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Categorizing world regional art prices by artistic movement: an analysis of Latin American art

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Abstract

Purpose – The literature on the potential benefits of art investing has yet to consider the effects of categorizing world regional art markets (e.g. Latin American art) by artistic styles or movements (e.g. Latin American surrealism, Latin American conceptual art, etc.). We propose that such categorization should be carried out and analyze the Latin American art market as an example.

Design/methodology/approach – Eleven artistic style price indices within the Latin American art market (30,288 artworks created by 293 artists and sold at auction between 1970 and 2014) are estimated using hedonic regressions: Abstract-geometric, abstract-informal, conceptual, costumbrismo, cubism, figurative, muralism, landscape, surrealism, nineteenth century and avant-garde. We find that several variables that rely on the corresponding Latin American art movement index have a significant relationship with painting prices.

Findings – There is significant variation in the financial performance of the various price indices for Latin American art styles: the conceptual (10.33% annual real return), abstract geometric (1.97%), cubism (0.97%) and costumbrismo (0.91%) movements overperformed a market that exhibited an aggregate negative cumulated real return of 0.9% during the sample period. The average correlation between each of the styles was only 0.12. The estimated price index for paintings sold at Christie's and Sotheby's clearly outperformed the index estimated for the other auction houses, and we also found that paintings created by Latin American women artists yielded higher returns.

Practical implications – Our results have practical applications for investors, collectors, auction houses and policymakers.

Originality/value – This is the first paper to highlight the need to decompose art price indices by artistic movements at the regional level.

Keywords Hedonic pricing model, Latin American art, Style effects, Diversification, Art price indices, Women artists

Paper type Research paper

JEL Classification — G10, G11, G12, G20, Z11

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While art markets may seem monolithic there are microtrends constantly occurring within each collecting category

ARTBnk

1. Introduction

Over the past few decades, both individual and institutional investors as well as art collectors have become increasingly interested in the global art market. The latter believe that the art market could offer better portfolio diversification. In 2023, 65 billion dollars' worth of art was traded, which was marginally more than the pre-pandemic levels (McAndrew, 2024). In a survey on art collecting, McAndrew (2023) discovered that, out of the six reasons given to collectors worldwide, self-identity and self-esteem were ranked highest (37%), followed by financial motivations (28%), which were also ranked throughout the world. Additionally, millennials made up the largest percentage of collectors who were driven primarily by a desire or passion for collecting, whereas boomers made up the largest percentage of investors (32%) who were driven primarily by the possibility of financial gains.

On average, prices represent the worth and quality of artworks (Coslor and Spaenjers, 2016). Even though this proposition is accepted by most economists, it is still controversial among art historians and the public (Edwards, 2004). Paintings and other collectibles constitute a unique type of asset since, for example, they do not generate income for their owners like stocks, bonds and real estate do. In addition to the possible financial gains from price appreciation, collectors also enjoy the aesthetic pleasure that comes with owning works of art.

According to Baumol (1986), artworks can also be regarded as a consumer good. According to the empirical evidence currently available, investing in artworks (diversified by country and artistic style) is generally expected to yield returns that are lower than stocks and more comparable to bonds, but with less risk than stocks (for a review of the literature, see Garay, 2018). The possibility of obtaining superior returns when purchasing works by a particular artist or artistic movement during a specific time period is not excluded by the aforementioned; in fact, such high returns are more likely to attract media attention.

The existing literature on the performance of art investing at the regional level (e.g. Latin America, South-East Asia, Africa, Scandinavian art, etc.) has been, thus far, been performed at an aggregate level, and such geographical classifications has only been categorized by countries (nationalities), if anything (e.g. Higgs and Worthington, 2005, for the case of Australia; Kraeussl and Logher, 2010, for China, India and Russia; Renneboog and Spaenjers, 2014, for Australia, Austria, Belgium, Canada, Denmark, France, Germany, Italy, the Netherlands, Sweden, Switzerland, the UK and the USA; Shi *et al.*, 2017, for China; Garay *et al.*, 2017, for Argentina). Although a few recent papers have broken down country art returns by movements (see Garay, 2021, for Venezuela, Gurjar and Ananthakumar, 2023, for India, and Wang, 2023, for China), to the best of our knowledge, no consideration has been given to the impact that various artistic movements or styles (such as surrealism, conceptual art, etc.) that may exist within world regions (such as Scandinavian art, Latin American art, etc.) may have on the performance of such indices up to this point [1]. Given the significance that collectors and auction houses attach to specific art markets, this is somewhat surprising. For example, 30 of the 60 existing specialist departments at Christie's are regional or country specific (e.g. Indian, Himalayan and Southeast Asian Art; and South Asian Modern and Contemporary Art). In the case of Sotheby's, the proportion is even higher, as 40 out of 73 of its departments are regional or country specific (e.g. German, Austrian and Central European Paintings; and Modern and Contemporary Southeast Asian Art).

In this paper, we take an in-depth analysis of the Latin American art market and propose art price indices for this specific region, and classify paintings according to the following eleven artistic styles: Abstract (geometric), abstract (informal), conceptual, *costumbrismo*, cubism, figurative, muralism, landscape, surrealism, nineteenth century and avant-garde. Our analysis

of Latin American artists' auction sales from 1970 to 2014 yields 30,288 sales, created by 293 artists. We look at art books and place each of those artists in one of the eleven previously mentioned artistic movements or styles. After adjusting for several control variables that are common in the literature, we estimate hedonic pricing regressions for each style.

The performance of the various artistic style indices from Latin America, the region we specifically study, does, in fact, differ significantly from one style to another. More specifically, the cumulated geometric real returns during the period were positive for only four of the artistic styles: conceptual (10.33%, 1996–2014), abstract geometric (1.97%, 1971–2014), cubism (0.97%, 1981–2014) and *costumbrismo* (0.91%, 1971–2014). The remaining seven styles had a cumulative annual real return that was negative. Furthermore, and more importantly for our paper, the average correlation between the styles was very low (only 0.12) and in some cases even negative.

Our study highlights the importance of breaking down aggregate art price indices at the regional level by styles so that art investors can count with a better risk/return assessment of the different constituents (styles) of the art market. This is comparable to what is often proclaimed for stocks, where the performance of different categories (for example, value versus growth stocks, stocks of different industries, etc.) varies significantly within and across regions and countries. Additionally, we construct and evaluate Latin American art price indices at the national level and evaluate the performance of Latin American artworks sold at Christie's and Sotheby's in comparison to those sold at other auction houses. Lastly, we discover that, in the case of Latin American art, works created by women artists command higher prices, which is in contrast to findings reported in other recent and related literature.

The paper is organized as follows. Section 2 offers a literature review on the potential benefits of art investing. Section 3 discusses the specificity of the Latin American art and its auction market, which make it suitable to conduct a study such as ours. Section 4 is dedicated to the data and methodology used in this study, and Section 5 presents the results obtained, which are discussed in Section 6. Section 7 deals with a series of robustness tests and extensions to the main results. Finally, in Section 8 we offer the conclusions, implications of our paper (including practical applications for investors, collectors, auction houses and policymakers) and propose potential avenues for future research.

2. Literature review on the financial performance of art

The hedonic pricing method and the repeat-sales method are the two primary approaches that have been put forth in the literature to estimate art price indices. Only artworks that have sold at least twice during a sample period are considered using the repeat-sales method when estimating returns. The repeat-sales method has the benefit of calculating art price changes based on purchases of the same piece of art. However, since only a small percentage of auction sales are usually repeat sales, this method's drawback is that it only includes a very small portion of all artworks sold. An additional drawback is that artworks whose values are thought to have increased more are more likely to be offered at auction, thus creating an upward bias in art returns when this methodology is used (see Goetzmann, 1993; Korteweg *et al.*, 2016).

Using repeat-sales data for the years 1650–1960 from Reitlingler's (1961) book, Baumol (1986) found that art prices behave randomly and fluctuate substantially. In the long run, real annual returns were only 0.55%. After updating the data and applying the repeat-sales method, Goetzmann (1993) also used data from the book by Reitlingler (1961) and concluded that wealth and equity market returns significantly impacted art market prices. In his analysis of the 1977–1992 print market, Pesando (1993) found that artwork performed worse than traditional financial assets. Finally, Etro and Stepanova (2019) found, using the repeat-sales method, that art markets are efficient, as return rates do not depend systematically on past prices.

The hedonic pricing model (Rosen, 1974) estimates the implicit price (i.e. the hedonic price) or contribution of each of the attributes of a work of art (e.g. name of the artist, its size,

etc.) within the total price. There is a wealth of research on the application of the hedonic pricing model to estimate art price indices and analyze the factors that influence art prices. For example, Higgs and Worthington (2005), Kraeussl and Logher (2010), Renneboog and Spaenjers (2012), Garay *et al.* (2017) and Garay (2021) have all used the hedonic pricing model to analyze art markets [2]. Hedonic pricing regression is by far the method that is most commonly used in the cultural economics literature to estimate art returns, according to a study conducted by Radermecker and Alvarez de Toledo (2022).

According to Higgs and Worthington' (2005) hedonic pricing model analysis of the Australian art market from 1973 to 2003, the nominal average annual return of Australian art was 6.96%, with a standard deviation of 16.51%. The investment benefits of artworks created by Australian Aboriginal artists between 1982 and 2007 were examined by Taylor and Coleman (2011), who calculated an annual nominal return of 6.6% with a standard deviation of 17.9%. Renneboog and Spaenjers (2012) used data from 1.1 million auction sales around the world (1957–2007), and applied a hedonic regression analysis, finding that that the following attributes affect art prices: size, signature, date, technique, author attribution dummies, subject (topic), auction house and location of the auction house. They also reported that art exhibited annual real returns of 3.97% during their sample period. Renneboog and Spaenjers (2012), and Li *et al.* (2022) also found that the correlation of art and stocks and bonds was low (and was even negative with other assets).

Research on art investment performance in emerging markets is still relatively recent. Kräussl and Logher (2010) studied the art markets of Russia (1985–2008), China (1990–2008) and India (2002–2008). The authors calculated, using hedonic regressions, that these three emerging markets' average nominal annual dollar returns were, respectively, 10%, 5.7% and 42.2% higher than the inflation rates in the USA. Using the repeat-sales method, Shi *et al.* (2017) examined the investment performance of Chinese art and calculated that, on average, Chinese artists' works provided an annual real appreciation of 8.42% between 2000 and 2015. According to a 2017 study by Garay, Vielma and Villalobos, the art market for Argentine artists provided an annual real dollar return of 3.81% (1980–2014). According to Garay's (2021) analysis of the Venezuelan art market from 1970 to 2014, geometric returns were marginally higher than inflation in US dollars, and artworks yielded a nominal annual average return of 7.96%. In these last two studies, hedonic pricing regressions were used.

Additionally, a body of literature has surfaced regarding the estimation of art price indices. For example, Candela and Scorcu (1997) proposed a price index methodology that is based on estimates and auction prices and suggested a selection procedure that enables the creation of indexes for a specific art market segment and/or at high frequencies. In turn, Candela *et al.* (2004) developed an annual price index computed as the ratio of the average market price to the average estimated price of paintings sold by artists each year. The authors suggest adjusting the average estimated price at a specific moment based on historical price dynamics in order to estimate ratios because they believe that experts are likely to raise (decrease) estimated prices if the market is bullish (bearish). They also concluded that indices computed for artists who are frequently traded are less erratic.

3. Literature review on the Latin American art market

"Latin American art" encompasses the collective artistic expression of South and Central America, the Caribbean, Latin Americans residing abroad and artists who have migrated to Latin America, according to Barnitz (2006). According to Uribe (in Theran, 1999), the term "Latin American art" also includes artwork produced by foreigners who have visited the region, such as Dutch artists who were among the first to capture the exotic lands of the New World when they traveled to what is now Brazil in the 1630s. A unique tradition of shapes, colors and motives has been created throughout the region as a result of the blending of Native American, African and European cultures. For Traba (1994), the most significant

aspect of Latin American artists' work is their constant attempt to engage with their cultures. Traba's proposal is controversial because some scholars contend that Latin American art should also be examined from the standpoint of the global art scene, where Latin American artistic movements like geometric abstraction and kinetic art have had a significant impact (Frost Art Museum and The Patricia & Phillip Frost Art Museum, 2010). Garay (2018) relates that "*according to some authors such as Pérez-Barreiro (see Castro, 2013), when traveling to continental countries such as Brazil, Colombia, Chile, Uruguay or Caribbean countries, for example, people tend to identify with their country and not with the continent. That is why the term Latin American art should be considered with caution, not only because of the primacy that collectors from Latin American countries have traditionally given to created works produced by artists from their own country (rather than to works executed by other artists from the continent), but also because Latin American art includes some currents or styles, such as geometric abstraction or kineticism, which can be conceived rather as inscribed within international abstract-geometric or kinetic art*" (the translation to English is ours).

There are three primary benefits to studying Latin American art auctions from an economic perspective (Edwards, 2004). First, since 1979, there have been frequent international auctions devoted to Latin American art, with Sotheby's and Christie's dominating the market (particularly for the most expensive lots) as well as at other smaller but highly active auction houses in Europe and the USA. This spans more than 40 years [3]. Additionally, in certain Latin American nations, local art auctions have been regularly held since at least the 1950s. As a result, Latin American art auctions have a lengthy history, which is essential for conducting a study like the one that is being presented here. Second, although museum interest in Latin American art has undoubtedly grown since Edwards' article, it is still relatively small compared to American artists and Impressionists, for instance. For the purposes of our study, this is a positive feature of the market because it suggests that the Latin American art market is not skewed by the purchasing decisions of big museums, which frequently purchase and "retire" some of the best pieces available.

Third, artworks from most Latin American great masters (the "Big-Five" Latin American artists are Rufino Tamayo, Diego Rivera, Roberto Matta, Wilfredo Lam and Fernando Botero) are liquid. Furthermore, Garay (2018) argues that it may be worthwhile to investigate the relationship between financial and economic factors and the prices of artworks due to the comparatively high economic volatility of many Latin American nations. In their 2014 study of the art markets in Western Europe and the USA, Renneboog and Spaenjers discovered that local factors, such as GDPs and stock returns, have an impact on the prices of paintings created by local artists, though not as much in the case of the high-end market.

Edwards (2004) conducted one of the first studies on the performance of Latin American art, analyzing 12,690 auction sales of Latin American paintings. He found that, between 1982 and 1990, the real annual rates of return for Latin American art were consistently positive and that, in a few years, they were relatively high. For the years 1991–2000, however, the rates of return were significantly lower and in some cases even negative. The real average annual rate of return for the entire portfolio from 1981 to 2000 was 9%, with a standard deviation of 12.6%.

Campos and Barbosa (2009) analyzed paintings by Latin American artists auctioned at Sotheby's between 1995 and 2002 and found that artwork prices were higher when, *ceteris-paribus*: the artist was reputable, the artwork was painted using oil and the larger its area. Similarly, the authors found, contrary to what would be expected, that a signed work did not fetch a higher price. Additionally, they examined the effects of other factors that are exclusive to Sotheby's and a few other upscale market catalogs, like provenance – whether a painting has been featured in art books or has been shown in galleries or museums. Table 1 presents a summary of the literature on the risk-return of art investing by movements/styles and for Latin American art (for both the region as a whole and for specific countries).

Table 1. Summary of the literature on the risk-return of art investing by movements/styles and for Latin American art

Style(s)/movement(s) Renneboog and Spaenjers (2012) (real dollars)	Annual returns 1957–2007	Standard deviation 1957–2007	Annual returns 1982–2007	Standard deviation 1982–2007	Annual returns Li *et al.* (2022) 1958–2016 (real dollars)
Medieval and renaissance	3.01%	27.13%	6.44%	19.59%	3.32%
Barroque	4.76%	17.69%	5.82%	12.57%	3.42%
Rococo	3.69%	25.42%	5.03%	12.15%	4.40%
Neoclassicism	6.32%	45.93%	5.36%	22.45%	7.48%
Romanticism	4.28%	17.34%	4.79%	15.24%	3.35%
Realism	2.57%	21.42%	4.16%	15.46%	3.20%
Impressionism and symbolism	4.10%	24.01%	4.55%	16.70%	3.47%
Fauvism and expressionism	3.72%	22.84%	4.90%	18.36%	3.68%
Cubism, futurism and constructivism	5.53%	22.40%	6.01%	20.55%	4.74%
Dada and surrealism	5.85%	32.32%	5.58%	19.42%	5.32%
Abstract expressionism	–	–	7.78%	21.91%	5.28%
Pop-art	–	–	10.35%	29.33%	7.93%
Minimalism and contemporary	–	–	7.07%	23.68%	12.88%
Korteweg *et al.* (2016)			1961–2013		1961–2013
(Nominal dollars)					
Post-war and contemporary			7.43%		11.63%
Impressionism and modern			6.09%		13.30%
Old masters			4.56%		13.75%
US artists			6.83%		10.28%
European XIX century			6.81%		11.70%
Other styles			6.53%		13.92%
Top 100 artists			9.50%		13.86%
Edwards (2004)			1981–2000		1981–2000
Latin America (real dollars)			9.00%		12.60%
Campos and Barbosa (2009)			1995–2002		
Latin America (nominal dollars)			5.23%		–
Kräussl *et al.* (2016)			1970–2013		
Latin America (nominal dollars)			6.11%		–
Garay *et al.* (2017)			1980–2014		1980–2014
Argentina (nominal dollars)			6.81%		29.11%
Garay (2021)			1969–2014		1969–2014
Venezuela (nominal dollars)			7.96%		33.66%

Source(s): Updated from Cinefra *et al.* (2019)

According to Garay *et al.* (2017), there is a home bias (local bias) in art purchases because investors and collectors are drawn to the creations of artists from their own nation, whether they are offered for sale at domestic or international auctions. Therefore, domestic economic conditions should have an impact on the local art market, supporting the creation of art price indices for local artists and consistent with the logic presented by Renneboog and Spaenjers

(2014). Previously, Goetzmann *et al.* (2011) asserted that British investors and collectors had purchased most of the artwork sold at auction in Great Britain. In the paper's discussion section, we offer additional analysis on the possible ramifications of the likely presence of a home bias in the art market.

3.1 On the issue of artists' career evolution over time

Artists' careers change over time. The argument put forth by Galenson (2000) and Galenson and Weinberg (2000, 2001) is that conceptual artists – those who plan their ideas ahead of time and execute them methodically – achieve the highest prices for their works and reach the pinnacles of their careers before experimental painters, who use incremental techniques and aim "for perfection in their works." In this context, Garay *et al.* (2022b) examined the Big-5 Latin American artists and found that, in the cases of Wilfredo Lam, Roberto Matta and Diego Rivera, the prices of their works were negatively and significantly correlated with the ages (in the case of Rufino Tamayo the coefficient was negative but not statistically significant), and positively and significantly related to the age of the artist for the case of Fernando Botero's paintings. Therefore, Botero could be considered an experimentalist and the first four artists were conceptual artists. These results are consistent with the findings of Edwards (2004).

Hodgson and Hellmanzik (2019) and Hodgson (2022), two more recent and related papers, looked at how movement associations might influence career creativity profiles, which could then influence creativity. Using auction data for 272 well-known modern artists – the majority of whom were categorized into movements based on art historical evidence – Hodgson and Hellmanzik (2019) applied a hedonic regression model and found that the art movements to which an artist is attributed significantly contribute to explaining auction prices. However, it is important to consider that at some point during their career, an artist may have begun working in a different artistic movement. In these situations, we have included those artists in the category most closely related to them in our paper based on the art history books we reviewed (we list those books in Section 5). Furthermore, as was previously mentioned, shifts in artistic movement are not always to blame for the fact that artists' prices for paintings differ according to the period of their lives in which they produced them [4]. One Venezuelan artist in our database, Carlos Cruz-Diez (1923–2019), for instance, was a part of the kinetic art movement, which is a subset of the op-art movement, nearly from the start of his lengthy career in the 1950s. However, according to Galenson's (2000) criteria, Cruz-Diez could be considered a conceptual artist because his works from the late 1950s and 1960s are by far the most valuable (see Garay *et al.*, 2024).

Although it is reasonable to assume that some artists in our paper would have changed certain aspects of their paintings over time, such as the subjects or motivations, there are a number of artists who stayed in the same artistic movement throughout their lives. In the case of Fernando Botero (1932–2023), a Colombian artist who is also included in our database, Edwards (2004) found that his most recent works (which are centered on Colombian society and people and always feature a local narrative) are more valuable than his earlier works, which include still lifes and portraits (note that we adjust our regressions to account for the topic of paintings, a control variable that has frequently been overlooked in the literature, as we explain in the next section). Despite these changes in topics throughout his long career, Botero's paintings could be ascribed to one artistic style: the *costumbrismo* movement, and we thus categorized him as belonging to that artistic style. By using an incremental technique and striving for perfection in his paintings, Botero may be classified as an experimental artist according to Galenson's (2000) criteria.

4. Data and methodology

Our data set includes 30,288 auction sales of drawings and paintings created by 293 artists from Latin America [5]. The first sale in the database was in January of 1970, and the last sale took place in December of 2014. The information was obtained from the Blouin Art Sales

database. We hypothesize, based on the hedonic pricing model originally proposed by Rosen (1974), that the prices of paintings are significantly related to a set of variables in the following form:

$$ln\, P_{kt}^{i} = \alpha + \sum_{m=1}^{M} \beta_m \times X_{mkt} + \mu_i + \lambda_t + \upsilon_{kt} \quad (1)$$

Where:

$ln\, P_{kt}^{i}$: Price, in natural logarithm, of painting k auctioned at year t (including the buyer's premium or commission charged by the auction house to the buyer).

β_m reflects the characteristics of a relative shadow price to each of the attributes, where m is the number of the considered artworks' characteristics or attributes.

X_{mkt} represents the characteristics (m) of each sold painting k, at period (year) t.

μ_i: Style fixed effects.

λ_t: Time (year) fixed effects

The functional form of the model is semi-logarithmic. Higgs and Worthington (2005), Campbell (2008), Campos and Barbosa (2009), Kräussl and Logher (2010), Taylor and Coleman (2011), Renneboog and Spaenjers (2012), Stepanova (2016), Vosilov (2015a, b), Pownall and Graddy (2016), Garay *et al.* (2017), Cinefra *et al.* (2019) and Garay (2021), among other authors, use this specification, as it provides a better adjustment for the regression. Equation (1) assumes that the market valuation of each attribute does not change through time. Following the literature (see, among others, Edwards, 2004; Higgs and Worthington, 2005; Campbell, 2008; Campos and Barbosa, 2009; Kraeussl and Logher, 2010; Taylor and Coleman, 2011; Renneboog and Spaenjers, 2012; Pownall and Graddy, 2016; Garay *et al.*, 2017; Garay, 2021), the hedonic regression model will be initially estimated by running an ordinary least squares regression (OLS).

Our dataset comprises both time series and cross-sectional variables. Therefore, we performed the Breusch-Pagan Lagrange Multiplier test to choose the appropriate methodology to be applied (either an OLS pooled regression or a random-effects panel regression). The null hypothesis that variances across the prices for paintings per artist are zero is rejected, and therefore, a random-effects regression is preferred to a pooled regression. We applied a Hausman test to select either a random-effects or a fixed-effects model and rejected the null hypothesis that the errors per artist/painting are not correlated with the regressors. Therefore, we run panel regressions with fixed effects. The standard error estimates are robust to disturbances being autocorrelated and heteroscedastic.

An important advantage of panel data regressions is that they enable us to examine the impact of unobservable variables on paintings by individual artists, as well as the effect of variables that change over time (but not across paintings per artist, see Garay *et al.*, 2022b). We estimate our model with style and time fixed effects considering that the group variable in our panel is style. With style fixed effects, we control for those cross-sectional painting attributes that affect painting prices per style but that do not change through time. With year fixed effects, we analyze the systematic impact of time-varying variables on painting prices.

The hedonic pricing model that we use includes the following variables:

4.1 Dependent variable

The dependent variable of the regressions is the auction sale price of each painting (including the buyer's commission), expressed in Napierian logarithm, and in real dollar terms (2014 US dollars).

4.2 Independent variables

We classified the characteristics of each painting sold into three groups, depending on the element to which they are intrinsic: painting-specific variables, auction-specific variables and other variables.

4.2.1 Painting-specific variables.

(1) *Area:* measured as the Napierian logarithm of square inches of each artwork (height x length).

(2) *Technique:* Works of art were classified according to the technique used for their creation (oil, acrylic, charcoal, gouache, ink, mixed, pastel, pencil, tempera, watercolor, work on paper and other techniques). This variable takes the value of one if a painting was executed using one of these techniques, and zero otherwise.

(3) *Signed:* whether the painting had the original signature of the artist or not. This is a dummy variable that takes the value of 1 if the painting is signed and 0 otherwise.

(4) *Dated:* whether the painting was dated by the artist or not. This is a dummy variable that takes the value of 1 if the painting is dated and 0 otherwise.

(5) *Topic/motive.* Each artwork sold at auction was classified into one of the following topics: Abstract, animal, landscape, nude, object, people, portrait, self-portrait, religion, still life, untitled, urban and others. Renneboog and Spaenjers (2012) had already used the same classification, except that we also added the topic object and untitled works. Following the procedure used by Garay (2021) and De Ridder *et al.* (2024), we analyzed the image of a sub-sample of paintings to determine the corresponding topic dummy when it was not obvious to deduce it from the title of the artwork.

4.2.2 Auction-specific variables.

(1) *Auction house:* This variable specifies if the work was auctioned at Christie's, Sotheby's or at any other auction houses.

(2) *City of the auction:* This variable defines whether the auction took place in New York City (where Christie's and Sotheby's conducted their semiannual Latin American art auction during most of the sample period) or in any other city.

(3) *Year of the auction:* It accounts for the potential effect of the year on the price of the auction, starting in 1970 and ending in 2014. This variable takes the value of 1 in each year in which a painting is sold, and zero for the other years.

4.2.3 Other variables.

(1) *Alive:* This variable takes the value of one if the artist was alive at the time of the auction, and 0 if the artist had already passed away.

(2) *Women:* This variable takes the value of one if the painting was executed by a woman artist.

5. Analysis of results

Table 2 shows the descriptive statistics of the 30,288 sales of Latin American art included in the database (1970–2014), categorized by the following eleven artistic styles/movements: Abstract-geometric, abstract-informal, conceptual, *costumbrismo*, cubism, figurative, muralism, landscape, surrealism, nineteenth century and avant-garde. After examining the following art books, each of the 293 Latin American artists in the database was assigned to one of those styles: Barnitz (2006), Galería de Arte Nacional (2005) and Theran (1999). To be eligible to be included in the study, each artist had to have at least 20 sales of their artwork

Table 2. Descriptive statistics for each of the eleven Latin American artistic styles

Artistic movement (for Latin American art)	Number of sales	Mean average price (2014 dollars)	Median price (2014 dollars)	Standard deviation (2014 dollars)
Abstract-geometric	2,761	57,698	11,270	147,270
Abstract-informal	1,470	18,068	4,895	48,895
Conceptual	464	43,047	12,815	88,164
Costumbrismo	2,289	27,923	8,000	91,887
Cubism	646	67,943	24,132	129,783
Figurative	3,476	66,998	8,821	192,117
Muralism	6,185	92,368	14,538	309,383
Landscape	3,656	26,624	5,644	73,707
Surrealism	6,855	71,637	20,133	235,172
Nineteenth century	1,216	39,163	10,320	167,084
Avant garde	1,270	22,688	8,720	49,242
Total	*30,288*	*58,857*	*10,856*	*204,958*

Note(s): 1970–2014, USD real dollars (conceptual: 1996–2014, cubism: 1981–2014)
Source(s): Own calculations, based on art market information obtained from Blouin Art

at auction during the sample period (for example, other authors have used a cutoff point of at least 20 sales – Higgs and Worthington, 2005 – and between 20 and 30 sales, depending on the specification – see Garay, 2021). It is important to remember that these artistic movements belong to different names, such as Latin American muralism, Latin American surrealism, etc. To make the language simpler, we will generally refer to them as surrealism, muralism, etc.

Table 2 shows that the artistic movement with the highest number of sales was surrealism (6,855 sales), followed closely by muralism (6,185 sales). Additionally, the highest average real prices per lot ($71,637 and $92,368, respectively) were recorded by these two styles. The next three styles with the highest average prices were abstract-geometric, figurative and cubism. The fact that paintings frequently have significantly different prices due to a variety of factors, including their sizes, whether they were created using different techniques, whether they were based on different subjects, whether they were sold during periods of booming or depressed art markets or other factors, may be reflected in the comparatively high standard deviation of prices for each artistic style [6].

Table 3 shows the results of the regressions estimated for each of the eleven Latin American artistic styles (Table A1, in the Appendix, shows the results of four specifications of the regressions for the aggregate sample of Latin American art). Results from Table 3 show that art prices increase with size, and that this result holds for each one of the eleven styles. As might be expected, the impact of the techniques employed on art prices varies less by style (for instance, conceptual art, as part of its philosophy, places less value on the materials used than other artistic styles). Regardless of style, oil paintings typically command higher prices. Topic results are not as definitive. It is interesting to note that, in contrast to "other styles" (the topic variable that was left out), topics typically have a positive impact on art prices for figurative and surrealist paintings, and a negative impact for conceptual art. The other styles' results are not conclusive. The findings for the remaining attributes (signed, dated, New York City, alive and women) are consistent with the findings for the aggregate regressions shown in Table A1 above. We then proceeded to estimate art price indices for each of the styles. The antilog of the estimations of the coefficients of the year dummy variables in the regressions can be used to create an art price index that controls for the set of explanatory variables of artworks sold through time. The value of the hedonic price index in year t is estimated as follows (see Renneboog and Spaenjers, 2012):

Table 3. Regressions for each Latin American style, real dollar prices

		(1) Abstract-geometric Ln(Price)	(2) Abstract-informal Ln(Price)	(3) Conceptual Ln(Price)	(4) Costumbrismo Ln(Price)	(5) Cubism Ln(Price)	(6) Figurative Ln(Price)	(7) Muralism Ln(Price)	(8) Landscape Ln(Price)	(9) Surrealism Ln(Price)	(10) Nineteenth century Ln(Price)	(11) Avant garde Ln(Price)
Area	Ln(area)	0.392***	0.403***	0.337***	0.415***	0.505***	0.510***	0.505***	0.448***	0.431***	0.435***	0.664***
		(0.0192)	(0.0222)	(0.0425)	(0.0289)	(0.0483)	(0.0201)	(0.0163)	(0.0201)	(0.0142)	(0.0339)	(0.0341)
Technique (omitted variable acrylic)	Charcoal	0	0	0	−0.198	0	1.211***	0	0	−0.496*	0	0
		(.)	(.)	(.)	(1.092)	(.)	(0.175)	(.)	(.)	(0.267)	(.)	(.)
	Gouache	0	0	0	0.213	−1.480**	0.884**	1.525**	0	0.0792	−0.974	0
		(.)	(.)	(.)	(0.452)	(0.602)	(0.282)	(0.607)	(.)	(0.219)	(1.165)	(.)
	Ink	0	0	0	0	0	1.566***	0.243	0	−0.227	0	0
		(.)	(.)	(.)	(.)	(.)	(0.473)	(0.290)	(.)	(0.283)	(.)	(.)
	Mixed	−0.169**	0.490***	0.480**	0.892***	0.104	0.184**	1.002***	0.500***	0.360***	−0.0961	−0.554***
		(0.0646)	(0.0794)	(0.160)	(0.101)	(0.185)	(0.0723)	(0.0624)	(0.0839)	(0.0558)	(0.244)	(0.133)
	Oil	−0.111*	0.930***	1.122***	1.186***	0.520**	1.106***	1.478***	0.547***	0.855***	0.279**	−0.0187
		(0.0608)	(0.0708)	(0.195)	(0.0968)	(0.165)	(0.0545)	(0.0596)	(0.0469)	(0.0491)	(0.127)	(0.0882)
	Other	0	0	0	0	0	0	0	0	0	0	0
		(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
	Pastel	0	0	0	0	0	1.346***	0	0	0.118	−0.149	0
		(.)	(.)	(.)	(.)	(.)	(0.255)	(.)	(.)	(0.119)	(0.396)	(.)
	Pencil	0	0	0	1.866*	0	1.530***	−0.324	0	0.711***	−0.359	0
		(.)	(.)	(.)	(1.093)	(.)	(0.156)	(1.209)	(.)	(0.142)	(0.838)	(.)
	Tempera	0	0	0	0	0	0.762	0.911	0	−0.0903	0	0
		(.)	(.)	(.)	(.)	(.)	(0.831)	(0.699)	(.)	(0.456)	(.)	(.)
	Watercolor	−0.256	0.535**	−0.0744	0.977***	−0.570*	1.263***	1.147***	0.354*	0.367**	−0.145	−0.952**
		(0.528)	(0.192)	(0.316)	(0.189)	(0.320)	(0.141)	(0.0976)	(0.210)	(0.146)	(0.241)	(0.363)
	Work on paper	−0.553***	0.304**	0.408*	0.719***	0	0.185*	0.724***	−0.0610	0.0863	0.0484	−0.635***
		(0.110)	(0.112)	(0.221)	(0.108)	(.)	(0.0996)	(0.0647)	(0.110)	(0.0640)	(0.225)	(0.122)

(*continued*)

Table 3. Continued

		(1) Abstract-geometric Ln(Price)	(2) Abstract-informal Ln(Price)	(3) Conceptual Ln(Price)	(4) Costumbrismo Ln(Price)	(5) Cubism Ln(Price)	(6) Figurative Ln(Price)	(7) Muralism Ln(Price)	(8) Landscape Ln(Price)	(9) Surrealism Ln(Price)	(10) Nineteenth century Ln(Price)	(11) Avant garde Ln(Price)
Auction house (omitted var, *Other houses*)	Christie's	1.394***	0.684***	−0.104	1.170***	0.853***	0.842***	0.809***	1.458***	0.966***	0.725***	−0.436***
		(0.0867)	(0.145)	(0.158)	(0.0943)	(0.257)	(0.107)	(0.0853)	(0.163)	(0.0523)	(0.122)	(0.106)
	Sotheby's	1.608***	0.591***	0.217	1.133***	0.732**	0.759***	0.819***	1.284***	0.923***	0.780***	−0.426***
		(0.0906)	*(0.159)*	*(0.195)*	*(0.0991)*	*(0.263)*	*(0.112)*	*(0.0865)*	*(0.167)*	*(0.0526)*	*(0.121)*	*(0.121)*
Topic (omitted, variable, other styles)	Abstract	0.709***	0.0351	2.502***	0.648***	−1.196***	−0.389	−0.0596	−0.238	1.058***	−0.470	−0.352
		(0.107)	(0.0916)	(0.287)	(0.188)	(0.339)	(0.246)	(0.225)	(0.487)	(0.0483)	(0.591)	(0.257)
	Animals	0.372	0.167	−0.116	−0.379**	−0.561*	0.261*	0.172	−0.593**	0.130**	0.203	0.0476
		(0.284)	(0.300)	(0.295)	(0.123)	(0.324)	(0.138)	(0.114)	(0.257)	(0.0646)	(0.289)	(0.257)
	Landscape	0.501***	−0.0700	0.265	0.298**	−0.887***	−0.0747	0.139*	−0.0198	−0.0446	0.101	0.470***
		(0.147)	(0.109)	(0.257)	(0.117)	(0.190)	(0.0979)	(0.0736)	(0.114)	(0.0706)	(0.132)	(0.130)
	Nude	0.232	0.252	−1.654	0.123	−1.281***	0.625***	0.0841	0.0896	0.201	−0.532	0.231
		(0.386)	(0.338)	(1.068)	(0.300)	(0.333)	(0.137)	(0.114)	(0.190)	(0.148)	(0.365)	(0.256)
	Object	0.415**	0.107	0.0186	0.0745	−0.185	−0.0569	0.523***	0.462**	−0.0347	−0.261	0.213
		(0.171)	(0.209)	(0.287)	(0.183)	(0.274)	(0.128)	(0.145)	(0.142)	(0.111)	(0.238)	(0.202)
	People	0.121	0.302**	0.386	0.0503	−0.272*	0.414***	0.554***	0.0864	0.377***	−0.245**	0.331**
		(0.137)	(0.102)	(0.252)	(0.0799)	(0.153)	(0.0627)	(0.0507)	(0.130)	(0.0483)	(0.125)	(0.119)
	Portrait	−0.109	−0.0231	−0.228	−0.0348	−0.853**	0.549***	0.148**	0.317	0.175	−0.271	−0.123
		(0.249)	(0.286)	(0.354)	(0.121)	(0.295)	(0.112)	(0.0708)	(0.195)	(0.120)	(0.166)	(0.169)
	Religion	0.412*	0.263	−0.0413	0.0640	−0.537**	0.974***	0.341***	0.211	0.408***	−0.0193	0.297
		(0.220)	(0.202)	(0.536)	(0.120)	(0.255)	(0.107)	(0.0960)	(0.161)	(0.0731)	(0.145)	(0.229)
	Self-Portrait	1.159	−0.198	0	0.724	−0.439	1.674***	0.341**	1.305***	0.618***	−0.0335	0.129
		(0.836)	(0.530)	(.)	(0.562)	(0.548)	(0.313)	(0.122)	(0.245)	(0.172)	(1.158)	(0.284)
	Still life	0.476**	0.294*	−0.0635	−0.494***	−0.0984	0.613***	0.544***	−0.111	0.240**	−0.489**	−0.135
		(0.161)	(0.152)	(0.365)	(0.113)	(0.195)	(0.0833)	(0.0776)	(0.124)	(0.0944)	(0.180)	(0.129)
	Untitled	−0.00557	−0.00476	−0.410**	−0.106	−0.454**	0.140*	0.111	−0.306**	0.246***	−0.576**	−0.0769
		(0.115)	(0.0867)	(0.135)	(0.100)	(0.218)	(0.0743)	(0.0775)	(0.129)	(0.0505)	(0.215)	(0.157)
	Urban	0.666***	0.418**	−0.210	0.0328	−0.745***	0.157	0.280***	−0.0799	0.0124	−0.171	0.468***
		(0.152)	(0.173)	(0.382)	(0.116)	(0.197)	(0.102)	(0.0827)	(0.120)	(0.0966)	(0.164)	(0.141)

(*continued*)

Table 3. Continued

		(1) Abstract-geometric Ln(Price)	(2) Abstract-informal Ln(Price)	(3) Conceptual Ln(Price)	(4) Costumbrismo Ln(Price)	(5) Cubism Ln(Price)	(6) Figurative Ln(Price)	(7) Muralism Ln(Price)	(8) Landscape Ln(Price)	(9) Surrealism Ln(Price)	(10) Nineteenth century Ln(Price)	(11) Avant garde Ln(Price)
Other characteristics	Signed	−0.152**	0.0454	−0.697***	−0.175**	−0.134	−0.0772	−0.0548	−0.272***	−0.370***	−0.289**	0.148**
		(0.0705)	(0.0832)	(0.133)	(0.0674)	(0.144)	(0.0692)	(0.0478)	(0.0528)	(0.0388)	(0.101)	(0.0713)
	Dated	−0.143**	0.104*	0.146	0.100*	0.229**	0.565***	0.373***	0.0909**	0.198***	0.573***	0.00103
		(0.0596)	(0.0582)	(0.131)	(0.0521)	(0.0893)	(0.0438)	(0.0336)	(0.0377)	(0.0311)	(0.0775)	(0.0597)
	New York	0.543***	0.523***	0.711***	0.218**	0.160	0.352***	0.993***	0.831***	0.478***	0.409***	1.160***
	City	(0.0826)	(0.141)	(0.142)	(0.0885)	(0.253)	(0.102)	(0.0813)	(0.153)	(0.0477)	(0.112)	(0.100)
	Alive	−0.207***	−0.552***	−1.345***	−0.207**	−1.004**	0.549***	−0.867***	0.302***	−0.945***	−0.866***	0.493**
		(0.0541)	(0.0579)	(0.164)	(0.0632)	(0.452)	(0.0476)	(0.0411)	(0.0503)	(0.0320)	(0.219)	(0.192)
	Women	0.787***	−0.237	0	0.542***	0	−0.00390	0	0	0.969***	0	0.853***
		(0.115)	(0.147)	(.)	(0.1000)	(.)	(0.192)	(.)	(.)	(0.0522)	(.)	(0.110)
	_cons	2,761	1,470	464	2,289	646	3,476	6,185	3,656	6,855	1,216	1,270
	N	0.567	0.630	0.621	0.464	0.544	0.654	0.593	0.526	0.613	0.423	0.495
	r2_o	0.567	0.630	0.621	0.464	0.544	0.654	0.593	0.526	0.613	0.423	0.495
	r2_w											
	r2_b	0.556	0.612	0.581	0.447	0.499	0.646	0.588	0.517	0.609	0.389	0.467
	r2_a	0.567	0.639	0.626	0.475	0.544	0.660	0.596	0.557	0.615	0.429	0.548
	Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Style fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Controls	All	All	All	All	All	All	All	All	All	All	All

Note(s): Standard errors in parentheses
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$
Source(s): Own calculations, based on art market information obtained from Blouin Art

$$\pi_t \equiv exp(\widehat{Y}_t) \times 100 \tag{2}$$

And the yearly art price return for year t is calculated as follows:

$$r_t \equiv \frac{\pi_t}{\pi_{t-1}} - 1 \tag{3}$$

Figure 1 shows the evolution of an aggregate Latin American style price index (Panel A) and the eleven artistic styles (grouped in Panels B1, B2 and B3) during the sample period. The aggregate index recorded a negative compounded real annual return of 0.9% between 1971 and 2014. After rising in the first half of the 1970s, the aggregate Latin American styles art price index fell in the second half of the decade and at the start of the 1980s (the "lost decade") before rising again toward the end of the decade and hitting a new high in 1990. Other authors who have examined the global art market in general during those years have also documented the very large price increase for Latin American art in the late 1980s and up until 1990 (see, for example, Edwards, 2004; Renneboog and Spaenjers, 2012). Additionally, they found that, since 1990, contemporary art has overwhelmingly outperformed other art movements on a global scale.

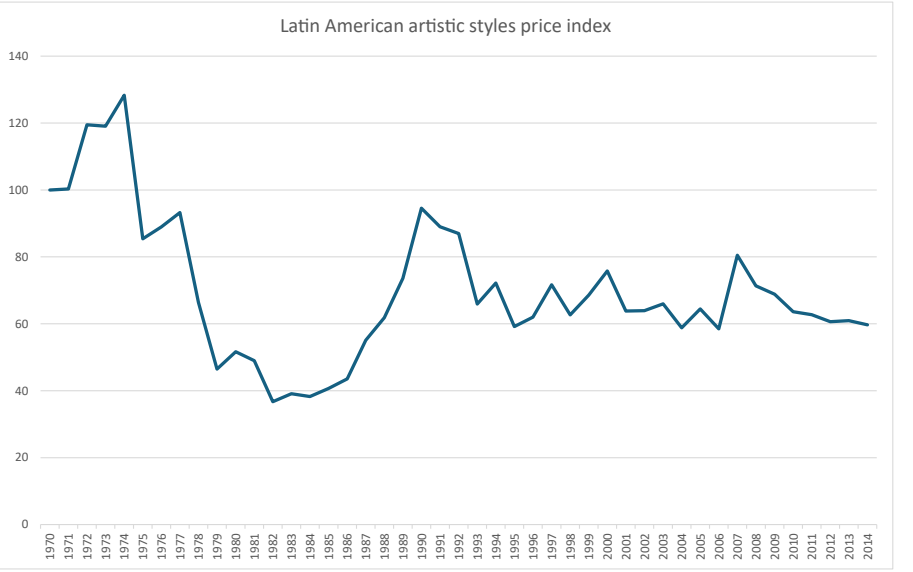
For convenience of exposition, we chose to plot the Latin American abstract-geometric, abstract-informal and conceptual art styles together in Figure 1, Panel B1, considering that these styles are most closely associated with the contemporary art movement. They show a high degree of correlation, and the abstract-geometric art price index outperformed the other two indices in the latter years of the sample. Panel B2 includes Latin American *costumbrismo*, figurative, muralist and landscape art price indices and Panel B3 shows Latin American cubism, surrealism, avant-garde and XIX century art price indices. Table 4, shows the statistics (in real dollars) on the performance statistics of each of the artistic styles, the Standard and Poor's 500 (US stocks), and 10-year treasury bonds (US bonds) [7].

Only four of the artistic styles had positive cumulative annual geometric real returns during the period: conceptual (10.33%), cubism (2.02%), abstract-geometric (1.97%) and *costumbrismo* (0.91%). This indicates that the performance of the Latin American style price indices varies significantly among them. The cumulative real return for the remaining seven styles was negative. Conceptual (0.30), *costumbrismo* (0.26), cubism (0.23) and abstract-geometric (0.20) had the highest Sharpe ratios. Those Sharpe ratios were lower than those of US stocks (0.39) and US bonds (0.53), a finding that is in line with prior research (see Renneboog and Spaenjers, 2012). Table 5, present the correlation matrix of returns among the Latin American artistic styles, US stocks and US bonds. According to that table, the average correlation between each of the styles was very low (at only 0.12) and was negative in several cases.

6. Discussion

Thus far, research on the benefits of art investing at the regional level (e.g. Latin America, South-East Asia and Africa) has been performed at the aggregate level; if anything, these geographical classifications have only been broken down by countries (nationalities). To the best of our knowledge, however, the influence that different artistic movements or styles (like conceptual art, surrealism, etc.) may have in those areas on the performance of those indices has not yet been considered. We carried out a comprehensive study of the Latin American art market and divided paintings into eleven distinct artistic styles in an effort to sort out these effects: Abstract-geometric, abstract-informal, conceptual, *costumbrismo*, cubism, figurative, muralism, landscape, surrealism, nineteenth century and avant-garde; finding a very low average correlation of 0.12 among the eleven artists' movements. This result is of utmost

Panel A: Aggregate Latin American style art price index (1970-2014, USD real, 1970 = $100)



Panel B: Eleven Latin American artistic styles art price indices (1970-2014, USD real, 1970 = $100)

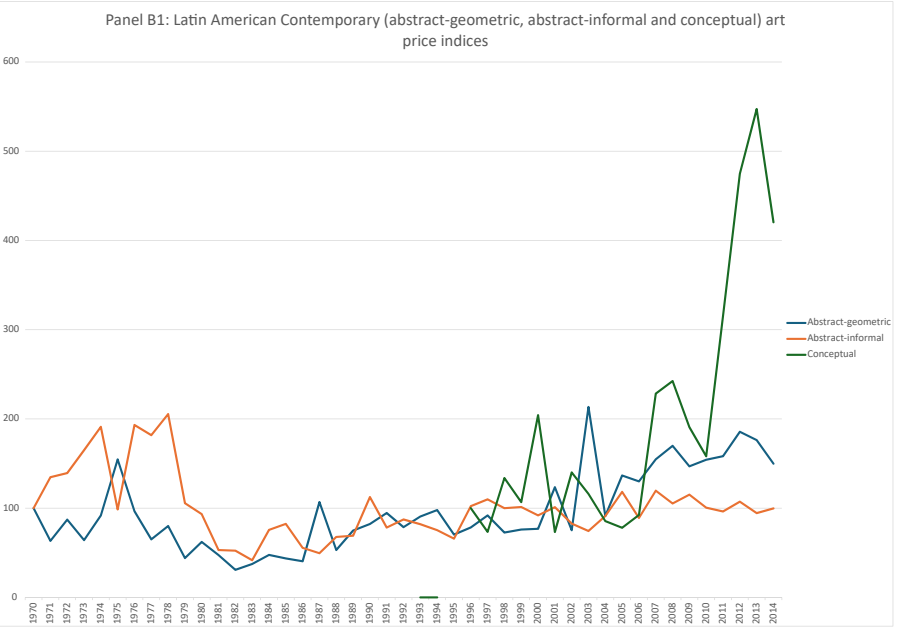
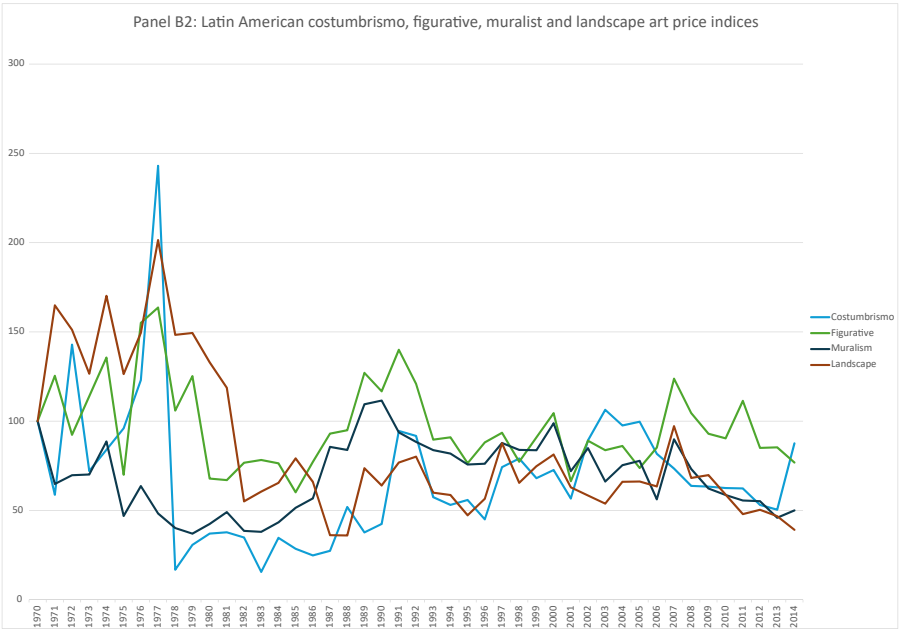


Figure 1. Latin American artistic styles price indices



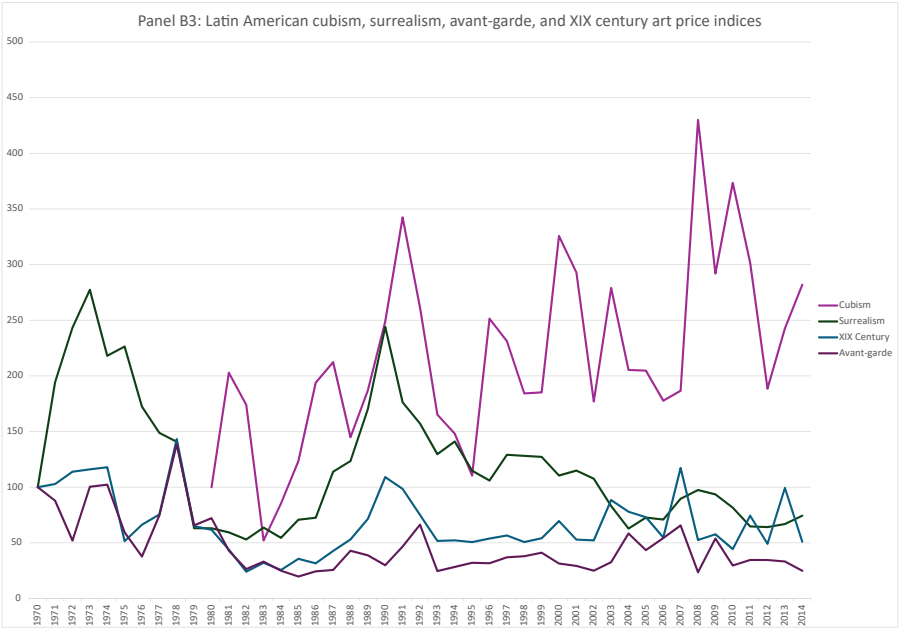


Figure 1. (*continued*)

importance, as it highlights the need to decompose art price indices by artistic styles/ movements to gain an enhanced diversification when investing in Latin American art *across different artistic styles*.

Table 4. Investment performance by Latin American artistic style, S&P 500 and US 10-year Government bonds (USD real returns)

Yearly returns/style	Abstract-geometric (1) 1971–2014	Abstract-informal (2) 1971–2014	Conceptual (3) 1996–2014	Costumbrism (4) 1971–2014	Cubism (5) 1981–2014	Figurative (6) 1971–2014	Muralism (7) 1971–2014	Landscape (8) 1971–2014	Surrealism (9) 1971–2014	Nineteenth century (10) 1971–2014	Avant garde (11) 1971–2014	S&P 500 (12) 1971–2014	US Bonds (13) 1971–2014
Arithmetic mean return (%)	9.99	3.54	18.41	14.76	12.95	2.39	1.35	0.01	0.12	5.35	5.10	7.57	5.48
Geometric mean return (%)	1.97	−0.70	10.33	0.91	2.02	−1.14	−0.73	−3.37	−2.20	−1.77	−3.60	5.86	0.72
Standard deviation (%)	47.19	31.34	59.01	53.13	52.03	28.65	21.10	27.97	21.72	39.94	44.99	17.37	8.96
Sharpe ratio	0.20	0.09	0.30	0.26	0.23	0.06	0.03	−0.03	−0.03	0.12	0.10	0.39	0.53

Source(s): Bloomberg and own calculations

Table 5. Correlation matrix for Latin American artistic styles, S&P 500 and US 10-year government bonds (USD real returns)

	Abstract-geometric	Abstract-informal	Conceptual	Costumbrismo	Cubism	Figurative	Muralism	Landscape	Surrealism	Nineteenth century	Avant garde	S&P 500	US Bonds
Abs.-geometric	1.00	−0.04	−0.26	−0.09	0.19	−0.20	0.08	−0.03	0.34	0.24	−0.08	0.06	−0.17
Abs.-informal		1.00	−0.09	0.09	0.12	0.31	0.38	0.28	0.11	0.28	0.04	−0.11	0.07
Conceptual			1.00	0.05	0.02	0.55	0.45	0.07	−0.01	0.37	−0.04	−0.32	−0.12
Costumbrismo				1.00	0.15	0.11	−0.01	0.17	−0.18	−0.20	−0.02	0.01	0.05
Cubism					1.00	0.12	0.05	0.16	0.04	−0.04	−0.36	−0.31	−0.39
Figurative						1.00	0.51	0.40	−0.08	0.25	0.06	−0.08	0.13
Muralism							1.00	0.44	0.40	0.35	−0.12	−0.13	−0.07
Landscape								1.00	0.18	0.29	0.16	0.05	−0.03
Surrealism									1.00	0.31	0.01	0.02	−0.01
Nineteenth Century										1.00	0.32	0.11	0.00
Avant Garde											1.00	0.03	0.12
S&P 500												1.00	0.49
US Bonds													1.00

Note(s): All the return correlations are for the period 1971–2014, except for the cases of conceptual art (1996–2014) and cubism (1981–2014)
Source(s): Bloomberg and own calculations

The mean annual geometric real return of the Latin American art price index was −0.9% between 1970 and 2014, compared to a positive mean annual real return of 0.8% for the world art market price index during the same period (estimating the average returns for the world art market from the results reported by Li *et al.*, 2022). As commented before, the highest Latin American art style returns were provided by conceptual art (10.33%), cubism (2.02%) and abstract-geometric art (1.97%). Abstract-geometric and conceptual art are post-war and contemporary art movements that, during the sample period, also provided the highest returns at the world level (for example, when compared to the *Abstract Expressionism/Pop/Minimalism and Contemporary art* price index estimated by Li *et al.*, 2022). However, during our sample period, the art price index for *Dada and Surrealism, Futurism and Constructivism, Cubism and Fauvism and Expressionism* estimated by Li *et al.* (2022) was virtually flat on the world art markets. The average annual real returns provided by the Latin American art price indices estimated here and related to that index were: Cubism (2.02%), surrealism (−2.20%) and avant-garde (−3.60%).

The average of the three indices yields an annual real return of −1.26%, which is marginally worse than the Latin American mean annual real return previously reported. These styles also underperformed the *Abstract Expressionism/Pop/Minimalism and Contemporary* art price index estimated by Li *et al.* (2022). This suggests that there may be a positive correlation between some of the Latin American art price style index returns calculated here and their global counterparts. This conclusion is consistent with our earlier quotation from Perez-Barreiro (in Castro, 2013), who contends that certain styles, such as Latin American geometric abstraction, can be classified as belonging to the global abstract-geometric art movement, and argues that some styles, like Latin American geometric abstraction, can be categorized as part of the global abstract-geometric art movement.

According to Schulze (1999), Goodwin (2008), Renneboog and Spaenjers (2012), Steiner *et al.* (2013), Shi *et al.* (2017) and Garay (2018), there is a home bias in art investing since collectors are more likely to buy works by artists who are of the same nationality. Steiner *et al.* (2013) argue that there is a significant home bias in private art collections across all continents and nations, which can be partially explained by very strict import and export regulations. Also, according to Martin (1999, pp. 4–5), who analyzed the Latin American art market: "*The audience at those first (Latin American Art) auctions (late 1970s, early 1980s) tended to sit together in little groups according to nationality. In the greatest numbers were the Mexicans, who bought about 40 percent of the offerings. Another group was the Venezuelans, more "pan-Latin" in that they were interested in art from a variety of countries. For example, a Venezuelan might buy a Mexican painting like a Rivera or a Tamayo (a Mexican artist), but a Mexican would not buy a Reveron (a Venezuelan artist). The remaining Latin Americans bought art from their own country only and failed to see any parallels with the art of close neighbors*." Toward the mid to the late 1980s, and after a few breakthrough museum exhibitions, US collectors also began to acquire the works of important Latin American masters. Some 20 years later, at the time of the publication of her book, Theran admitted that the "home bias" was not as prevalent as before, but that it was still an important force.

In the preceding quotation, Martin (1999) refers to Latin American art auctions that took place in the USA. Since auctions are private markets where buyers' identities are safeguarded, information about the names of the buyers of artwork is virtually nonexistent. As a result, a systematic record of the nationalities of auction bidders cannot be found. It may be inferred that, with the possible exception of some auctions held in New York City and London, the majority of bidders at local auctions worldwide are citizens of the nation where the sale is being held. Since the author was present at those auctions and thus had first-hand knowledge, we think Martin's quote is very relevant. Martin (informally) confirmed that the majority of buyers at the Latin American art auctions held in the USA between the late 1970s and at least until the end of the 1990s were from Latin America. According to Garay (2018), the imposition of extremely high taxes on the import and export of artwork in certain countries exacerbates

the home bias in the art market. Additionally, transporting artworks, particularly sculptures, can be very expensive (see Vosilov, 2015a, b).

A foreigner who buys an artwork in Argentina must navigate a number of challenges, according to Arteaga (2017) (the following translation to English is ours): "*[. . .] 1) request an appraisal from the Banco Ciudad, which takes at least 24 h; 2) once the buyer has this appraisal, he or she has to go to the Department of Visual Arts, which depends on the National Secretariat of Culture, for it to authorize the work to be taken out of the country, a procedure which takes about ten days; 3) if the buyer has already gone back to his or her country of origin or to another country, the gallerist will have to hire a customs broker to send the piece, which costs a minimum of 1,000 dollars, airport to airport, and 3,000 dollars if the final destination is the buyer's home [. . .]. But, in addition, the importation of works of art into our country is taxed at approximately 17.5%*". In the case of Brazil, a 40% tax is levied when importing artworks (Garay, 2018). Finally, well-known artists' creations are frequently designated as national heritage, a practice that makes it extremely difficult to negotiate and export artwork from the respective nations. An example of this is represented by the paintings created by Mexican artist Frida Kahlo (1907–1954), which were declared as part of the national heritage by the Mexican Government in 1984.

According to Angelini *et al.* (2023), an export veto that has been in place in Italy since 1939 may have an impact on prices if an artwork was produced more than 50 years before the date of sale by the artist (who is no longer alive at that time). The authors estimate a model to account for and analyze the impact of the export veto law on prices while controlling for the possibility of sample selection bias using hand-collected data covering all artworks created by non-living modern and contemporary Italian artists and sold at Christie's and Sotheby's in London and Milan between 2012 and 2016. For artworks sold in Italy and those made more than 50 years before the sale date, the effect of rising art prices between the year of creation and the sale date is reversed, according to Angelini *et al.* (2023). Pre-sale estimates likewise exhibit a similar pattern. The authors hypothesize that transaction costs – such as transportation, insurance and storage expenses, which are significant in the art industry – are the primary source of market inefficiencies and that export veto rules may be driven by or combined with a home bias impact.

Nationals are more interested in some artistic genres than foreign collectors (Theran, 1999). For instance, when it comes to landscape paintings, collectors are more likely to value those that feature their own nations and areas than those that feature locations that are unfamiliar to them. Steiner *et al.* (2013) argue that collectors "*. . . are said to have a tendency to acquire art objects related to their own country. This can refer to the objects shown in a piece of art, such as local landscapes or persons dressed according to local custom. Most importantly, many collectors focus on the art produced by a national, regional or local artist. It is argued that the collectors feel a special attachment to, or a special taste for, artists sharing the same culture, history, and nationality and whom they sometimes know personally.*"

For three of Latin America's art style indices that we estimated: Landscapes (−3.37%), *costumbrismo* (0.91%) and nineteenth century art (−1.77%), and perhaps less so in the case of muralism (−0.73%), their inferior geometric average real annual returns during our sample period (on average, −1.24% versus −0.9% for the aggregate Latin American index) is consistent with the higher desirability that locals tend to display for these artistic styles (compared to international collectors). This is in addition to the fact that a number of Latin American nations went through serious economic crises throughout the research period, including the early 1980s debt crisis and hyperinflation occurrences in the same decade. One could argue that a comparatively poorer group of local (Latin American) collectors ended up with lower returns after buying a larger percentage of artworks from artistic styles created by local (Latin American) artists. It would be necessary to estimate art style price indices for every nation to test this hypothesis more precisely. Unfortunately, our inference can only be considered a conjecture because we lack sufficient observations for a number of art style price indices at the national level to perform such an analysis.

When financial analysts break down stocks by different categories (e.g. value versus growth stocks), our method of breaking down a regional art price index (e.g. Latin America) by artistic styles within that region might be comparable to that procedure.

Lastly, two fundamental ideas in finance and marketing are the complementarity and substitutability of goods. Two items are considered complementary when they are typically bought together, but interchangeable when a buyer can swap out one for the other in marketing and retail (Tian *et al.*, 2021). Cultural events have been used to investigate the impacts of complementarity and substitution. Meleddu and Pulina (2024), for instance, evaluate the effects of cultural events in rural communities on the Mediterranean island of Sardinia (Italy) in terms of complementarity and substitution. People who attend an event in one community are more likely to visit another community where a similar event is held, according to the complementarity effect (complementarity effects are likely to arise under a cooperation strategy across communities). Conversely, the substitution effect suggests that there is a trade-off as visiting one group reduces the likelihood of visiting another. When communities compete to achieve a self-advantageous outcome, a substitution effect is likely to occur.

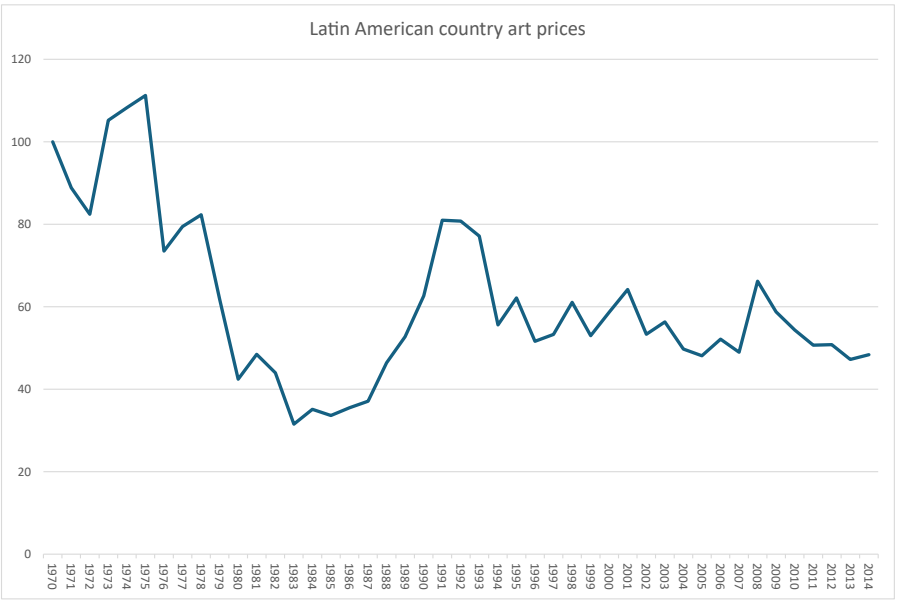
The degree to which the returns of two or more assets move in opposing directions under certain circumstances is referred to as complementarity in the context of portfolio diversification (Garay, 2005; Cote, 2021). As previously mentioned, we discovered a very low average correlation of 0.12 between the eleven artistic styles of Latin American art. We believe this result is extremely significant because it emphasizes the need to break down art price indices by artistic movements or styles in order to enhance portfolio diversification when investing in Latin American art across various artistic styles. We conjecture that the importance of dissecting regional art collecting by artistic movements could also arise in other regions or sub-continents for which auction houses organize sales (e.g. Christie's Indian, Himalayan and Southeast Asian Art and Sotheby's Modern and Contemporary Middle East). Furthermore, we highlight that the average correlation of the Latin American art styles with US stocks and US bonds is even lower, at −0.06 and −0.04, thus suggesting that these assets are complementary.

7. Robustness tests and extensions

Four robustness tests and extensions to our results are presented in this section. First, we estimate art price indices for each Latin American country in the sample (defined according to the nationality of the artists in the sample). Hedonic regressions were used to estimate art price country indices for each group of artists, broken down by nationality. Figure 2 shows our estimated Latin American art price index (Panel A) [8], and the estimated indices for Argentina, Brazil, Chile, Colombia, Cuba, Mexico, Venezuela and other countries (Ecuador, Peru and Uruguay, "EPU" or "OTH") [9], Panel B. The highest cumulated real returns were recorded by Colombia, Chile, EPU and Brazil, respectively. Argentina, Mexico and Cuba exhibited relatively modest returns, and Venezuela had negative cumulated returns. Most of the art price country indices peaked around 1990, a finding that coincides with other evidence on world art prices around that time (see Li *et al.*, 2022). A natural extension to these results would be to estimate artistic style indices within each Latin American country. Unfortunately, as we previously stated, we were unable to do this analysis due to the small sample size that was available in the majority of the countries in our sample [10].

Second, we estimated art price indices for each of the 13 topic/motive variables included in our regressions: *Abstract, animal, landscape, nude, object, people, portrait, self-portrait, religion, still life, untitled, urban* and *others*. Art price indices were estimated using hedonic regressions for each group of artists, categorized by topic. The topics that did better than the rest of the Latin American market were *abstract* and *religion*. In the case of *abstract*, the last 20 years have seen the most overperformance. In keeping with global art markets, the *abstract* topic also saw a sharp rise and fall around 1990. The *landscape* and *urban* topics had a negative

Panel A: Aggregate Latin American country art price index (1970-2014, USD real, 1970 = $100)



Panel B: Eight Latin American country art price indices (1970-2014, USD real, 1970 = $100)

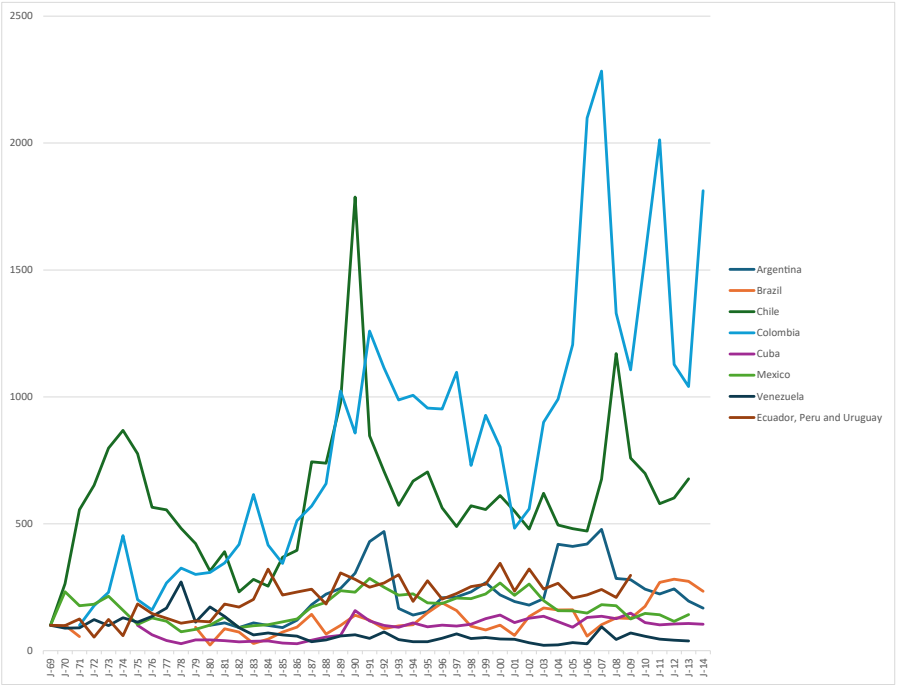
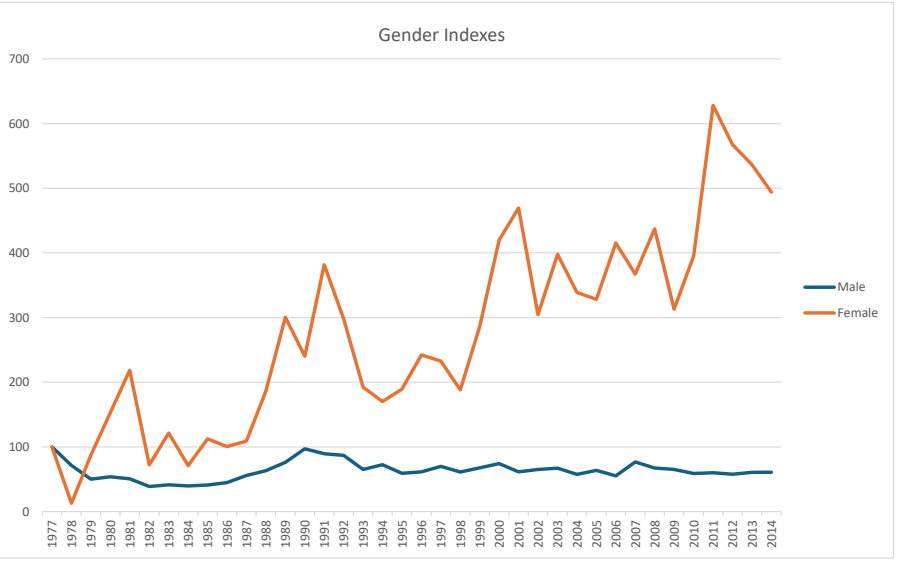


Figure 2. Latin American country art price indices

cumulative return and performed worse than the other indexes. These two topics tend to have a higher percentage of local buyers, as we mentioned in the previous section [11].

Third, we divided our sample by genres and estimated art price indices. Our sample had 17 women artists and 276 man artists. Figure 3 shows the results. The return of the women art price index clearly overperformed that of the male art price index, a finding that is consistent with the positive coefficient on the variable *Women* that we obtained across the regressions shown in the four specifications of the regressions for the aggregate Latin American art market shown in Table A1 (Appendix 2). Furthermore, this overperformance exhibited an upward trend throughout the sample period. Adams *et al.*'s (2021) study found a 42.1% female-women discount in international auction prices for a period that is very similar to ours (1970–2013), contradicting our findings. Additionally, LeBlanc and Sheppard (2021) discovered that female artists received unadjusted discounts of over 40%. However, Latin American women artists in Edwards's (2004) sample had the highest rates of return (32.04%), indicating that his findings were in line with ours.

Our results are also in line with the findings of Cameron *et al.* (2019), who tested for gender impacts in the art market using auction prices for Yale School of Arts graduates. They found that the artworks of female graduates were significantly less likely to be offered at auction after controlling for time effects, base graduation year rate and other variables. However, conditioning on appearing at auction, the average price obtained from women graduates was higher, controlling for a host of hedonic characteristics. According to Bocart *et al.* (2022), a glass ceiling exists for women artists, which is evidenced by their finding that artworks executed by women artists sell for an average premium of 4%. These authors also discovered that there is an abnormal demand for the few works created by a small number of exceptional female artists, which is consistent with the idea that the presence of a few female superstars skews the results. Conversely, earnings are split more equitably for male artists. Future studies should investigate possible causes for Latin American women artists' overperformance in comparison to their male counterparts.



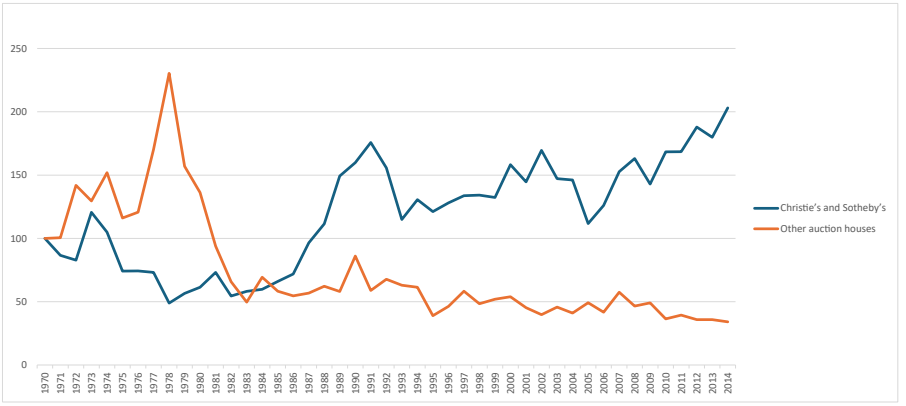
Note(s): 1977–2014, USD real, 1977 = $100

Figure 3. Latin American female and male art price indices

Fourth, we estimated a price index for Latin American artworks sold at Sotheby's and Christie's, and a price index for the remaining lots in the full sample (lots of Latin American artworks at other auction houses, nearly all of them were local auction houses, meaning they were located in the country where the artists' work was sold). Figure 4 shows the evolution of both price indices. The Christie's and Sotheby's index clearly outperformed the local auction houses index, yielding an annual compounded real return of 1.65%, compared to a grim return of −2.23% for the other auction houses index. The results for Christie's and Sotheby's also imply an underperformance of Latin American art when compared to the results reported by Li *et al.* (2022) for the aggregate world art markets. During the same period as ours (1970–2014), these authors found that an index of artworks sold at Christie's and Sotheby's offered an annual compounded real return of 2.37%, whereas an index of local auction houses offered an annual compounded real return of −0.51%. Additionally, since the first art bubble of the late 1980s, the difference between the Christie's and Sotheby's index and the local art markets index has grown, which is consistent with the findings of Li *et al.* (2022). Furthermore, compared to the international art markets (as described in Li *et al.*, 2022), the gap between the Christie's and Sotheby's index and the other auction houses index is considerably worse in the case of the Latin American art markets.

The behavior of the two indices that we calculated for Latin America in the late 1970s and early 1980s shows a difference between the results reported in the two papers. Specifically, the local auction house index experienced a sharp decline, which likely reflected the global recession of that time and the onset of the Latin American debt crisis (Mexico defaulted on its debts in 1982, starting the region's debt crisis). In contrast, the Christie's and Sotheby's indices (ours for Latin American art, and Li *et al.*, 2022 for the global art market) show significant price increases in the late 1980s, peaking around 1990 before plummeting precipitously. They also show accelerated price increases prior to the Global Financial Crisis of 2008–2009, which were followed by significant declines.

Lastly, we also tried to separate the sample into "medium and small" and "big" auction houses. Nonetheless, we found that the corresponding indices exhibited remarkably comparable behavior to the art price indices developed for Christie's, Sotheby's and the other auction houses mentioned in the preceding paragraphs. This is hardly surprising given that, between 1970 and 2014, Christie's and Sotheby's; and the other auction houses differed significantly not just in terms of prestige but also in terms of the total amount of money that was sold at auction or the average price per lot. When it comes to the average price per lot sold, Phillips is the only auction house that can match Christie's and Sotheby's. However, its



Note(s): USD real, 1970 = $100

Figure 4. Latin American art price indices for Christie's and Sotheby's, and for other auction houses

inclusion in the Christie's and Sotheby's index does not alter our primary findings because there were only 349 lots of Latin American art sold at that auction house during the study period (about 1% of all lots sold in our sample).

8. Conclusions, implications and potential future research

We broke down and categorized the 30,288 artworks sold at auction by 293 Latin American artists between 1970 and 2014 into eleven artistic movements or styles. We discovered that there are significant differences in the performance of the various styles' art price indexes that we calculated. In particular, the average correlation between the styles was only 0.12 and occasionally even negative. Given that art price indices have been typically estimated at the regional level (at most by country) in the literature, this finding is significant because it highlights the need of segmenting art price indices by movements or artistic styles in order to optimize the benefits of diversification when purchasing Latin American art across a variety of artistic genres and styles. Our method is comparable to the one used when breaking down stocks and other financial assets into different categories.

Additionally, regression analysis indicated that the area of an artwork, when it is dated and the technique used all affected its price. A painting's topic/motive also influenced its price. Additionally, paintings by deceased artists typically sold for higher prices; the highest prices were recorded for pieces sold in New York City and at Sotheby's and Christie's auctions. Lastly, we found that artworks created by women artists from Latin America yielded greater returns, and that this premium rose over the course of the sample period.

Investors, auction houses, art collectors, legislators and other art market participants can all benefit from our findings. The diverse risk and return characteristics of the various Latin American art forms indicate that each one should be taken into account separately (for instance, the Sharpe ratios of Latin American conceptual art and *costumbrismo* were substantially higher at 0.30 and 0.26, respectively, than those of Latin American landscapes and surrealism, both of which were at −0.03).

Except for a few recent country-level papers, we assert that the task of breaking down regional art price indices by artistic movements has not received attention in the literature to date. The very low average correlation of 0.12 that we discovered for the eleven Latin American artists' styles emphasizes how crucial it is to break down the overall Latin American art price indices by artistic movements or styles to ponder the benefits of portfolio diversification when purchasing works by local artists. More precisely, and as far as we are aware, there are a number of studies on the factors that influence artwork prices at the national or regional level (see, for example, Edwards, 2004; Higgs and Worthington, 2005; Campos and Barbosa, 2009; Kraeussl and Logher, 2010; Garay *et al.*, 2017; Garay, 2021; Li *et al.*, 2022). Few studies have recently examined the factors that influence the prices of artistic movements or styles within a country (Garay, 2021, for the case of Venezuela; Gurjar and Ananthakumar, 2023, for the case of India; Wang, 2023, for the case of China); none have done so within a particular region (for instance, and as we commented before, auction houses have departments and auctions on Scandinavian paintings, African and Oceanic art, and German, Austrian and Central European paintings).

The hedonic price regressions shown in this paper provide investors, collectors, art financing providers and auction houses with helpful information about the price determinants of the styles or artistic movements for a particular region for the first time. In order to determine whether to include artworks from artists from specific regions and working in a particular artistic movement in their global auctions dedicated to that movement, auction houses may find it useful to analyze the price determinants of various artistic movements within a region (e.g. a price index on Latin American surrealism), as well as their correlations with global artistic movements (e.g. a price index on worldwide artists ascribed to surrealism).

The results of our research, particularly those pertaining to the factors influencing art prices by movement within a region, can also be useful to policymakers. Determining the proper tax to be paid on a single work of art or a group of works of art is essential when valuing artwork. The evaluation of artworks is important for collectors and art investors (individuals or art funds). For the purpose of donations, artworks must also be valued. Museums also place a high value on art appraisal because they purchase and occasionally sell artwork at auction.

Our paper has some limitations. First, we could only use art prices from auction sales, which is a restriction that other studies on art prices have to deal with. There are several ways to trade artwork, and auctions are just one of them. The others are art fairs, galleries and dealers. Only databases that contain data on sales made at public auctions can be used to collect information on the prices and characteristics of sold paintings in a systematic manner. Second, we did not have information about the buyers of the artworks in our database (e.g. age, nationality, their genre, etc.), as this information is nonexistent for many of the sales. This is another limitation that other research on the art market is subject to. Third, and as previously mentioned, our results might have been somewhat affected by the likely shifts in artistic movement that some artists may have experienced over the course of their lives. Fourth, and as already commented in the paper, the relatively small number of sales for some artistic styles, especially at the beginning of the sample period, impels us to be cautious about the main conclusion of the paper.

There are three possible extensions to our paper. First, rather than focusing solely on the Latin American art market as a whole, as has been done historically in the literature, it would be helpful to estimate the ideal portfolio allocations according to the style of Latin American art. The ability to allocate funds to both traditional and alternative investments could be taken into account when measuring these portfolio allocations.

Second, it would be most helpful to compare the performance and assessment of each Latin American art style estimated here with that of their international counterparts. Since the indices available in the literature are categorized differently (for instance, nineteenth century art is frequently classified in a more disaggregate way, as romanticism, realism, impressionism, etc.), it would be necessary to estimate international art price style indices for this purpose. We might speculate that some of the most international Latin American art style price indices (like abstract-geometric, which has a large international collector base) would have a stronger correlation with the corresponding international index (an international geometric abstract-geometric art price index) than they would with the other Latin American art price styles. We presented some initial comments in the paper's discussion section that point to a positive correlation between some of the Latin American art price style index returns calculated in this study and their global counterparts.

Third, Christie's, Sotheby's and other auction houses also hold other auctions at the regional level, apart from the Latin American art auction, such as: the African, Oceanic and Pre-Columbian Art, the Islamic and Middle Eastern Art and the South-East Asian art auctions. Therefore, it would be interesting to extend our research to these additional regional auctions in subsequent studies. Finally, we could also test the hypothesis of a masterpiece effect in the Latin American art market (at the aggregate level and across the eleven artistic styles that we used). The proposition that the most expensive paintings perform better than the rest of the market is known as the "masterpiece effect." Pesando (1993) asserts that the theory of efficient markets and the possible existence of a masterpiece effect are incompatible. One can wonder if the underperformance of masterpieces also applies to extremely expensive paintings, given that Pesando's sample only included prints, which typically have lower prices than the rest of the market. Similarly, Pesando (1993), Ginsburgh and Jeanfils (1995), Goetzmann (1996) and Campos and Barbosa (2009) failed to find evidence supporting the masterpiece effect. Given that Campos and Barbosa examined the upscale segment of the Latin American art market, the findings of the latter paper are particularly pertinent to our research. However, Garay (2021) found that the Venezuelan art market had a powerful masterpiece effect.

Notes

1. We use the terms style, artistic style, movement and artistic movement interchangeably throughout the paper.
2. The hedonic pricing model has also been employed to construct price indices for other alternative investments, such as real estate (e.g. Contreras *et al.*, 2014) and collectibles.
3. Prior to 1979, artworks from Latin American artists had already been sold at other auctions held at Sotheby's and Christie's during those years (e.g. at the Modern Paintings, Drawings and Sculpture auction – Sotheby's, and at the Impressionist and Modern Paintings, Drawings – Christie's). Out of the 30,288 lots sold available in our database for the full sample period (1970–2014), 25% belonged to Sotheby's and 24% to Christie's, this is, almost half of all the lots were transacted at either of these two auction houses (49%). In turn, we computed that 46% of the lots were sold at either Christie's or Sotheby's between 1970 and 1978, a percentage that is only slightly lower than the percentage for the full period, and thus we do not expect that this minor difference could have any material effect on our results.
4. Garay *et al.* (2022a) analyze the case of the US artist Jean-Michel Basquiat (1960–1988), who could be ascribed to the street art movement for all his short career (he died at the age of 27). It is within this art style (street art/urban art) that these authors argue that he had three distinct artistic periods, explainable by several reasons. For instance, in his earlier years, Basquiat was not under contract to create several paintings within a strict chronogram, as would happen later in his artistic career. Art critics argue that this had an impact on the appeal of his later paintings. Therefore, Basquiat's paintings from his early years are more expensive, even though they all belonged to the street art movement.
5. Following the literature, we excluded sculptures and other three-dimensional works of art, as these types of work would require a different equation specification (Vosilov, 2015a, b, proposes a methodology to construct a sculpture price index). We also excluded serigraphs, lithographs and other multiple type works of art.
6. Regarding the technique used, oil paintings had the highest average prices across all the artists (oil paintings accounted for 51% of the total sales). This result is in line with the literature (see, for example, Campos and Barbosa, 2009; Renneboog and Spaenjers, 2012, and the review presented in Garay, 2018). The mastery of the use of oil can only be accomplished by the greatest artists, and oil paintings can last longer than artworks executed using other techniques. Also, the highest number of sales were recorded at Sotheby's (25% of the sales on the sample), followed closely by Christie's (24%).
7. In the cases of the conceptual and the cubist art price indices, we were only able to construct their indices starting in 1996 and 1981, respectively, due to the small number of sales for artworks belonging to this style prior to those dates.
8. As expected, the aggregate Latin American art country index is very similar to the aggregate Latin American art style index presented in Figure 1, Panel B.
9. We had to group Ecuador, Peru and Uruguay together, as there were not enough artists to construct an index for each one of those countries.
10. Garay (2021) was able to estimate only three art price indices for the Venezuelan market, given the small sample size of that paper: Abstract, landscape and figurative, finding that the landscape and figurative indices followed a similar downward pattern between 1970 and 2014. However, the abstract index overperformed the other two indices, especially since 1990, when it shut up dramatically, as the Venezuelan artists belonging to this movement (broadly classified as abstract) received increasing international acclaim. On the other hand, and in general, the prices of paintings by landscape and figurative artists, whose market is essentially local, declined sharply, reflecting the deterioration of the Venezuelan economy, especially during the last years of the sample period.
11. We decided not to include the graphs corresponding to each of the 13 topics for ease of exposition. Results are available upon request.

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Appendix 1

Topic/motive dummies

Here, we explain the criteria used to determine the topic/motive of each painting in the sample. Following Renneboog and Spaenjers (2012), we examined the title words of each painting in the sample to allocate works of art to a set of topic dummies. Most of the titles were in Spanish, followed by English, Portuguese and French. Renneboog and Spaenjers (2012) categorized their sample by topic/motive as: People, portrait, self-portrait, landscape, nude, religion, still life and other. We followed a similar criterion and added five new categories, to better reflect the most popular Latin-American topics/motives: People, portrait and self-portrait, landscape, nude, religion, still life, abstract, animals, objects, urban, untitled and other. Following the procedure used by Garay (2021) and De Ridder *et al*. (2024), in several cases we had to analyze the image of a painting to ascertain the respective topic dummy variable.

Appendix 2

Aggregate regressions (all Latin American artistic styles), real dollar prices

Table A1. Aggregate regressions (all Latin American artistic styles), real dollar prices

		(1) Ln(Price)	(2) Ln(Price)	(3) Ln(Price)	(4) Ln(Price)
Area	Ln(area)	0.441***	0.477***	0.520***	0.516***
		(0.00703)	(0.00723)	(0.00687)	(0.00693)
Technique (omitted variable: acrylic)	Charcoal	0.696***	0.999***		
		(0.151)	(0.157)		
	Gouache	0.00633	0.223		
		(0.159)	(0.165)		
	Ink	−0.00563	0.298		
		(0.193)	(0.200)		
	Mixed	0.309***	0.331***		
		(0.0249)	(0.0258)		
	Oil	0.690***	0.819***		
		(0.0205)	(0.0210)		
	Other	0	0		
		(.)	(.)		
	Pastel	0.408***	0.795***		
		(0.104)	(0.108)		
	Pencil	1.299***	1.671***		
		(0.104)	(0.107)		
	Tempera	0.203	0.589		
		(0.366)	(0.380)		
	Watercolor	0.489***	0.585***		
		(0.0555)	(0.0575)		
	Work on paper	0.0463	0.153***		
		(0.0289)	(0.0298)		
Auction house (omitted variable: other houses)	Christie's	1.032***		1.202***	
		(0.0310)		(0.0322)	
	Sotheby's	1.007***		1.193***	
		(0.0319)		(0.0330)	
Topic (omitted variable: other styles)	Abstract	0.856***			1.042***
		(0.0319)			(0.0328)
	Animal	0.117**			0.107**
		(0.0462)			(0.0483)
	Landscape	0.225***			0.241***
		(0.0314)			(0.0328)
	Nude	0.186**			0.137**
		(0.0643)			(0.0673)
	Object	0.212***			0.315***
		(0.0518)			(0.0542)
	People	0.401***			0.413***
		(0.0259)			(0.0271)
	Portrait	0.198***			0.251***
		(0.0427)			(0.0447)
	Religion	0.438***			0.438***
		(0.0419)			(0.0438)
	Self-portrait	0.487***			0.489***
		(0.0836)			(0.0875)
	Still life	0.211***			0.252***
		(0.0357)			(0.0372)
	Untitled	0.0417			−0.0396
		(0.0294)			(0.0307)
	Urban	0.186***			0.260***
		(0.0368)			(0.0385)

(*continued*)

Table A1. Continued

		(1) Ln(Price)	(2) Ln(Price)	(3) Ln(Price)	(4) Ln(Price)
Other characteristics	Signed	−0.249***	−0.277***	−0.254***	−0.201***
		(0.0208)	(0.0216)	(0.0216)	(0.0217)
	Dated	0.268***	0.274***	0.210***	0.245***
		(0.0154)	(0.0160)	(0.0160)	(0.0160)
	New York City	0.654***	1.475***	0.560***	1.575***
		(0.0294)	(0.0172)	(0.0305)	(0.0170)
	Alive	−0.424***	−0.455***	−0.482***	−0.503***
		(0.0174)	(0.0180)	(0.0181)	(0.0181)
	Women	0.524***	0.463***	0.407***	0.570***
		(0.0375)	(0.0388)	(0.0390)	(0.0392)
	_cons	5.887***	6.109***	5.911***	5.599***
		(0.140)	(0.143)	(0.143)	(0.145)
	N				
	r2_o	30,288	30,288	30,288	30,288
	r2_w	0.506	0.461	0.456	0.457
	r2_b	0.496	0.454	0.446	0.447
	r2_a	0.671	0.637	0.581	0.502
	Time fixed effects	0.495	0.453	0.445	0.446
	Style fixed effects	Yes	Yes	Yes	Yes
	Controls	All	Material	Auction House	Topic

Note(s): Standard errors in parentheses
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$
Source(s): Own calculations, based on art market information obtained from Blouin Art

Table A1 presents the results of the regressions for the aggregate sample of Latin American artists, using the following four different specifications: including all the control variables (column 1), excluding auction houses and topics (column 2), excluding techniques and topics (column 3) and excluding techniques and auction houses (column 4). Overall, the prices of paintings increase with the area of the artwork (1% level of significance across all the regressions). This finding has already been reported in the literature (see, for example, Higgs and Worthington, 2005; Campbell, 2008; Taylor and Coleman, 2011; Renneboog and Spaenjers, 2012; and the review presented in Garay, 2018). Paintings executed in oil, watercolor, pastel, pencil, mixed materials and charcoal recorded prices that were higher than acrylic, the technique variable that was omitted from the regression (1% level of significance). The finding for oil is consistent with the existing literature (see, for example, Renneboog and Spaenjers, 2012; Garay, 2021).

Prices of artworks auctioned at Christie's and Sotheby's were significantly higher (at the 1% level) than those sold at other auction houses. This finding is consistent with the review presented in Garay (2018). Christie's and Sotheby's are regarded as the two most reputable auction houses. Works that were dated fetched higher prices (1% level of significance). Results also suggest that works sold in New York City commanded higher prices (1% level of significance). These two results are consistent with the evidence reported by Renneboog and Spaenjers (2012) and Garay (2021), among other authors. Signed works had lower prices. This counterintuitive result has also been found by other authors, such as Campos and Barbosa (2009), for Latin American works sold at Sotheby's, and Garay (2021), for the case of Venezuela. The fact that some auction houses do not offer accurate information on their catalogues regarding whether a work of art is signed or not may perhaps explain this puzzling finding.

Works by artists that have passed away by the time of the auction tend to have higher prices. This finding is consistent with the evidence presented by Higgs and Worthington (2005). Very interestingly, works by women artists tend to fetch higher prices (we discuss this issue with more detail on the robustness and extensions section). Finally, all the painting topics had prices that were significantly higher than those of other styles, the category that was left out of the regression.

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