

Padua 2017 Abstract Submission

Title

Are there Bubbles in Wine?

I want to submit an abstract for:

Conference Presentation

Corresponding Author

Fernandez-Perez Adrian

E-Mail

adfernan@aut.ac.nz

Affiliation

Auckland University of Technology

Co-Author/s

Name	E-Mail	Affiliation
Bart Frijns	bart.frijns@aut.ac.nz	Auckland University of Technology
Alireza Tourani-Rad	alireza.touranirad@aut.ac.nz	Auckland University of Technology
Jean-Philippe Weisskopf	jean-philippe.weisskopf@ehl.ch	Ecole hôtelière de Lausanne, HES-SO // University of Applied Sciences Western Switzerland

Keywords

Heterogeneous Agent Model; Fundamentalists vs. Trend Followers; Bubbles

Research Question

Are there bubbles in wine index prices? why and who creates those bubbles?

Methods

Quasi-Maximum Likelihood; Random Walks

Results

We document that any large positive or negative deviation of prices from their fundamentals coincides with the majority of investors trading on the basis of a chartist belief.

Abstract

In the aftermath of the Dot-com bubble and the Global Financial Crisis, investors have increasingly been showing an interest in more exotic and alternative investments, such as fine wine. According to Wine Spectator, for example, sales at major wine auctions increased from 90 million USD in 2002 to 350 million USD in 2015. The combination of emotional and social wealth derived from alternative investments coupled with supposedly high returns and increased media attention have rendered them assets to own.

The particular nature of alternative assets with an essentially fixed supply and the sudden surge in demand has led to price rallies on the different collectibles markets. Mei and Moses (2002) and Renneboog and Spaenjers (2013) show attractive returns on the art market, Dimson and Spaenjers (2011) on the stamp market, while Martin (2016) indicates a good performance of classic cars investments. The market for fine wine has not been spared by this phenomenon as shown by e.g., Masset & Henderson (2010) and Sanning et al. (2008). The appearance of wine funds (Lucey & Devine, 2015; Masset & Weisskopf, 2015) since the beginning of the 2000s and the substantial increase in demand for wine, especially from Asia (Masset et al., 2016), since the Global Financial Crisis has reinforced the price momentum.

Wine can further be considered an emotional asset. Thus, market participants not only invest to pursue financial goals but also for the emotional wealth that can be derived from its holding. This characteristic triggers a situation

in which the wine market shows various anomalies. First, it has been shown that the wine market cannot be considered efficient within the framework of Fama (1970). Erdős and Ormos (2013) using different models illustrate various degrees of autocorrelations as evidence of market inefficiencies. Second, wine, and here especially Lafite Rothschild, has witnessed some sort of bubble and crash pattern in 2011. The emotional aspect of wine can indeed explain the bubble-like behaviour (Czupryna & Oleksy, 2015; Dimson et al., 2015; Jovanovic, 2013), where prices deviate from their intrinsic value over prolonged periods of time. Persistent price appreciation followed by market collapse can be influenced by both rational and irrational factors, and beliefs that investors have about the future prospects of an asset can introduce an additional source of risk. Finally, at times, severe price dispersions across wine markets have been observed (Jaeger & Storchmann, 2011; Masset et al., 2016) which invalidates the law of one price, according to which the price of an identical good should be uniform.

The deviation from the law of one price appears rather persistent through time. The reasons for this observation on the fine wine market are manifold. It may be due to a technical feature such as the declining price anomaly at auctions (Ashenfelter, 1989; Ginsburgh, 1998). However, even outside auction houses, price dispersion remains important (Jaeger & Storchmann, 2011). In a classic setting, these price discrepancies should disappear in the presence of arbitrageurs. This, however, is not really evidenced in practice as the wine market is fairly illiquid, has quite high transaction costs (storage, shipping, insurance, auction premia) and suffers from severe information asymmetries. As a consequence, it may not be worthwhile for arbitrageurs to profit from even seemingly large price discrepancies. Finally, price differences can emanate from a heterogeneous customer base due to market segmentation (Häberle-Masset 2016; Cardebat et al. 2016). Buyers may trade in wine for very different reasons (collection, investment, consumption) which lets them react to different price triggers and levels based on their knowledge, access to information or beliefs of the future evolution of the market. The strong information asymmetry on the wine market reinforces this issue as some segments (collectors or enthusiasts) may have a deeper understanding of it and use private networks and information to trade at more attractive prices. Others, on the other hand, may be relatively inexperienced on the market (e.g., wine fund managers or inexperienced buyers) and in a first step may follow past prices to gain a quick understanding of the market while learning the ins and outs with time. We, therefore, would expect the wine market to be profuse with customers facing strong emotions and information asymmetries. These different customer segments could trade at different moments in time and based on different price triggers dependent on their informational background.

This situation leads to an interesting setting to analyse the effect of information asymmetry (or gathering) and diverging trading behaviours may have on the demand and consequently price dynamics of the wine market. Our paper looks into this topic by particularly examining how market participants on the market for fine wine build their beliefs on the future development of the market based on a differentiated access to information and trade on it. More specifically, we examine the price dynamics, and bubble and crash behaviour, on the market for fine wine by making use of a Heterogeneous Agent Model (HAM). A HAM assumes that a market is populated with investors who form beliefs about the future value of an asset based on different informational strategies and switch between these different beliefs based on signals they derive from the past performances of their trading strategies. The model assumes that investors can generally have two types of beliefs. They can either be fundamentalists, believing in mean-reversion of wine prices towards a level which seems to represent a fair value, or they can be chartists or trend-followers, who trade on a belief that recent trends in the market can be extrapolated into the future.

We implement this HAM to explain the dynamics of the Liv-Ex Fine Wine Investables Index, which tracks the most investable wines of the fine wine market, and find significant evidence of the existence of both types of traders in this market. Moreover, we find evidence of significant switching behaviour between the fundamentalist and chartist beliefs, where investors follow the belief that has been the most accurate in forecasting prices in the recent past. This switching behaviour can explain price deviations from fair values observed on the fine wine market. Specifically, we document that any large positive or negative deviation from fundamentals coincides with the majority of investors trading on the basis of a chartist belief. Further robustness testing reveals that our results do not hinge on the particular specification of the fair value, as results hold using alternative specifications. This alleviates any concerns about the precise concept of a “fundamental” value of wine, as its definition does not appear to impact our findings.

We further refine and extend our analysis to a set of Liv-Ex indices covering several distinct winegrowing regions from across the world. We document that the heterogeneity in beliefs of investors is strongest for the Liv-Ex Fine

Wine Investables Index. This result is expected as Bordeaux wines - which are the constituents of the Liv-Ex Fine Wine Investables Index - are the best-known wines and are most prone to speculative investing due to their status and relatively high market depth. It, furthermore, tends to display the highest heterogeneity in terms of market participants as compared to smaller, more complex regions analysed. Overall, our model and results provide an explanation for bubble and crash behaviour in fine wine prices and the observed high volatility in wine as documented by Dimson et al (2015) who observe the volatility of their wine index exceeds that of equities.

Our findings contribute to literature in multiple ways, and are not only interesting and applicable to the fine wine market, but potentially to any market on which emotional assets trade and different customer segments build up diverging beliefs. To the best of our knowledge, we are the first to implement a HAM on a wine market. This model appears especially useful to study and explain the price dynamics of the fine wine market in the presence of diverse clients with different beliefs and informational characteristics. While some papers have looked into the pricing of fine wines (Oczkowski & Doucouliagos, 2014) and its benefits as an asset class (Storchmann, 2012) the importance of segmentation and the effect this has on the price dynamics of the market has received very little attention. Furthermore, the use of wine indices covering multiple wine-growing regions on which different customer segments operate deepens the analysis. The application of our model clearly demonstrates that it is especially those sub-markets on which investors and/or speculators are active that display the highest heterogeneity and switching behaviour. Market segments which are more difficult to access by buyers with a lesser knowledge of the wine market and for which price information is less readily available display a more homogenous behaviour. In addition, our paper contributes to the explanation of the creation of price bubbles on the fine wine market. The existence of a bubble like evolution on the Bordeaux and especially Lafite market has been put forward by practitioners (Serdarevic, 2012) and hinted at by academics (Masset & Weisskopf, 2016) but its existence or creation has not received due attention.

File Upload (PDF only)

- [Abstract-AAWE_9Dec2016.pdf](#)

Are there Bubbles in Wine?

Adrian Fernandez-Perez^{a,*}

Bart Frijns^a

Alireza Tourani-Rad^a

Jean-Philippe Weiskopf^b

This Version: December 2016

* Corresponding author: Adrian Fernandez. Phone: +64 9 921 9999; Fax: +64 9 921 9940; Email: adrian.fernandez@aut.ac.nz

^a Auckland University of Technology, Private Bag 92006, 1142 Auckland, New Zealand

^b Ecole hôtelière de Lausanne, HES-SO // University of Applied Sciences Western Switzerland & Bordeaux Wine Economics.

Abstract

In the aftermath of the Dot-com bubble and the Global Financial Crisis, investors have increasingly been showing an interest in more exotic and alternative investments, such as fine wine. According to Wine Spectator, for example, sales at major wine auctions increased from 90 million USD in 2002 to 350 million USD in 2015. The combination of emotional and social wealth derived from alternative investments coupled with supposedly high returns and increased media attention have rendered them assets to own.

The particular nature of alternative assets with an essentially fixed supply and the sudden surge in demand has led to price rallies on the different collectibles markets. Mei and Moses (2002) and Renneboog and Spaenjers (2013) show attractive returns on the art market, Dimson and Spaenjers (2011) on the stamp market, while Martin (2016) indicates a good performance of classic cars investments. The market for fine wine has not been spared by this phenomenon as shown by e.g., Masset & Henderson (2010) and Sanning et al. (2008). The appearance of wine funds (Lucey & Devine, 2015; Masset & Weisskopf, 2015) since the beginning of the 2000s and the substantial increase in demand for wine, especially from Asia (Masset et al., 2016), since the Global Financial Crisis has reinforced the price momentum.

Wine can further be considered an emotional asset. Thus, market participants not only invest to pursue financial goals but also for the emotional wealth that can be derived from its holding. This characteristic triggers a situation in which the wine market shows various anomalies. First, it has been shown that the wine market cannot be considered efficient within the framework of Fama (1970). Erdős and Ormos (2013) using different models illustrate various degrees of autocorrelations as evidence of market inefficiencies. Second, wine, and here especially Lafite Rothschild, has witnessed some sort of bubble and crash pattern in 2011. The emotional aspect of wine can indeed explain the bubble-like behaviour (Czupryna & Oleksy, 2015; Dimson et al., 2015; Jovanovic, 2013), where prices deviate from their intrinsic value over prolonged periods of time. Persistent price appreciation followed by market collapse can be influenced by both rational and irrational factors, and beliefs that investors have about the future prospects of an asset can introduce an additional source of risk. Finally, at times, severe price dispersions across wine markets have been observed (Jaeger & Storchmann, 2011; Masset et al., 2016) which invalidates the law of one price, according to which the price of an identical good should be uniform.

The deviation from the law of one price appears rather persistent through time. The reasons for this observation on the fine wine market are manifold. It may be due to a technical feature such as the declining price anomaly at auctions (Ashenfelter, 1989; Ginsburgh, 1998). However, even outside auction houses, price dispersion remains important (Jaeger & Storchmann, 2011). In a classic setting, these price discrepancies should disappear in the presence of arbitrageurs. This, however, is not really evidenced in practice as the wine market is fairly illiquid, has quite high transaction costs (storage, shipping, insurance, auction premia) and suffers from severe information asymmetries. As a consequence, it may not be worthwhile for arbitrageurs to profit from even seemingly large price discrepancies. Finally, price differences can emanate from a heterogeneous customer base due to market segmentation (Häberle-Masset 2016; Cardebat et al. 2016). Buyers may trade in wine for very different reasons (collection, investment, consumption) which lets them react to different price triggers and levels based on their knowledge, access to information or beliefs of the future evolution of the market. The strong information asymmetry on the wine market reinforces this issue as some segments (collectors or enthusiasts) may have a deeper understanding of it and use private networks and information to trade at more attractive prices. Others, on the other hand, may be relatively inexperienced on the market (e.g., wine fund managers or inexperienced buyers) and in a first step may follow past prices to gain a quick understanding of the market while learning the ins and outs with time. We, therefore, would expect the wine market to be profuse with customers facing strong emotions and information asymmetries. These different customer segments could trade at different moments in time and based on different price triggers dependent on their informational background.

This situation leads to an interesting setting to analyse the effect of information asymmetry (or gathering) and diverging trading behaviours may have on the demand and consequently price dynamics of the wine market. Our paper looks into this topic by particularly examining how market participants on the market for fine wine build their beliefs on the future development of the market based on a differentiated access to information and trade on it. More specifically, we examine the price dynamics, and bubble and crash behaviour, on the market for fine wine by making use of a Heterogeneous Agent Model (HAM). A HAM assumes that a market is populated with investors who form beliefs about the future value of an asset based on different informational strategies and switch between these different beliefs based on signals they

derive from the past performances of their trading strategies. The model assumes that investors can generally have two types of beliefs. They can either be fundamentalists, believing in mean-reversion of wine prices towards a level which seems to represent a fair value³, or they can be chartists or trend-followers, who trade on a belief that recent trends in the market can be extrapolated into the future.

We implement this HAM to explain the dynamics of the *Liv-Ex Fine Wine Investables* Index, which tracks the most investable wines of the fine wine market, and find significant evidence of the existence of both types of traders in this market. Moreover, we find evidence of significant switching behaviour between the fundamentalist and chartist beliefs, where investors follow the belief that has been the most accurate in forecasting prices in the recent past. This switching behaviour can explain price deviations from fair values observed on the fine wine market. Specifically, we document that any large positive or negative deviation from fundamentals coincides with the majority of investors trading on the basis of a chartist belief. Further robustness testing reveals that our results do not hinge on the particular specification of the fair value, as results hold using alternative specifications. This alleviates any concerns about the precise concept of a “*fundamental*” value of wine, as its definition does not appear to impact our findings.

We further refine and extend our analysis to a set of Liv-Ex indices covering several distinct winegrowing regions from across the world. We document that the heterogeneity in beliefs of investors is strongest for the *Liv-Ex Fine Wine Investables* Index. This result is expected as Bordeaux wines – which are the constituents of the *Liv-Ex Fine Wine Investables* Index - are the best-known wines and are most prone to speculative investing due to their status and relatively high market depth. It, furthermore, tends to display the highest heterogeneity in terms of market participants as compared to smaller, more complex regions analysed. Overall, our model and results provide an explanation for bubble and crash behaviour in fine wine prices and the observed high volatility in wine as documented by Dimson et al (2015) who observe the volatility of their wine index exceeds that of equities.

³ HAM literature refers to this as fundamental value. Although, we acknowledge, that the concept of a fundamental value for wine is rather moot as wine investments do not generate cash flows, one should take this concept in a generic manner and interpret it as a fair price. If we believe that the price of wine reflects common attributes such as quality (vintages and producers), individual and collective reputation and natural endowments (producer) as shown in numerous studies on wine price determinants (see, e.g., Oczkowski and Doucouliagos (2014) for a review of this literature), then one could define a fair price as a reflection of the long-run average growth rate in the price of wine.

Our findings contribute to literature in multiple ways, and are not only interesting and applicable to the fine wine market, but potentially to any market on which emotional assets trade and different customer segments build up diverging beliefs. To the best of our knowledge, we are the first to implement a HAM on a wine market. This model appears especially useful to study and explain the price dynamics of the fine wine market in the presence of diverse clients with different beliefs and informational characteristics. While some papers have looked into the pricing of fine wines (Oczkowski & Doucouliagos, 2014) and its benefits as an asset class (Storchmann, 2012) the importance of segmentation and the effect this has on the price dynamics of the market has received very little attention. Furthermore, the use of wine indices covering multiple wine-growing regions on which different customer segments operate deepens the analysis. The application of our model clearly demonstrates that it is especially those sub-markets on which investors and/or speculators are active that display the highest heterogeneity and switching behaviour. Market segments which are more difficult to access by buyers with a lesser knowledge of the wine market and for which price information is less readily available display a more homogenous behaviour. In addition, our paper contributes to the explanation of the creation of price bubbles on the fine wine market. The existence of a bubble like evolution on the Bordeaux and especially Lafite market has been put forward by practitioners (Serdarevic, 2012) and hinted at by academics (Masset & Weisskopf, 2016) but its existence or creation has not received due attention.