

# Compiling the who-to-whom matrix for Belgium

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# Financial accounts matrix

- Overview of the financial investment and financing activities of the major **economic sectors**
- Full who-to-whom matrix ->
- A cross table of asset sector and liabilities sector for each instrument/ time period/ type ->
- Broken down by **financial instruments**, with a matrix for each instrument

		Liabilities sectors													
		s11	s121	s122	s124	s125	s126	s127	s128	s129	s13	s14	s15	s2	Total
Asset sectors	s11														
	s121														
	s122														
	s124														
	s125														
	s126														
	s127														
	s128														
	s129														
	s13														
	s14														
	s15														
	s2														
Total															

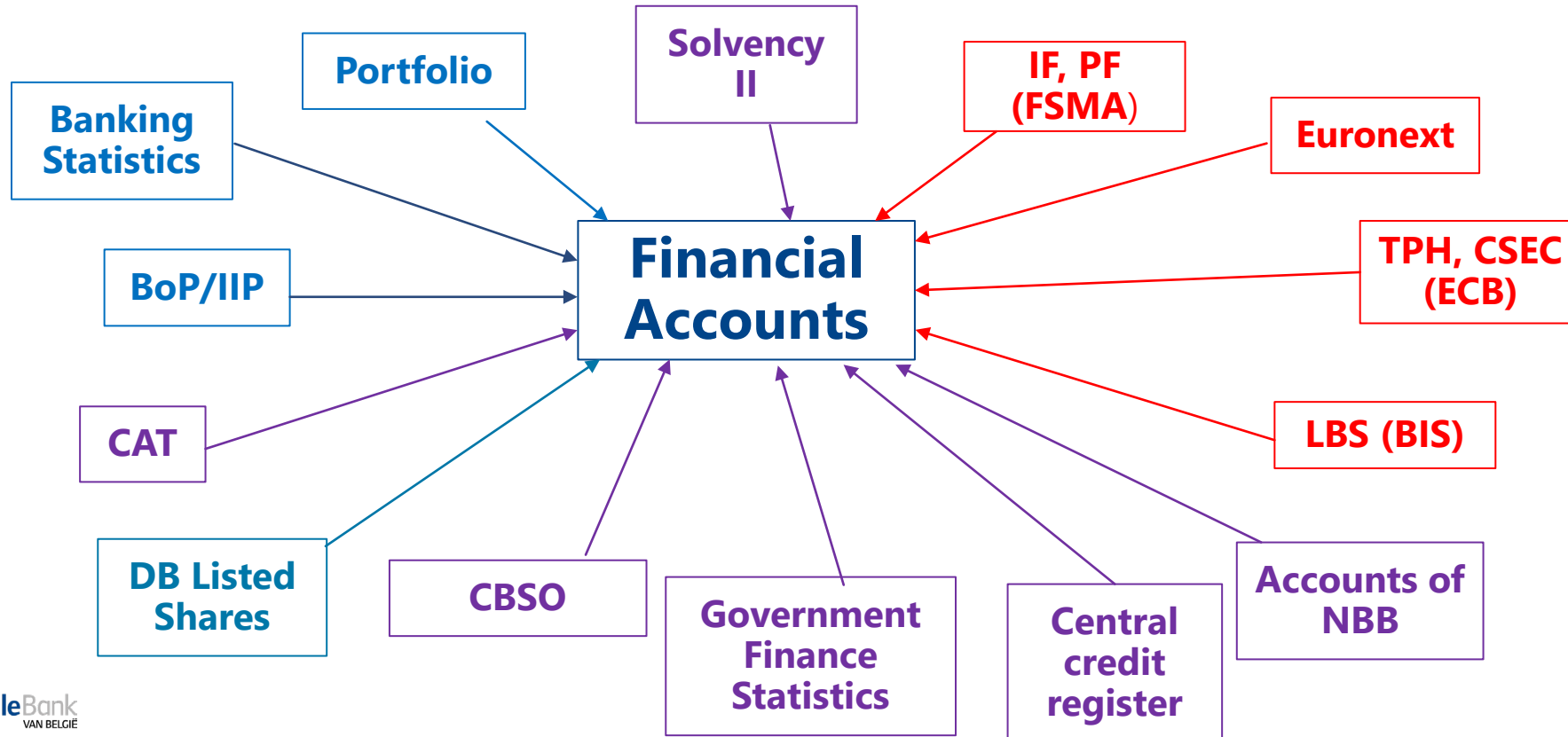
- Based on different sources, ideally already structured in a whom-to-who manner
- **Key trick: primary sources containing as much counterpart data as possible**
- Estimations for missing data needed
- Reconciliation of different sources needed
- Important advantage of such a matrix is "horizontal balancing"



# Sources

## Financial Accounts = secondary statistic using other primary sources

Mix of sources from inside NBB and from other institutions





## Sources internal NBB

- Government Finance Statistics (QFAGG)
- Listed shares issues statistics (CAT)
- DB on shareholdership of listed shares
- Banking statistics, MFI statistics (schema A or BSI)
- Portfolio statistics
  - Securities Holding Statistics (SHS)
  - Securities issues statistics (SEC) + CSEC (ECB)
- FVC - Financial vehicle corporations statistics
- Central Balance Sheet Office
- Balance of Payments/International Investments Position -BoP/IIP
- Insurance corporations statistics (Solvency II)
- Central credits register

Who-to-whom structured datasource

Who-to-whom asset side

Who datasource

To whom datasource



## External sources

- FSMA
  - Pension funds statistics
  - Investment funds statistics
- BIS: deposits and loans held by residents vis-à-vis foreign credit institutions (LBS)
- Euronext: listed shares
- ECB: - Third Party Holdings
- Financial head offices: direct quarterly data

Who-to-whom structured datasource

Who-to-whom asset side only

Who datasource

To whom datasource



## Source example: CBSO = Central Balance Sheet Office

- Collects statutory accounts (per legal entity) – transposition directive 2013/34/EU (legal obligation except for specific legal form)
- Standardized schemes with balance sheet, P&L, annex tables, 'social' balance sheet, annual report, audit report
- According to Belgian GAAP > < IFRS
- Extensive data of good quality: audited (for large companies) + validation checks by CBSO
- Full coverage of NFC-sector (S.11), Captive financial institutions (S.127) and S.125 and S.126
- Annual frequency, time lag: Y+14m  
=> not designed for statistical needs

# CBSO

- Granularity analysis
  - By items
  - By entity
  - Other sources consistency
  - Separate accruals analysis
- Different types of adjustments
  - Add missing balance sheets
  - Valorisation effects
  - OCV (sectorisation – instruments)
  - Reclassification between ESA instruments
- Idea : final results conform with ESA & SNA definitions







## Compilation process

- Collecting data from different primary sources, convert data to ESA 2010 requirements
- Input depends on the sources
- Hierarchy of sources (not absolute)
- Processing & integrating into a specifically designed DB (FASTRA)
- Analysis, validation & quality control
- Revision policy
- Quarterly time series from 1998Q4 / Annual from 1995
- Number of series: +- 16000 (and growing)
- More detailed information available in FASTRA than needed for dissemination (for internal use)



## Compilation rules

Hierarchy of sources (not absolute):

- Sometimes more sources are available for certain fields in the matrix
- Tentative hierarchy:

Source	Sector/instrument	Counterpart information?
Government Finance Statistics	S.13	Yes - micro
Accounts from the central bank	S.121	Yes - macro
Banking Statistics (BSI)	S.122	Yes - macro
FVC-statistics	S.125-1	Partly
Solvency II	S.128	Partly
FSMA	S.124 - S.129	Partly
Euronext	F.511	No
Portfolio statistics	F.31 - F.32 - F.511 - F.52	Yes - macro
DB on shareholdership	F.511	Yes - micro
Shares issues statistics	F.512 - F.519	Yes - micro
BoP and IIP	S.2	Partly
Annual accounts data from CBSO	S.11	No



# Compilation rules

- Most reliable (almost full microdata) = government statistics QFAGG
- Full who-to-whom available

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations				QFAGG		
s121 The central bank				QFAGG		
s122 Deposit-taking corporations				QFAGG		
s124 Non-MMF investment funds				QFAGG		
s125 Other financial intermediaries				QFAGG		
s127 Captive financial institutions				QFAGG		
s128 Insurance corporations				QFAGG		
s129 Pension funds				QFAGG		
s13 General government	QFAGG	QFAGG	QFAGG	QFAGG	QFAGG	QFAGG
s14 Households				QFAGG		
s2 Rest of the world				QFAGG/ balancing		
Total				<b>QFAGG</b>		



# Compilation rules

- Who-to-whom government statistics
- Add Monetary Financial Institution data (MFI)
  - Banking statistics, FVC statistics
- Add NCB data => balancing

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations		MFI	MFI	QFAGG		
s121 The central bank	NCB	NCB	NCB	QFAGG	NCB	NCB
s122 Deposit-taking corporations	MFI	MFI	MFI	QFAGG	MFI	MFI
s124 Non-MMF investment funds		MFI	MFI	QFAGG		
s125 Other financial intermediaries	MFI	MFI	MFI	QFAGG	MFI	MFI
s127 Captive financial institutions		MFI	MFI	QFAGG		
s128 Insurance corporations		MFI	MFI	QFAGG		
s129 Pension funds		MFI	MFI	QFAGG		
s13 General government	QFAGG	QFAGG	QFAGG	QFAGG	QFAGG	QFAGG
s14 Households		MFI	MFI	QFAGG		
s2 Rest of the world		MFI	MFI	QFAGG/ balancing		
<b>Total</b>		<b>MFI</b>	<b>MFI</b>	<b>QFAGG</b>		

## Compilation rules

- Government statistics
- MFI data
- NCB data
- Add portfolio data
  - Instrument specific
  - Information on all sectors
  - Partial balancing
- Add data on insurance companies (IC), Investment funds (IF), Pension funds (PF). Mainly asset info
- ROW: Bop/IIP data
- Annual accounts data (balance sheets, BS)
- Balancing, mainly NFC sector
- Scheme is not complete

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations	BS	MFI	MFI	QFAGG	Bop/IIP	
s121 The central bank	NCB	NCB	NCB	QFAGG	NCB	NCB
s122 Deposit-taking corporations	MFI	MFI	MFI	QFAGG	MFI	MFI
s124 Non-MMF investment funds	IF	MFI	MFI	QFAGG	Bop/IIP	IF
s125 Other financial intermediaries	MFI	MFI	MFI	QFAGG	MFI	MFI
s127 Captive financial institutions	BS	MFI	MFI	QFAGG	Bop/IIP	
s128 Insurance corporations	IC	MFI	MFI	QFAGG	Bop/IIP	IC
s129 Pension funds	PF	MFI	MFI	QFAGG	Bop/IIP	IP
s13 General government	QFAGG	QFAGG	QFAGG	QFAGG	QFAGG	QFAGG
s14 Households	BS	MFI	MFI	QFAGG	balancing	
s2 Rest of the world	Bop/IIP	MFI & BoP/IIP	MFI	QFAGG/ balancing		
Total		<b>MFI</b>	<b>MFI</b>	<b>QFAGG</b>	Bop/IIP	



## Example: debt securities

- Several sources: portfolio data, SHS, CSDB (ECB), QFAGG

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations						
s121 The central bank						
s122 Deposit-taking corporations						
s124 Non-MMF investment funds						
s125 Other financial intermediaries						
s127 Captive financial institutions						
s128 Insurance corporations						
s129 Pension funds						
s13 General government						
s14 Households						
s2 Rest of the world						
Total						

## Example: debt securities

- Totals issued per Belgian sector reported via Securities Issues statistics

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations						
s121 The central bank						
s122 Deposit-taking corporations						
s124 Non-MMF investment funds						
s125 Other financial intermediaries						
s127 Captive financial institutions						
s128 Insurance corporations						
s129 Pension funds						
s13 General government						
s14 Households						
s2 Rest of the world						
<b>Total</b>	<b>60041</b>	<b>50169</b>	<b>67878</b>	<b>430966</b>		

## Example: debt securities

- Adding portfolio statistics on the holders of securities from portfolio statistics

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations	370	941	13	438	5604	7366
s121 The central bank	6099	3677	14	63082	40591	113463
s122 Deposit-taking corporations	886	445	63339	40090	63467	168227
s124 Non-MMF investment funds	360	87	56	789	27757	29049
s125 Other financial intermediaries	238	29	104	2047	17168	19586
s127 Captive financial institutions	38	44	0	7	3914	4003
s128 Insurance corporations	3852	509	512	74606	119120	198599
s129 Pension funds	324	130	81	491	2784	3810
s13 General government	95	617	9	22647	1508	24876
s14 Households	2554	10945	237	887	29645	44268
s2 Rest of the world	21019	16752	1417	149354		188542
Total	60041	50169	67878	430966	311558	





## Example: debt securities

### Residual calculation of holdings by the Rest of the world

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations	370	941	13	438	5604	7366
s121 The central bank	6099	3677	14	63082	45591	118463
s122 Deposit-taking corporations	886	445	63339	40090	63467	168227
s124 Non-MMF investment funds	360	87	56	789	27757	29049
s125 Other financial intermediaries	238	29	104	2047	17168	19586
s127 Captive financial institutions	38	44	0	7	3914	4003
s128 Insurance corporations	3852	509	512	74606	119120	198599
s129 Pension funds	324	130	81	491	2784	3810
s13 General government	95	617	9	22647	1508	24876
s14 Households	2554	10945	237	887	29645	44268
s2 Rest of the world	<b>45225</b>	<b>32745</b>	<b>3513</b>	<b>225882</b>		307365
Total	60041	50169	67878	430966	316558	



## Example: debt securities

### Changing data from the central bank – internal source

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations	370	941	13	438	5604	7366
s121 The central bank	<b>6233</b>	<b>3755</b>	<b>14</b>	<b>64425</b>	<b>48545</b>	122972
s122 Deposit-taking corporations	886	445	63339	40090	63467	168227
s124 Non-MMF investment funds	360	87	56	789	27757	29049
s125 Other financial intermediaries	238	29	104	2047	17168	19586
s127 Captive financial institutions	38	44	0	7	3914	4003
s128 Insurance corporations	3852	509	512	74606	119120	198599
s129 Pension funds	324	130	81	491	2784	3810
s13 General government	95	617	9	22647	1508	24876
s14 Households	2554	10945	237	887	29645	44268
s2 Rest of the world	45225	32745	3513	225882		307365
Total	60041	50169	67878	430966	319512	



## Example: debt securities

### Adjusting the residual calculation

Assets \ Liabilities	s11 Non-financial corporations	s122 Deposit-taking corporations	s125 Other financial intermediaries	s13 General government	s2 Rest of the world	Total
s11 Non-financial corporations	370	941	13	438	5604	7366
s121 The central bank	6233	3755	14	64425	48545	122972
s122 Deposit-taking corporations	886	445	63339	40090	63467	168227
s124 Non-MMF investment funds	360	87	56	789	27757	29049
s125 Other financial intermediaries	238	29	104	2047	17168	19586
s127 Captive financial institutions	38	44	0	7	3914	4003
s128 Insurance corporations	3852	509	512	74606	119120	198599
s129 Pension funds	324	130	81	491	2784	3810
s13 General government	95	617	9	22647	1508	24876
s14 Households	2554	10945	237	887	29645	44268
s2 Rest of the world	<b>45091</b>	<b>32667</b>	<b>3513</b>	<b>224539</b>		305810
Total	60041	50169	67878	430966	319512	



# Annex: Map of main datasources

		Assets									Liabilities								
		S11	S12K	S124	S120	S128	S129	S13	S14+S15	S2	S11	S12K	S124	S120	S128	S129	S13	S14+S15	S2
		NFCs	MFI	IFs	OFls	IC	PF	Gov	HH+NPISH	RoW	NFCs	MFI	IFs	OFls	IC	PF	Gov	HH+NPISHs	RoW
F11	Monetary gold		MFI																
F12	SDRs		MFI																MFI
F21	Currency	NFC	MFI						*	BoP		MFI							MFI
F22	Deposits, transferable	MFI	MFI	IF	MFI/OFI/OFC	IC	PF	QFAGG	MFI	MFI		MFI							MFI/BoP
F29	Deposits, other	MFI/BoP	MFI	IF	MFI/OFI/OFC	IC	PF	QFAGG	MFI/BoP	MFI		MFI					QFAGG		MFI/BoP
F3	Debt securities	SHS	MFI	IF	SHS	IC	PF	QFAGG	SHS	SHS*	SEC	MFI/SEC		FVC/CSEC	IC		QFAGG		SHS
F4	Loans	NFC*	MFI		FVC/OFI/OFC	IC	PF	QFAGG	NPISH	BoP	MFI/BoP/NFC*	MFI	IF	MFI/OFI/OFC	IC		QFAGG	MFI/FVC/OFI/BoP/QFAG	BoP
F511	Listed shares	SHS/LDB	MFI	IF	SHS/LDB	IC	PF	QFAGG	SHS	SHS/LDB*	LDB	LDB		LDB			QFAGG		SHS
F512	Unlisted shares	NFC/SIS/*	MFI	IF	OFI/OFC/SIS	IC	PF	QFAGG	SIS/*	BoP	NFC/SIS	MFI		OFI/OFC/SIS	IC				BoP
F519	Other equity	NFC/SIS/*	MFI		OFI/OFC/SIS		PF	QFAGG	SIS/BoP/*	BoP	NFC/SIS	MFI		OFI/OFC/SIS	IC		QFAGG		BoP
F52	Investment fund shares/units	IF	MFI	IF	IF	IC	PF	QFAGG	IF*	IF		MFI	IF						SHS
F61	Non-life insurance techn. res.	IC			IC	IC			IC	IC							IC		IC
F62	Life insurance and annuities								IC	IC							IC		IC
F63-F65	Pension entitlements								IC/PF						IC	PF	QFAGG		
F66	Standardised guarantees								QFAGG								QFAGG		
F7	Financial derivatives	SHS	MFI	IF	FVC	IC			SHS	BoP	BoP	MFI	IF	FVC	IC		QFAGG		BoP
F81	Trade credits and advances	NFC*	MFI		OFI/OFC			QFAGG	ENA	BoP	NFC*	MFI		OFI/OFC	IC		QFAGG	ENA	BoP
F89	Other accounts excl. F81	NFC*	MFI	IF	FVC/OFI/OFC	IC	PF	QFAGG	QFAGG	BoP	NFC*	MFI	IF	FVC/OFI/OFC	IC		QFAGG	QFAGG	BoP

## Key for data sources and calculation/estimations:

QFAGG Quarterly financial accounts for general government

MFI MFI balance sheet statistics (including NBB balance sheet data)

IC Insurance corporations statistics

PF Pension fund statistics

IF Investment fund statistics

FVC Financial vehicle corporations statistics

SHS Securities holdings statistics (including TPH)

LDB Listed shares database

BoP Balance of payments and international investment position.

OFI other financial institution statistics

CSEC Centralized securities issues statistics

NFC Non-financial corporation balance sheets (CBSO, coverage 100%, estimations until final data is integrated at t+7 quarters)

OFC Other financial corporation balance sheets (CBSO, coverage 100%, estimations until final data is integrated at t+7 quarters)

NPISH NPISH balance sheets (CBSO, coverage 93%, grossing up model, estimations until final data is integrated at t+7 quarters)

SIS Share issues statistics

ENA Estimation based on national accounts data

\* Residual sector for respective instrument - i.e. the sector (assets or liabilities) where source is available, but most likely adapted to achieve horizontal consistency.

\*\* Pure residual calculation as no source data for a meaningful plausibility check is available.

