Laboratoire
de Recherche
en Gestion
& Economie

Working Paper

2021-11

Which price, if we all like it?

Effects of liking and emotional consensus on art prices in auctions

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December 2021

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Abstract:

This paper investigates whether consensus on liking and emotion play a role in explaining art auction prices. This study fills a gap in the economics of art literature by considering subjective perceptions of artworks in addition to objective factors in art pricing models. We conduct a survey to measure the degree of consensus on liking and emotion for 124 artworks in two distinct social groups: art collectors (*i.e.* art market insiders, N=146) and non-collectors (*i.e.* art market outsiders, N=192). We focus on the comic art market, as it is one of the rare art markets in which it is relatively easy to reach collectors. We find that liking and emotional consensus are reflected in art prices but differently depending on the social group. Specifically, our results show that artworks generally achieve higher prices when they are consensually liked by insiders or eliciting positive emotions to them. However, we find that what is consensually liked by or evokes positive emotions to outsiders generally achieve lower prices at auction. This finding is remarkable as it shows that aesthetic codes and information shared among collectors do not spread to outsiders, but rather go in the opposite direction.

Keywords: art prices, auction, emotion, liking, consensus, art expertise

(JEL Z11, D91, D83)

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Acknowledgments: The author thanks Pr. Régis Blazy for his helpful comments and is grateful to Pr. Nathalie Moureau and Pr. Kim Oosterlinck for their comments. The author is also grateful to Antoine Robin, Bagur Lisa, Banou Sara, Beauté Pol, Bentires Alj Ghali, Bentz Alexandre, Berenguier Renaud, Bex Caroline, Billy Antoine, Blandin Maxime, Boggio Samuel, Bourguet Florian, Boutin Marie, Brach Alice, Bricaud Olivier, Buys Michael, Castex Guillaume, Chauvelot Patrick, Clerc Louise, Coutin Loïs, Crochelet Eric, Dahan Olivier, Dano Vincent, De Lacaze Arnaud, Démazure Victoria, Denechau Guilhem, Diedrich Louis, Dionnet Pierre-André, Dubuisson Arnaud, Dufour Antoine, Dumon Alexandre, Durandy Antoine, Ernaelsteen Lionel, Finkler Martin, Fölsing Franziska, Forzan Arnaud, Fumex Thomas, Garnier Vincent, Gautherat Alexis, Geffé Anthony, Geret Frédéric, Goutelle Edgar, Grigore Lucas, Guidikov Peter, Guzzo Philippe, Ha Antoine, Hoerter Leo, Hranek Michael, Huguet Sébastien, Huyghe Lucas, Jarrige Valérian, Johnson Alex, Jonqua Jean-Marie, Khattaf Sabrine, Kleiber Antoine, Lapeyre Maéva, Lardinois Pascal, Le Davay Etienne, Le Scolan Marie, Legrand Philippe, Lenfant Pierre-Henry, Lepoix Manelle, Lesens Lucas, Litzler-Italia Marie, Lottin Bruno, Mainetti Alexis, Marchal Nicolas, Marsan Violette, Mauché Olivier, Mazet Simon, Montini Emmanuel, Mouillet Mathis, Muzet Elric, N'Guessan Paul-Arnaud, Ouillon Bertrand, Palerme Cilaé, Perrin Théophile, Pochet Hugo, Portal Alice, Puente Axel, Raoult Caroline, Renaud Yves, Rocklin Antoine, Schoen Thomas, Smits Jean-Marie, Taylor George, Terry Doyle, Tinchant Pierre, Toussaint Benjamin, Vallée Nicolas and Virely Yoann, for taking the time to give their opinion on 40 or more artworks.

1. Introduction

"*It seems reasonable that efforts to appeal to a shared human aesthetics are responsible for at least part of a work's value*" suggest Graham et al. in their study (2010). The authors raise the broader issue of the behavior of art prices, asking the still not well understood question of how do art prices get at being. The question of the existence of systematic pattern in price determination of unique and non-fungible goods such as art has appealed to many economists throughout the history of economic thought, like Adam Smith, David Ricardo, William Stanley Jevons or Alfred Marshall, who agreed this kind of good is an exception to their theories (Velthius, 2005). Today, even if economics of the arts and more broadly cultural economics has become a proper branch of economics (Ginsburgh & Throsby, 2006), monetising seemingly invaluable features remains a fertile field under investigation.

Art is an extreme case of heterogenous good, each work being unique as created by the hand of the artist. Artworks bear many different characteristics and all of them may affect value. The hedonic approach assumes that differences in prices are due to differences in characteristics. The purpose is to determine consumer's relative valuations of these characteristics. In practise, the price is regressed on the different dimensions, and marginal contributions – also called implicit or shadow prices – of these individual features are estimated. Previous studies have focused on objective price determinants from different categories, such as artworks' physical attributes, artist-related variables and sale characteristics, among others.

However, there are also subjective liking and emotional dimensions involved in the consumer's utility function and therefore in artwork prices. Indeed, collectors buy and consume art for aesthetic enjoyment – at least partly, if not totally – and build a collection of pieces of art they like. A study by Barclays (2012) reports that the most important motivation for owning art and collectibles is enjoyment (75% cited enjoyment as a key motivation of owning art[1]), whereas only a tenth of those questioned answered they buy art solely as an investment. In the literature, the emotional component has also been shown to matter for art buyers. Bourdieu (1993), Moulin (1987) and Velthuis (2005) have all taken into account the role of emotion in the art market from a sociological perspective (Herrero, 2009). From a financial point of view, many scholars who have found rather low rate of returns on paintings compared with investments in financial markets suggest to investors that "*artworks, unlike assets such as stocks, bonds, real estate, and certain investment funds, should be kept for the enjoyment of aesthetic returns as well*" (Kraeussl & Logher, 2010). An economic study by Ma et al. (2019) has recently pointed out the impact of emotions, especially the emotion of pleasure, on prices in an experimental study focused on color. Individual liking and emotion thus undoubtedly play a role in explaining the desirability and the individual valuation of art. But if many individuals share the same subjective judgement about an artwork, as pointed out by Graham et al. (2010), is the price affected?

[1] The study is based on interviews with 2000 high net worth individuals (those having more than US$1.5 million in investable assets) in 17 countries, across Europe, North America, South America, the Middle-East and Asia-Pacific.

In this paper, we investigate the effect on art prices of consensus about the perception of this art. Namely, we try to find out whether the fact that people largely share a positive or a negative perception of an art good has an impact on its price. We look at the degree of consensus among individuals on two dimensions of the perception of art: the liking for art and the emotional reaction to art. Moreover, we distinguish two social groups: one group of collectors who are also market insiders and another group of lay viewers who are logically outsiders. Indeed, the level of art expertise leads to changes in individual perceptions and we may expect a different impact between a consensus among art market insiders and a consensus among art market outsiders on art prices. Thus, the purpose of our paper is to examine empirically the effect of consensus on liking and emotions in two different social groups (insiders and outsiders) on art prices at auction. We answer to the following question: does a link between consensus on liking and emotions within social groups and real art prices at auction exist? In other words, is the fact that average people agree on a positive or negative perception about an art object reflected in its price? And the fact that collectors share a same (positive or negative) perception? There has been, to our best knowledge, no research in economics or management on consensus about subjective judgement in an art pricing context.

It is worth mentioning that although financial and economic studies do not make the difference between liking and emotional perceptions elicited by art exposure, the two notions are distinct. An aesthetic experience is characterized by both an emotional and a cognitive process that interact with each other (Leder et al., 2004; Leder et al., 2012; Leder at al., 2013; Leder et al., 2014). The emotions refer to the affective state, *i.e.* the perceived emotional valence, elicited by art exposure. The cognitive aspects of aesthetic experiences refer to the aesthetic evaluation and art appreciation, which are very close to the liking judgement (Leder et al., 2004; Leder et al., 2013). The liking judgement is linked to comprehension, emotion (Leder et al., 2012) and familiarity (Leder et al., 2014).

To examine the influence of liking and emotional consensus on art prices, we create a questionnaire addressed to collectors and to *a priori* art-novice subjects respectively. Participants rate a set of artworks for their degree of liking and their emotional valence (*i.e.* positivity and negativity of emotions). As art stimuli, we select a set of comic artworks sold at one auction sale in Paris in 2017 and for which we observe the final price. We choose to focus on the comic art market because it is one of the rare art market for which there exists an online forum easily reachable that gathers many collectors (all of them being specialized in the same market), *i.e.* insiders of the market. For each artwork of our sample, the results of our questionnaire give us the emotional valence and the liking degree of participants (both collectors and lay viewers). We then construct an index of consensus to measure the degree of consensus for liking and emotion among individuals of both social groups. This approach enables us to explore the relationship between real art auction prices and the consensual aesthetic and emotional perception of insiders and outsiders, using a hedonic pricing model.

Our main findings are as follows. Our results show that liking and emotional consensus affect prices differently depending on the social group from which they are issued. More precisely, we observe

that artworks generally achieve higher prices when they are consensually liked by collectors or are eliciting positive emotions to them. This result shows that collectors, who are art market insiders, are subject to normative as well as informational influences. Moreover, we unexpectedly find that what is consensually liked by or evokes positive emotions to novice subjects generally achieve lower prices at auction. This finding is remarkable as it shows that aesthetic codes and information shared among collectors do not spread to outsiders, which are also not aware of the fads that drive the art market. Even more, liking judgements and emotions from insiders go in the opposite direction with respect to outsiders' judgements, which is in line with Bourdieu's assumption (1979) stating that people engaging in arts are driven by an individualisation process through which they aspire to stand out above the crowd. Last, we find that the collectors' consensus on liking is positively influenced by the artist's recognition, whereas for naïve subjects, art liking is negatively impacted by the artist's recognition. This shows that outsiders do not share at all art market standards.

Our contribution is twofold. First, we contribute to the literature by considering for the first time human subjective judgement of artworks and consensus on art tastes and emotions in artwork pricing models, while the empirical literature have been mainly focused on objective factors. Namely, we propose to investigate in this paper the influence of (dis)liking and emotional consensus of different groups of individuals on prices at auction, an unexplored direction of causality. Second, this research is the first to study art perceptions in an actual group of market insiders in the economic sense of the term, since studies on art evaluations consider groups of art experts – in contrast to naïve subjects – such as art students or individuals having an artistic background.

The remainder of this paper is structured as follows. Section 2 reviews the related literature on art price determinants and art perceptions. Based on this literature, Section 3 exposes the hypotheses. In Section 4, we present the methodology (survey design, the construction of our index of consensus, model and variables). We provide and discuss our results in Section 5. Section 6 presents a robustness test and Section 7 concludes.

2. Literature review on art prices and art perceptions

This paper aims at answering whether art prices can be explained by art perceptions, particularly consensus on art perceptions. Therefore we will explore the relationship between art prices and art perceptions in a first part (2.1), then we will have a focus on the specificity of art perceptions (2.2).

2.1. The relationship between art prices and art perceptions

The economic and financial literature has investigated the determinants of art prices. The factors impacting art prices explored so far have been mostly objective determinants from different discernible categories (2.1.1), while subjective determinants related to art perceptions have received little attention,

except from a few studies (2.1.2). Some research in psychology of arts have examined the relationship the other way around: how monetary factors may influence art perceptions (2.1.3).

2.1.1. The traditional determinants of prices

Typical factors in explaining art prices are physical attributes of the artworks, mainly the size, medium, support, color and subject matter, and the name of the artist[2]. Other variables linked to the artist are also often added to hedonic analysis: his/her living status (Ekelund *et al.*, 2000; Higgs & Worthington, 2005; Ursprung & Wiermann, 2011) and year of birth (Agnello & Pierce, 1996; Campos & Barbosa, 2008; Marinelli & Palomba, 2011). Another category of price determinants relates to the popularity of the artwork but importantly to authenticity issues, since the risk of buying fakes is not negligible. In this category, we find the artwork inclusion in art books, catalogs or exhibitions, its previous ownership, the authentication by the artist or recognition by experts, and the presence of a signature (Campos & Barbosa, 2008; Czujack, 1997; Figini & Onofri, 2005; Marinelli & Palomba, 2011).

A set of price explanatory variables that have been generated for a while in the literature as well refers to sale environment characteristics. These variables are the auction house where the sale takes place, the sale location, the year and month of sale and the lot order in the sale (Agnello & Pierce, 1996; Beggs & Graddy, 1997; Marinelli & Palomba, 2011; Pesando, 1993; Renneboog & Van Houtte, 2002). Moreover, art prices are influenced by macroeconomic features. Chanel (1995) suggests that short-run relations exist between art and financial markets. Goetzmann *et al.* (2011) argue that equity market returns have played a significant role in determining art auction prices over the last two centuries, that art prices rise with increases in income inequality and that a robust long-run relationship between top incomes and price level in the art market exist. Lovo and Spaenjers (2018) find that prices increase in expansions. Finally, Beggs and Graddy (2009) and Graddy *et al.* (2015) pointed out that art prices are determined by anchoring effects.

It comes out that the price determinants considered by the literature are objective factors. Yet, some recent studies have looked at subjective factors to explain art prices.

2.1.2. The impact of subjective factors on art prices

Few economic studies have looked into the influence of subjective factors on art prices. To start with, two studies (Pénasse *et al*., 2014; Renneboog & Spaenjers, 2013) have examined the role on art prices of the subjective expectations about the evolution in the future of prices on the art market, what the authors call art buyer's "sentiment" and define as "*the unjustified optimism (or pessimism) about future resale values*" (Renneboog & Spaenjers, 2013, p. 51). Renneboog and Spaenjers (2013), based

[2] See Agnello & Pierce, 1996; Anderson, 1974; Campos & Barbosa, 2008; Czujack, 1997; Higgs & Worthington, 2005; Ma *et al*., 2019; Marinelli & Palomba, 2011; Renneboog & Spaenjers, 2013; among others.

on volume and rates of unsold artworks at high-profile auctions, and on media reports, find that art market sentiment forecasts art price trends. Pénasse *et al.* (2014), using a panel survey data on art market participants' confidence levels in the outlook for a set of artists, observe that art price appreciations are correlated to higher sentiment, *i.e.* confidence from art market participants that prices will rise in the near future for a set of artists.

Another kind of subjective factor, that time focused on the subjective perception of artworks, have been explored by Ma *et al.* (2019). The purpose of their study is to examine the impact of colors on the value of paintings in the field (art auction market) and in the laboratory. Based on a sample of abstract artworks, they find a significant effect of colors on art valuations in both contexts. Then, they measure in the experiment the participants' emotions – through the (dis)pleasure and (non)arousal dimensions – and find that the emotion of pleasure strongly and positively influences bids and purchase intention, while the arousal level appears to be less relevant. They argue that it is the emotion of pleasure induced by colors that is the channel whereby colors influence art valuations.

These three studies have investigated the impact of subjective factors on art prices. Yet, the relationship has also been considered the other way around, in psychology of the arts.

2.1.3. The impact of monetary values on art perceptions

Very few studies have investigated the influence of monetary information on art perceptions. Kirk *et al.* (2011) have explored the impact of monetary favors (corporate sponsorship in their study) on art perceptions and found that monetary favors presented alongside the artworks influence non-expert subjects' aesthetic preferences but not those of experts. As for Lauring *et al.* (2016), they have experimentally assessed with a group of art-naïve students the impact of fictitious auction sale prices of artworks on liking ratings of these artworks. The authors observe that art appreciation was significantly higher for paintings accompanied by a high monetary value than those characterized by low fictitious auction sale prices. Last, Graham *et al.* (2010) have performed an initial experiment on 17 non-expert students to assess whether real auction prices are predictive of preferences and found no correlation between selling prices and preferences. In their study, individuals were unaware of the real auction price when giving their perceptions of the artworks.

It appears from this section, although there exists only a few studies that price-awareness may influence art perceptions. However, art perceptions are determined according to some contextual and social characteristics, that it is important to take into account to formulate hypotheses.

2.2. Specificities of art perceptions

The literature on art perceptions is essentially drawn from the psychology and sociology of the arts. Research have shown that art perceptions may differ depending on the context and the environment

in which individuals are exposed to art (2.2.1), but also on social influences, either from other individuals or from one's own background (2.2.2).

2.2.1. Contextual influences on art perceptions

Regarding contextual influences, information that helps in the interpretation of the artwork, such as title, description, the stylistic features, compositional elements, contextual information, therefore making the painting more meaningful, can have an impact upon art appreciation (Belke *et al*., 2006; Cupchik *et al*., 1994; Russell, 2003; Swami, 2013) as well as upon emotional reactions after the stimulus onset (Gerger & Leder, 2015). Moreover, some environmental factors modulate aesthetic judgement. According to Brieber *et al*. (2015), artworks were found more arousing and liked more in the museum than in the laboratory, a result that corroborates results from Kirk *et al.* (2009) who demonstrate that aesthetic ratings (level of appeal) are greater for a prestigious museum context than it is for a computer context. Gartus and Leder (2014) found that for participants interested in graffiti art, emotions were more positive when seeing graffiti art or modern art in a street context, compared with a museum context.

Along with contextual and environmental influences individuals are subject to, social influences are major drivers of art tastes and preferences.

2.2.2. Social influences on art perceptions

We can distinguish two types of social influences: those coming from other individuals and those from one's own background, *i.e.* the level of art expertise.

Since art can be considered as a symbolic good (according to Bourdieu, 1968; and in addition to being an economic asset), interacting with art appears as a social practise. Indeed, interacting with art is a mean of joining or distancing oneself from other social groups. Thus, social information may modulate personal art appraisal, as observed by Lauring *et al*. (2016). Through an experiment involving a group of university students, the authors find social priming effects on liking ratings. Participants change significantly their appraisals and especially raise their own liking judgements compared to the control condition (no extra information) when they believe the artworks had been positively rated by fellow students (participants' own peer group) or art experts (potentially an aspirational group) or when they believe the artworks had been negatively rated by low-income/education social group (less socially desirable group). This social priming effect is positively correlated with group identification, so that when participants identify highly with a priming social group and were told this group had rated the artworks positively, the impact on liking ratings is stronger. These findings suggest that individual and personal art appraisal may be adapted according to what we believe to be the judgements of those with whom we want to stand out from (less desirable social group), of a group with which we socially identify and want to be part of, and of a group we aspire to belong to. Individuals tend to modulate their tastes closer to the preferences of the groups they like (peers or aspirational social groups) and further away

from the preferences of the groups they don't like. Bourdieu's theory of social distinction (1968) finds empirical support, as art preferences may be the basis of social differentiation and establish distinct social groups. Another recent study by Hesslinger *et al*. (2017) who have tested the impact of social conformity pressure on aesthetic judgements also finds a significant effect. The desire to conform to one's reference group has also been observed for other goods than art, such as music (Berns *et al*., 2010) or luxury products (Bearden & Etzel, 1982; Childers & Rao, 1992).

Besides and among social influences that can affect aesthetic evaluation, individuals' level of human and cultural capital influences their appreciation and consumption of cultural goods (Stigler & Becker, 1977). The two authors show that the capacity to enjoy and appreciate the consumption of some goods depends on human capital, that is on the time spent to consume the good, on the training and on the individual's skills. Artistic training and knowledge lead to changes in the individual perception and aesthetic appraisal of a stimulus and therefore in aesthetic preferences.

Individual differences in the salience of the dimensions involved in perceiving artworks depending on individual artistic experience have been reported: art-novice subjects attach more importance to the degree of realism, *i.e.* have a preference for more traditional works, but less importance to the clarity of detail compared to art-trained subjects (O'Hare, 1976).

Moreover, Cupchik and Gebotys (1988) found that trained viewers underestimate the duration of exposure to aesthetic stimuli regardless of painting complexity, while naïve viewers overestimate exposure duration, especially for highly complex stimuli. This finding reflects differences in the amount of perceptual/cognitive effort needed by novice and trained subjects to appreciate a painting: naïve subjects have to struggle to perform analyses while trained viewers perform automatic processing thanks to a set of skills to assess paintings developed over time. This study also reveals divergence in judgements of aesthetic pleasure between untrained and trained subjects and a higher aesthetic flexibility on the part of naïve viewers, who may adjust their preferences after longer exposure.

The level of formal art training affects the individual scanning patterns and modifies the way individuals observe paintings by changing their areas of attention. Thus, Nodine *et al*. (1993) who based their study on eye-movement analysis reveal that novice viewers fixed their eyes on the pictorial elements of the composition therefore spending more time looking at central and foreground figures, while art-trained viewers give more attention to the overall compositional design, *i.e.* to the relationships between shapes, colors and space, hence looking also at background features. This result suggests that untrained subjects focus more on individual pictorial elements and their representational accuracy, but this representational issue is supplanted with art training by concerns about global recognition of pictorial structures that express narrative themes. Their findings uphold observations by Winston and Cupchik (1992, p. 12) that "*naïve viewers generalize from everyday perception and search for the familiar and the moderately stimulating*" while experienced viewers' "*approach to art is not predicated on the identification of objects, but rather on principles which are distinctive to the aesthetic domain,*

such as composition, harmony, contrast, texture, and emotional expressivity". Based on questionnaires answered by trained and untrained art viewers, they demonstrate that art education shapes the expectations and motives of individuals when they experience aesthetic episodes. More recent studies have kept finding differences between experienced and inexperienced viewers in the way they look at paintings, based on the analysis of eye movements (Vogt, 1999; Vogt & Magnussen, 2007; Ylitalo *et al.*, 2016).

What is more, emotional reactions to art which play an important role in aesthetic experiences are also affected by expertise. Leder *et al.* (2012) found that expertise increases liking, emotions and understanding ratings, but also that expertise comes with a more flexible and idiosyncratic interplay of cognitive and emotional variables that determine art appreciation compared to non-experts. However, Leder *et al.* (2014) who based their study upon a participants' larger range of expertise found that art experts show attenuated emotional responses compared to laypeople (indicated by facial electromyography) and their emotional ratings of artworks show likewise a trend towards attenuation compared to nonexperts, providing less extreme valence ratings. This result could be explained by distinct emotional processing with expertise which weakens the immediate impact of emotions and allows the expert to adopt a detached mode in order to proceed to aesthetic judgements. Lay viewers especially base their aesthetic appreciation on personal feelings, while art-experienced persons rather focus on style and form (Augustin & Leder, 2006; Winston & Cupchik, 1992). Still, when being asked to evaluate art quality, art experts rely more on their gut feelings or intuition than lay viewers who rather draw upon an analysis of their level of understanding of the artwork's meaning.

It must still be noted that clear differences between experienced and inexperienced art viewers have not always been found empirically. For instance, Locher and Nagy (1996) and Locher *et al.* (1996, 1999, 2003) demonstrate that the ability to identify a visually right composition, *i.e.* a painting that has a very efficient structural organization of its pictorial features, does not require a design expertise[3]. Another example is given by Neperud (1986) who found moderate support for the hypothesis that art and non-art students differ in their response to aesthetic episode: art students rated their pleasingness higher than non-art students as for abstract art stimuli, but no significant differences has been found between the two groups as for figurative, collage or pattern art styles. A last illustration is the study by Lindauer (1990) who showed that mass-produced art (*i.e.* manufactured and "cheap" art) was generally liked, regardless of education and background in the arts, because this type of art – typically cliché-like images – brings peacefulness, are reassuring and requires little effort to understand.

[3] Locher et al. (1999) nonetheless observe a higher ability for design professionals than for untrained subjects.

Once the relevant literature on art prices and art perceptions have been presented in this section, we will discuss in the following section the hypotheses that can be drawn from the literature review.

3. Hypotheses

The literature has shown that art prices and subjective factors are linked. On the one hand, studies have found that art prices are influenced by emotions and sentiment of bidders. On the other hand, monetary information can have an impact on subjective perceptions. In line with these few studies, subjective factors need to be taken into account in art pricing models since they may be relevant to explain prices. This leads us to hypothesize that consensus on subjective perceptions – in our analysis, consensus on liking and emotions – may play a role in explaining auction prices:

H1: *Consensus on art perception is reflected in auction prices.*

Also, studies in psychology and sociology of the arts have shown that subjective perceptions differ depending on contextual factors, but also on social factors, such as the influence of other people and the influence of one's own background. Firstly, individuals tend to adapt their art preferences towards the preferences of the group they socially identify with or want to be part of. Secondly, the level of art expertise seems to involve changes in art perceptions and preferences. Thus, the study of the consensus on art perceptions and its effect on prices must be differentiated depending on the social group of the participants. Indeed, it is very likely that art collectors and novices do not share the same preferences, but that art collectors agree among themselves on their art perceptions and that novices also agree among themselves on their art assessment. Consequently, we distinguish for our study of the art perceptions between art collectors (who are market insiders) and students (who are art novices and market outsiders). This leads us to measure the consensus on art perceptions among insiders and among outsiders separately and analyse their respective effect on auction prices. We expect that auction prices may be explained by consensus on art perceptions of insiders, but not of outsiders, so that the explanation of the price by consensus on art perceptions is only valid for one kind of population (insiders). The hypotheses are thus the following:

H2a: *Auction prices reflect consensus on art perceptions of insiders only.*

H2b*: Auction prices do not reflect consensus on art perceptions of outsiders.*

4. Methodology

We begin this section dedicated to the presentation of the methodology of this paper by describing the survey design, especially the participants, the materials and the procedure (4.1). Then, we detail the construction of our indexes of consensus (4.2). Last, we introduce our sample, variables, the descriptive statistics and we finish by explaining our model (4.3).

4.1. Survey design

As the present research aims at testing the influence of consensus on subjective perceptions – liking and emotion – on art prices, we measure subjective perceptions of two distinct social groups by means of a survey. Participants, materials and procedure are described hereafter.

4.1.1. Participants

We conducted the survey with two distinguished groups of individuals: a group of art novices and a group of comic art experts. The first group of participants – the art-naïve group – consists of students from the University of Strasbourg. A total of 176 students (85 female) studying for a degree at the same department of political science took part in the survey. Five of them were excluded from our sample because they failed the test of consistency of their answers (explained in the survey procedure hereafter). Our final sample of art novices thus comprises 171 students. The same education track limits influences like the field of study or the experience. Mean age is 21 years (SD = 2.05). These students do not have a prior expertise or training in comic art *a priori* (this point will be assessed later in the study). The survey was sent by email to all students and they were free to answer to the survey. They did not receive any monetary compensation or grade bonus, but were proposed to be mentioned in the study acknowledgments if they made an evaluation of a minimum of 40 artworks.

The second group of participants – the comic art collectors – are members of the comics specialized website BDGest©[4]. BDGest, created in 2001, is the website where the largest community of francophone *bande dessinée* connoisseurs meet. It includes tools for the management of comics collections and sales, an online forum about comics, contests, previews, news, specialized articles, etc. This website gathers more than 100 000 subscribers. We posted a message with the link to our survey on a forum of this website which is dedicated to comic art (*i.e.* original comics) and which gathers only individuals genuinely interested in comic art. In this forum, individuals indeed discuss artworks they own in their collections or artworks that will be soon on sale. Thus, the population of this forum we contacted is composed of market insiders. Members of this forum were free to participate to the survey. A total of 171 experts (4 female) took part in the survey. Mean age is 49 years (SD = 9.70). Four of them were excluded from our sample because they failed the test of consistency of their answers (explained in the survey procedure hereafter). Our final sample of art collectors thus comprises 167 individuals. They did not receive any monetary compensation, but were proposed to be mentioned in the study acknowledgments if they assessed a minimum of 40 artworks.

Participants of both social groups were informed that participation and data collection were anonymous, but they were given the possibility to leave their name if they wanted to be mentioned in the study acknowledgments provided they fulfil the condition.

[4] https://www.bdgest.com

We perform a further control of our two categories – insiders and outsiders– based on participants' self-reported collecting behavior. Participants had to fill an art-expertise questionnaire before starting the survey, one of the question being "Do you collect original comics?". We found that three student participants do collect comic art; they were therefore reassigned to the insiders category. Likewise, twenty four of our BDGest participants do not identify as collectors, so that they were reassigned to the group of lay viewers. Finally, after these changes, we count 146 collectors (*i.e.* insiders) and 192 non-collectors (*i.e.* outsiders).

4.1.2. Materials

The stimuli consisted of 124 pictures of comic artworks sold by the auction house Artcurial on the 8th of April, 2017 in Paris. We note that comic artworks are figurative art stimuli.

We focus on the comic art market since it is one of the rare art market for which there is an online forum (on BDGest) easily accessible and which gathers many French and Belgian collectors. Indeed, on other art markets such as old masters paintings or impressionist and modern art for example, there is no such unique forum on which a significant number of collectors gather[5]. Consequently, the only way to reach insiders on other art markets would be to ask auction houses and galleries for their lists of people who are interested in one kind of art or have bought/sell on this art market. This process raises problems of authorization, of confidentiality and would certainly not result in such an important number of answers as it is the case for our survey through the BDGest forum. On the contrary, participants on the BDGest forum register and intervene freely which enables us to be sure to reach a population of comic art market players.

Moreover, we choose to focus on a sale of 2017, while conducting our survey in 2020. The purpose of this paper is to understand to what extent subjective perceptions of individuals and especially consensus on subjective perceptions translate in art prices at auction; consequently a set of artworks presented at auction had to be selected. Auction houses publish the catalog approximately one month before the auction sale (depending on the auction house). However, if we would have asked collectors about their subjective perceptions of artworks that are about to be presented for sale (*i.e.* before the sale), they would have known about the pre-sale estimates given by experts of auction houses and would have been influenced by the discussions with other collectors such as those held within the BDGest dedicated forums. Therefore, we choose to select an auction sale that occurred three years before our survey, in order that collectors have forgotten about the auction sale. We do not select a longer period either, so that fads would not change over the period, since fads are moving slowly (Pénasse *et al.*, 2014).

[5] There exists some forums for collectors, but more for collectible goods (like stamps, coin or toys) than for art. For instance, there is the "Forum des collectionneurs" (http://collections.forumgratuit.org/forum) with 1200 members. Another example of forum is the "Art Collectors Club" on Facebook with 70 000 members, a forum which is very general and not focused on a specific art market.

Last, we discarded artworks by Hergé auctioned in this sale in order to minimize socio-cultural and familiarity influences for lay viewers in our results. Indeed, Hergé holds a special place in the comic art world and market. Thanks to the comic series of *The Adventures of Tintin* that turned into a global success, Hergé is by far the best-known comic artist and his creative work has spread through all social strata, becoming part of the popular culture especially in Europe. Moreover, on the European comic art market, Hergé's artworks are the ones that reach record prices by far.

4.1.3. Procedure

The questionnaire was created on LimeSurvey© software and was sent by email to students and posted on the forum of BDGest website for comic art experts. We proposed the questionnaire in French and in English for comic art experts. Our questionnaire comprised three parts: i) an introductory instruction, ii) a questionnaire for comic art/world interest and art expertise and iii) the questionnaire containing the stimuli and questions related to the participants' subjective perception of them.

The introductory instruction told the participants that they would see a series of original comic artworks sold at auction in the past and that they would be asked to evaluate each artwork for their degree of liking and emotion. Examples of negative emotions (anger, disgust, contempt) and of positive emotion (pleasure, arousal, enjoyment) were given. Participants were not informed about the goal of the study and how their answers will be exploited, only that this survey is part of a research project on subjective perceptions and does not serve any commercial purpose.

The second part of the survey aims at obtaining basic personal information about participants and measuring their art/comic art expertise, as the literature pointed out the role of expertise in aesthetic judgements. After two questions related to personal information (sex and year of birth), we measured expertise by a self-developed short questionnaire containing five items related to their comic background (their knowledge of and interest in the comic world, their comic collector behavior) and art background (art-related education, art practise). We use 5-point Likert-type scale (1 = not at all; 5 = absolutely) for the questions related to the knowledge and interest in the comic world and to the art background. For the comic collector behavior, we use a multiple choice question.

The third phase concerns the questionnaire as such, with pictures of artworks to assess displayed. Images of artworks were directly drawn from the auction house catalog and re-sized so that the width size equalled 400 (in units used by Limesurvey©), while keeping the original proportions. Participants judged each of the depicted aesthetic stimuli without receiving any information or description about it, by the means of two questions. For each stimulus, participants were asked to evaluate on the one hand for their degree of liking, using a 5-point Likert-type scale (1 = dislike very much; 5 = like very much) and on the other hand the intensity/polarity of their emotion triggered by the sight of each artwork, using

a 5-point Likert-type scale (-2 = strong negative emotion; 0 = no emotion; 2 = strong positive emotion).[6] We selected the "liking" measure as it is a general measure of personal preference and aesthetic judgements (Leder *et al*., 2005; Leder *et al*., 2013; Reber *et al*., 2004). Moreover, both aesthetic judgement and emotions appear to be two distinct but relevant components of aesthetic experiences and evaluations (Leder *et al*., 2004; Leder *et al*., 2013), so that we consider these two dimensions measured by liking and emotional valence scales in our study. It is undeniable that liking is determined by emotion, so that the two are essentially related, but liking for art is also affected by comprehension of artworks and familiarity (Leder *et al*., 2004; Leder *et al*., 2012; Leder *et al*., 2014). Stimuli were presented in a randomized order and after each set of 10 stimuli, participants had the choice to exit or continue the questionnaire. However, in order to continue the questionnaire, the two rating scales (*i.e.* liking and emotion) had to be completed for all artworks previously seen.

When leaving the survey, participants had a last question in order to test for the consistency of their answers. They were shown four groups of images and were asked to select one group in which they recognize an artwork they rated. In these groups of images proposed, there was a mix of the pictures of artworks selected for this study and pictures of artworks that were sold in another comic auction sale (Christie's). Participants who did not answer correctly were excluded from the sample (9 individuals in total). There was no time limit for the ratings. For both groups, the survey was opened for 15 days over a close time period (spring 2020). Each social group did not know that another group was also asked the same questions.

4.2. Measuring consensus

With the data collected with the questionnaire, we construct a new index, which we call *VALCONS*, that combines valence (*i.e.* the positivity or negativity) and intensity of the consensus of subjective liking and emotional judgements made by individuals. We aimed to obtain an index that takes higher values when respondents agree on high ratings attributed to an artwork (consensus on positive perception) and lower values when respondents agree on low ratings given to an artwork (consensus on negative perception). This index of consensus can be applied for both the subjective perception of liking and emotion. To take into account the valence in our index, the first component on which this index should be based is the mean of all grades attributed by the participants. As mentioned above, grades range from 1 to 5 for liking judgement and from -2 to 2 for emotion judgement. With the sole objective of proposing one identical index for both types of subjective judgement, we normalize the emotional judgement from a -2-to-2 scale to a 1-to-5 scale, as for the liking judgement, by adding systematically 3 points to the emotional grade attributed by participants. From there, a mean rating close to 5 indicates a positive average judgement, while a mean grade close to 1 states a negative average judgement. In

[6] We chose to use two different types of Likert scales to help the participants distinguish between the question on their liking and the one on their emotion.

order to address the intensity of the consensus for our index, we now turn to the second component of this index: the standard deviation measure. A small standard deviation attests a high consensus among respondents, while a high standard deviation indicates presence of a dissensus among participants about artwork perception. Thus, for any artwork (*i*), the formula for our index of consensus is the following:

$$VALCONS_i = \frac{m_i - 3}{\sigma_i (m_i - 1)(5 - m_i)} \qquad (1)$$

where $VALCONS_i$ is our consensus index for an artwork (*i*), m_i is the mean of the grades given by participants and σ_i is the standard deviation of the grades attributed by participants.

When the average rating given by participants is included between 3 and 5, meaning a positive perception of the artwork, the index is positive. Also, the smaller the standard deviation is, meaning that participants reach a consensus on their subjective perception, the higher is the index. Conversely, when the average rating given by respondents lies between 1 and 3, which demonstrates a negative judgement of the artwork, the index turns negative. Moreover, the smaller the standard deviation is (*i.e.* people surveyed agree on their subjective judgement), the lower is the index. Further details on the behavior of our *VALCONS* index are provided in Appendix 1.

The merit of the *VALCONS* index is that it measures the valence combined with the intensity of the consensus of the ratings given by participants. The higher is this index, the more participants agree on a positive rating, whereas the smaller is this index, the more participants agree on a negative rating. We distinguish in our study one *Liking-VALCONS* index, based on participants' rating of their liking, and one *Emotion-VALCONS* index, based on participants' rating of their emotion. An index close to 0 is consistent with an artwork that is moderately liked/disliked (for Liking-VALCONS) or that is triggering low emotional response (for *Emotion-VALCONS*), or reflects a dissensus on perceptions among participants. A limit of this index is that it is not defined for artworks which are hated by everyone (m_i =1) or loved by everyone (m_i =5), which is very unlikely to happened with a high number of respondents (it did not happened for any observations in our study).

4.3. Empirical implementation

In this section, we first discuss the sample selection (4.3.1). Then, we present the variables (4.3.2) and the descriptive statistics (4.3.3). We finish by explaining the model (4.3.4).

4.3.1. The sample

Our sample comprises the 124 auctioned artworks used as stimuli for the survey. These are artworks sold in 2017 by Artcurial during one single auction sale. We choose to focus on one auction sale in order to prevent any sale effect to interfere in our estimates. We select the European comic art

market (an American market for comics also exists) in order to be coherent with the scope of the BDGest community, which is mostly focused on European comics. The Artcurial sale includes different types of comic art: boards, coverpages, illustrations, drafts and colorings (the colored distinct material when colors are dissociated from the drawing strokes). Drafts and colorings being unachieved artworks, we exclude them from our sample. Finally, since we are interested in price determinants, we also remove all bought-in lots (*i.e.* lots without observable prices because they have not been sold during the auction, as bids did not reach the seller's reserve price).

Regarding the number of subjective ratings per artwork, there is at least 89 expert ratings on one artwork and maximum 102, with a median of 97 evaluations by experts per lot. Non-experts participants rated on average less artworks than did the experts (*i.e.* were ending the survey before), so that the median number of lay viewer judgements per lot is 84 (minimum 73, maximum 90). In the end, each lot is appraised by 179 participants in average (with a minimum of 169 and a maximum of 189 judgements).

4.3.2. The variables

The dependent variable is the logarithm of real EUR final price, buyer's premium included, since it is the price buyers are willing to pay to acquire the comic art good.

The category of variables related to the subjective perceptions are the explanatory variables of interest and have been little explored in the literature so far, thus being particular to our study. These variables have been elaborated on the basis of a survey and consist of two indexes of consensus on aesthetic judgements (explained above in section 4.2.): *Liking-VALCONS* and *Emotion-VALCONS*. These indexes of consensus are considered across each social group – collectors and non-collectors – so that, for each artwork, we have four indexes of consensus in total on subjective perceptions: *Liking-VALCONS - insiders, Liking-VALCONS - outsiders, Emotion-VALCONS - insiders* and *Emotion-VALCONS - outsiders.* The two next groups of variables, related to the artist and the artwork, can be considered as control variables. Detailed definitions of all variables are given in Appendix 2.

We consider a first set of variables that refer strictly to the artist who created the artwork, as previous research has shown the importance of the artist's effect in the determination of auction prices. We include *i)* the length of the artist's biography[7] (number of words) as a proxy of his/her reputation, *ii)* whether they have received an award or not as a proxy of the artist's recognition (dummy), and *iii)* their living status (dummy).

With respect to artworks' physical characteristics, recognized as factors affecting prices, we consider the type of comic artwork (dummies introduced for boards, coverpages or illustrations), the medium (four non-excludable dummies accounting for ink, paint, pencil or pasting/mixed medium), the size (in square meters), the condition (dummy that equals one if the artwork is damaged), the presence

[7] We consider the website Bédéthèque© (https://www.bedetheque.com) – a reference for European comic culture gathering of information – to collect comic artists' biographies.

of a signature (dummy that equals one if the artwork is signed) and the subject matter(s) (non-excludable dummies for a wide set of topics, which can be seen in Table 3 showing descriptive statistics). We also include three attributes related to the artwork as well but which represent specific dimensions of comic art. The first variable is the number of publications of the artwork. Indeed, comic artworks are of "hybrid" nature since they are unique pieces of art created by an artist and at the same time commercial goods gathered and published on a large scale for the purpose of selling comic books. The number of publications of the comic book from which the artwork stems reflects the commercial success of the comic book and consequently the artwork. It is reasonable to think that such dimension can have an impact on prices. The second variable is a black and white dummy, which takes the value of one for black and white artworks and zero for colored artworks. Indeed, both kinds of artworks exist on the comic art market and color is a determinant of art prices (Ma *et al*., 2019). The third and last specific feature of comic art is linked to the presence of the hero. The hero is a key dimension of comic art and a comic artist becomes famous after his hero does so. Therefore, we assume comic art buyers prefer artworks with the presence of the hero than artworks without, so that prices can arguably be impacted. We thus count the number of times the hero appears on each artwork. However, heroes are not similarly famous. For this reason, we weight the number of heroes depicted in an artwork by the Amazon© ranking of the comic book from which the artwork originates. This ranking reflects the popularity of the comic book, and in turn of the hero. This weighting brings about a consistent variable accounting for the number of famous heroes.

4.3.3. Descriptive statistics

The explained variable is the auction price of each artwork. Descriptive statistics of the dependent variable are reported in Table 1. On the 124 auctioned comic artworks sold by Artcurial selected for this study, the average final purchase price (all fees included) is a little higher than 7 000 €, while 50% of them were sold to buyers under 3 120 €. Final purchase prices range from a low price of 130 € to a high price of 78 000 €. The mean price per square centimetre is 5.43 € and the median is 1.96 €. Prices for one square centimetre range from 0.17 € to 86.76 €. The average mean-estimate (midpoint between high and low pre-sale estimates) of our sample is 5 181€. This shows that the Artcurial sale is representative of the comic art market, neither being a prestigious sale such as those of Christie's (with an average pre-sale mean estimate around 14 000 € in 2017) nor being part of the mid-range to low-end market, as sales by Coutau-Bégarie or Cornette de Saint Cyr for example (with an average pre-sale mean estimate around 1000 € in 2017).

Table 1 Descriptive statistics of the dependent variable : the price

Variable	Mean	Median	Std Dev	Min	Max
Hammer price	5 436	2 400	9 040	100	60 000
Price buyer's premium incl.	7 075	3 120	11 750	130	78 000
Average pre-sale estimate	5 182	2 250	8 910	150	65 000
Price per cm2	5.43	1.96	10.86	0.17	86.76

One category of independent variables consists of our variables of interest, *i.e.* our indexes of consensus on subjective perceptions. Table 2 reports descriptive statistics related to these variables.

For each lot, many insiders and outsiders have given their own rating on liking and emotion. Consequently, we have for each lot one grade on liking and one on emotion for insiders (which is the mean of all ratings given by insiders on that particular lot) and one grade on liking and one on emotion for outsiders (which is the mean of all ratings given by the outsiders on that lot). Likewise, we have for each lot one standard deviation on liking and on emotion for insiders (which is the standard deviation of all grades given by insiders on that lot) and one standard deviation on liking and on emotion for outsiders (which is the standard deviation of all grades given by outsiders on that particular lot). Our index of consensus *VALCONS* (Equation 1) for each artwork has been constructed using these means and standard deviations. Therefore, we report in our descriptive statistics the mean rating and the standard deviation of the ratings of insiders and outsiders on liking and on emotion.

Regarding the liking rating, the average artwork (on the 124 artworks of our sample) receives the grade of 3.24 on a 1-to-5 scale by insiders, while the average artwork receives the grade of 3.31 by outsiders. These grades are close and above the 3-rating that figures a moderate liking, indicating that collectors and non-collectors rather like than dislike the artworks presented in the sample. We observe that insiders give more extreme liking grades (the minimum mean rating given to a lot by experts is 1.97 and the maximum 4.34) compared to naïve viewers (mean ratings that range from 2.44 to 4.29). This suggests that naïve viewers discriminate less between artworks in their liking choice. Besides, collectors agree slightly more than naïve comic art viewers on their liking judgements on a piece of art, as the standard deviation of liking ratings attributed by experts for the average artwork is lower than the one attributed by lay viewers (1.03 and 1.09 respectively). In accordance, the maximum standard deviation for liking ratings has been achieved by outsiders, not insiders (1.30 and 1.52 for insiders and outsiders respectively).

Regarding the emotional rating, the average artwork receives the grade of 3.26 on a 1-to-5 scale by collectors and 3.24 by non-collectors. These positive and very similar grades show that artworks of our sample elicit rather positive emotion than negative emotion to both social groups. Otherwise, as for liking ratings, insiders give more extreme emotional grades then do outsiders (the emotional grades per lot range between 2.33 and 4.30 for insiders and between 2.40 and 4.10 for outsiders), but they agree

slightly more than outsiders on their emotional grades for an artwork (standard deviation of 0.93 and 0.97 for insiders and outsiders respectively).

We then turn to the analysis of the consensus on liking and on emotion (*Liking-VALCONS* and *Emotion-VALCONS*). We find that both indexes have similar mean values between insiders and outsiders (0.072 for collectors and 0.088 for non-collectors on the *Liking-VALCONS*; 0.082 for collectors and 0.076 for non-collectors on the *Emotion-VALCONS*). These mean values are positive but close to 0 which means that when considering all lots of our sample, we observe in average a dissensus or a feeble positive consensus. This might be explained by the fact that our consensus indexes can be negative or positive, so that the values of the consensus indexes for the different lots compensate with each other. Standard deviations of our *VALCONS* indexes which range between 0.109 and 0.138 indicate that our consensus indexes take a variety of different values. As these aggregated statistics on all lots do not reveal important differences between outsiders' and insiders' perceptions and consensus, an approach per lot with econometrics seems to be particularly relevant. Lastly, we note that both for liking and emotion, consensus indexes take more extreme values in the group of collectors than in the group of non-collectors. This shows that collectors may be able to like or dislike pieces of art more strongly, to report deeper emotional feelings (positive or negative) and to achieve higher consensus than do non-collectors.

Table 2 Descriptive statistics of subjective perceptions

Variable	Mean	Median	Std Dev	Min	Max
Liking rating					
Mean rating per lot for liking - insiders	3.24	3.22	0.42	1.97	4.34
Standard deviation per lot for liking - insiders	1.03	1.02	0.11	0.81	1.29
Mean rating per lot for liking - outsiders	3.31	3.31	0.37	2.44	4.29
Standard deviation per lot for liking - outsiders	1.09	1.08	0.14	0.79	1.52
Emotion rating					
Mean rating per lot for emotion - insiders	3.26	3.25	0.32	2.33	4.30
Standard deviation per lot for emotion - insiders	0.93	0.91	0.11	0.64	1.23
Mean rating per lot for emotion - outsiders	3.24	3.22	0.36	2.40	4.10
Standard deviation per lot for emotion - outsiders	0.97	0.94	0.15	0.47	1.34
Indices of consensus - liking and emotion					
Liking-VALCONS - insiders	0.072	0.058	0.138	-0.369	0.696
Liking-VALCONS - outsiders	0.088	0.077	0.114	-0.148	0.653
Emotion-VALCONS - insiders	0.082	0.068	0.109	-0.231	0.659
Emotion-VALCONS - outsiders	0.076	0.062	0.112	-0.152	0.454

Our second and last category of independent variables accounts for the artist's and the artwork's characteristics. Table 3 reports descriptive statistics of these variables.

Regarding the artist, we account for the artist's reputation, recognition and his/her living status. As a proxy of the artist's reputation, we use the artist's biography which contains on average almost 500 words. The length of the biography ranges from 0 to almost 1600 words in our sample. Moreover, more than one third of our sampled lots have been produced by awarded artists. This means that our sample is balanced in terms of artworks created by recognized artists and less known artists (having no biography on the specialized comic website Bédéthèque). Lastly, 41% of the lots have been produced by artists deceased at the time of the sale.

We now turn to the attributes of the artworks. The pre-sale catalog provides information on different characteristics: the type of artwork, the medium used, the size, the condition and the presence of a signature. With respect to the type of artwork, our sample gathers 64% of boards, 12% of coverpages and 24% of illustrations. Boards are the main type of comic art, as a set of boards constitutes the comic book. For each comic book there is only one coverpage, which explains that coverpages represent a moderate percentage of the sale. Illustrations are drawings which are independent from the boards. As to the medium used, ink is the most typical medium comic artworks are made of (90% of our sample), paint is used for 56% of our sample, pencil for 25% and pasting and mixed-medium for 18%. These percentages indicate that comic art often combine several techniques, which can be understood in the light of the creation process of boards. Indeed, pencil is generally used by artists to first draft their boards. Boards are then inked and they may be colorized ultimately, either directly or on a separate material. Also in the light of this process of creation, it is coherent to see that black and white artworks represent the majority (64%) of the artworks of our sample. We finally find out that the average size of our sampled artworks is 0.18 square meters and that most of them are signed (66%) and in good condition (90%). The presence of a signature is considered as a proof of authenticity.

Moreover, catalogs provide images of the lots for sale, which allow to include the topic(s) and the number of heroes displayed as independent variables. The main subject matters depicted (in more than 20% of our lots) are genre scenes, action, adventure/suspense, archetypes, humor, and interactions. Topics are non-excludable as comic art can cover more than one subject matter. The hero appears in average twice and in the majority of the artworks once or more. Finally, we take into account the commercial success of the comic book from which the artwork comes. Our sampled artworks have been published in average more than three times and 50% of them have been published twice or more. The number of publications for our sample ranges between 0 (for illustrations) and 20. Our sample is thus composed of artworks which have met with varying degrees of retail success.

Table 3 Descriptive statistics of artist's and artwork's characteristics (control variables)

Variable		Mean	Median	Std Dev	Min	Max
Length of the biography		496	359	389	0	1 594
Artist's Award (0/1)		0.36	0	0.48	0	1
Death (0/1)		0.41	0	0.49	0	1
Signature (0/1)		0.66	1	0.48	0	1
Size (m2)		0.18	0.14	0.14	0.01	0.89
Condition (0/1)		0.10	0	0.30	0	1
Type (0/1) :	Board	0.64	1	0.48	0	1
	Coverpage	0.12	0	0.33	0	1
	Illustration	0.24	0	0.43	0	1
Medium (0/1):	Ink	0.90	1	0.30	0	1
	Paint	0.56	1	0.50	0	1
	Pencil	0.25	0	0.43	0	1
	Pasting/mixedmedium	0.18	0	0.38	0	1
Color (0/1): Black and white		0.64	1	0.48	0	1
Subject matter (0/1):	Action	0.27	0	0.45	0	1
	Adventure/suspense	0.21	0	0.41	0	1
	Archetypes	0.24	0	0.43	0	1
	Arts	0.08	0	0.27	0	1
	Erotism	0.10	0	0.30	0	1
	Fantasy/Magic	0.12	0	0.33	0	1
	Genre	0.35	0	0.48	0	1
	Historical context	0.06	0	0.25	0	1
	Humor	0.23	0	0.42	0	1
	Interaction	0.23	0	0.43	0	1
	Landscape	0.17	0	0.38	0	1
	Portrait	0.08	0	0.27	0	1
	Science-fiction/high-tech	0.17	0	0.38	0	1
	War/Violence	0.11	0	0.32	0	1
Number of heroes		2.15	1	3.22	0	21
Ranking Amazon		418 965	197 900	525 274	6 067	2 432 967
Number of publications		3.16	2.00	3.88	0	20

4.3.4. The model

To test for the influence of consensus about subjective judgements of art on art auction prices, we estimate hedonic pricing models. Our dependent variable is the (log) final auction price of each artwork. Our dataset comprises the hammer price and purchase price. The latter differs from the former because it includes the buyer's premium, which corresponds to transaction fees charged to the buyer by the auction house in addition to the hammer price. We consider the price buyer's premium included since it is the real price buyers are willing to pay for the good. We use our different indexes of consensus on subjective perceptions as explanatory variables while controlling for the intrinsic heterogeneous character of artworks with a set of hedonic characteristics. To avoid any risk of multicollinearity between liking and emotional indexes, we estimate two models. Model 1 includes liking consensus indexes

(Equation 2a) and Model 2 includes emotion consensus indexes (Equation 2b). This leads to the following specifications:

$$\ln p_i = \alpha + Liking\text{-}VALCONS\text{-}insiders_i\beta_1 + Liking\text{-}VALCONS\text{-}outsiders_i\beta_2 + \sum_j Artist_{j,i}\gamma_j + \sum_k Artwork_{k,i}\delta_k + \varepsilon_{1,i} \quad (2a)$$

$$\ln p_i = a + Emotion\text{-}VALCONS\text{-}insiders_i b_1 + Emotion\text{-}VALCONS\text{-}outsiders_i b_2 + \sum_j Artist_{j,i}c_j + \sum_k Artwork_{k,i}d_k + \varepsilon_{2,i} \quad (2b)$$

where $\ln p_i$ is the log of the price of artwork *i (i* = 1, …, *N)*, $Liking\text{-}VALCONS\text{-}insiders_i$ and $Liking\text{-}VALCONS\text{-}outsiders_i$ are the liking indexes of consensus of insiders and outsiders respectively, $Emotion\text{-}VALCONS\text{-}insiders_i$ and $Emotion\text{-}VALCONS\text{-}outsiders_i$ are the emotion indexes of consensus of insiders and outsiders respectively, $Artist_{j,i}$ is the measurable artist-related attribute *j (j* = 1, …, *J)* of artwork *i*, $Artwork_{k,i}$ is artwork-specific feature *k* (*k*=1,…, *K*), $\beta, \gamma, \delta, b, c,$ and d are unknown coefficients that represent the implicit prices of the linked characteristics, $\varepsilon_{1,i}$ and $\varepsilon_{2,i}$ are the error terms.[8]

5. Results

This section is dedicated to the presentation and discussion of the results. We first analyse the impact of consensus about subjective perception of insiders and outsiders on art prices (5.1.) before having a closer look at what determines consensus on subjective perceptions of insiders and outsiders respectively (5.2.).

5.1. Impact of consensus about subjective perceptions on art prices

We aim at testing whether liking and emotional consensus influence artwork prices. To do so and as given by equations (2a) and (2b), we regress auction prices on liking and emotion indexes of consensus for both social groups, comic art collectors and non-collectors. We add variables related to the artist and artwork as controls that are kept identically for both specifications. Table 4 shows the results from our hedonic regressions.

[8] We apply Durbin-Wu-Hausman Tests (DWH) to determine if our models suffer from endogeneity issues. We use two instruments which are proxies of the degree of realism and of complexity of the drawings, obtained from the ratings of a panel of 21 experts. These tests reject any statistical presence of endogeneity in the *VALCONS* variable.

Table 4 Dependent variable: (log) price, buyer's commission incl.

Variable		Model 1	Model 2
Liking-VALCONS - insiders		5.102 ***	
Liking-VALCONS - outsiders		-2.496 **	
Emotion-VALCONS - insiders			6.442 ***
Emotion-VALCONS - outsiders			-2.985 ***
Control variables			
Length of the biography		-0.011	-0.023
Artist's Award (0/1)		0.660 ***	0.681 ***
Number of publications		0.319 **	0.321 **
Death (0/1)		0.160	0.165
Signature (0/1)		0.188	0.157
Size (m2)		0.261 *	0.249 *
Condition (0/1)		0.157	0.129
Type (0/1) :	Coverpage	0.856 ***	0.862 ***
	Illustration	0.304	0.208
Medium (0/1):	Paint	-0.190	-0.198
	Pencil	0.458 **	0.397 **
	Pasting/mixedmedium	-0.259	-0.177
Color (0/1): Black and white		-0.262	-0.284
Subject matter (0/1):	Action	-0.120	-0.155
	Adventure/suspense	-0.184	-0.192
	Archetypes	-0.154	-0.141
	Arts	0.927 ***	0.940 ***
	Erotism	-0.154	-0.139
	Fantasy/Magic	0.802 ***	0.833 ***
	Genre	0.228	0.250
	Historical context	0.087	0.062
	Humor	-0.877 ***	-0.934 ***
	Interaction	0.013	0.024
	Landscape	0.047	0.023
	Portrait	-0.027	0.043
	Science-fiction/high-tech	-0.222	-0.294
	War/Violence	-0.185	-0.132
Number of famous heroes		0.165	0.217 **
Constant		7.758 ***	7.695 ***
F		7.1	7.50
R2		0.696	0.707
Adjusted R2		0.598	0.613
Number of observations		124	124

***Statistically significant at 1% level, **Statistically significant at 5% level, *Statistically significant at 10% level

Model 1 focusing on the liking index of consensus (*Liking-VALCONS*) shows that positive liking consensus among experts has a highly significant and positive effect upon artwork prices, while

positive liking consensus among non-experts has the opposite effect. Model 2 targeting emotional consensus (*Emotion-VALCONS*) corroborates this finding, revealing that positive emotion consensus among art experts plays a significant and positive role in explaining auction prices. On the contrary, positive emotional consensus among non-experts about artworks has a highly negative effect on these artworks prices. These findings supports H1, as both our perception indexes have a statistically significant effect on auction prices. H2a is confirmed, as our results show that auction prices reflect consensus on perceptions of market insiders. However, our results do not support H2b, since we observe that auction prices also reflect consensus on perceptions of market outsiders.

These estimates bring novel and interesting results. First, liking and emotional consensus are differently reflected in prices depending on the social group from which they are issued. This finding can be explained in the light of other results in the literature. According to Stigler and Becker (1977), these differences in taste come from the different level of human capital between collectors and non-collectors. Unlike non-collectors, collectors spend time to contemplate original comics, are trained to analyse them, and have acquired knowledge about comic art, so that their human capital to appreciate comic art is higher than the one of non-collectors. Moreover, studies by Cupchik and Winston (1992), Leder *et al*. (2012), Leder *et al*. (2014) demonstrate that the degree of liking and emotional responses elicited by art exposure differ depending on the level of expertise. If patterns of liking and emotion are conditioned by the social group subject to art exposure, so do the values of our liking and emotion consensus indexes and in turn their contribution in explaining prices. Indeed, art expertise affects the way individuals look at artworks and, more precisely, changes individuals' evaluation process, expectations, perceptions and preferences for art (Cupchik & Gebotys, 1988; Cupchik & Winston, 1992; Vogt & Magnussen, 2007; Ylitalo *et al*., 2016; among others). This phenomenon leads to differences in the set of references that trained and untrained viewers bring to their judgement process. Artwork qualities taken into account in the art stimulus appraisal depend on the subject's experience.

Second, we observe that artworks generally achieve higher prices when they are consensually liked by collectors and eliciting positive emotion to them, as expected in H2a. Three factors are likely to explain this finding. The first factor refers to normative influence. The existence of consensus among art collectors shows that comic art market players share a common set of standards and have integrated aesthetic principles about what is considered as "good art". The comic art market appears thus to be a codified market where stakeholders tend to conform to other collectors' expectations and assess artworks similarly according to established canons. In that sense, experts' judgements are biased by acknowledged standards and the criteria of what is likeable are completely modified with expertise. As it is the insiders who influence the market, the closer an artwork is from their principles and what they think is good art, the higher is the price. Secondly, an informational herd behavior may also be at stake. Indeed, art markets are subject to uncertainty regarding the quality of the goods exchanged. Collectors may infer information from the actions of others, believing they indicate quality, so that they imitate other collectors rather than making decisions with their own information. This imitative behavior can

lead to the creation of informational cascades (Bikhchandani *et al*., 1992). Indeed, each new collector entering the comic art market may defer to the information of predecessors (*i.e.* collectors who have already entered the market) so that collectors become part of an informational cascade. This explain the phenomenon of art stars, namely the fact that in the art market the choice of buyers focus on some artists, despite a large supply (Moureau, 2000). "Star" artists emerge and their artworks achieve high prices. Thirdly, the higher prices observed for artworks consensually and positively perceived by collectors may be explained by an anticipated conspicuous consumption by collectors. Indeed, as collectors know what other collectors like, part of the collectors' behavior to pay higher prices for artworks that are consensually appreciated by peers may be directed by prestige considerations and their desire to signal their status.

Third, estimations of Models 1 and 2 indicate that auction prices of artworks are significantly lower the more lay viewers agree on the fact that they like them and feel emotionally positive while viewing them. This finding is unexpected and controverts H2b. One would think that outsiders' opinions are not relevant when explaining market prices, so that we would have observed no significant influence of non-experts' liking and emotional consensus on final purchase prices of artworks. Besides, this finding does not support the hypothesis that "universal beauty" – what is liked by all or elicits positive emotion to all – results in higher observed prices, as an increase in the price of our sampled artworks reflects positive subjective perceptions of some individuals (experts) and negative subjective perceptions of others (non-experts). Rather, this result shows that non-experts do not have the codes required to recognize "good art" that reaches high prices. This provides corroboratory evidence for the result of Winston and Cupchik (1992), namely that experienced viewers prefer high art, while naïve viewers prefer popular art. Indeed, they found that "*naive viewers liked popular art and disliked high art works, while experiences viewers showed the reserve pattern*". This discrepancy is due to distinct basis for their judgements. Naïve viewers emphasize affective dimensions such as pleasantness and warmth in their judgements of art and rate popular art as more pleasant and warmer than high art. Experienced viewers focus on objective and expressive qualities of artworks such as structural complexity for their art appraisals and find high art more complex than popular art. These two contrasting grounds for art assessment lead to two different conceptions and beliefs of the purpose of art. Experienced viewers consider that art should challenge our view of the world and require intense processing effort from the viewers, whereas naïve subjects consider that art should provide immediate positive feelings to a large number of people. Finally, as other markets, the art market is subject to fads (Pénasse *et al*. 2014), defined as "*mean-reverting deviations from intrinsic value caused by social or psychological forces*" (Camerer 1989), which also explains that outsiders are not aware of what kind of art is considered as high art and valuable by market insiders nowadays.

We can conclude that our results contradict Graham *et al.*'s assumption (2010) that "*it seems reasonable that efforts to appeal to a shared human aesthetics are responsible for at least part of a work's value*". Shared positive appreciation or emotion from insiders and outsiders do not contribute to

prices, but instead the latter are explained by restricted appreciation and emotion from insiders, which go in the opposite direction with respect to outsiders' judgements. What is liked by or elicits positive emotions to novice subjects, *i.e.* ordinary people, generally results in lower artwork prices. This is in line with Stigler and Becker (1977) showing that different levels of human capital result in differences in tastes and with Bourdieu's assumption (1979), namely that individuals engaging in art are driven by an individualisation process through which they tend to stand out from the others.

Our results show that collectors, who acquired comic art knowledge, share a common set of standards and information, which does not spread to outsiders.

5.2. Individual differences (collectors vs. non-collectors) in making judgements

As our results have shown that experts and non-experts achieve opposite consensus on liking judgement of art and emotional responses to art, we investigate in this section which dimensions, *i.e.* attributes of artworks, govern experts and non-experts judgements and if there are differences in the salience of particular dimensions between insiders and outsiders. To do so, we model consensus on liking and emotional judgements. More precisely, we first regress the consensus on liking (*Liking-VALCONS)* of insiders (Model 3, Equation 3) and outsiders (Model 4, Equation 4) on a set of artwork's attributes. Second, we regress the consensus on emotion (*Emotion-VALCONS*) of insiders (Model 5, Equation 5) and outsiders (Model 6, Equation 6) on the same set of artwork's attributes. The purpose is to determine social groups' relative valuation of these characteristics involved in the perception of art. The models are as follows:

$$Liking\text{-}VALCONS\text{-}insiders_i = e + \sum_j Artist_{j,i} f_j + \sum_k Artwork_{k,i} g_k + \varepsilon_{3,i} \qquad (3)$$

$$Liking\text{-}VALCONS\text{-}outsiders_i = h + \sum_j Artist_{j,i} p_j + \sum_k Artwork_{k,i} q_k + \varepsilon_{4,i} \qquad (4)$$

$$Emotion\text{-}VALCONS\text{-}insiders_i = r + \sum_j Artist_{j,i} s_j + \sum_k Artwork_{k,i} t_k + \varepsilon_{5,i} \qquad (5)$$

$$Emotion\text{-}VALCONS\text{-}outsiders_i = v + \sum_j Artist_{j,i} w_j + \sum_k Artwork_{k,i} z_k + \varepsilon_{6,i} \qquad (6)$$

where *Liking-VALCONS-insiders*, *Liking-VALCONS-outsiders*, *Emotion-VALCONS-insiders* and *Emotion-VALCONS-outsiders* are our indexes of consensus on liking and emotion of artwork *i (i* = 1,

…, *N)* for both social groups, $Artist_{j,i}$ is the measurable artist-related attribute *j (j* = 1, …, *J)* of artwork *i*, $Artwork_{k,i}$ is artwork-specific feature *k* (*k*=1, …, *K)*, f, g, p, q, s, t, w and z are unknown coefficients, $\varepsilon_{3,i}$, $\varepsilon_{4,i}$, $\varepsilon_{5,i}$, and $\varepsilon_{6,i}$ are the error terms.

We include the same artist's and artwork's attributes in specifications (3) to (6) than those included as control variables in the auction price regressions, apart from the artwork size. Indeed, the influence of the artwork size on art prices is a finding that has been generated for a while by economists in the art market field, so that it was a necessity to include size as a control variable for auction prices. However, in our questionnaire sent to experts and nonexperts, sizes of all artworks' images were adjusted to fit to a width of 400 (in units used by Limesurvey©), so that respondents could not have been influenced by the number of square centimetres in their ratings. Therefore, it makes no sense to include real artwork size as an explanatory variable in specifications (3) to (6). We will first analyse the determinants of consensus on liking (4.3.1) and then of consensus on emotions (4.3.2).

5.2.1. Explaining liking judgement

Table 5 shows the determinants of insiders' and outsiders' consensus on liking. Model 3 has the consensus on liking of experts as dependent variable (*Liking-VALCONS-insiders)* and Model 4 explains the consensus on liking of non-experts (*Liking-VALCONS-outsiders*).

The first significant difference and probably the most interesting result revealed in Table 5 is that art liking of collectors increases with the artist's recognition (measured by the fact that the artist has been honoured by an award for his/her career) whereas for non-collectors, art liking decreases with the artist's recognition. This result clearly shows that experts recognize the artists behind the artworks they had seen and know about their respective reputation so that their preferences agree and match with the artist's recognition. On the contrary, non-experts' preferences reveal an opposite pattern of liking, which indicates that nonexperts do not share at all the market standards. What is more, we observe that black and white artworks enhance significantly experts' consensus on liking for these stimuli, without having any influence on non-experts' judgements of liking. Again, this result shows that collectors have integrated this monochrome form as being a norm of "high art", superior to colored comic art. Indeed, black and white artworks are more frequent than colored artworks on the comic art market and reflect comic culture more, for the reason that comic artists have been largely working in black and white. For close reasons, experts' consensus on liking is negatively impacted by pasting and mixed medium compared to ink, the latter being the traditional medium used.

Table 5 Dependent variable: consensus on artworks' liking of insiders and outsiders (*Liking-VALCONS-insiders* ; *Liking-VALCONS-outsiders*)

Variable		**Model 3** *Liking-VALCONS - insiders*	**Model 4** *Liking-VALCONS - outsiders*
Length of the biography		0.013	0.007
Artist's Award (0/1)		0.044 *	-0.056 **
Number of publications		0.044 ***	0.029 *
Death (0/1)		0.025	0.011
Signature (0/1)		-0.039 *	-0.001
Condition (0/1)		-0.038	0.016
Type (0/1) :	Coverpage	0.028	0.005
	Illustration	0.069 *	0.100 ***
Medium (0/1):	Paint	0.022	0.010
	Pencil	0.020	0.037
	Pasting/mixedmedium	-0.063 **	-0.043
Color (0/1): Black and white		0.105 ***	0.025
Subject matter (0/1):	Action	0.019	0.012
	Adventure/suspense	-0.060 **	-0.043 *
	Archetypes	0.022	0.007
	Arts	-0.028	0.011
	Erotism	-0.026	-0.050
	Fantasy/Magic	-0.021	-0.040
	Genre	-0.014	-0.012
	Historical context	-0.014	0.008
	Humor	-0.012	-0.033
	Interaction	-0.045 *	-0.025
	Landscape	0.056 *	0.076 ***
	Portrait	0.041	0.023
	Science-fiction/high-tech	-0.036	-0.022
	War/Violence	0.001	-0.014
Number of famous heroes		0.045 ***	0.020 *
Constant		-0.136 *	-0.005
F		4.70	3.04
R2		0.569	0.461
Adjusted R2		0.448	0.310
Number of observations		124	124

***Statistically significant at 1% level, **Statistically significant at 5% level, *Statistically significant at 10% level

However, we also find characteristics that influence liking consensus of insiders and outsiders similarly. The number of publications contribute positively to both experts and non-experts' judgement, while being more significant for experts. In other words, the more an artwork has been published in the form of comic books, the more it is liked by experts and non-experts. The number of publications reveals the commercial success, because reprints of a first edition of a comic book mean that it has been appreciated by the readers. As insiders' preferences go hand in hand with outsiders' preferences, insiders this time do not overlook what is appreciated by the public in order to set themselves apart from the

mass. Regarding outsiders, since readers of comic books represent a much greater audience than collectors, it comes as no surprise that non-experts like what has been a public success. Last, the coefficient is almost twice higher for experts than for non-experts, so that the effect of commercial success on liking consensus is greater for experts than for non-experts. This can be explained by the greater awareness of experts of the popularity of comic books. In line with this result, Table 5 indicates that both social groups' liking is positively related to the number of famous heroes depicted in the artwork, the coefficient being twice bigger for the insider group than for the outsider group. This variable – the number of heroes which is weighted by the fame of the hero – reflects the notoriety of the hero measured with rankings on Amazon©. This result suggests that the hero is a universally liked dimension, the more it is displayed, the more the artwork is liked by all, which is explained by the fact that it is the hero's presence that definitely leads the story. Finally, consensus on preferences of experts and nonexperts converge on the illustration medium and on two subject matters depicted in artworks: the landscape topic enhances liking for both social groups, whereas the adventure/suspense topic has the adverse effect. The positive effect on liking of the illustration medium and the landscape topic is bigger for outsiders than insiders, while the negative effect of the adventure/suspense topic is lower for outsiders than insiders.

5.2.2. Measuring emotional judgement

Table 6 focuses on what makes experts' and non-experts' consensus on emotion. Model 5 has the consensus on emotions of insiders as dependent variable (*Emotion-VALCONS-insiders)* and Model 6 explains the consensus on liking of outsiders (*Emotion-VALCONS-outsiders*).

Regressions presented in Table 6 regarding emotional valence and intensity reveal some similar pattern to liking. Illustrations convey significantly more positive emotions to both insiders and outsiders than boards, and this effect is more pronounced for outsiders than insiders. Indeed, experts may be more attached to the board medium, which is emblematic of the comic culture, whereas outsiders are more unfamiliar with a unique board taken out of its context (the comic book). Next, the landscape topic evokes positive emotions to all social groups. Again, as for liking, the coefficient is higher for non-experts than experts. We may explain this finding in the light of the study by Cupchik and Winston (1992) who states that lay viewers, when exposed to art, search for familiar themes and their "personal associations form the basis for aesthetic pleasure", while experienced viewers add a degree of objectivity to the aesthetic experience. Then, a higher number of famous heroes results in higher shared positive emotional responses among experts and non-experts. The magnitude of the effect of the presence of famous heroes is similar for both social groups. Last, the black and white positively influences only the experts' consensus on emotions, whereas pasting and/or mixed medium have the opposite effect.

Nevertheless, we also distinguish that the artwork's commercial success (reflected by the number of publications) appeals to experts' positive emotions, but does not have an effect on non-

experts' emotions. As well, artworks from recognized artists affect outsiders' emotions negatively, additionally to the liking judgement, while these artworks do not trigger particular emotional consensus for insiders.

One puzzling finding of Table 6 is that the presence of a signature results in average in stronger negative emotions shared by experts and non-experts. Unexpected result on signature has also be found in a study by Campos and Barbosa (2008) who found that the presence of a signature negatively affects auction prices.

Table 6 Dependent variable: consensus on artworks' evoked emotion of insiders and outsiders (*Emotion-VALCONS-insiders* ; *Emotion-VALCONS-outsiders*)

Variable		**Model 5** ***Emotion-VALCONS - insiders***	**Model 6** ***Emotion-VALCONS - outsiders***
Length of the biography		0.007	-0.005
Artist's Award (0/1)		0.034	-0.044 **
Number of publications		0.025 *	0.002
Death (0/1)		0.014	-0.002
Signature (0/1)		-0.045 **	-0.043 **
Condition (0/1)		-0.028	0.009
Type (0/1) :	Coverpage	0.025	0.014
	Illustration	0.085 **	0.122 ***
Medium (0/1):	Paint	0.013	-0.003
	Pencil	0.024	0.026
	Pasting/mixedmedium	-0.053 **	-0.015
Color (0/1): Black and white		0.094 ***	0.037
Subject matter (0/1): Action		0.009	-0.017
	Adventure/suspense	-0.038	-0.018
	Archetypes	0.019	0.014
	Arts	-0.035	-0.014
	Erotism	-0.026	-0.048
	Fantasy/Magic	-0.014	-0.019
	Genre	-0.007	0.007
	Historical context	-0.012	-0.006
	Humor	0.014	0.005
	Interaction	-0.033	-0.013
	Landscape	0.046 *	0.059 **
	Portrait	0.021	0.019
	Science-fiction/high-tech	-0.027	-0.040
	War/Violence	-0.017	-0.032
Number of famous heroes		0.034 ***	0.032 ***
Constant		-0.057	0.089
F		3.53	3.27
R2		0.498	0.479
Adjusted R2		0.357	0.333
Number of observations		124	124

***Statistically significant at 1% level, **Statistically significant at 5% level, *Statistically significant at 10% level

6. Robustness check

As a robustness check, we also estimate our Equation (2a) and Equation (2b) with weighted consensus of liking and evoked emotions depending on the subjects' comic and art interest, education and knowledge. Thus, we refine the degree of art training of our participants (collectors and non-collectors), by weighting the ratings of our participants by the total number of points they gave on the four Likert scales ranging from 1 to 5 comprised in the art-expertise questionnaire answered prior to the survey. The degree of art and comic art training varies between 4 (no comic or art training at all) and 20 (high knowledge and involvement in comic culture and strong education in arts). Therefore, subjects within each social group – collectors and non-collectors– do not have the same weight. A new consensus index is calculated with weighted means and standard deviations of liking and emotion ratings, that we call *WEIGHTED-VALCONS*, with two variations: *Liking-WEIGHTED-VALCONS* and *Emotion-WEIGHTED-VALCONS*. These alternative indexes of consensus aim at testing the robustness of our findings with respect to possible expertise bias. Table 7 (in Appendix 3) reports results of this robustness test, with Models 7 and 8 that respectively include weighted liking consensus indexes and weighted emotion consensus indexes as explanatory variables of the price. We find that our baseline results still hold after adding an additional level of precision in the degree of art training. Collectors' liking and emotion consensus indexes show a statistically significant and positive relationship with auction prices whereas non-collectors' liking and emotion consensus indexes exhibit a significant but negative relationship with prices.

7. Conclusion

Prior to this research, the determinants of art prices that have been explored in the literature were mostly objective artworks' or artists' characteristics as well as context-related variables. Subjective determinants on the contrary have received little attention. This paper aims at casting light on how subjective perceptions – especially consensus on subjective perceptions – are reflected in art auction prices. Based on the few studies that have investigated the relationship between art prices and subjective factors, we hypothesize that consensus on art perceptions is reflected in auction prices. However, studies in economics, psychology and sociology of the arts have shown that subjective perceptions are shaped by social influences; as a consequence, art perceptions differ depending on the social group. More specifically, the level of art expertise involves changes in art perceptions. Therefore, it is likely that art collectors and non-collectors do not share the same preferences and we should distinguish between these two social groups. This leads us to formulate our second hypothesis: consensus on art perceptions of collectors – who are market insiders – are reflected in art prices but those of non-collectors – who are market outsiders – are not.

To test these hypotheses, we collect assessments of collectors and non-collectors on the same artworks, thanks to a questionnaire we built. We focus on the comic art market because it is one of the

rare art market for which collectors can be relatively easily reached through an online forum that gathers many of them. It is worth mentioning that our survey includes a particularly large number of participants compared to previous studies on art evaluations. We measure two subjective perceptions: liking and emotional response. In order to measure the consensus on art assessment of our two social groups, insiders and outsiders, we create an index of consensus.

We find a statistically significant relationship between our indexes of consensus on art perceptions (for both social groups) and art prices, which supports our first hypothesis. This result shows the importance of considering subjective perceptions when explaining art prices. Moreover, we find that consensus on liking or positive emotion among insiders play a significant and positive role in explaining auction prices, while consensus on liking or positive emotion among outsiders are significantly and negatively reflected in prices at auction. Our second hypothesis is then partially confirmed and partially contradicted. This result suggests that art collectors, who drive art market prices, are subject to normative and informational influences and driven by prestige considerations, while outsiders do not share this pool of information and aesthetic references of what can be considered as "high art". The set of standards integrated by collectors turns out to be the opposite of what is generally liked and positively felt by naïve art viewers, *i.e.* ordinary people, supporting Bourdieu's assumption (1979) of a differentiation process underlying people's engagement in arts. It seems that art prices cannot be understand in large aesthetic terms but rather only in aesthetic codes established by and shared among insiders. In the end, our results contradict the assumption of Graham *et al.* (2010) that "it seems reasonable that efforts to appeal to a shared human aesthetics are responsible for at least part of a work's value". Delving deeper into the relationship between artworks' and artists' characteristics on one side and subjective perceptions on the other, we report a difference between the artworks' and artists' characteristics that influence the liking and emotional judgements of collectors and non-collectors respectively, which explains our main findings.

Finally, our study allows for a better understanding of human perception, shared preferences and the interaction between aesthetic judgements and prices. This paper also opens the way towards future research. In this study, we have considered a particular art market, for which the collectors were accessible. Future research using data from other art markets could explore the influence that subjective perceptions of insiders and outsiders have on other art objects' prices. A comparison between the high-end art market and the low-end art market of the contribution of subjective perceptions to prices would be particularly interesting. Also, our study is focused on the European comic art market, which is mainly located in Belgium and France. Future studies could consider participants from other countries that have different cultural backgrounds. Finally, the effect of other subjective dimensions on art prices could be investigated, for example the degree of comprehension of the art object.

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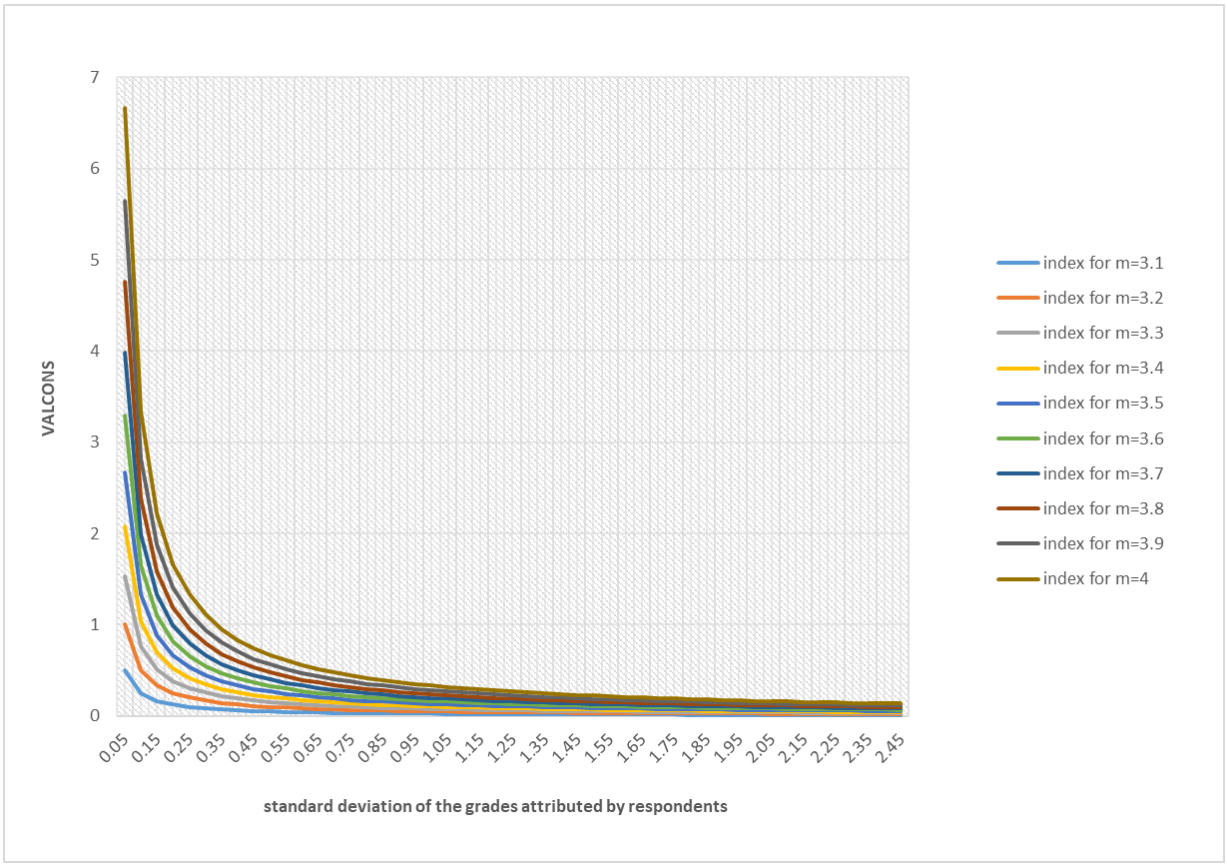
Appendices

Appendix 1.a. Figure 1: Index of consensus (*VALCONS*) when the mean perception is positive.

This figure shows how the index *VALCONS* behaves when the mean perception (liking or emotion) of a social group is positive. A positive perception of the artwork is indicated by an average rating given by participants between 3.1 and 5. For this figure, the average rating attributed by respondents (either insiders or outsiders) is fixed while the standard deviation (x-axis) evolves between 0 (complete consensus) and 2.5 (large dissensus). We show 10 scenarios of positive average rating: when the mean rating is set at 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, and 4.

We can see that the higher the mean rating is, the higher is the value taken by the index. Also, the lower is the standard deviation (*i.e.* which means a consensus), the higher is the index.

We take the example of an artwork for which the mean rating given by participants is 3.7. If the standard deviation is 0,5 which gives evidence of a relative consensus among participants, the index equals 0,4; whereas if the standard deviation is 2 which rather shows a greater dissensus among participants, the index equals 0,1.

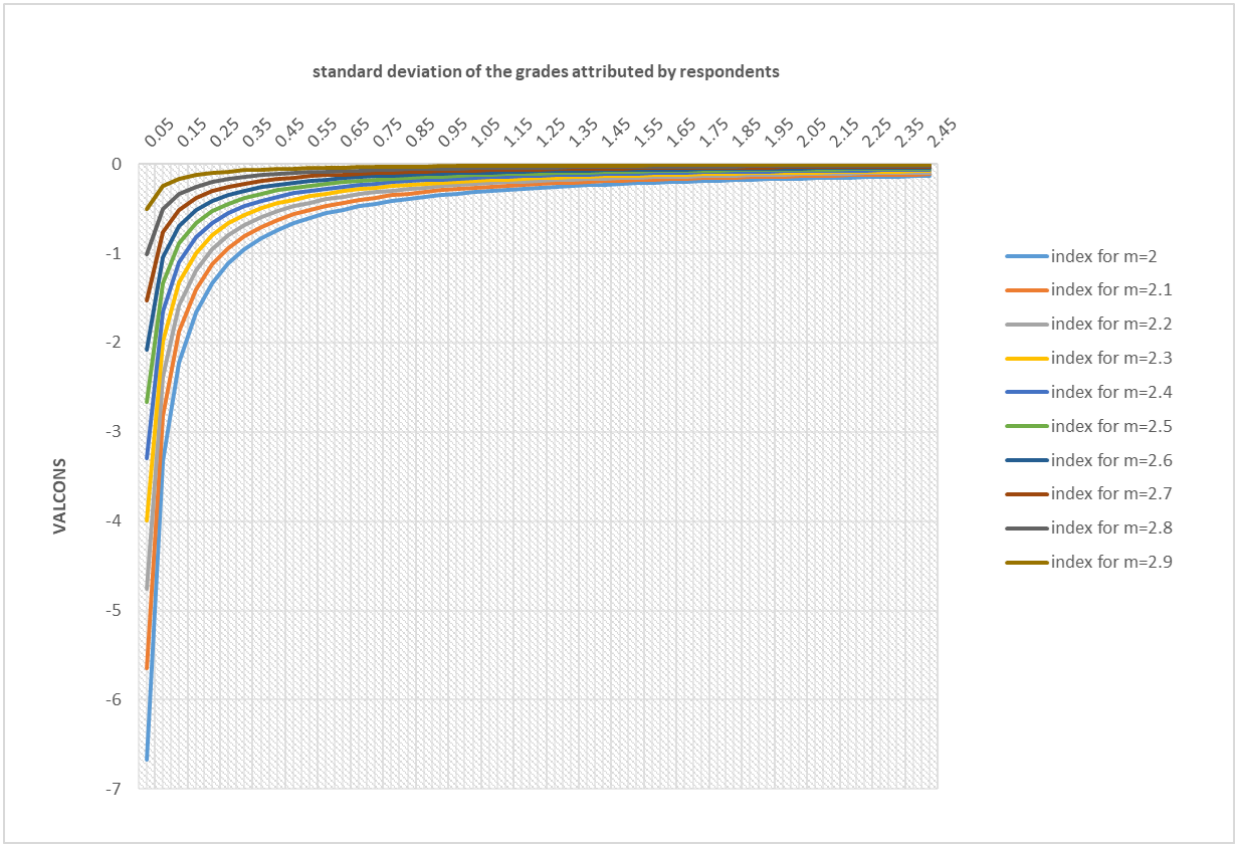


Appendix 1.b. Figure 2: Index of consensus (*VALCONS*) when the mean judgement is rather negative.

This figure shows how the index *VALCONS* behaves when the mean perception (liking or emotion) of a social group is negative. A positive perception of the artwork is indicated by an average rating given by participants between 1 and 2.9. For this figure, the average rating attributed by respondents (either insiders or outsiders) is fixed while the standard deviation (x-axis) evolves between 0 (complete consensus) and 2.5 (large dissensus). We show 10 scenarios of negative average rating: when the mean rating is set at 2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, and 2.9.

We can see that the lower the mean rating is, the lower is the value taken by the index. Also, the lower is the standard deviation (*i.e.* which means a consensus), the lower is the index.

We take the example of an artwork for which the mean rating given by participants is 2.3. If the standard deviation is 0.5 which gives evidence of a consensus among participants, the index equals -0.4; whereas if the standard deviation is 2 which rather shows a greater dissensus among participants, the index equals -0.1.

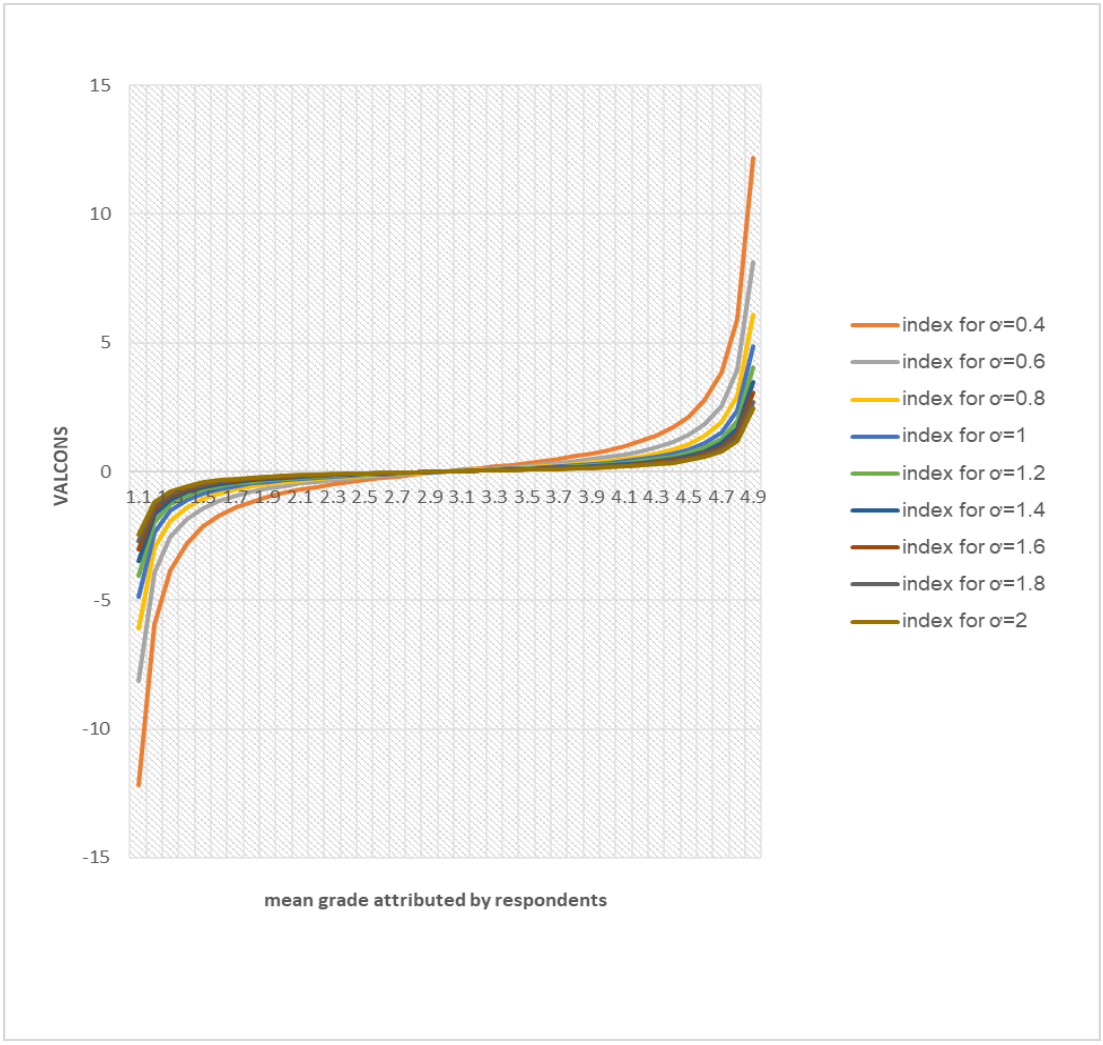


Appendix 1.c. Figure 3: Index of consensus (*VALCONS*) when the level of consensus is fixed.

This figure shows how the index *VALCONS* behaves when the standard deviation of the ratings (*i.e.* the level of consensus on liking or on emotion) of a social group is fixed. A consensus is indicated by a low standard deviation and a dissensus is indicated by a high standard deviation. For this figure, the standard deviation is fixed while the mean rating of participants (x-axis) evolves between 1 (absolute disliking or high negative emotion) and 5 (absolute liking or high positive emotion). We show 9 scenarios of standard deviation: when the standard deviation is set at 0.4, 0.6, 0.8, 1, 1.2, 1.4, 1.6, 1.8, and 2.

We can see that the lower the standard deviation is, the higher is value taken by the index. Also, the higher is the mean rating, the higher is the index. Symmetrically, the lower is the mean rating, the lower is the index.

Let us take the example of an artwork for which the standard deviation of the ratings given by respondents is 1. If the mean rating is negative, at 2.2, the index equals -0.24. If the mean rating is positive, at 3.8, the index equals 0.24.



Appendix 2. Variable definitions

Variable	Definition
Price buyer's premium incl.	Price buyer's premium incl. is the natural logarithm of the purchase price (hammer price and all fees included) in Euros
Liking-VALCONS - insiders	Liking-VALCONS - insiders is the index of consensus on liking of insiders on the lot. The index of consensus is calculated according to formula (1), using the average liking rating given by insiders on the lot and the standard deviation of the liking ratings given by insiders on the lot.
Liking-VALCONS - outsiders	Liking-VALCONS - outsiders is the index of consensus on liking of outsiders on the lot. The index of consensus is calculated according to formula (1), using the average liking rating given by outsiders on the lot and the standard deviation of the liking ratings given by outsiders on the lot.
Emotion-VALCONS - insiders	Emotion-VALCONS - insiders is the index of consensus on emotion of insiders on the lot. The index of consensus is calculated according to formula (1), using the average emotion rating given by insiders on the lot and the standard deviation of the emotion ratings given by insiders on the lot.
Emotion-VALCONS - outsiders	Emotion-VALCONS - outsiders is the index of consensus on emotion of outsiders on the lot. The index of consensus is calculated according to formula (1), using the average emotion rating given by outsiders on the lot and the standard deviation of the emotion ratings given by outsiders on the lot.
Length of the biography	Length of the biography is the number of words in the artist biography found on Bédéthèque website.
Artist's Award (0/1)	Artist's Award (0/1) is a dummy variable equaling one if the artist has been honoured by an award for her/his career (Grand Prix de la ville d'Angoulême), 0 otherwise.
Number of publications	Number of publications is the number of times the comic book (from which the artwork comes) has been published, including the foreign language editions.
Death (0/1)	Death (0/1) is a dummy variable equaling one if the artist is dead at the time of the auction sale, 0 otherwise.
Signature (0/1)	Signature (0/1) is a dummy variable equaling one if the artwork is signed, 0 otherwise.
Size (m2)	Size (m2) is the size of the artwork in square meters.

Condition (0/1)	Condition (0/1) is a dummy variable equaling one if the artwork is damaged (retouching, patches, tears, yellowing etc, 0 otherwise.), 0 otherwise.
Board	Board is a dummy variable equaling one if the artwork is a board or a strip (which is a part of a board), 0 otherwise.
Coverpage	Coverpage is a dummy variable equaling one if the artwork is a coverpage, 0 otherwise.
Illustration	Illustration is a dummy variable equaling one if the artwork is an illustration, 0 otherwise.
Ink	Ink is a dummy variable equaling one if one of the medium used for the artwork is ink, 0 otherwise.
Paint	Paint is a dummy variable equaling one if one of the medium used for the artwork is paint, 0 otherwise.
Pencil	Pencil is a dummy variable equaling one if one of the medium used for the artwork is pencil, 0 otherwise.
Pasting/mixedmedium	Pasting/mixedmedium is a dummy variable equaling one if one of the medium used for the artwork is pasting or mixed medium, 0 otherwise.
Black and white	Black and white is a dummy variable equaling one if the artwork is in black and white (no colour), 0 otherwise.
Action	Action is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to action, 0 otherwise.
Adventure/suspense	Adventure/suspense is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to adventure or suspense, 0 otherwise.
Archetypes	Archetypes is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to archetypes, 0 otherwise.
Arts	Arts is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to the arts, 0 otherwise.
Erotism	Erotism is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to erotism, 0 otherwise.
Fantasy/Magic	Fantasy/Magic is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to fantasy or magic, 0 otherwise.
Genre	Genre is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to genre scenes, 0 otherwise.

Historical context	Historical context is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to historical context, 0 otherwise.
Humor	Humor is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to humor, 0 otherwise.
Interaction	Interaction is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to interaction, 0 otherwise.
Landscape	Landscape is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to landscape, 0 otherwise.
Portrait	Portrait is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to portrait, 0 otherwise.
Science-fiction/high-tech	Science-fiction/high-tech is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to science fiction or high technologies, 0 otherwise.
War/Violence	War/Violence is a dummy variable equaling one if one of the subject matter depicted in the artwork refers to war or violence, 0 otherwise.
Number of famous heroes	Number of famous heroes is the number of times the hero(es) is/are displayed in the artwork weighted by the Amazon ranking of the album from which they originate.

Appendix 3. Table 7. Robustness check

Table 7 Dependent variable: (log) price, buyer's commission incl. (N=124)

Variable		Model 7	Model 8
Liking-WEIGHTED-VALCONS - insiders		4.992 ***	
Liking-WEIGHTED-VALCONS - outsiders		-2.226 **	
Emotion-WEIGHTED-VALCONS - insiders			6.157 ***
Emotion-WEIGHTED-VALCONS - outsiders			-2.737 **
Control variables			
Length of the biography		-0.006	-0.013
Artist's Award (0/1)		0.667 ***	0.694 ***
Number of publications		0.327 **	0.333 **
Death (0/1)		0.157	0.176
Signature (0/1)		0.179	0.164
Size (m2)		0.268 **	0.266 **
Condition (0/1)		0.151	0.120
Type (0/1) :	Coverpage	0.857 **	0.890 ***
	Illustration	0.300	0.227
Medium (0/1):	Paint	-0.185	-0.185
	Pencil	0.437 **	0.375 *
	Pasting/mixedmedium	-0.262	-0.196
Color (0/1): Black and white		-0.252	-0.267
Subject matter (0/1): Action		-0.119	-0.152
	Adventure/suspense	-0.167	-0.193
	Archetypes	-0.149	-0.148
	Arts	0.903 ***	0.925 ***
	Erotism	-0.150	-0.133
	Fantasy/Magic	0.796 ***	0.817 ***
	Genre	0.223	0.241
	Historical context	0.112	0.055
	Humor	-0.906 ***	-0.971 ***
	Interaction	-0.002	0.024
	Landscape	0.029	0.013
	Portrait	-0.053	0.005
	Science-fiction/high-tech	-0.231	-0.311
	War/Violence	-0.177	-0.136
Number of famous heroes		0.155	0.209 *
Constant		7.722 ***	7.631 ***
F		7.05	7.35
R2		0.695	0.703
Adjusted R2		0.596	0.608
Number of observations		124	124

***Statistically significant at 1% level, **Statistically significant at 5% level, *Statistically significant at 10% level