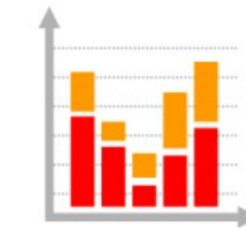
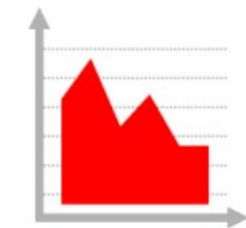
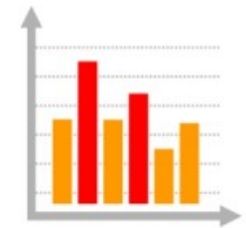
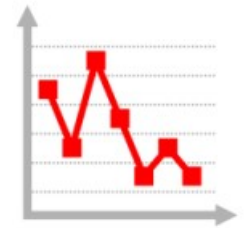


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# Introducing Turnover indices



Date

# Turnover definition

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- Turnover is the amount of sales (excluding taxes) realised by the company with third parties in the course of its normal and current professional activity.
- Turnover is the sum of sales of goods, made products, services and additional businesses products.
- In France, it is mainly collected through VAT forms.

# Turnover in industry

---

- In industry, two significant indexes quite different
- IPI (Industrial Production Index) : a volume index providing information on value added mainly used in quarterly account.
- Turnover index : a value index as a complement to production information in short-term analysis.

# Turnover in services including retail trade

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- Objective : to show the development of the market for goods and services
- Monthly turnover index : a good indicator used in proxy of quartely household consumption in national accounts.

# To reflect economic outlook

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- Turnover indexes monthly allow measuring sales of goods and services variations, in market services sectors.
- Available at 60 days, they are one of the first source of quantitative information observed on the economic outlook level

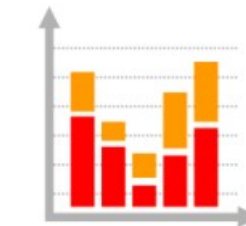
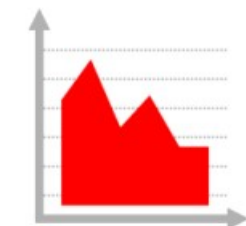
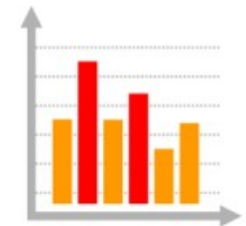
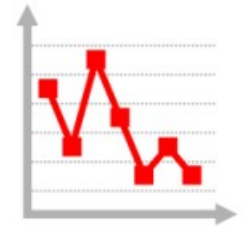
# To meet european regulations

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- At first, Short-term business Statistics regulation n° 1165/98 of the council of 19 May 1998
- To analyse economic outlook at member states and eurozone level
- FRIBS – Framework regulation for the integration of business statistics
  - Linking STS, SBS, PRODCOM, ...
  - Simplification, gathering load reduction
  - Data exchange
  - Consistency (statistical units, nomenclatura)

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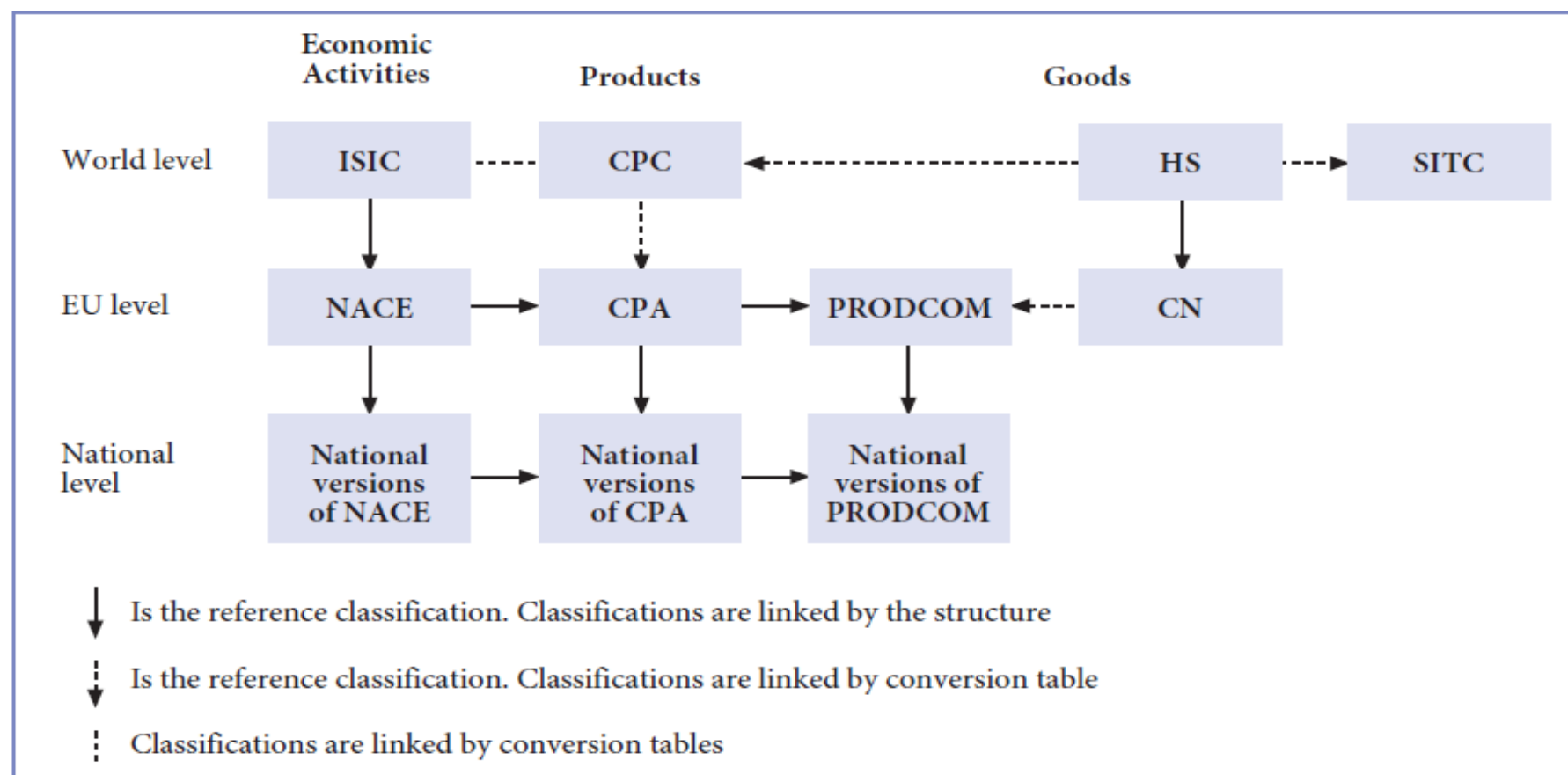
# Classifications



Date

## The international system of economic classifications

3. The comparability at world level of statistics produced on the basis of NACE is due to the fact that NACE is part of an integrated system of statistical classifications, developed mainly under the auspices of the United Nations Statistical Division. From the European point of view, this system can be represented as follows:





# Correspondence between ISIC Rev.4 and NACE Rev.2

The following table shows the links between the selected classifications. In case of a partial link, the detail column specifies the portion of the second classification. An icon in the last column signifies comments, such as changes after the original publication. Clicking on the codes of either classification links to the definition of that particular category.

996 records found

ISIC Rev.4	NACE Rev.2	Part	Detail	
<a href="#">01</a>	<a href="#">01</a>			
<a href="#">011</a>	<a href="#">01.1</a>			
<a href="#">0111</a>	<a href="#">01.11</a>			
<a href="#">0112</a>	<a href="#">01.12</a>			
<a href="#">0113</a>	<a href="#">01.13</a>			
<a href="#">0114</a>	<a href="#">01.14</a>			
<a href="#">0115</a>	<a href="#">01.15</a>			
<a href="#">0116</a>	<a href="#">01.16</a>			
<a href="#">0119</a>	<a href="#">01.19</a>			
<a href="#">012</a>	<a href="#">01.2</a>			
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<a href="#">0122</a>	<a href="#">01.22</a>			
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<a href="#">0124</a>	<a href="#">01.24</a>			
<a href="#">0125</a>	<a href="#">01.25</a>			
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<a href="#">0127</a>	<a href="#">01.27</a>			
<a href="#">0128</a>	<a href="#">01.28</a>			
<a href="#">0129</a>	<a href="#">01.29</a>			

Source: <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=70>

# STS Requirements : Industry

## STS Requirements

Version as of 31 January 2014

### ANNEX A – "Industry"

**Scope:** applies to all activities listed in Sections B to E of NACE Rev. 2 respectively all products of the equivalent CPA Sections

**Observation unit:** kind-of-activity unit, in certain cases (few persons employed in secondary activities) local unit or enterprise

Group	Definition	Group members (base year 2010)	Additional comments
I	Less than 1% of EU-28 <u>value added</u> in Sections B to E	BG, EE, HR, CY, LV, LT, LU, MT, SI, SK	--
II	1% or more of EU-28 <u>value added</u> in Sections B to E (but less than 4% of EU <u>value added</u> in Section C)	BE, CZ, DK, IE, EL, HU, NL, AT, PL, PT, RO, FI, SE	Concerning the deadlines, the threshold between Groups II and III is "less than 3%" (of value added in Sections B to E). There are three MS of Group II who, in terms of the deadlines, have to comply with Group III requirements: NL, PL, SE
III	4% and more of EU-28 <u>value added</u> in Section C)	DE, ES, FR, IT, UK	--

Variable	Reference period	Form	Country group	Level of detail	Deadlines (days are calendar days)
A-120 (tovt) Turnover	month	unadjusted (if available) [Index or absolute]	I	Total Industry excluding Section D and E (= B_C), MIGs (MIG Energy excluding Sections D and E = MIG_NRG_X_D_E) and Section-level of NACE (not Sections D and E) [NACE Sections D and E not included]	as Group III plus 15 days
			II	as Group I. Additionally: 2-digit level of NACE	2 months
			III		
A-121 (tovd) Turnover domestic	as Variable 120	as Variable A-120	I	as Variable A-120	as Variable A-120
			II		
			III		
A-122 (tove) Turnover non-domestic	as Variable 120	as Variable A-120	I	as Variable A-120	as Variable A-120
			II		
			III		
			euro area	Split of total (tove) into euro area (tovz) and non-euro area (tovx); level of detail according to country group (I, II or III)	according to Group

Division	Group	Class	n.e.c. : not elsewhere classified	* part of ISIC Rev. 4
<b>SECTION B — MINING AND QUARRYING</b>				
<b>05</b>	05.1		Mining of coal and lignite	
		05.10	Mining of hard coal	0510
	05.2	05.20	Mining of lignite	0520
<b>06</b>	06.1		Extraction of crude petroleum and natural gas	
		06.10	Extraction of crude petroleum	0610
	06.2	06.20	Extraction of natural gas	0620
<b>07</b>	07.1		Mining of metal ores	
		07.10	Mining of iron ores	0710
	07.2	07.21	Mining of non-ferrous metal ores	0721
<b>08</b>		07.29	Mining of uranium and thorium ores	0729
	08.1		Other mining and quarrying	
		08.11	Quarrying of stone, sand and clay	0810*
		08.12	Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate	0810*
	08.9		Operation of gravel and sand pits; mining of clays and kaolin	
		08.91	Mining and quarrying n.e.c.	0891
		08.92	Mining of chemical and fertiliser minerals	0892
		08.93	Extraction of peat	0893
		08.99	Extraction of salt	0899
<b>09</b>			Other mining and quarrying n.e.c.	
	09.1		Mining support service activities	
		09.10	Support activities for petroleum and natural gas extraction	0910
	09.9		Support activities for other mining and quarrying	

Division	Group	Class	n.e.c. : not elsewhere classified	* part of ISIC Rev. 4
<b>SECTION C — MANUFACTURING</b>				
<b>10</b>	10.1		Manufacture of food products	
		10.11	Processing and preserving of meat and production of meat products	1010*
		10.12	Processing and preserving of meat	1010*
		10.13	Processing and preserving of poultry meat	1010*
		10.13	Production of meat and poultry meat products	
	10.2		Processing and preserving of fish, crustaceans and molluscs	
		10.20	Processing and preserving of fish, crustaceans and molluscs	1020
	10.3		Processing and preserving of fruit and vegetables	
		10.31	Processing and preserving of potatoes	1030*
		10.32	Manufacture of fruit and vegetable juice	1030*
		10.39	Other processing and preserving of fruit and vegetables	1030*
	10.4		Manufacture of vegetable and animal oils and fats	
		10.41	Manufacture of oils and fats	1040*
		10.42	Manufacture of margarine and similar edible fats	1040*
	10.5		Manufacture of dairy products	
		10.51	Operation of dairies and cheese making	1050*
		10.52	Manufacture of ice cream	1050*
	10.6		Manufacture of grain mill products, starches and starch products	
		10.61	Manufacture of grain mill products	1061
		10.62	Manufacture of starches and starch products	1062
	10.7		Manufacture of bakery and farinaceous products	
		10.71	Manufacture of bread; manufacture of fresh pastrygoods and cakes	1071*
		10.72	Manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes	1071*
		10.73	Manufacture of macaroni, noodles, couscous and similar farinaceous products	1074
	10.8		Manufacture of other food products	
		10.81	Manufacture of sugar	1072
		10.82	Manufacture of cocoa, chocolate and sugar confectionery	1073
		10.83	Processing of tea and coffee	1074*

# STS Requirements : Retail trade

## STS Requirements

Version as of 31 January 2014

### ANNEX C – "Retail trade and repair"

**Scope:** applies to the activities listed in Division G47 of NACE Rev. 2  
**Observation unit:** enterprise

Group	Definition	Group members (base year 2010)
I	Less than 1% of EU-28 <u>turnover</u> in Division 47	BG, EE, HR, CY, LV, LT, LU, HU, MT, SI, SK
II	1% or more, but less than 3% of EU-28 <u>turnover</u> in Division 47	CZ, DK, IE, EL, AT, PT, RO, FI, SE
III	3% and more of EU-28 <u>turnover</u> in Division 47 of NACE	BE, DE, ES, FR, IT, NL, PL, UK

Variable	Reference period	Form	Country group	Level of detail	Deadlines (days are calendar days)
C-120 (tovt) <u>Turnover</u>  and C-330 (defl) (%) <u>Deflator of sales</u>	month	unadjusted (if available) and working-day adjusted [index or absolute]	I, II and III	Sum of (G4711 and G472)(= G47_FOOD), sum of (G4719, G474 to G479)(= G47_NFOOD_X_G473), Division G47, Division G47 without G473 (= G47_X_G473)	1 month
			II	Additionally: G4711, G4719, G472, G473, sum of (47.73 to 47.75)(G47_NF_HLTH), sum of (G4751, G4771 and G4772)(G47_NF_CLTH), sum of (G4743, G4752, G4754, G4759 and G4763)(G47_NF_OTH2), sum of (G4741, G4742, G4753, G4761, G4762, G4764, G4765, G4776, G4777 and G4778)(G47_NF_OTH1), G4791	2 months and 15 days
			III		2 months

Division	Group	Class		ISIC Rev. 4
47			Retail trade, except of motor vehicles and motorcycles	
	47.1		Retail sale in non-specialised stores	
		47.11	Retail sale in non-specialised stores with food, beverages or tobacco predominating	4711
		47.19	Other retail sale in non-specialised stores	4719
	47.2		Retail sale of food, beverages and tobacco in specialised stores	
		47.21	Retail sale of fruit and vegetables in specialised stores	4721*
		47.22	Retail sale of meat and meat products in specialised stores	4721*
		47.23	Retail sale of fish, crustaceans and molluscs in specialised stores	4721*
		47.24	Retail sale of bread, cakes, flour confectionery and sugar confectionery in specialised stores	4721*
		47.25	Retail sale of beverages in specialised stores	4722
		47.26	Retail sale of tobacco products in specialised stores	4723
		47.29	Other retail sale of food in specialised stores	4721*
	47.3		Retail sale of automotive fuel in specialised stores	
		47.30	Retail sale of automotive fuel in specialised stores	4730
	47.4		Retail sale of information and communication equipment in specialised stores	
		47.41	Retail sale of computers, peripheral units and software in specialised stores	4741*
		47.42	Retail sale of telecommunications equipment in specialised stores	4741*
		47.43	Retail sale of audio and video equipment in specialised stores	4742

# STS Requirements : Services

## STS Requirements

Version as of 31 January 2014

### ANNEX D – "Other services"

**Scope:** applies to all activities listed in Divisions G45 and G46 and Sections H to N and P to S of NACE Rev. 2

**Observation unit:** enterprise

Group	Definition	Group members (base year 2010)	Additional comments
I	Less than 4% of: – EU-28 <u>turnover</u> in Divisions G45 and G46 respectively (> level of detail of D-120), – EU-28 total <u>value added</u> in Sections H and J respectively (> level of detail of D-210), – EU-28 <u>turnover</u> in Division J63 (> level of detail of D-310)	BE, BG, CZ, DK, EE, IE, EL, HR, CY, LV, LT, LU, HU, MT, AT, PL, PT, RO, SI, SK, FI, SE	With regard to Variable... – D-120, BE has to provide Group II details of Divisions 45 and 46, – D-310, IE and AT have to provide Group II details of Division 63
II	4% and more of the respective EU-28 totals	DE, ES, FR, IT, NL, UK	With regard to Variable... – D-310, ES is not required to provide Group II details of Division 63

Variable	Reference period	Form	Country group	Level of detail	Deadlines
D-120 (tovt) <u>Turnover</u>	quarter	unadjusted (if available) and working-day adjusted [index or absolute]	I	G45, H49, H50, H51, H52, H53, Section I, J58, J59, J60, J61, J62, J63, M71, M73, M74, N78, N79, N80, N812, N82, sum of (M69 and M702)(= M69_M702). Additionally: G46	2 months
			II	G45, H49, H50, H51, H52, H53, Section I, J58, J59, J60, J61, J62, J63, M71, M73, M74, N78, N79, N80, N812, N82, sum of (M69 and M702)(= M69_M702) (as Group I). Additionally: G452, sum of (G451, G453 and G454)(G45_X_G452), G46 at 3-digit level	



**SECTION G — WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES**

45			Wholesale and retail trade and repair of motor vehicles and motorcycles	
	45.1		Sale of motor vehicles	
		45.11	Sale of cars and light motor vehicles	4510*
		45.19	Sale of other motor vehicles	4510*
	45.2		Maintenance and repair of motor vehicles	
		45.20	Maintenance and repair of motor vehicles	4520
	45.3		Sale of motor vehicle parts and accessories	
		45.31	Wholesale trade of motor vehicle parts and accessories	4530*
		45.32	Retail trade of motor vehicle parts and accessories	4530*
46	45.4		Sale, maintenance and repair of motorcycles and related parts and accessories	
		45.40	Sale, maintenance and repair of motorcycles and related parts and accessories	4540
			Wholesale trade, except of motor vehicles and motorcycles	
	46.1		Wholesale on a fee or contract basis	
		46.11	Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods	4610*
		46.12	Agents involved in the sale of fuels, ores, metals and industrial chemicals	4610*
		46.13	Agents involved in the sale of timber and building materials	4610*
		46.14	Agents involved in the sale of machinery, industrial equipment, ships and aircraft	4610*
		46.15	Agents involved in the sale of furniture, household goods, hardware and iron-mongery	4610*
		46.16	Agents involved in the sale of textiles, clothing, fur, footwear and leather goods	4610*
		46.17	Agents involved in the sale of food, beverages and tobacco	4610*
		46.18	Agents specialised in the sale of other particular products	4610*

**SECTION H — TRANSPORTATION AND STORAGE**

49			Land transport and transport via pipelines	
	49.1		Passenger rail transport, interurban	
		49.10	Passenger rail transport, interurban	4911
	49.2		Freight rail transport	
		49.20	Freight rail transport	4912
	49.3		Other passenger land transport	
		49.31	Urban and suburban passenger land transport	4921
		49.32	Taxi operation	4922*
		49.39	Other passenger land transport n.e.c.	4922*
	49.4		Freight transport by road and removal services	
		49.41	Freight transport by road	4922*

49.12 Removal services				4923
<b>SECTION N — ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES</b>				
77	77.1		Rental and leasing activities	
			Renting and leasing of motor vehicles	
		77.11	Renting and leasing of cars and light motor vehicles	7710*
		77.12	Renting and leasing of trucks	7710*
	77.2		Renting and leasing of personal and household goods	
		77.21	Renting and leasing of recreational and sports goods	7721
		77.22	Renting of video tapes and disks	7722
		77.29	Renting and leasing of other personal and household goods	7729
	77.3		Renting and leasing of other machinery, equipment and tangible goods	
		77.31	Renting and leasing of agricultural machinery and equipment	7730*
		77.32	Renting and leasing of construction and civil engineering machinery and equipment	7730*
		77.33	Renting and leasing of office machinery and equipment (including computers)	7730*
		77.34	Renting and leasing of water transport equipment	7730*
		77.35	Renting and leasing of air transport equipment	7730*
		77.39	Renting and leasing of other machinery, equipment and tangible goods n.e.c.	7730*
	77.4		Leasing of intellectual property and similar products, except copyrighted works	
n.e.c. : not elsewhere classified				* part of
Division	Group	Class		ISIC Rev. 4

SECTION P — EDUCATION				
85	85.1		Education	
			Pre-primary education	
		85.10	Pre-primary education	8510*
	85.2		Primary education	
		85.20	Primary education	8510*
	85.3		Secondary education	
		85.31	General secondary education	8521
		85.32	Technical and vocational secondary education	8522
	85.4		Higher education	
		85.41	Post-secondary non-tertiary education	8530*
		85.42	Tertiary education	8530*
	85.5		Other education	
		85.51	Sports and recreation education	8541
		85.52	Cultural education	8542
n.e.c. : not elsewhere classified			* part of	
Division	Group	Class		ISIC Rev. 4

<b>SECTION S — OTHER SERVICE ACTIVITIES</b>				
94	94.1		Activities of membership organisations	
			Activities of business, employers and professional membership organisations	
		94.11	Activities of business and employers membership organisations	9411
		94.12	Activities of professional membership organisations	9412
	94.2		Activities of trade unions	
		94.20	Activities of trade unions	9420
	94.9		Activities of other membership organisations	
		94.91	Activities of religious organisations	9491
		94.92	Activities of political organisations	9492
		94.99	Activities of other membership organisations n.e.c.	9499
95	95.1		Repair of computers and personal and household goods	
			Repair of computers and communication equipment	
		95.11	Repair of computers and peripheral equipment	9511
		95.12	Repair of communication equipment	9512



# To supply Insee users

---

- National accounts
- Statisticals directories (Sirus, Citrus)
- Structural surveys (ESA, EAP) :
  - Treatment of nonrespon
  - To conform annual data
  - To determine whether or not a company is ceased

# Using in quarterly accounts

---

- Activity indexes, as the IPI and turnover indexes are used in quarterly accounts in their calibration:
- $\text{Production} = a + b * \text{IPI} + c * \text{ICA} + \dots$
- Estimated econometric equation over annual data and used to forecast the quarter

# To build new indexes

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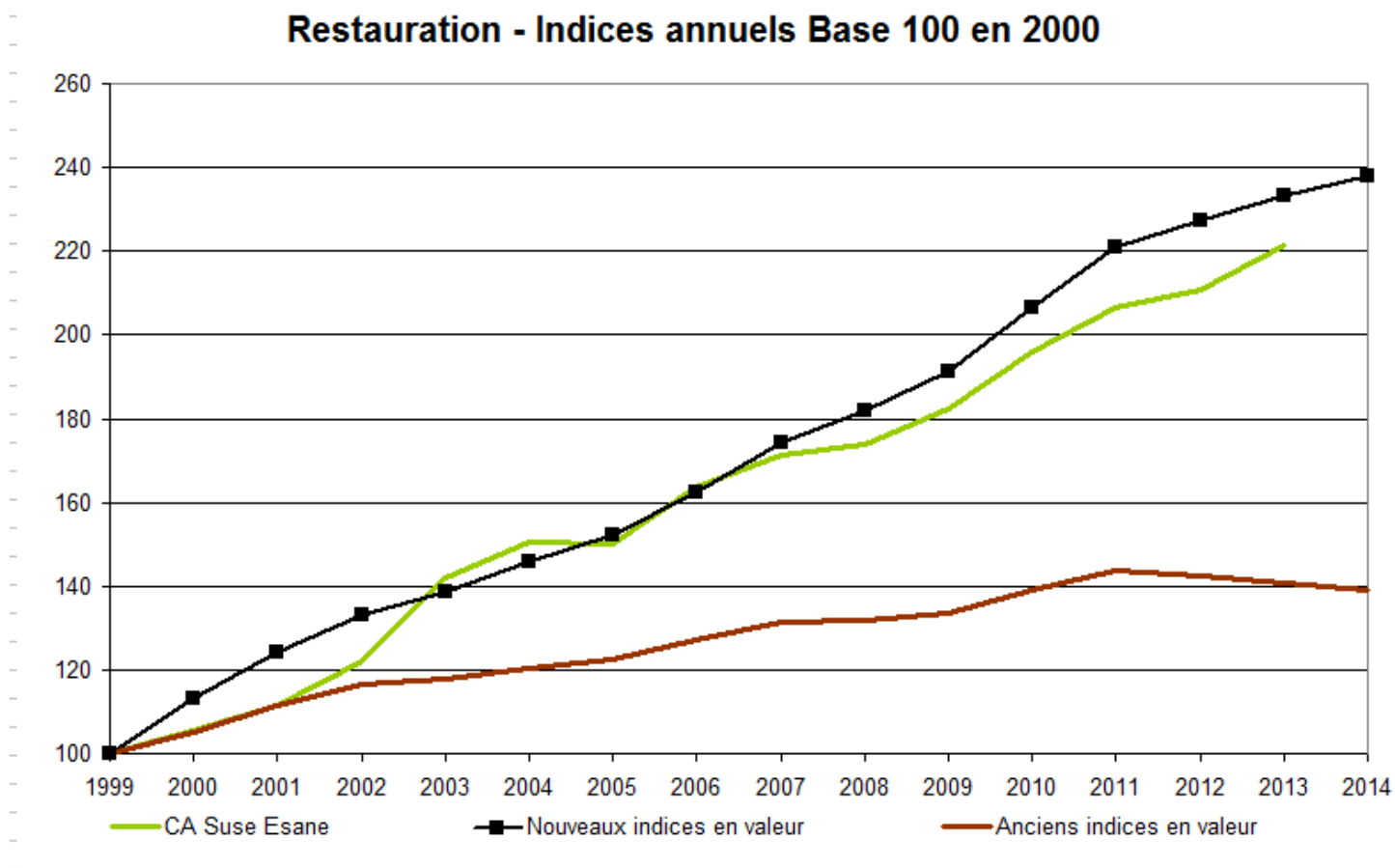
- Indexes deflated by prices ( sales volume in the trade, production in services)
- Indexes by company size
- Indexes by branches

# History of turnover indexes in France

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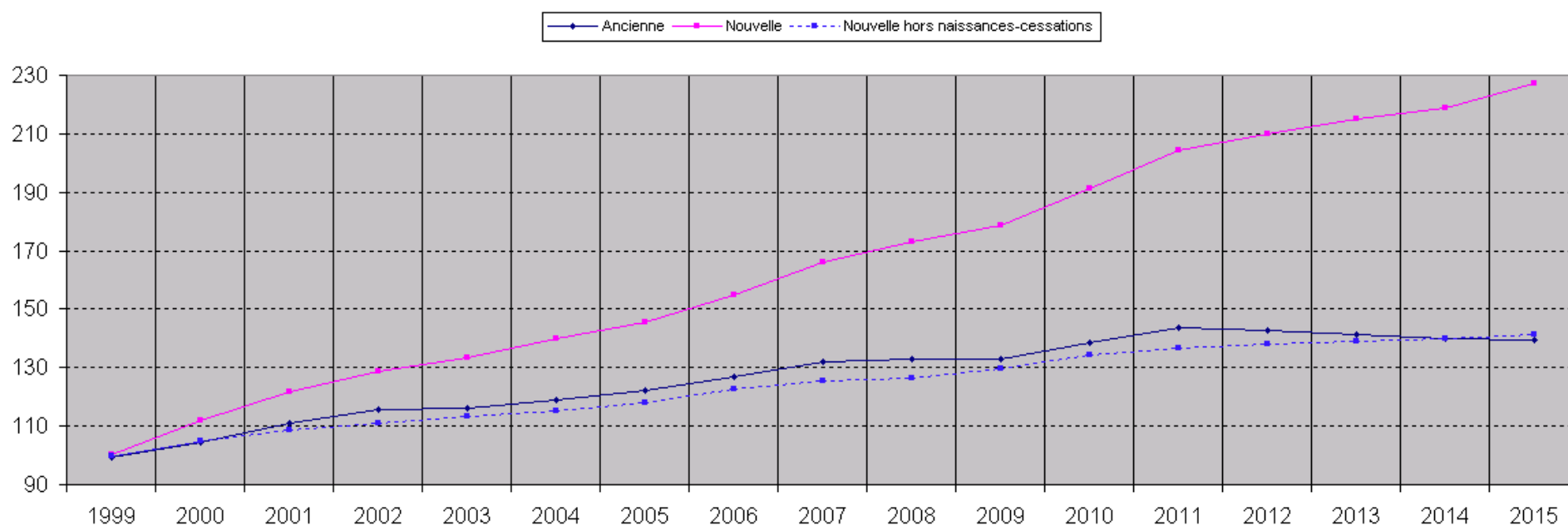
- INSEE was authorised to use companies VAT forms to built a set of monthly turnover variation indexes.
- This fiscal source was exploited since 1976 by INSEE.
- Until 1994, this exploitation was done with a monthly sample supplied by Finance and Tax Office based on a list of companies introduced by INSEE.
- Since 1995, Finance and Tax Office has been supplying the whole forms to INSEE, but only a sample used to calculate the indexes.
- Since 2015, INSEE has been exploiting the whole monthly forms.

# To best reflect the reality



# To best take into account the demography

Comparaison des séries annuelles en points d'indices



# Broadcasting media

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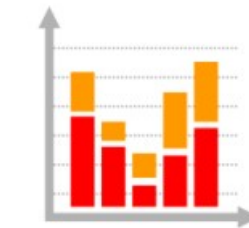
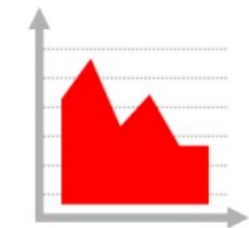
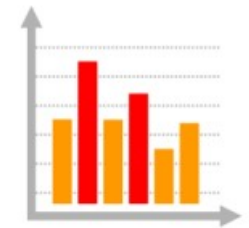
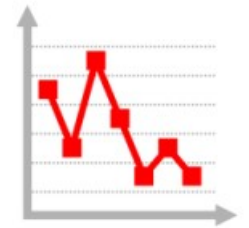
- Monthly publication in French and in English of three « *Informations rapides* »
- Dissemination of monthly and annual indexes on website

<http://www.insee.fr/en/default.asp>

- Transmission to Eurostat of series for international comparisons

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# Sources, sampling frame, questionnaires





# Collecting data

- The methods of data collection are up to the Member States

Status	Statistical	Administrative	Mixed
Official or non-official	Compulsory or voluntary Regular or ad hoc Census or sample Postal, electronic or interview	Company register VAT declarations Social security declarations Tax declarations Permits Membership records	Statistical business register Estimations (synthesis)

# Statistical surveys

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- All national statistical authorities have experience in surveys and how to conduct them
- Turnover is a well-known concept for companies which have to record it in their account
- Statisticians control the whole process
- Limits :
  - cost for the NSI
  - statistical burden for the businesses
  - response rate is crucial

# Sampling Frame

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- To use a common register for STS surveys is recommended
- Stratification on activity, employment and turnover
- Exhaustive strata on large businesses

# Reducing non-response

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- With tight deadlines and limited resources, keeping the response rate as high as possible is a challenge
  - automated systems for data collection and transmission OR Internet questionnaires
  - aiming most influential non-respondents on the call-back process
  - good questionnaire design

# Using administrative sources in STS

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- Administrative data generally has a large coverage of the administrative target population.
- Reduced burden for both the NSIs and the companies
- Limits :
  - the following elements are fixed by the source
    - the statistical unit
    - the administrative target
    - the content of the data
  - they are out of control for the statisticians
  - they may vary at any moment for administrative or political reasons

# Limits coming from the units of administrative sources

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- Units of an administrative business sources can be
  - Legal units
  - Plants
  - Customised administrative units
  - When the source concerns products or activities, classification is not adequate (trade classification not prodcom) => no KAU
- Statistical units have to be built from the administrative units
  - in France the VAT declaration of a legal unit is the sum of the VAT declaration of the customised VAT units belonging to this legal unit
  - if the “enterprise” contains several legal units, this units should be consolidated
- French case : the turnover indexes are indexes of legal units

# Limits coming from the administrative target

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- Generally, the administrative target does not cover completely the economic scope.
  - very small business is exempted from VAT declaration in France ; the threshold depend on the activity
- The administrative target can vary for political or administrative reason
- The first improvement is to complete the administrative source by a survey on the uncovered part of the scope
  - This approach has been stopped in France because of its cost (EMCS survey)

# Links between registers and administrative sources

---

- Because its incomplete scope, an administrative source is very often a poor sampling frame
  - however, administrative sources are useful to maintain the business register
- The best approach is to use all the available administrative sources to maintain the register.
  - the same business register should be used for all the business statistics (consistency)
  - the manager of a short term statistic should not use for his own a version of the register that he updated himself.



# How to use the business register with the administrative source ?

---

- The business register should be the sampling base or the base for a census
- Build the statistical units from the units of the administrative source
- Sample on the register (or select all)
- Find in the source the information on the sampled units
- The units not found in the source must be treated as “non responses”
  - This remains a field of research in France

# Limits coming from the information on the units

---

- The adequacy of administrative data to STS purpose has to be studied :
- Concepts and definition
  - in general, the definition of the data does not correspond to what should be observed
  - the definition of the data vary for administrative reasons
- The case of VAT in France
  - the VAT base is not the value added
  - it is not the turnover
  - it contains part of the sales and part of the purchases
  - the VAT base has changed about every two years during the last years => the link between the VAT form and the turnover has changed several times
- The problem is time series with a changing questionnaire where changes are out of control for the statistician.

# How to use administrative sources ?

---

- Study the concepts
  - administrative rules & economic concepts ?
- Match the definition of the data (find the best fit)
  - try to find the best proxy of the variable you need to measure (=> study the administrative rules)
  - study the statistical fit of the proxy on the past (individual comparison)
- Example :
  - X1 and X2 are two proxies for the turnover out of monthly VAT forms
  - the annual turnover of legal units TO is published in the account book
  - test the adequacy between X1 and TO, between X2 and TO on past individual data.

# Burden of turnover collection

Quarterly survey				Monthly survey				Combination survey & admin data			
	Burden (h/y)	No. of Units	Monthly minutes per unit		Burden (h/y)	No. of Units	Monthly minutes per unit		Burden (h/y)	No. of Units	Monthly minutes per unit
BG	5,120	8,520	3	CZ	12,000	12,247	5	DE	47,267	18,200	13
EE	3,360	4,381	4	IE	1,850	2,045	5	NL	14,755	23,051	3
EL	2,687	1,244	11	ES	10,100	10,100	5	SI	1,130	807	7
IT	38,800	19,400	10	PT	na	na	na	FI	2,400	600	20
CY	2,118	1,203	9	RO	16,214	8,107	10	SE	20,000	10,500	10
LV	4,280	3,933	5	SK	10,191	9,713	5	UK	14,051	24,500	3
LT	na	na	na								
HU	3,024	8,563	2								
MT	na	na	na								
PL	10,159	10739	5								
Total	69,548	57,983	6.0	Total	50,355	42,212	6.0	Total	99,603	77,658	6.4
Administrative data (burden = 0): DK, FR, LU, BE											
AT: admin data plus voluntary survey, HR - no data collected for 2012											

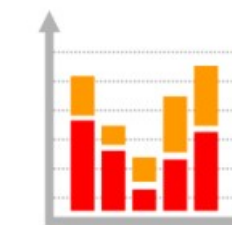
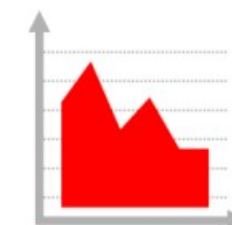
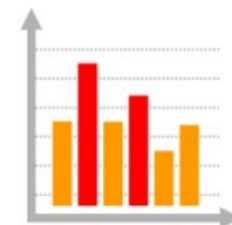
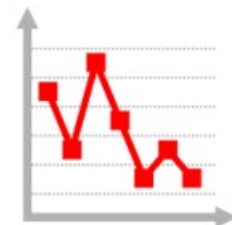
Source: Eurostat, internal data for the preparation of the 2014 STS quality report to the European Parliament and the Council.

# Cost of turnover collection

Quarterly survey				Monthly survey				Combination survey & admin data			
	Cost (h/y)	No. of Units	Monthly minutes per unit		Cost (h/y)	No. of Units	Monthly minutes per unit		Cost (h/y)	No. of Units	Monthly minutes per unit
BG	10,240	8,520	6	CZ	11,000	12,247	4	DE	44,240	18,200	12
EE	2,005	4,381	2	IE	9,464	2,045	23	NL	21,689	23,051	5
EL	4,520	1,244	18	ES	51,650	10,100	26	SI	6,317	807	39
IT	18,114	19,400	5	PT	na	na	na	FI	na	na	na
CY	3,906	1,203	16	RO	21,712	8,107	13	SE	6,000	10,500	3
LV	16,498	3,933	21	SK	10,904	9713	6	UK	70,575	24,500	14
LT	na	na	na								
HU	1,767	8,563	1								
MT	na	na	na								
PL	7,199	10739	3								
Total	64,249	57,983	5.5	Total	104,730	42,212	12.4	Total	148,821	77,058	9.7
Administrative data: BE, DK, FR, LU, AT:				Average Costs 4.2							
HR - no data collected for 2012											

Source: Eurostat, internal data for the preparation of the 2014 STS quality report to the European Parliament and the Council.

# Index formula



Date

# Elementary indexes

---

- The turnover index is a value index (development in volume and prices of transaction)
- The calculation of value index  $I$  for a given activity ( $k$ ) are based on the turnover ( $T$ ) of all observations units ( $h$ ) of the reference month ( $t$ ) compared with the monthly average of turnover of the base period ( $0$ )

$$I_k(t) = 100 \times \frac{\sum_{h \in k} T_h(t)}{\sum_{h \in k} T_h(0)}$$

# Different kinds of development

---

- The population of units used for short term statistics develops by-and-by. Over different periods, units and composition of units vary
  - development that should be measured
  - comparable changes
  - non-comparable changes



# Direct methods to calculate indexes

---

- Backward oriented
- Forward oriented
- Reporting period oriented
- Limits
  - possible non-comparable changes remain
  - time span between reference and reporting periods

# Indirect methods to calculate indexes

---

- The calculation of value index  $I$  for a given activity ( $k$ ) of the reference month ( $t$ ) are based on the development of turnover ( $T$ ) between reference month ( $t$ ) and a previous period  $t'$

$$I(t) = \text{turnover . development}(t' \rightarrow t) \times I(t')$$

- Development to a previous month
  - sensitive toward revisions
- Development to the previous year's average
  - the time span between reference and previous year periods
  - average previous year not accurate on beginning's year

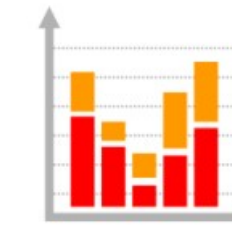
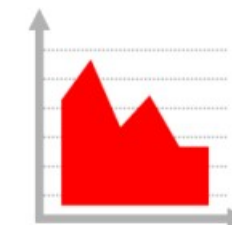
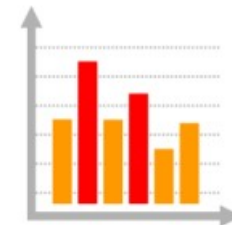
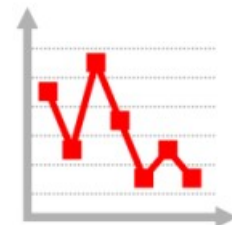
# Rebasing

---

- The STS-Regulations have specified that base years should be updated every 5 years and that the base years should be those ending with a "0" or a "5"
- The STS-Regulations require that rebasing should take place within three years from the end of the base year

---

# Aggregation and weighting structure



# Compiling aggregates

---

- On aggregated levels of the nomenclatura, Turnover indexes are compiled as the weighted average of elementary indexes or aggregates

$$I_L(t) = \sum_{k \in L} \frac{\omega_{base \cdot year}(k)}{\omega_{base \cdot year}(L)} \times I_k(t)$$

- for a sector of activity the weight is the base year's Turnover of all units the sector of activity (given by SBS or National accounts)
- Laspeyre index

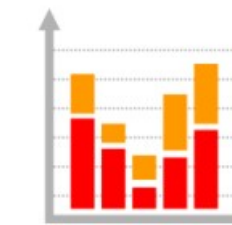
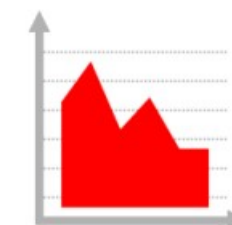
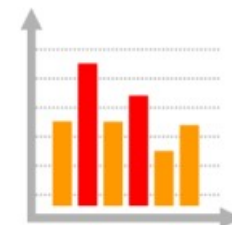
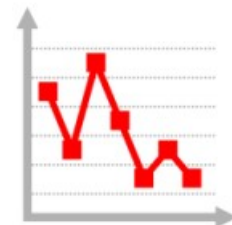
# Rebasing

---

- The STS-Regulations require that indices relative to a new weighting system should be calculated retrospectively for several years, so that the point where the two series are spliced is between the two base years
- The STS TaskForces have specified that for nominal indices annual chain-linking is theoretically not relevant

---

# Seasonal and working day adjustment



Date

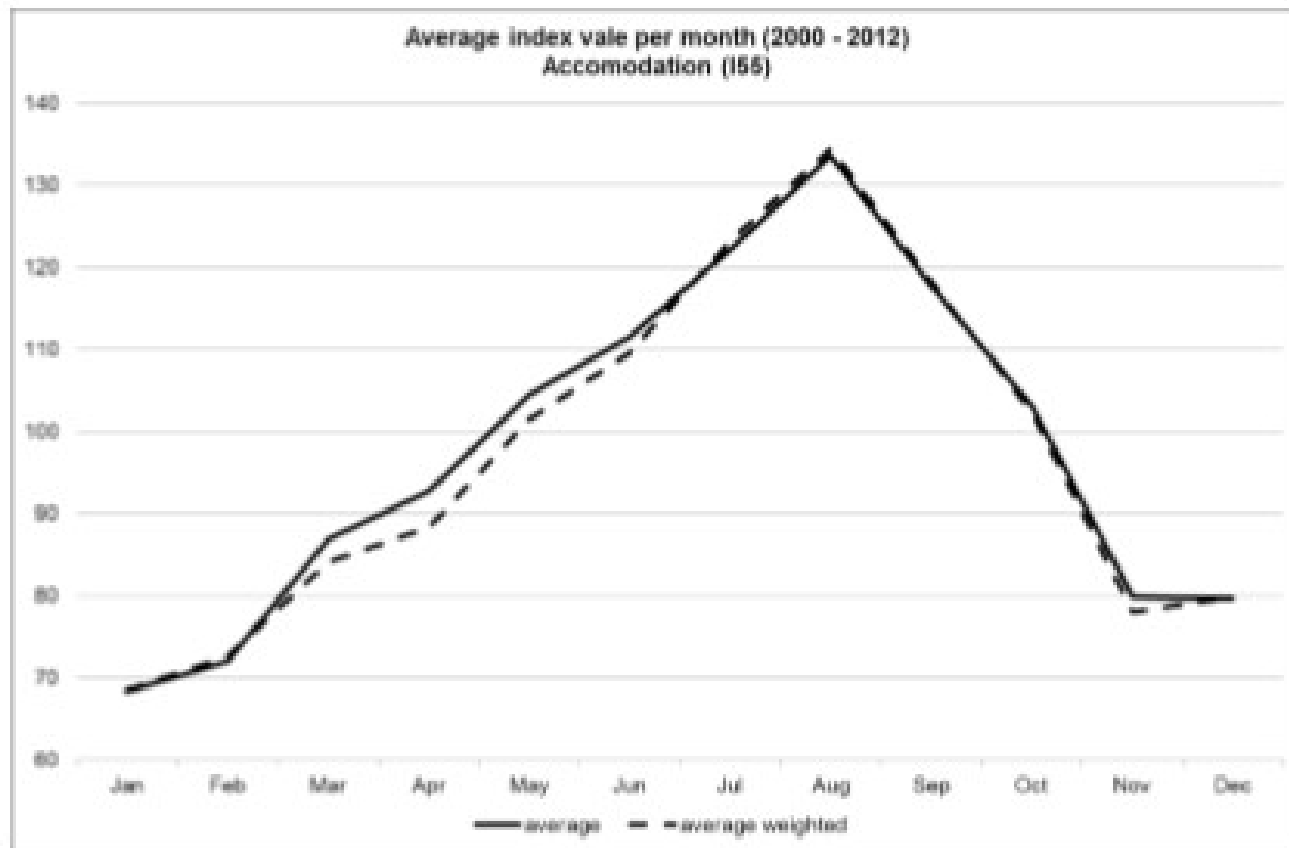
# Seasonal and working days adjustment

---

- The calendar effect is related to the fact that the economic activity varies around the special periods and dates in the year (Easter, moving holidays) while the working/trading day effect originates from the varying number of days of the week (Mondays, Tuesdays, Wednesdays,..., Sundays) in each month.
- Seasonal adjustment, or the adjustment of seasonal variations, aims, after adjusting for calendar and working/trading day effects, to take into account the impact of the known seasonal factors that have been observed in the past.

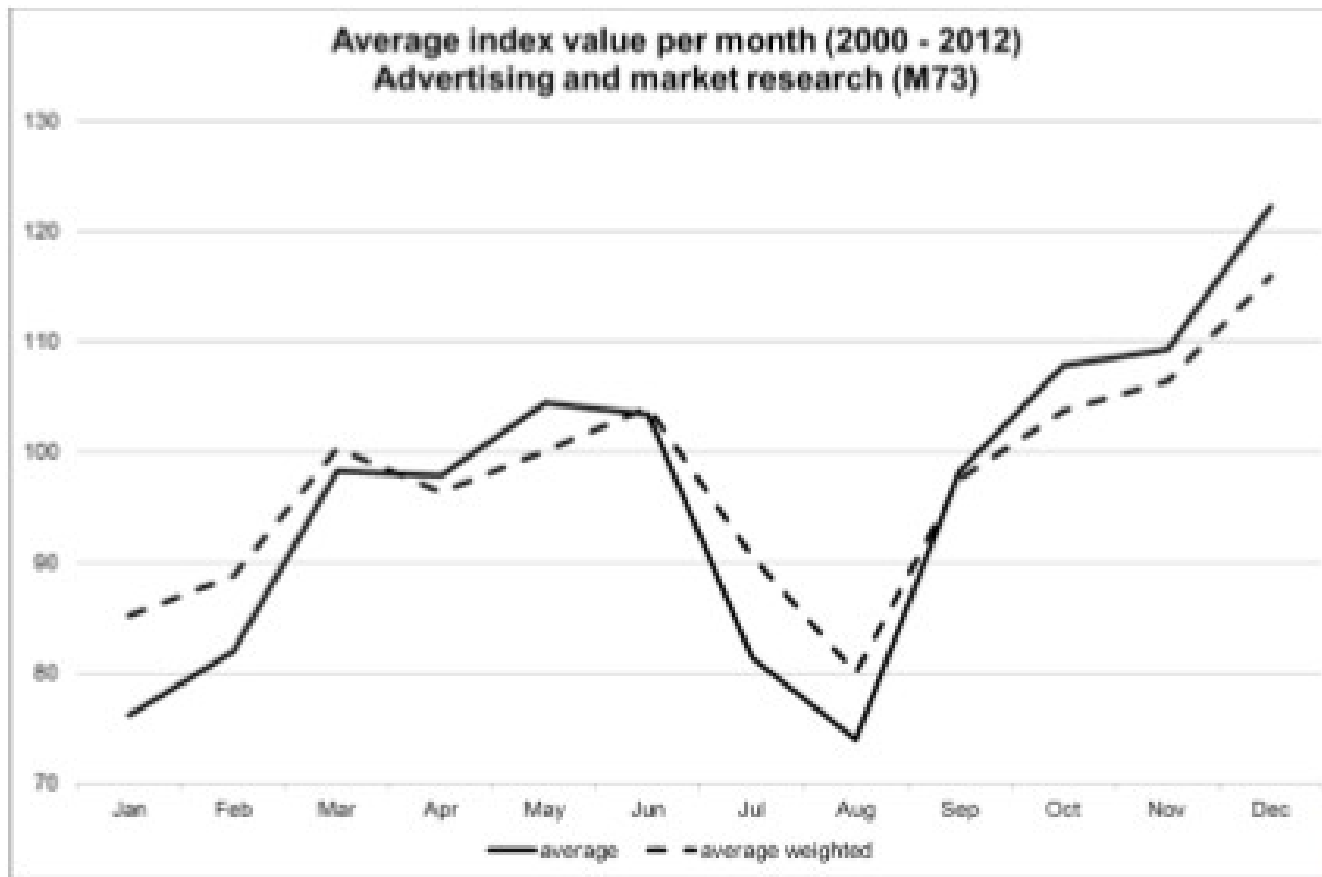


# Seasonal pattern in accommodation services (I55) - summer peak



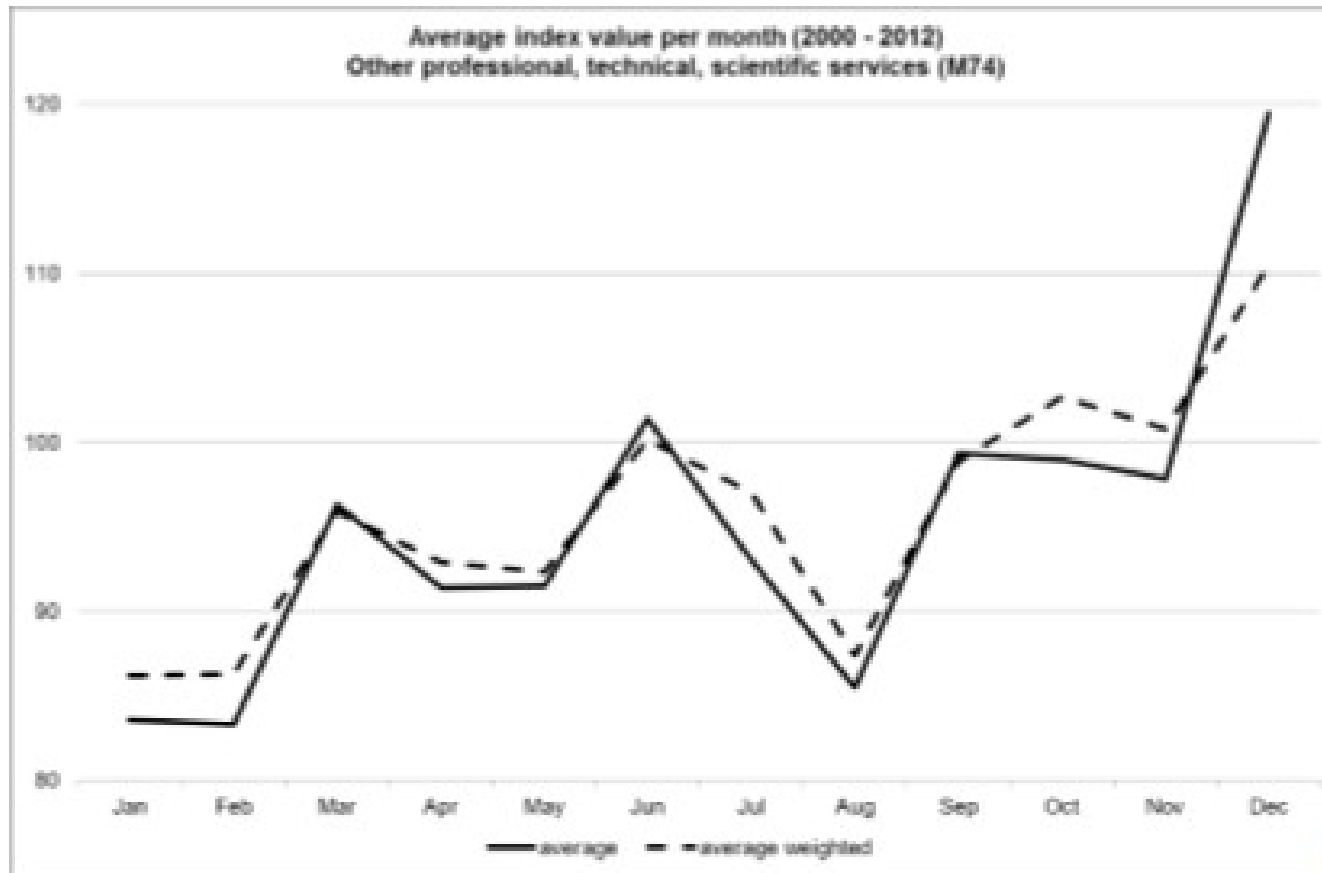
Source: Eurostat, STS, (sts\_setu\_m), internal calculations.

# Seasonal pattern in advertising and market research (M73) – silly season



Source: Eurostat, STS, (sts\_setu\_m), internal calculations.

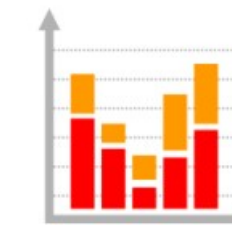
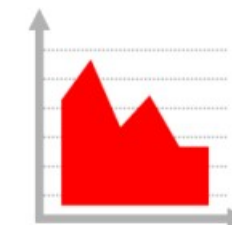
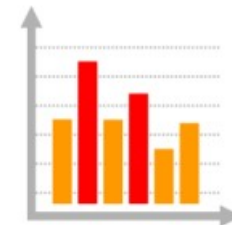
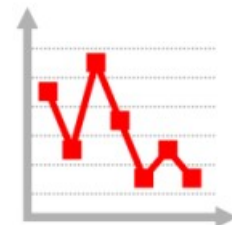
# Seasonal pattern in (M74) – hockey stick effect



Source: Eurostat, STS, (sts\_setu\_m), internal calculations.

---

# Case study : France



Date

# Data sources

---

- Administrative data : VAT form filled by companies
  - 1,5 millions forms transmitted every month
  - only monthly forms are used
  - forms for month  $m$  are received on early  $m+2$
- Statistical survey on supermarket and hypermarket
  - very light survey (350 legal units, 15 questions per month, by internet)
  - needed to produce an early estimate for G47
- Statistical business register

# Administrative data coverage

- Targeted economic scope is the one of national accounts

*Décomposition du champ Esane-DCN selon le régime de TVA (année 2009)*

	Nombre d'UL	Part du chiffre d'affaires dans le champ Esane DCN (en %)
Champ Esane DCN (*)	3 232 153	100
dont TVA mensuelle (= champ Harmonica)	1 122 118	94
dont TVA non mensuelle	940 176	5
dont en franchise de TVA	1 169 859	1

(\*) Il s'agit du champ Esane-DCN restreint aux secteurs de diffusion des indices de chiffre d'affaires, soit 613 sous-classes impliquées.

# Survey questionnaire

**DONNÉES RELATIVES AU MOIS D'AFFAIRES JANVIER 2030**

**1. CHIFFRE D'AFFAIRES**

**Le chiffre d'affaires total** TTC de **votre entreprise** s'est élevé ce mois à  euros  
(Ce chiffre d'affaires comprend toutes vos activités réalisées dans tous vos magasins en FRANCE METROPOLITAINE y compris courses en ligne, drive, livraison à domicile ...)

Veuillez indiquer ce chiffre d'affaires **TTC** :

- réalisé dans **l'ensemble de vos SUPERMARCHÉS** (hors courses en ligne: drive, livraison à domicile, ...)  euros
  - dont :**
    - dans la vente de produits **alimentaires**  euros
    - dans la vente de produits **non alimentaires**  euros
    - dans la vente de **carburants**  euros
- réalisé dans **l'ensemble de vos HYPERMARCHÉS** (hors courses en ligne: drive, livraison à domicile, ...)  euros
  - dont :**
    - dans la vente de produits **alimentaires**  euros
    - dans la vente de produits **non alimentaires**  euros
    - dans la vente de **carburants**  euros

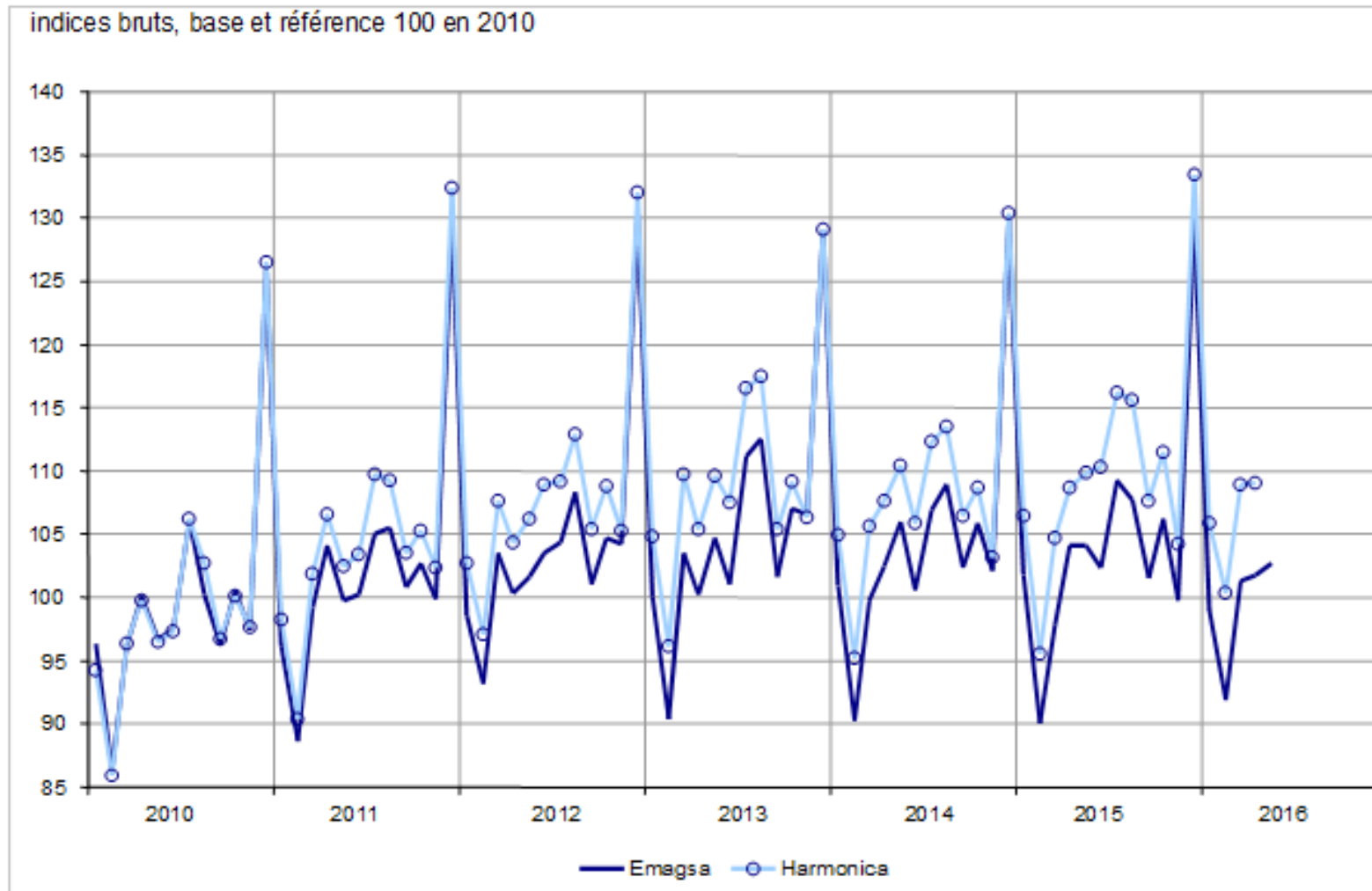
**2. ETAT DU PARC DE SUPERMARCHÉS ET D'HYPERMARCHÉS**

Si les valeurs indiquées ne correspondent pas à l'état de votre parc pour le mois de **Janvier 2030**, merci de les mettre à jour directement dans le tableau :

	Nombre de magasins	Surface de vente en m <sup>2</sup>
<b>SUPERMARCHÉS</b> (de 400 à 2 500 m <sup>2</sup> )	<input type="text" value="4"/>	<input type="text" value="6000"/>
<b>HYPERMARCHÉS</b> (2 500 m <sup>2</sup> et plus)	<input type="text" value="5"/>	<input type="text" value="30000"/>

**NB :** les champs concernés sont pré-remplis avec les dernières valeurs enregistrées dans notre base à partir de vos réponses.

# Comparison between survey and turnover indices on food supermarkets



Source: Insee, Turnover indices, Business survey on food supermarkets



# Compilation formula

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- Chain-linking with the development on the month over the previous year same month

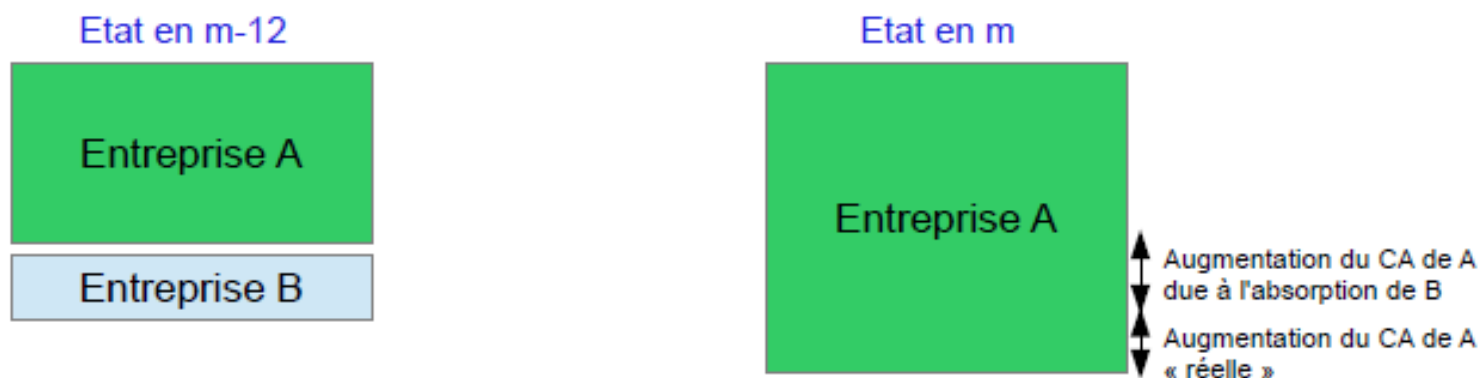
$$I(t) = \text{turnover} . \text{development}(t-12 \rightarrow t) \times I(t-12)$$

- Development formula takes changes into account
  - birth and death
  - new units in scope, in activity

$$\text{dev}(t-12 \rightarrow t) = \frac{T_{\text{stable}(t,k)}(t) + T_{\text{new} \cdot \text{activity}(t,k)}(t) + T_{\text{new} \cdot \text{scope}(t,k)}(t) + T_{\text{birthed}(t,k)}(t)}{T_{\text{stable}(t,k)}(t-12) + T_{\text{new} \cdot \text{activity}(t,k)}(t-12) + T_{\text{new} \cdot \text{scope}(t,k)}(t-12) + T_{\text{dead}(t,k)}(t-12)}$$

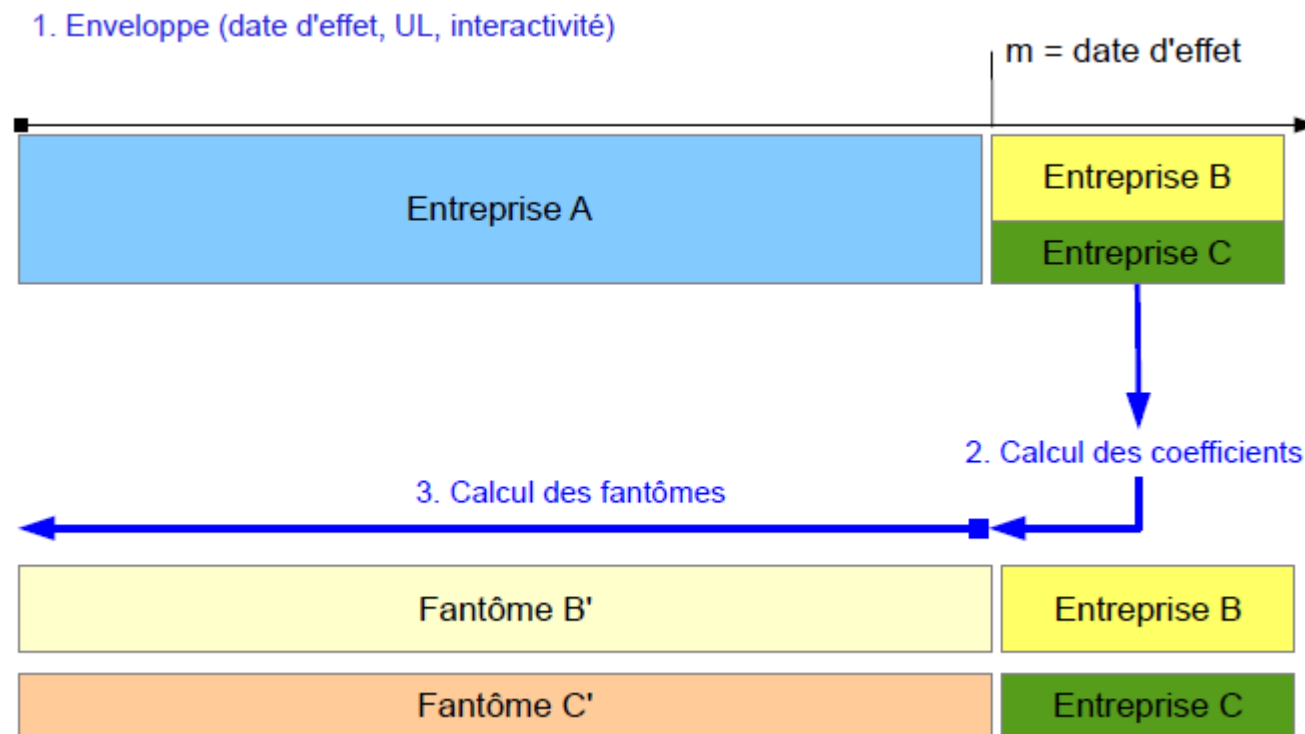
# Processing structural modifications (1/2)

- Companies undergoing a structural modification are likely to have a development that does not reflect accurately the economic outlook of the activity.
  - Example : A take over B. Without taking B into account, development on  $m$  over  $m-12$  for A would be overestimated at +100 %, whereas it really is +25 %



# Processing structural modifications (2/2)

- So as to prevent ones from taking wrong developments into account, the development should be calculated on the restructuring companies as a whole and then applied to each company



# Bibliography

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- On <http://ec.europa.eu/eurostat/web/short-term-business-statistics/methodology>
  - Guide on developing an Index of Services Production
  - Chain Linking – Final Task Force Report
  - Methodology of short-term business statistics – Interpretation and Guidelines
- On <http://ec.europa.eu/eurostat/web/short-term-business-statistics/legislation>
  - STS Regulation and Requirements

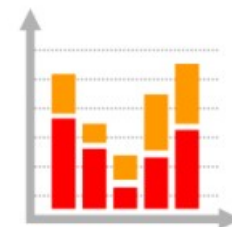
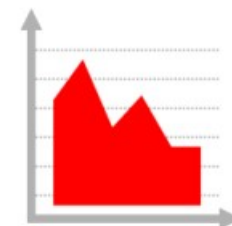
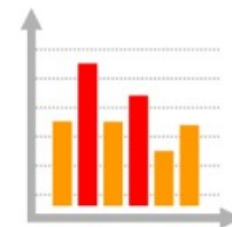
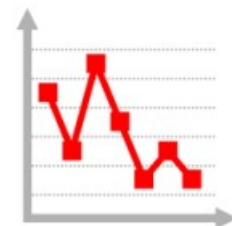
# Numerical examples

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- Building Turnover from VAT
- Calculating a development
- Preprocess for imputation and abnormality detection
- Data corrections implied by administrative rules
- Analysis through selective editing

---

# Building Turnover from VAT's form



Date

# Data used from VAT form

A MONTANT DES OPÉRATIONS RÉALISÉES				
OPÉRATIONS IMPOSABLES (H.T.)			OPÉRATIONS NON IMPOSABLES	
01 Ventes, prestations de services .....	0979	6882	04 Exportations hors UE .....	0032 33
02 Autres opérations imposables .....	0981	51	05 Autres opérations non imposables .....	0033 621
2A Achats de prestations de services intracommunautaires (article 283-2 du code général des impôts) .....	0044	2	06 Livraisons intracommunautaires .....	0034 591
2B Importations (entreprises ayant opté pour le dispositif d'autoliquidation de la TVA à l'importation) .....	0045	0	6A Livraisons d'électricité, de gaz naturel, de chaleur ou de froid non imposables en France .....	0029 0
03 Acquisitions intracommunautaires (dont ventes à distance et/ou opérations de montage) .....	0031	4109	07 Achats en franchise .....	0037 148
3A Livraisons d'électricité, de gaz naturel, de chaleur ou de froid imposables en France .....	0030	0	Ventes de biens ou prestations de services réalisées par un assujéti non établi en France (article 283-1 du code général des impôts) .....	0043 0
3B Achats de biens ou de prestations de services réalisés auprès d'un assujéti non établi en France (article 283-1 du code général des impôts) .....	0040	0	7B Régularisations (important : cf. notice) .....	0039 52
3C Régularisations (important : cf. notice) .....	0036	0		
B DÉCOMPTÉ DE LA TVA À PAYER				
TVA BRUTE			Base hors taxe	Taxe due
Opérations réalisées en France métropolitaine				
08 Taux normal 20 % .....	0207	96		19
09 Taux réduit 5,5 % .....	0105	10949		602
9B Taux réduit 10 % .....	0151	84		8
Opérations réalisées dans les DOM				
10 Taux normal 8,5 % .....	0201	0		0
11 Taux réduit 2,1 % .....	0100	0		0
12 .....				
Opérations imposables à un autre taux (France métropolitaine ou DOM)				
13 Ancien taux .....	0900	0		0
14 Opérations imposables à un taux particulier (décompte effectué sur annexe 3310 A) .....	0950	0		0
15 TVA antérieurement déduite à reverser .....			0600	

# Control Base/Taxe

- Ensuring consistency on variables used in the form

Nombre moyen d'anomalies par mois d'affaires pour la période 2009-2012

Contrôle	Anomalie « Taxe nulle »		Anomalie « Base incohérente »			
			Base manquante		Base non manquante	
	En nombre	En % (*)	En nombre	En % (*)	En nombre	En % (*)
C3	2701	0,19	53	0,00	2081	0,15
C8	234	0,02	9	0,00	4280	0,37
C9	412	0,03	3	0,00	3702	0,27
C9B	302	0,01	1	0,00	2957	0,10
C10	347	0,02	1	0,00	192	0,01
C11	99	0,01	1	0,00	252	0,03
C13	29	0,00	1	0,00	1205	0,09
C14	2	0,00 <sup>(**)</sup>	0	0,00 <sup>(**)</sup>	6	0,00 <sup>(**)</sup>

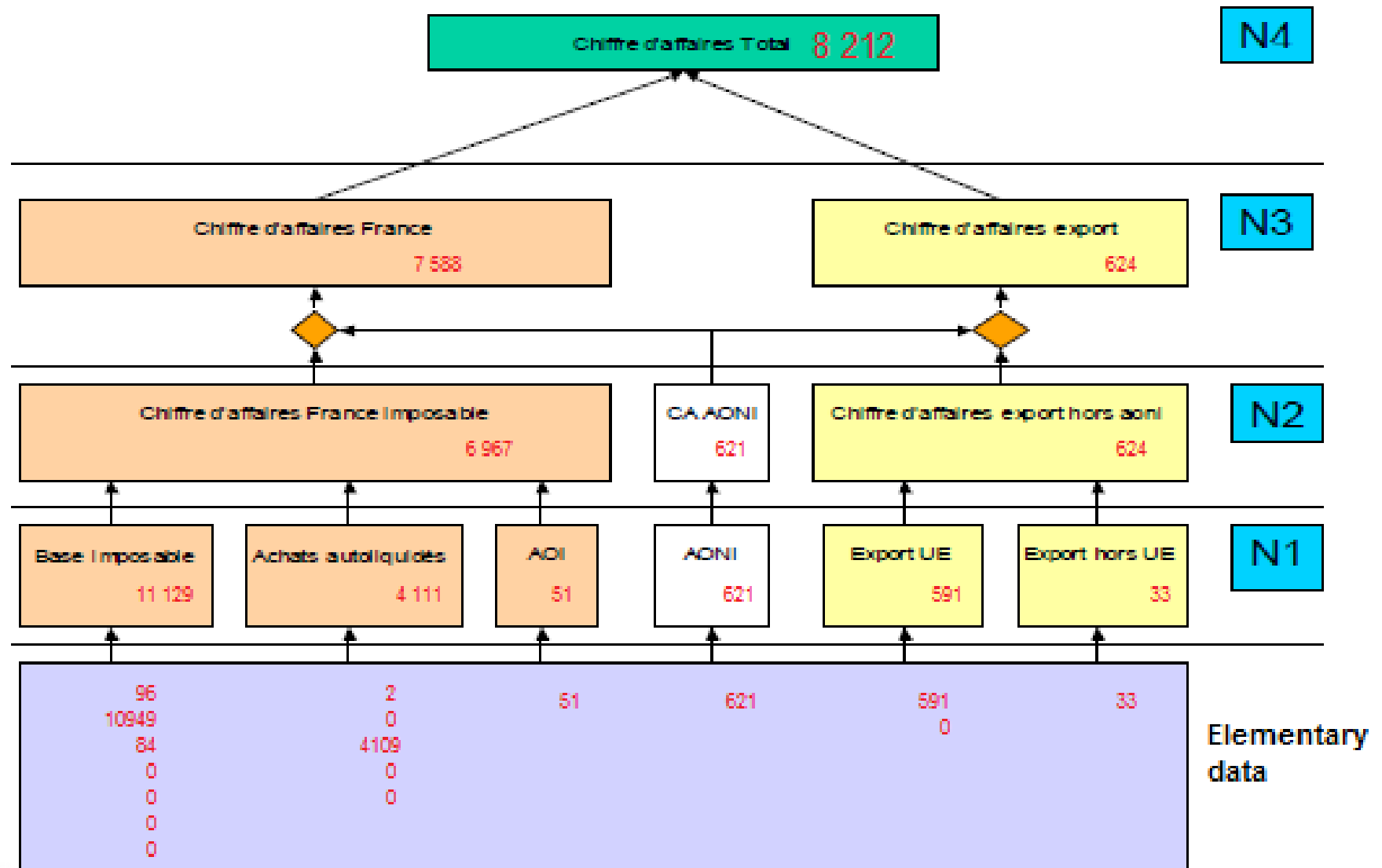
(\*) En % du nombre de déclarations mensuelles

(\*\*) Ce contrôle n'étant appliqué qu'aux entreprises du secteur de la pharmacie, le pourcentage est calculé par rapport au nombre de déclarations mensuelles de ce secteur.

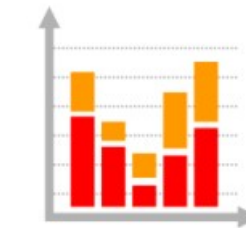
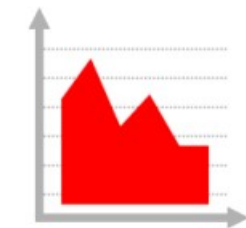
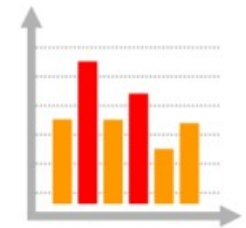
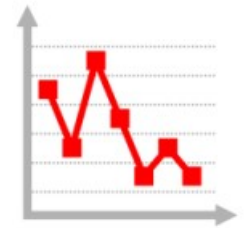
- Too few errors were detected, control cancelled in the new software



# Compilation of Turnover



# Caculating a development



Date

# Data storage and selection

## Turnover computing system

Update from Tax Offices  
(VAT's forms)



Update from Insee  
(business registers  
changes' notifications)



### TABLES

Turnover for 08/2016  
Turnover for 07/2016  
...  
Turnover for 08/2015  
...

Businesses state in 08/2016  
Businesses state in 07/2016  
...

### VARIABLES

legalUnitIdentifier  
dateCalcul  
turnoverTotal  
turnoverFrance  
...

legalUnitIdentifier  
kindOfActivity  
whenCreated  
whenStopped  
isInScope  
...

► numerator for 08/2016 development      denominator for 08/2016 development ◀

# Calculating a development

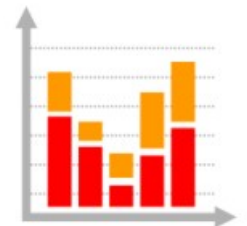
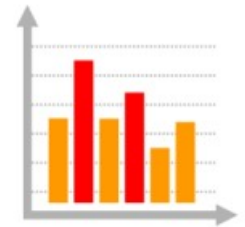
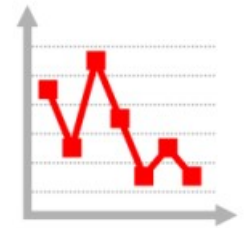
legalUnitIdentifier	kindOfActivity	stateForCalcul	TurnoverTotal_08/2016	...	TurnoverTotal_08/2015
ld_1	4711F	NonRelevant	150		120
ld_2	4711F	EntryScope	100		110
ld_3	4711F	Stable	120		120
ld_4	4711F	Stable	250		250
ld_5	4711F	Birth	1		.
ld_6	4711F	EntryActivity	50		40
ld_7	4711F	Stable	150		140
ld_8	4711F	Stable	180		180
ld_9	4711F	EntryActivity	170		190
ld_10	4711F	Death	.		2
ld_11	4711F	Death	.		100
ld_12	4711F	Birth	110		.
ld_13	4711F	Birth	100		.

- Development

$$\text{dev}(08/2015 \rightarrow 08/2016, 4F11F) = \frac{700 + 220 + 100 + 211}{690 + 230 + 110 + 102}$$

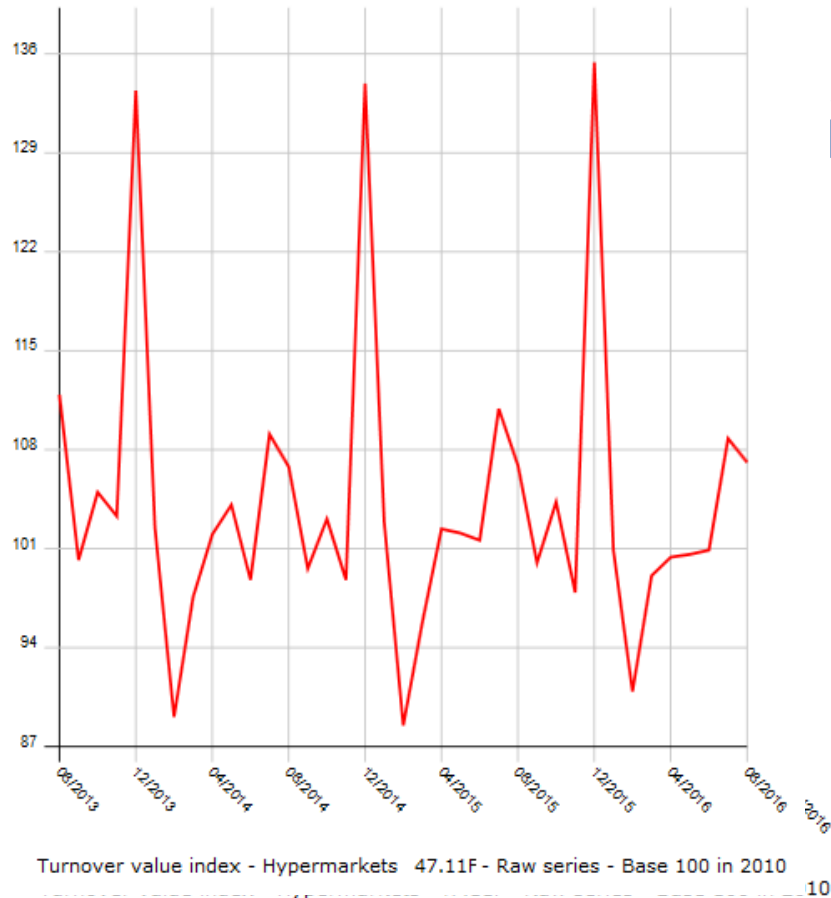
$$= + 8,7\% \text{ ( +0,1 \% without death and birth)}$$

# Preprocess for imputation and abnomarlity detection

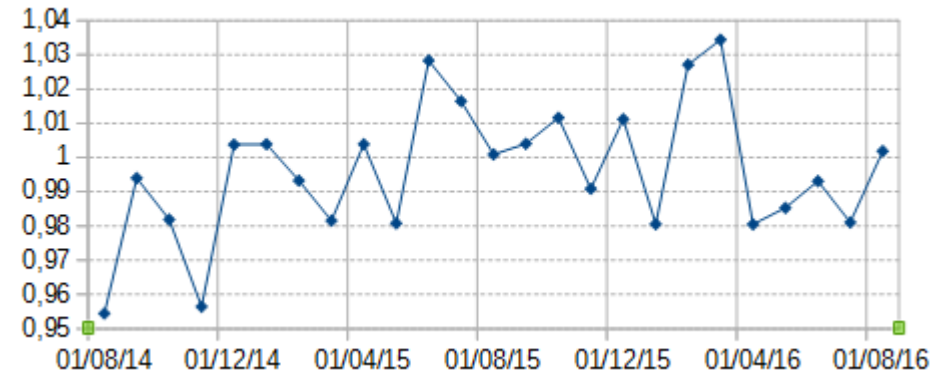


Date

# Determining normal evolution for a sub-class level index



Development over last 24 months



Q25	0,9814340382
Median	0,9936389847
Q75	1,0058126457



$$\text{inf} = \text{MAX}(0, \text{Median} - 2 (\text{Median} - \text{Q25})) = 0,9692290917$$

$$\text{sup} = \text{Median} + 2 (\text{Q75} - \text{Median}) = 1,0179863067$$

Date

70

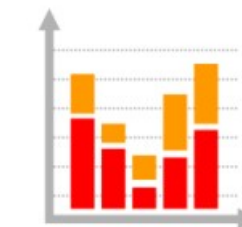
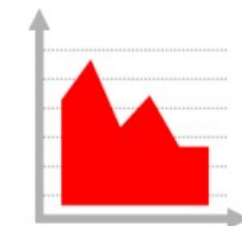
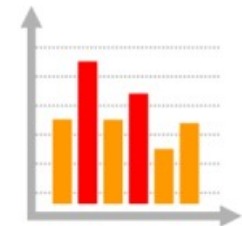
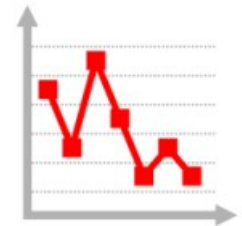
# Determining an adjusted development for correction

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- Development(08/2015  $\rightarrow$  08/2016, 4711F) = 1,0018709074
  - in [sup, inf] then seems normal
- Compute a development\_adjusted for 4711F excluding units in 4711F which have a development t/t-12 out of [sup,inf]
  - development\_adjusted for t/t-12 in 08/2016 is 0,9921
  - the development\_adjusted will be later use for imputation

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# Data correction implied by administrative rules



Date



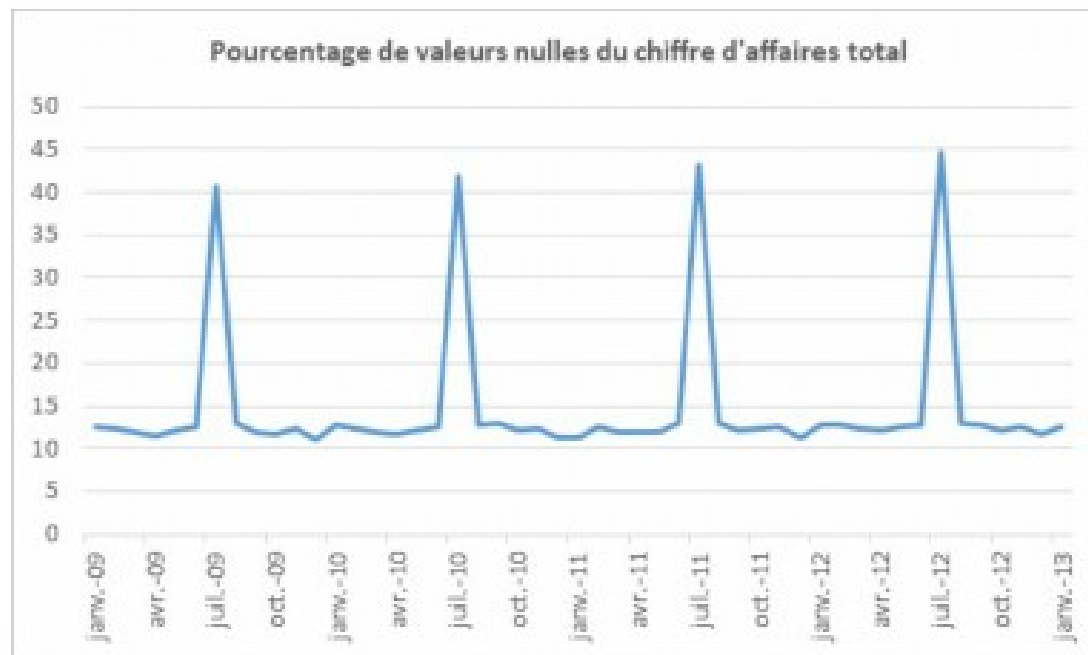
# New threshold

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- In january 2015, Tax Offices introduce a new kind of threshold compelling some rather small businesses to declare monthly
  - possible impact on indexes where coverage is low and is likely to increase

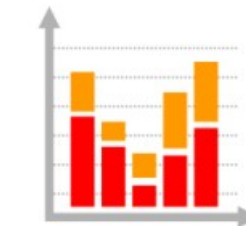
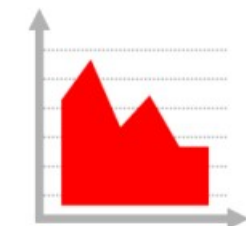
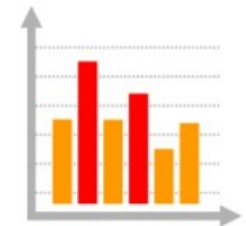
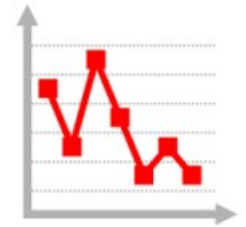
# Accountant holiday's toleration

- Once a year, considering accountant might be off, companies are allowed pay an account (and declare 0 turnover on VAT form) for a month, and the next month give full details for the two months
  - This is especially visible for july's turnover (declared in august)
  - Correction is needed if companies change their behavior from one year to another



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# Analysis through selective editing



Date

# Abnormality detection

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- If development is out of boundaries
  - $\text{dev}(t-12 \rightarrow t) > \text{sup}$ ,  $\text{score}(t,k) = [\text{sup} - \text{dev}(t-12 \rightarrow t)] / \text{sup}$
  - $\text{dev}(t-12 \rightarrow t) < \text{inf}$ ,  $\text{score}(t,k) = [\text{dev}(t-12 \rightarrow t) - \text{inf}] / \text{inf}$
- Score are calculated on NACE3 and NACE5 level
- Developments for elementary series are sort regarding scores and revisions

# Selective editing for elementary indexes

- At beginning of analysis, list of development needing further checking is automatically built

Liste des indices à expertiser

Rechercher : <input type="text"/>							
NAF	Maillon	NACE3	Libellé NACE3	Score évol. NACE3	Score évol. NAF	Traitement	Demande expertise suite analyse
1920Z	09/2016	192	Raffinage du pétrole	697	720	En cours d'expertise	NON
7740Z	04/2016	774	Loc-bail propr. intel., sf oeuvre avec ©	390	390	Expertisé	NON
3011Z	09/2016	301	Construction navale	363	511	Expertisé	NON
3012Z	09/2016	301	Construction navale	363	0	En cours d'expertise	NON
5020Z	09/2016	502	Transports maritimes et côtiers de fret	305	305	Expertisé	NON
7740Z	09/2016	774	Loc-bail propr. intel., sf oeuvre avec ©	251	251	Expertisé	NON
7740Z	07/2016	774	Loc-bail propr. intel., sf oeuvre avec ©	231	231	Expertisé	NON
4110A	05/2016	411	Promotion immobilière	214	166	En cours d'expertise	NON
6190Z	09/2016	619	Autres activités de télécommunication	210	210	En cours d'expertise	NON

# Contributing sub-series or businesses

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- Formula for indexes :

- on month  $t$ , contribution of index of activity  $k$  to the development of index of activity  $L$ , (having activity  $k$  included in activity  $L$ )

$$contrib_{I_k(t)} = \frac{w_{base.year}(k)}{w_{base.year}(L)} \times \frac{I_k(t) - I_k(t-12)}{I_L(t-12)}$$

- Formula for businesses :

- on month  $t$ , contribution of a enterprise in activity  $k$  to the development of index of activity  $k$

$$contrib_{unit} = \frac{T_{unit}(t) - T_{unit}(t-12)}{T_{stable(t,k)}(t-12) + T_{new.activity(t,k)}(t-12) + T_{new.scope(t,k)}(t-12) + T_{dead(t,k)}(t-12)}$$

# Selective editing for businesses

- Only the top twenty, having the biggest contribution, legal units are allowed for correction

**Identifiants de l'indice**  
Code sous-classe : 4931Z      Libellé sous-classe : Transport urbain & suburbain de voyageur      Maillon : septembre 2014

**Maillon en anomalie : septembre 2014**  

septembre 2014  
97,54 % = \_\_\_\_\_

septembre 2015  
103,95 % = \_\_\_\_\_

septembre 2016  
104,81 % = \_\_\_\_\_

[Consulter Démographie](#)   [Valider le Maillon](#)   [Consulter Historique du Maillon](#)

**Liste des unités contributrices à l'évolution du maillon en anomalie**  

[CSV](#)   [Excel](#)   [PDF](#)   Rechercher :

SIREN	Dénomination	Contribution initiale évol. maillon	Contribution évol. maillon après correction	Traitement
		-2,10		- Non expertisé
		-0,89		- Non expertisé
		-0,81		- Non expertisé
		0,67		- Non expertisé
		-0,60		- Non expertisé
		0,44		- Non expertisé
		-0,44		- Non expertisé

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Thank you for your attention

Do you have any questions ?