National Accounts: rooting the SFC approach in empirical data

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Agent-based and stock-flow consistent modelling: theory and applications - Paris - July 17

Aims

- Lab1 (SFC modelling and national accounts)
  - Get you fluent in ESA2010 language: what does S11, P3, MIO_NAC or EL stand for?
  - Know your way around Eurostat database
  - Introduction to R and relevant packages: pdfetch
- Lab2 (SFC Modelling, an intrduction to PKSFC)
  - Build and simulate a medium scale SFC model
  - Introduction to R and relevant packages: PKSFC
- Lab3 (SFC Modelling, an intrduction to empirical models)
  - Calibrate and simulate a medium scale SFC model
- Usually done in 5 3-hours lecture

Stock Flow Consistent matrices

Balance Sheets

- Lists Assets and Liabilities of an economic agent
- Assets are all the financial and real items owned by the agent
- Liabilities are the obligation to creditors

Assets	Liabilities
Cash	Credit Card
Deposits	Mortgage
House	Car Loan
Savings Account	Net Worth

Balance sheets are always balanced, i.e. Assets = Liabilities

Balance sheets are interconnected

Global balance sheet

Transaction-flow matrix

- The transactions flow matrix consists of three separate parts.
  1. On the top rows of the matrix, you will have output expressed as expenditures, which by definition is given by

$$Y = C + I + G(+X - M)$$

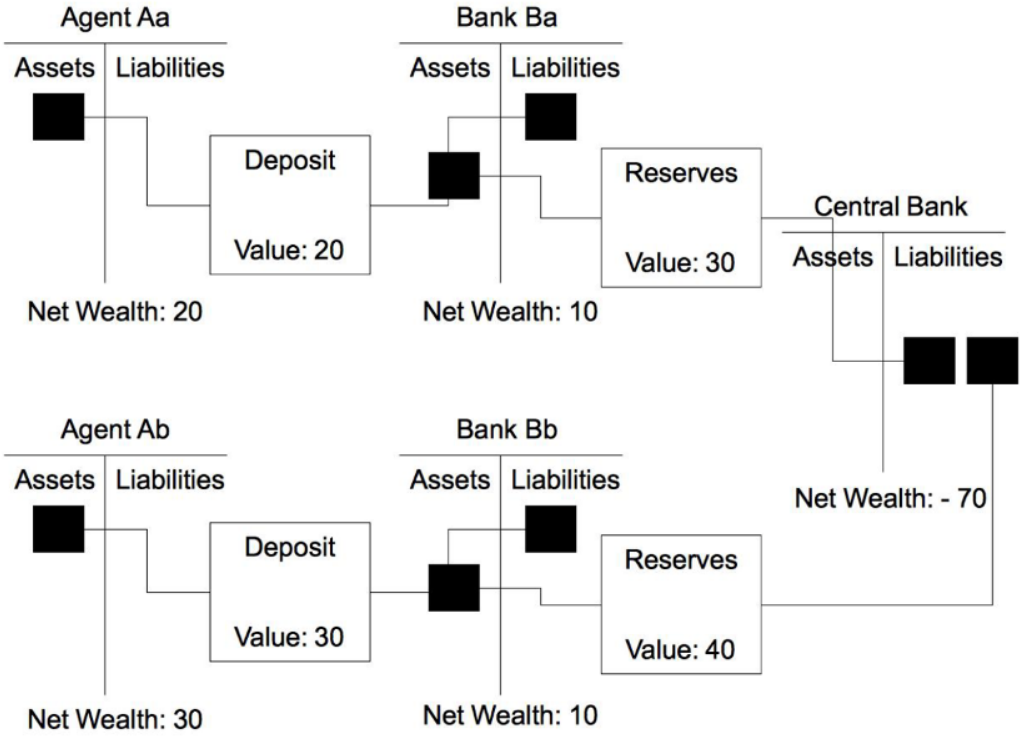


Figure 1: Example of interconnection

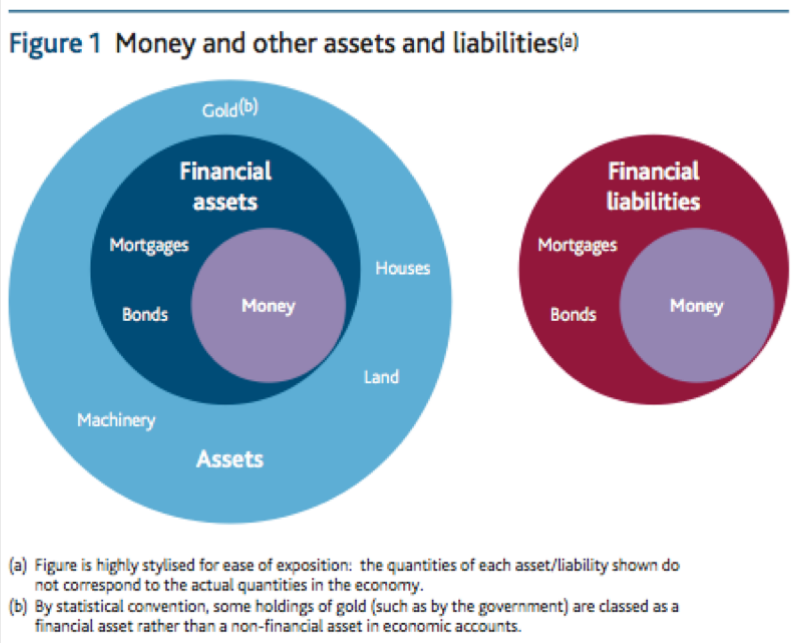


Figure 2: Source:McLeay, Radia, and Thomas (2014)

2. The second part of the transactions flow matrix outlines output using an income approach.
3. The last part of the transactions flow matrix shows which assets and liabilities these savings/dissavings have been channelled to (also called the flow-of-funds).

The prodution accounts

- The matrix should clearly identify the consumption and investment by the sectors in your model.
- Depending wether you have or not a closed economy: import and exports

The distribution accounts

- Depending on how disaggregated your model is and how many assets you have included in your model, this part may include various sources of income for your sectors such as
  - wages
  - profits of firms, banks, central bank
  - rents
  - interest income on bills, loans, deposits, etc.
  - taxes
  - transfers - subsidies
  - returns on securities, derivatives, CDOs

Assume a closed economy,

- Households work for firms in exchange for wages, consume, invest in housing and hold cash, equities of firms and banks, government bills and deposits as financial assets. Government taxes households, firms and banks and spends, and issues bills to finance its deficit.
- Firms employ households to produce goods and invest in productive capital stock. They use undistributed profits to finance investment and borrow from banks/issue new equity to finance any shortfall. -Banks lend to households and firms, hold bills, accept deposits from households and distribute part of their profits to households. They do not invest in tangible capital.
- Central bank holds government bills and transfers its profits to the government

Example of Transaction Flow Matrix

Transaction flow matrix, part 2

- Once you have identified the first two parts of the transactions flow matrix, you have a complete picture of income sources and expenditures of each sector in your model.
- Naturally, the difference between income and expenditures yields the savings of each sector, which are then allocated to real and financial assets to accumulate wealth.
- The last part of the full flow matrix shows which assets and liabilities these savings/dis-savings have been channelled to.
- In order to ensure that each column adds up to zero, we have to record the changes in assets/liabilities in a non-intuitive way and record changes in assets with a (-) sign and change in liabilities with a (+) sign.
- Therefore, each column now shows

Income - Expenditures +/- Change in assets/liabilities =0

	Households	Production firms		Banks		Government	Central Bank		
	(1)	Current (2)	Capital (3)	Current (4)	Capital (5)	(6)	Current (7)	Capital (8)	Σ
Consumption	$-C$	$+C$							0
Investment	$-I_h$	$+I$	$-I_f$						0
Govt. exp.		$+G$				$-G$			0
Wages	$+WB$	$-WB$							0
Profits, firms	$+FD_f$	$-F_f$	$+FU_f$						0
Profits, banks	$+FD_b$			$-F_b$	$+FU_b$				0
Profit, central Bk						$+F_{cb}$	$-F_{cb}$		0
Loan interests	$-r_{l(-1)} \cdot L_{h(-1)}$	$-r_{l(-1)} \cdot L_{f(-1)}$		$+r_{l(-1)} \cdot L_{(-1)}$					0
Deposit interests	$+r_{m(-1)} \cdot M_{h(-1)}$			$-r_{m(-1)} \cdot M_{(-1)}$					0
Bill interests	$+r_{b(-1)} \cdot B_{h(-1)}$			$+r_{b(-1)} \cdot B_{b(-1)}$		$-r_{b(-1)} \cdot B_{(-1)}$	$+r_{b(-1)} \cdot B_{cb(-1)}$		0
Taxes – transfers	$-T_h$	$-T_f$		$-T_b$		$+T$			0
Change in loans	$+\Delta L_h$		$+\Delta L_f$		$-\Delta L$				0
Change in cash	$-\Delta H_h$				$-\Delta H_b$			$+\Delta H$	0
Change, deposits	$-\Delta M_h$				$+\Delta M$				0
Change in bills	$-\Delta B_h$				$-\Delta B_h$	$+\Delta B$		$-\Delta B_{cb}$	0
Change, equities	$-(\Delta e_f \cdot p_{ef} + \Delta e_b \cdot p_{eb})$		$+\Delta e_f \cdot p_{ef}$		$+\Delta e_b \cdot p_{eb}$				0
Σ	0	0	0	0	0	0	0	0	0

Figure 3: Transaction Flow Matrix, source: G&L 2007

Full integration matrix

- Once you have written down the transactions flow matrix, you can move to derive the full integration matrix, which simply shows the changes in net worth of your sectors between the beginning of the period and the end of the period.
- In order to do so, you use the bottom part of the transactions flow matrix with opposite signs in order to make sure increases in assets lead to an increase in net worth and increases in liabilities lead to a decrease in net worth. (Do not forget to add change in tangible capital)
- One further consideration is the change in the value of some stocks of assets between the beginning of the period and the end of the period.
- In order to capture this, you will need to add rows for the assets whose values are subject to such change.
- The last row now becomes the net worth of each sector at the end of the period.

Example of Full Integration Matrix

		Households (1)	Production firms (2)	Banks (3)	Government (4)	Central bank (5)	Σ
	Net worth, end of previous period	NW_{h-1}	NW_{f-1}	NW_{b-1}	NW_{g-1}	0	K_{-1}
Change in net assets arising from transactions	Change in loans	$-\Delta L_h$	$-\Delta L_f$	$+\Delta L$			0
	Change in cash	$+\Delta H_h$		$+\Delta H_b$		$-\Delta H$	0
	Change in deposits	$+\Delta M_h$		$-\Delta M$			0
	Change in bills	$+\Delta B_h$		$+\Delta B_h$	$-\Delta B$	$+\Delta B_{cb}$	0
	Change in equities	$+\Delta e_f \cdot p_{ef} + \Delta e_b \cdot p_{eb}$	$-\Delta e_f \cdot p_{ef}$	$-\Delta e_b \cdot p_{eb}$			0
	Change in tangible capital	$+\Delta k_h \cdot pk$	$+\Delta k_f \cdot pk$				$+\Delta k \cdot pk$
Change in net assets arising from revaluations	Capital gains in equities	$+\Delta p_{ef} \cdot e_{f-1}$ $+\Delta p_{eb} \cdot e_{b-1}$	$-\Delta p_{ef} \cdot e_{f-1}$	$-\Delta p_{eb} \cdot e_{b-1}$			0
	Capital gains in tangible capital	$+\Delta pk \cdot k_{h-1}$	$+\Delta pk \cdot k_{f-1}$				$\Delta pk \cdot (k_{h-1} + k_{f-1})$
	Net worth, end of period	NW_h	NW_f	NW_b	NW_g	0	K

Figure 4: Full Integration Matrix, source: G&L 2007

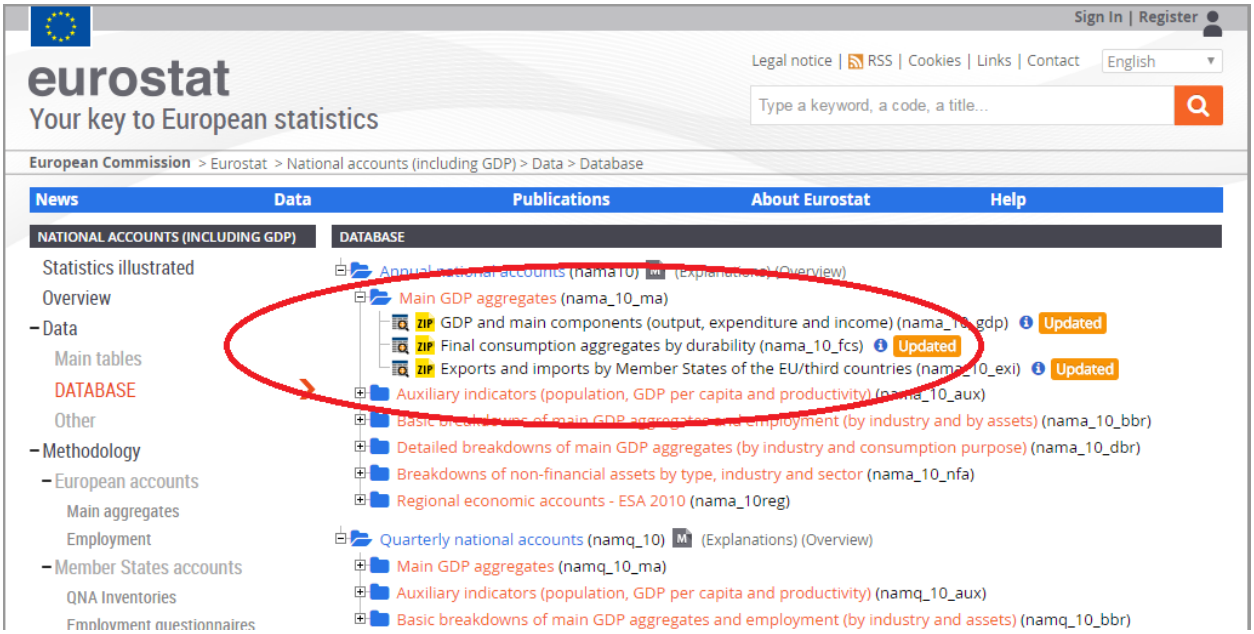


Figure 5: Data Search in Eurostat

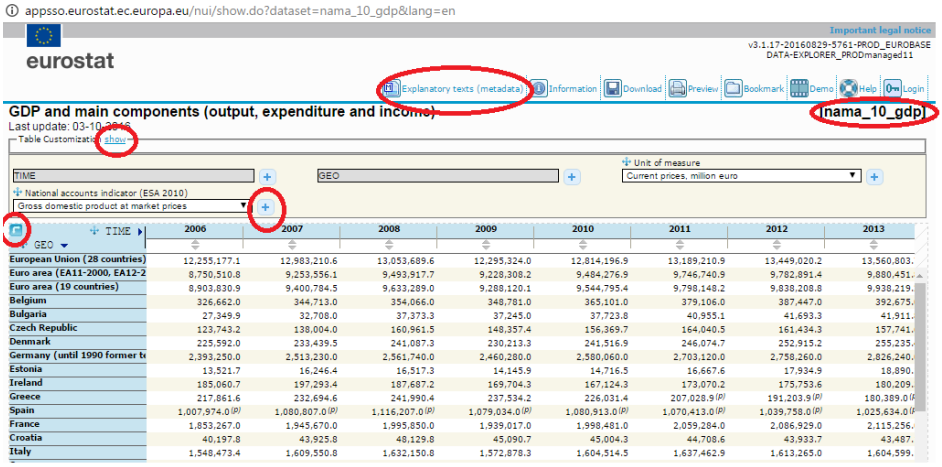


Figure 6: Data Table in Eurostat

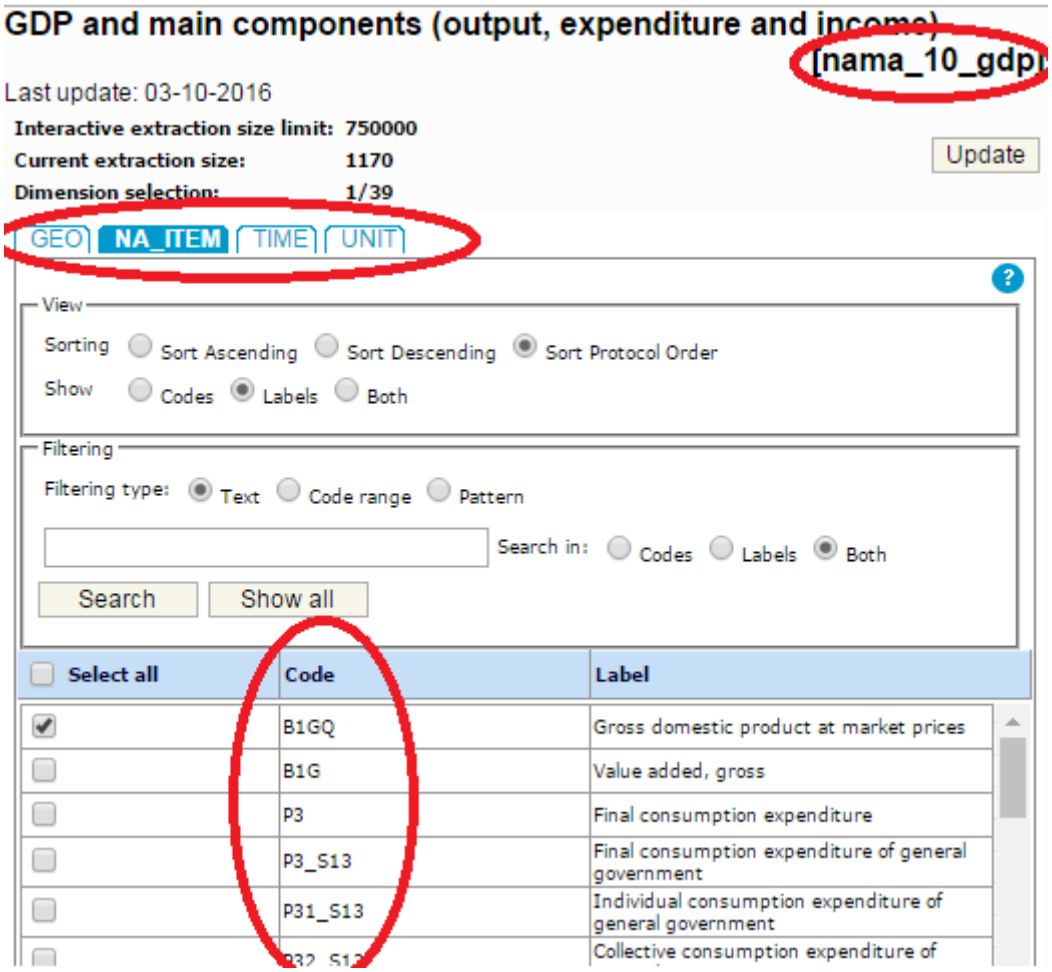


Figure 7: Data Details

Data

Eurostat

Looking at sectoral Accounts

url: http://ec.europa.eu/eurostat/web/sector-accounts

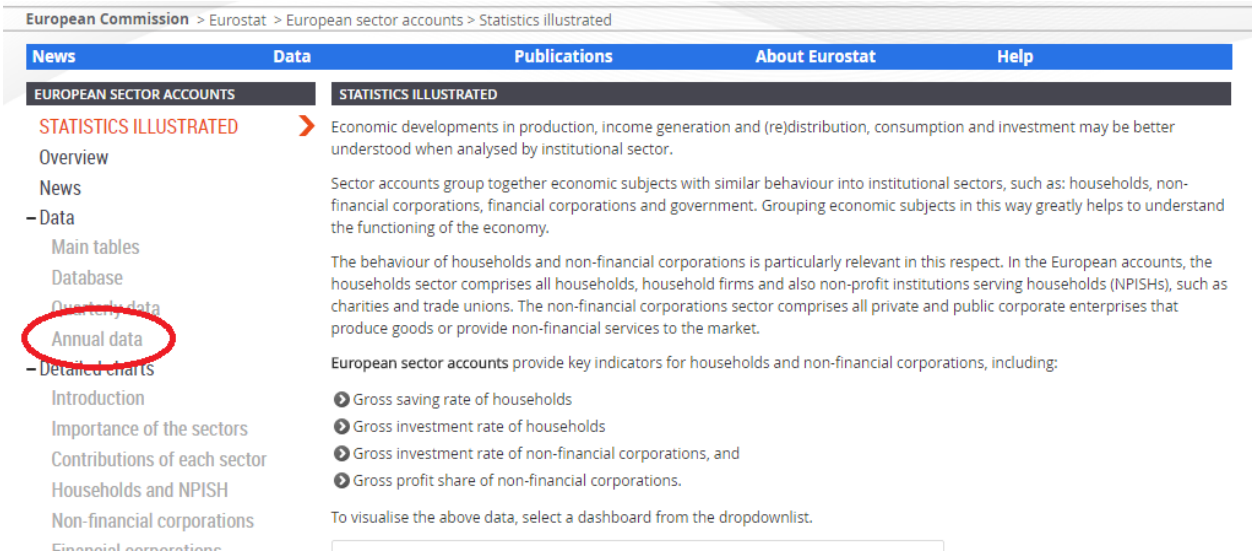


Figure 8: Sectoral Accounts webpage

pdfetch: getting data automatically

- Fetch Economic and Financial Time Series Data from Public Sources
- Package developed by Abiel Reinhart
- We will be using the `pdfetch_EUROSTAT` function

```
?pdfetch_EUROSTAT
```

Example 1: Net lending per sector, UK

```
# Specifying the name of the flows of interests
names<-c("B9")
# Downloading the data by specifying the various filters
UKdata_raw = pdfetch_EUROSTAT(flowRef = "nasa_10_nf_tr",
        UNIT="CP_MNAC",NA_ITEM=names, GEO="UK", DIRECT="PAID",
        SECTOR=c("S11","S12","S13","S14_S15","S2"))
# Transforming the obtained data into a data.frame
UKdata<-as.data.frame(UKdata_raw)
# Setting readable names
colnames(UKdata)<-c("NFC","FC","Govt","HH","RoW")

# Matricial plot
matplot(as.numeric(substr(row.names(UKdata),1,4)),UKdata,lwd=2,type="l",lty=1,
```

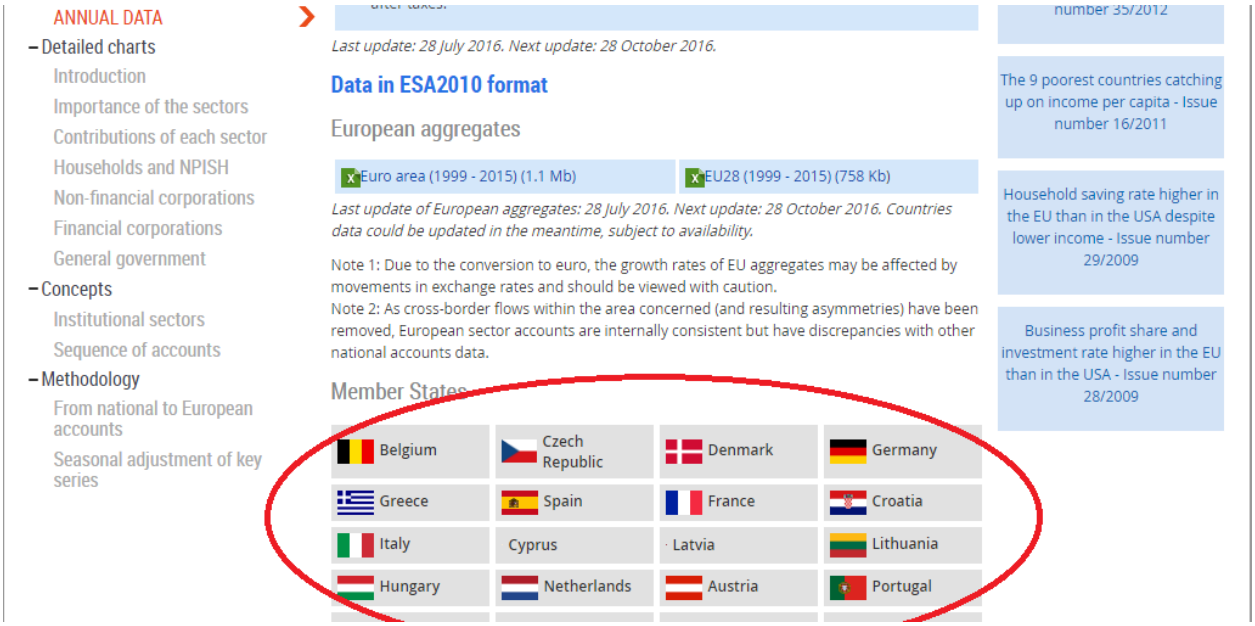
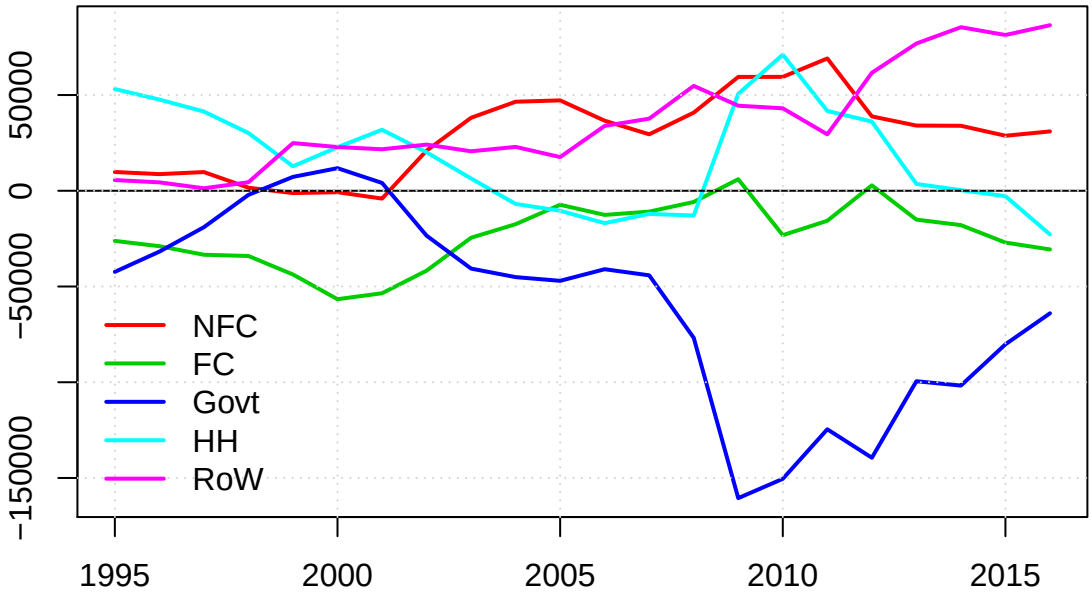


Figure 9: Sectoral Accounts Countries Data

```
        ylab="",xlab="",col=2:6)
# Adding the horizontal line
abline(h=0,col=1)
# Adding a grid
grid()
# Adding a legend
legend("bottomleft",col=c(2:6),lwd=2,lty=1,legend=c("NFC",
        "FC","Govt","HH","RoW"),bty='n')
```



National Accounts and Stock-Flow Consistent Modelling

- SFC models are based on a set of different tables that are more or less connected to real data and national accounts.
- Balance Sheets
- Transaction Flow Matrix
- Full Integration Matrix
- References: Godley and Lavoie Ch. 2, Caverzasi and Godin (2015), Eurostat and ONS Blue book

Stock-Flow Accounting

- Started with Copeland (1949) and his Social Accounting for moneyflows, picked up by Denizet (1969) and many others...
- Highlights the importance to incorporate monetary and financial processes into national accounts such as NIPA.
- Very close to Keynes's idea to integrate financial and income accounting.
- Idea is to be able to answer Copeland questions:
  - when total purchases of our national product increase, where does the money come from to finance them?
  - when purchases of our national product decline, what becomes of the money that is not spent?

Balance Sheets

- Balance sheets display the assets, liabilities and the balancing item net worth.
- Most of you are familiar with basic balance sheets such as the households balance sheet for the households at the end of 2015 in the United Kingdom (source Eurostat).

```
names<-c("F2","F3","F4","F5","F6","F7","BF90")
sec="S14_S15"
F_BS_raw = pdfetch_EUROSTAT("nasa_10_f_bs", UNIT="MIO_NAC", CO_NCO="CO", NA_ITEM=names, SECTOR=sec, TIM
F_BS<-as.data.frame(F_BS_raw)
NFA_BS_raw = pdfetch_EUROSTAT("nama_10_nfa_bs", UNIT="CP_MNAC", SECTOR=sec, GEO="UK", ASSET10=c("N1N","
NFA_BS<-as.data.frame(NFA_BS_raw)
balancesheet<-matrix(0,ncol=2,nrow=9,dimnames = list(c("Produced non-financial asset","Non-produced non
counter<-1
for(name in c("N1N","N2N")){
    colnamea<-paste("A.CP_MNAC",sec,name,"UK",sep=".")
    balancesheet[counter,1]<-NFA_BS[18,colnamea]
    counter<-counter+1
}
for(name in names[1:6]){
    colnamea<-paste("A.MIO_NAC.CO",sec,"ASS",name,"UK",sep=".")
    colnamel<-paste("A.MIO_NAC.CO",sec,"LIAB",name,"UK",sep=".")
    if(is.null(F_BS[20,colnamea]))
        balancesheet[counter,1]<-0
    else
        balancesheet[counter,1]<-F_BS[20,colnamea]
    if(is.null(F_BS[20,colnamea]))
        balancesheet[counter,2]<-0
    else
        balancesheet[counter,2]<-F_BS[20,colnamel]
    counter<-counter+1
```

```
}
balancesheet[9,2]<-F_BS[20,paste("A.MIO_NAC.CO",sec,"LIAB.BF90.UK",sep=".")]+NFA_BS[18,paste("A.CP_MNAC
kable(balancesheet)
```

	Assets	Liabilities
Produced non-financial asset	1549286	0
Non-produced non financial assets	2257	0
Currency and deposits	1412172	0
Securities other than shares	91487	2226
Loans	18745	1563594
Shares and other equity	777956	0
Insurance technical reserves	3708339	69232
Other accounts receivable/payable	6847	2842
Net Worth	0	6048765

Non-financial corporations

```
names<-c("F2","F3","F4","F5","F6","F7","BF90")
sec="S11"
F_BS_raw = pdfetch_EUROSTAT("nasa_10_f_bs", UNIT="MIO_NAC", CO_NCO="CO", NA_ITEM=names, SECTOR=sec, TIM
F_BS<-as.data.frame(F_BS_raw)
NFA_BS_raw = pdfetch_EUROSTAT("nama_10_nfa_bs", UNIT="CP_MNAC", SECTOR=sec, GEO="UK", ASSET10=c("N1N","
NFA_BS<-as.data.frame(NFA_BS_raw)
balancesheet<-matrix(0,ncol=2,nrow=9,dimnames = list(c("Produced non-financial asset","Non-produced non
counter<-1
for(name in c("N1N","N2N")){
    colnamea<-paste("A.CP_MNAC",sec,name,"UK",sep=".")
    balancesheet[counter,1]<-NFA_BS[18,colnamea]
    counter<-counter+1
}
for(name in names[1:6]){
    colnamea<-paste("A.MIO_NAC.CO",sec,"ASS",name,"UK",sep=".")
    colnamel<-paste("A.MIO_NAC.CO",sec,"LIAB",name,"UK",sep=".")
    balancesheet[counter,1]<-F_BS[20,colnamea]
    balancesheet[counter,2]<-F_BS[20,colnamel]
    counter<-counter+1
}
balancesheet[9,2]<-F_BS[20,paste("A.MIO_NAC.CO",sec,"LIAB.BF90.UK",sep=".")]+NFA_BS[18,paste("A.CP_MNAC
kable(balancesheet)
```

	Assets	Liabilities
Produced non-financial asset	1857180	0
Non-produced non financial assets	0	0
Currency and deposits	546337	0
Securities other than shares	65083	384631
Loans	262326	965308
Shares and other equity	837888	2475658
Insurance technical reserves	4029	1056253
Other accounts receivable/payable	29976	50912
Net Worth	0	-1386059

- note negative net worth due to market value of equity
- capital stock are at market value (replacement cost) and not historical costs

Financial corporations

```
names<-c("F2","F3","F4","F5","F6","F7","BF90")
sec="S12"
F_BS_raw = pdfetch_EUROSTAT("nasa_10_f_bs", UNIT="MIO_NAC", CO_NCO="CO", NA_ITEM=names, SECTOR=sec, TIM
F_BS<-as.data.frame(F_BS_raw)
NFA_BS_raw = pdfetch_EUROSTAT("nama_10_nfa_bs", UNIT="CP_MNAC", SECTOR=sec, GEO="UK", ASSET10=c("N1N","
NFA_BS<-as.data.frame(NFA_BS_raw)
balancesheet<-matrix(0,ncol=2,nrow=9,dimnames = list(c("Produced non-financial asset","Non-produced non
counter<-1
for(name in c("N1N","N2N")){
    colnamea<-paste("A.CP_MNAC",sec,name,"UK",sep=".")
    balancesheet[counter,1]<-NFA_BS[18,colnamea]
    counter<-counter+1
}
for(name in names[1:6]){
    colnamea<-paste("A.MIO_NAC.CO",sec,"ASS",name,"UK",sep=".")
    colnamel<-paste("A.MIO_NAC.CO",sec,"LIAB",name,"UK",sep=".")
    balancesheet[counter,1]<-F_BS[20,colnamea]
    balancesheet[counter,2]<-F_BS[20,colnamel]
    counter<-counter+1
}
balancesheet[9,2]<-F_BS[20,paste("A.MIO_NAC.CO",sec,"LIAB.BF90.UK",sep=".")]+NFA_BS[18,paste("A.CP_MNAC
kable(balancesheet)
```

	Assets	Liabilities
Produced non-financial asset	113216	0
Non-produced non financial assets	0	0
Currency and deposits	3129884	5141459
Securities other than shares	3520842	1829957
Loans	3418831	1553526
Shares and other equity	2986514	2046996
Insurance technical reserves	1296602	3844915
Other accounts receivable/payable	6069641	6031487
Net Worth	0	15088

- Central Banks are in the financial corporations

Goverment

```
names<-c("F2","F3","F4","F5","F6","F7","BF90")
sec="S11"
F_BS_raw = pdfetch_EUROSTAT("nasa_10_f_bs", UNIT="MIO_NAC", CO_NCO="CO", NA_ITEM=names, SECTOR=sec, TIM
F_BS<-as.data.frame(F_BS_raw)
NFA_BS_raw = pdfetch_EUROSTAT("nama_10_nfa_bs", UNIT="CP_MNAC", SECTOR=sec, GEO="UK", ASSET10=c("N1N","
NFA_BS<-as.data.frame(NFA_BS_raw)
balancesheet<-matrix(0,ncol=2,nrow=9,dimnames = list(c("Produced non-financial asset","Non-produced non
```

```
counter<-1
for(name in c("N1N","N2N")){
    colnamea<-paste("A.CP_MNAC",sec,name,"UK",sep=".")
    balancesheet[counter,1]<-NFA_BS[18,colnamea]
    counter<-counter+1
}
for(name in names[1:6]){
    colnamea<-paste("A.MIO_NAC.CO",sec,"ASS",name,"UK",sep=".")
    colnamel<-paste("A.MIO_NAC.CO",sec,"LIAB",name,"UK",sep=".")
    balancesheet[counter,1]<-F_BS[20,colnamea]
    balancesheet[counter,2]<-F_BS[20,colnamel]
    counter<-counter+1
}
balancesheet[9,2]<-F_BS[20,paste("A.MIO_NAC.CO",sec,"LIAB.BF90.UK",sep=".")]+NFA_BS[18,paste("A.CP_MNAC
kable(balancesheet)
```

	Assets	Liabilities
Produced non-financial asset	1857180	0
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Insurance technical reserves	4029	1056253
Other accounts receivable/payable	29976	50912
Net Worth	0	-1386059

Balance Sheets in SFC

- When you are constructing the balance sheets of your model, you should first consider which assets you will include in your model.
  - Real assets: Capital stock, housing etc.
  - Financial assets/liabilities: cash, deposits, bills, bonds, loans, equities, derivatives, bank reserves, monetary gold, SDR etc.
- These assets will contain the economic wealth accumulated by economic agents. So your balance sheet matrix must contain the assets you decide to include in your model, and it should clearly identify which sectors in your economy hold which assets and which liabilities. As usual, the difference between assets and liabilities will yield net worth.

Example

	HHs	Firms	Gov.	Banks	C. B.	Sum
Capital	+Kh	+Kf				+K
Money	+Hh			+Hb	-H	0
Bills	+Bh		-Bs	+Bb	+Bcb	0
Loans	-Lh	-Lf	+L	0	0	0
Equities	+Ef	-Ef	0	0	0	0
Equities	+Eb	0	-Eb	0	0	0
Net worth	-NWh	-NWf	-NWb	-NWg	0	-K
Sum	0	0	0	0	0	0

	HHs	Firms	Gov.	Banks	C. B.	Sum

Sectorial accounts (from Eurostat)

- Sector accounts record every transaction between sector and the change in financial assets and liabilities.
- Transactions are grouped in categories having a distinct economic meaning. Each non-financial transaction is recorded as an increase in the "resources" of a sector and an increase in the "uses" of another.
- Shown in a sequence of accounts, each of which covers a specific economic process.
- Two main categories: current accounts and accumulation accounts
  - *Current accounts* record transactions that do not involve the purchase or sale of financial or non-financial assets. Final balancing item is saving
  - *Accumulation accounts* record net acquisition of non-financial and financial assets, and the net incurrence of liabilities. Also show other changes in balance sheets, such as revaluations and write-offs of bad debts
  - The accumulation accounts explain all the changes in the (non-financial and financial) balance sheets

Example for households in the UK in 2014

```
# Selecting the flows
names<-c("B5G","D5","D61","D62","D7","D8","B6G","P3","B8G","P5G","D9","NP","B9")

# Obtaining the data
EZdata_raw = pdfetch_EUROSTAT("nasa_10_nf_tr", UNIT="CP_MNAC",NA_ITEM=names, GEO="EU28",
                              SECTOR=c("S14_S15"), TIME="2014")

# Transforming the data into a data.frame
EZdata<-as.data.frame(EZdata_raw)

# Automatic procedure to remove the non-interesting bit of the colnames
coln<-colnames(EZdata)
newcoln<-c()
HHdata<-c()

for(i in 1:length(coln)){
  name<-coln[i]
  tname<-strsplit(name,"\\.")[[1]]
  newname<-paste(tname[3:4],collapse=".")
  # If the column contains only NA, remove it from the dataset
  if(!is.na(EZdata[16,i])){
    newcoln<-c(newcoln,newname)
    HHdata<-c(HHdata,EZdata[16,i])
  }
}

# Creating a new dataset with only values 2014
HHdata<-as.data.frame(t(HHdata))
colnames(HHdata)<-newcoln

# Creating the aggregates
```

```
HHdata_1<-as.data.frame(c(HHdata$PAID.B5G,-HHdata$PAID.D5,-HHdata$PAID.D61+HHdata$RECV.D61,
                          +HHdata$RECV.D62-HHdata$PAID.D62,-HHdata$PAID.D7+HHdata$RECV.D7,paste(HHdata$
                          -HHdata$PAID.NP,HHdata$PAID.B9))
colnames(HHdata_1)<-"Households"
rownames(HHdata_1)<-c("Total Income","Taxes","Social Contributions","Social Benefits",
                      "Other transfers","[Gross Disposable Income","Consumption","Adjustments in Pensio
                      "Net Non-Produced NF Assets","Net Lending Position")
kable(HHdata_1)
```

	Households
Total Income	9881408
Taxes	-1455366
Social Contributions	-2422712
Social Benefits	2637790
Other transfers	116967
[Gross Disposable Income	8758087]
Consumption	-8008156
Adjustments in Pensions	200560
[Gross Savings	950492]
Gross Capital Formation	-710480
Capital Transfer	23045
Net Non-Produced NF Assets	6961
Net Lending Position	270017

From the Sectoral Account to the Transaction Flow Matrix

- See the excel sheet SectoralAccount_to_TFM.xlsx

Generate a TFM automatically

```
TFM_code<-as.data.frame(read.csv("TFM_ESA2010.csv",row.names = 1,colClasses = "character"))

country="IT"
year=2013
unit="CP_MNAC"

generateTFM<-function(TFM_code,dataset=NULL,country,year,unit){

    tfm_flows<-row.names(TFM_code)
    tfm_sectors<-colnames(TFM_code)

    TFM_values<-as.data.frame(matrix(NA,nrow=nrow(TFM_code),ncol=ncol(TFM_code),dimnames=list(tfm_flows


    for(r in 1:nrow(TFM_code)){
        for(c in 1:ncol(TFM_code)){
            cell<-TFM_code[r,c]
            contents<-strsplit(cell,"+[-\\+]")[[1]]
            for(content in contents){
```

```
                if(nchar(content)>1){
                    struct<-strsplit(content,"\\.")[[1]]
                    sect<-struct[1]
                    flow<-struct[2]
                    direct<-struct[3]
                    if(is.null(dataset))
                        value<-as.numeric(pdfetch_EUROSTAT("nasa_10_nf_tr",from=paste(year-1,"-12-31",s
                    else
                        value<-as.numeric(dataset[dataset$unit==unit&dataset$direct==direct&dataset$na_
                    cell<-sub(content,value,cell)
                }
            }
            TFM_values[r,c]<-eval(parse(text=cell))
        }
    }
    sum.row<-rowSums(TFM_values)
    TFM_values<-cbind(TFM_values,sum.row)
    sum.col<-colSums(TFM_values)
    TFM_values<-rbind(TFM_values,sum.col)
    rownames(TFM_values)<-c(tfm_flows,"sum.col")
    return(TFM_values)
}

test_TFM<-generateTFM(TFM_code = TFM_code,country="IT",year=2013,unit="CP_MNAC")
kable(test_TFM)
```

	Non.Financial.Corporation.Current	Non.Financial.Corporation.Capital	Financial
GDP Redistribution	-737911	0	
Consumption	1296296	0	
Exports	463129	0	
Imports	-426888	0	
Investment	272061	-132934	
Wages	-394651	0	
Net Production Taxes and Subsidies	-182201	0	
Dividends	-114281	0	
Interests payments	-12444	0	
Other property income	4004	0	
Net Social Contributions	-35088	0	
Other Transfers	4489	0	
Net Lending Position	-4491	0	
sum.col	132024	-132934	

Lab

- See the pdf file on github.

References

McLeay, M., A. Radia, and R. Thomas. 2014. "Money Creation in the Modern Economy." *Bank of England Quarterly Bulletin* Q1: 14.