • Duplicated information (mainly transformations),
  • Outdated classification guidelines for data dissemination,
  • Unexplored high potential of relevant new information from available data,
  • Difficulty to fill some data gaps, because of rigidity and heterogeneity in the design and structure of information,
  • Partial adoption of international standards,
  • Opportunity to increase standardization (counterparties, financial products, transactions, etc.).
Introduction

• A way to tackle some of these needs is to improve the structure and classification of information with a sort of a...

When lost in the dark
Or lost in the sky
Always look for a...
Agenda

• Information Map

• A simple example of use

• Final remarks
Information Map

“A representation usually on a flat surface of the whole or a part of an area” (Webster Dictionary).

“A symbolic depiction highlighting relationships between elements of some space” (Wikipedia).

• Building a map needs to identify the relevant “dimensions” of information, those dimensions would define its “axes” (scope).

• Using data warehousing definitions, a dimension is: i) a collection of reference information about a measurable event; or, ii) a structure that categorizes facts and measures in order to enable users to answer business questions.
Information Map

• Dimensions are data sets of the same class composed of individual, non-overlapping data elements. They have as primary functions:
  • Provide filtering,
  • Grouping, and
  • Labelling.

• In our case, relevant measurable events are financial transactions. The different elements and characteristics of financial transactions are candidates for dimensions, for example:
  • Markets,
  • Instruments,
  • Characteristics of the **parties**, 
  • Financial characteristics.

• Other kind of relevant dimensions are:
  • **Uses** of information, and
  • **Data attributes.**
Information Map

Simple Representation of an Information Map: Conceptual Elements

Uses of information
- Parties
  - Nationality
  - Residence
  - Economic sector
  - Institutional sector
  - ...

Financial information
- Financial characteristics
  - Currency
  - Original term
  - Residual term
  - Yield
  - ...

Markets & instruments
- Equities
- Credit cards
- Derivatives
- Deposits
- ...

Frequency
Opportunity
Aggregation

First draft of dimensions related to:

Cost of financial services
Financial supervision
Risk microfinancial
Risk macroprudential
Macroeconomic analysis
Regulatory compliance
Information Map

To

Classify:
- Information available
- Potential information

Structure:
- Information requirements
- Data bases
- Catalogues
- Products

Identify:
- Relations
- Attributes
- Hierarchies
- Duplicity of information
- Product Inputs
- Needs and gaps

Useful to:
- Identify new needs
- Identify existing opportunities
- Improved information classification
- Identify information duplicities and discrepancies in catalogs
- Improved dissemination and information searching
- Refine and standardize

Increased efficiencies in the design of new requirements
Increased the value of existing information
Improved dissemination and information searching
Refine and standardize
Information Map

- Improvement in the management of catalogues...

Structure:

Catalogs

Useful to:

Identify information duplicities and discrepancies in catalogs

Refine and standardize

Financial information classified by Market

Credit Market

Derivatives Market

Foreign Exchange Market

Debt Securities

Collateralized Funding

Capital Market

International Standards

Master Catalogs Hub

Financial information classified by Sector

Banks

Private Nonfinancial Institutions

Central Government

Households

Other Depository Institutions

Other Financial Intermediaries

Master Catalogs

Households

Central Government

Other Depository Institutions

Other Financial Intermediaries

Master Catalogs

International Standards

Master Catalogs Hub

Capital Market

Collateralized Funding

Debt Securities

Foreign Exchange Market

Derivatives Market

Credit Market

Financial information classified by Market

Structure: Useful to: Refine and standardize
A simple example of use

**Conceptual Formulation**
- Dimensions
- Classes
- Relevant crosses
- Relevant uses
- Data attributes
- Standardization
- ...

**Banco de Mexico Experience**
- Regulatory templates
- Inventory of transformations and information products
- Catalogs
- Other metadata
- Banxico uses
- ...

**International Experiences**
- FIBO
- IOSCO/CPSS/CFTC/ESMA
- ISDA
- Data repositories WG
- ISO
- GLEIS
- ...

---

A simple example of use
A simple example of use

Cross dimensions: Market

<table>
<thead>
<tr>
<th>Rest of dimensions</th>
<th>Anchor dimension: Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data attributes</td>
<td>Foreign Exchange</td>
</tr>
<tr>
<td>Parties attributes</td>
<td>Debt Securities</td>
</tr>
<tr>
<td>Financial</td>
<td>Interbank Funding, Public</td>
</tr>
<tr>
<td></td>
<td>Funding and Time Deposits</td>
</tr>
<tr>
<td></td>
<td>Commercial Credit</td>
</tr>
<tr>
<td></td>
<td>Credit Cards</td>
</tr>
<tr>
<td></td>
<td>Other Consumer Credits</td>
</tr>
<tr>
<td></td>
<td>Derivatives</td>
</tr>
</tbody>
</table>

...
A simple example of use

Data gaps and cross dimensions: Derivatives Market

<table>
<thead>
<tr>
<th>Anchor dimension: Derivatives market</th>
<th>Negotiated in:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exchange markets</td>
</tr>
<tr>
<td></td>
<td>Futures</td>
</tr>
<tr>
<td>Data attributes</td>
<td></td>
</tr>
<tr>
<td>Micro data</td>
<td>✓</td>
</tr>
<tr>
<td>Frequency (D=Daily basis)</td>
<td>D</td>
</tr>
<tr>
<td>Opportunity (D=Daily)</td>
<td>D</td>
</tr>
<tr>
<td>Parties attributes</td>
<td></td>
</tr>
<tr>
<td>Entity identifier</td>
<td>✓</td>
</tr>
<tr>
<td>Legal identity</td>
<td>✓</td>
</tr>
<tr>
<td>Nationality</td>
<td>§</td>
</tr>
<tr>
<td>Residence</td>
<td>✓</td>
</tr>
<tr>
<td>Economic sector (NAICS)</td>
<td>§</td>
</tr>
<tr>
<td>Institutional sector</td>
<td>✓</td>
</tr>
<tr>
<td>Size</td>
<td></td>
</tr>
<tr>
<td>Financial characteristics</td>
<td></td>
</tr>
<tr>
<td>Contract validity</td>
<td>✓</td>
</tr>
<tr>
<td>Original and maturity term</td>
<td>✓</td>
</tr>
<tr>
<td>Guaranty or collateral</td>
<td>§</td>
</tr>
<tr>
<td>Plus/minus MtM (Yield)</td>
<td>✓</td>
</tr>
<tr>
<td>Currency</td>
<td>✓</td>
</tr>
</tbody>
</table>

1/ Refers the embedded derivative in the structurated note.

Legend:
- ✓ Complete information
- § New information requirement of Banco de Mexico’s derivatives trade repository
- § Micro data under the trading scheme for Guarantees and Collateral in Derivatives market
- § Missing information

Complete information
Individuals and individuals with business activities are not identified
New information requirement of Banco de Mexico’s derivatives trade repository
Micro data under the trading scheme for Guarantees and Collateral in Derivatives market
Final Remarks

• An Information Map is defined at different levels.

• The depth of the Information Map depends on the desired uses and the characteristics of available information.

• Our Information Map is work in progress.

• Feedback is welcome.