

## FACTORS AFFECTING THE PRICES OF ARTWORKS IN THE POLISH AUCTION MARKET<sup>1</sup>

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**Abstract:** The turbulences of the contemporary financial markets lead to exploration of alternative assets such as art. The aim of this pilot study is to investigate for the price determinants of paintings on the Polish art market using transaction data from art auctions involving the works of 50 most significant Polish artists. The study proved that some factors are statistically significant for the price of paintings; these include the subject (i.e., self-portrait), the age and size of the artwork, and the reputation of the artist.

**Keywords:** art market, determinants of prices, hedonic regression

### INTRODUCTION

The turbulences characterizing contemporary financial markets lead to exploration of assets providing diversification of the portfolio, hence the increased interest in alternative investments such as art. Successful investment in art requires extensive knowledge of factors affecting price value of art. One of them relate to the work of art and include its features, i.e.: the subject of the painting (abstract painting, figures, portraits, self-portraits, nude portraits, genre painting, still life, marines, landscapes, cityscapes, nocturnes, historic/religious/battle painting), art movement (i.e. Romanticism, Positivism and Historicism, Modernism, Ecole de Paris, Modern and Contemporary Art), the size of painting, auction house that traded the painting and age (productivity profile). Factors related to the artist

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include reputation (the number of paintings sold and maximum price) and date of birth.

There is a broad discussion in the world literature concerning various aspects of art as an investment. The aim of this article is the attempt to fill the gap as far as Polish art market is concerned. Using transaction data from art auctions for the works of 50 most significant (in terms of number and value of paintings sold in Polish auction houses in the years 2007 – 2010) Polish artists the paper discusses the relationship between the price of a painting and above-mentioned factors.

The present article addresses the question of whether some subjects are appreciated more than others by the buyers of paintings in the auction market. Are changes in the content and form of artworks across the various art movements reflected in the prices of paintings? Is it true that price is proportional to the area of the artwork? Does a painter's reputation influence the price of his or her paintings? The objective of the paper is to identify statistical relationships between the prices of paintings and the factors affecting the price.

#### PRICE DETERMINANTS: THE SUBJECT OF THE PAINTING AND ART MOVEMENT

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The prices of artworks are influenced by many factors, namely [Mamarbachi et al. 2008]:

- features of the artwork – its subject, technique, size, authenticity, rarity, state of preservation, genre, provenance, wall power, etc.;
- features related to the artist – career stage, reputation, market value of his or her other paintings and the frequency of their appearance in the market, other information concerning the life and work of the artist;
- properties of the art market – type (primary or secondary), supply of paintings and demand for them as well as the relationship between supply and demand, the functioning of market institutions (art dealers, galleries, museums, auction houses, and certifying institutions) [Towse 2011];
- macroeconomic factors – state of the economy, economic cycles affecting the art market, legal regulations concerning trade in works of art, etc.

The price determinants analyzed in the present paper include: the subject of the painting, art movement, the size of the painting (area), and the market value of the artists' other works. The last of the above-mentioned factors is linked to another feature of the painter, that is, his or her reputation. It was assumed that if a painter is highly popular, then the prestige connected to owning his or her artworks would result in higher market prices.

Painting subjects include the following categories:

- abstract paintings – do not represent any real objects – form and color are used without any restraints;
- religious paintings – depict divine figures, scenes from the Old and New Testament, images of saints, and events from the history and life of the Church;
- mythological paintings – usually based on themes from Greek and Roman mythology;
- historical paintings – represent scenes and figures from the past or contemporary events;
- battle scenes – often treated as a subgenre of historical painting, depict wars, battles, camp life, marching armies, etc.;
- landscapes – portray the beauty of nature – there are several types of landscape painting: cityscapes – represent small fragments of a city (e.g., quaint streets, squares, greens, etc.) or panoramic views with landmark buildings, nocturnes – landscapes or cityscapes depicted at night, marine scenes – views of the sea, seashore, ports, or sea battles, landscapes with staffage – landscapes with human or animal figures,
- genre paintings – based on observation of real life, portray ordinary, anonymous persons engaged in everyday activities, customs, rituals, work, or resting; the images are realistic without embellishment;
- still life paintings – compositions made up of small, still, usually inanimate objects such as flowers, books, vessels, weapons, musical instruments, candles, food products (e.g., fruits, vegetables, fish, bread, etc.), dead animals, skulls;
- portraits – of importance here are the appearance and personality of the depicted person (in an individual portrait) or persons (in a collective portrait); the different types of portraits include: head portraits, busts, full-figure or knee-length portraits, and self-portraits;
- nudes – portray naked persons (typically females).

Each of the above-mentioned subject categories has evolved over time, which can be seen by every potential investor researching the paintings available in the market. The subject of a painting is frequently connected to the way it is expressed (its form, or, the art movement). Therefore, the review of the subjects of paintings in the Polish auction market presented below includes a brief discussion of the major art movements. The following classification of movements has been adopted for the needs of the present paper: Romanticism, Positivism and Historicism, Modernism, École de Paris, Colorism, Constructivism, Formism, Expressionism, Cubism, and others.

The paintings traded in the Polish auction market were produced by 19th and 20th century Polish artists. The development of the fine arts in Poland was closely linked to the turbulent history of the country [Dobrowolski 1989]. The stormy years immediately following the partitioning of Poland, changes of borders, and uprisings gave rise to a mission, undertaken by Romantic painters, which was to

cultivate a sense of patriotism by emphasizing the beauty of Polish landscapes and showing the heroic past of the nation in military art, images of insurrection and Sarmatian themes, and portraits of knights, hetmans, and war heroes. In the second part of the 19th century, the Spring of Nations and the January Uprising failed to bring freedom for Poland. The policy of eradicating Polish national identity pursued by Russia and Prussia left an imprint on the fine arts, which continued the mission of nurturing a patriotic sentiment. Polish art aspired to present contemporary events and the nation's drama. The art movements that arose in Poland at that time are termed Positivism and Historicism. Artists focused on the grand moments in Polish history, battles, Sarmatian motives, as well as genre scenes with historical costumes. Nature and landscapes were recognized as attractive subjects of artworks [Małkowska 2010], which led to a number of paintings depicting the beautiful lands of Polesie, Podole, Ukraine, etc. Many artworks also represented genre scenes located in the countryside and Warsaw, nocturnes (night scenes), and peripheral city districts strewn with wooden shacks and littered with junk.

The art of the years 1890–1914 is subsumed under the term of Modernism. It was characterized by a plethora of art currents and opposition to the 19th century realist and naturalist conventions with their emphasis on imitating reality. Historical art was rejected on the grounds that an artwork should not be utilitarian or didactic and that it must not convey any particular message to the viewer; rather, it should communicate through purely artistic means alone. This thesis constitutes one of the foundations of modern art theory [Dobrowolski 1989] and explains the prolific development of forms and means of artistic expression, which obviously influenced the perception of paintings. Instead of cultivating the national spirit, artists started to search for ways to represent the notions of life and death, as well as mental states such as suffering, despair, or madness. Works of art conveyed sensual and expressive visions of dangers looming over the Western civilization, a sense of helplessness and a crisis of values. Still life images with a focus on color as a means of expression were appreciated. Landscapes and nature images (flowers and trees), genre scenes, portraits (sometimes with symbolic staffage) were shown in a new, impressionist manner (aimed at capturing a fleeting moment) or with an expressionist touch (deforming reality).

École de Paris consisted of a group of mostly Jewish artists living in Montparnasse in the years 1905–1930 who did not embrace any particular artistic program, form a movement, or hold joint exhibitions. They did not intend to represent nature accurately, but rather transform it in such a way as to best communicate the underlying essence of the depicted objects. Thus, they produced landscapes, cityscapes, nudes, and portraits inspired by new currents, such as Colorism, Fauvism, Cubism, Primitivism, and Surrealism.

Following Poland regaining independence, the country saw the rise of many artistic groups which formulated innovative programs. That period also abounded in individual artists who did not yield to group ideas. The dynamism of modernity

was reflected in surrealist paintings full of visions, deformed monsters, and hallucinations refuting the logical foundations of reality. There was a departure from figurative painting, as artists embraced abstract art with geometric compositions made up of planes and lines. Different conventions were combined in portraits, genre scenes showing unreal, cubist, geometric creatures, genre paintings showing Jews, symbolic compositions, and landscapes. Rural children, nymphs, and dancers were portrayed in colorful paintings vibrant with energy. Artists painted a white Zakopane as well as grotesque, expressionist portraits, subdued cityscapes of industrial districts, as well as Hutsul and emigration landscapes. As the previous ideals lost their validity, new artworks conveyed a sense of longing for color. This gave rise to Colorism, which came to be an important trend in Polish painting. Popular still life images were full of hot and cold hues, but did not necessarily offer faithful representations, as artists found color-based esthetic effects to be more important than likeness. However, many painters remained outside the main art movements, painting Napoleonic battles, horses, landscapes, cityscapes, urban genre paintings, as well as portraits of Jews and still life images.

After World War II, new ideas emerged in the isolated countries of the Eastern Bloc during periods of political thaw. Following socialist realism (which was enforced by public administration in 1949–1956), new movements exploded. Artists created metaphorical paintings depicting scenes from everyday life, as well as evocative and uncompromising images of senselessness, suffering, and death, often subjected to expressionist deformation; they created fantastic figures and visions of disaster in phosphorescent colors, and produced abstract paintings containing objects-signs, elements giving an impression of movement or pulsating light. Genre scenes, landscapes, and still life pictures were freely and strongly transformed. The interpretation of abstract paintings is not obvious: e.g., a red rectangular plane with hardly visible green dots framed with a white-green line may be taken to represent an affirmation of the order of the world as red and green are opposites in the color spectrum [Włodarczyk 2010].

## LITERATURE DATA

The literature concerning the studied problem is so rich that its review might be the subject of a separate paper. A particularly well-researched issue is the productivity profile, that is, the relationship between the stage in the artistic development of a painter and the price of their paintings. A connection has been found between the prices of paintings and the artist's age for painters living in different periods in the French market [Galenson 1999], international market [Lanyon, Smith 1999], American market [Galenson, Weinberg 2000], Polish market [Lucińska 2012], and South-American market [Edwards 2004]. In most cases, a statistical correlation has been identified between price and artist age such that painters born earlier (e.g., prior to 1850 in France) created their greatest and most expensive works towards the end of their careers, while those born later – at

an early stage in their careers. This is explained by the theory of innovation in art [Galenson 2004], according to which a radically innovative approach to art has become a prerequisite for attaining maximum economic gains [Galenson 2008]. The factors influencing the prices of paintings in the Canadian market include [Hodgson 2011]: year of sale (the macroeconomic recession had a major influence on the art market), auction house (prices were found to be highly correlated with auction houses), medium (the most expensive being oil paintings on canvas), subject (the greatest influence was exerted by genre scenes and still life), and height and width (strong influence). The painter's reputation and the provenance of the painting (previously sold on auction; owned by a private or public collector, gallery, or museum; appeared in prestigious exhibitions; present in major art publications and catalogs) were found to strongly impact the price of the painting [Campos, Barbosa 2008]. Furthermore, a significant correlation between prices and the medium and surface area has been identified [e.g., Burton, Jacobsen 1999; Kompa, Witkowska 2013]. Some authors have also explored the relationship between auction prices and time of the day, finding that prices in subsequent auctions in a sequence decreased (the so-called "declining price anomaly" or "the afternoon effect") [Ashenfelter, Graddy 2003].

## STUDY SAMPLE

The study sample was constructed based on 10,400 auction records obtained from the art websites [www.artinfo.pl](http://www.artinfo.pl) and [www.agraart.pl](http://www.agraart.pl). These records concern paintings produced by 2,938 artists and sold in the years 2007–2010 on auctions held by 41 auction houses and foundations. These records were manually entered into a data set. Painters were qualified to the study sample based on the criterion of their influence on the art market, which was measured by the product of the number and value of works sold [Lucinska, 2011].

As a result, the study sample consists of auction records concerning the sale of paintings by fifty painters, listed in Annex 1. Each record in the set of selected data contains the following information about the painting: the symbol and name of the painter, ln of price (in PLN), the maximum price commanded by any painting by the painter, ln of surface area (in cm<sup>2</sup>), date of painting (this information was available only for dated artworks), subject, and year of sale. The initial number of 1,989 auction records for the selected 50 painters was reduced to a final total of 1,074 (Annex 1) as 915 records did not provide information about the date of the painting, which made it impossible to calculate its age.

## RESEARCH METHOD

The essential characteristic of a work of art is its uniqueness, hence a lack of comparability of paintings and the difficulty of determining which feature of a painting affects its price. The price of an artwork depends on many factors, some of

them are of quantitative type, among others: the surface, frequency of the appearance of a given painter in the market (reflecting popularity measured by the number of his or her artworks), the maximum price of an artwork by the painter (reflecting his or her reputation), the age of painting et al. Other price determinants are of qualitative type, for instance: the subject of the painting or the art movement the artwork represents. Of course, it is very difficult to determine quantitatively the influence of these factors on the prices of the artworks. Therefore, there is a need to use the hedonic OLS regression method to include these characteristics in the regression model as explanatory variables and to estimate parameters of hedonic regression model i.e. the implicit prices for artistic characteristic of paintings. This approach takes the assumption that the hedonic prices of the artworks are the prices of a set of different attributes that bear some quality. Qualitative variables take a form of binary variables with the value of 1 or 0 to indicate whether given price determinant is present or not.

The characteristics of paintings were estimated econometrically. Due to the pilot character of the research, multiple regression with backward elimination was used. A model containing many potential explanatory variables was constructed, and then those variables that turned out not to be statistically significant were eliminated.

Initially, one of the variables was a dummy variable – a 13-element vector in which the value “1” was assigned respectively to one of the following subjects:

- landscape,
- landscape with staffage,
- cityscape,
- marine scene,
- portrait,
- self-portrait,
- nude,
- religious painting,
- genre painting,
- historical painting,
- battle scene,
- abstract painting,
- still life.

The other elements of the vector were assigned the value “0.” Only one of the above-mentioned subjects (and the corresponding variable), that is, self-portrait, was found to be statistically significant.

Another studied variable was art movement. Information about movements was contained in a 10-element vector, in which the element with the value “1” corresponded to one of the following:

- 1st half of the 19th century – Romanticism,
- 2nd half of the 19th century – Positivism and Historicism,
- 1890–1914 – Modernism,
- 1890–1914 – outside art movements (this category includes the artworks of those painters who were active during the period of Modernism, but who were not influenced by this movement, e.g., Feliks Wygrzywalski, Michał Gorstkin-Wywiórski),
- 1905–1930 – École de Paris,
- 1914–1939 – Colorism, Constructivism, Formism, Expressionism, Cubism and others,
- 1914–1939 – outside art movements (similarly to the category “1890–1914 – outside art movements,” this category includes the artworks of those painters who were not influenced by the art movements of the time, such as Nikifor, Władysław Chmieliński-Stachowicz, Erno Erb, Jerzy Kossak),
- 2nd half of the 20th century to present.

No variable reflecting art movements was found to be statistically significant. Thus, another variable was introduced to the model in its place, that is, the age of the painting. It was assumed that it would reflect variability in both content and form (corresponding to subjects and art movements) and the influence of this variability on prices.

The reputation of the artist was represented by variables based on the market value of his or her paintings and the frequency of transactions involving them. The first variable was defined as the highest value of a painting included in the study sample for each artist. The frequency of the appearance of a given painter in the market (popularity) was defined as the number of his or her artworks contained in the study sample. It was found that this variable was not statistically significant.

Finally, the regression equation was as follows:

$$P_i = C + \beta_1 C_{\max_i} + \beta_2 C_{\text{pow}_i} + \beta_3 C_{\text{wiek}_i} + \beta_4 AUT_i + \xi_i$$

where  $P_i$  is dependent variable, the price of the  $i$ -th painting. The determinants of price i.e. explanatory variables in the hedonic regression comprise the personal characteristic of the artist ( $C_{\max_i}$  – the maximum price of an artwork by the painter who produced the  $i$ -th painting, variable reflecting the reputation of the painter) and the physical attributes of an artwork:  $C_{\text{pow}_i}$  – natural logarithm of the surface area of the  $i$ -th painting (expressed in  $\text{cm}^2$ ),  $C_{\text{wiek}_i}$  – age of the  $i$ -th painting at the time of sale (in years, *year of sale* minus *year of painting*) and  $AUT_i$  – binary variable indicating the subject of the painting: “1” stands for self-portrait and “0” for any other subject, the element  $\xi_i$  stands for random error,  $C$  is an intercept and  $\beta$  coefficients are estimated regression coefficients.



Regression was estimated using the EViews statistical package.

## STUDY RESULTS

The results of the regression analysis of the price determinants are presented in Table 1.

Table 1. Regression analysis results

Dependent Variable: P				
Method: Least Squares				
Date: 04/05/13 Time: 21:57				
Sample: 1 1074				
Included observations: 1074				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
$C_{max}$	0.224062	0.012971	17.27350	0.0000
$C_{pow}$	9.232462	0.710376	12.99659	0.0000
$C_{wiek}$	340.9081	98.92596	3.446093	0.0006
$AUT$	85017.10	20039.52	4.242472	0.0000
$C$	-55960.68	7223.215	-7.747338	0.0000
R-squared	0.380997	Mean dependent var	60515.19	
Adjusted R-squared	0.378681	S.D. dependent var	126921.6	
S.E. of regression	100044.4	Akaike info criterion	25.86926	
Sum squared resid	1.07E+13	Schwarz criterion	25.89244	
Log likelihood	-13886.79	Hannan-Quinn criter.	25.87804	
F-statistic	164.4926	Durbin-Watson stat	1.710548	
Prob(F-statistic)	0.000000			

Source: own calculations.

The regression analysis results shows statistical significance of all variables and their differential impact on prices of artworks. The value of adjusted  $R^2$  of 0.378681 requires a comment: it is assumed to treat it like sufficient enough for cross-sectional data. The presence of high-valued intercept may indicate that there are other variables strongly influencing the price.

## SUMMARY

The variables contained in the model influence the price in a statistically significant manner. Self-portrait (variable  $AUT$ ) has a major impact. This reflects the truth presented in a humorous manner in a soap opera where a film character, upon advancing in the professional and social hierarchy, finds it necessary to purchase “a portrait of an ancestor.” The results of the study indicate self-portrait as the subject of the painting is more appreciated more than others by the buyers.

Another variable that has a significant impact on price is  $C_{wiek}$  which represents the age of the painting at the time of sale. This shows the influence of the subject and art movement on price: the greater the value of this variable, the higher the price is, that is, the older the painting, the higher the price it commands. Polish buyers are reluctant to purchase contemporary and modern art, as opposed to older art. They prefer landscapes or historic scenes evoking a patriotic sentiment over artworks depicting psychological states and reality deformed and transformed into an abstract form. This is consistent with the opinions of experts on the Polish art market: "one should think that Polish society is conservative and potential art buyers are not interested in contemporary issues. Regrettably, our culture may not transmit the refined snobbery that is linked to collecting contemporary art or interest in it" [Potocka 2013]. Another significant variable is the surface area of the painting ( $C_{pow}$ ). Its influence on the price may be described as a statistical relationship – the larger the painting the higher the price. In turn, the significance of the variable  $C_{max}$  may be interpreted as the influence of the artists' reputation on price – the better the reputation, the higher the price of the painting. An artwork by a highly reputed painter will be expensive, while low reputation will be reflected in low artwork prices.

Presented paper shows the results of one of the first pilot studies on Polish art market. The efforts are made to construct a model that would show in the best way the relationship of price of an artwork with variety of factors. Being aware of the imperfections of the present model, authors have attempted to present the results of the studies due to their innovative - in Polish conditions - nature. These efforts will continue.

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## ANNEX 1

Table 2. The most prominent painters in terms of the number and value of paintings sold in the Polish auction market in the years 2007–2010

Nº	Name	Number of paintings	Value of paintings [PLN]
1	MALCZEWSKI Jacek	39	7.981.000
2	NOWOSIELSKI Jerzy	70	5.093.500
3	WYCZÓŁKOWSKI Leon	39	2.407.300
4	MUTER Mela	17	2.530.200
5	HOFMAN Vlastimil	49	1.080.750
6	KOSSAK Wojciech	45	1.623.000
7	FAŁAT Julian	36	1.588.800
8	KOSSAK Jerzy	66	870.600
9	MENKES Zygmunt Józef	15	835.000
10	TRUSZ Iwan	6	251.000
11	PANKIEWICZ Józef	18	2.095.500
12	KOSSAK Juliusz	26	1.556.960
13	KOWALSKI-WIERUSZ Alfred	14	3.825.000
14	WITKACY	37	1.780.000

15	TARASIN Jan	47	1.302.000
16	AXENTOWICZ Teodor	10	372.500
17	BRANDT Józef	9	4.500.000
18	WEISS Wojciech	15	517.500
19	CHEŁMONSKI Józef	9	3.868.000
20	ZAK Eugeniusz	13	2.697.000
21	ERB Erno	6	107.500
22	KANTOR Tadeusz	21	1.356.700
23	LEBENSTEIN Jan	30	1.290.700
24	STRYJEŃSKA Zofia	20	600.000
25	DUDA-GRACZ Jerzy	34	1.031.600
26	KANELBA Rajmund	19	535.000
27	OLBIŃSKI Rafał	8	105.600
28	CHMIELIŃSKI Władysław	14	198.100
29	BOZNAŃSKA Olga	10	2.317.500
30	GIEROWSKI Stefan	23	946.500
31	STAŻEWSKI Henryk	28	854.300
32	WYGRZYWAŁSKI Feliks	14	259.900
33	KARPIŃSKI Alfons	11	198.200
34	HAYDEN Henryk	9	748.700
35	DOMINIK Tadeusz	42	573.000
36	PAĞOWSKA Teresa	21	820.800
37	DWURNIK Edward	62	422.800
38	KORECKI Wiktor	8	72.900
39	MALCZEWSKI Rafał	9	315.700
40	STANISŁAWSKI Jan	3	144.000
41	WASILEWSKI Czesław	6	124.000
42	SZANCENBACH Jan	21	513.000
43	WYWIÓRSKI GORSTKIN Michał	8	205.300
44	BEKSIŃSKI Zdzisław	17	973.500
45	TERLIKOWSKI Włodzimierz	16	384.000
46	NIKIFOR Krynicki	2	5.500
47	TCHÓRZEWSKI Jerzy	15	842.600
48	MICHAŁOWSKI Piotr	5	505.000
49	WYSPIAŃSKI Stanisław	8	1.641.500
50	SETKOWICZ Adam	4	26.000
	TOTAL	1.074	64.895.510

Source: own calculations.