



香港大學

THE UNIVERSITY OF HONG KONG

Laidlaw Scholars Programme 2019-20 Research Proposal

Guidelines on how to prepare a research proposal:

- Identify a project of your choice and discuss the topic with your academic supervisor at HKU.
- Prepare a research proposal including the following details:

1. Title of research project:

Pay and Display: What determines the price of a painting?

2. Research question:

- ✚ How has different auction house affected the sale of artwork?
- ✚ Would the reputation of artist and provenance still play a robust role when the historical/cultural factors are taken into account?
- ✚ How can the aesthetic value of a painting be translated into its price?

3. Summary of the work to be undertaken by the applicant (e.g., background information, location, history, context, limitation, methodology, and timeline)

The economics of painting has quite some unique characteristics: high in heterogeneity and transaction costs, low in fungibility and frequency of trade. Due to the lack of continuous monitoring of price system, the know-hows for art investments are immensely exclusive to art experts and a tiny circle of investors, even though some expert “insights” fail to reflect the reality (e.g. masterpiece effect), making art not much of a friendly option for investors new to the market. Consistent upward bias in price estimates over the span of 30 years was discovered in Mei and Moses (2005), contributing to its subsequent underperforming returns. To combat that unfavourable result, determining factors that significantly affect price should be of top priority. Through extensive literature search, I’ve found some interesting results on how researchers analyze the price indicator with different perspective. With information available from pre-auction catalogues, Campos (2008) saw the significance of dimensions and inclusion in exhibit/artbook in determining price. In another research, Mei and Moses (2002) observed that Old Masters painting at Sotheby’s throughout 20th century generally sell at a higher price in New York art auction market. Investment-wise, popular belief of masterpieces being good investment has been debunked by economists that not only they underperforms non-masterpieces in returns but some newer research (Korteweg & Verwijmeren, 2013) even argues that the diversified portfolio with artworks (masterpiece or not) doesn’t strictly outperform one with stocks/bonds.

Despite the fact that experts’ opinion was argued to have limited power in predicting the sale of an artwork, Campos (2008) pointed out the possibility that different auction houses may yield better result. It should be meaningful to compare results from Sotheby’s, Christie’s, Philips, and even Bonhams by implementing fixed-effects probit estimator. Since art is consumer good at the core, the functionality

including aesthetics and cultural/historical importance matter as much as its investment potential in estimation, yet they were mostly noted as unquantifiable, if not neglected, in papers prior to the 10s. Judging from the subjectivity of aesthetics, it'll be interesting to compare art expert's review through lot essay and machine learning assisted image processing techniques revolutionized in recent years (Kim, Son & Jeong, 2014). From the lot essay, we can identify whether the painting depicts a particular historical event, a renowned place, or a commonly seen cultural setting, and later put into the OLS model to test its significance in determining the price. In addition, we can also examine the aesthetics of high-resolution e-paintings through chromo-spectroscopy to show the distribution of colors and height-difference correlation (HDC) to understand the spatial correlation of colors, both will be prospective indicators that'll be tested against its relation with price.

Aside from what I aim to achieve through this research attachment, it's always good to arrange time wisely in advance. In Campos (2008), he mentions the limitation of qualities in the data provided by the collection company, so he decided to hand-code all the information from auction catalogues on Latin American art from Sotheby's into an original dataset. When I was browsing through Google Dataset Search in January this year, I still saw an apparent scarcity of datasets that collect price and its characteristics at the same time; what's worse, these commercial databases were not easily accessible to researchers, often charging incredible amount for very limited information. That's why I want to create a data pipeline that'll scrape detailed information (incl. high-resolution photographic reproduction of painting, lot essay, provenance, medium, date of execution, estimate, auction result) from auction house website like Sotheby's and Christie's, and load into a giant dataset for further pre-processing. Due to the complexity of pre-processing qualitative data, I would like to take inspiration from the renowned Adolescent Brain Cognitive Development (ABCD) data repository, and make my dataset available beyond just my research but also for researchers, who want to help collect, harmonize, or utilize the data on a collaborative basis. However, my scope of collection only ranges from 1998 to 2018 for all auctioned painting available on the website of auction houses. In the six-week research attachment, this will take about two weeks to finish (3 days for web-scraping tool, and the rest for data pre-processing). Subsequently, I'll take a week and half to check how auction house, as well as indicators extracted from lot essay, influences the price through traditional OLS model. Last but not least, the following 2.5 weeks in summer and 1.5 week in winter will allow the machine learning model to train data for analyzing the e-paintings chromatically and finding sensible correlation with price at a later stage (tentatively from the fourth week of summer). By the end of the winter, I leave one and a half week for me to finalize my research findings. Explorative readings will also take place from now on, and throughout the research attachment.