Economic Modelling xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Economic Modelling

journal homepage: www.elsevier.com/locate/econmod

Herding behavior among wine investors

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ARTICLE INFO

Keywords:
Herding behavior
Market-wide herding
Wine market
Cross-sectional dispersion

ABSTRACT

We propose a detailed and comprehensive examination of the two main regression-based techniques used to detect herding among investors. We also introduce a novel approach based on the autocorrelation of returns. We test all models on a unique dataset of wine prices. For the first two models, our conclusions highlight the importance of macroeconomic variables (US equities) on the dispersion of wine returns. Thus, if wine investors herd, it is essentially because of external contingencies and they are not driven by the state of the wine market itself. The third (new) model seems to indicate that there is at most weak evidence of herding and the conclusions are robust when controlling for the state of the US equity market.

1. Introduction

Wine is usually a hedonistic and emotional investment. Speculative wines are usually the Grands-Crus (the “icons” or “first growth”) and come mainly from France, Italy, Spain, Australia and the US. Traditionally, buying fine wine has been linked to sentimental factors rather than purely speculative ones. Obviously, as a financial asset, wine lies outside the traditional asset classes, such as stocks and bonds and the interest of investing in fine wine is generally attributed to the low correlation with standard financial assets, which allows for portfolio diversification benefits (see, e.g., Sanning et al., 2008; Fogarty, 2010; Masset and Henderson, 2010). Thus, investing in wine combines pleasure and required return while diversifying a portfolio. It can be complementary or substitutable in a traditional portfolio.

Wine has recently become an investment vehicle like any other. There exists a global marketplace for fine wines, namely Liv-ex (the London Vintners Exchange).[1] Located in London and founded in 1999, Liv-ex publishes several wine indices.[2] Since the early 2000s, other indices have been also created like those of iDealwine (France), Winedecider (France) and Vinfolio (US). The emergence of these indices, and more specifically those of Liv-ex, has enhanced the quantity and quality of available information on the wine market. This reassures investors and steadily increases the volume of transactions. Mechanically, this also improves market liquidity and encourages even more wine connoisseurs to invest in fine wines. This recent rise in fine wine trading activity has generated a growing amount of data that allows the study of investor behavior on the wine market. One intriguing question is whether or not investors influence each other when they trade rare wines. This issue is important in order to understand how information is incorporated into wine prices.

Herding is typically described as the tendency of investors to imitate others or flock together when they trade securities. This topic has received considerable attention in the financial literature and herding behavior in financial markets has been interpreted in many ways (Kindleberger and Aliber (2011), Bernstein (1993), Bernstein (1996), Galbraith (1994) or Orléan (1989), Orléan (1992), Orléan (2001)). Devenow and Welch (1996) note that herding in financial markets requires a coordination mechanism which can arise from a widely spread coordination rule based on either a signal (price movement) or each one's skill at observing other decision-makers. There are two polar views of herding behavior, namely the non-rational and rational views. The non-rational view of herding focuses on investor psychology and holds that agents follow one another blindly and ignore rational analysis.[3] Beyond this non-rational aspect of herding, there are also several rational reasons to copy others, such as imperfect information, reputation concern and compensation structures. Orléan

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[1] www.liv-ex.com

[2] Fine Wine 50, Fine Wine 100, Bordeaux 500, Fine Wine 1000, Fine Wine Investables.

[3] The non-rationality of herding occurs when all agents have the same lack of knowledge and each one copies the others by assuming that they hold the relevant information. Thus, herding remains positive until a certain threshold, as long as it increases the individual performances. Beyond this level, it becomes harmful. DeLellis et al. (2017) note that irrational herding creates inequalities and harms the potential benefits of mutual interactions. Bubbles and crashes in the stocks markets are examples of non-rational herding behavior where individual investors follow the crowd in a rush. For a synopsis of the various cases of collective hysteria on financial markets, see Kindleberger and Aliber (2011).

http://dx.doi.org/10.1016/j.econmod.2017.07.022
Received 16 January 2017; Received in revised form 29 May 2017; Accepted 31 July 2017

(1989) notes that herding is a rational behavior since it is the most adapted behavior vis-à-vis uncertainty and allows the improvement of individual performance.

The empirical literature on herding behavior can be divided into two streams: group-wide and market-wide herding. The group-wide herding approach studies market participants',herding behavior.[4] The latter includes mutual fund managers, financial analysts and traders. The majority of empirical studies related to group-wide herding uses the measure of Lakonishok et al. (1992) (LSV), which corresponds to the average tendency of a group of investors to trade together (buy or sell). In other words, this measure examines herding behavior expressed as the degree of correlated trading between investors.[5]

Market-wide herding focuses on the collective behaviors of all investors toward the market view and therefore buying or selling a particular asset at the same time. In other words, according to Henker et al. (2006), this type of herding occurs when investors follow the performance of the market and ignore the individual characteristics of the stocks. The majority of empirical studies related to market-wide herding uses the concept of cross-sectional dispersion of stock returns. Herding is captured as a relationship between dispersions and the market return. Introduced by Christie and Huang (1995), the core idea is that the dispersion of individual returns is expected to be relatively low upon the occurrence of herding: individual stock returns are clustered around the overall market return. They examine the US stock market (NYSE and Amex firms) and suggest that investors are more inclined to abandon their own beliefs in favor of market consensus during periods of extreme price fluctuations, which leads to herding. Their study points out a higher dispersion of stock returns during periods of market stress and shows no evidence of herding in the US stock market. Then, Chang et al. (2000) extend the study of Christie and Huang (1995) by introducing a non-linear relationship between the level of dispersion, measured by the cross-sectional absolute deviation of returns, and the market return. They examine the presence of herding across developed and emerging markets. While their results show significant evidence of herding in Taiwan and South Korea, only partial evidence is found in Japan. The authors also find no evidence in US and Hong Kong markets and confirm the results of Christie and Huang (1995). The approaches of Christie and Huang (1995) and Chang et al. (2000) or their modified versions are widely used in the academic literature and applied to a number of different markets and countries.[6] Hwang and Salmon (2004) propose an altered approach on the basis of cross-sectional dispersion of the betas, as in Chen (2013), Khan et al. (2011) and Lakshman et al. (2013). They estimate herding behavior in the US and South Korean stock markets and they find that herding toward the market shows significant persistence and movements independently of any given market conditions. Thus, herding behavior occurs because of sentiment rather than macro factors. The authors also show that even though herding occurs when the market is both rising and failing, it is less prevalent during the periods of market stress.

All in all, most of the previous literature focuses on the stock markets and suggests that herding behavior more probably occurs in emerging markets than in developed markets. In addition to the academic literature focused on stock markets, there are also some studies on commodity markets such as energy, metals, grains or livestock (see, e.g, Chunrong et al., 2006; Demirer et al., 2015; Pierdzioch et al., 2013; Pindyck and Rotemberg, 1990 or Steen and Gjolberg, 2013). The literature provides conflicting results on herding in these markets.

In this paper, we investigate the herding behavior in the wine market. To our knowledge, there has been no study investigating herding among wine investors. Wine prices are studied in Coqueret (2015) (pricing of wine bottles), Dimson et al. (2015) (impact of aging), Lecocq and Visser (2006) (hedonic regressions), Masset and Henderson (2010) (portfolio diversification) and Qiao and Chu (2014) (forecasting of GDP), but our perspective is novel.

Our contributions can be summarized as follows. First, we provide a thorough analysis of the regression-based methods of Christie and Huang (1995),Chang et al. (2000) and Chiang and Zheng (2010). We show that their results were somewhat predictable and propose an alternative test, based on the instantaneous autocorrelation of returns. Empirically, the conclusions for the first two methods are the same as for the equity returns and, likewise, the results of the two protocols lead to a contradiction. When the state of the US stock market is added as a control variable, the significance of the coefficients related to the herding variables vanishes. Our alternative methodology yields only mild support for herding among wine investors, and this conclusion is robust to macroeconomic controls.

2. Regression-based tests

The regressions all depend on the relationship between cross-sectional dispersion measures and market (aggregated) returns. For the sake of thoroughness, we will work with the two metrics used in the literature. We denote with $R_{i,t}$ the one-period time-t return of the i^{th} asset, that is, the return between time $t-1$ and t. The time-t market return $R_{m,t}$ is the cross-sectional average over all N_t wine returns available at time t. Bold letters are used to represent vectors: $\boldsymbol{R}_t$ is the N_t-dimensional vector of all time-t returns. The first metric is the cross-sectional standard deviation (CSSD):

$$CSSD_t = \sqrt{\frac{\sum_{i=1}^{N}(R_{i,t} - R_{m,t})^2}{N_t - 1}} \tag{1}$$

This is the one chosen by Christie and Huang (1995). Second, the cross-sectional absolute deviation, defined as:

$$CSAD_t = \frac{1}{N_t}\sum_{i=1}^{N}|R_{i,t} - R_{m,t}| \tag{2}$$

The latter equation is used by Chang et al. (2000) and Chiang and Zheng (2010). In the remainder of the section, we present the herding tests in detail.

2.1. The test of Christie and Huang (1995)

The impact of extreme returns on cross-sectional dispersion was originally studied in Christie and Huang (1995). Their model is the following:

$$Y_t = \alpha + \beta^U(q)D_t^U(q) + \beta^L(q)D_t^L(q) + \epsilon_t, \tag{3}$$

where $D_t^U(q)$ $(resp.\ D_t^L(q))$ is equal to one if the market return are above its $(1-q)^{th}$ $(resp.$ below $q^{th})$ quantile. Christie and Huang (1995) set q to be equal to 1% or 5% of historic returns. In their article, they work with the $Y = CSSD$ as the dispersion measure. The presence of herding behavior is contingent to $\beta^U(q)$ and $\beta^L(q)$ being significantly negative.

Now, let us present the details of the mechanism. We use the

[4] Diverse scientific communities, such as the physics and engineering communities, are also interested in the analysis of financial markets and particularly modeling of herding behavior. Their studies can be classified as group-wide herding since they try to explain the herding phenomenon on financial markets from the behavior of financial agents. For more details, see e.g. Kaizoji (2000), Lillo et al. (2008) or Vaglica et al. (2008).

[5] For studies using the LSV measure, see, e.g., Boyd et al. (2015), Bowe and Domuta (2004), Grinblatt et al. (1995), Voronkova and Bohl (2005),Welch (2000) or Wermers (1999). Furthermore, beyond the degree of correlated trading between investors, other approaches have also been undertaken to model the herding behavior of agents. For instance, the mutual influence among the agents could be described in terms of networks. For studies describing the coevolution of the mutual influence among investors with their trading patterns, or among individuals in a socio-economic context, see, e.g., da Gama Batista et al. (2015), DeLellis et al. (2017), Ehrhardt et al. (2006) or Wang and Wang (2017).

[6] See e.g. Chiang et al. (2010), Chiang and Zheng (2010), Demirer and Kutan (2006), Henker et al. (2006), Lao and Singh (2011), Tan et al. (2008) or Tessaromatis and Thomas (2009).