



EUROPEAN CENTRAL BANK

EUROSYSTEM

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Session III: Statistics on a who-to-whom basis

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1 Background

2 Who-to-whom data production

3 Who-to-whom data use

4 Monetary policy

5 Financial stability and macro-prudential policy

6 Financial integration

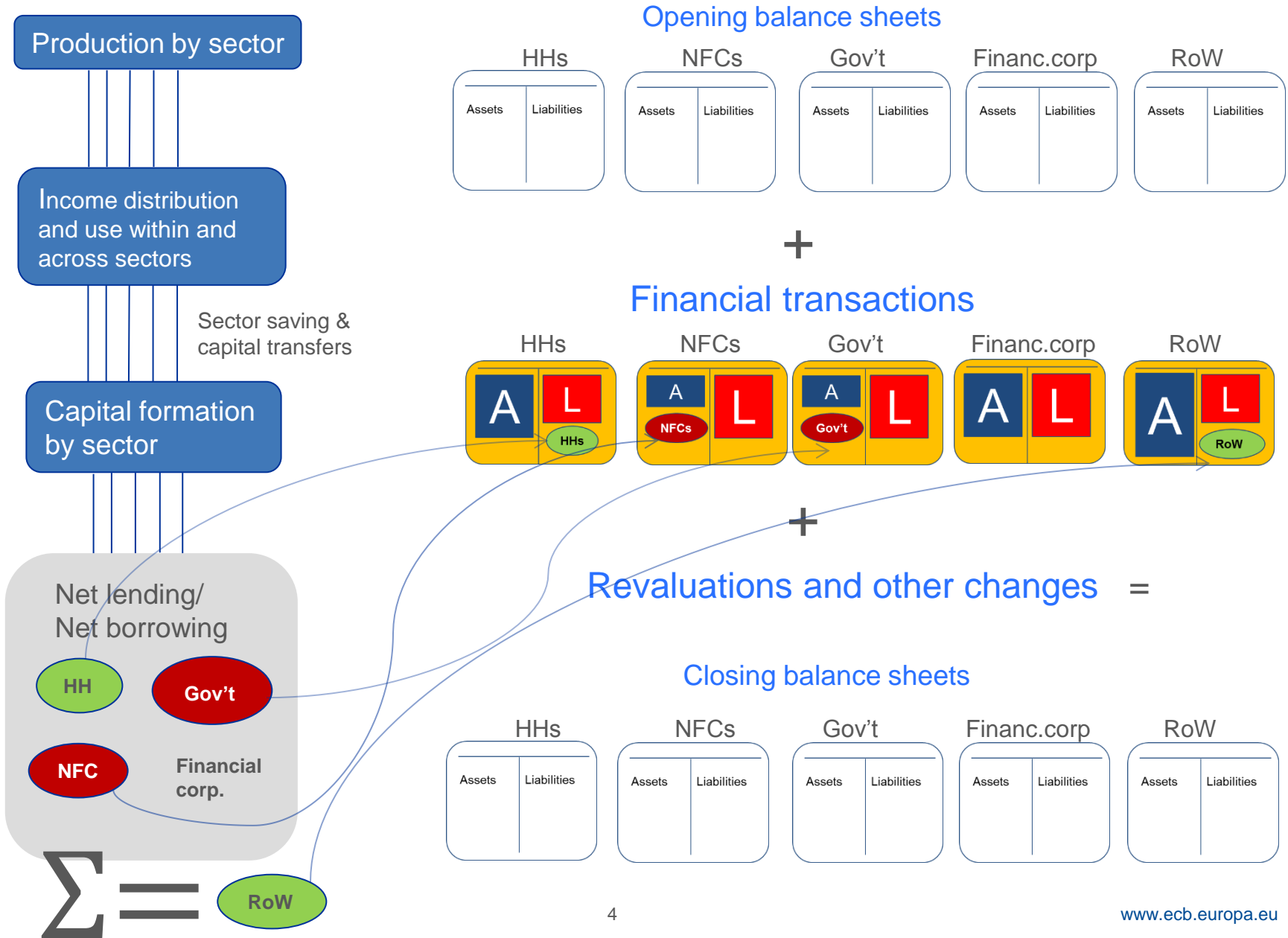
7 Conclusions

- The financial crisis revealed information **gaps in sector accounts** (G20 Data Gaps Initiative - April 2009)

R15	Sector Accounts	The IAG, which includes all agencies represented in the Inter-Secretariat Working Group on National Accounts, to develop a strategy to promote the compilation and dissemination of the balance sheet approach (BSA), flow of funds, and sectoral data more generally, starting with the G20 economies. Data on nonbank financial institutions should be a particular priority. The experience of the ECB and Eurostat within Europe and the OECD should be drawn upon. In the medium term, including more sectoral balance sheet data in the data categories of the Special Data Dissemination Standard could be considered.
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- Sector accounts provide **rough indicators, e.g. of building imbalances** prior to the crisis (debt to income in HHs, maturity mismatches in the financial sector ...)
- Sector accounts provide the **information framework** supporting joint macro-economic and macro-prudential policies to fight the crisis
- However, an in-depth analysis on financial linkages amongst economies and sectors requires **counterparty information**: i.e. **data on a who-to-whom basis**

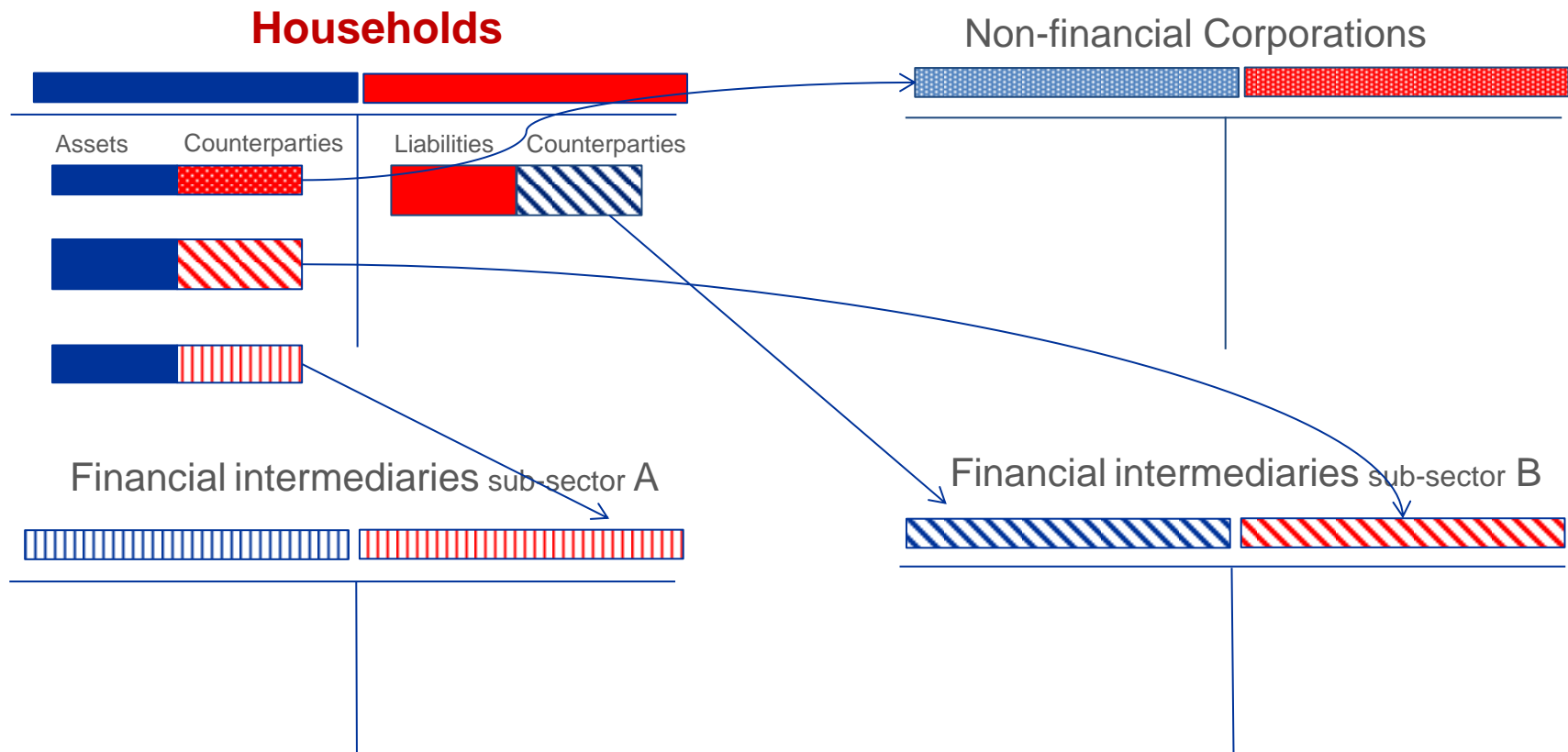
Background: who-to-whom data in the statistical standards (II)



Background: who-to-whom data in the statistical standards (III)

Sector accounts on a w-t-w sector basis:

data collection keeps track of the counterparty to each transaction



Each asset of a sector is a liability for the counterparty and the other way round. The charts represent the Households sector in solid colour, and three counterparty sectors in shaded colour, vertical bars and left-leaning bars. Households sector assets and liabilities correspond to the left portion of each horizontal bar, with assets in blue and liabilities in red. The right portion of each horizontal bar indicates the sector of the counterparty.

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SOURCES

Availability of information on sector and other counterparty details:

- **for financial institutions:** easily available from statistical reporting
- **for general government:** good availability, although reporting with full counterparty detail is not yet the norm
- **for non-financial corporations and households:** much more difficult (or impossible) to obtain

- An almost complete **who-to-whom matrix of transactions** can be compiled for many financial instruments, as every asset in a sector is a liability in some (other) sector
- **Balancing and residual approaches** are used for cells in the matrix that could not be determined otherwise
- Data on a who-to-whom basis should preferably cover both **financial transactions and outstanding amounts.**
- More preferably should also distinguish **revaluation effects from other non-transactions.**

- **Aggregated data collection**

reporting by **individual institutions who aggregate their positions and transactions** by financial instrument, sector and residency of the **counterparties**

- **Granular data collection**

collection of data on a **loan-by-loan, security-by-security**, trade-by-trade, etc. basis. Data are then **enriched with other micro databases** containing detailed information on securities, counterparties, contract types etc.

- **For (ESA/SNA) w-t-w sector accounts**

aggregated data collection may suffice when data is collected from financial institutions **also as custodians of securities**.

- **For more specialised w-t-w matrices**

(e.g. sectors on a consolidated group basis) more granularity is required.

■ Aggregated data collection

- typically **well established** for financial institutions in advanced economies, with broad coverage, known lead times to deployment and **limited costs** of reporting and processing the information.

■ Granular data collection

- increasingly required to allow **more sophisticated analysis**, as well as to respond efficiently to **evolving user needs**.
- However development, collection and processing **costs are significantly higher**. **Lead times** to deployment are also **long and uncertain**.

■ The extra costs of granularity may be justified when

- its use for **macro-prudential policy** is high in the agenda
- data are also used for **(micro) prudential supervision**

Granular data collection by the ECB/Eurosystem (I): “sec-by-sec” basis

Centralised Securities Database (CSDB)

Who issues what?

Securities Holdings Statistics Database (SHSDB)

Who holds what?

Example:

Issuer A issues a **security B** which is held by **Holder C** at the **amount of X EUR**

Issuer reference data

Issuer identifier

Issuer name

Issuer sector

Issuer country

...

Instrument reference data

Instr. Identifier

Instrument type

Amount outstanding

Price

...

Holder reference data

Group name

Group country

Entity name

Entity country

...

Holding data

Holding amount

Amount type

Valuation type

Consolidation flag

...

Analytical Credit Dataset (Anacredit)

- A multipurpose set of harmonised granular data on credit and credit risk [under development]
-
- **When?** to be implemented in a stepwise approach; the first stage (tentatively) introduced in *March 2018*
 - **What?** bank loans (and guarantees) to legal entities above €25,000 e.g. *non-financial corporations* (not households, at least in the first stage!)
 - **Who?** all banks in the euro area
 - **For whom?** central banking purposes e.g. monetary policy, research, risk management, macro prudential supervision... and statistics
 - **Legal basis?** ECB regulation in preparation

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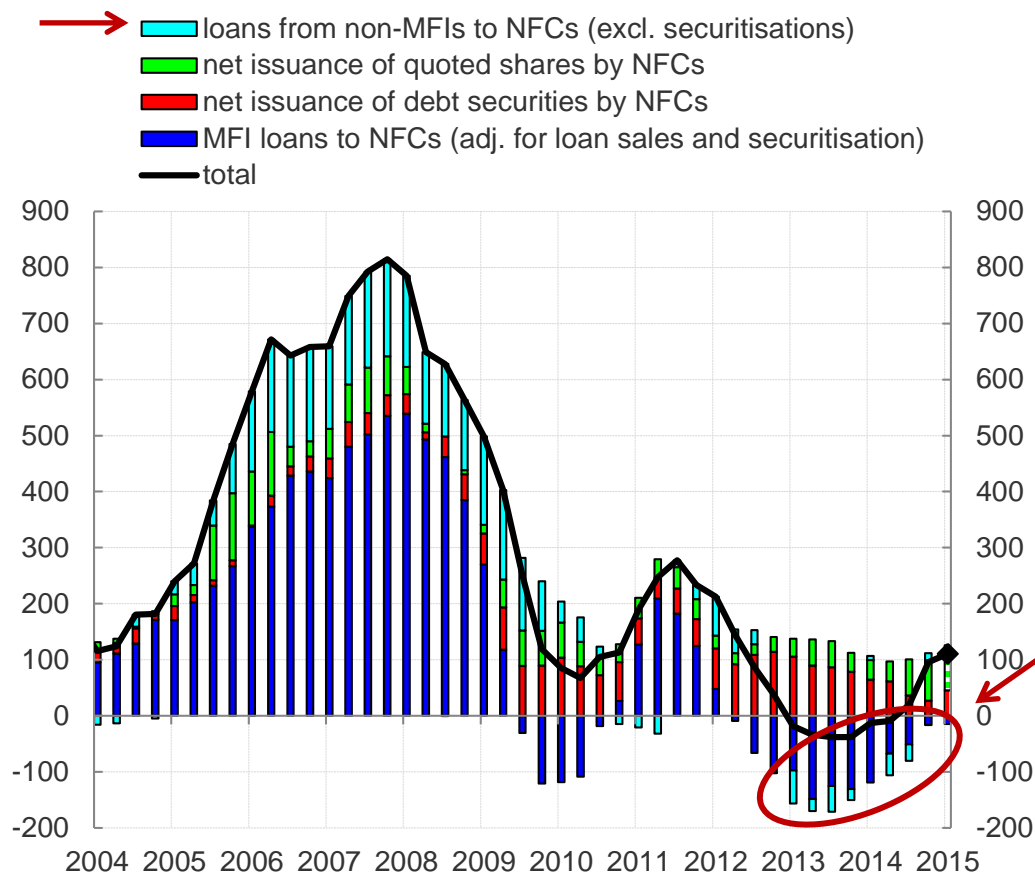
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- The **sector accounts** provide the most encompassing framework to conduct analysis of real-financial linkages, even without w-t-w information
- In addition, **w-t-w data enable**
 - **Mapping the funding channels** of the various sectors of the economy → important if e.g. credit supply restrictions are suspected
 - Analysing **portfolio behaviour** in general and specific channels of **monetary transmission**, such as the so-called balance sheet channel (e.g. ECB Economic Bulletin, issue 2, 2015)
 - Analysing the **expected impact of quantitative measures**:
 - What is the sectoral **distribution of holdings** of the targeted assets?
 - What is the feasible/expected **asset substitution** of the holding sectors?
 - Which **indirect effects** can be expected from the above asset substitutions, given the observed inter-sectoral linkages?

Use case 1 in monetary policy: funding channels (I)

Are non-banks contributing significantly to the funding of Non-Financial Corporations (NFCs)?

(funding flows to NFCs, four-quarter transactions in EUR bn.)



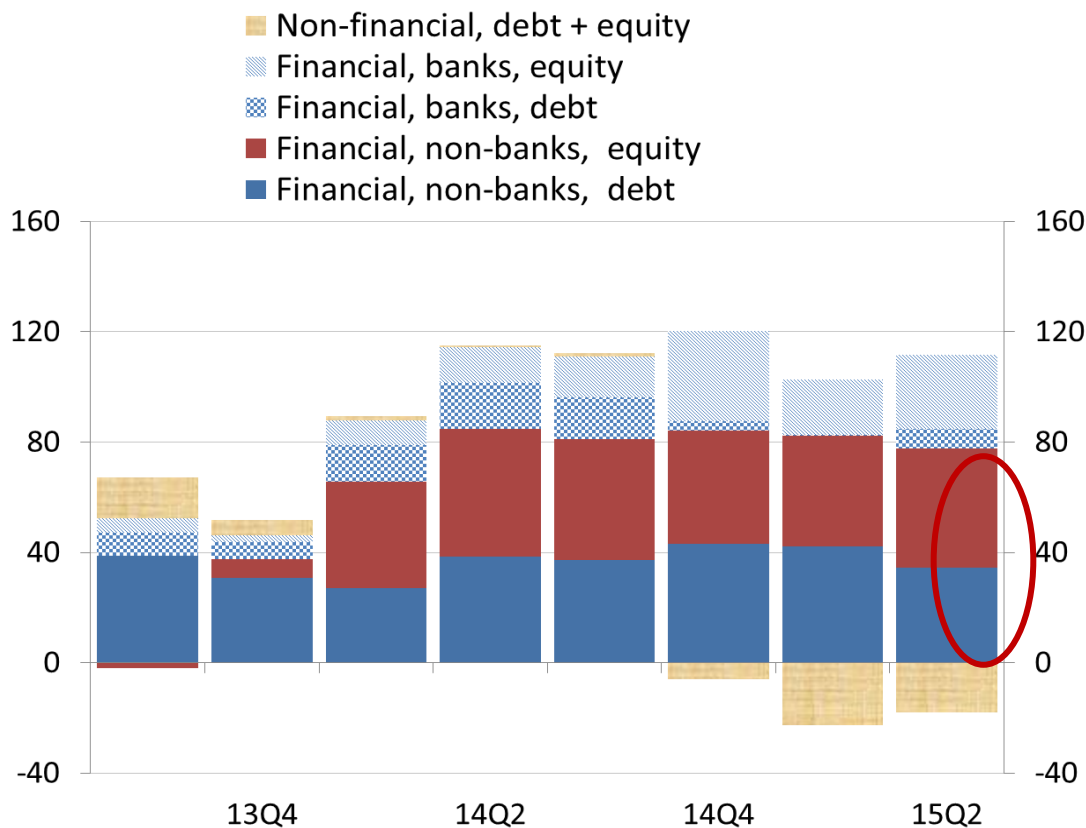
It does not look so in the case of loans, with negative or nil contribution ...

Sources: ECB Euro Area Accounts, ECB BSI statistics

Use case 1 in monetary policy: funding channels (II)

Are non-banks contributing significantly to the funding of NFCs?

(funding to NFCs in the capital markets by euro area investors, by investor sector and funding instrument, four-quarter transactions in EUR bn.)



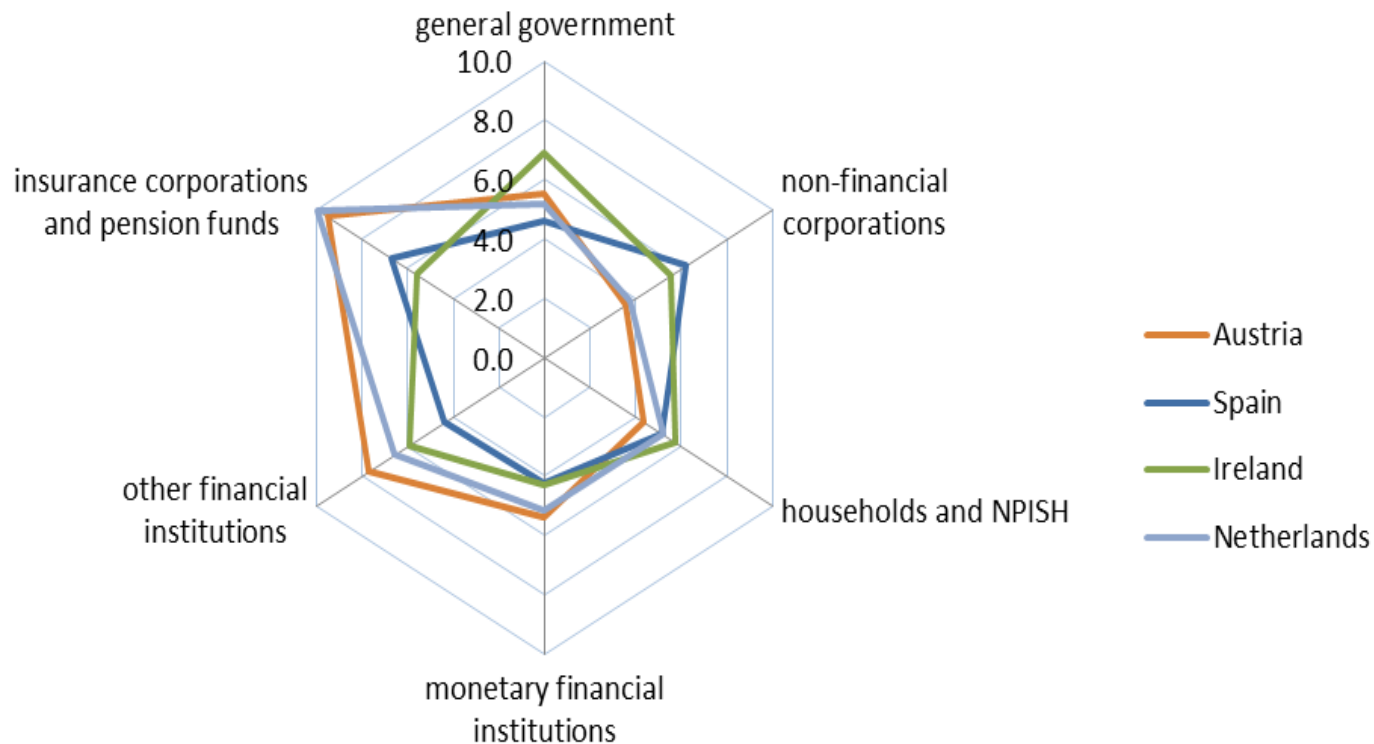
... but non-banks are the main contributors of capital market funds to NFCs in the euro area.

Source: ECB Euro Area Accounts

Use case 2 in monetary policy : balance sheet channel

Holding gains in the portfolio of different sectors following a decrease of 100 basis points in the yield of government debt securities

(percentages of gov't securities portfolio, second quarter of 2014) funding to NFCs in the capital markets by euro area investors,



Source: ECB Economic Bulletin, issue 2, p. 82.
(ECB SHS, Iboxx and ECB calculations)

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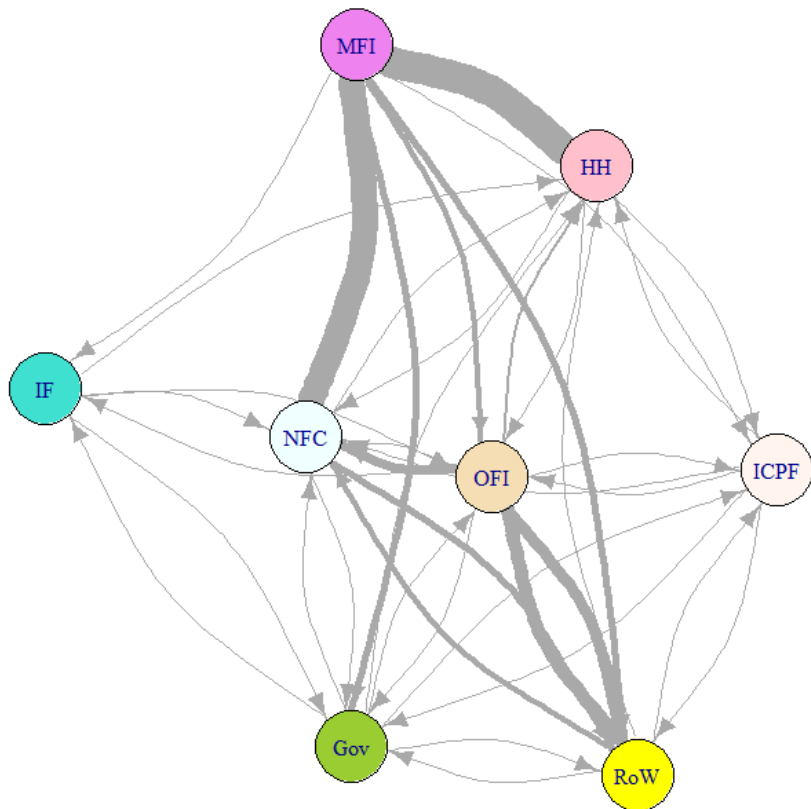
W-t-w uses in financial stability and macro-prudential policy

- Macro-prudential oversight requires **monitoring risks and vulnerabilities** in the financial system across many dimensions, notably across institutional sectors
- However, intra- and cross-sector linkages at the **individual firm level** are often required for financial stability
- Stability risks may **emerge in one (sub-) sector and propagate quickly** to other sectors --> analysing these phenomena requires w-t-w data
- **Sector-level w-t-w data** provide a useful interface between financial stability and monetary policy uses, and allow to identify problem areas for further analysis
- Examples of **applications** of sector-level w-t-w data:
 - **Better monitoring of financial risks**, as simple sector-specific balance sheet approaches may overlook certain risks that are only apparent when examining sector interconnectedness
 - **Network analysis of cross-sectoral** linkages in order to get rough aggregate estimates of shock propagation, potential amplification and feedback effects due to network structure

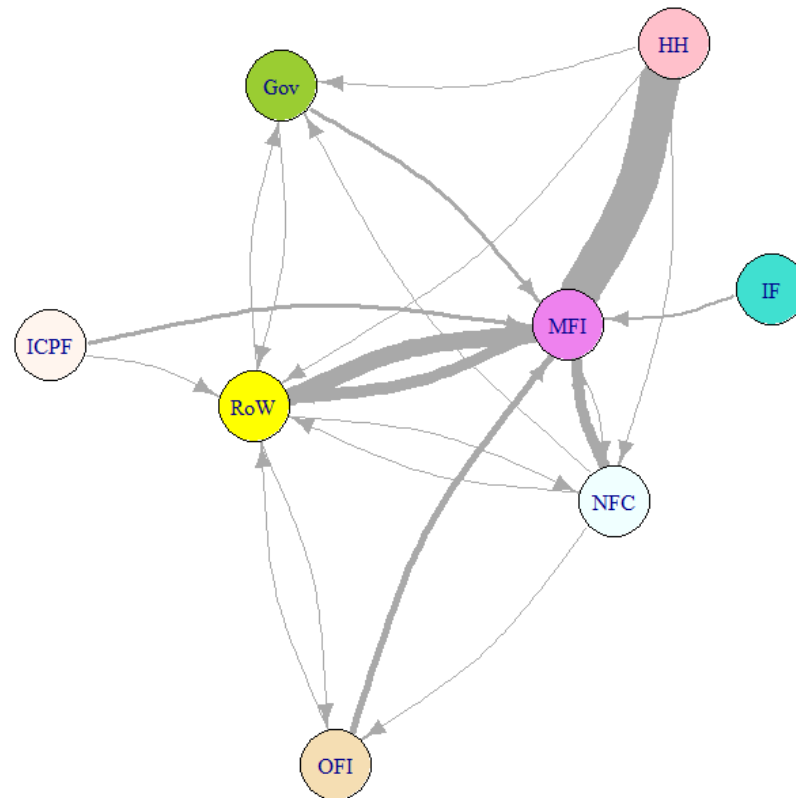
Use case 1: Interconnectedness among sectors (I)

Interconnectedness among euro area sectors (2015-Q2)

Loans



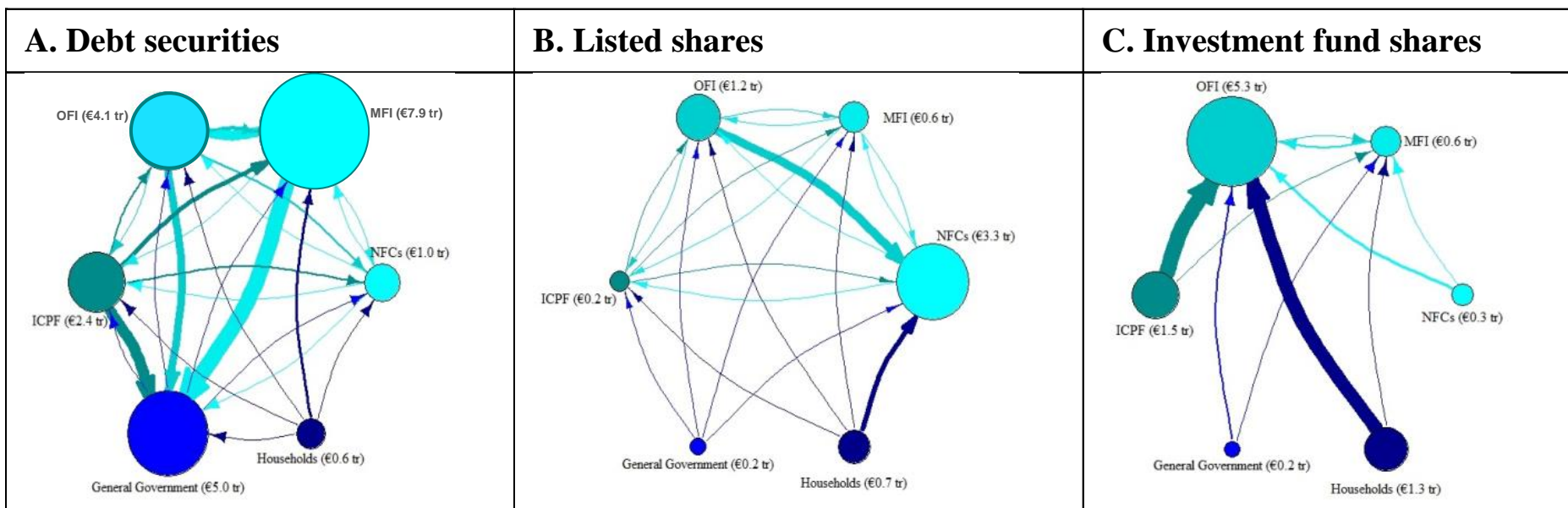
Deposits



Source : ECB. Euro area accounts. Arrow thickness proportional to amounts outstanding. Minimum outstanding size plotted is EUR 5 bn.

Interconnectedness among euro area sectors (2014-Q2)

Marketable Securities

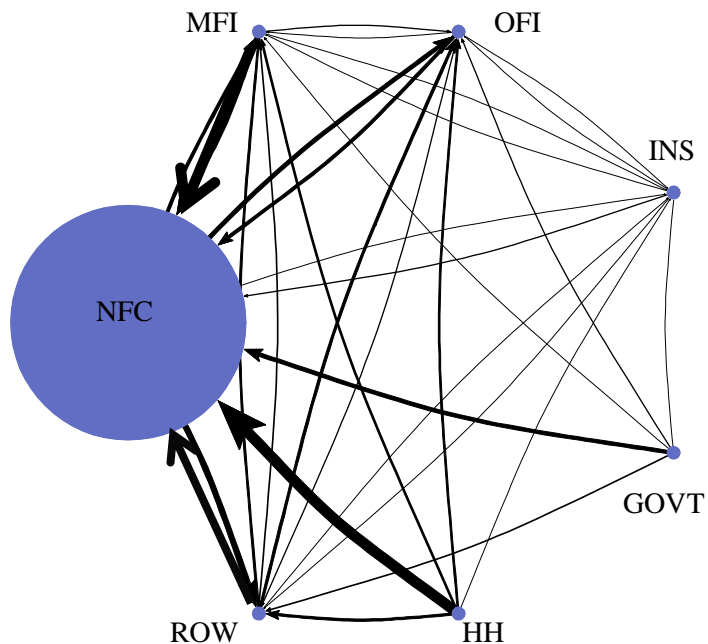


Notes: Each node represents one euro area sector (NFC = non-financial corporations, MFI = monetary financial institutions, OFI = other financial institutions, ICPF = insurance corporations and pension funds, and Households = households and non-profit institutions serving households). The arrows show the holdings by the corresponding sector of securities issued by another euro area sector and their thickness is proportional to the value of these holdings. The size of the nodes is proportional to the sum of (i) the market value of holdings by the respective sector of securities issued by euro area residents and (ii) the value of securities issued by the respective sector and held by euro area investors. This sum is also reported in brackets (EUR trillion).

Sources: ECB (SHS) and ECB calculations.

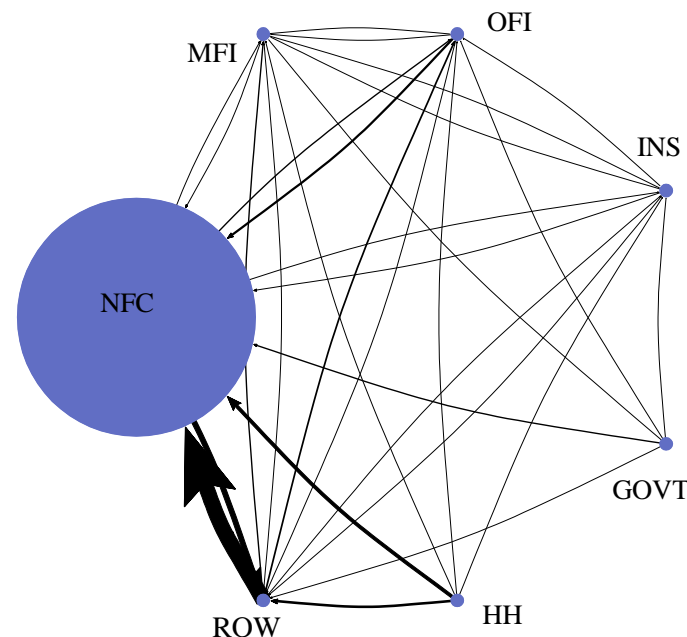
Shock propagation across sectors depends on country's network topology

Shares holdings in **country A**



An adverse shock to NFC's net worth propagates to HHs, MFIs and government (1st round effect, with possible 2nd round effects)

Shares holdings in **country B**



An adverse shock to NFC's net worth is mostly absorbed by the RoW

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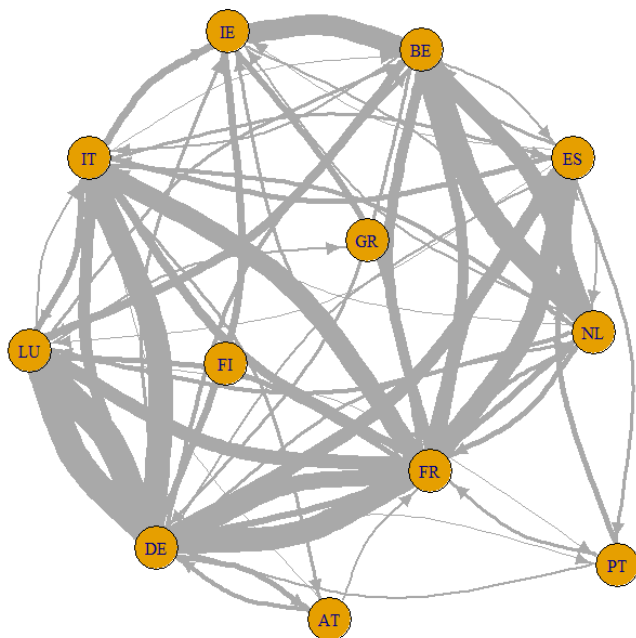
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- International **financial integration** promotes an **efficient allocation of resources** and **decreases the cost of financial intermediation**
- Within the **euro area**, financial integration is required for a **homogeneous transmission of monetary policy** across the area as a whole
- Financial integration can be assessed by means of both **price and quantity indicators**
- **W-t-w data** are key in the development of quantity-based indicators of financial integration as they **preserve the sector and residency of the counterparty**
- The combination of both dimensions of residency and sector allows an even more **refined analysis of financial integration** in general and of policy initiatives in particular, such as the **EU's Capital Markets Union**

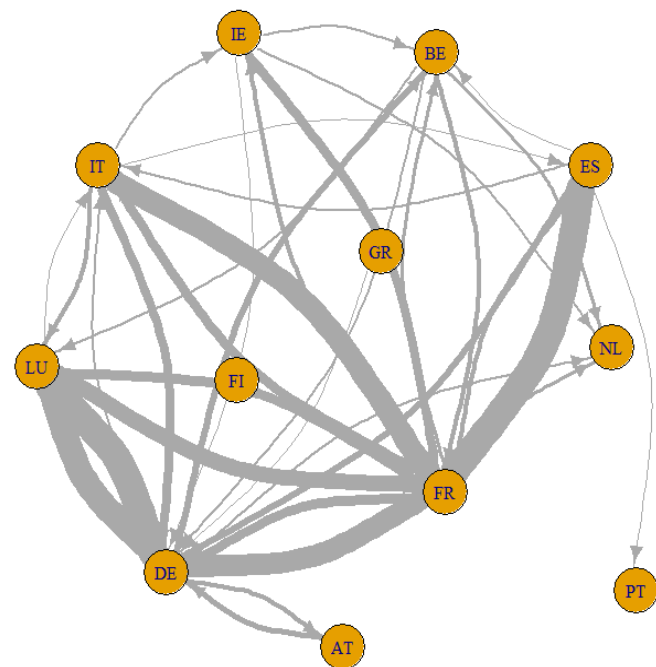
Use case 1: cross-border funding among banks

Banks reduced cross-border funding within the euro area

End-2007



End-2014

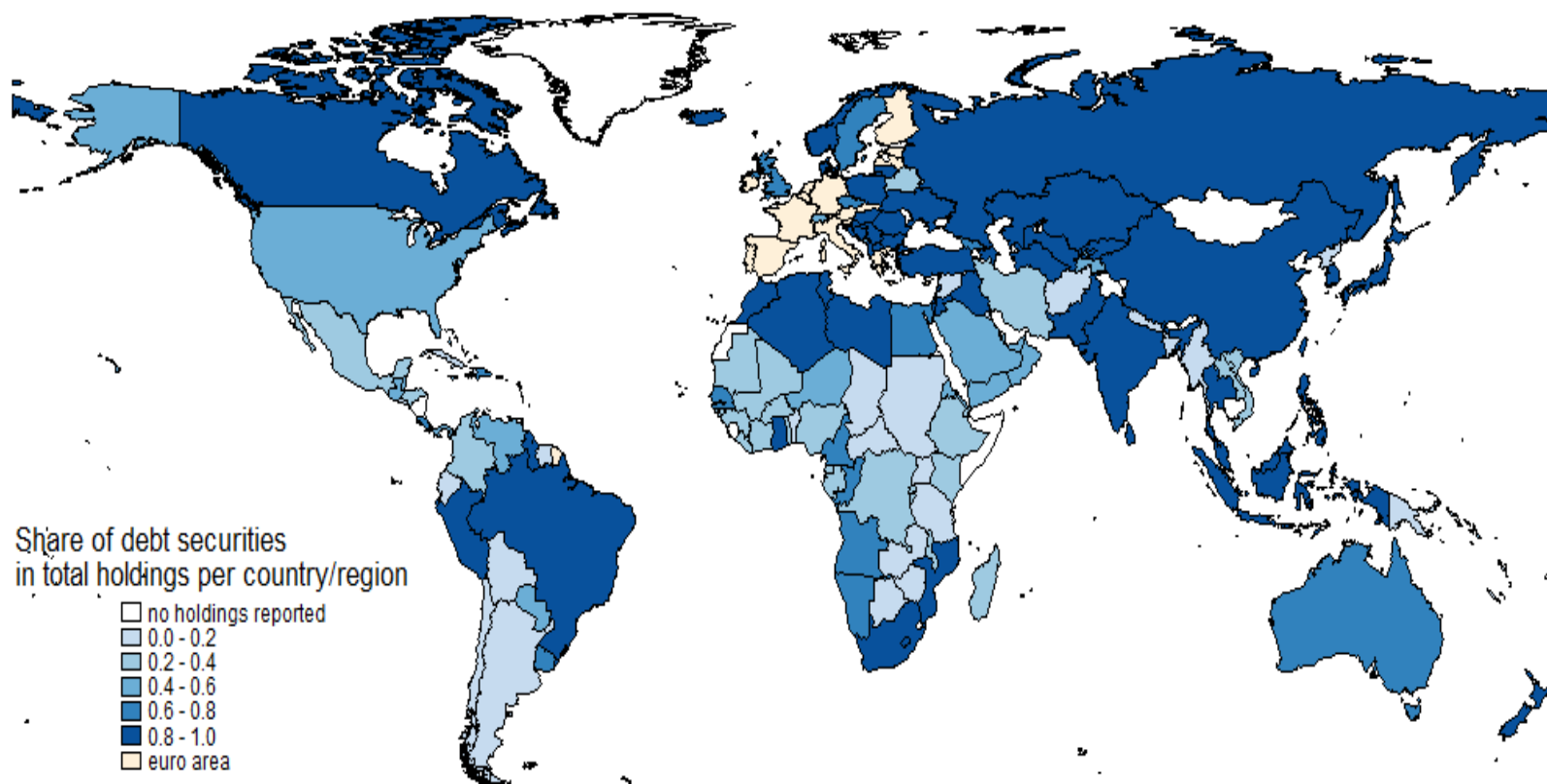


Source : ECB. Cross-border inter-MFI deposits within the euro area - BSI statistics, Table 3. Arrow thickness proportional to amounts outstanding. Minimum outstanding size plotted is EUR 5 bn.

Use case 2: international investment in euro area securities

Portfolio structure of non-resident investment in euro area securities

(end-2014Q2, share of debt securities in the total euro area portfolio of each country, 'portfolio' excludes mutual funds and non-quoted equity)



Source: ECB Economic Bulletin, Issue 2, 2015

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Conclusions (I)

- From the **data gaps** revealed in the financial crisis, data on a **who-to-whom** basis is perhaps very **high in the list**
- The current regime of central bank's **non-standard monetary policy measures** and the **close interrelationship between monetary and macro-prudential policies** have heightened the importance of such data
- **Sectoral w-t-w** data within the SNA/ESA framework already provide a **useful interface** between monetary and macro-prudential data uses
- Compilation from **granular sources** is **costly, but allows to drill-down** to problem areas identified from sectoral data, including inter-linkages at the individual firm level
- Alternative presentations of w-t-w data, such as those based on **consolidated groups** and/or data on an **ultimate risk basis** appear only feasible if compiled from granular data

- **Granular** data appears to **pay off** for both authorities and reporters if data **re-use for different purposes is institutionally and technically viable**
- The **ECB's new responsibilities** for banking supervision **make data re-use** and hence granularity **key** to its statistical strategy, always keeping in mind reporting burden