

Technology Balance of Payments

17 December 2024

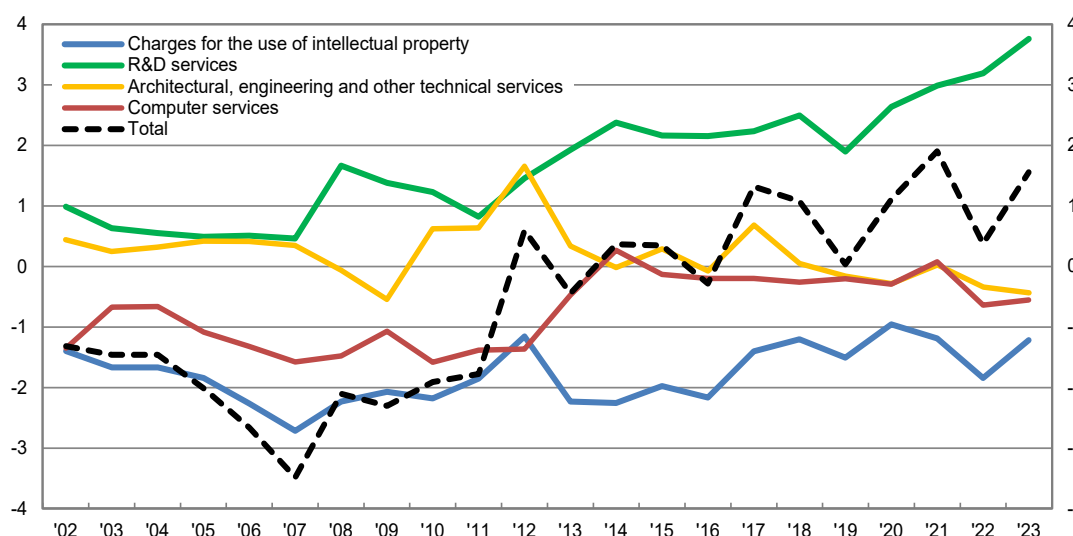
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Main findings¹

In 2023, Italy's technology balance of payments (TBP), which includes charges for the use of intellectual property, as well as trade in computer services, research and development (R&D) services, and architectural and engineering services (collectively defined as international trade in disembodied technology), recorded a surplus of €1.6 billion, markedly up from €0.4 billion a year earlier and close to its 2021 peak (Figure 1 and Table 1). The higher surplus mainly reflected a better performance for R&D services and the reduction in the deficit in charges for the use of intellectual property. Between 2010 and 2023, disembodied technology exports grew by an average of 9.5 per cent per year, at a faster pace than other types of services.

In 2023, the sample of firms surveyed was expanded to meet new statistical requirements set by EU regulations,² leading to more accurate estimates, especially in terms of their breakdown by sector and class size. Based on the new estimates, nearly 60 per cent of disembodied technology transactions are attributable to service firms, whose balance is positive, albeit lower than that of manufacturing firms as a whole; the share of large firms and of Italian firms belonging to foreign groups trading in disembodied technology remained high.

Figure 1 – Italy's technology balance of payments by transaction type
(billions of euros)



¹ This report was prepared by Enrico Tosti, the data were processed by Arcangela De Cata and Francesca Monica Romano.

² The survey on non-financial quarterly transactions of non-financial corporations and insurance companies was expanded for the purpose of compiling the statistics on services trade by enterprise characteristics (STEC – Regulation (EU) 2019/2152) within the framework of the cooperation between Banca d'Italia and Istat. The time series by type of service and country were reconstructed backwards; the revision did not extend to the sector of economic activity and to firm size, for which the data are not comparable with those released in the past (see the Appendix).

Reference period: 2023

Italy's technology balance of payments in 2023

The TBP balance records a surplus again

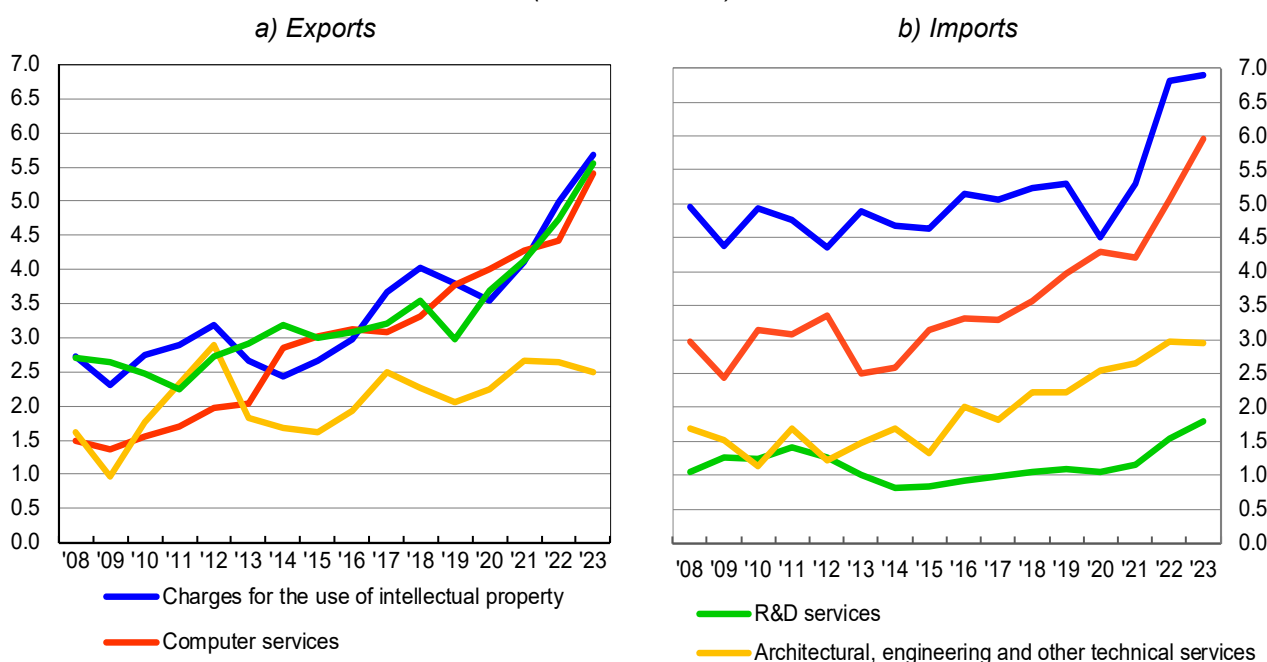
In 2023, Italy's technology balance of payments,³ which has been positive since 2017, rose to €1.6 billion (up from €0.4 billion in 2022; Table 1), mainly because of a higher R&D surplus and a smaller deficit in charges for the use of intellectual property.

Exports grow more than imports

In 2023, TBP exports increased by 14.1 per cent. Computer services made the strongest contribution (21.9 per cent), followed by R&D services (17.5 per cent) and charges for the use of intellectual property (14.1 per cent), whereas engineering and architectural services contracted (-5.0 per cent; see Figure 2.a).

TBP imports grew by 7.3 per cent, about half as much as exports. Computer services and R&D services led the way in imports as well (around 17 per cent), while imports of engineering and architectural services declined (-1.1 per cent; see Figure 2.b). Charges for the use of intellectual property still account for the highest share of imports, though they only increased by 1.1 per cent.

Figure 2 - Italy's technology balance of payments: exports and imports by transaction type
(billions of euros)

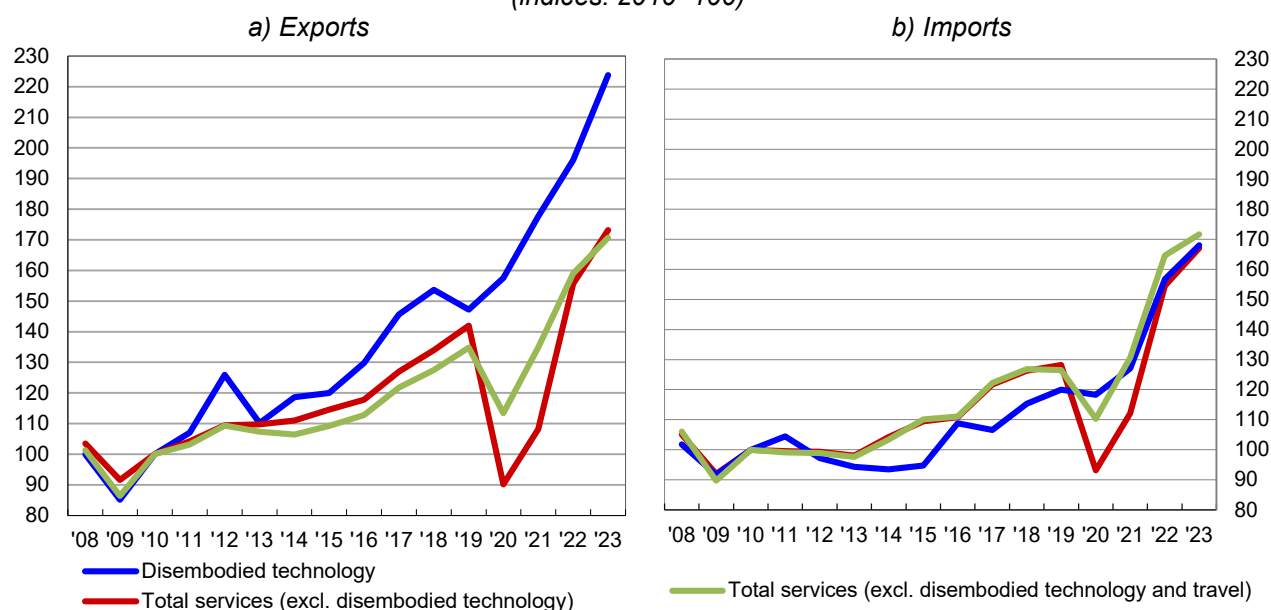


Since 2010 technology exports have risen faster than other services on average

Between 2010 and 2023, TBP exports increased by 9.5 per cent on average each year, at a higher rate than those of other types of services (5.6 per cent; see Figure 3.a). The increase in TBP imports was instead smaller (5.2 per cent on average) and broadly in line with imports of other services (Figure 3.b).

³ The definition of 'technology balance of payments' follows the OECD's taxonomy, which excludes the sale of concessions and similar rights, royalties and other non-R&D-related licenses in order to avoid overestimation. These flows are recorded as 'intangible assets' in the capital account and therefore cannot be kept distinct from other transactions entered under that item (such as the sale of CO₂ emission rights and the like, television and film rights and transfers of sports players from one club to another). In any case, the value of these transactions is likely to be negligible. For further details, see: [Methods and Sources: Methodological Notes](#).

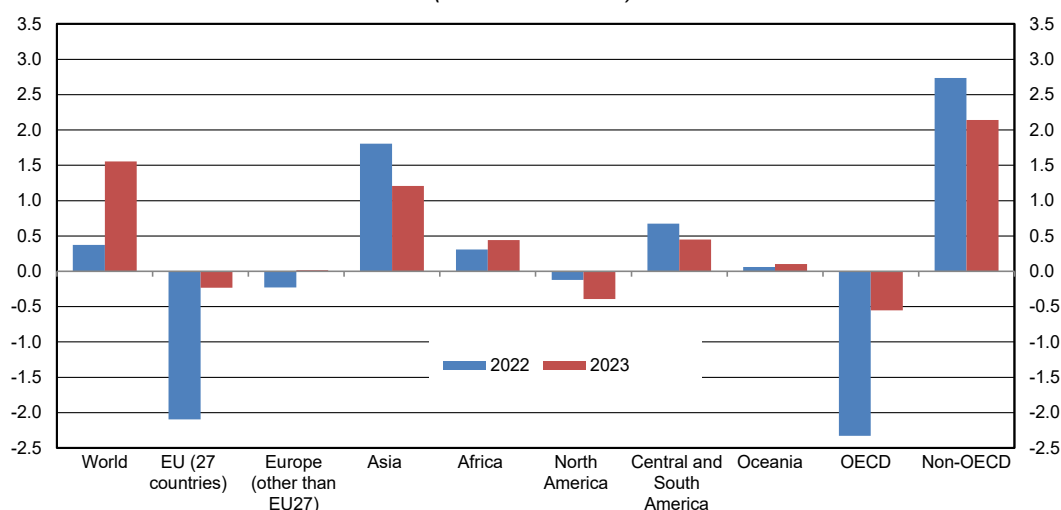
**Figure 3 – Italy's technology balance of payments:
exports and imports compared with other services data**
(indices: 2010=100)



The deficit vis-à-vis OECD countries narrows significantly

The expansion of the TBP surplus in 2023 reflected a significantly narrower deficit vis-à-vis OECD countries (Figure 4 and Table 2), which account for 82 per cent of exports and 93 per cent of imports of this type of services by Italian firms. In particular, the bilateral trade balances with France, Ireland and the Netherlands improved. Conversely, the surplus vis-à-vis non-OECD countries decreased, especially for Qatar, Brazil and China.

Figure 4 - Italy's technology balance of payments by geographical area
(billions of euros)



France becomes the main export market

Italian exports to OECD countries in 2023 were mostly to France (€2.9 billion), which overtook the United States, the first export destination market for Italy during the previous two-year period. Exports to France were distributed across all sectors, while those to the United States mainly consisted of R&D services. The other main export destination markets were Germany (€1.8 billion), followed by Switzerland, the United Kingdom and Ireland. Outside the OECD, the main destination markets were China, Singapore and Brazil.

The US is the top import partner country for Italy

The United States became the top exporter to Italy (€3.1 billion, from €2.3 billion in 2022), especially in terms of charges for the use of intellectual property and computer services. Purchases from Germany and the United Kingdom, which are Italy's second and third largest import markets, also increased and exceeded overall purchases from Ireland which, being home to several high-tech multinational corporations, had been the top exporter to Italy for the past few years. Among non-OECD countries, China and Singapore accounted for most of Italy's imports.

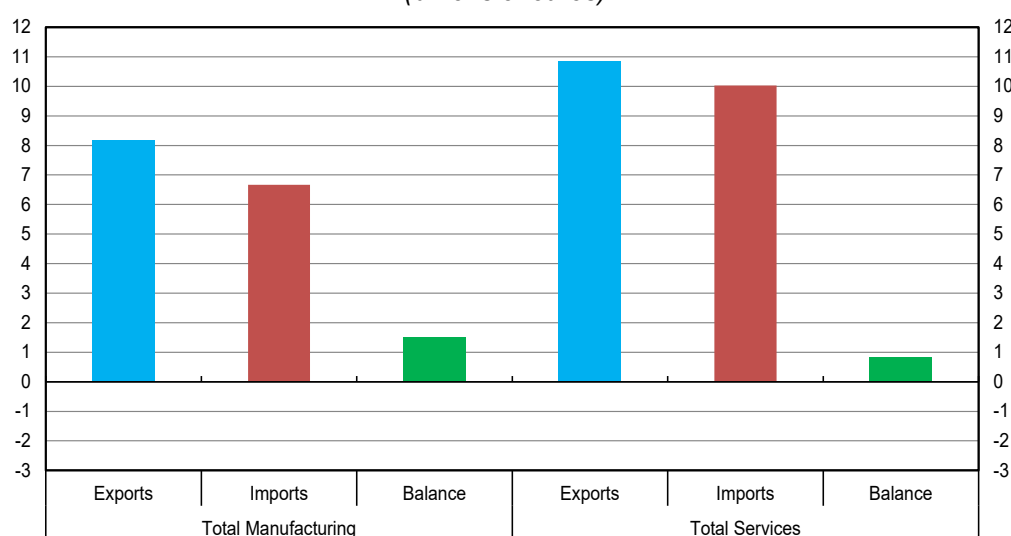
Service firms account for 57 per cent of trade in disembodied technology

According to the new estimates calculated using the expanded sample of firms and based on the revised statistical methodology, the share of disembodied technology exports attributable to service firms in 2023 exceeded that of manufacturing firms⁴ (57 and 43 per cent respectively). In the service sector, the main segments involved in these sales were 'professional, scientific and technical services' and 'information and communication services', while in manufacturing, the main segments were 'transport equipment' and 'pharmaceuticals'.

Manufacturing firms' share was smaller than that of service firms also for imports (38 per cent compared with 57 per cent). Once again, the main segments involved in disembodied technology purchases were 'transport equipment' and 'pharmaceuticals'. 'Information and communication services' accounted for more than half of the imports of service firms.

Both manufacturing and service firms recorded a surplus (€1.5 billion and €0.8 billion respectively; Figure 5 and Table 3).

Figure 5 – Italy's technology balance of payments: exports, imports and balances for the manufacturing and service sectors
(billions of euros)

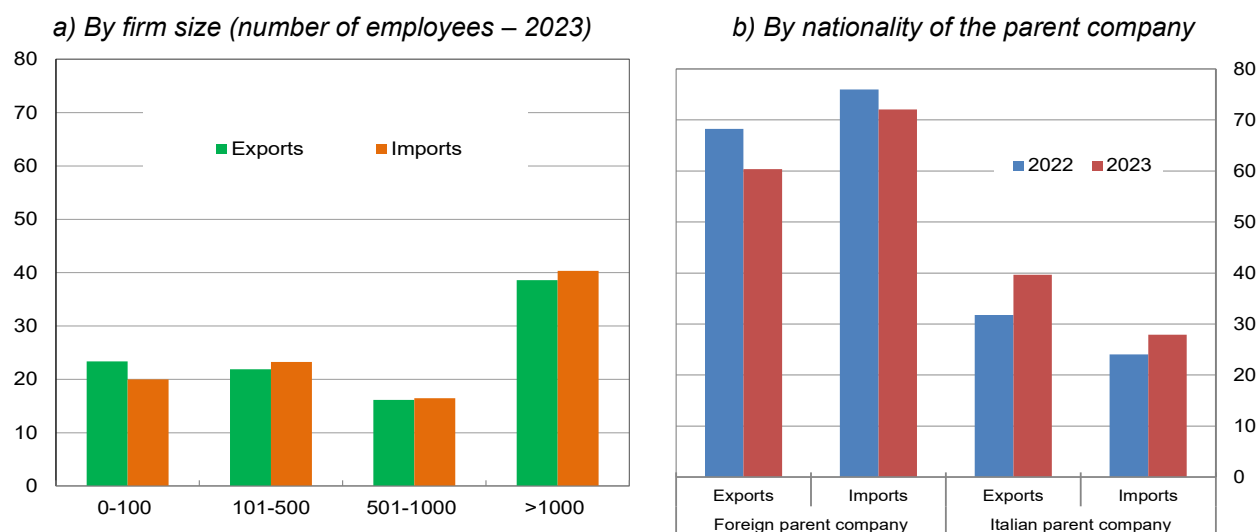


Foreign-controlled firms play a significant role

The methodological revision allowed for a more precise estimate of the contribution of small firms (those with up to 100 employees), which in 2023 accounted for about 20 per cent of trade in disembodied technology against around 40 per cent for large firms (those with 1,000 or more employees; Figure 6.a). Taking into account the distribution by nationality of the parent company, foreign-controlled firms accounted for 60 per cent of exports and 72 per cent of imports (Figure 6.b).

⁴ As mentioned in the 'Main findings' section, the larger share of exports attributed to service firms based on the new estimates reflects the greater accuracy of the new survey methods (see the Appendix).

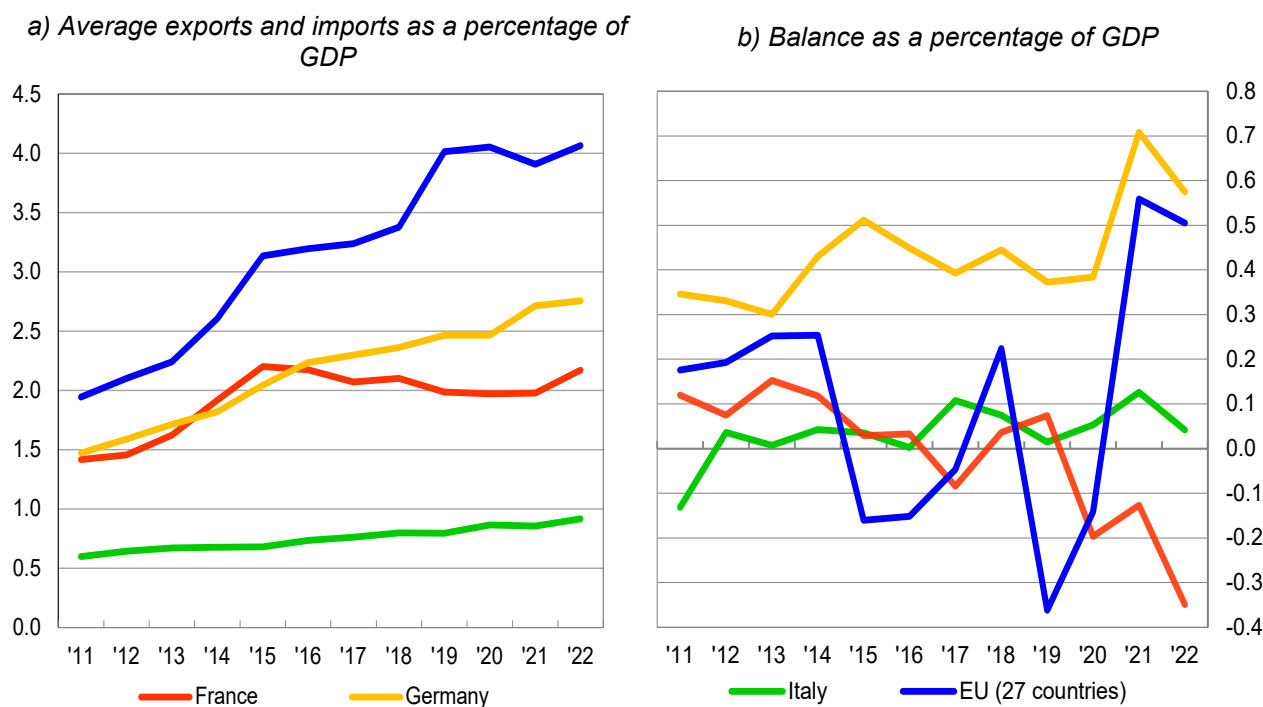
Figure 6 – Italy's technology balance of payments by firm size and by nationality of the parent company (per cent)



The technology balance of payments as a percentage of GDP is still below the EU

In 2022 (the last year for which internationally comparable data are available), Italy's TBP flows as a percentage of GDP were still significantly smaller than those of Germany and France (Figure 7.a).⁵ The high EU average reflects the large share of technology trade in countries, such as Ireland, where companies belonging to large multinational groups operate. In terms of disembodied technology balances, Italy's position was higher than France's but below the EU average and the balance for Germany (Figure 7.b).

Figure 7 – Italy's technology balance of payments: EU comparison



Source: Based on Eurostat data (balance of payments data; national accounts data for GDP).

⁵ The gap was observed for both exports (0.9 per cent of GDP in Italy, compared with 1.9 per cent in France and 3.1 per cent in Germany) and imports (0.8 per cent of GDP in Italy, compared with 2.0 per cent in France and 2.3 per cent in Germany).

Tables

Table 1 – Italy's technology balance of payments by transaction type
(millions of euros)

Year	A) Charges for the use of intellectual property	B1) Computer services	B2) Architectural, engineering and other technical services	Technology-related services (B=B1+B2)	C) Research and development services	Total TBP (A+B+C)
EXPORTS						
2002	2,040	1,008	1,274	2,282	1,746	6,068
2003	2,163	1,099	1,145	2,244	1,523	5,930
2004	2,321	1,209	1,438	2,648	1,691	6,659
2005	2,610	1,358	1,690	3,048	1,549	7,207
2006	2,934	1,526	1,899	3,425	1,741	8,100
2007	3,101	1,613	2,008	3,621	1,841	8,563
2008	2,720	1,498	1,624	3,122	2,709	8,552
2009	2,316	1,360	972	2,332	2,641	7,289
2010	2,752	1,563	1,768	3,331	2,477	8,560
2011	2,901	1,695	2,323	4,018	2,241	9,160
2012	3,193	1,980	2,884	4,863	2,719	10,775
2013	2,658	2,027	1,821	3,849	2,922	9,428
2014	2,427	2,862	1,680	4,542	3,182	10,152
2015	2,656	3,009	1,608	4,617	2,996	10,269
2016	2,980	3,116	1,925	5,041	3,084	11,106
2017	3,669	3,092	2,499	5,591	3,209	12,470
2018	4,031	3,316	2,262	5,578	3,543	13,152
2019	3,786	3,776	2,059	5,835	2,981	12,602
2020	3,543	4,004	2,248	6,252	3,689	13,484
2021	4,109	4,285	2,672	6,957	4,137	15,203
2022	4,981	4,430	2,635	7,065	4,736	16,781
2023	5,682	5,402	2,504	7,906	5,565	19,153
IMPORTS						
2002	3,438	2,356	833	3,189	759	7,386
2003	3,832	1,770	896	2,666	890	7,388
2004	3,990	1,870	1,119	2,989	1,139	8,118
2005	4,452	2,441	1,272	3,713	1,058	9,223
2006	5,196	2,849	1,485	4,334	1,234	10,765
2007	5,815	3,188	1,662	4,850	1,381	12,046
2008	4,951	2,978	1,682	4,660	1,046	10,658
2009	4,388	2,429	1,515	3,944	1,262	9,594
2010	4,931	3,145	1,144	4,289	1,249	10,469
2011	4,753	3,078	1,687	4,765	1,417	10,935
2012	4,348	3,344	1,226	4,571	1,261	10,179
2013	4,891	2,499	1,485	3,983	997	9,871
2014	4,685	2,595	1,698	4,293	807	9,785
2015	4,631	3,139	1,316	4,455	835	9,920
2016	5,147	3,314	1,999	5,312	930	11,389
2017	5,072	3,288	1,816	5,104	977	11,153
2018	5,236	3,576	2,214	5,790	1,049	12,076
2019	5,291	3,978	2,217	6,195	1,081	12,567
2020	4,500	4,295	2,533	6,828	1,054	12,381
2021	5,298	4,209	2,646	6,856	1,149	13,303
2022	6,822	5,067	2,975	8,042	1,543	16,407
2023	6,898	5,953	2,941	8,894	1,804	17,597
BALANCES						
2002	-1,398	-1,348	441	-907	987	-1,318
2003	-1,669	-671	248	-422	634	-1,458
2004	-1,669	-661	320	-341	551	-1,459
2005	-1,842	-1,083	418	-666	492	-2,015
2006	-2,263	-1,323	414	-909	507	-2,665
2007	-2,714	-1,575	346	-1,229	459	-3,484
2008	-2,231	-1,480	-58	-1,538	1,663	-2,106
2009	-2,072	-1,069	-543	-1,612	1,379	-2,305
2010	-2,179	-1,582	624	-958	1,228	-1,909
2011	-1,852	-1,383	636	-747	824	-1,775
2012	-1,155	-1,364	1,657	293	1,458	596
2013	-2,233	-471	337	-135	1,925	-443
2014	-2,257	267	-18	249	2,375	367
2015	-1,974	-130	292	162	2,161	349
2016	-2,167	-198	-73	-271	2,154	-283
2017	-1,402	-196	684	488	2,232	1,317
2018	-1,205	-261	49	-212	2,494	1,076
2019	-1,505	-202	-158	-360	1,899	34
2020	-957	-291	-284	-575	2,635	1,103
2021	-1,189	76	26	101	2,988	1,900
2022	-1,841	-638	-340	-978	3,193	375
2023	-1,216	-552	-437	-989	3,761	1,556

Table 2 – Italy's technology balance of payments by counterpart country or geographical area
(millions of euros)

Counterpart country or geographical area	EXPORTS		IMPORTS		BALANCES	
	2022	2023	2022	2023	2022	2023
World	16,781	19,153	16,407	17,597	375	1,556
EU (27 countries)	7,334	9,693	9,428	9,925	-2,094	-231
Europe (other than EU-27)	3,199	3,256	3,430	3,242	-230	14
Asia	2,520	2,038	713	832	1,807	1,206
Africa	674	681	364	241	309	440
North America	2,208	2,823	2,328	3,217	-120	-394
Central and South America	767	528	94	80	674	448
Oceania	77	129	15	25	62	104
<i>Unallocated data</i>	2	4	34	35	-32	-31
OECD	12,778	15,757	15,106	16,311	-2,328	-554
Austria	269	197	116	143	154	54
Belgium	433	569	201	217	233	352
Finland	203	167	111	91	93	76
France	1,705	2,918	2,178	1,922	-472	996
Germany	1,306	1,788	2,235	2,748	-929	-959
Ireland	884	1,447	2,245	2,026	-1,362	-579
Luxembourg	510	502	153	151	357	351
Netherlands	257	359	1,097	809	-841	-450
Poland	283	184	63	96	221	88
Spain	327	542	244	456	83	86
Sweden	415	289	380	627	36	-338
United Kingdom	1,114	1,519	2,102	2,204	-988	-685
Switzerland	1,765	1,546	1,145	858	620	688
Türkiye	135	59	44	50	92	8
United States	2,143	2,652	2,281	3,111	-138	-459
Canada	65	171	47	106	18	66
Japan	210	71	91	144	119	-73
Other OECD countries	753	777	374	553	379	224
Non-OECD countries	4,002	3,391	1,267	1,251	2,735	2,141
Saudi Arabia	157	110	72	46	84	64
Brazil	458	238	52	41	406	197
China	874	759	230	273	644	486
Croatia	270	153	17	14	253	139
Egypt	567	338	312	185	256	152
United Arab Emirates	86	155	34	23	52	132
Russia	109	24	6	2	103	22
India	146	90	85	74	61	17
Qatar	349	82	26	14	323	67
Romania	67	149	62	94	5	55
Singapore	166	278	21	118	145	159
Other non-OECD countries	752	1,015	350	365	403	650

Table 3 – Italy's technology balance of payments by sector of economic activity of the resident reporting entity
(millions of euros)

	EXPORTS	IMPORTS	BALANCES
	2023	2023	2023
Manufacturing	8,172	6,670	1,502
<i>of which: Food, beverages and tobacco</i>	654	733	-79
<i>Textiles, wearing apparel, leather and related products</i>	447	75	372
<i>Chemicals</i>	513	277	236
<i>Pharmaceuticals</i>	1,165	840	325
<i>Computer, electronic and optical products</i>	1,080	221	859
<i>Electrical equipment</i>	247	689	-442
<i>Machinery and equipment n.e.c.</i>	852	645	206
<i>Motor vehicles, trailers and semi-trailers</i>	1,525	940	586
<i>Other transport equipment</i>	1,067	887	181
Services	10,838	10,031	807
<i>of which: Wholesale and retail trade</i>	1,293	1,821	-528
<i>Information and communication</i>	3,993	5,290	-1,298
<i>Financial and insurance</i>	223	585	-361
<i>Professional, scientific and technical</i>	4,478	982	3,496
Other sectors*	142	896	-753
Total	19,153	17,597	1,556

Note(*) - Other sectors include: (i) Agriculture; (ii) Mining and quarrying; (iii) Electricity and waste; (iv) Construction.

Appendix

The methodological revision of the sampling design used to survey non-financial transactions and the impact on the time series of the technology balance of payments

The main source used to fill in the 'other services' item of the balance of payments is the survey on non-financial quarterly transactions of non-financial corporations and insurance companies (TTN)⁶, conducted as part of the Direct Reporting requirements.

In 2023, the methodology of the survey was revised for the purpose of compiling the statistics on services trade by enterprise characteristics (STEC – Regulation (EU) 2019/2152) within the framework of the cooperation between Banca d'Italia and Istat. As of 2024, pursuant to Regulation (EU) 2019/152, Istat has provided these statistics to Eurostat for its European Business Statistics. To this end, the size of the sample was expanded from around 3,500 to 5,000 units. At the same time, a stratified sampling design was adopted that uses as stratification variables not only the presence/absence of cross-border transactions but also the number of employees, sector of economic activity, turnover, and the presence of direct investment (both inward and outward).

The data based on the new sampling methodology were published in September 2024 together with the benchmark revision of national accounts data and the concurrent revisions of the balance of payments statistics. Based on the new methodology, the figure for international trade for the total of 'other services' is broadly in line with that reported in the previous editions, while more extensive revisions were applied to the breakdown by individual types of service and by some counterparty countries. The data have been reconstructed backwards from 2008 onwards to ensure the continuity of the time series. This was done by revising the sample weights of the surveys for the previous years so as to obtain a distribution by service item and country that is consistent with the results for 2023. Conversely, the data by sector of economic activity and firm size reported for 2023 are not comparable with those of the previous years because of the different sampling design. Table A1 provides a comparison between current and previous data for total exports and imports in the technology balance of payments; the revised figures for exports are higher than the previous estimates until 2011; from 2013 onwards, the revised figures for both imports and exports are lower than the previous estimates, by 10 per cent on average, with a limited impact on the balance.

Table A1 – Total TBP exports and imports: a comparison between current and previous data
(millions of euros and per cent)

	TOTAL TBP EXPORTS				TOTAL TBP IMPORTS				BALANCES		
	A) Previous data	B) Current data	C) Absolute difference (B-A)	D) Difference (%) (C*100/A)	A) Previous data	B) Current data	C) Absolute difference (B-A)	D) Difference (%) (C*100/A)	A) Previous data	B) Current data	C) Absolute difference (B-A)
2008	7,632	8,552	920	12.1	10,658	10,658	0	0.0	-3,026	-2,106	920
2009	6,369	7,289	920	14.4	9,594	9,594	0	0.0	-3,225	-2,305	920
2010	7,760	8,560	800	10.3	10,469	10,469	0	0.0	-2,709	-1,909	800
2011	8,760	9,160	400	4.6	10,935	10,935	0	0.0	-2,175	-1,775	400
2012	10,775	10,775	0	0.0	10,179	10,179	0	0.0	596	596	0
2013	10,862	9,428	-1,434	-13.2	10,751	9,871	-880	-8.2	111	-443	-554
2014	11,444	10,152	-1,292	-11.3	10,757	9,785	-971	-9.0	687	367	-320
2015	11,590	10,269	-1,321	-11.4	11,011	9,920	-1,091	-9.9	579	349	-230
2016	12,575	11,106	-1,469	-11.7	12,536	11,389	-1,147	-9.2	39	-283	-322
2017	14,237	12,470	-1,767	-12.4	12,402	11,153	-1,249	-10.1	1,835	1,317	-518
2018	14,852	13,152	-1,700	-11.4	13,553	12,076	-1,478	-10.9	1,298	1,076	-222
2019	14,480	12,602	-1,878	-13.0	14,219	12,567	-1,651	-11.6	261	34	-227
2020	14,929	13,484	-1,444	-9.7	13,967	12,381	-1,586	-11.4	962	1,103	142
2021	16,832	15,203	-1,629	-9.7	14,733	13,303	-1,430	-9.7	2,099	1,900	-199
2022	18,673	16,781	-1,891	-10.1	17,907	16,407	-1,500	-8.4	766	375	-391

⁶ The survey excludes processing services, international transport (with the exception of postal services), travel and the portion of financial services related to FISIM (financial intermediation services indirectly measured).

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