SEBASTIAN EDWARDS

Presidential Address

The Economics of Latin American Art: Creativity Patterns and Rates of Return

The Latin American countries are famously known for their economic and political travails. Most of the region has a long history of authoritarian politicians, successive coups d'état, galloping inflation, and financial crises. The literature attempting to explain Latin America's political and economic developments is voluminous and covers most angles of the region's social problems.

Politics and economics, however, are not the only aspects of the Latin American nations that have attracted the attention of intellectuals from around the world. Indeed, there has traditionally been keen interest in Latin American literary and artistic accomplishments. For example, the works of novelists Gabriel García Márquez and Mario Vargas Llosa and of poets Pablo Neruda and Octavio Paz have been exhaustively analyzed by critics and academics, as have the works of artists Fernando Botero, Frida Kahlo, and Diego Rivera.

Studies on Latin American economic and artistic developments have proceeded along separate paths. Very few economists, if any, have used economic methods and data to analyze issues related to Latin American literature or arts. And only a few authors—mostly of a Marxist persuasion—have attempted to relate the creative process to the region's economic developments or prospects.

In this paper I use a large data set and economic methods to analyze two rather different aspects of the Latin American arts: namely, the nature of the artistic creative process and Latin American art as an investment. I am

Edwards is with the University of California–Los Angeles. He was president of the Latin American and Caribbean Economics Association (LACEA), 2001–03.

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particularly interested in using data on art auctions to understand the relation between artists' age and the evolution of their work. I also use these data to investigate the historical rates of return obtained by buyers of Latin American art. This research is part of a new and growing field on the economics of art and cultural economics, whose pioneers include Orley Ashenfelter, William Baumol, Richard Caves, Bruno Frey, David Galenson, and Victor Ginsburgh.[1]

Latin American art auctions have a number of advantages as a subject of study. First, regular and dedicated international auctions for Latin American art have been held since 1979. Although Sotheby's and Christie's dominate the market, a number of smaller houses are quite active, in both Europe and the United States. Second, museum activity in this area of collecting is still limited. Thus—in contrast with American artists or the impressionists, for example—the market is not subject to the bias introduced by big museums, which tend to buy and retire some of the best works from the market. Third, the market for many of the most important Latin American artists is also quite liquid, with a large number of works by many of the masters being sold each year.

The rest of the paper is organized as follows. The next section discusses the main issues addressed in this paper and provides a brief review of the literature on the economics of art. I then describe the data set (the artists included in this study are listed in the appendix). A subsequent section is devoted to analyzing the creative process. The point of departure is Galenson's pioneering work on creativity patterns.[2] The paper then addresses Latin American art as an investment. Here, I discuss methodological issues and calculate hedonic price indexes to compute the rates of return of different art portfolios. The concluding section discusses directions for future research.

The Issues and the Literature

Over the years, a small number of economists have analyzed problems related to cultural issues. Some of the most important works in this field

1. The number of authors using data on auctions to analyze the art market is growing rapidly. For a list of contributors to this literature, see the recent review by Ashenfelter and Graddy (2003).

2. Galenson (1997, 2001).

deal with the economics of museums, artistic competitions, artists and stardom, art auctions, investing in the arts, and, more recently, aspects of the creative process. Although the economics of art has never made it into the mainstream, many of the authors involved in it are quite prominent in other fields.[3]

The Creative Process of Artists

In a series of recent works, David Galenson uses data on auction prices and regression techniques to investigate creativity patterns among French and American painters from the nineteenth and twentieth centuries.[4] In particular, Galenson uses these data to determine at what age different artists did their best, or most important, work. In his regression analyses, the dependent variable is the log of the price at which each work was sold; the independent variables include a polynomial on the age at which the work was executed and data on the year the work was sold. Additional covariates include the work's support (canvas, board, or paper) and its size.[5] From this analysis, Galenson is able to trace how prices for a particular artist's work are related to the age at which the artist painted it. Galenson argues that it is possible to distinguish two broad patterns of creativity among artists: experimental and conceptual. Experimental artists peak late in life, doing their best work at a relatively old age. For experimental artists each work is an experiment, and it constitutes a step in a process of trial and error. Experimental artists work slowly, and "rarely make preparatory sketches or plans for a painting."[6] Paul Cezanne is an example of an experimental artist; according to Galenson's analysis, he did his best work in 1906, when he was sixty-seven years old.[7] Conceptual artists work in a very different way from experimental artists. They conceive an idea—an artistic concept—and work on it until they reach the desired result. During

3. Prominent economists who have made their reputation in other fields and have published on the economics of art include Orley Ashenfelter, William Baumol, Richard Caves, and Sherwin Rosen.

4. Galenson (1997, 1999, 2001). See also Galenson and Weinberg (2000); Galenson and Jensen (2002).

5. A number of economists have analyzed creativity within the context of R&D, innovation, and productivity. See, for example, Bartel and Sicherman (1998). Psychologists have had a long interest in understanding the dynamics of creativity; for a recent effort, see Kanazawa (2003).

6. Galenson (2001, p. 50).

7. Galenson (2001).

the creative process, these artists do a number of sketches and studies as they refine their concept and move toward the finished work. Conceptual artists are—or desire to be—sudden innovators, and they tend to do their best work early on in their careers. According to Galenson, Picasso is a very good example of a conceptual artist. Galenson's regression analysis suggests that Picasso did his best work in 1907, when he was twenty-six years old. That was the year he finished *Les Demoiselles d'Avignon*.

In an important paper, Galenson and Weinberg use auction data to analyze creativity among American artists born between 1900 and 1940.[8] They divide their data set into two cohorts: artists born between 1900 and 1920 and those born between 1921 and 1940. They find, based on a number of panel data regressions, that artists belonging to the second cohort tended to do their best work at a younger age than artists born before 1920.[9] For the pre-1920 cohort the estimated peak age (or age when the most important work was executed) is fifty-one years; for the younger (post-1920) artists it is only twenty-nine years of age.

Galenson and Weinberg argue that this significant shift in creativity patterns stemmed mostly from a sudden increase in the demand for contemporary art in the 1950s and 1960s. This change in the demand for works by contemporary American artists—many associated with Abstract Expressionism—was partially the result of the increasing influence of critics such as Clement Greenberg, together with a new structure in the gallery system. More and more galleries were willing to represent and support American artists; some of the most prominent early galleries include those of Peggy Guggenheim, Julien Levy, and Pierre Matisse.[10] Consequently, collectors began spending increasing amounts on contemporary works. In the 1950s and 1960s many young artists discovered that they didn't have to hold other jobs in order to survive. The increasingly dynamic gallery system allowed them to devote all of their time to pursuing their artistic careers.[11]

8. Galenson and Weinberg (2000).

9. Their data set includes 1,109 observations for the pre-1920 cohort and 3,286 observations for the post-1920 cohort.

10. On the Julien Levy gallery, see Levy (1977); Schaffner and Jacobs (1998). On the Pierre Matisse gallery, see Russell (1999), and on the Art of This Century gallery run by Peggy Guggenheim in New York, see Guggenheim (1997).

11. The galleries tended to pay their artists a modest stipend that allowed them to devote themselves fully to their artistic work. The stipend was paid back as their works were sold,

Economists readily accept the proposition that, on average, prices reflect the value and quality of works of art. This view, however, is extremely controversial among the public, in general, and among art historians, in particular. Galenson has made a major effort to show that the quality assessment extracted from a careful analysis of auction prices is not very different from what one obtains from an exhaustive reading of scholarly works by art historians and critics.[12] To do this, Galenson analyzes a large number of scholarly works on art history published in the United States and Europe, in which he focuses on identifying which works from specific artists are reproduced and discussed most often by the experts.[13] He argues that this procedure allows him to extract information on which works and periods in an artist's creative life are considered most important by scholars in the field. His analysis indicates that critics' judgments on artists' best periods and best works are extremely similar—almost identical, in fact—to those obtained from his regression analysis.

Art as an Investment

Because works of art are unique, it is difficult to compare art prices at different points in time. Consequently, measuring the rate of return of art as an investment is nontrivial, and it entails making a serious effort to compare the evolution of prices of very similar objects. Economists have used two basic approaches to address this issue: repeated sales and hedonic prices.

The repeated sales methodology consists of comparing prices of works that have been sold more than once. By doing this, the analyst ensures that the characteristics of the asset—in this case, the work of art—are exactly the same at different points in time. In a pioneering article, Baumol uses this methodology to analyze the rate of return of art generally defined; he concludes that the annual return for the three centuries 1650 to 1960 was

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and in that sense, it was equivalent to a writer's advance. A very small number of Latin American artists who were connected to New York's art world participated in this system, receiving a stipend from their galleries. See Russell (1999) for the case of Cuban painter Wifredo Lam and Pierre Matisse's gallery.

12. Galenson (1997, 1999, 2001).

13. This methodology, which is sometimes called historiometry, has been used by a number of authors to evaluate intellectual accomplishments and eminence. See, for example, Murray (2003).

0.55 percent per year.[14] Pesando calculates the rate of return on modern prints, and Pesando and Shum analyze the case of Picasso prints.[15] More recently, Mei and Moses use the repeated sales technique to estimate rates of return on American paintings, old masters, and impressionists.[16] Although the repeated sales methodology has the advantage of calculating price indexes on the basis of strictly comparable assets, it has the limitations of not using all available information and of averaging across artistic schools and artists in computing a single rate of return.[17] One of the main limitations of this approach is that many works of art are sold only once within the sample period.

The use of hedonic prices allows the researcher to use information on all transactions for which there are data, even if they refer to single sales. The hedonic price methodology was developed in the 1930s as a way of comparing prices of automobiles with different characteristics, and it has been used since to calculate price indexes of heterogeneous commodities, including houses, computers, and works of art. By using hedonic regressions, the researcher is able to construct a price index for the average painting. Average, in this case, is defined by maintaining constant a series of characteristics of the work, including the year it was painted, the support (paper, canvas, or board), the size, and whether the painting was signed by the artist.[18]

Most studies based on hedonic prices calculate the rate of return for very broadly defined portfolios. For example, Anderson; Buelens and Ginsburgh; and Chanel, Gérard-Varet, and Ginsburgh compute the rate of return on paintings in general.[19] Their results yielded an average (real) rate of return ranging from 2.6 to 4.9 percent. Buelens and Ginsburgh use hedonic prices to analyze the rate of return on five painting portfolios: English painters, non-English painters, Dutch painters, Italian painters,

14. Baumol (1986). To exclude speculative transactions, Baumol only includes works that had been sold at least twice, at a minimum interval of twenty years.

15. Pesando (1993); Pesando and Shum (1996).

16. Mei and Moses (2001).

17. This last criticism also applies to analyses based on the hedonic prices approach.

18. On hedonic prices in general, see Berndt (1991) and the bibliography cited therein; on hedonic prices and the computation of price indexes for works of art, see de la Barre, Docclo, and Ginsburgh (1994); Ashenfelter and Graddy (2003); Chanel, Gérard-Varet, and Ginsburgh (1996).

19. Anderson (1974); Buelens and Ginsburgh (1993); Chanel, Gérard-Varet and Ginsburgh (1996).

and impressionists.[20] De la Barre, Docclo, and Ginsburgh look at impressionists, while Czujack calculates the rate of return on Picasso paintings.[21] No researchers have undertaken a hedonic price study—or repeated sales studies, for that matter—on Latin American painters.

From an investment strategy perspective, an important question is the degree of correlation of returns from investing in art and from investing in other assets. More specifically, what is the effect of adding works of art on a portfolio's level of risk? A number of authors address this question, including Goetzmann, Pesando, and Mei and Moses.[22] While some authors analyze the correlation of returns on art portfolios and securities portfolios, others estimate different versions of the capital asset pricing model (CAPM). Most of these studies find that returns on (broadly defined) art portfolios have a low correlation with more traditional investment portfolios comprising marketable securities only.

The Data Set

In this paper I use a large data set on international auctions of Latin American works of art to analyze issues related to the creative process and to investigate the performance of Latin American art as an investment. The total number of observations is 12,690. The data set covers 115 artist from seventeen countries, for the period 1977 to 2001. In addition to data from international auctions, I have assembled biographical data on all 115 Latin American artists included in the sample, including their nationality, date of birth, date of death (when relevant), artistic school, and training. Nationalities are generally given by place of birth; for a few artists, however, nationality is defined by the country where the artist lived and did most of his or her work. For instance, I have classified Remedios Varo as Mexican although she was born in Spain, and English-born Leonora Carrington is similarly classified as Mexican. A complete list of artists is given in the appendix.

The data on auctions are from two sources. For 1977 through 1986, I used *Leonard's Price Index of Latin American Art at Auction;* for

20. Buelens and Ginsburgh (1993).
21. De la Barre, Docclo, and Ginsburgh (1994); Czujack (1997).
22. Goetzmann (1993); Pesando (1993); Mei and Moses (2001).

1987–2001 I used the Artprice CD-ROM.[23] The following data were obtained from these two sources: the price at which the work was sold (excluding the buyer's premium);[24] the year and month of sale; the place of sale; the auction house, classified as Sotheby's (which pioneered Latin American art auctions in 1979), Christie's, or other; the year in which the work was executed (when the work was done over a period of several years, I used the year it was finished); the size of the work, measured as length and width; whether the work in question is a drawing or a painting;[25] whether paintings are on canvas, board, or paper; and whether the artist signed the work in question.

To be included in the data set, an artist must have sold at least thirty-five works at international auctions during the period under study.[26] The mean number of works sold by each artist is 260, and the median is 117. Since not every work auctioned has information on every variable listed above, the number of observations used in the regression analysis was typically of the order of 6,000 to 7,000.

The artists with the largest number of pieces in the data set are Fernando Botero, Leonor Fini, Wifredo Lam, Roberto Matta, Carlos Mérida, René Portocarrero, Diego Rivera, Rufino Tamayo, Francisco Toledo, Joaquín Torres-García, and Francisco Zuñiga. Artists whose works sold in excess of U.S.$1 million are Tarsila do Amaral, Fernando Botero, Frida Kahlo, Wifredo Lam, Roberto Matta, Diego Rivera, Rufino Tamayo, and José María Velasco. Table 1 contains summary data for the most important variables in the data set.

While occasional auctions of works by Mexican artists were held in the United States in the mid-1970s, it was not until 1979 that a system of international auctions was established.[27] The first international auction exclu-

23. Theran (1999); Artprice (2002).

24. The original *Leonard's Index* data include the buyer's premium. To make the data compatible with those obtained from Artprice, I subtracted the premium from prices obtained from *Leonard's Index*.

25. In this paper paintings are defined as work on canvas, board, and paper, including watercolors, gouaches, and pastels.

26. This criterion for inclusion in the data set is completely objective and data driven. Most earlier studies on the economics of art rely on subjective criteria for including certain artists in the sample; for a discussion, see de la Barre, Docclo, and Ginsburgh (1994, p. 149). Since the data set contains relatively few Brazilian artists, I included two artists from that country with a smaller number of works sold at international auctions.

27. Martin (1999).

TABLE 1. Latin American Art Data Set: Summary Statistics, 1978–2000

Summary statistic	*Value*
Number of artists	115
Number of countries	17
Average number of paintings per artist	206
Median number of paintings per artist	117
Average price (in 1995 U.S. dollars)	39,996
Median price (in 1995 U.S. dollars)	10,978
Percentage sold by Sotheby's and Christie's	78.9
Total number of observations	12,690

Source: Data on prices are from Artprice (2002) and Theran (1999). Data on artists' lives and careers were obtained from a variety of sources, including Lucie-Smith (1993), Traba (1994), Theran (1999), Ades (1989), Barnitz (2001), Cardoza y Aragón (1974), and Castedo (1969).

sively dedicated to Latin American art was held at Sotheby's in New York in October of 1979. The total for that sale barely exceeded U.S.$1 million.[28] Christie's launched its own dedicated Latin American auctions in 1981, and since then both major houses have had semiannual auctions (May and October) in New York. In addition, smaller houses schedule regular auctions in other parts of the United States and in Europe.

The fact that it was not until 1979 that periodic and dedicated international auctions were held does not mean, however, that there was no interest in the United States or Europe in Latin American art. Contrary to what Martin asserts, a number of galleries in the United States had shown works by artists from Latin America as early as the 1930s, and many collectors were interested in their work.[29] For instance, Julien Levy exhibited Rufino Tamayo (Mexican) in 1937 and 1938, Frida Kahlo (Mexican) in 1938, Roberto Matta (Chilean) in 1940 and 1943, Jesús Guerrero Galván (Mexican) in 1943, and René Portocarrero (Cuban) in 1945. The Museum of Modern Art in New York had a number of large exhibits devoted to Latin American artists, including a major retrospective for Diego Rivera in 1931 and a large show for Roberto Matta in 1957, which was curated by William Rubin. In 1963 the Guggenheim Museum had a major show on promising young Latin American artists entitled *The Emerging Decade,* and in 1966 the San Francisco Museum of Art held a major exhibit on

28. By comparison, each of the four yearly auctions currently held in New York by the two major houses tends to bring in between U.S.$6 million and U.S.$7 million.

29. Martin (1999).

Latin American art from 1810 to 1960.[30] European galleries and museums also showed Latin American artists throughout the years. Jesús Rafael Soto (Venezuelan) had a one-man show at the Stedelijk Museum in Amsterdam in 1968, Antonio Seguí (Argentine) was shown at the Musée d'Art Moderne de la Ville de Paris in 1979, and Matta had a major retrospective at the Pompidou Center in Paris in 1985.

Patterns of Creativity: Comparing the Periphery and the Center

Scholars have long been interested in understanding patterns of creativity. Why are some people more creative than others? What makes someone a genius? At what age does creativity peak? Is there a common age pattern in creativity? While psychologists have traditionally shown the most interest in understanding the creative process, scholars from other disciplines—including economists—have also dealt with this issue. In particular, a number of economists interested in understanding productivity growth have investigated the relationship between creativity and innovation.[31] As pointed out earlier in this paper, Galenson and also Galenson and Weinberg meticulously analyze the issue of creativity among American and French artists in a series of pioneering contributions that use auction prices of works of art.[32] An earlier article by de la Barre, Docclo, and Ginsburgh also relies on auction prices to analyze at what point in their careers a group of six artists did their best work; the aim of the paper, however, is more limited than that of Galenson and Weinberg, and it does not attempt to relate the age at which artists did their best work with specific creativity patterns.[33]

In this section I use auction data to analyze creativity patterns among Latin American artists. Specifically, I investigate the age at which Latin American artists—both individual artists and groups of artists organized by cohorts—did their most important work, to determine whether the age-

30. The show was entitled *Art of Latin America since Independence*; it was also shown at the Yale University Art Gallery, the Jack S. Blanton Museum of Art at the University of Texas at Austin, the La Jolla Art Museum in southern California, and the Isaac Delgado Museum of Art in New Orleans. See Yale University Art Gallery (1969) for details.

31. See, for example, Griliches (1979, 1994).

32. Galenson (1997, 1999, 2001); Galenson and Weinberg (2000).

33. De la Barre, Docclo, and Ginsburgh (1994). Table 5 of that paper (p. 161) includes date ranges when the six authors in their sample experienced "good and bad spells."

creativity pattern of Latin American artists experienced a shift similar to that observed among U.S. painters. As documented by Galenson and Weinberg, the age at which Latin American painters executed their best work declined significantly for artists born after 1920.[34] The rest of this section proceeds as follows. First, I describe the empirical methodology used to construct indexes of creativity patterns. Second, I present results obtained from the computation of creativity patterns for what I call the big six Latin American artists: Fernando Botero, Frida Kahlo, Wifredo Lam, Roberto Matta, Diego Rivera, and Rufino Tamayo. Third, I estimate age-creativity patterns for Latin American artists in three age cohorts: artists born before 1900, those born between 1900 and 1920; and those born after 1920. Finally, I discuss future work on creativity patterns of Latin American artists.

The Empirical Model

To identify the age at which artists did their best, or most important, work, I estimate regression equations that relate the log of the price of a particular work to a number of characteristics of the work in question, including a polynomial on the age at which the artist executed it.[35] These equations were estimated for the three cohorts mentioned above and for individual artists. An unbalanced panel was used in the case of the three cohorts (pre-1900, 1900–20, and post-1920), and equations of the following type were estimated:

$$\begin{aligned}\ln \mathrm{PRICE}_{jt} = {} & \alpha_1 \mathrm{AGE}_{jt} + \alpha_2 \mathrm{AGE}_{jt}^2 + \alpha_3 \mathrm{AGE}_{jt}^3 + \alpha_4 \mathrm{AGE}_{jt}^4 \\ & + \alpha_5 \ln \mathrm{HEIGHT}_{jt} + \alpha_6 \ln \mathrm{WIDTH}_{jt} + \alpha_7 \mathrm{PAPER}_{jt} \\ & + \alpha_8 \mathrm{SIGNED}_{jt} + \sum \beta_i \mathrm{YEAROFSALE} \\ & + \sum \gamma_i \mathrm{ARTIST} + \sum \sigma_i \mathrm{DECADE} + \varepsilon_{jt}, \end{aligned} \tag{1}$$

34. Galenson and Weinberg (2000). Whether the creativity patterns of Latin American artists changed depends on the evolution of the demand for Latin American art during the second half of the twentieth century. In contrast with the United States, no major influential critics championed the younger regional artists. The possible exception was Marta Traba, an Argentine critic based in Bogotá. Her influence varied across countries, however, because Latin America's artistic world was—and, to a significant degree, continues to be—largely fragmented. Traba died in an airplane accident in 1983. In 1994 the Inter-American Development Bank published her magnificent posthumous work, *Arte de América Latina: 1900–1980.*

35. Following Galenson (1997, 2001); Galenson and Weinberg (2000).

where the subscripts *jt* refer to painting *j* sold in period *t*. $PRICE_{jt}$ is the price expressed in 1995 dollars. AGE is the artist's age when the painting was executed, HEIGHT and WIDTH capture the painting's size. PAPER is a dummy variable that takes a value of 1 if the support is paper and zero otherwise (when the support is canvas, board, or other material). SIGNED is a dummy variable that takes the value of one if the piece has not been signed by the artist, and takes a value of zero if it has been signed. The regressions also include a year-of-sale dummy, an artist dummy, and a decade dummy that captures the possible existence of vintage effects. Finally, ε_{jt} is an error term. As discussed below, I make alternative assumptions regarding this error term in the estimation of the panel regression in equation 1.

The α_1 through α_4 coefficients on the AGE polynomial determine the pattern of creativity, or the relation between the artist's age when the painting was executed and the painting's price. To determine the actual order of the polynomial, I estimated models with polynomials of degrees 2 through 4 and then selected the specification with the highest polynomial for which all estimated coefficients turned out to be significant.

Before I present the results, it is important to discuss some of the limitations of auction prices for this type of analysis (these limitations also apply to the rate-of-return calculations presented later in the paper). Possibly the most important limitation is that the data entail a selection bias. By definition, the analysis includes only those works that have been sold—and excludes those that are "bought in" or are not put on the block. The data set thus tends to exclude prices that are on the upper and lower ends of the distribution. The data set is also subject to an omitted variables problem, in that it does not include some characteristics of the pieces sold such as their specific style or whether they have been included in major exhibitions or retrospectives.[36] Moreover, auction prices exclude transaction costs—both the buyer's premium and the seller's commission. The data set has no direct information on the supply of works of art, such as how many works each artist produced per year or the artist's overall production.[37] And, as argued by Rosen, hedonic price regressions do not cap-

36. The style, however, is closely related to the year in which the piece was painted; the data set includes information on dates when paintings were executed.

37. Including variables related to supply—such as whether the artist is alive or the year of the artist's death—does not change the results in any significant way.

ture demand characteristics; the coefficients obtained from hedonic estimations reflect both demand and supply forces.[38]

Two additional limitations are particularly relevant for the analysis of rates of return presented later. First, auctions are subject to very high transaction costs in the form of buyer's and seller's premiums, transportation costs, and insurance. This is not the case for financial assets. Second, works of art yield a dividend in the form of satisfaction from owning them and being able to enjoy their beauty. The data do not measure this dividend, however. The presence of these limitations does not mean that auction prices have little information value, but simply that results obtained using these data should be interpreted carefully.

Individual Creativity Patterns of the Big Six

I estimated equations like equation 1 for the six individual artists who are usually considered the most important in Latin America: Fernando Botero, Frida Kahlo, Wifredo Lam, Roberto Matta, Diego Rivera, and Rufino Tamayo. With the exception of Botero, who was born in 1932, all were born before 1920—and Rivera and Tamayo were born before 1900. Table 2 summarizes some basic data for each of them, including the number of paintings in the sample, the average and median sale prices (in 1995 U.S. dollars), the percentage of paintings executed on paper, and the order of the estimated polynomial (for date of birth and death—if relevant—see the appendix).

Figure 1 presents the estimated price–age profiles for these six artists. The data on the horizontal axes refer to the artist's age; those on the vertical axes are on the log of prices and are not comparable across artists. The age-price patterns are quite different for the big six artists. For Mexicans Diego Rivera and Rufino Tamayo and for Cuban Wifredo Lam, the schedule is first rising with age, until it reaches a peak; it then declines into a trough, which is followed by a new ascending segment. For Tamayo and Lam, the recovery continues until the time of their death. For Rivera, on the other hand, there is a plateau at sixty-five years of age, followed by a new decline; according to these calculations his latest works are the least important of his overall oeuvre. Although these three artists did their most valuable work at different ages, they all did it during the first half of their careers: Rivera's best work was done when he was thirty-one years old;

38. Rosen (1974).

TABLE 2. Summary Statistics for the Big Six Artists

Artist	*Number of paintings*	*Average price (1995 U.S. dollars)*	*Median price (1995 U.S. dollars)*	*Percentage of paintings on paper*	*Degree of polynomial*
Fernando Botero	374	138,507	93,018	11.8	3
Frida Kahlo	40	576,702	149,391	14.6	4
Wifredo Lam	495	69,417	22,397	26.1	3
Roberto Matta	436	81,294	34,565	11.5	3
Diego Rivera	471	108,392	27,932	52.4	4
Rufino Tamayo	386	177,208	80,134	31.6	3

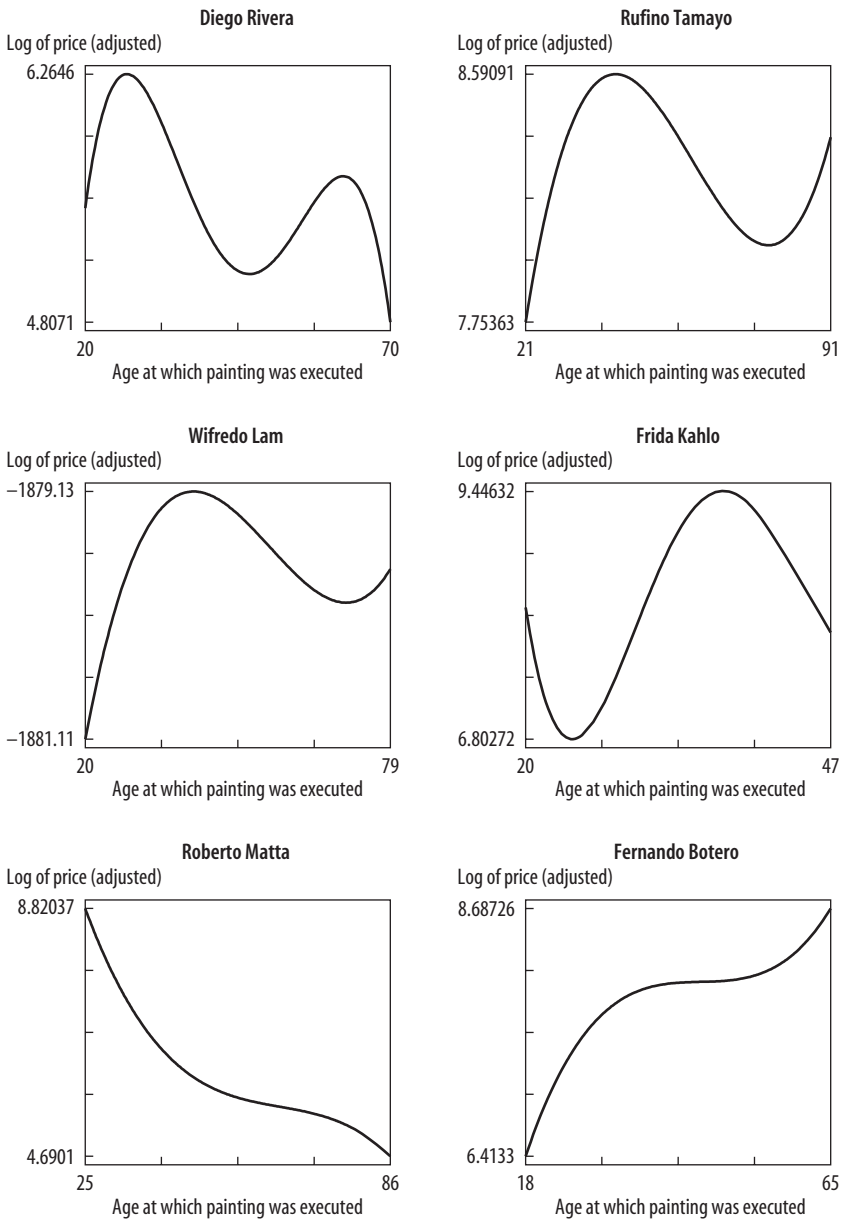
Source: Artprice (2002); Theran (1999).

Tamayo did his most valuable work at forty-four years old; and Lam did his best work when he was thirty-nine years old, which corresponds approximately to the time when he painted his famous piece, *The Jungle*, currently in the permanent collection of the Museum of Modern Art. All in all, then, these three artists peaked quite early in their careers and, according to the discussion above, can be classified as conceptual artists.

Mexican artist Frida Kahlo did her most valuable work at thirty-eight years old (in 1945), when she painted some of her most famous self-portraits, including *Self-Portrait with Small Monkey*, and some of her best-known allegorical paintings, such as *Tree of Hope* and *The Broken Column*. In contrast with Rivera, Tamayo, and Lam, Kahlo's creativity profile in figure 1 shows that the (log of the) price of her work declined initially. As may be seen, her creativity schedule reaches its lowest level when she is in her mid-20s. From that point on, the value of her work—as captured by auction prices data—increases steadily, until it reaches a maximum at age thirty-eight. Indeed, because her work peaked at such a relatively young age, it is possible to classify her as a conceptual artist.

A simple visual comparison of the age-price profiles for Chilean Roberto Matta and Colombian Fernando Botero shows that these are very different—both from the previous group of artists and from each other—and they are quite extreme. While Matta's work exhibits a continuous decline in prices with age, Botero shows a continuous increase in prices with age. The relationship is not linear for either artist, but the direction is unmistakable in both cases, and the maxima are at the extremes—at a very early age for Matta and at a fairly old age for Botero. Matta thus appears to be a quintessential case of a conceptual artist; Botero, on the other hand, is a prime example of an experimental artist.

F I G U R E 1 . Creativity Patterns of the Big Six



According to these results, Matta's most important work was done in the late 1930s and very early 1940s, when he painted his psychological morphologies and psychological inscapes, and before he introduced the robotic-type characters that began to populate his work in the late 1940s and 1950s.[39] The pattern of strict decline that is evident in Matta's creativity pattern is quite unusual: only five of the thirty-one American artists analyzed by Galenson show this kind of behavior.[40] Even artists such as Jasper Johns, whose pattern exhibits an overall decline through age, have marked inflections and local maxima at an older age.[41] The case of Botero is almost exactly the opposite of that of Matta. His early works—including his still lifes and early portraits—are less important than his very recent works, in which the motifs revolve around Colombian society and people and in which a local narrative always lies at the center of the composition. As depicted in figure 1, Botero is a very clear case of an experimental artist. Indeed, in a recent interview he acknowledges that his work process does not include developing a series of preparatory sketches.[42]

Age Cohorts and Creativity Patterns of Latin American Artists

To investigate whether creativity patterns of Latin American artists have changed through time, I estimated a series of panel regressions based on equation 1 for three age cohorts.[43] The first cohort corresponds to artists born before 1900. Most—but not all—of these artists' work is traditional, and it follows the European artistic canon. Many artists in this group produced landscapes that capture the big vistas of their countries, as well as marine subjects. José María Velasco, from Mexico, is perhaps the most prominent of this traditional group. A second group of pre-1900 artists ventured into the late nineteenth and early twentieth century European trends, including impressionism, fauvism, and cubism. Consider, for example, the early work by Diego Rivera. Finally, a small number of pre-

39. He sometimes referred to these creatures as the Great Transparents, an allusion to characters that appear in some of André Breton's writings.

40. Galenson (1997).

41. Galenson's results indicate that Johns did his best work at the very beginning of his career, when he was twenty-five years old, but he exhibits a local maxima in his mid-fifties.

42. Serena (2003).

43. In addition to the three cohorts discussed here, I used alternative breakpoints to define the age groups. The results obtained, however, were very similar to those reported in this subsection.

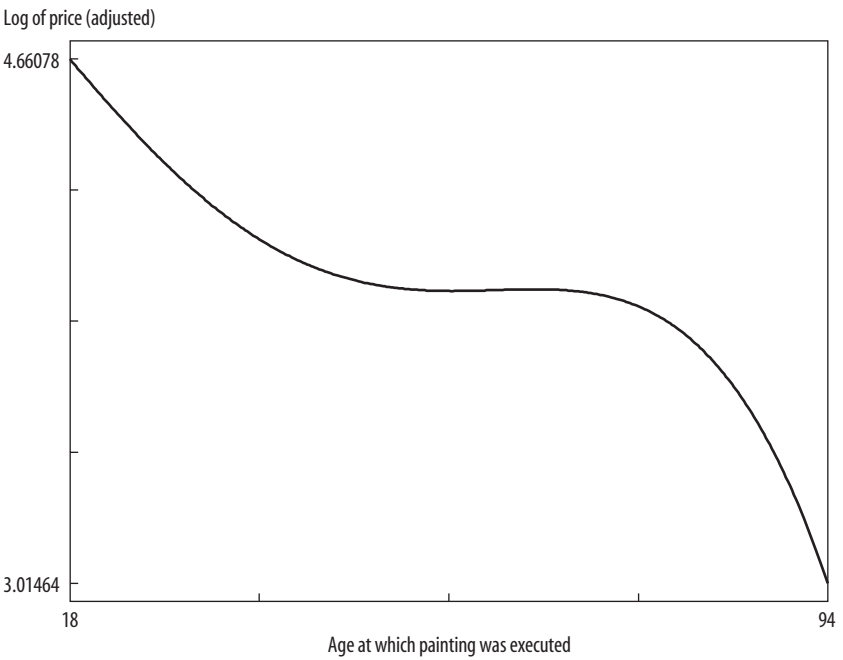
1900 artists developed very personal styles that, in some cases, became quintessential representatives of Latin American art. This is the case of the work by Rufino Tamayo, Joaquín Torres-García, Carlos Mérida, and the Mexican muralists (namely, Diego Rivera, David Siqueiros, and José Clemente Orozco).

The second cohort corresponds to artists born between 1900 and 1920, and it includes a wide variety of artists. Some of these have become iconic, including Frida Kahlo and Wifredo Lam. Some of the better known artists in this group spent much of their careers away from their home country. Wifredo Lam, for example, lived mostly in France, except for a period in the 1940s and 1950s. Roberto Matta left his native Chile in the mid-1930s and he only returned to it briefly after a prolonged period of time. Matta's estrangement from his native country was so deep that some critics have referred to him as a French artist, born in Chile.[44] In terms of artistic schools, this cohort exhibits a wide variety that includes abstract expressionism, figurative, surrealism, and constructivism.

The third cohort corresponds to artists born after 1920. As in the previous two cases, this group includes representatives from a variety of artistic schools. There are some very prominent artists, such as Fernando Botero, Francisco Toledo, and Claudio Bravo, and some that have played an important conceptual and intellectual role in the development of Latin American art. This is the case of Mexican José Luis Cuevas, who in 1956 wrote a manifesto criticizing the then-predominant trend in Mexico of painting almost exclusively nationalistic—and revolutionary—scenes. In many ways, Cuevas's manifesto, which was entitled *The Cactus Curtain*, marked the beginning of the so-called neofiguration school among Mexican and Latin American artists. Cuevas's manifesto provided a new intellectual framework for the very old debate among Latin American artists: should their work attempt to capture the region's realities, or should it be more universal in its themes and subjects? Most scholars and art historians that deal with Latin American art discuss this issue, in one way or another. The history of the region's art movements is replete with manifestos that address questions such as the nature of Latin American art and the artist's relation to Latin America's social realities. Some intellectuals have argued that Latin American artists should aim at producing a synthesis between European esthetic and artistic principles (especially mod-

44. Fletcher (1992).

FIGURE 2. Creativity Pattern for the Pre-1900 Cohort

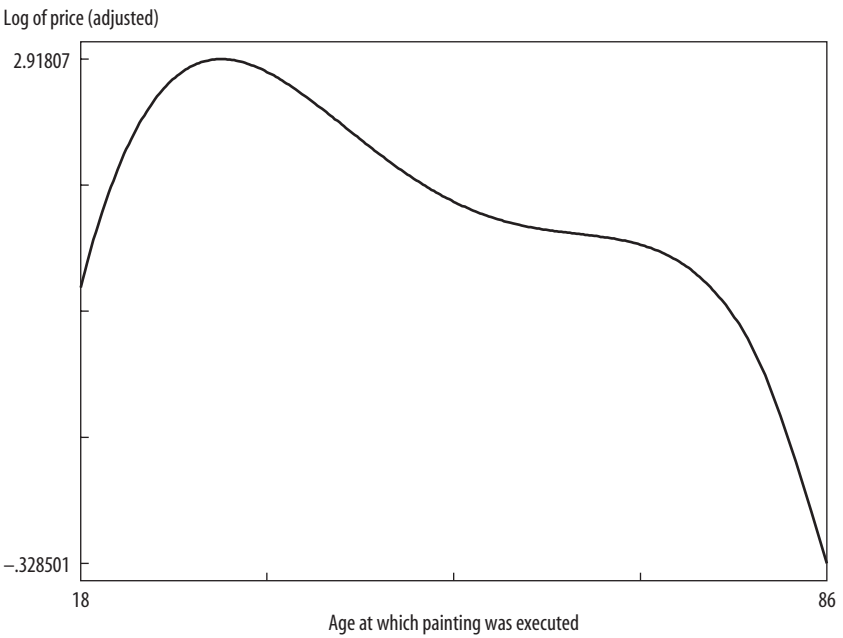


ernism) and regional realities. Possibly the most influential movement along these lines was *antropofagia,* developed by Oswald de Andrade and Tarsila do Amaral in Brazil. The legendary *Week of Modern Art* that took place on 13–18 February 1922 in São Paulo gave the movement a great thrust. In 1924—the same year André Breton published his *Surrealist Manifesto*—Oswald de Andrade published his *Manifiesto da Poesía Pau-Brasil.*

Figures 2 through 4 present the creativity patterns estimated for the three cohorts. These figures were constructed from regression results estimated using weighted least squares, where the total number of works sold at auction by each artist are used as weights.[45] The results show very different patterns across the three age groups. The relation between the age at

45. I also estimated regressions using feasible least squares (FLS) and unweighted least squares. The results were very similar to those discussed here.

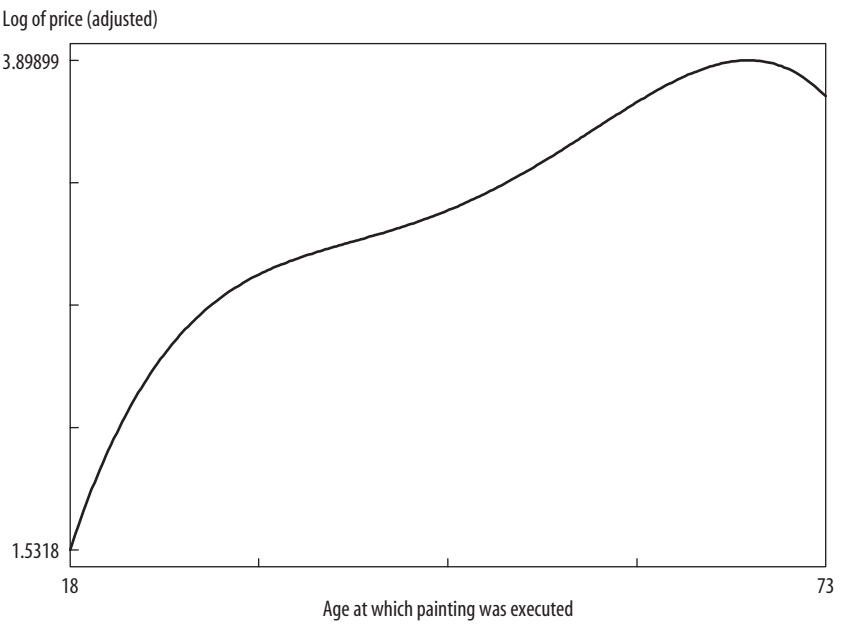
FIGURE 3. Creativity Pattern for the 1900–20 Cohort



which the work was executed and prices exhibits an overall declining trend for the pre-1900 and 1900–20 cohorts. This suggests that conceptual artists dominated these two cohorts. The patterns are different for these two groups, however. While the maximum occurs at a very early age for the pre-1900 cohort (twenty-three years old), the maximum takes place at thirty-one years of age for the 1900–20 cohort. Furthermore, the group born before 1900 displays a decline in prices between ages twenty-three and forty-one; the schedule then exhibits a plateau of sorts through the age of sixty-five. Finally, for the cohort born after 1920, the price schedule is clearly upward sloping. The maximum is achieved at sixty-six years of age, indicating that experimental artists dominate this cohort.

These results suggest that Latin American artists, as a group, moved from peaking early—a characteristic associated with conceptual artists—to peaking later and later in their careers. Formal tests for the equality of the coefficients of the age variables confirmed that these cohorts of artists

FIGURE 4. Creativity Pattern for the Post-1920 Cohort



have distinct creativity profiles. The *F* test for the hypothesis of equality of coefficients between the pre-1900 and the 1900–20 cohort has a value of 34.7; the *F* test for the comparison between the pre-1900 and the post-1920 group is 129.4; and the *F* test for equality of coefficients for the 1900–20 and post-1920 groups is 73.7. These results are very different from what Galenson finds for American and French artists, for whom the age at which the most important work was done moved progressively earlier in time. Artists born after 1920 did their best work at a significantly younger age than their older colleagues.[46]

The results for Latin American artists presented in figures 2 through 4 imply that creativity profiles in the "periphery" have not changed through time in the same way they changed in the "center." This is not really surprising, as the conditions under which the arts have developed in Latin America have been very different from those in the United States. Indeed, the three factors identified by Galenson and Weinberg as being

46. Galenson (2001); Galenson and Weinberg (2000).

behind the shift in creativity patterns in the United States—that is, increased demand by collectors for innovative works, the influence of prominent critics, and a new gallery system—have been largely absent in Latin America.[47]

In contrast with the United States, the history of Latin American art in the second half of the twentieth century has not been the history of artists searching for new ways of innovating. The greatest effort to innovate came early in the twentieth century, when Latin American artists struggled to find a voice of their own; this effort was mostly undertaken by artists born before 1920. During the early decades of the last century, there was great interest in defining a type of art that could genuinely be considered Latin American. This movement was largely based on the idea that the region's artists should find a synthesis between traditional precepts—mostly coming from Europe—and the local realities. This search for a Latin American identity resulted in major artistic innovations in the 1920s, 1930s, and 1940s, including the muralist movement in Mexico, *antropofagia* in Brazil, and the constructivist school in the Río de la Plata. Young artists who were willing to break with the academician heritage of Europe were at the forefront of this trend, and they created new ideas of what Latin American artists should do. In Galenson's terms, these artists were largely conceptual. They developed an artistic concept of what was genuinely Latin American, and, although they were by no means a homogeneous group, they had in common the development of new visions that integrated artistic trends coming from the center and the periphery. Tarsila do Amaral, Dr. Atl, Frida Kahlo, Wifredo Lam, Diego Rivera, and Rufino Tamayo are representatives of this group of artists who helped define Latin American art.

By the mid-twentieth century, a well-defined Latin American artistic voice had been established, and collectors began looking for variations of this perspective. As a result, younger artists began to improve on this now well-accepted approach, and they began experimenting with newer perspectives within the Latin American voice. This resulted in a new creativity pattern for younger artists; they did their best work at a considerably older age than their "rupturist" older colleagues. Osvaldo Guayasamín and Fernando Botero are emblematic of this trend. To be sure, many artists in the second half of the twentieth century tried to break away from the Latin

47. Galenson and Weinberg (2000).

American canon developed during the previous decade, in particular with what they considered to be an excessive representation of political—in the case of Mexico, revolutionary—themes. However, even these rebellious artists, such as José Luis Cuevas and his neofiguration colleagues, continued to rely on technique and craftsmanship—two characteristics associated with experimental artists. To this day, collectors of Latin American art favor works with a strong regional content, based on distinctive Latin American voice and imagery. As documented by Traba, the Latin American public continued to prefer more traditional works throughout the 1950s, 1960s, and 1970s, in contrast with the case of the United States.[48] Only a very small group of adventurous collectors pursued and purchased works by artists who were pushing the global creative envelope.[49]

Artistic Creativity in Latin America: Directions for Future Work

Future work in this area should go beyond using the year of birth as the main organizing principle for analyzing patterns of creativity among Latin American artists. Indeed, the distinction between artists born before and after 1920 appears not to be very relevant, since the 1950s and 1960s were not characterized by any major changes in the demand for Latin American art or in the Latin American gallery system. More promising lines of exploration are related to other characteristics of artists, including the following three.

—The artistic (or esthetic) inclinations of the artist in question. In particular, comparing traditional (or indigenist) artists whose themes are unequivocally Latin American with universalist artists is a promising avenue. The Mexican muralists, Tarsila do Amaral, Fernando Botero, and Francisco Zuñiga, are representatives of the traditionalist-indigenist trend; examples of universalists include José Luis Cuevas, Gunther Gerszo, and Roberto Matta.

—Artists with and without formal training abroad. This type of comparison will provide an indication of the effects of artistic and cultural exchanges on creativity patterns. It will also shed some light on whether those who are trained abroad experience a noticeable learning curve.

48. Traba (1994).

49. By this I don't mean to say that there were no true innovators among the younger artists. Jesús Rafael Soto is an important example. The arguments made above refer to the general trend among Latin American artists of different generations.

—Female artists versus male artists. Psychologists have traditionally argued that the creative pattern is different for men and women. In the case of Latin American art, this comparison is particularly interesting in light of the tremendous posthumous success of Mexican artist Frida Kahlo.

Preliminary results suggest that artists who have received formal training abroad tend to do their most important works at an older age than those with no foreign training. While the former group achieves its maximum (conditional) price of paintings at thirty-seven years of age, the latter group reaches the maximum at twenty-three years of age. These results also suggest that artists with formal training experience a very steep learning curve: between the ages of eighteen and thirty-seven, the price of their paintings increases very sharply with every additional year. With respect to universalists and traditionalists, a preliminary regression analysis indicates that the former group's most valuable work was done at age thirty-four. Traditionalists, on the other hand, exhibit a virtual plateau, and their highest-priced work is done between the ages of twenty-three and sixty-two years of age.

Latin American Art as an Investment

In this section I use the data set described above to analyze Latin American art as an investment. As pointed out earlier in this paper, the literature employs two basic approaches to analyze the rate of return of works of art: the repeated sales approach and the hedonic prices approach. This paper is based on hedonic prices, as this technique allows me to use all the available information and thus to obtain more precise estimates of the coefficients of interest.[50] More specifically, I use panel regressions to compute hedonic price indexes for thirteen different national portfolios. I then use these national results to calculate the rate of return (and standard deviation) of an overall portfolio of Latin American works of art. I finally analyze whether adding Latin American art reduces the overall level of risk of an international portfolio composed of marketable securities.

50. Chanel, Gérard-Varet, and Ginsburgh (1996) compare the estimates obtained using the repeated sales and hedonic prices techniques. They find that while the coefficients obtained using both methods are unbiased, those obtained using hedonic prices have a significantly smaller standard deviation.

Examples of individual paintings that were sold more that once during the period under study include Mexican artist Gunther Gerszo's *Rojo, Azul y Amarillo,* executed in 1966, which was sold in 1985 for U.S.$12,000 and in 1992 for U.S.$38,000. Wifredo Lam's 1943 painting, *La Mañana Verde*, was sold in 1987 for U.S.$380,000, in 1990 for U.S.$550,000, and in 1992 for U.S.$870,000. Finally, Roberto Matta's 1942 canvas, *The Disasters of Mysticism*, was sold in 1983 for U.S.$160,000, in 1990 for U.S.$1.12 million, and in 1999 for U.S.$2.4 million.

Hedonic Price Indexes and Rates of Return on National Portfolios

The first step in the computation of rates of return consists of calculating a hedonic price index for a comparable average work of art. I used panel data to estimate equations of the following type for artists from thirteen different countries:[51]

$$\begin{aligned}\ln \mathrm{PRICE}_{jt} = {} & \sum \beta_i \mathrm{YEAROFSALE} + \alpha_1 \mathrm{AGE}_{jt} + \alpha_2 \mathrm{AGE}_{jt}^2 + \alpha_3 \mathrm{AGE}_{jt}^3 \\ & + \alpha_4 \mathrm{AGE}_{jt}^4 + \alpha_5 \ln \mathrm{HEIGHT}_{jt} + \alpha_6 \ln \mathrm{WIDTH}_{jt} \\ & + \alpha_7 \mathrm{PAPER}_{jt} + \alpha_8 \mathrm{SIGNED}_{jt} \\ & + \sum \gamma_i \mathrm{ARTIST} + \sum \sigma_i \mathrm{DECADE} + \varepsilon_{jt}. \end{aligned} \tag{2}$$

The estimated β_i coefficients are the variables of interest. They provide information on the evolution through time of the log of the price of a work of art, maintaining constant (at their mean values) the characteristics of all other covariates included in the hedonic regression 2. To construct the hedonic price index, the β_i coefficient for the first year in the sample (1980 in this case) is normalized to one, and the rest of the coefficients are adjusted accordingly.[52] I used this procedure to construct hedonic price indexes for the following national portfolios: Argentina, Brazil,

51. I estimated hedonic price indexes for twelve national portfolios and for a thirteenth portfolio that included artists from all other nationalities. See figure 5 for details on the national portfolios.

52. This procedure assumes that the coefficients of the other covariates in equation 2 are stable through time. This need not be the case, however. It is possible to compute hedonic prices assuming that these coefficients change through time. This requires using some type of chain rule that links the different panel regressions for different periods.

Chile, Colombia, Cuba, Ecuador, Guatemala, Haiti, Mexico, Peru, Uruguay, Venezuela, and all other nationalities. I then used these data on national hedonic price indexes to compute rates of return of an equal-value Latin American portfolio composed of all thirteen individual national portfolios.[53]

The results obtained from this exercise are summarized in figures 5 through 7. Figure 5 presents the evolution of the hedonic price indexes for selected national portfolios. Figure 6 shows the evolution of the real rate of return in U.S. dollars of the equal-value overall—or total—portfolio of Latin American works of art from 1981 through 2000. Figure 7 depicts the rates of return and standard deviation for the thirteen national portfolios, as well as for the overall portfolio. As may be seen from figure 6, annual (real) rates of return for the overall Latin American art portfolio were always positive and quite high between 1982 and 1990. Between 1991 and 2000, the rates of return were significantly lower, more volatile, and often negative. For the total portfolio and the complete 1981–2000 period, the overall mean annual (real) return was a hefty 9 percent, with a standard deviation of 12.6 percent.[54] To put these figures in perspective, during the same period the following real rates of return (and standard deviations) were observed in selected emerging stock markets: Argentina: 3.8 percent (standard deviation of 57.3 percent); Brazil: 7.3 percent (54.0 percent); Chile: 7.3 percent (41.0 percent); South Korea: 1.1 percent (55.0 percent); and Mexico: 5.5 percent (56.0 percent).

Figure 6 shows that, as expected, there is a positive relation between mean returns and risk. National portfolios with higher mean returns for the period under study tend to be precisely those with a higher standard deviation of returns. This figure also shows that, as expected, the diversified overall portfolio has a much lower degree of risk than the individual national portfolios. The important issue of the correlation between the rate of return of the Latin American portfolios and overall diversified world portfolios is addressed below.

53. Using equal weights across national portfolios for calculating the total or overall portfolio's rate of return may provide figures that are not very realistic, because the prices of individual pieces vary widely for each of the national portfolios. For instance, average prices are quite high for the case of Chile, and relatively low for the case of Haiti.

54. These figures are gross; they do not net out transaction costs.

FIGURE 5. Hedonic Price Indexes for Selected Portfolios

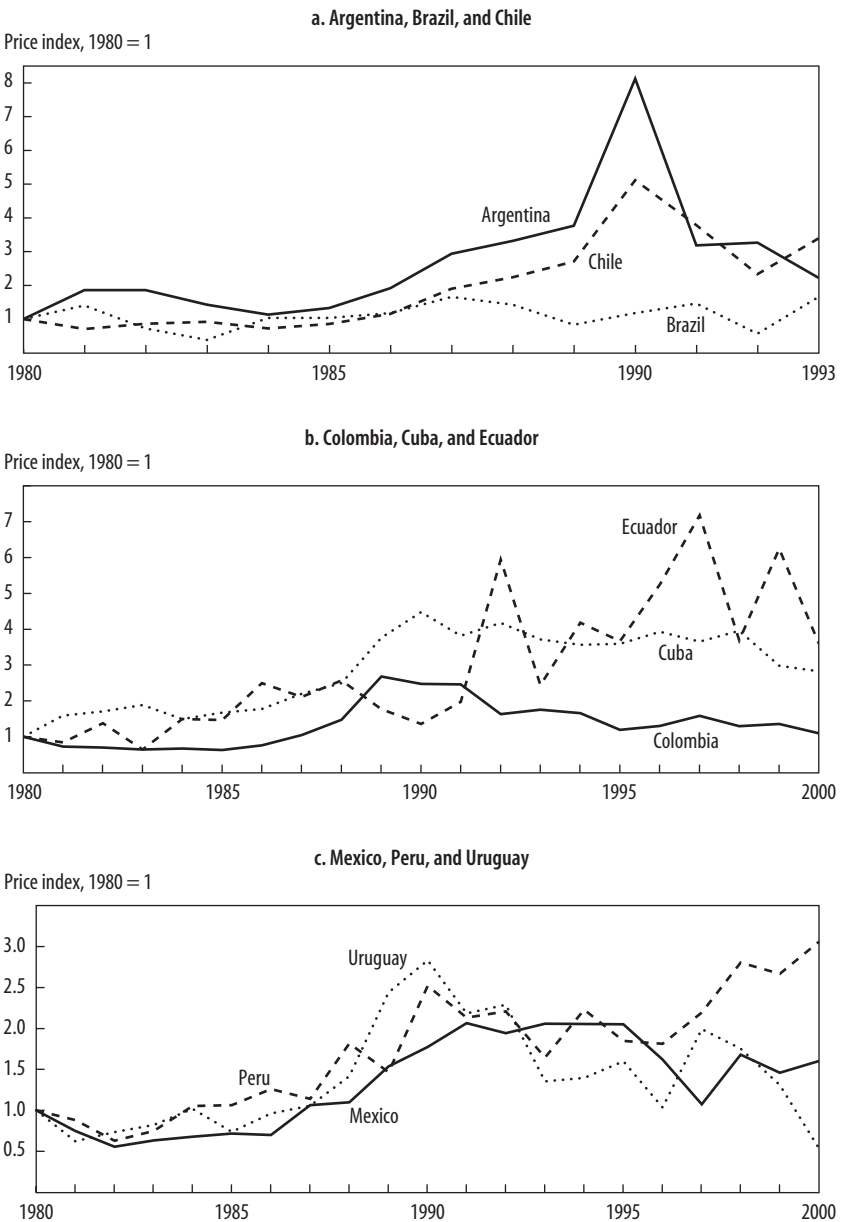


FIGURE 6. Annual Real Rates of Return on Overall Portfolio of Latin American Artists

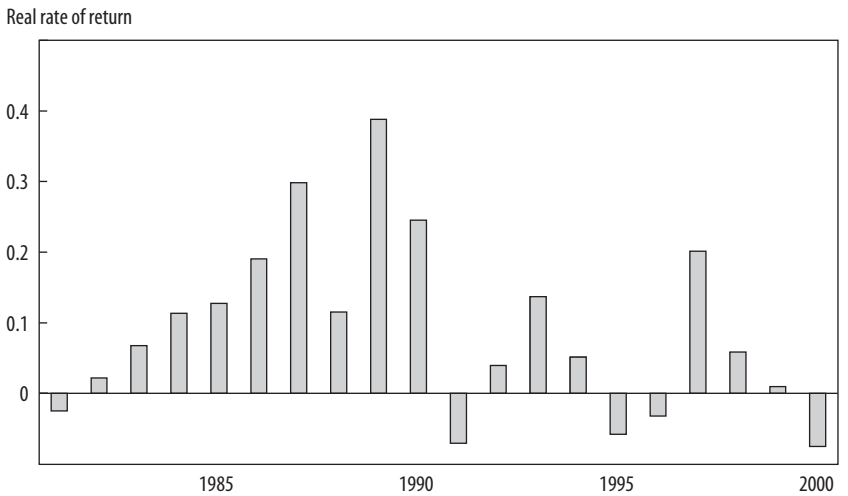
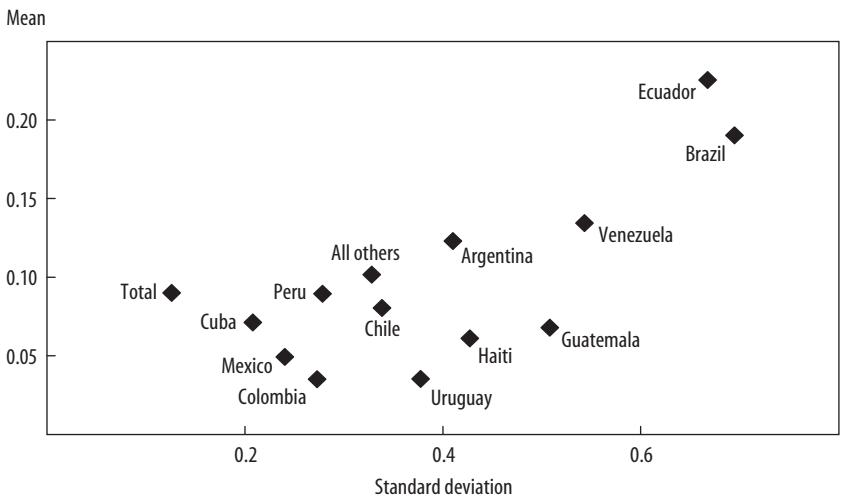


FIGURE 7. Risk and Return on National Artist's Portfolios, 1980–2000



Thematic and Other Portfolios

In addition to the national portfolios discussed above, I also computed hedonic price indexes, rates of return, and standard deviations for a number of thematic portfolios, including portfolios for (a) traditionalist artists (or artists whose motives and imagery are quintessentially Latin American); (b) universalist artists; (c) older artists (born before 1900); (d) intermediate artists (born between 1900 and 1920); (e) younger artists (born after 1920); (f) artists with formal training abroad; (g) artists with no formal training abroad; and (h) women artists, excluding Frida Kahlo. The results obtained are presented in table 3; they may be summarized as follows:

—Traditionalist portfolios had a higher mean rate of return than universalists;

—A portfolio of younger artists (born after 1920) had higher rates of return than portfolios of older artists, together with a lower standard deviation;

—Artists with formal training abroad had a slightly higher rate of return and slightly lower standard deviation than portfolios of artists without such training; and

—A portfolio of women artists (excluding Frida Kahlo) had by far the highest annual mean rate of return—a quite remarkable 32.04 percent—but it also had a significantly higher standard deviation than the other portfolios.

The Correlation between the Rate of Return on Latin American Art and International Portfolios

An important issue for anyone developing an investment strategy is the degree of correlation between returns on art and returns on other assets. The critical point involves identifying the effect of adding works of art to a diversified portfolio on the portfolio's level of risk. Some authors address this question by analyzing the correlation of returns on art portfolios and securities portfolios; others estimate different versions of the capital asset pricing model (CAPM). Most of these studies find that the correlation between returns on art portfolios and returns on more traditional investment portfolios made up of marketable securities only is low.

TABLE 3. Rates of Return for Portfolios of Latin American Art, 1981–2000 and 1985–2000

	1981–2000		*1985–2000*	
Portfolio	*Mean*	*Standard deviation*	*Mean*	*Standard deviation*
Traditionalists	0.0583	0.2190	0.0811	0.2140
Universalists	0.0396	0.1909	0.0584	0.1934
Older artists (pre-1900)	0.0390	0.2071	0.0566	0.2001
Intermediate artists (1900–20)	0.0412	0.2144	0.0644	0.2015
Younger artists (post-1920)	0.0554	0.1826	0.0735	0.1877
Foreign training	0.0525	0.2053	0.0726	0.2105
No foreign training	0.0491	0.2166	0.0618	0.2128
Women (except Kahlo)	0.3205	1.4000	0.2324	0.5010

Source: Author's calculations.

I deal with this issue by estimating equations for the well-known CAPM, which measures the degree of correlation of a particular asset (or asset class) and the market return. The standard CAPM equation regresses the excess return of the asset in question—measured as the difference between its return and that of a risk-free asset—and the excess market return:

$$R_t^{LA} - r_t^F = \alpha + \beta(R_t^M - r_t^F) + \varepsilon_t, \tag{3}$$

where R_t^{LA} is the rate of return of the portfolio of Latin American artists, r_t^F is the return on the risk-free asset, R_t^M is the rate of return on the market portfolio, and ε_t is a white-noise error term. The coefficient β measures the degree of correlation between the art portfolio and the market portfolio. The lower the estimated beta, the lower the correlation between the two portfolios and the more attractive the Latin American portfolio will be. The reason for this is that low-beta portfolios (or securities) tend to lower the risk of a particular portfolio. I estimated equations similar to equation 3 for a number of Latin American art portfolios. I used the three-month real return on U.S. Treasury bills as a measure of the risk-free rate; the (real) return on the Morgan Stanley Capital International (MSCI) World portfolio as a measure of the market return; and the overall Latin American portfolio as a measure of R_t^{LA}. The following

result was obtained when equation 3 was estimated using ordinary least squares:

$$R_t^{LA} - r_t^F = \underset{(1.82)}{0.0548} + \underset{(0.58)}{0.108}(R_t^M - r_t^F),$$

where the Durbin-Watson statistic is 1.4 and the number of observations is twenty. The estimated beta coefficient is significantly lower than one and not significantly different from zero. This indicates that adding Latin American art will reduce the riskiness of an international portfolio composed of equities.

Concluding Remarks

In this paper I have used data on auction prices to investigate two aspects of the economics of Latin American art: the relationship between age and creativity and Latin American art as an investment. The data set has more than 12,600 observations, and it includes prices and other characteristics on sales of works by 115 artists from seventeen countries during the period 1978–2001.

The analysis on creativity suggests that Latin American artists have followed very different patterns than American artists. Strong evidence suggests that American artists born after 1920 did their best work at an earlier age than their colleagues born before 1920. Exactly the opposite is true for the case of Latin America: the results reported in this paper suggest that Latin American artists born after 1920 did their best work at a significantly older age than their colleagues from earlier cohorts. This difference in creativity patterns among these two groups of artists reflects differences in the market for American and Latin American art. Galenson and Weinberg argue that the demand for contemporary art increased significantly in the United States in the 1950s and 1960s.[55] Following the lead of influential critics, a new generation of American collectors began purchasing more and more works by American painters. These collectors put a big premium on innovation, thus pushing artists to do significant work at a relatively young age. The evolution of Latin American art has been very different.

55. Galenson and Weinberg (2000).

During the first half of the twentieth century, Latin American artists struggled to find a voice of their own. This effort was largely based on the idea that Latin American artists should find a synthesis between traditional precepts—mostly coming from Europe—and the region's realities. This search for a Latin American identity resulted in major artistic innovations in the region in the 1920s, 1930s, and 1940s. Young artists who were willing to break with the academician heritage of Europe undertook most of these innovations, including Tarsila do Amaral, Dr. Atl, Frida Kahlo, Wifredo Lam, Diego Rivera, and Rufino Tamayo. These revolutionary artists did their best—and most innovative—work early on in their careers. By the 1950s, a well-defined Latin American artistic voice had been established, and collectors and critics began looking for variants of this perspective. This led younger artists to strive to improve on the well-accepted approach. Improvement came slowly and took time. This resulted in a new creativity pattern for younger artists, such as Osvaldo Guayasamín and Fernando Botero, who did their best work at a considerably older age than their older colleagues. Many artists in the second half of the twentieth century tried to break away from the established Latin American style, but most collectors continued to favor works with a strong regional content based on distinctive Latin American imagery.

The analysis of art as an investment was based on the estimation of hedonic price indexes. It indicates that Latin American art has had a relatively high rate of return—much higher than that of other types of paintings. That return comes at the cost of high volatility, however. The standard deviations of national portfolios of Latin American art are quite high. The analysis presented here suggests that a thematic portfolio of female artists (excluding Frida Kahlo) had the highest rate of return in the sample; it also had the highest standard deviation. From an investment strategy perspective, an important question involves the effect of adding works of art to a diversified portfolio. The results reported in this paper indicate that returns on Latin American art have a very low degree of correlation—that is, a very low beta—with an international portfolio composed of equities. This means that adding Latin American art will lower the overall risk of an international portfolio.

APPENDIX. Artists in Data Set

Artist	*Country*	*Dates*	*Artist*	*Country*	*Dates*
Abela, Eduardo	Cuba	1889–1965	Escobar, Marisol	Venezuela	1930–
Alfonzo, Carlos	Cuba	1950–1991	Fernández, Agustín	Cuba	1928–
Anguiano, Raúl	Mexico	1915–	Figari, Pedro	Uruguay	1861–1938
Atl, Dr. (Gerardo Murillo)	Mexico	1875–1964	Fini, Leonor	Argentina	1908–96
Bazile, Castera	Haiti	1923–66	Gerszo, Gunther	Mexico	1915–2002
Bermudez, Cundo	Cuba	1914–	Gourgue, Jacques Enguerrand	Haiti	1930–98
Berni, Antonio	Argentina	1905–81			
Bigaud, Wilson	Haiti	1931–	Grau, Enrique	Colombia	1920–
Bonevardi, Marcelo	Argentina	1929–94	Greenwood, Marion	U.S., Mexico	1909–70
Botello, Angel	Spain, Puerto Rico	1913–86	Guayasamín, Osvaldo	Ecuador	1919–99
			Guerrero Galván, Jesús	Mexico	1910–73
Botero, Fernando	Colombia	1932–	Hernández, Daniel	Peru	1856–1932
Bravo, Claudio	Chile	1936–	Hoyos, Ana Mercedes	Colombia	1942–
Bush, Norton	U.S., Panama	1834–94	Hyppolite, Hector	Haiti	1894–1948
Cantú, Federico	Mexico	1908–89	Iturria, Ignacio de	Uruguay	1949–
Cardenas, Agustín	Cuba	1927–2001	Izquierdo, María	Mexico	1902–55
Carreno, Mario	Cuba, Chile	1913–99	Kahlo, Frida	Mexico	1907–54
Carrington, Leonora	U.K., Mexico	1917–	Kingman, Eduardo	Ecuador	1913–97
Castañeda, Alfredo	Mexico	1938–	Kuitca, Guillermo	Argentina	1961–
Castañeda, Felipe	Mexico	1933–	Lam, Wifredo	Cuba	1902–82
Charlot, Jean	France, Mexico	1898–1979	Larraz, Julio	Mexico	1944–
Clausell, Joaquín	Mexico	1866–1935	Laville, Helene Joy	Mexico	1923–
Colunga, Alejandro	Mexico	1948–	Leuus, Jesús	Mexico	1931–
Coronel, Pedro	Mexico	1923–85	Lohr, August	Germany, Mexico	1843–1919
Coronel, Rafael	Mexico	1932–			
Corzas, Francisco	Mexico	1936–83	Lynch, Albert	Peru	1851–1930
Costa, Olga	Germany, Mexico	1913–93	Mabe, Manabu	Brazil	1924–
			Manuel, Victor	Cuba	1897–1969
Covarrubias, Miguel	Mexico	1904–57	Martínez, Ricardo	Mexico	1918–
Cuevas, José Luis	Mexico	1934–	Matta, Roberto	Chile	1911–2002
Del Campo, Federico	Peru	1837–1923	Mérida, Carlos	Guatemala, Mexico	1891–1984
De Szyszlo, Fernando	Peru	1925–			
Di Cavalcanti, Emiliano	Brazil	1897–1976	Meza, Guillermo	Mexico	1917–97
Do Amaral, Tarsila	Brazil	1886–1971	Mijares, José	Cuba	1922–
Duffaut, Prefete	Haiti	1923–	Molina Campos, Florencio	Argentina	1891–1959
Enríquez, Carlos	Cuba	1901–1957			

APPENDIX. Artists in Data Set (*continued*)

Artist	*Country*	*Dates*	*Artist*	*Country*	*Dates*
Montenegro, Roberto	Mexico	ca. 1881–1968	Ramos Martínez, Alfredo	Mexico	1871–1946
Montoya, Gustavo	Mexico	1905–2003			
Morales, Armando	Nicaragua	1927–	Rentería Rocha, Horacio	Mexico	1912–72
Morales, Darío	Colombia	1944–88			
Nierman, Leonardo	Mexico	1932–	Reverón, Armando	Venezuela	1889–1954
Normil, André	Haiti	1934–	Rivera, Diego	Mexico	1886–1957
Obin, Philomé	Haiti	1892–1986	Rodo Boulanger, Graciela	Bolivia	1935–
Obin, Seneque	Haiti	1893–1977			
Obregón, Alejandro	Colombia	1920–92	Rodríguez, Mariano	Cuba	1912–90
O'Gorman, Juan	Mexico	1905–82	Rojas, Elmar	Guatemala	1939–
O'Higgins, Pablo	Mexico	1904–83	Romañach, Leopoldo	Cuba	1862–1951
Oiticica, Hélio	Brazil	1937–80	Sánchez, Emilio	Cuba	1921–
Orozco, José Clemente	Mexico	1883–1949	Sánchez, Tomás	Colombia	1948–
			Seguí, Antonio	Argentina	1934–
Orozco Romero, Carlos	Mexico	1898–1984	Siqueiros, David Alfaro	Mexico	1896–1974
Pelaez, Amelia	Cuba	1896–1968	Soriano, Juan	Mexico	1920–
Penalba, Alicia	Argentina	1918–82	Soto, Jesús Rafael	Venezuela	1923–
Pettoruti, Emilio	Argentina	1892–1971	Tamayo, Rufino	Mexico	1899–1991
Pierre, André	Haiti	1914–79	Toledo, Francisco	Mexico	1940–
Poleo, Héctor	Venezuela	1918–89	Torres-García, Joaquín	Uruguay	1874–1949
Ponce de León, Fidelio	Cuba	1895–1949			
			Varela, Abigail	Venezuela	1948–
Portinari, Cándido	Brazil	1903–62	Varo, Remedios	Spain, Mexico	1908–63
Portocarrero, René	Cuba	1912–86	Velasco, José María	Mexico	1840–1912
Quinquela Martín, Benito	Argentina	1890–1977	Velásquez, José Antonio	Honduras	1906–83
Ramos, Domingo	Cuba	1894–1967	Villacres, César A.	Mexico	1880–?
Ramos Catalán, Benito	Mexico	ca. 1890–?	Zárraga, Angel	Mexico	1886–1946
			Zuñiga, Francisco	Costa Rica	1912–98

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