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Auctions, market efficiency, and the trade in second-hand and antique silver

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HIGHLIGHTS

- Scrap value of silver plays a significant role in determining realised auction prices.
- Riskless arbitrage opportunities are limited via selling items for their scrap value.
- Silver auctions exhibit a high level of market efficiency.

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ABSTRACT

Using a new, large, unique database relating to silver goods sold at two major UK auction houses we show that the scrap value of silver plays a significant role in determining the realised prices of items sold at silver auctions. However, although scrap silver can be sold for cash at guaranteed prices almost immediately, arbitrage opportunities are extremely limited. Just over 6% of silver goods sell below scrap value but once the buyer's premium is allowed for the opportunity for profit is tiny.

1. Introduction

Ashenfelter and Graddy (2003) cite evidence of long periods of divergence in prices between auction houses and geographical locations from studies of wine, prints, and paintings (e.g. Ashenfelter, 1989; Pesando, 1993; Mei and Moses, 2002). Despite this interest in pricing anomalies, few studies have addressed in depth the issue of market efficiency and opportunities for arbitrage in the market for collectibles. In many areas, such as paintings, the conditions for riskless arbitrage are impossible to fulfil. Even for wine and prints, whilst it is possible to identify opportunities for profitable arbitrage over time, by purchasing and selling identical bottles or prints in different markets, the risks and uncertainties involved make riskless arbitrage almost impossible.

Motivated by an observed apparent discrepancy between the value of the silver in some goods and their auction prices we investigate systematically the opportunities for riskless arbitrage in the market for secondhand and antique silver. Studies of English silver goods (or indeed any other type of silver good) are limited. Bauwens and Ginsburgh (2000) use a sample based on sales of English teapots, but their primary focus is on the accuracy of the pre-sale estimate. Our focus is rather different, as our concern is with market efficiency, and specifically the possibility of riskless arbitrage from buying silver items with little artistic merit at auction, and then selling these for scrap within the same day at a guaranteed price.

A thriving market exists in silver scrap. Recycling scrap silver is straightforward. English silver has a long established history of hallmarking (almost) guaranteeing a fixed proportion of silver and copper. The application of heat and flux enables the silver to be easily separated from the copper. Prices paid for hall-marked scrap silver by bullion dealers are available online and in specialist publications. Prices are firm and it is entirely possible to sell to

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Table 1
Descriptive statistics and sample distribution.

Panel A: Pooled sample statistics					
Variable	Mean	Std. dev.	Min.	Max.	Description
Price	880.74	1906.84	20.00	85,000.00	Hammer price of lot (£)
Price+bp	1073.17	2311.57	24.40	101,57[illegible].00	Hammer price of lot including the buyer's premium (£)
Scrap	295.16	441.80	0.89	6,211.80	Scrap value of lot (£)
Weight	25.93	37.03	0.10	553.00	Weight of lot (ounces)
Spread	0.39	0.13	0.05	1.00	Auctioneer's spread (High estimate – Low estimate)/Low estimate)
Age	166.06	77.75	1.00	510.00	Age of lot (years)
Order	0.67	0.25	0.00	1.00	Order of lot in the auction
Q1	0.08	0.26	–	1.00	Dummy (= 1 if notable 20th century maker; 0 otherwise)
Q2	0.19	0.39	–	1.00	Dummy (= 1 if notable pre-20th century makers; 0 otherwise)
prov	0.02	0.15	–	1.00	Dummy (= 1 if provenance; 0 otherwise)
arm	0.40	0.49	–	1.00	Dummy (= 1 if armorial; 0 otherwise)
assay_off	0.62	0.48	–	1.00	Dummy (= 1 if London assay office; 0 otherwise)

Panel B: Sample distribution of lots sold, average lot hammer price (£), and average lot scrap value (£)												
Year	Bonhams									Woolley and Wallis		
	Knightsbridge			Knowle			New Bond Street			Salisbury		
	Obs.	Price	Scrap	Obs.	Price	Scrap	Obs.	Price	Scrap	Obs.	Price	Scrap
2009	551	708.85	220.07	402	382.44	179.87	148	3245.54	283.95	567	478.66	81.93
2010	667	698.21	278.90	476	458.25	298.34	132	3614.77	377.16	828	920.42	192.16
2011	671	899.24	538.90	472	596.60	459.47	146	3987.33	741.78	986	684.69	288.25
2012	539	1089.38	645.23	–	–	–	61	3179.48	674.79	1018	580.38	211.68
2013	447	1062.86	417.61	–	–	–	93	4074.73	798.47	1080	559.84	162.78
2014	332	1386.42	485.82	–	–	–	42	5035.71	685.61	956	506.69	116.80
Quarter												
1st	489	892.68	391.53	291	465.10	275.94	–	–	–	1180.00	549.56	170.31
2nd	1134	928.36	424.30	394	488.48	324.64	274	3748.17	635.91	1376.00	691.92	186.19
3rd	424	895.67	393.99	296	487.53	306.71	72	2750.69	285.49	1415.00	607.24	186.37
4th	1160	959.65	452.56	369	491.45	358.25	276	3981.84	541.78	1464.00	634.33	185.68

the bullion dealer at the prices quoted and with speedy or even immediate payment. The possibility, therefore, of selling for scrap provides a minimum guaranteed price, allowing sellers to realise cash with a minimum of restrictions.

Both sales for scrap, and to antique dealers provide immediacy to the seller. They also provide certainty and low transaction costs. They do not however provide exposure to a wide range of buyers. The significant transactions costs associated with selling by auction suggests that sellers of silver goods that are of low quality and plentiful supply should sell direct to bullion or antique dealers to maximise their receipts from sale. Despite this, low quality silver is sold at auction. Selling for scrap removes any chance of receiving a premium for artistic merit or scarcity and there may be some sellers of low quality items who prefer, perhaps through ignorance, to sell by auction. High quality items should not be scrapped but sold to dealers or by auction.

Many silver goods have some worth relating to their scarcity, usefulness, artistic merit and quality of workmanship. A number of items, however, have no such merit. They may have been mass produced and of poor quality originally, or may be battered and broken. The demand for such items is slight. They are of limited interest to collectors or dealers. They do however retain value, a value that depends on their silver content. They may be easily melted and reduced to pure silver. In an efficient market, we would expect any silver item to have a minimum value directly related to its scrap value.

2. Sample and data

To examine the role that the scrap value plays in determining the price of silver items sold at auction, along with any possible opportunities for riskless arbitrage, we construct a unique database from the catalogues of 88 silver auctions from two major English auction houses, Bonhams, and Woolley and Wallis, between January 2009 and December 2014.[1] Although no statistics are available for the proportion of antique silver sold by dealers in the UK, informed sources have suggested that, while dealers are responsible for about half of annual sales, auction houses have become more dominant in the market. Bonhams is the third major international UK auction house and the largest seller of UK antique silver by volume over our sample period, and Woolley and Wallis is the UK's largest regional auction house and the second largest seller of UK antique silver by volume.

Since it is common for auctioneers to exclude some of the available pre-sale information from the online data (Campos and Barbosa, 2009), copies of the physical catalogues are used. Whilst attempting to be as comprehensive as possible we exclude unsold lots, mixed collections (since it is impossible to assign detailed information to the individual pieces), and lots without a pre-sale estimate. Our final sample contains information on 10,614 sold lots spread across three Bonhams locations, Knightsbridge (30%), Knowle (13%), New Bond Street (6%), and Woolley and Wallis' house in Salisbury (51%). In terms of the timing of the silver auctions, Woolley and Wallis hold auctions quarterly, while Bonhams have departed from a fixed schedule in recent years, and closed their Knowle salesroom in 2011. Table 1 reports the main descriptive statistics and sample distribution of the dataset described above.

3. A hedonic price model for silver goods

To examine the relation between the hammer price and the scrap value of the auction lot, we use the following hedonic pricing

[1] Unlike other studies, we do not concentrate on the international auction houses, Christies and Sotheby's, since both rarely hold specialist silver auctions in London over the sample period.