**A Place for Everything and Everything in its Place:**

**New York’s Role in the Art Market[[1]](#footnote-1)§**

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ABSTRACT

A crucial point in any sale is the choice of the market where to sell. This issue is much more important in the case of the artworks, where there is evidence that arbitrage does not necessarily equalise prices of comparable items across different cities of sale. Are these price differences due to the specific characteristics of items sold in different places or do they capture the idiosyncratic nature of the markets? In order to answer to this question, we apply the unconditional Recentered Influence Function (RIF) regression method to a sample of Picasso paintings sold worldwide during the period 2000-2019. Specifically, we compare percentile price differences between New York City, which is known for its status as a world art city and the Rest of World. Overall, results illustrate that the law of one price fails with Picasso’s ‘blue chips’, his most expensive artworks. However, after the 2008-09 financial crisis the art market became more efficient and the idiosyncratic nature of New York’s art market faded.

**JEL Codes**: C1, D44, Z1

**Keywords**: New York; arbitrage; non-standard investments; RIF percentile decomposition; Picasso; auction.

*“*[*New York is what Paris was in the twenties ... the centre of the art world. And we want to be in the centre. It's the greatest place on earth... I've got a lot of friends here and I even brought my own cash.*](https://izquotes.com/quote/john-lennon/new-york-is-what-paris-was-in-the-twenties-the-center-of-the-art-world-and-we-want-to-be-in-the-330365)*”*[John Lennon](https://izquotes.com/author/john-lennon)

1. **INTRODUCTION**

The Law of One Price (LOP) implies that the price of a single identical (or near-perfect substitute) commodity is the same at any given time and location if transaction costs are null or regulatory barriers are absent. If the LOP holds, there should be no profitable arbitrage, while persistent differences in price levels may constitute arbitrage opportunities.

In general, arbitrage is commonplace in financial markets due to a lack of transportation costs. Efficient markets rarely exhibit short disruptions of the LOP, while inefficient markets are characterised by a number of infractions, whose detection is particularly challenging in non-standard investment markets (fine wines, antiques, vintage cars, etc.). In fact, arbitrage is easier in standard financial markets since there are no transportation costs and transactions occur almost instantaneously (Lamont and Thaler, 2003). By contrast, non-standard financial assets sold worldwide are uncommon and usually have different characteristics (Worthington and Higgs, 2004). This ‘singularity’ is exacerbated in the case of items sold at art auctions, which are characterised by multidimensionality, uncertainty, and incommensurability (Karpik, 2010).

The literature investigating the LOP in the art (auction) market is limited, and mainly based on repeat sales indexes. Pesando (1993) analysed the LOP in the art market and used repeat sales of prints sold at Christie’s and Sotheby’s in both the US and UK. He found systematic price differences between both auction houses and markets. Czujack’s (1997) findings were comparable and showed that Picasso’s paintings were sold at higher prices in New York than in London. Mei and Moses (2002) revealed the existence of undetected arbitrage opportunities across different auction houses. Later, Pesando, and Shum (2007) revisited the results of Pesando (1993) and used the sales of alternative copies of the same print sold worldwide at Christie’s and Sotheby’s between 1977-2004. They found that prices were 9 percent less on average at Christie’s than at Sotheby’s during the period 1977-1992. By contrast, prices were 12 percent higher on average at Christie’s than Sotheby’s during the period 1993-2004. Additionally, prices were higher in New York than in all of Europe across the entire period. Liu (2015) used the sale history of Andy Warhol’s *Flowers* print series to highlight the role of what she called “auction experience” in determining a clear violation of the LOP. However, location was not taken into account in these studies. Recently, Etro and Stepanova (2021) jointly analysed transaction costs and new information on the value of artworks, avoiding the possibility of spurious relations. They concluded that there were no significant differences in returns for either auction houses or sales location, suggesting that the efficiency hypothesis cannot be rejected.

In contrast to these contributions, which use repeat sales (RS) to test the existence of LOP, our paper uses single sale observations to investigate the existence of the LOP. This allows us to overcome some of the limits of the RS approach. In fact, RS reduces datasets to a small number of observations since high value art objects are traded infrequently (Goetzmann and Spiegel, 1997). In addition, most RS studies might be biased due to disproportionately representation of famous artists, or geographical sale provenances, etc. (Guerzoni, 1995). Finally, resales can be difficult to identify, potentially creating inappropriate links between two sales (Graddy et al., 2012).

This study investigates the existence of the LOP in the arts specifically focusing on New York (NY),[[5]](#footnote-5) which is known for its status as a world art city. We analyse price differences between NY and the Rest of the World (RoW), decomposing them into differences which are due to different distribution of characteristics of artworks sold at NY or in the RoW or to the differences in the effects these characteristics exert on prices across markets.Based on a sample of Picasso paintings sold worldwide at auction in the period 2000-2019, we apply the unconditional Recentered Influence Function (RIF) regression method (Firpo et al., 2009) to decompose the differences across percentiles in the distribution of returns between NY, and the RoW. The main findings suggest that overall, the LOP fails with Picasso’s ‘blue chip’ artworks, while it holds with Picasso’s lower price paintings. However, after the 2008-2009 financial crisis, we show that the art market became more efficient and the idiosyncratic nature of NY disappeared. The choice to use NY is due to its importance for trading art worldwide (Deloitte, 2019).

The main contributions of the paper to the existing literature are twofold. Firstly, different from previous studies, the use of the hedonic sample rather than RS to address the LOP enlarges allows us to keep as much available information as possible to carry out the analysis. Secondly, despite the role of NY in the art markets being well known (Power, 2008), we suggest a unique way to use the RIF-decomposition results to highlight the idiosyncratic nature of it in the art markets. This approach could be applied to analyse other non-standard investment markets.

The remainder of this paper is organised as follows. Section 2 surveys the specific role of NY in the arts. Section 3 briefly illustrates the unconditional RIF-decomposition method, while Section 4 describes the sample and the variables selected for this study. Section 5 shows the empirical findings. Section 6 discusses the results and concludes by providing the main implications.

1. **NEW YORK AND THE ARTS**

The business of art has long been characterised by geographic agglomeration in key centres of cultural activities, also favoured by worldwide transport connectivity (Hall, 2000; Scott, 2000). They are key nodes in communication and transport networks, easy to be reached from other countries. Moreover, market forces and media controversy contributed to establish internationally worldwide recognised art cities (Ekelund, 2017). Territorial factors such as the economic power, political system, cultural policy, presence in art history, or the infrastructure of its arts institutions and art market may all affect a nation’s position and therefore a city’s position in the hierarchy of powerful art cities (Janssen et al., 2008).

NY status as a world art city can be traced back to the 19th century, when the narrative of the artistic innovation slowly moved from Paris to NY (Ott, 2008). During and after the Second World War NY capitalised on Europe’s turmoil of contemporary art’s debates (Guilbaut, 1983), and replaced Paris as cluster of creativity – ‘a cluster premium’ (Hellmanzik, 2010). This is confirmed by the rise of new art movements such as Abstract Expressionism or Pop Art on one side, and, on the other one, new infrastructures, facilities and networks (of dealers, critics, galleries and artists) were developed to promote an international avant-garde movement.

Referring to Galenson’s studies (2000, 2001), [Ginsburgh and Weyers (2006)](file:///C:\Users\utente\Downloads\NY_MV.docx#_bookmark9) discussed the changes of the art market in NY went through after the Second World War as new, different market conditions occurred as well as a new creative atmosphere, which was boosted by the arrival of many European artists and gallerists. An “epistemic community” flourished, bonded through affinity, necessity, and historical coincidence, which played a relevant role in the process of knowledge creation and diffusion of radical innovation in the arts (Cohendet et al. 2014). In fact, epistemic communities - embedded in a specific context, a city or a region - are relevant as they contribute to benefit the local milieu by making the city’s influence and attractiveness stronger, by developing new cultural organizations and institutions, by creating jobs and skills, by developing the cultural scene from different perspective (Cohendet et al., 2014).

Over time, NY formed a solid art industry chain model, incorporating the concepts of the value chain, organizational chain, supply-demand chain and spatial chain. NY became a global creative hub (Currid, 2006) and got the status as one of the world’s key “global nodes” for art exchange, home to world-famous museums (the Metropolitan Museum of Art, the Museum of Modern Art, the Guggenheim Museum), dealers and galleries, art auction houses, art trading centres, well-established networks of critics, and art studies. The economic conditions contribute to solidifying NY position as an artistic and cultural hub (Currid, 2006; Ekelund, 2017).

The connection between economic power and cultural capital in world cities is well-known (King, 1990; Sassen, 1991; Flew, 2010). There is a clear positive correlation between cities being the centres of financial activities and cultural and creative industries. Recently, Freke and Derudder (2017) analysed the geographical intersections between global cities of finance and global cities of art. To this end, a ‘global arts centre’ and a “global financial centre” indices were developed. As expected, NY displayed a prominent and leading position in the rank correlation between the two indexes.

Hence, the status of NY as dominant global city because of both its high concentration of finance and management services (Sassen, 1991) and the importance of the arts in the economic development of the city (Scott, 2000; Markusen et al., 2004), make NY a unique city to focus on to investigate whether any idiosyncratic effect on the art market emerges.

1. **METHODOLOGICAL FRAMEWORK**

In what follows we attempt to capture the idiosyncratic effect of NY on the art market by comparing percentile price differences in Picasso paintings sold worldwide during the period 2000-2019 between NY and the RoW. The idea here is to decompose price differences and consider the unexplained component of the decomposition as a proxy for the idiosyncratic nature of the markets after adjusting for differences in observable characteristics. To the extent that such a component is statistically significant, the idiosyncratic effect of NY emerges and, consequently, the LOP is assumed to be violated.

The Oaxaca (1973) and Blinder (1973) decomposition is the standard approach to decomposition analysis. Although it is relatively easy and intuitive, the Oaxaca and Blinder decomposition (OB) has some limits. Specifically, the contribution of each covariate to the dependent variable structure effect is sensitive to the choice of the base group (Gardeazabal and Ugidos, 2004). In additional, the OB estimates are consistent only if the conditional expectation is linear (Barsky et al., 2002). Hence, due to the existence of a segmentation in the art market with respect to the market value of the artworks (Scorcu and Zanola, 2011), in what follows we adopt the RIF-regression decomposition method, which provides a linear approximation of highly non-linear functional (Firpo et al., 2018).

The RIF decomposition method has been used to explain the gender wage gap (Fortin et al., 2010). Although a number of papers have then extended this analyse beyond the traditional labour economics framework, such as the case for health (Borah and Basu, 2013; Heckley et al., 2016), happiness inequality (Becchetti et al., 2014), cultural labour markets (Heo and Yoon, 2018), income inequality (Essama-Nssah and Lambert, 2016), the RIF decomposition approach has never been used, to our knowledge, to analyse investment art markets.

Let *Y* be a random variable with cumulative distribution function and let be any functional form, assumed to be linear for simplicity. Closely following Fortin et al. (2011), the influence function (IF) of *v* at *FY* - which describes the influence of an infinitesimal change in the distribution of a sample on a real-valued functional distribution - can be expressed as:

(1)

where is the percentile; is the marginal density function of Y; and I is a characteristic function. The RIF function for the percentile of interest is:

(2)

where and . The RIF-regression model consists in regressing the RIF, given in equation (2), on the set of covariates X. Since the conditional expectation of the RIF, , is linear in , the average marginal effect of covariates, , can be consistently estimated using OLS regression in a linear probability model.

To decompose the differences in prices between NY and the RoW, we calculate the total difference in prices across percentiles between markets as follows:

(3)

By replacing in (3) by its estimate , both components can be evaluated as follows:

(4)

The first component, , is the explained component of the market difference, which is explained by differences in observed characteristics at the mean, weighted by coefficients attributable to New York, . The second term, , is the unexplained component, which is the difference in the returns to observable characteristics of NY and RoW, evaluated at the mean set of the RoW’s characteristics. This latter component is used here as a proxy to confirm (or reject) LOP in the art markets. If the unexplained component is not statistically significant, this implies that, after adjusting for differences in observable characteristics, prices do not differ between NY and the RoW, confirming the existence of the LOP.

1. **DATA**

In this study, we use a sample of Picasso paintings sold worldwide as registered on Artprice, a large online auction sales database. The sample consists of 938 Picasso paintings sold worldwide at auction during the period 2000-2019. Prices, *price,* are gross of the buyers’ and sellers’ transaction fees paid to auction houses and are expressed in US dollars, deflated using the US CPI (2000 = 100).

Covariates include area of the painting, *size;* and a set of dummy variables, reflecting media: *canvas*, oil on canvas; *mixed*, mixed media techniques; and *other\_tech* all other media (omitted variable). Sale characteristics refer to auction houses and markets. We introduce a set of dummy variables for auction houses: *soth*, for Sotheby’s; *chr,* for Christie’s; and *other\_auc* for all other auction houses (omitted variable). *NY* is a dummy which assumes value 1 if the painting is sold at New York, 0 otherwise; *RoW* is the dummy that captures whether the painting is not sold at New York (omitted variable). We also identify style period characteristics (Czujack, 1997): Childhood and Youth (1881-1901), *style1*; Blue and Rose Period (1902-1906), *style2*; Analytical and Synthetic Cubism (1907-1915), *style3*; Camera and Classicism (1916-1924), *style4*; Juggler of the Form (1925-1936), *style5*; Guernica and the ‘Style Picasso’ (1937-1943), *style6*; Politics and Art (1944-1953), *style7*; and The Old Picasso (1954-1973), *style8* (omitted variable). Finally, a set of time dummy variables, *dt*, are introduced for each year between 2000 and 2019 (2000 baseline variable). Table 1 reports the descriptive statistics for the variables adopted in this study.

[TABLE 1 ABOUT HERE]

In the full sample, the average price for a Picasso painting is $5,961,644 with a skewness value of 6.89, reflecting a long right tail of high prices. In addition, the kurtosis is 68.2 and therefore the prices have a leptokurtic (or fat-tailed) distribution. Splitting the sample into NY and the RoW market, the average price is $7,682,751 in the first and $4,139,296 in the second market, with similar values for skewness (6.3 and 6.1, respectively) and kurtosis (55.7 and 51.7, respectively).

1. **RESULTS**
   1. *Full sample*

Table 2 reports the RIF regression estimates at the 25th, 50th, 75th, and 90th percentiles. Each observation is weighted by the sampling weight of the painting to correct for imperfections in the representativeness of the sample. The standard errors around the estimated parameter values are obtained using a bootstrap procedure with 200 replications. Wald tests are conducted to assess significant differences across percentiles.

[TABLE 2 ABOUT HERE]

Coefficients are mostly significant and show the expected effects. Specifically, higher dimension is associated to higher returns for all percentiles. Analogously, canvases display a positive effect on prices in line with previous studies (Czujack, 1997; Scorcu and Zanola, 2011), while mixed media paintings perform systematically lower than the comparison group (*other\_tech*). By contrast, comparisons across percentiles show that the differences among them are highly significant in the case of mixed media: lower percentiles show a negative effect on prices; while higher percentiles display a positive effect on prices.

The coefficient associated with a sale in NY is positive for all percentiles of the price distribution, suggesting the existence of a significant market effect. Concerning the main auction houses their effect on price is generally positive, being an exception, the coefficients associated to Sotheby’s at 75th, and 90th percentiles, which are not statistically significant. Lastly, the style period effect is generally positive (compared to the omitted covariate *style8*) with a few exceptions.

In a nutshell, prices are driven by both physical and style characteristics at all percentiles of the price distribution. Analogously, sale characteristics have a positive effect on prices across percentiles, with sales in NY driving higher returns. Figure 1 plots a kernel density estimate to provide an impression of the difference of (log) prices distributions between NY and the RoW. Both distributions are skewed to the right, but discrepancies between markets occur throughout the price distributions. One implication of these findings is that there appears to be a potential gain for sellers from choosing NY to sell their paintings. In fact, while the physical and style characteristics are out of the control of the seller, the choice of the sale market could specifically depend on the sellers’ strategy, providing them some advantages reflected in (potentially) higher prices. But what might explain these differences in price distribution between sale markets?

[FIGURE 1 ABOUT HERE]

Given that our aim is to investigate whether paintings differ because of intrinsic characteristics (explained component) or because markets appreciate differently the same characteristics (unexplained component), we proceed with the decomposition of the price differences between NY and the RoW. The decomposition is carried out using the estimates provided by RIF regressions to calculate the two components according to Equation (3) and Equation (4), respectively. Table 3 presents the decomposition results.

[TABLE 3 ABOUT HERE]

Decomposition in the price differences between NY and the RoW are displayed in Table 3.

Table 3 shows the decomposition results for the period 2000-2019. While both explained and unexplained component are not statistically significant for 25th and 50th percentiles - thus suggesting that the market effect is the same between NY and the RoW - in the case of the 75th and 90th percentiles they are both statistically significant. Specifically, the unexpected component is systematically negative and contributes to the overall decrease in price differences. In other words, the more expensive paintings are - what we might call the ‘Picasso blue chips’ - the more likely is to violate the LOP.

* 1. *Robustness check*

The period under scrutiny is characterised by significant price fluctuations. After an extraordinary market spree during the late 1980s, the art market collapsed after June 1990, as the Japanese withdrew from buying art and the Gulf War started in the Middle East, and it did not recover until the late 1990s. In 2008-2009, at the time of the worldwide financial crisis, the art market experienced a substantial crash, when prices of contemporary, modern and Impressionist artworks decreased about 30 per cent. The market started to recover from late 2009 to 2011, with ups and downs through 2018-2019

Following these market fluctuations, we split the period into two decades, respectively 2000-2009 and 2010-2019, to check the robustness of our results. Figure 2A and Figure 2B show the kernel density estimates for the two sub-samples, separately. Both figures seem to confirm that discrepancies between the two markets occur throughout the price distributions, giving support to the idea of exploring the determinants of these differences across both markets and periods.

[FIGURE 2A ABOUT HERE]

[FIGURE 2B ABOUT HERE]

We then proceed to the RIF-decomposition for the two periods. Table 4 displays the overall results for the 2000-2009 and the 2010-2019 period, respectively. In the first period, the negative contribution of the unexplained effect on price differences between NY and the RoW is statistically significant for all percentiles. To the extent that such an effect captures the idiosyncratic nature of markets on (log) prices, this result confirms that the LOP is violated across percentiles, irrespective of the value of the paintings. A quite different result emerges for the 2010-2019 period. In this case, the unexplained effect is not always statistically significant across percentiles, suggesting that the price differences existing between NY and the RoW are only due to the intrinsic characteristics of the sold paintings. These results better qualify conclusions of the previous sub-section. During the boom period (2000-2009) the LOP failed and the idiosyncratic nature of NY emerged for all paintings sold at auction. Afterwards (2010-2019) markets became more efficient and the LOP held.

[TABLE 4 ABOUT HERE]

1. **DISCUSSION**

In this paper, we apply the RIF decomposition methodology to investigate whether any idiosyncratic difference in prices exists between NY and the RoW. To this end, we used the unexplained component of the decomposition as a proxy for the LOP, after adjusting for differences in observable characteristics. Although we acknowledge that some unmeasured characteristics could also explain the observed price differences, we assume that if the unexplained component of the decomposition is statistically significant, the LOP is violated.

Our results illustrate the potential of the RIF decomposition approach in capturing the absence of arbitrage between NY and the RoW. Overall, the results suggest that there is not a statistically significant difference between NY and the RoW, even if, after decomposing price differences, a much clearer picture emerges. While with Picasso’s lower price paintings the unexplained components are not statistically significant, the LOP fails with Picasso’s ‘blue chips’, represented by more expensive artworks.

Splitting the period into two decades, 2000-2009 and 2010-2019, respectively, allows clearer conclusions. In the first period, the price differences are determined by both the explained and the unexplained component for all percentiles, suggesting the absence of the LOP. However, in the second period, the RIF decomposition shows that the unexpected components are no longer statistically significant across percentiles, suggesting that the LOP is not violated. On the contrary, paintings sold in NY - with the only exception of the first quartile- are always higher than the RoW due to their different intrinsic characteristics. In other words, after the 2008-2009 financial market collapse, the art market became more efficient and paintings to sell in NY were only selected according their characteristics to achieve higher returns. To this end, the link between economic power and cultural capital ensured that NY was able to meet the demand for higher quality paintings.

Additionally, two mechanisms can contribute to explain the idiosyncratic nature of NY. The former is represented by the *droit de suite*, the artist resale right (Benhamou and De Vriese, 2008). Originally introduced as a way to protect the interests of artists, the droit de suite has become a controversial subject. In many countries and worldwide jurisdictions, living (and, in some cases, recently deceased) artists are entitled to a percentage of the sum paid for an original artwork on the secondary market, usually when the object is above a certain value. The Resale Rights Directive, implemented across the European Union in 2006, requires that artists receive a 4% share of works sold under €50,000. The percentage decreases as the sale price increases above that threshold. In the United States, the use tax (VAT in the context of imports) and sales taxes vary from state to state (Deloitte, 2019). As Picasso’s estate still qualifies for the *droit de suite* in Europe reselling a Picasso in NY provides a financial incentive for the buyer and the seller[[6]](#footnote-6) as the American’s first sale doctrine prevails and artists or their estates do not have the right to profit from secondary sales.

The second mechanism is illustrated by the fiscal and tax advantages that NY provides. For example, in Europe art auction transactions are taxable at varying rates from 8 percent in Switzerland to 23 percent in Italy. In steep contrast, the sales tax rate for NY is 8.875 percent. in additional, the 2017 Tax Cuts and Jobs Act created an additional tax benefit that is especially advantageous for taxpaying collectors. Investors receive varying levels of special tax treatment if they invest their capital gains into qualified Opportunity Zone Funds (OZFs) designed to spur economic activity in economically distressed communities. The longer investors keep their investments in OZFs, the greater the tax benefits they receive. The cornerstone of the OZ program is the OZF, a new type of investment vehicle. Taxpayers who sell appreciated assets such as fine art, real estate, or stocks, can receive three special tax benefits if they roll their gains into an OZF within 180 days.

Like any analysis based on statistical residuals, additional unmeasured characteristics could also help explain the observed price differences. This article also has some limitations due to the specific sample. To validate NY’s role, we need to extend the investigation to other artists and their estates, who also qualify for the droit de suite. This analysis could be applied to other collectibles such as jewellery and high-endsports memorabilia, which gain more importance in the decision-making process of investment diversification. Nevertheless, our results raise some interesting questions regarding the strength of methods to eventually isolate a ‘market premium’ in non-standard investment transactions, suggesting investors select markets that aim to gain higher returns from their (non-standard) investments. In order to maximise the use of the existing information, differently from previous studies, we employed the hedonic sample rather than repeat sales to investigate the LOP, which definitively enlarges the number of processed information. Moreover, we propose a novel way to use the RIF-decomposition results to demonstrate the existence of the art market’s idiosyncratic nature. This approach could be applied to study other non-standard investment markets.

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**TABLE 1. Descriptive statistics**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | **Full Sample (N=938)** | | |  | **NY (N=496)** | | |  | **RoW (N=442)** | | |  |
|  |  |  | Mean |  | Std. Dev. |  | Mean |  | Std. Dev. |  | Mean |  | Std. Dev. |  |
|  | *price* |  | 5,961,644 |  | 1.31e+07 |  | 7,682,751 |  | 1.64e+07 |  | 4,139,296 |  | 8,091,451 |  |
|  | *size* |  | 6,734.55 |  | 10,094.1 |  | 7,107.98 |  | 11,237.73 |  | 6,312.64 |  | 8,614.91 |  |
|  | *canvas* |  | .744 |  | .437 |  | .808 |  | .394 |  | .672 |  | .470 |  |
|  | *mixed* |  | .086 |  | .281 |  | .050 |  | .219 |  | .127 |  | .333 |  |
|  | *othmedia* |  | .168 |  | .374 |  | .141 |  | .348 |  | .199 |  | .340 |  |
|  | *NY* | | .529 |  | .499 |  | 1.000 |  | .000 |  | .000 |  | .000 |  |
|  | *RoW* |  | .470 |  | .499 |  | .000 |  | .000 |  | 1.000 |  | .000 |  |
|  | *soth* |  | .419 |  | .494 |  | .474 |  | .500 |  | .357 |  | .480 |  |
|  | *chri* |  | .470 |  | .499 |  | .484 |  | .500 |  | .455 |  | .498 |  |
|  | *othauc* | | .110 |  | .313 |  | .042 |  | .202 |  | .185 |  | .389 |  |
|  | *style1* |  | .044 |  | .205 |  | .040 |  | .197 |  | .048 |  | .214 |  |
|  | *style2* |  | .016 |  | .126 |  | .022 |  | .147 |  | .009 |  | .095 |  |
|  | *style3* |  | .045 |  | .207 |  | .044 |  | .206 |  | .046 |  | .209 |  |
|  | *style4* |  | .112 |  | .316 |  | .127 |  | .333 |  | .096 |  | .295 |  |
|  | *style5* |  | .097 |  | .297 |  | .111 |  | .314 |  | .082 |  | .275 |  |
|  | *style6* |  | .130 |  | .336 |  | .133 |  | .340 |  | .126 |  | .332 |  |
|  | *style7* |  | .127 |  | .334 |  | .153 |  | .361 |  | .098 |  | .298 |  |
|  | *style8* |  | .394 |  | .489 |  | .351 |  | .478 |  | .444 |  | .497 |  |
|  | *time dummies* |  | [incl.] |  |  |  | [incl.] |  |  |  | [incl.] |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**TABLE 2. Unconditional percentile RIF-regression results, 2000-2019**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 25th percentile | |  | 50th percentile | |  | 75th percentile | |  | 90th percentile | |
|  |  | Coef. | Std. Err. |  | Coef. | Bootstrap Std. Err. |  | Coef. | Bootstrap Std. Err. |  | Coef. | Bootstrap Std. Err. |
| *size* |  | .000\*\* | .000 |  | .000\*\*\* | .000 |  | .000\*\*\* | .000 |  | .000\*\*\* | .000 |
| *canvas* |  | .592\*\*\* | .169 |  | .601\*\*\* | .143 |  | .429\*\*\* | .136 |  | .284\* | .150 |
| *mixed* |  | -1.470\*\*\* | .265 |  | -.730\*\*\* | .236 |  | -.440\*\* | .229 |  | -.577\*\*\* | .214 |
| *NY* |  | .341\*\*\* | .109 |  | .333\*\*\* | .128 |  | .242\*\* | .120 |  | .256\* | .140 |
| *soth* |  | .568\*\*\* | 191 |  | .469\*\*\* | .171 |  | .202 | .164 |  | .072 | .156 |
| *chr* |  | .641\*\*\* | .192 |  | .361\*\* | .175 |  | .253\* | .155 |  | .278\* | .146 |
| *style1* |  | .339 | .271 |  | 1.010\*\*\* | .315 |  | .801\*\*\* | .264 |  | .725\*\*\* | .297 |
| *style2* |  | .869\*\*\* | .309 |  | 1.592\*\*\* | .434 |  | 2.255\*\*\* | .501 |  | 3.816\*\*\* | .969 |
| *style3* |  | .360 | .287 |  | .500\* | .288 |  | .829\*\*\* | .258 |  | .681\*\* | .309 |
| *style4* |  | -.420\*\* | .204 |  | -.292 | .198 |  | .022 | .181 |  | .352 | .244 |
| *style5* |  | .477\*\*\* | .168 |  | .509\*\*\* | .199 |  | .817\*\*\* | .191 |  | 1.178\*\*\* | .314 |
| *style6* |  | .358\*\* | .151 |  | .792\*\*\* | .181 |  | .813\*\*\* | .176 |  | .773\*\*\* | .213 |
| *style7* |  | -.163 | .182 |  | .115 | .182 |  | .090 | .182 |  | -.007 | .161 |
| *constant* |  | 11.632\*\*\* | .249 |  | 12.209\*\*\* | .213 |  | 13.598\*\*\* | .246 |  | 14.611\*\*\* | .230 |
| *time dummies* |  | [incl.] | |  | [incl.] | |  | [incl.] | |  | [incl.] | |
| F |  | 11.07 | |  | 12.29 | |  | 8.10 | |  | 4.59 | |
| Prob > F |  | .000 | |  | .000 | |  | .000 | |  | .000 | |
| Adj. R2 |  | .22 | |  | .24 | |  | .21 | |  | .16 | |

\*p<.10, \*\*p<.05, \*\*\*p<0.01

**TABLE 3. Decomposition analysis: NY vs. RoW, 2000-2019**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | RIF-based Oaxaca-Blinder | | | | | | | | | | |  |
|  |  |  | 25th percentile | |  | 50th percentile | |  | 75th percentile | |  | 90th percentile | |  |
|  |  |  |  | Std. Err. |  |  | Std. Err. |  |  | Std. Err. |  |  | Std. Err. |  |
| **Overall** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| difference |  |  | -.045 | .253 |  | -.051 | .266 |  | -.150 | .284 |  | -.179 | .301 |  |
| explained |  |  | .416 | .270 |  | .457 | .294 |  | .518\* | .306 |  | .544\* | .329 |  |
| unexplained |  |  | -.462 | .333 |  | -.508 | .358 |  | -.668\* | .381 |  | -.723\* | .407 |  |

\*p<.10, \*\*p<.05, \*\*\*p<0.01

**TABLE 4. Decomposition analysis: NY vs. RoW, 2000-2009 and 2010-2019**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | RIF-base Oaxaca-Blinder | | | | | | | | | | |  |
|  |  |  | 25th percentile | |  | 50th percentile | |  | 75th percentile | |  | 90th percentile | |  |
|  |  |  |  | Std. Err. |  |  | Std. Err. |  |  | Std. Err. |  |  | Std. Err. |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2000-2009** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| difference |  |  | -.244 | .326 |  | -.404 | .338 |  | -.396 | .364 |  | -.351 | .382 |  |
| explained |  |  | .705\* | .383 |  | .768\* | .414 |  | .824\* | .439 |  | .831\* | .469 |  |
| unexplained |  |  | -.949\*\* | .471 |  | -1.172\*\* | .504 |  | -1.221\*\* | .538 |  | -1.182\*\* | .567 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **2010-2019** | | | |  |  |  |  |  |  |  |  |  |  |  |
| difference | |  | .963\*\*\* | .354 |  | .954\*\*\* | .351 |  | .572 | .384 |  | .777\* | .434 |  |
| explained | |  | .419 | .299 |  | .676\*\* | .307 |  | .671\*\* | .322 |  | .749\*\* | .380 |  |
| unexplained | |  | .544 | .386 |  | .279 | .390 |  | -.099 | .427 |  | .028 | .503 |  |

\*p<.10, \*\*p<.05, \*\*\*p<0.01

**FIGURE 1. Kernel density: NY vs. RoW (2000-2019)**



**FIGURE 2A. Kernel density: U.S. vs. Rest of the World (2000-2009)**

****

**FIGURE 2B. Kernel density: U.S. vs. Rest of the World, (2010-2019)**

****

**APPENDIX 1. Variable descriptions**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Variable |  | **Description** |
|  |  |  |
|  |  |  |
| *price* |  | price of paintings (Euros, 2000=100) |
| *size* |  | area (m2) |
| *canvas* |  | oil on canvas |
| *mixed* |  | mixed media |
| *othmedia* |  | other media (omitted category) |
| *NY* |  | sold at New York |
| *RoW* |  | sold in the rest of the world (omitted category) |
| *soth* |  | sold at Sotheby's |
| *chri* |  | sold at Christie's |
| *othauc* |  | sold at other auction houses (omitted category) |
| *style1* |  | Childhood and Youth (1881-1901) |
| *style2* |  | Blue and Rose Period (1902-1906) |
| *style3* |  | Analytical and Synthetic Cubism (1907-1915) |
| *style4* |  | Camera and Classicism (1916-1924) |
| *style5* |  | Juggler of the Form (1925-1936) |
| *style6* |  | Guernica and 'Style Picasso' (1937-1943) |
| *style7* |  | Politics and Art (1944-1953) |
| *style8* |  | The Old Picasso (1954-1973) (omitted category) |
| *d00-d19* |  | dummy variables |
|  |  |  |

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2. + University of York, Department of Economics and Related Studies, UK; Centre for Health Economics, Monash University; Department of Economics, University of Bergen email: andrew.jones@york.ac.uk [↑](#footnote-ref-2)
3. CEREN, EA 7477, Burgundy School of Business - Université Bourgogne Franche-Comté, France, Dept. of Accounting, Finance and Law; email: marilena.vecco@bsb-education.com [↑](#footnote-ref-3)
4. ° University of Eastern Piedmont, Institute of Public Policy and Public Choice, Italy, email: roberto.zanola@unipmn.it [↑](#footnote-ref-4)
5. New York and its abbreviation NY refers to New York City and not to New York State. [↑](#footnote-ref-5)
6. As reported by Farchy and Petrou (2012), professionals believe that these fees weigh on the seller at a declining rate between 20% and 12% and the buyer up to a rate ranging between 17.5% and 10%. Regarding Sotheby's in London, if the commissions concerning the seller remain secret, the comparison of the rates of the droit de suite and the commission rates on the buyer shows the weakness of the droit de suite. [↑](#footnote-ref-6)