
IFC Satellite Seminar on “Granular data: new horizons and challenges for central banks”

International trade in creative economy: an analysis with granular data¹

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GRANULAR DATA NEW HORIZONS AND CHALLENGES FOR CENTRAL BANKS

International Trade in Creative Economy: an analysis with granular data

Andrea Carboni – Marco Di Bella – Flavia Ciccioli

OTTAWA 15 July 2023

AGENDA

- Definitions: from creative economy to creative products
- Trade in creative products in Italy:
 - Macrodata evidences
 - Granular data analysis (export in creative services)
- Some conclusions

What is creativity?

A commonly accepted classification is to consider three areas of creativity development:

- **artistic creativity** involves imagination and a capacity to generate original ideas and novel ways of interpreting the world, expressed in text, sound and image;
- **scientific creativity** involves curiosity and a willingness to experiment and make new connections in problem solving; and
- **economic creativity** is a dynamic process leading towards innovation in technology, business practices, marketing, etc., and is closely linked to gaining competitive advantages in the economy.

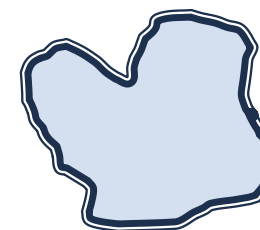
Definitions: from creative economy to creative products

Creative industry and creative economy

The **creative industry** refers to a broad range of sectors and economic activities that are based on the creation, production, and distribution of goods and services that have a high degree of creativity and artistic value



Creative economy is a broader concept, that encompasses not only the creative industry but also the economic and cultural impact generated by creativity in general



How measure creativity (with our instruments)?

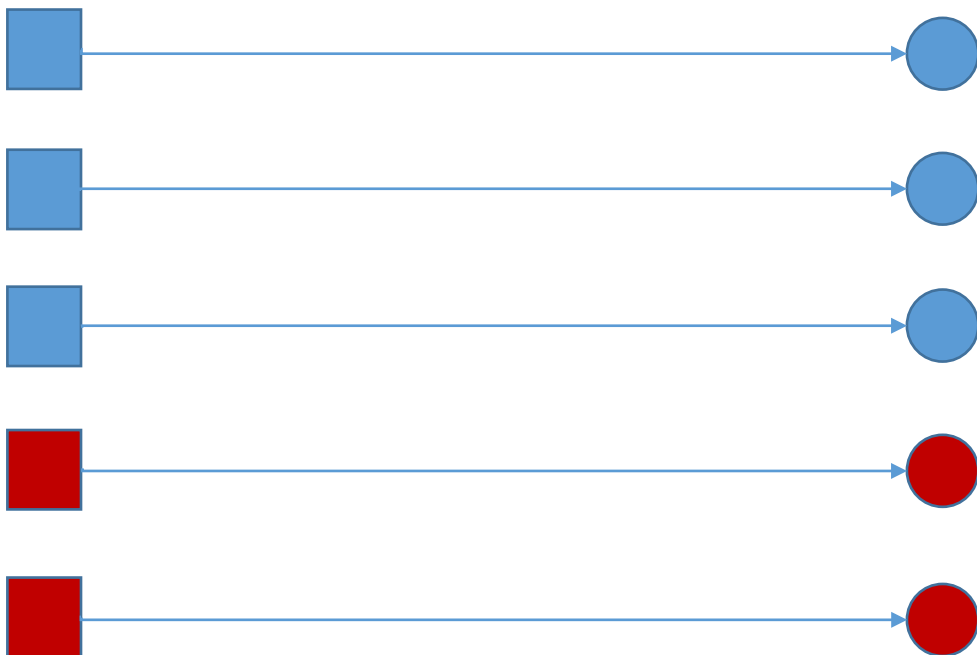


Definitions: from creative economy to creative products

Mono-product economy

Industries

Products



Creative Industries and products



Other (non- creative)
industries and products

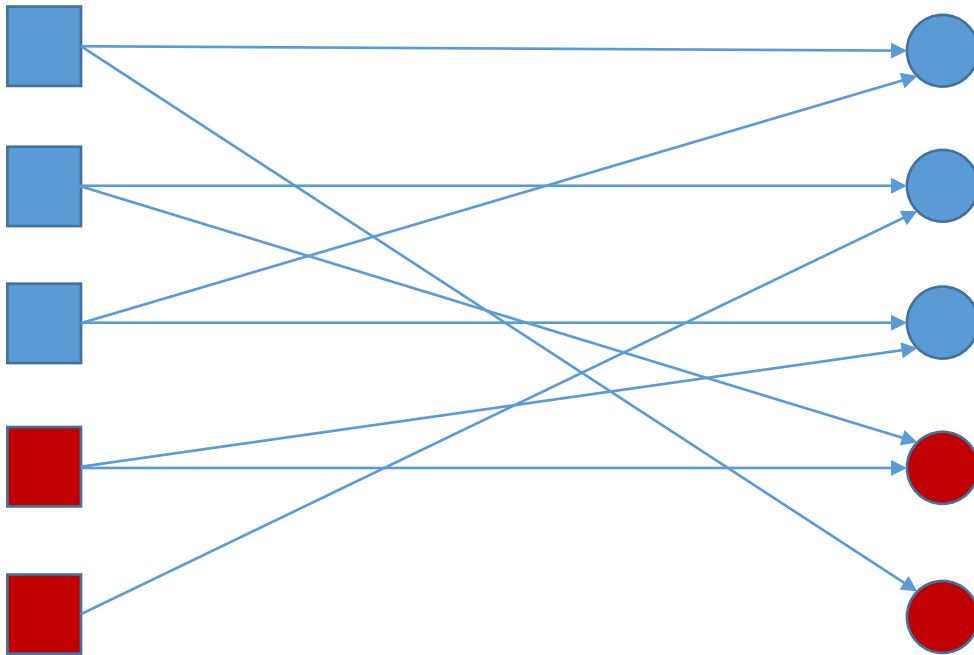


Definitions: from creative economy to creative products

Globalization and diversification economy

Industries

Products



Creative Industries and products



Other (non- creative)
industries and products



Definitions: from creative economy to creative products

Product classification: goods

UNCTAD has a list of 197 creative goods identified at the Harmonized System (HS) 6-digit level that fall under the following sub-categories:

- *art crafts* (carpets, products related to celebration, other crafts, paperware, wickerware, and yarn);
- *audio-visuals* (films and CDs, DVDs and tapes);
- *design* (architecture, fashion, glassware, interior, jewellery, and toys);
- *new media* (recorded media and video games);
- *performing arts* (musical instruments and printed music); *publishing* (books, newspapers, and other printed matter); and
- *visual arts* (antiques, painting, photography, and sculpture).

For a detailed list of the creative economy product groups and hierarchy see
[https://unctadstat.unctad.org/
EN/Classifications/DimHS2012Products_Creatives_Hierarchy.pdf](https://unctadstat.unctad.org/EN/Classifications/DimHS2012Products_Creatives_Hierarchy.pdf).

Definitions: from creative economy to creative products

Product classification: services

A precise classification (based on E-Bops) is annually provided by UNCTAD in its Annual Report

Code	EBOPS description
SH	CHARGES FOR THE USE OF INTELLECTUAL PROPERTY N.IE.
SI	TELECOMMUNICATIONS, COMPUTER AND INFORMATION SERVICES
SI3	INFORMATION SERVICES
SI31	NEWS AGENCY SERVICES
SI32	OTHER INFORMATION SERVICES
SJ	OTHER BUSINESS SERVICES
SJ1	RESEARCH AND DEVELOPMENT SERVICES
SJ11	WORK UNDERTAKEN ON A SYSTEMATIC BASIS TO INCREASE THE STOCK OF KNOWLEDGE
SJ111	PROVISION OF CUSTOMISED AND NON-CUSTOMISED R&D SERVICES
SJ112	SALE OF PROPRIETARY RIGHTS ARISING FROM R&D
SJ12	RESEARCH AND DEVELOPMENT SERVICES OTHER THAN WORK UNDERTAKEN ON A SYSTEMATIC BASIS TO INCREASE THE STOCK OF KNOWLEDGE
SJ2	PROFESSIONAL AND MANAGEMENT CONSULTING SERVICES
SJ22	ADVERTISING, MARKET RESEARCH AND PUBLIC OPINION POLLING
SJ3	TECHNICAL, TRADE-RELATED AND OTHER BUSINESS SERVICES
SJ31	ARCHITECTURAL, ENGINEERING, SCIENTIFIC AND OTHER TECHNICAL SERVICES
SJ311	ARCHITECTURAL SERVICES
SK1	AUDIOVISUAL AND RELATED SERVICES
SK2	OTHER PERSONAL , CULTURAL AND RECREATIONAL SERVICES
SK23	HERITAGE AND RECREATIONAL SERVICES

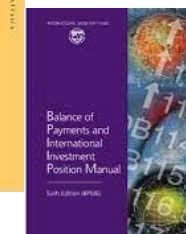
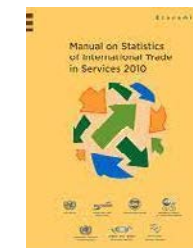
Definitions: from creative economy to creative products

Product classification

HS Nomenclature (Convention on the Harmonized Commodity Description and Coding System) is adopted for International Merchandise Trade (or Foreign Trade Statistics)

EBOPS classification is used for balance of payments and ITSS (International Trade in Services Statistics)

FTS and BOP goods are different from a conceptual perspective, but highly correlated



Definitions: from creative economy to creative products

Product classification: the sources

In Italy, NSI provides data about international trade statistics with the HS breakdown...

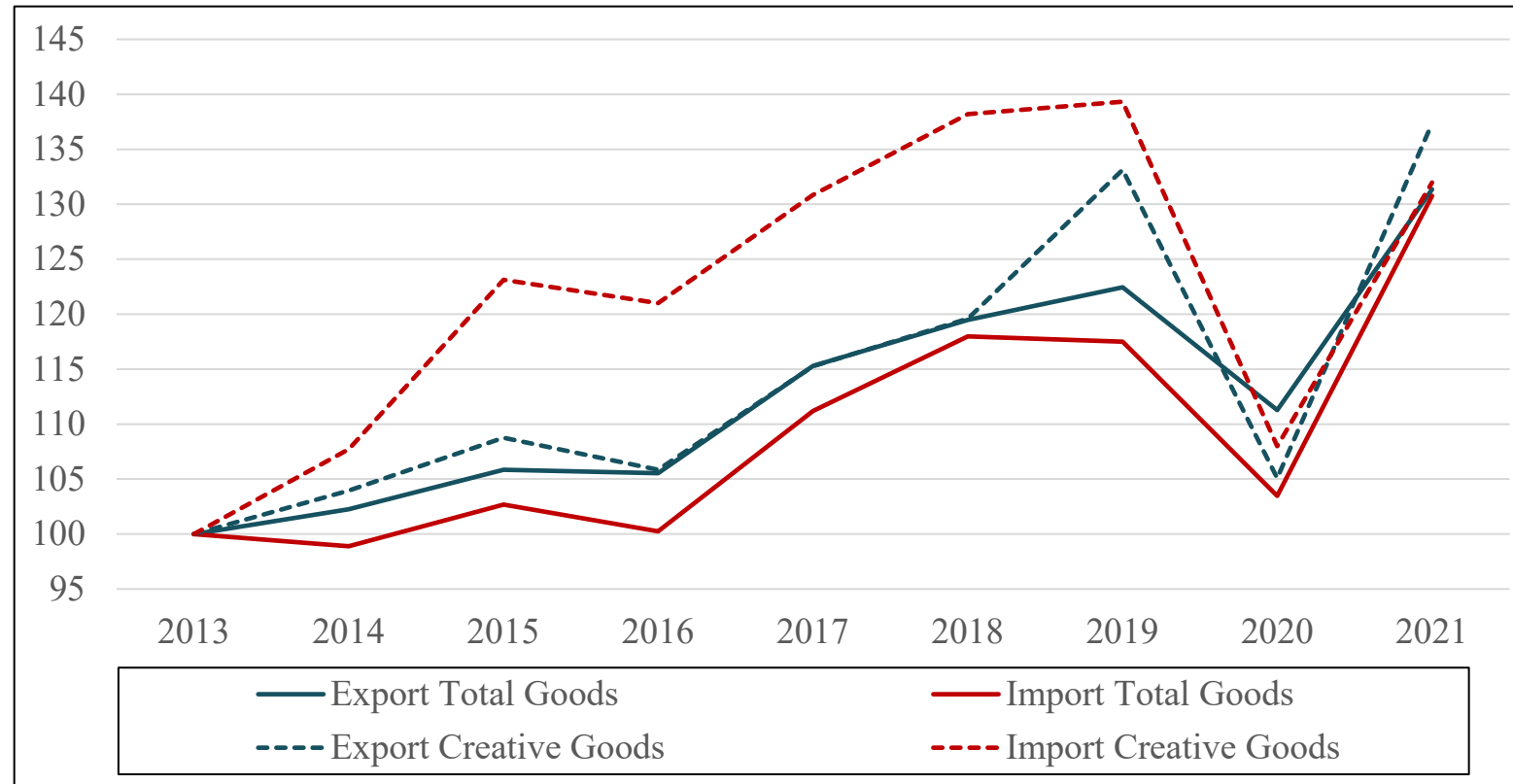
While Banca d'Italia collects the trade in services EBOPS classification, (adopted for balance of payment and ITSS) with an extensive survey

Granular data for trade in services statistics are available



The trade of creative products in Italy: macroeconomic evidence

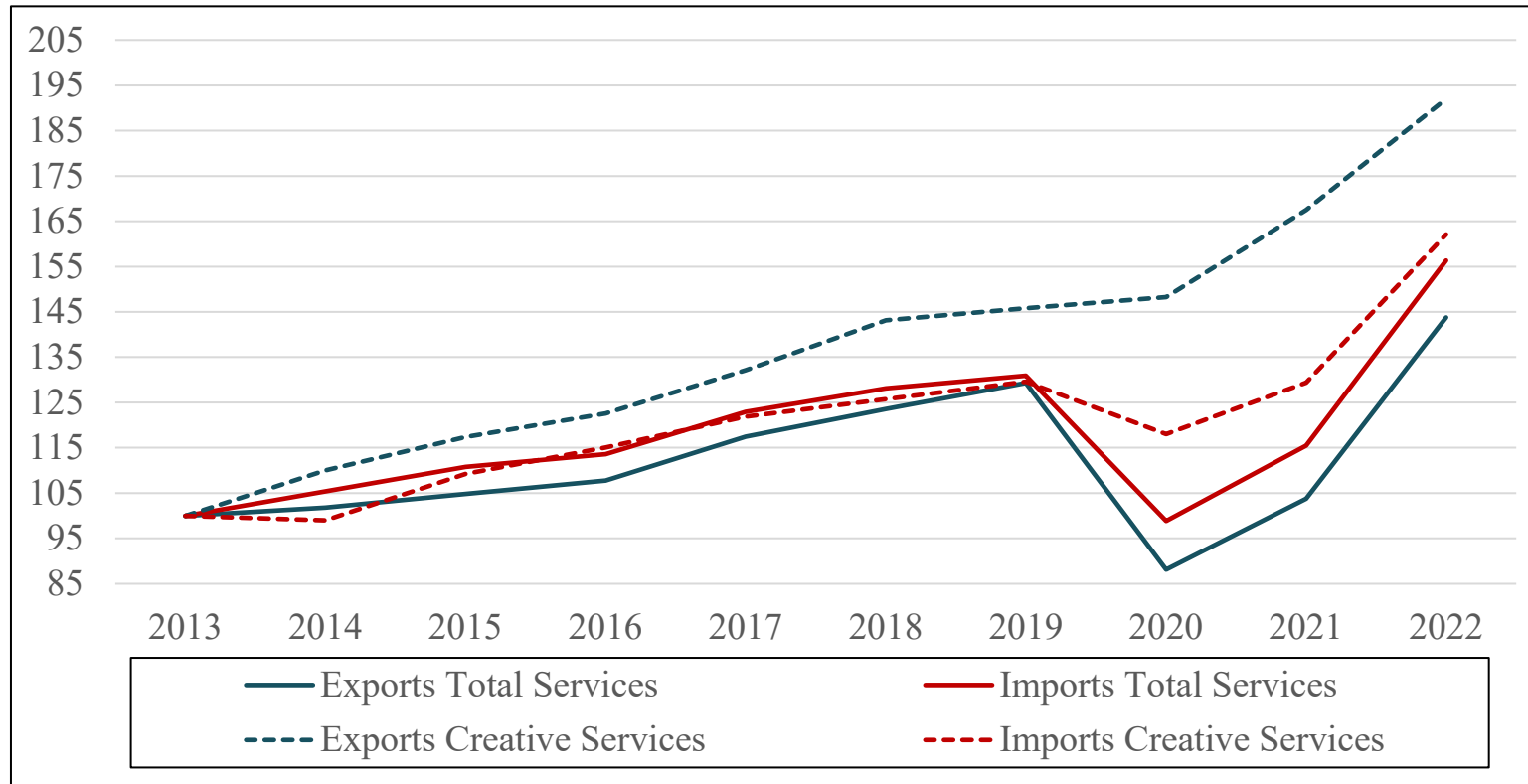
Creative Goods: exports and imports in Italy (2013 base 100)



Foreign Trade Statistics (Istat)

The trade of creative products in Italy: macroeconomic evidence

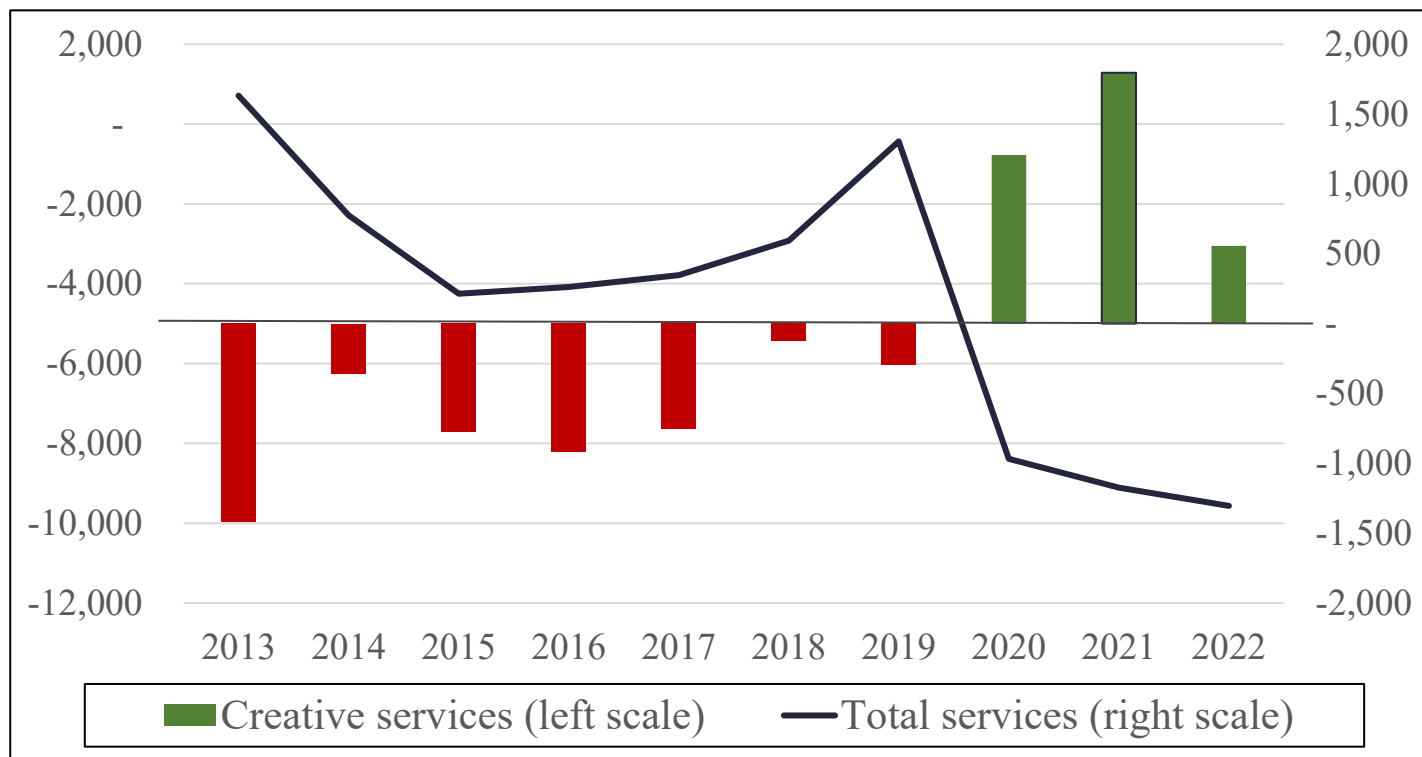
Creative Services: exports and imports in Italy (2013 base 100)



Balance of payments (Banca d'Italia)

The trade of creative products in Italy: macroeconomic evidence

Total Services and Creative Services: the balance



The large growth of export in creative services has generated a positive surplus on the last three years in Italy. At the opposite for the other services the balance is negative.

Balance of payments (Banca d'Italia)

The trade of creative products in Italy: granular data analysis

The Bank of Italy ITSS survey

A ML approach based on a logit model

The trade of creative products in Italy: granular data analysis

The Bank of Italy Bop survey for non-financial transactions

Quarterly frequency

A sample of around 3,500 non financial enterprises (increased to 5,000 units in 2023). The response rate is around 95%

Import / Export in services: breakdown counterpart country – invoicing currency

Several stratification variables: dimension (total turnover), FDI , cross-border payments (through a resident bank).

The sample is renewed every 2 years, with a rotation of around 20% enterprises.

The trade of creative products in Italy: granular data analysis

The enterprises that led the growth

Around 1,400 enterprises have participated to the survey from 2017 to 2022.

166 companies have registered a growth rate greater than 30 per cent in the export in creative services in this period.

These companies accounted for approximately 80 percent of exports in creative services.

WHO ARE THESE COMPANIES?



The trade of creative products in Italy: granular data analysis

The enterprises that led the growth: a logit model

We developed a logit model to identifying the main features of the 166 enterprises that led the growth in creative services exports.

We tested several approaches included a ML model (a training and a validation dataset).

We have used balance samples: half units in target and half not.

In general the correct classification is around 80%; for our purposes (the companies' description) is enough

The trade of creative products in Italy: granular data analysis

WHO ARE THESE COMPANIES?

- These companies are mainly located in the northeast and central regions of Italy.
- They usually have FDI outward at the opposite of the other enterprises in the sample (while FDI inward are less relevant for distinguishing them from other companies).
- They import services.
- In general, they have recorded a significant growth in number of employees over the past 5 years
- These companies are usually of large size, particularly focusing on the turnover range between 500 million and 2.5 billion Euros. It is rare for them to have a turnover below 10 million Euros.



The trade of creative products in Italy: granular data analysis

WHO ARE THESE COMPANIES?

- They do not belong to a specific sector of economic activity, but typically they are associated with the following sectors:

NACE	Description
53	Postal and courier activities
91	Libraries, archives, museums and other cultural activities
60	Programming and broadcasting activities
74	Other professional, scientific and technical activities
18	Printing and reproduction of recorded media
13	Manufacture of textiles
59	Motion picture, video and television programme production, sound recording and music publishing activities
93	Sports activities and amusement and recreation activities
66	Activities auxiliary to financial services and insurance activities
32	Other manufacturing

Not all sectors are related to creative industries (i.e. Postal services, textile sector, and other manufacturing industries.)



Some conclusions

In recent years, Italy has experienced a particularly intense international trade of creative products.

In particular, the export of creative services has been significant.

It has been possible to analyze the companies that have contributed the most to this growth and outline their major characteristics (size, geographical, Nace, FDI, turnover growth)

Their challenge for the future is to understand whether the current business model will need to undergo changes due to their remarkable development.

Some conclusions

Macro-economic statistics have always provided an essential contribution to policy choices.

The analysis of granular data has also become important in providing a complementary view of the economy.

The integration of trade data and business statistics is an urgency for the statistical community (EU-EBS Regulation).

Central banks (as BoP compilers) will need to seek granular information (i.e. trade in services surveys, customs data) to develop a comprehensive economic analysis.

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THANK YOU !!!

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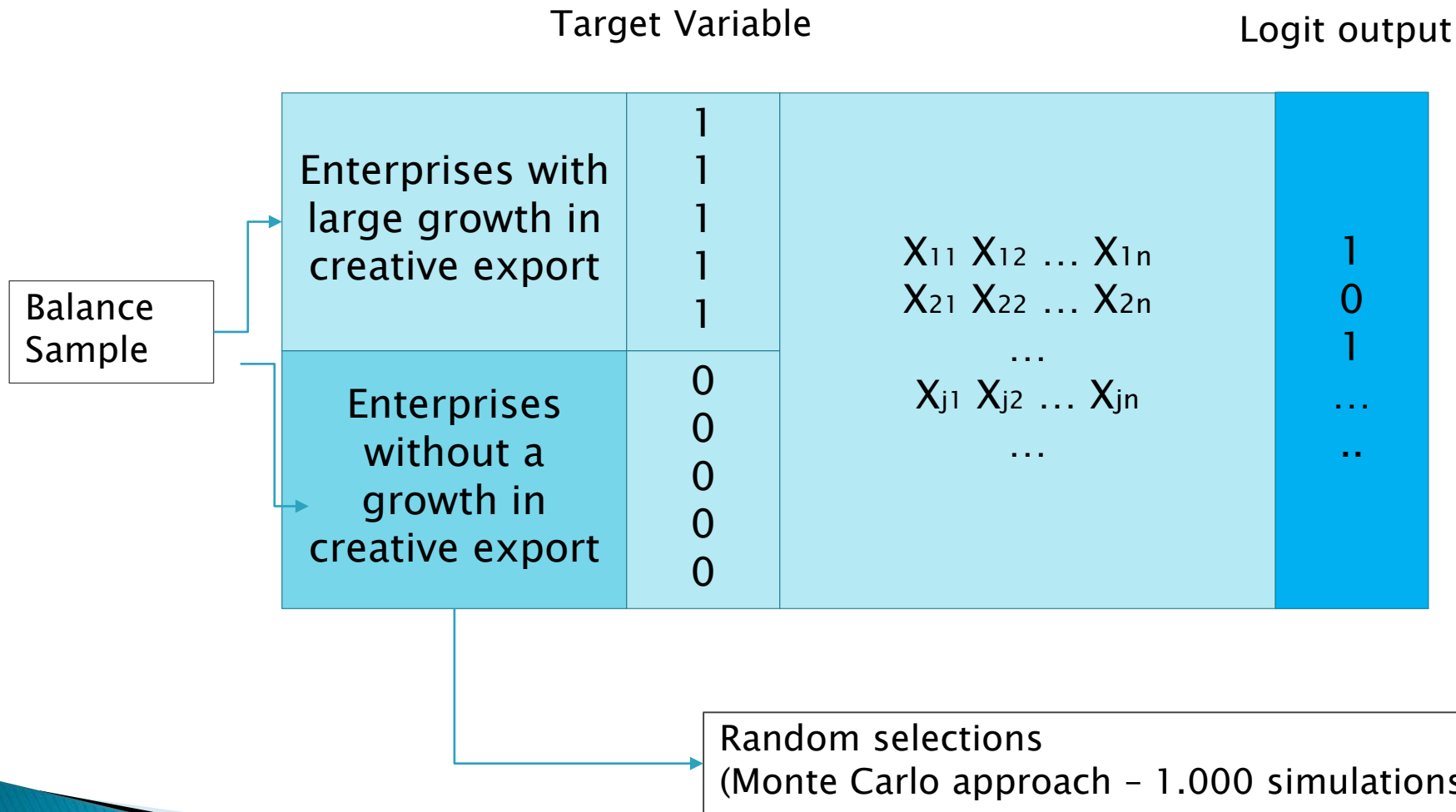
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ADDITIONAL SLIDES

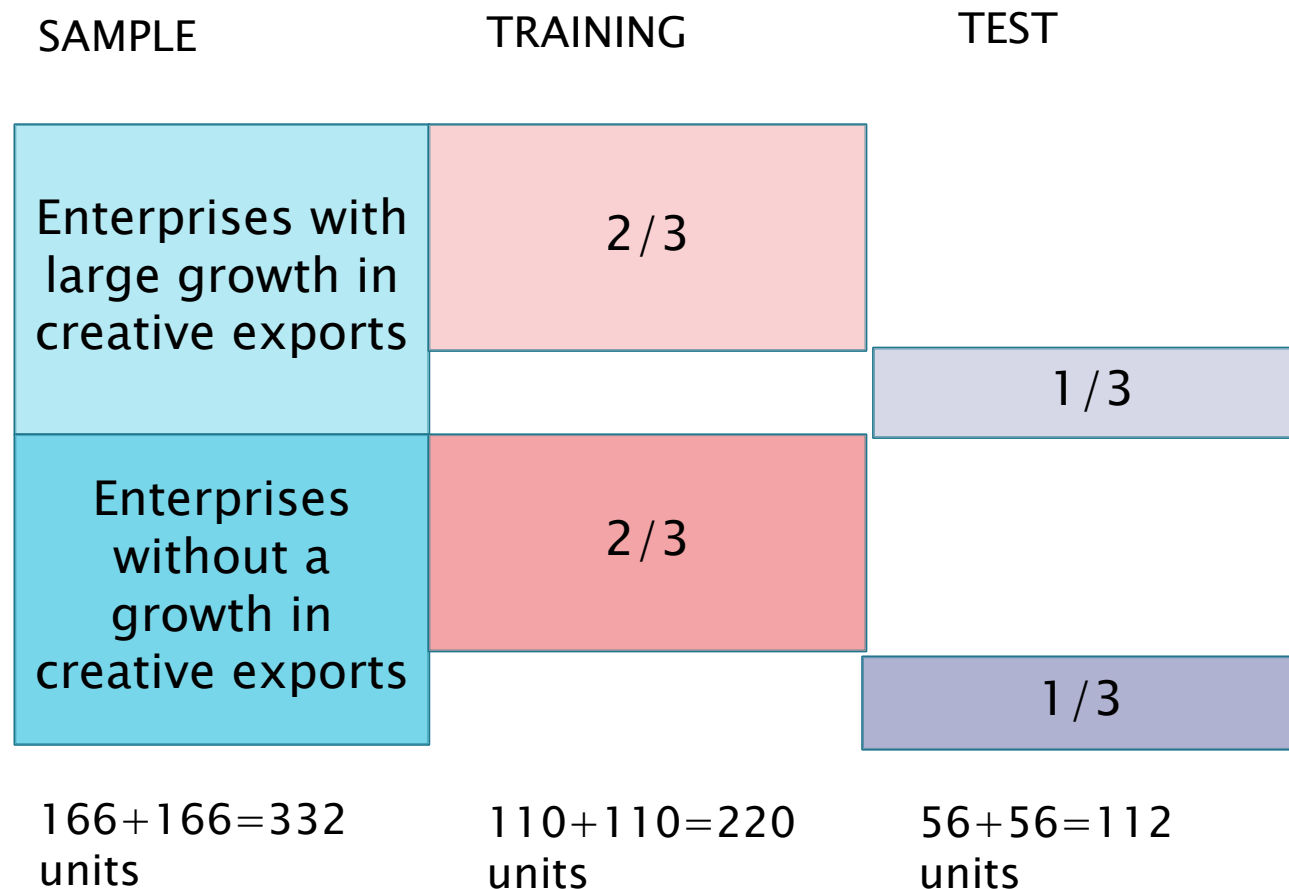
Table 11 – Number of enterprises with significant growth rate in creative services exports in the period 2017-2022
Source: ITSS Survey (Banca d'Italia)

(1) Growth rate (2017-2022)	(2) Number of enterprises	(3) % of enterprises	(3) Share of export in creative services (2022)
30	166	12.1	78.3
50	137	10.0	71.3
100	102	7.4	48.8

ADDITIONAL SLIDES



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ADDITIONAL SLIDES

The corner point approach

Class	Description	Parameter
1	Turnover lower than 10 million euro	-0,39417483
2	Turnover between 50 and 100 million euro	-0,732568843
3	Turnover between 100 and 500 million euro	0,019538032
4	Turnover between 500 million and 1 billion euro	0,123339257
5	Turnover between 1 and 2.5 billion euro	0,453097813

For class 6 –enterprises with sales greater than 2.5 billion– the parameter is equal to 0 (this is the corner!).

Thus the coefficients in the table are positive if class membership increases the probability of being an enterprise with large creative export growth (target=1) compared to class 6; negative if it decreases the probability.