

# The Roles of Social Media and Expert Reviews in the Market for High-End Goods: An Example Using Bordeaux and California Wines



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# Overarching goal

Try *new* approach to evaluating/understanding expert impact on price by exploiting social media data



*"Our best—rated over 700 in both Math and Verbal."*

We take wine as a fitting case study



# Existing approach to expert influence

- ▶ Impact of an expert review entirely attributed to his/her reputation (eg., Reinstein et al. 2005; Ali et al. 2007)
- ▶ Leads to impression that market price is highly influenced by a few expert reviews
- ▶ But, expert reviews are driven in part by underlying quality
  - In turn drives price



# The appeal of wine as a case study

Features of wine that are attractive for the purposes of structural analysis:

- ▶ Interesting signal extraction problems: Quality is not fixed; it evolves over time in a non-monotonic fashion, rising for a period before falling
- ▶ Once wine has been produced and released, the evolution of wine quality is exogenous to reviews (unlike the case with, say, restaurants)



# The appeal of wine as a case study

More attractive features:

- ▶ Strong expert reviewer presence (ie, Robert Parker for the sake of the analysis)
- ▶ Wine boasts a uniquely informed and extensive rating community: CellarTracker.com



## More on CellarTracker

- ▶ A few hundred thousand users
- ▶ Tracking tens of millions of bottles of wines
- ▶ Over 5 million tasting notes
  
- ▶ Difficult to successfully manipulate the online ratings since:
  - For high-end wines, the number of reviews can be fairly large
  - Users can see number of reviews by others and can discount opinions of others who only have a few reviews completed



# Data for analysis

Collect CellarTracker scores as well as:

- ▶ Parker events via eRobertParker.com
  - ▶ Difference between revisionary review and previous review
  - ▶ First reviews come out too quickly to see impact of event with respect to CellarTracker data
- ▶ Auction prices (Wine Market Journal)
- ▶ Retail prices (Wine-searcher.com)



# What do we mean by quality?

## Features of the wine that consumers care about

- ▶ Quality is not just peoples' opinions or personal preferences
- ▶ Components of wine: concentration of fruit, level of tannins, acidity, etc.
  - Longevity (aided by combination of three above) factored into quality
- ▶ Quality changes over time
  - Makes quality assessments difficult/complex
- ▶ Note: quality characteristics people care about for a given wine depends on the person and the type of wine being consumed





## Other factors matter for price as well

While quality corresponds to internal factors (those *inside* the bottle), factors *outside* the bottle also influence price

- Think name/label
- Especially relevant: expert review scores
  - Consumers ascribes social value to these (bragging rights)



# How do we distinguish between these?

We have the public & we have CT community

Both conduct signal extraction problems to make decisions about price

But, CT users **also** make a decision about scores

- ▶ Learn/filter in a way they do not for price decision
- ▶ Exploit this difference for the purposes of identification



# How do we do this econometrically?

Use method developed in **Pedroni (2013)**

- ▶ Identify unobservable shocks in heterogeneous panel via a VAR method
- ▶ Allows for endogeneity of variables (price and Cellarracker scores)
- ▶ Allows for heterogeneity in relationship between wine attributes and quality assessments across wines, i.e. not all wines are evaluated by the same criteria
- ▶ Accounts for evolving nature of wine
- ▶ Accounts for the dynamic effect of vintages over time on both price and quality assessments



# Our unobservable shocks

Wine quality itself evolves in a smooth manner, but new information that arrives about its quality comes in the form of shocks = **"quality information shocks"**

Wine price is impacted by other factors that influence supply and demand for wine after it has been produced = **"other" shocks** (a sort of catch-all)



# Pedroni (2013) VAR approach

We use a bivariate VAR process

- ▶ VAR for each wine
- ▶ VAR is 2-equation, 2-variable model (log cellarTracker scores and log auction prices)
- ▶ Each variable is explained by its own lagged variables as well as the current and past values of the other variable
- ▶ Want to obtain the impulse responses of our endogenous variables (reactions of these variables at time of shocks and in subsequent quarters)



# Specifics of identification

Use CT to help in identification

- ▶ Other shocks have no immediate direct impact on CT quality assessment
- ▶ They have indirect impact over time since they impact price, and CT reviews may be done in part conditional on price
  - ▶ ie, "what is the quality relative to the price I paid?"
- ▶ Key identifying restriction (for SVAR) specifies: CellarTracker scores do not change in the short-run w.r.t. other shocks
  - Restricts an element of the impact matrix



# Bringing in Parker

Treat Parker as known event & decompose into the two shocks of interest (quality information & other)

What does "other" mean for Parker? Argue it is a publicity shock,

since Parker reviews:

- (1) are an innovation to the quality information stockpile [*quality information shock*]
- (2) disseminate information to a larger audience (due to his reputation), thus raising awareness [*publicity shock*]



# Interpreting results

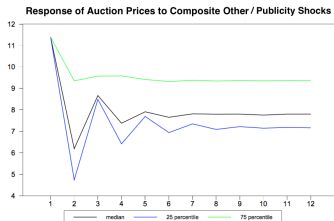
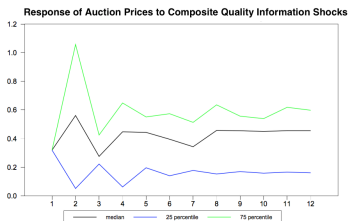
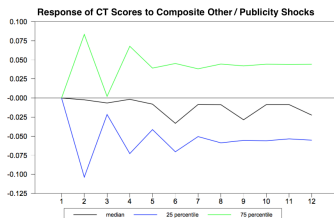
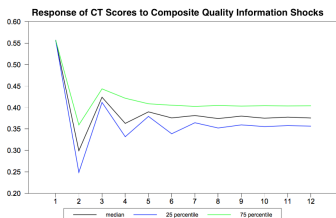
- ▶ Impulse responses describe reaction of endogenous variables at time of shocks and during subsequent time periods
- ▶ Since using logs, these are percent responses
- ▶ There are impulse responses for each wine and each looks different
  - ▶ Challenge: these graphs represent responses for the whole sample—illustrate the spread of the responses
  - ▶ Represent with quantiles (not showing confidence intervals)





# Responses to the two types of shocks

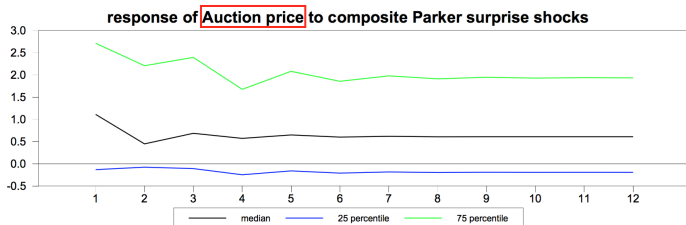
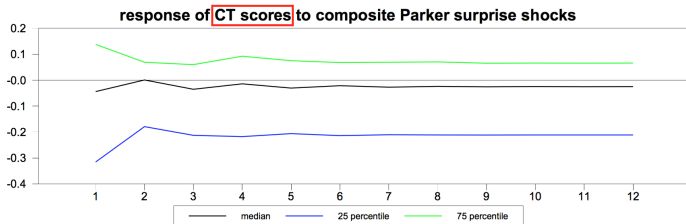
Without Parker:



Response of price to other/publicity shocks is much larger than response to quality information shocks



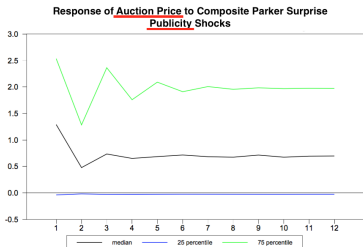
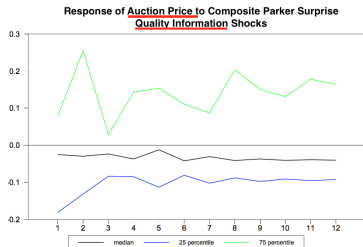
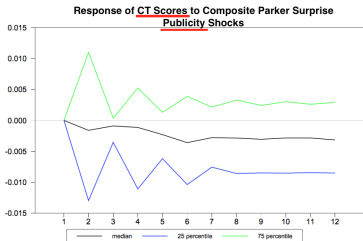
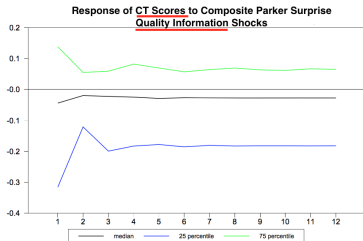
# Responses to composite Parker shocks



Now we want to decompose the Parker shocks into quality information & publicity parts...



# Results to the two components of Parker



Story of heterogeneity of mean reviewer score  
among different wines relative to Parker



# Summary of results

- ▶ Evidence that expert reviews influence the market primarily due to the publicity effect, rather than due to quality information effect
- ▶ Heterogeneity of average CT reviewers among different wines relative to Parker
  - Potential story here: components of wine evaluated differently due to geographic context
  - I.e: Parker-favored components (Parkerization) generate different ratings in Bordeaux vs. California



## Future work

- ▶ Look into wines making up the graphs for further understanding of heterogeneity of CT across different wines (esp w.r.t. California vs. Bordeaux geography)
- ▶ Look into specific characteristics of wine associated with both CT and Parker reviews
  - Scrape the textual components of CT/Parker reviews and investigate descriptive characteristics
  - Special attention to classic descriptions of "Parkerization"





Thanks!  
Questions?

