I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 16282

Illicit Shadows: An Economic Analysis of Trade Gaps in Cultural Goods through the Italian Market

Elia Acciai
Michele Belloni
Marina Della Giusta
Giovanna Segre

JULY 2023

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 16282

Illicit Shadows: An Economic Analysis of Trade Gaps in Cultural Goods through the Italian Market

Elia Acciai
University of Torino

Marina Della Giusta
University of Torino and IZA

Michele Belloni
University of Torino

Giovanna Segre
University of Torino

JULY 2023

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Illicit Shadows: An Economic Analysis of Trade Gaps in Cultural Goods through the Italian Market

This paper provides evidence of a consistent gap in the value of cultural goods exported from Italy and the value declared by its trading partners in official trade statistics for the period 1994-2021 and discusses it in the context of the literature on illicit trafficking in cultural property, a phenomenon that plights a number of both developing and developed countries rich in cultural heritage. Differences between the four categories of cultural goods recorded (archaeological goods, antiquities, paintings, and sculptures) are exploited to highlight potential areas where trafficking might be expected to be larger. We construct a panel dataset to estimate a gravity model of the gap including market size, extent of trade, level of corruption and adoption of protective legislation (UNESCO and UNIDROIT) and discuss results indicating further questions to be investigated in this important and to date under researched policy area.

JEL Classification: F13, F14, K12, K42, O17, Z11, Z13

Keywords: illicit trafficking, cultural property, trade, corruption, UNESCO, UNIDROIT

Corresponding author:
Marina Della Giusta
University of Reading
Whiteknights Reading RG6 6AA
United Kingdom

E-mail: m.dellagiusta@reading.ac.uk

1. Introduction

The illicit import, export, and transfer of ownership of cultural heritage, such as objects of importance to archaeology, prehistory, history, literature, art, and science, is a criminal phenomenon that has been documented since early modern history and has been studied primarily by legal scholars and archaeologists (Yates and Smith, 2022; Yates and Brodie, 2022; Hardy, 2020; Smith, 2019; Yates and Smith, 2019; McKenzie et al. 2019). While the trade itself is lucrative for organized crime networks, politically motivated armed groups, middlemen and collectors (which include also academies and museums sometimes unaware and sometimes complicit) it is not so for locals in source countries who are often characterized by political or economic instability (Yates and Smith, 2022; Hardy 2020; De Sanctis 2013; Brodie et al. 2011). Importantly, there are no currently reliable estimate of the extent of illicit trafficking of cultural goods as it is actually the monetary value attributed to stolen objects that determines whether or not a crime is thoroughly investigated and whether a transaction is entrusted or less to anti-money laundering authorities (Gerstenblith, 2007). Only a few countries have the motivation, capacity, and resources to fill out periodic statistics on cultural property stolen from museums, galleries, places of worship, and private homes, or looted from archaeological sites. This is demonstrated by the fact that INTERPOL receives annual information on cultural property thefts from less than half of all its member states. In the absence of accurate estimates, the extreme claim has begun to circulate according to which the illicit trafficking of cultural goods is quantifiable in billions of dollars a year, ranking third among the most common forms of international crime such as the trafficking of arms and drug (Kouroupas, 1998). While this claim has been refuted several times (Sargent et al. 2020; Brodie et al. 2019; Fitz Gibbon, 2005; Brodie et al. 2000), it seems to remain a widespread belief (Bardon, 2020). Two recent attempts to approximately quantify the size of the trade (Sargent et al., 2020; Brodie et al. 2019) are based on sampling a small selection of all possible cultural goods on the basis of data from open-source databases. The first analysis concludes that the monetary value of the antiquities trade in Europe, with a material volume ranging from 140,000 to 700,000 objects transacted annually, has a total monetary value ranging between 64 million and 318 million euros. The authors emphasize that the estimated figures are approximate and subject to uncertainty, but they have, if anything else, based on more solid evidence than previously published data. The second paper concludes that, overall, the data does not substantiate the claim that the antiquities market in Europe and the Americas is sufficient to support the annual sale of billions of dollars' worth of looted antiquities. While analyses of looting and the supply side of the antiquities market have documented extensive looting in the Middle East and North Africa, the analysis of the major sales channels in Europe and the Americas has not identified evidence indicating the existence of a sufficiently robust international market for these goods. Despite law enforcement seizures and ongoing investigations providing anecdotal documentation of the flow and sale of looted goods, the authors suggest, through the analysis of aggregated data, that the antiquities market, both licit and illicit, amounts to at most a few hundred million dollars annually, rather than the billions of dollars claimed in prevalent estimates.

Overall, studies on illicit trade in cultural goods that have used quantitative and qualitative methods can be classified into two main categories (Brodie, 2012): studies examining looting of heritage and archaeological sites and on the theft of works of art (the sources); and studies focusing on the trade and consumption of unduly appropriated or stolen cultural goods (the market). Most of the quantitative studies on the sources focus on measuring the damage caused by the looting of culturally relevant sites by quantifying the incidence of damage by combining the data available in the databases with empirical data collected by experts directly in the field (Gutchen, 1983; Fernandez Cacho and Sanjuàn, 2000; Roosevelt and Luke, 2006). This type of

investigation can produce good quantitative information on the extent and severity of archaeological plundering, but it is very expensive and therefore rarely carried out. Scholars focusing instead on the market have estimated the size and shape of the illegal market by analyzing the information contained in the catalogues of museums and auction houses. They have shown that ambiguous information about the provenance of many goods traded on the legitimate market is linked to the theft and clandestine excavation of archaeological sites (Chippindale and Gill, 2000; Nørskov, 2002).

The only paper in economics that has tackled the illicit trade in cultural goods is Fisman and Wei (2009), who analyze the illicit market of cultural goods in the US comparing the values of goods exported from a given country of origin with the values of import for the same goods in the US. Beltrametti (2013) applied the same method to show that large quantities of goods imported from Italy by the United States do not appear to have been actually exported from Italy in the official data.

When considering the macroeconomic determinants of this phenomenon of course the quality of institutions is also important and has been widely studied in connection to economic and cultural development as well as trade (Acemoglou and Robinson, 2021, 2005). Corruption in particular has been documented as an important correlate to illicit trade in general (Shelley, 2018) and Finsman and Wei indeed find that it also matters in the case of cultural goods.

In terms of regulation, there are two main international instruments that have been designed specifically to protect cultural heritage: the 1970 UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property which introduced a series of legal and normative principles and recommendations, along with subsequent series of clarifying and strengthening laws to develop international public policies (O' Keefe, 2017) which however is not self-executing with implementation varying widely from state to state and the art dealing lobby discouraging the adoption of conventions that restrict their market. The second instrument is the 1995 UNIDROIT Convention on Stolen or Illegally Exported Cultural Objects which was designed to address some of the problems of the UNESCO Convention, and which countries have again adopted at different times.

2. Italy in the illicit trafficking arena

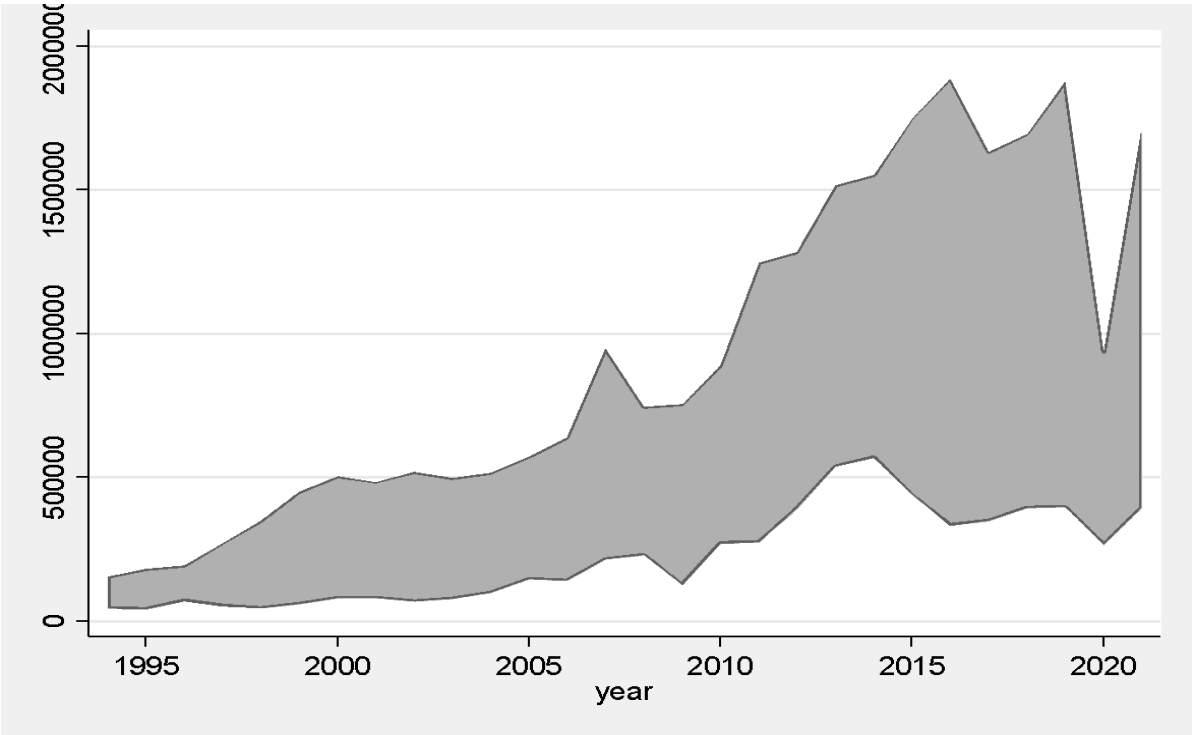
Due to the extensive spread of cultural heritage throughout its territory, Italy is particularly vulnerable to the theft of cultural goods. It also serves as a crossroads abroad for the illicit trafficking of cultural goods, ancient books, documents, and archaeological antiquities given the significant involvement of organized crime and mafias in the trade (Chappell and Polk, 2011). Policing activities over the last fifty years have had a significant impact on combating illegal activities of this kind, and there is a dedicated large policing force, the *Carabinieri Command for the Protection of Cultural Heritage* (Rush and Millington, 2015) which is considered an example of excellence at the international level due to the number and specific experience of police officers involved. Furthermore, Italy is the only country in the world to have a police department dedicated to the protection of cultural heritage, and it is one of the few countries to have enshrined in the constitution the protection of cultural heritage. Italy is also at the forefront from a regulatory point of view. The latest regulation that came into force in Italy on the subject of illicit trafficking was the law n. 22 of 2022. By approving this law, the criminal law provisions for the protection of cultural heritage were reformed by inserting a new title in the Penal Code: Title VIII-bis of crimes against cultural heritage. This represents an

important turning point because it introduces a form of protection of cultural heritage that is not limited to administrative and civil law provisions, but also to criminal law provisions. Despite all these efforts, Italy is still one of the countries with the highest incidence of art theft, partly due to the extensive cultural heritage present in the territory (Balcells, 2019) and the strong presence of organized crime (Mocetti and Rizzica, 2021). The annual reports of the Carabinieri Command for the Protection of Cultural Heritage report the total value of objects recovered each year: for example, in 2021, the recovered cultural goods were valued at over 80 million euros, while in 2018, they amounted to almost 120 million euros, and in 2012, they exceeded 140 million euros.

In this paper we follow the approach to estimating illicit trade of Fisman and Wei (2009) and begin our investigation by calculating the total value of cultural goods exports from Italy and compare it with the total values declared imported by Italy's trading partners. We use the monetary value of Italy's exports to all trading partners (exports) and the values that all trading partners register on entry from Italy (imports), available in the Comtrade Database for the four main categories of cultural goods considered in Comtrade. The database compiled by the United Nations Statistics Division covers approximately 200 countries and represents more than 99% of the world's merchandise trade, aggregating detailed global annual and monthly trade statistics by product and trading partner (https://comtradeplus.un.org/). We use data from the period 1994-2021 in the following four code classes by product: HS 9701: paintings, drawings and pastels, executed directly by hand, collages, mosaics and decorative plaques; HS 9703: original sculptures and statues in any material; HS 9705: collections and pieces of archaeological, ethnographic, botanical, mineralogical, anatomical, paleontological and numismatic interest; HS 9706: antiques over 100 years old. For brevity, we label the categories just described as: Paintings; Sculptures; Archaeological property; Antiquities.

Figure 1 clearly shows a consistent gap over the whole period considered across the total of the four categories of cultural goo. This provides a first indication that the phenomenon documented by Fisman and Wei (2009) and Beltrametti (2013) is indeed present for the Italian case in the aggregate.

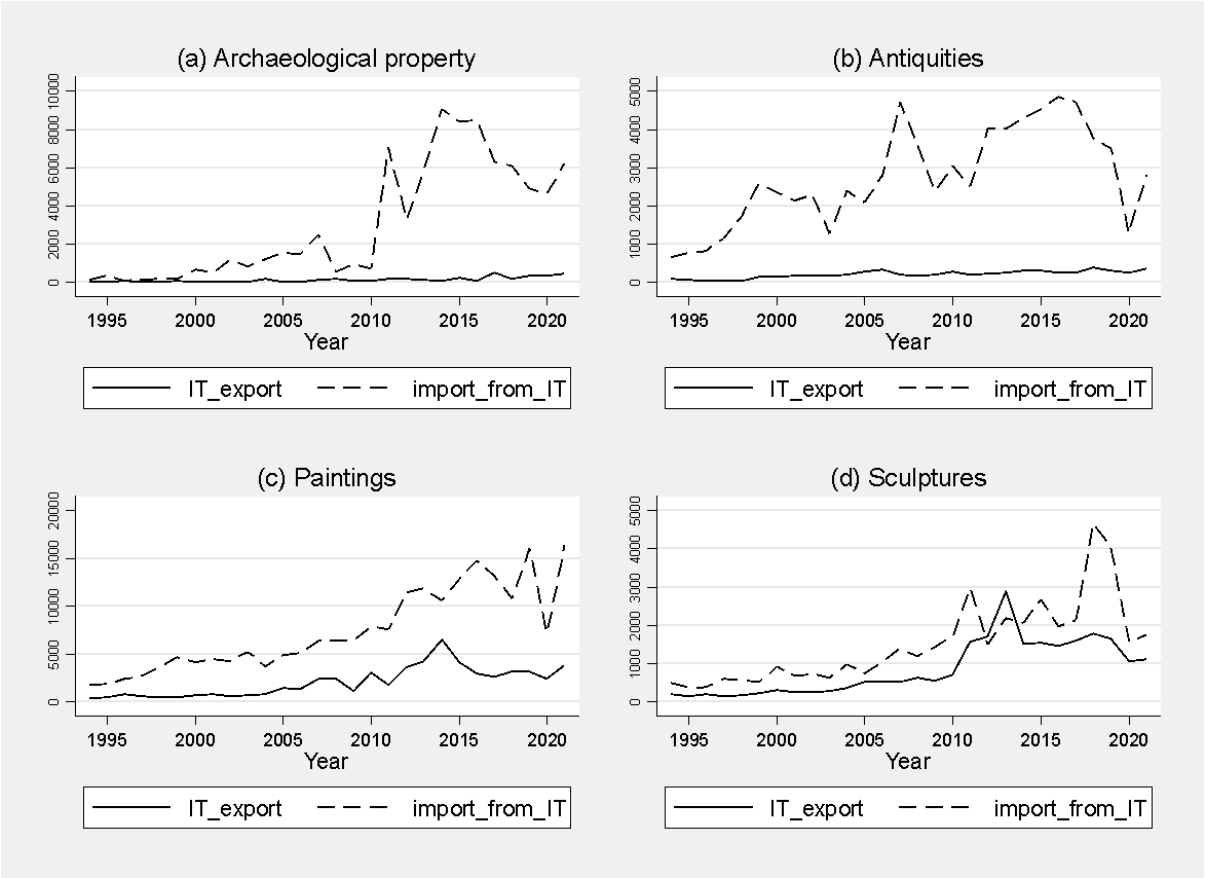
Figure 1. Trade gap of Italian cultural goods: a shadow of illicit?



Notes: the shadow area (gap) is the yearly difference between *import_from_IT* (values that all trading partners register on entry from Italy) and *IT_export* (monetary value of Italy's exports to all trading partners), concerning the following good categories pooled together: HS 9705: collections and pieces of archaeological, ethnographic, botanical, mineralogical, anatomical, paleontological and numismatic interest; HS 9706: antiques over 100 years old; HS 9701: paintings, drawings and pastels, executed directly by hand, collages, mosaics and decorative plaques; HS 9703: original sculptures and statues in any material.
Source: our computations from Comtrade database.

When scrutinizing the four categories separately the gap is still apparent, but with important variations across categories that correspond to four submarkets characterized by different degrees of illicit trafficking and that we will also model separately in our analysis.

Figure 2: Trade gap of Italian cultural goods, by category



Note: *IT_export*: monetary value of Italy's exports to all trading partners; *import_from_IT*: values that all trading partners register on entry from Italy. Good category: a) HS 9705: collections and pieces of archaeological, ethnographic, botanical, mineralogical, anatomical, paleontological and numismatic interest; b) HS 9706: antiques over 100 years old; c) HS 9701: paintings, drawings and pastels, executed directly by hand, collages, mosaics and decorative plaques; d) HS 9703: original sculptures and statues in any material.
Source: our computations from Comtrade database.

We expect different levels of illicit trafficking between classes of goods given that the proportion of legally traded cultural goods varies by category. For example, in the paintings category, there is a very high number of regular market transactions, whereas trade for archaeological goods is much more restricted and, in some cases, completely forbidden. Based on that, we can hypothesize that the Gap between Import and Export (GIE) of the archaeological goods category (HS 9705) which in Italy is heavily protected should be much lower than that of the paintings category (HS 9701).

In Figure 2a (Archaeological property), we observe that it is possible to essentially divide the trend of the average gap into two periods: before 2011 and after 2011, when there was a significant increase from an average gap of $6,759,418 to $6,890,773 in one year. The positive peak was reached in 2014 with a value of $8,959,394. This gap is worrying as it is extremely difficult to obtain export certification for archaeological goods which are strongly protected in Italy. In Figure 2b (Antiquities), we observe a consistent increase in the average gap with two periods of slight decline in 2003 ($1,095,567) and between 2009 and 2012, possibly as a result of the Great Recession. However, a different trend is noticeable in 2020 (the year of the pandemic), as there is already a new growth in the gap visible in 2021. This category comprises principally furniture and while parts of it are protected, it is relatively easier to obtain certification for exports as the market is not per se illegal or discouraged.

Figure 2c (Paintings) outlines that the average gap significantly increases from 2010 onwards, reaching its peak value in 2016 at $14,905,980, mainly due to a substantial growth in the average declaration of imports from Italy's trading partners. This is again a market which includes a mixture of legally tradable and protected items. In Figure 2d (Sculptures), we observe that the average gap remains fairly constant during the period between 1994 and 2021, except for two sub-periods: between 2012 and 2015 and between 2018 and 2020. In the first case, the average gap experiences a negative dip, reaching a peak of -684,438$ after 14 years of slightly positive and increasing average gaps. In the second case, it goes through two years of extremely positive values, reaching a value of 2,870,421$ in 2018, mainly due to a significant increase in declared imports from partners. The market for sculptures is similar to that of paintings in but much smaller, so again it can be expected that illicit trade might be a less relevant phenomenon.

In the remainder of the paper we model the gap in each product category by means of market size, extent of trade between Italy and each of its partners, the degree of corruption and the amount of time since the adoption of UNESCO 1970 and UNIDROIT 1995, the two main international instruments designed to curb the illicit trade in cultural goods. We discuss our results in the light of current discussions around the protection of cultural goods and present an agenda for research.

3. Methodology and model specification

The starting point of the quantitative methodological analysis is the work of Fisman and Wei (2009), who have suggested that the illicit market of cultural goods can be analyzed by comparing the values of the goods exported from a specific country of origin with the import values for the same goods in a recipient country which allows them to be traded and consider the gap an indication of the extent of the illicit traffic. They consider the effect of degree of development and level of corruption of the United States' trading partners in determining the size of the gap. Our model differs from theirs in that we consider not a country of destination (they look at the US and its trading partners) but rather a country that is simultaneously an origin and a market for cultural goods from a variety of other countries. For this reason, we make use of a basic gravity model which accounts for both the effect of the size of an economy and the relative closeness between it and its trading partners as measured by trade flows (Carrère et al. 2020).

Gravity models have increasingly been used in the context of analyzing illicit types of trade such as illicit financial flows, money laundering and human trafficking. For instance, Paz Lourenço Senne (2022) utilizes the gravity model of global trade flows and publicly accessible international trade statistics at the product level to calculate the costs associated with transportation and insurance determining misreporting by assessing the difference between the declared value and the estimated actual value of each transaction. Ferwerda et al. (2013) make use of a gravity model to explain the distribution of money laundering between 199 countries and the United States and show that money laundering is strongly correlated with legitimate trade as the proceeds hide in the large pool of exports and imports. Furthermore, their analysis shows that governments that have a restrictive anti-money laundering policy experience more trade-based money laundering, which could indicate that criminals find new ways to escape regulations. Akee et al. (2014) have used a gravity model to identify the drivers of cross-border trafficking in human beings. Among the controls included in addition to the GDP of both origin and destination they consider distance between countries, a variable that indicates common borders, a variable that indicates whether they are in the same region of the world, and a set of

variables that reflect the political conditions of the host and the country they are from, finding an inelastic demand in human trafficking.

Here we combine the two approaches and estimate a gravity model of the Italian GIE of cultural goods augmenting it with institutional quality (level of corruption) and time since adoption of regulation (UNESCO 1970 and UNIDROIT 1995).

3.1 Model specification

We construct our dependent variable *logGIE* as follows:

$$logGIE_{it} = log(1 + imports\ from\ partner\ country_{it}) - log(1 + exports\ from\ Italy_{it})$$

where *i* stands for the partner country identifier and *t*=1994… 2021; we take information from imports and exports (in US$) from the previously mentioned Comtrade database.

The explanatory variables are $loggdp_{it}$, i.e. the country-and-time-specific logarithm of GDP (constant 2015 US$), $trade_{it}$, i.e. a variable indicating the overall trade value (the sum of exports and imports between Italy and the trading partner *i*, normalized by the partner's GDP). These first two variables represent the gravity component of the model. Moreover, we include the Corruption Control Index ($corruption_{it}$) from the World Bank database and two variables ($yearsinunidroit_{it}$ and $yearsinunesco_{it}$) counting the number of years since the time each country has ratified the UNESCO 1970 and UNIDROIT 1995 conventions and equal to zero before ratification. The idea of the latter variables is that the most substantial impact of ratification on illicit trafficking by a given country occurs just after it and fades progressively away over time. The model includes year times region fixed effects (in Appendix A, we also report results including year fixed effects). We estimate the models by OLS under standard assumptions and a white noise error term. Table 1 displays descriptive statistics by classes of good for the variables included in the model.

Table 1. Descriptive Statistics

Archaeological Property	Obs	Mean	SD	Min	Max
logGIE	1260	1.459	5.692	-13.903	15.996
loggdp	1247	26.191	1.916	21.264	30.653
trade	1205	.037	0.054	.002	.533
corruption	1035	.702	0.993	-1.686	2.459
yearsinunesco	1260	14.053	13.445	0	47
yearsinunidroit	1260	1.945	4.731	0	23
Antiquities					
logGIE	1428	1.22	5.518	-13.844	16.043
loggdp	1413	26.412	1.605	22.201	30.653

trade	1352	.034	0.047	.002	.533
corruption	1173	.774	1.022	-1.686	2.459
yearsinunesco	1428	12.777	13.459	0	47
yearsinunidroit	1428	1.692	4.378	0	23
Paintings					
logGIE	1501	-.69	1.84	-8.44	6.026
loggdp	2194	25.729	1.779	21.264	30.653
trade	1444	.032	0.039	.002	.303
corruption	1840	.443	1.063	-1.686	2.459
yearsinunesco	2240	13.015	13.696	0	23
yearsinunidroit	2240	1.631	4.347	0	50
Sculptures					
logGIE	2408	-.58	5.07	-16.012	14.413
loggdp	2363	25.475	1.84	20.971	30.653
trade	2222	.032	0.049	.001	.533
corruption	1978	.355	1.02	-1.606	2.459
yearsinunesco	2408	12.706	13.774	0	48
yearsinunidroit	2408	1.598	4.31	0	23

4. Results

Table 2 presents OLS estimates for *logGIE* by class of good: Archaeological Property (a), Antiquities (b), Paintings (c), and Sculptures (d). For each category, it shows three specifications: specification (1), which includes the variables characteristic of gravity models (*loggdp* and *trade*) and the corruption index; specification (2), which adds to (1) the institutional variable *yearsinunesco;* and specification (3), which adds to (1) the institutional variable *yearsinunidroit*.

Table 2. OLS estimates for *logGIE* by class of good

	Archaeological Property (a)			Antiquities (b)		
	(1)	(2)	(3)	(1)	(2)	(3)
loggdp	0.111	0.115	0.127	0.314	0.337	0.290
	(0.165)	(0.159)	(0.164)	(0.245)	(0.255)	(0.242)
trade	-0.276	-0.535	0.447	22.50***	21.62	22.27***
	(4.159)	(4.107)	(3.784)	(3.413)	(3.720)	(3.511)
corruption	0.815**	0.689*	0.692**	0.638	0.275	0.610
	(0.327)	(0.394)	(0.311)	(0.594)	(0.702)	(0.610)
yearsinunesco		-0.0164			-0.0467*	
		(0.0323)			(0.0263)	
yearsinunidroit			-0.0852			-0.0479
			(0.0665)			(0.0595)
Observations	1012	1012	1012	1130	1130	1130
p-value	0.7235	0.6792	0.7003	0.0000	0.0000	0.0000

	Paintings (c)			Sculptures (d)		
	(1)	(2)	(3)	(1)	(2)	(3)
loggdp	0.202**	0.206**	0.200**	-0.144	-0.134	-0.138
	(0.0858)	(0.0851)	(0.0815)	(0.156)	(0.147)	(0.157)
trade	7.823**	7.981**	7.443*	13.59**	13.62*	13.54**
	(3.593)	(3.588)	(3.910)	(6.544)	(7.041)	(6.671)
corruption	0.256*	0.210	0.225	0.0440	-0.0701	0.0287
	(0.153)	(0.166)	(0.162)	(0.294)	(0.298)	(0.297)
yearsinunesco		-0.00705		0.0440	-0.0279	
		(0.00816)		(0.294)	(0.0170)	
yearsinunidroit			-0.0467**			-0.0272
			(0.0208)			(0.0434)
Observations	1236	1236	1236	1872	1872	1872
p-value	0.0138	0.0107	0.0145	0.0341	0.0544	0.0420

Notes: *** Significant at the 1 percent level, ** Significant at the 5 percent level, *Significant at the 10 percent level. Standard errors are clustered at the country level. All specifications include Year x Region fixed effects. The dependent variable is *logGIE*=log(1+ *import_from_IT*)-log(1+ *IT_export*), where *import_from_IT* are values that trading partners register on entry from Italy and *IT_export* are values of Italy's exports to trading partners concerning the analyzed good categories. *Loggdp* is the country-and-time-specific logarithm of GDP (constant 2015 US$); *trade* is the overall trade value (the sum of exports and imports between Italy and trading partner i, normalized by the partner's GDP); *corruption* is the World Bank database measure of corruption; *yearsinunesco* and *yearsinunidroit* count the number of years since the time each country has ratified the UNESCO 1970 and UNIDROIT 1995 conventions and equal to zero before ratification. The p-value refers to a joint test for the overall significance of the gravity variables *loggdp* and *trade*.

Market size (as proxied by *loggdp*) is most important for the category of cultural goods for which the legal trade is proportionately larger (paintings) and irrelevant for the other goods. The amount of exchange between the countries (*trade*) is important for all categories except the most protected archaeological goods, where instead *corruption* is, as expected, significant and positively associated with the gap. The reporting gap in cultural objects is wider for trade with more corrupt countries: *corruption* is statistically significant and positive at the 5-10% level. The sign of the variable confirms our expectations: as the corruption index of a country increases, the monetary level of illicit trafficking also increases. One hypothesis related to this variable is that in highly corrupt countries, exporters may have a greater ability to evade customs controls, potentially with the complicity of authorities.
In terms of the effects of regulatory policies instead, UNESCO is significant and negatively associated with the gap in antiquities, while UNIDROIT is relevant for reducing the gap for paintings. It was reasonable to assume that as the number of years since a country ratified the convention increased, the illicit trafficking of cultural goods would decrease, thanks to a greater willingness and natural inclination to enforce the law.

5. Conclusions and policy implications

In the field of illicit trafficking of cultural goods, few studies embrace economic analysis, mainly due to a lack of available data. An effort aimed at filling this gap is essential to effectively fight the phenomenon, implement effective preventive actions, and allocate adequate resources (Yates and Smith, 2022; Yates and Brodie, 2022; Hardy, 2020). Furthermore, given the persistence of the illicit market fifty years after the adoption of the UNESCO 1970 Convention, the lack of basic knowledge necessary to develop effective policy responses is evident.
Cultural heritage is an important development and identity asset, a driver for social cohesion, community development and economic growth. In Italy, in particular, the role of cultural heritage is extremely relevant both because of its size and value (it is the country with the largest number of sites on the UNESCO World Heritage List) and because of the productive specialization in the cultural and creative industries that are linked to it. Overall, together with tourism, the cultural and creative industries generate a value of about 16% of the GDP (Symbola, 2019), and their openness to foreign markets contributes to the recognition of the Italian cultural heritage as a landmark all over the world, worth to be traded, licitly and illicitly. Cultural heritage includes a complex set of artifacts that international trade statistics group into just four broad categories, which are however sufficient to highlight the potential presence of illicit trade as highlighted by Fisman and Wei (2009) for the case of the United States. When considering a country like Italy which is both an important source but also an important market for cultural goods, the use of standard trade models helps to highlight further the distinction between those categories where cultural goods are a 'normal' market and those for which instead it is likely that significant illegal activity is involved in generating the gaps we observe between values exported by Italy and values imported by Italy's trading partners. For the archaeological goods category, this is particularly relevant, and indeed our results confirm that corruption in the countries that trade with Italy is an important factor associated with the gap. When it comes to the effectiveness of the existing international conventions to protect cultural goods, it seems that both UNESCO and UNIDROIT play a role in reducing the size of the gap, UNESCO is significant in the case of antiquities and UNIDROIT for paintings. Further research is underway investigating more granular customs data in order to establish the effectiveness of specific national policing and regulatory interventions that have occurred in the last decade to help

inform policy in this under researched and yet vitally important area for all countries aiming to strengthen the protection of cultural heritage.

References

Akee R, Basu AK, Bedi A & Chau NH. (2014). "Transnational Trafficking, Law Enforcement, and Victim Protection: A Middleman Trafficker's Perspective". *The Journal of Law & Economics*.

Balcells M. (2019). "One Looter, Two Looters, Three Looters … The Discipline of Cultural Heritage Crime Within Criminology and Its Inherent Measurement Problems". In: Hufnagel S.,Chappell D. (eds), *The Palgrave Handbook on Art Crime*, Palgrave Macmillan, London.

Bardon A. (2020). "Art Traffickers: Pillaging Peoples' Identities". *UNESCO Courier*, October-December, 5-8.

Beltrametti S. (2013). "Dati e analisi sul traffico illecito dei beni culturali". *Aedon*, Vol. 1.

Brodie N, Doole J & Watson P. (2000). "Stealing History: The Illicit Trade in Cultural Material". *McDonald Institute: Cambridge*.

Brodie N. (2011). "Congenial Bedfellows? The Academy and the Antiquities Trade". *Journal of Contemporary Criminal Justice*, 27(4), 408–437.

Brodie N. (2012). "Uncovering the Antiquities Market". In: Skeates R., McDavid C., Carman J. (eds.), *The Oxford Handbook of Public Archaeology*, Oxford University Press, Oxford, pp. 230-252.

Brodie N, Batura O, Hoog G op't, Slot B, Van Wanrooij N & Yates D. (2019). "Illicit Trade in Cultural Goods in Europe". Brussels: *European Commission*.

Brodie N, Kersel M, Mackenzie S, Sabrine I, Smith E & Yates D. (2021). "Why There is still an Illicit Trade in Cultural Objects and What We Can Do About It". *Journal of Field Archaeology*, 47(2), 117-130.

Brodie N, & Yates D. (2022): "Money Laundering and Antiquities", *Transfer*, 1, 97–109

Carrère C, Mrázová J & Peter Neary. (2020). "Gravity without apology: The science of elasticities, distance and trade". *The economic journal*.

Chappell D & Polk K. (2011). "Unraveling the 'Cordata': Just how organized is the international traffic in cultural objects?". In: Crime in the Art and Antiquities World: Illegal Trafficking in Cultural Property, 99-113.

Chippindale C & Gill DWJ. (2000). "Material Consequences of Contemporary Classical Collecting". *American Journal Archaeology*, 104, 481.

De Sanctis FM. (2013). "Money Laundering through Art. A Criminal Justice Perspective". *Springer*.

Fernandez Cacho S & García Sanjuán L. (2000). "Site Looting and Illicit Trade of Archaeological Objects in Andalusia, Spain". *Culture Without Context*, 7, 19.

Ferwerda J, Kattenberg M, Chang H-H, Unger B, Groot L & Bikker JA. (2013). "Gravity models of trade-based money laundering". *Applied economics*, 45(22), 3170-3182.

Fisman R & Wei S. (2009). "The smuggling of art, and the art of smuggling: Uncovering the trade in cultural property and antiques". *American Economic Journal: Applied Economics*, 1(3), 82–96.

Fitz Gibbon K. (2005). "Editor's Note: The Illicit Trade – Fact or Fiction?". In: Fitz Gibbon K. (ed.), *Who Owns the Past?*, 179–182. New Brunswick: Rutgers.

Gerstenblith P. (2007). "Controlling the International Market in Anqiquities: Reducing the Harm, Preserving the Past". *Chicago Journal of International Law*, 8(1), 69-195.

Gutchen M. (1983). "The Destruction of Archaeological Resources in Belize, Central America". *Journal of Field Archaeology*, 10, 223.

Hardy SA. (2020). "Criminal money and antiquities: An open source investigation into transnational organized cultural property crime". In: Benson K, King C, Walker C (Eds.), *Assets, crimes and the state: Innovation in 21st-century legal responses*, 154-167. London: Routledge.

Kouroupas MP. (1998). "Illicit Trade in Cultural Objects". *Conservation Perspectives*, 13(1), 4–7.

Mocetti S & Rizzica L. (2021). "Organized crime in Italy: an economic analysis". *Questioni di Economia e Finanza (Occasional Papers) 661*, Bank of Italy, Economic Research and International Relations Area.

Nørskov V. (2002). "Greek Vases in New Contexts". *Aarhus University Press, Aarhus*, pp. 256-270.

O'Keefe P. (2017). "Protecting Cultural Objects: Before and after 1970". Leicester: *Institute of Art and Law*.

Paz LS. (2022). "Measuring illicit financial flows: A gravity model approach to estimate international trade misinvoicing". *WIDER Working Paper*, No. 2022/24, ISBN 978-92-9267-155-6, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki.

Roosevelt CH & Luke C. (2006). "Mysterious Shepherds and Hidden Treasures: The Culture of Looting in Lydia, Western Turkey". *Journal of Field Archaeology*, 31(2), 185-198.

Rush LW & Millington LB. (2015). "The Carabinieri command for the protection of cultural property: saving the world's heritage". Vol. 17. *Boydell & Brewer*.

Sargent M & Marrone JV, Evans A, Lilly B, Nemeth E, Dalzell S. (2020). "Tracking and Disrupting the Illicit Antiquities Trade with Open Source Data". Santa Monica: *Rand*.

Shelley LI. (2018). "Corruption & illicit trade". *Daedalus*, 147(3), 127-143.

Symbola (2019). *Report Io Sono Cultura 2019*. Rome: Symbola Fondazione per le Qualità Italiane.

Venard B. (2013). "Institutions, Corruption, and Sustainable Development". *Economics Bulletin*, 33(4), 2545-2562.

Yates D, & Smith E. (2019): "Antiquities Trafficking and the Provenance Problem". In J. Milosch and N. Pearce (Eds.) *Collecting and Provenance: A Multidisciplinary Approach*. London: Rowman & Littlefield.

Appendix A: OLS estimates for *logGIE* by class of good, year fixed effects

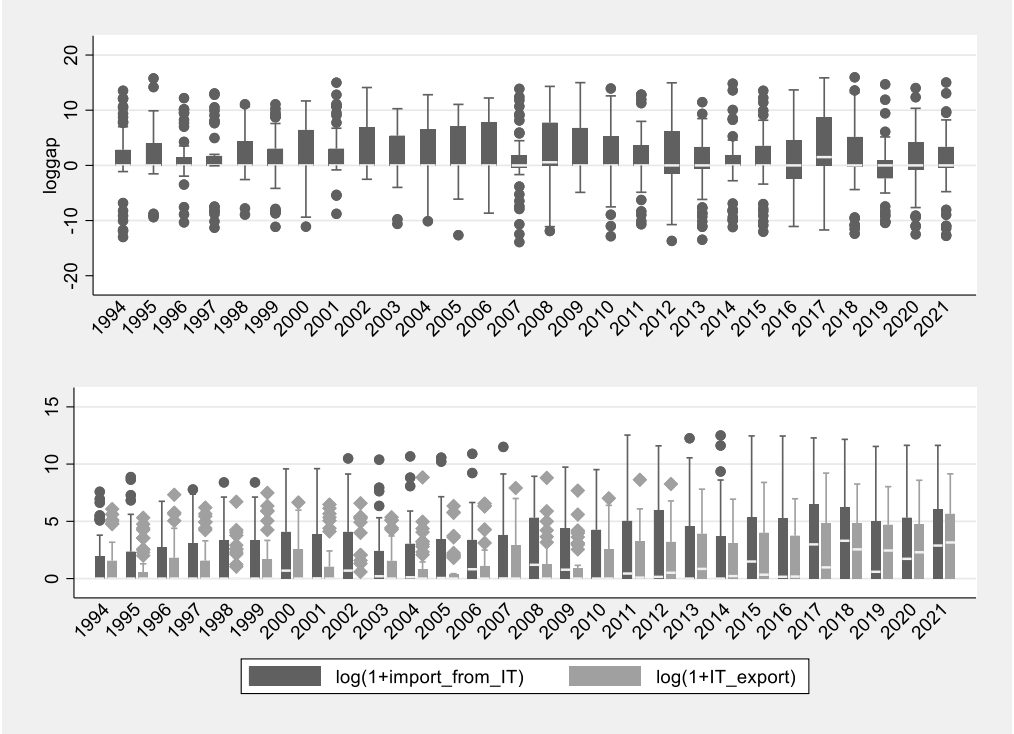
	Archaeological Property (a)			Antiquities (b)		
	(1)	(2)	(3)	(1)	(2)	(3)
loggdp	0.114	0.119	0.136	0.400*	0.425*	0.364
	(0.180	(0.180)	(0.188)	(0.236)	(0.245)	(0.232)
trade	-11.91	-11.99	-10.60	14.46**	13.63**	14.41**
	(8.049)	(8.024)	(7.793)	(6.318)	(6.080)	(5.903)
corruption	0.953*	0.916	0.855	0.528	0.263	0.507
	(0.484)	(0.558)	(0.528)	(0.576)	(0.712)	(0.585)
yearsinunesco		-0.00513			-0.0364	
		(0.0336)			(0.0300)	
yearsinunidroit			-0.0943			-0.0655
			(0.0768)			(0.0556)
Observations	1012	1012	1012	1130	1130	1130
p-value	0.0826	0.0813	0.0503	0.0425	0.0419	0.0394

	Paintings (c)			Sculptures (d)		
	(1)	(2)	(3)	(1)	(2)	(3)
loggdp	0.214**	0.223**	0.213**	-0.244	-0.224	-0.219
	(0.0883)	(0.0868)	(0.0844)	(0.161)	(0.157)	(0.164)
trade	2.398	2.624	2.431	-2.138	-2.242	-1.445
	(2.107	(2.021)	(2.330)	(3.825)	(3.870)	(4.004)
corruption	0.139	0.0662	0.116	-0.403	-0.507	-0.420
	(0.150)	(0.158)	(0.151)	(0.351)	(0.360)	(0.354)
yearsinunesco		-0.0122			-0.0262	
		(0.00848)			(0.0185)	
yearsinunidroit			-0.0626***			-0.0848*
			(0.0186)			(0.0450)
Observations	1236	1236	1236	1872	1872	1872
p-value	0.0579	0.0418	0.0474	0.3216	0.3628	0.04051

Notes: *** Significant at the 1 percent level, ** Significant at the 5 percent level, *Significant at the 10 percent level. Standard errors are clustered at the country level. All specifications include Year fixed effects. The dependent variable is *logGIE*=log(1+ *import_from_IT*)-log(1+ *IT_export*), where *import_from_IT* are values that trading partners register on entry from Italy and *IT_export* are values of Italy's exports to trading partners concerning the analyzed good categories. *Loggdp* is the country-and-time-specific logarithm of GDP (constant 2015 US$); *trade* is the overall trade value (the sum of exports and imports between Italy and trading partner i, normalized by the partner's GDP); *corruption* is the World Bank database measure of corruption; *yearsinunesco* and *yearsinunidroit* count the number of years since the time each country has ratified the UNESCO 1970 and UNIDROIT 1995 conventions and equal to zero before ratification. The p-value refers to a joint test for the overall significance of the gravity variables *loggdp* and *trade*.

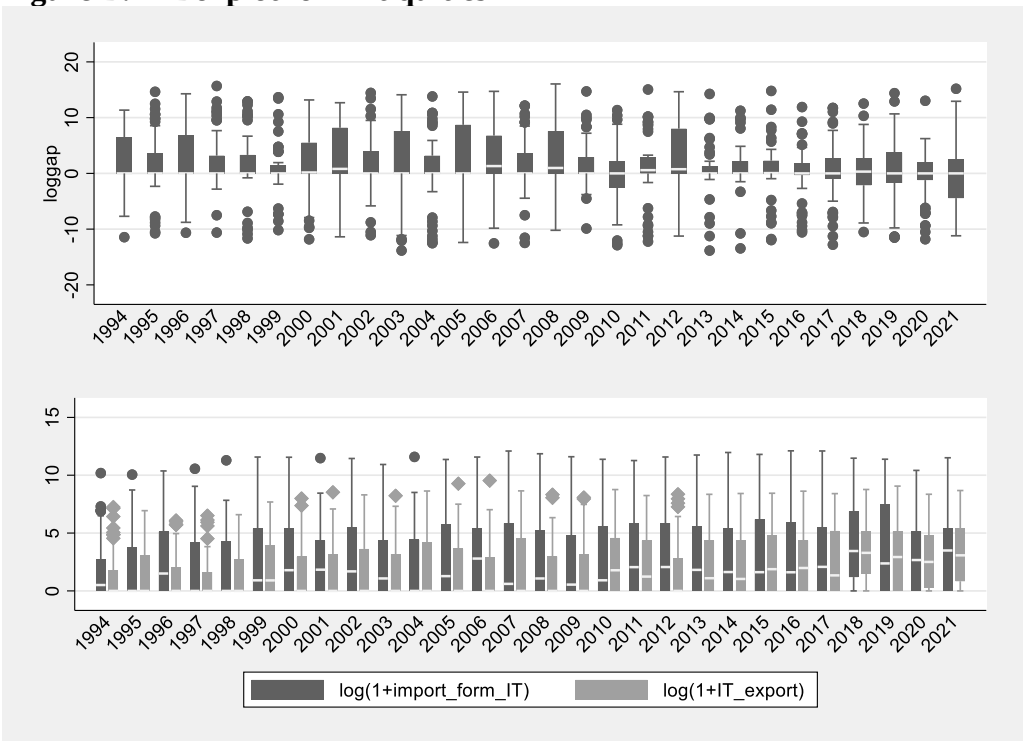
Appendix B:

Figure B.1 - Boxplot for Archaeological property



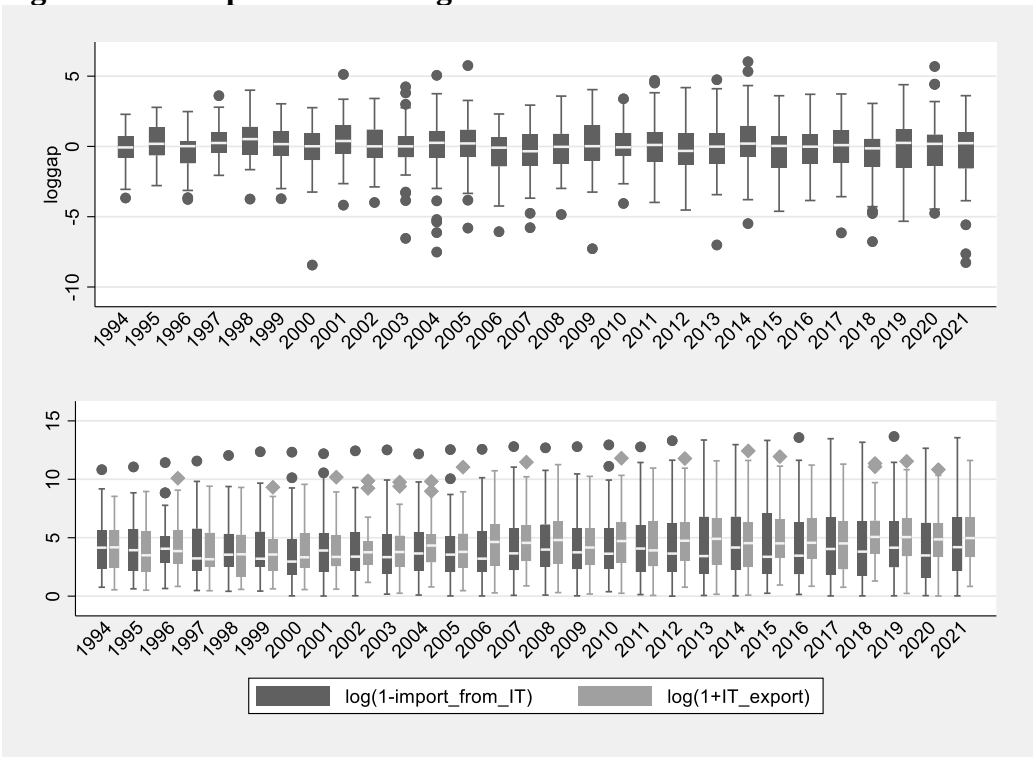
Note: The upper panel reports the boxplot for *loggap*=log(1+ *import_from_IT*)-log(1+ *IT_export*). The bottom panel reports its two components, where *import_from_IT* are values that trading partners register on entry from Italy and *IT_export* are values of Italy's exports to trading partners concerning the analyzed good category. Source: our computations from Comtrade database.

Figure B.2 - Boxplot for Antiquities



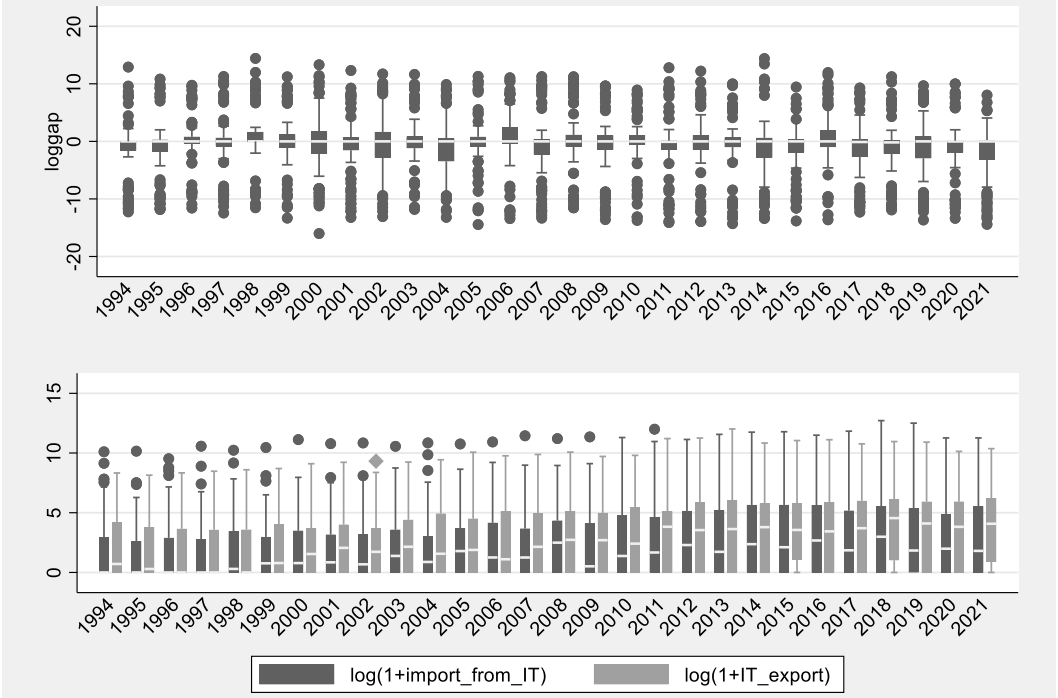
Notes: see previous graph. Source: our computations from Comtrade database.

Figure B.3 - Boxplot for Paintings



Notes: see previous graph. Source: our computations from Comtrade database.

Figure B.4 - Boxplot for Sculptures



Notes: see previous graph. Source: our computations from Comtrade database.