

**New statistical units for a better quality of National and European
business statistics**

First official Italian SBS estimates for the reference year 2017

SBS Workshop statistical unit "enterprise"

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Overview

- ISTAT goals in implementing Action Plan SBS
- The impact of Action Plan SBS on ISTAT activities
- The process of Action Plan SBS in Italy
- The impact of Action Plan SBS on Italian SBS figures
- Technical issues on:
 - ✓ Automatic consolidation of SBS variables
 - ✓ Survey on intragroup-flows (RFI) supporting intensive profiling
- The way forward

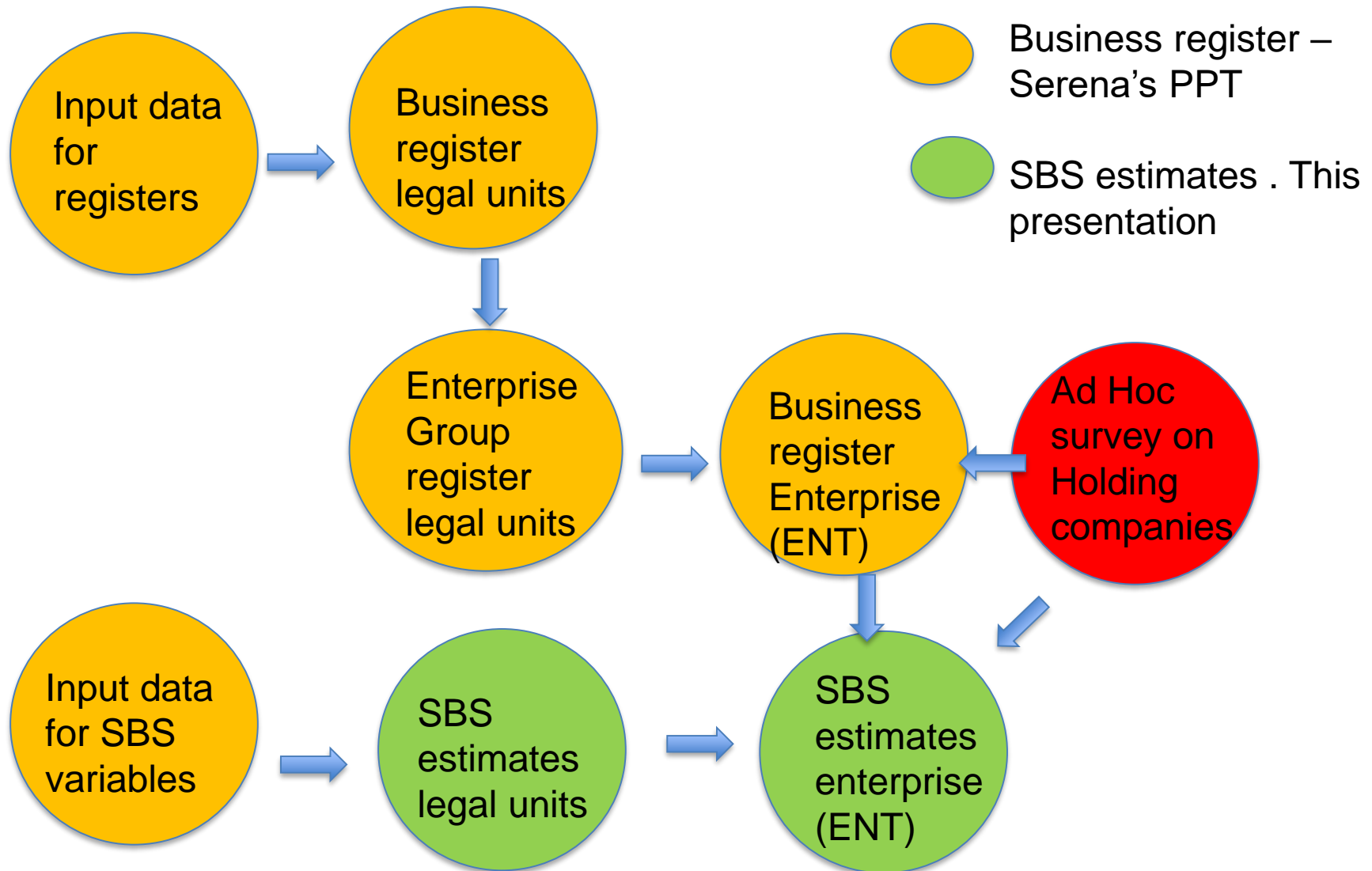
The Italian approach was carefully designed to meet the following criteria:

- **Increase the business relevance of SBS data:** a pool of experts on enterprise groups, FATS, Large Case Units was set up to focus on top enterprise groups in Italy
- **Flexibility between automatic and intensive profiling:** It is possible to shift from automatic to intensive profiling and vice versa based on human resources availability and the need to focus on specific industries etc with no relevant impact on the consistency of data
- **Full reversibility from the old to the new statistical unit:** The process is fully consistent from the old to the new statistical units both at the macro and the micro level (requests from data users and National Accounts)
- **Sequential and integrated process** from input data, BR to SBS final estimates with clear defined responsibility between BR and SBS divisions

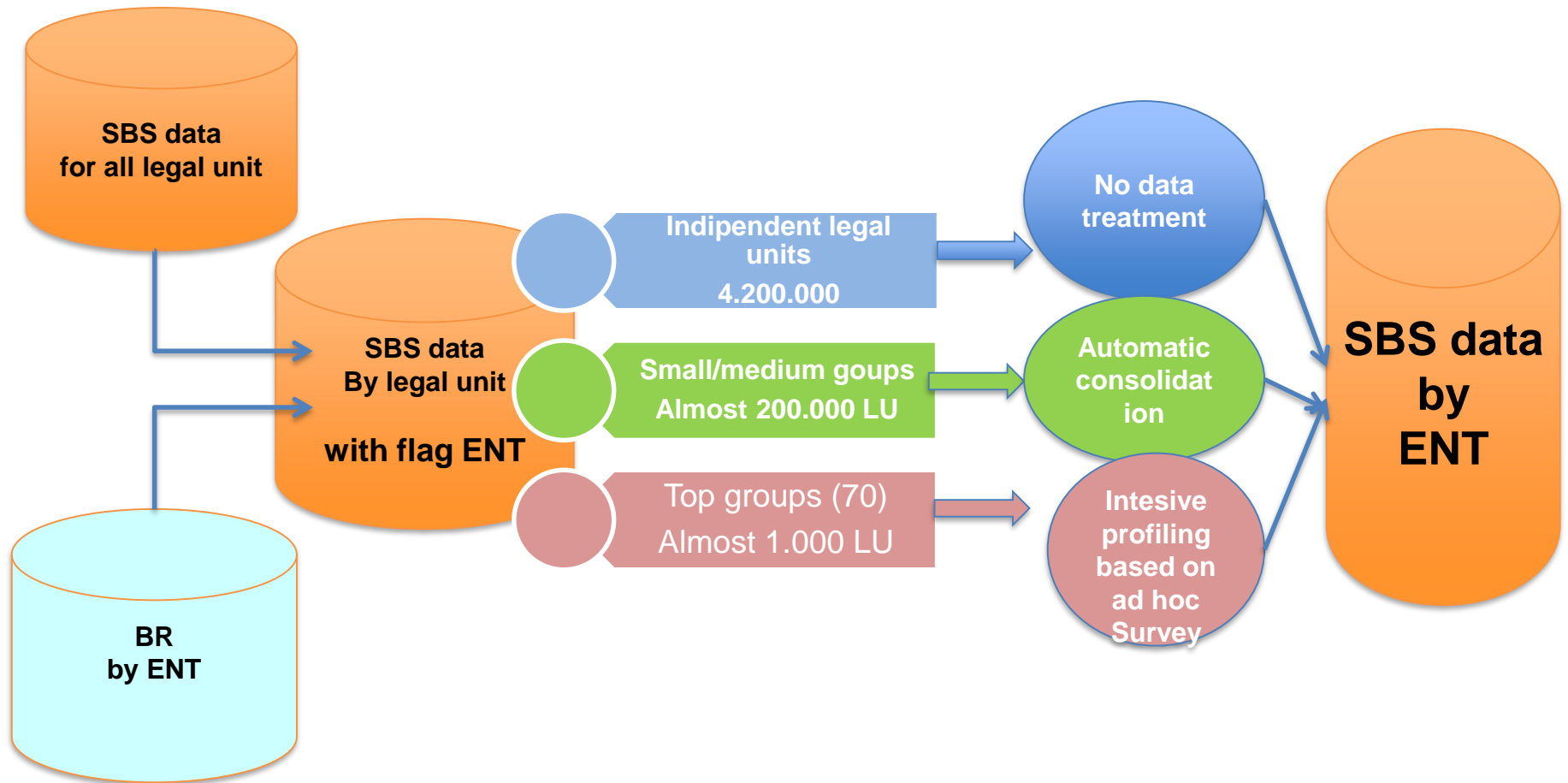
Multilevel impact on ISTAT activities:

- ✓ Redesign and integration of the overall governance of complex statistical production processes separately managed by two large divisions: Business Registers and Structural Business Statistics
- ✓ Upgrading and integrating skills and knowledge of human resources usually operating in a stovepipe approach
- ✓ Redesign of IT and statistical procedures in order to integrate new and old outputs in a consistent way

Overview of the integrated process



The process of Action Plan SBS in Italy



The automatic consolidation procedure of SBS variables

In the consolidation procedure, the **additive variables** can be added up when the legal units are aggregate to create an ENT.

The consolidation of **non-additive variables** depends on the characteristics of the legal units that make up the ENT: if there are **ancillary activities** or **vertically integrated units** the flows between the legal units within the ENT must be eliminated.

The automatic consolidation procedure

The automatic consolidation procedure starts from ENT with 2 legal units.

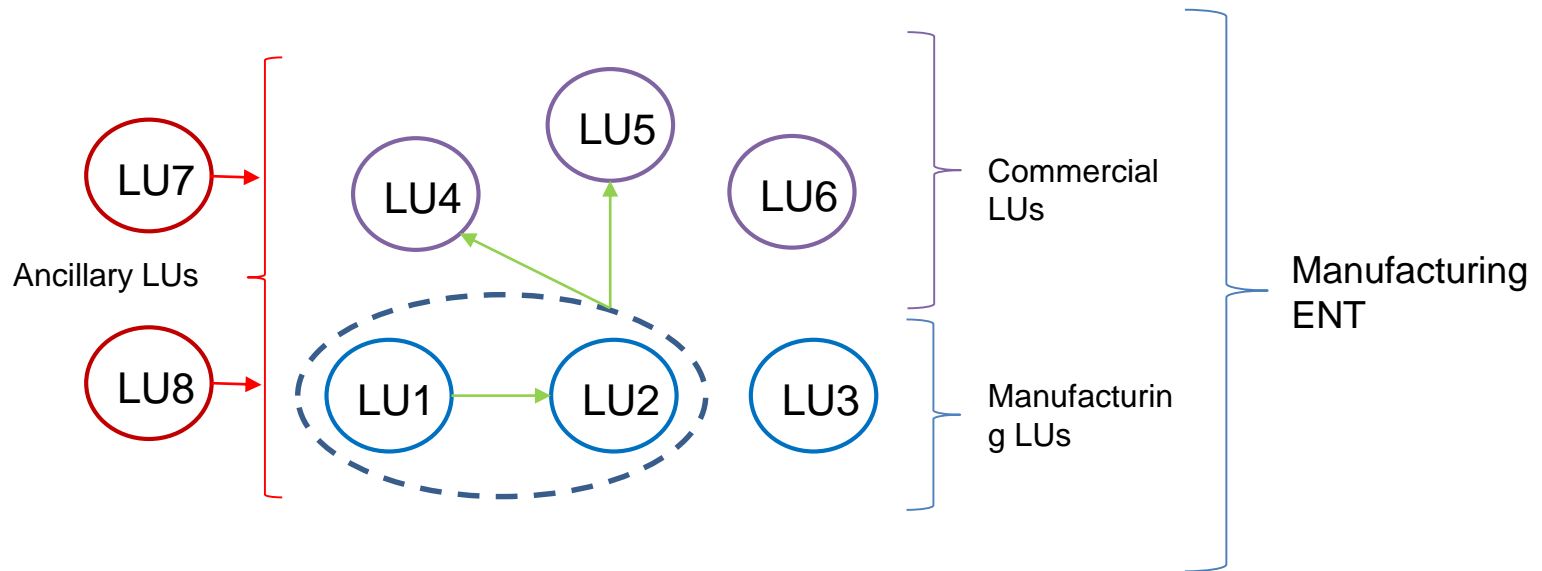
There can be identified the following cases of ENT with ancillary activities or vertically integrated units:

Cases		LUs that sell		Flows	LUs that buy	
		Activities	Variables		Activities	Variables
Ancillary activities	A	Auxiliary services (accounting, marketing,...)	Turnover	→	Manufacturing/Service activities	Purchases of services
	B	Real estate rental and management services (ATECO 68.2)	Turnover	→	Manufacturing/Service activities	Use of third-party assets
	C	Trade intermediaries (ATECO 46.1)	Turnover	→	Manufacturing/Service activities	Purchases of services
Vertically Integrated units	D	Manufacturing activities	Turnover	→	Trade activities	Purchases of goods
	E	Manufacturing activities	Turnover	→	Manufacturing activities	Purchases of goods
	F	Wholesale activities	Turnover	→	Retail activities	Purchases of goods

ENT with more than 2 LUs are solved by making comparisons in pairs of units to exploit the case studies implemented for the cases with 2 LUs.

The automatic consolidation procedure – example (1)

Case of Manufacturing ENT with 8 Legal Units:



The automatic consolidation procedure – example (2)

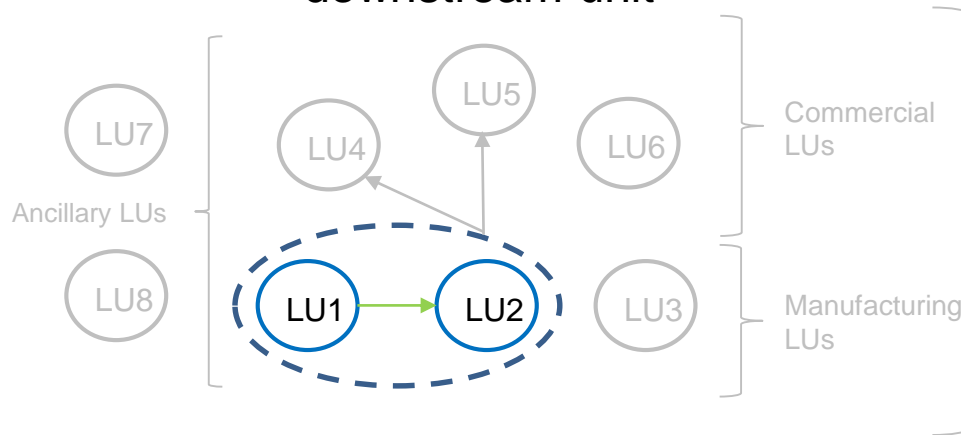
The table shows the values of the main economic variables involved in the consolidation for each LU:

LU	TYPE	Turnover	Purchase s of goods	Purchases of services	Use of third- party assets
LU1	M	580	250	20	5
LU2	M	2,140	1,100	150	10
LU3	M	115	80	15	0
LU4	C	280	145	45	15
LU5	C	390	165	86	7
LU6	C	175	80	28	3
LU7	A	120	0	0	0
LU8	A	160	0	0	0
ENT	M	3,960	1,820	344	40

$$\text{Value added} = 3,960 - (1,820 + 344 + 40) = 1,756$$

The automatic consolidation procedure

Step 1: Consolidation between vertically integrated units. L1 upstream unit; L2 downstream unit



Step 1.
Intra-flow = min among turnover of upstream unit and P. of goods of downstream unit

Manufacturing ENT

Step 2.
Delete the Intra-flow from the upstream unit's turnover and from the costs of the downstream unit

LU	TYP E	Turn over	P. of goods
LU1	M	580	250
LU2	M	2140	1100

Flow = 580

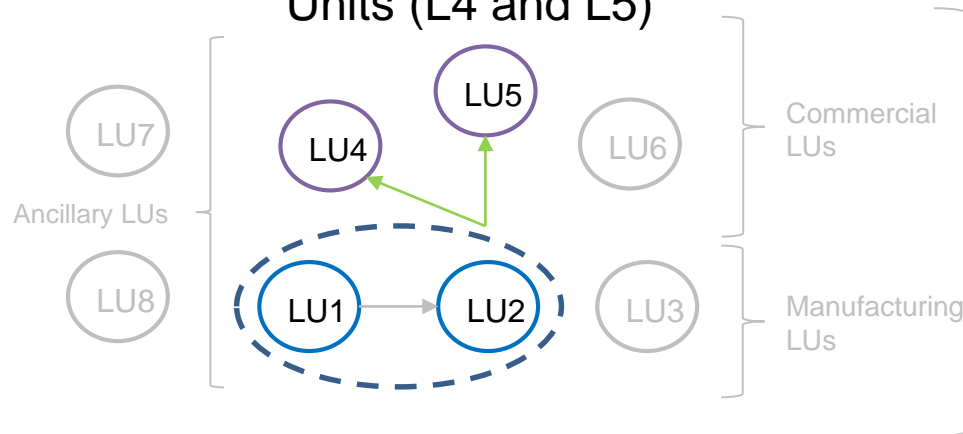


LU	TYP E	Turnover	Purchases of goods	Purchases of services	Use of third-party assets
LU1	M	0	250	20	5
LU2	M	2140	520	150	10
LU3	M	115	80	15	0
LU4	C	280	145	45	15
LU5	C	390	165	86	7
LU6	C	175	80	28	3
LU7	A	120	0	0	0
LU8	A	160	0	0	0

Intra-flow = min(580, 1100) = 580

The automatic consolidation procedure

Step 2: Consolidation between Manufacturing unit (L1 + L2) and Commercial Units (L4 and L5)



Step 1. Intra-flow = Minimum among turnover of manufacturing unit (L1 + L2) and P. of goods of commercial units (L4 and L5)

Manufacturing ENT

Step 2. Delete the Intra-flow from the turnover and costs of the commercial units (L4 and L5)

LU	TYP E	Turnove r	P. of goods
LU1	M	0	250
LU2	M	2140	520

LU4	C	280	145
LU5	C	390	165

Flow = 310

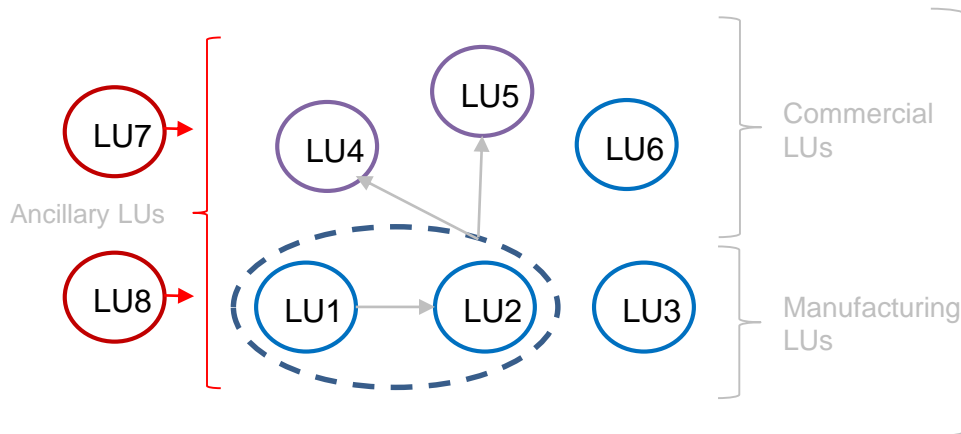


Intra-flow = $\min(0+2140, 145+165) = 310$

LU	TYPE	Turnov er	Purchas es of goods	Purchas es of services	Use of third-party assets
LU1	M	0	250	20	5
LU2	M	2140	520	150	10
LU3	M	115	80	15	0
LU4	C	135	0	45	15
LU5	C	225	0	86	7
LU6	C	175	80	28	3
LU7	A	120	0	0	0
LU8	A	160	0	0	0

The automatic consolidation procedure

Step 3: Consolidation with Ancillary LUs



Step 1. Intra-flow = min among turnover of ancillary units (L7 + L8) and P. of services of other units

Manufacturing ENT

Step 2. Delete the Intra-flow from the turnover of ancillary units and from P. of services of other units

LU	TY PE	Turnove r	P. of services
LU1	M	0	20
LU2	M	2140	150
LU3	M	115	15
LU4	C	135	45
LU5	C	225	86
LU6	C	175	28
LU7	A	120	0
LU8	A	160	0

Flow = 280

LU	TYPE	Turnover	Purchases of goods	Purchases of services	Use of third-party assets
LU3	P	0	250	4	5
LU4	P	2140	520	28	10
LU5	P	115	80	3	0
LU6	C	135	0	8	15
LU7	C	225	0	16	7
LU8	C	175	80	5	3
LU9	As	0	0	0	0
LU10	As	0	0	0	0

$$\text{Intra-flow} = \min(120+160, 20+150+15+45+86+28) = 280$$

The automatic consolidation procedure

The final result of the automatic consolidation procedure is:

LU	TYPE	Turnover	Purchases of goods	Purchases of services	Use of third-party assets
LU3	M	0	250	4	5
LU4	M	2,140	520	28	10
LU5	M	115	80	3	0
LU6	C	135	0	8	15
LU7	C	225	0	16	7
LU8	C	175	80	5	3
LU9	A	0	0	0	0
LU10	A	0	0	0	0
		Consolidated Turnover	Consolidated Purchases of goods	Consolidated Purchases of services	Consolidated Use of third-party assets
ENT	M	2,790	930	64	40

$$\text{ENT value added} = 2,790 - (930 + 64 + 40) = 1,756$$

$$\left[\text{Legal unit Value added} = 3,960 - (1,820 + 344 + 40) = 1,756 \right]$$

Why a Survey on intragroup-flows?

Motivations

- Lack of information from available data sources, including data integration
- Increase the quality of both the “new” Register and new SBS
- Strong interaction with intensive data profiling

Outcomes

- Quite complicated survey with expected low quality and response rate
- It turns into a successful survey with high quality, high response rates and a concrete opportunity for intensive profilers to “speak” with the companies

Survey on intragroup-flows (RFI) (1)

Target population: 67 main groups:

- 32 groups studied with "Profiling Intensive"
- 20 groups chosen according to criteria of economic size and coverage of specific sectors of economic activity
- 15 groups inserted to test the profiling of ENTs resulting from the automatic procedure

Reporting Unit: Global group head

Statistical Unit: Ent (Ent is the smallest combination of resident legal units and is an organizational unit producing goods and services, which benefits from a certain degree of autonomy in decision-making)

Survey on intragroup-flows (2)

Period: 6 December 2018 - 15 March 2019

Method: Electronic questionnaire (Excel)

Staff dedicated to the survey: 20 *Profilers*.

We have divided the 67 groups into 10 pairs of *profilers*.

Each couple completed the questionnaire and provided support for each problem.

Theprofilers:

- Analyze the case study and the budgets of the groups
- Check the perimeter of the group and assign legal units to the ENTs
- Check the economic variables

Questionnaire RFI

SECTIONS PRECOMPILATED

*to be conferred by
reporting unit*

- List of all legal units of the group
- Delineation of ENTs

SECTIONS TO FILL OUT

- Flows among legal units belonging to same ENT
- Consistency of investments in ENTs

Results and future goals of Survey on intragroup-flows

RESULTS

Response rate: 90%

The 67 Groups investigated represent:

- 4.2% of the employees
- 9% of the value added
- 11% of the turnover of the Italian economy

GOALS

Next edition of RFI

- Almost 100 Groups for 15-20% of the total value added

The impact of Action Plan SBS on SBS figures

- ❑ Poor impact on number of enterprises, larger impact on turnover and purchase of goods and services as expected, focus of data users of value added distribution for its policy implications
- ❑ Limited impact on the distribution of Value added across economic macro-sectors (industry from 41.7% to 42.4% with a variation of 1.5%, business services from 58,3% to 57,6% with a variation of -1.1%)
- ❑ Intermediate impact on the distribution of Valued added across enterprise size classes (large companies from 32.0% to 34.8%)
- ❑ Major impact on specific industries (NACE 4 digits) and other SBS domains dominated by MNEs: «Manufacture of other organic basic chemicals, +122.8%; Manufacture of cocoa, chocolate and sugar confectionery, + 48.3%; Manufacture of engines and turbines, except aircraft, vehicle and cycle engines, +40.9%”
- ❑ The business population affected by Action Plan SBS has a relatively limited weight on Italian SBS figures (40% of valued added) and asymmetries between domestic and foreign MNEs in the reclassification of variables.

- ✓ Action Plan is considered by ISTAT as **an opportunity to increase the quality and the business relevance of SBS data**
- ✓ Some **characteristics** (flexibility, reversibility and consistency) of the ISTAT Action Plan approach can be considered highlight **desirable by other countries**
- ✓ The future perspectives concerns both **vertical** (GNI and LCU) and **horizontal** developments (extension to other SBS related domains FATS and R&D...)
- ✓ Technical cooperation between European countries is very relevant

THANK YOU FOR THE ATTENTION

Empirical analysis – SBS ENT vs SBS legal unit (reference year 2017)

Nace code	Economic activity section	Var. % "SBS ENT on SBS LU"				
		Enterprises	Employees	Turnover	Value added	Value added by employees
Total economy		-1.39	-0.02	-1.66	-0.01	0.00
<i>B</i>	<i>Mining and quarrying</i>	-7.31	-41.44	-85.63	-44.04	-4.45
<i>C</i>	<i>Manufacturing</i>	-1.35	0.88	1.57	2.04	1.16
<i>D</i>	<i>Electricity, gas, steam and air conditioning supply</i>	-21.99	8.79	23.39	8.53	-0.23
<i>E</i>	<i>Water supply, sewerage, waste management and remediation activities</i>	-3.88	0.09	-0.16	-0.01	-0.10
<i>F</i>	<i>Construction</i>	-1.24	-0.07	-0.80	-0.40	-0.33
<i>G</i>	<i>Wholesale and retail trade; repair of motor vehicles and motorcycles</i>	-0.85	-0.60	-6.99	-2.36	-1.77
<i>H</i>	<i>Transportation and storage</i>	-1.49	-1.52	0.80	-1.01	0.52
<i>I</i>	<i>Accommodation and food service activities</i>	-0.84	-0.15	0.21	0.06	0.21
<i>J</i>	<i>Information and communication</i>	-2.84	0.63	-1.47	-0.95	-1.56
<i>L</i>	<i>Real estate activities</i>	-7.24	-2.28	-7.61	-8.24	-6.09
<i>M</i>	<i>Professional, scientific and technical activities</i>	-0.79	1.67	8.64	2.84	1.15
<i>N</i>	<i>Administrative and support service activities</i>	-1.56	-0.52	-1.27	-0.71	-0.19
<i>P</i>	<i>Education</i>	-1.23	-1.34	-6.12	-4.58	-3.28
<i>Q</i>	<i>Human health and social work activities</i>	-0.41	0.18	0.18	0.22	0.04
<i>R</i>	<i>Arts, entertainment and recreation</i>	-1.26	0.10	-2.27	-3.13	-3.23
<i>S</i>	<i>Other service activities</i>	-0.32	-0.23	-0.93	-0.49	-0.26

Empirical analysis – SBS ENT vs SBS legal unit (reference year 2017)

Magior revisions in terms of value added at four digit level

4 digit nace code	VA by legal unit	employees by legal unit	N. of legal unit	VA by ENT	employees by ENT	N. of ENT	VA_ENT vs VA_LU (Var. %)
2014 (Manufacture of other organic basic chemicals)	983,641,667	8798.98	149	2,191,514,203.00	15480.49	144	122.8
1082 (Manufacture of cocoa, chocolate and sugar confectionery)	1219531703	17142.13	681	1807982821	19847.09	667	48.3
2811 (Manufacture of engines and turbines, except aircraft, vehicle and cycle engines)	1416256010	13599.39	192	1994915764	15979.44	180	40.9
4643 (Wholesale of electrical household appliances)	2442124439	20040.83	3025	1414011273	17642.47	2915	-42.1
1106 (Manufacture of malt)	5453778	47.1	3	2899190	32.6	2	-46.8
4920 (Freight rail transport)	354323682	4901.12	14	131978845	1796.31	12	-62.8
0620 (Extraction of natural gas)	2672660789	13564.49	6	965288744	1652.78	5	-63.9

Empirical analysis – SBS ENT vs SBS legal unit (reference year 2017)

Cladd	Var. % "SBS ENT on SBS LU"			
	Enteprises	Employees	Turnover (mln)	Value added (mln)
0-9	-1.32	-0.92	-5.47	-3.99
10-19	-2.97	-2.99	-7.06	-4.54
20-49	-2.76	-2.91	-6.52	-4.66
50-249	-2.00	-2.01	-9.50	-3.94
250+	1.00	6.02	10.19	8.82
Total economy	-1.39	-0.02	-1.66	0.00

SBS ENT - Percentage of sub-populations

	Enteprises	Employees	Turnover (mln)	Value added (mln)
Indipendent Legal units	96.44	66.95	39.59	46.54
Automatic consolidation	3.55	28.73	48.92	43.83
Large groups - direct information on intra-floous by survey	0.01	4.32	11.49	9.63
Total economy	100.00	100.00	100.00	100.00