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Advanced Corporate Finance

10. Alternative Investments

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So far…

- Focus essentially on investments made in financial assets (options, futures, equity, bonds)
- However one should bear in mind that one of the main models used in finance, the CAPM, considers originally all classes of assets
- One of the main asset usually held by households is real estate… which represents on average in the US 70% of the assets! (and may be even higher)
- Alternative assets may include precious metals (gold, silver etc…), currencies, real estate, collectibles (stamps, Stradivarius, artworks…) or even currencies

Objectives of the session

1. Discuss the existence of alternative investments
2. Present some of these investments in general
3. And in detail one of these: the art market
4. Present additional issues related to this market

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Alternative Investments

- May be hard to value since there is not necessarily an active market (example some collectibles) or goods may be heterogeneous (real estate, artworks) => need to find a way to construct indices
- May present features of investment and consumption (artworks, real estate) for which the motives of the buyers may be hard to disentangle
- Have been studied for many, many assets
- Examples (see Frey and Eichenberger, 1995): Mettlach beer steins (mugs), violins of Stradivarius and more recently stamps (Dimson, Spaenjers, 2011)

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Stamps…

- Dimson and Spaenjers (2011): stamp catalogue prices to investigate the returns on British collectible postage stamps over the period 1900–2008.

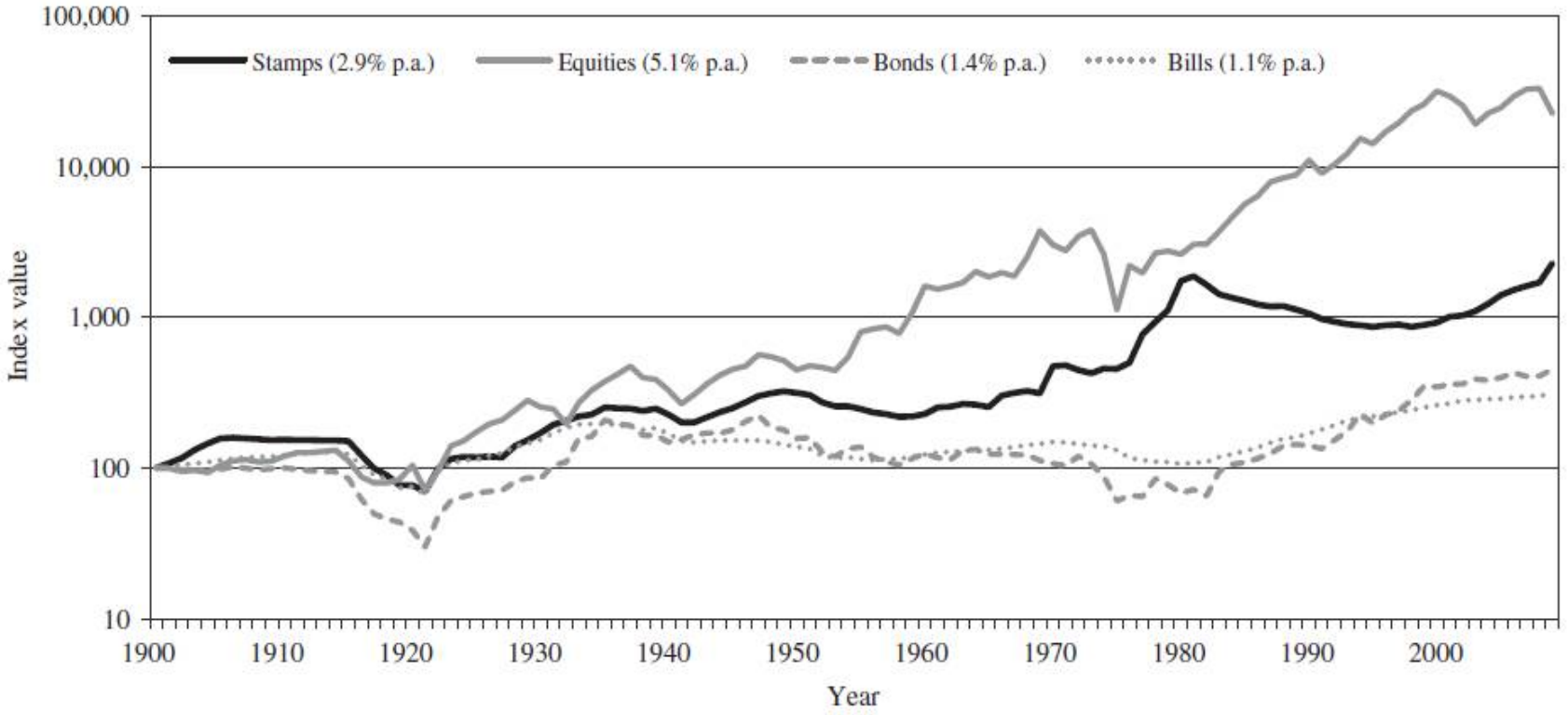

Fig. 4. Cumulative returns on stamps and financial assets in real terms 1900–2008. This figure shows the real (i.e., deflated) index values for U.K. stamps, equities, bonds, and bills over the time frame 1900–2008. It also presents the geometric average real return per annum (p.a.) for each asset category. The index is set equal to 100 at the beginning of 1900. The real stamp price index data are shown in Table 2. The return data for equities, bonds, and bills come from Dimson, Marsh, and Staunton (2009).

Assessing the interest of alternative investments

- Usually viewed as an addition to a general portfolio
- Raises a series of questions
- Can we talk about market efficiency?
- What about risk-return characteristics?
- How can the returns for heterogeneous goods be measured?
- Can some of these assets be used as hedge during extreme events (safe-haven investments)?

Market efficiency

- Most traditional assets are weak-form efficient
- Studies on alternative assets are less developed.
- Gold market usually found as NOT weak-form efficient (Booth and Kaen, 1979; Solt and Swanson, 1981; Koutsoyiannis, 1983; Lashgari, 1991, Hoang, 2014) even though some studies find contradictory results
- Currencies usually efficient, even if traded on black markets! (Gupta, 1981; Booth and Mustafa, 1991; Huett et al., 2014).
- Art market NOT efficient (David et al,, 2013)

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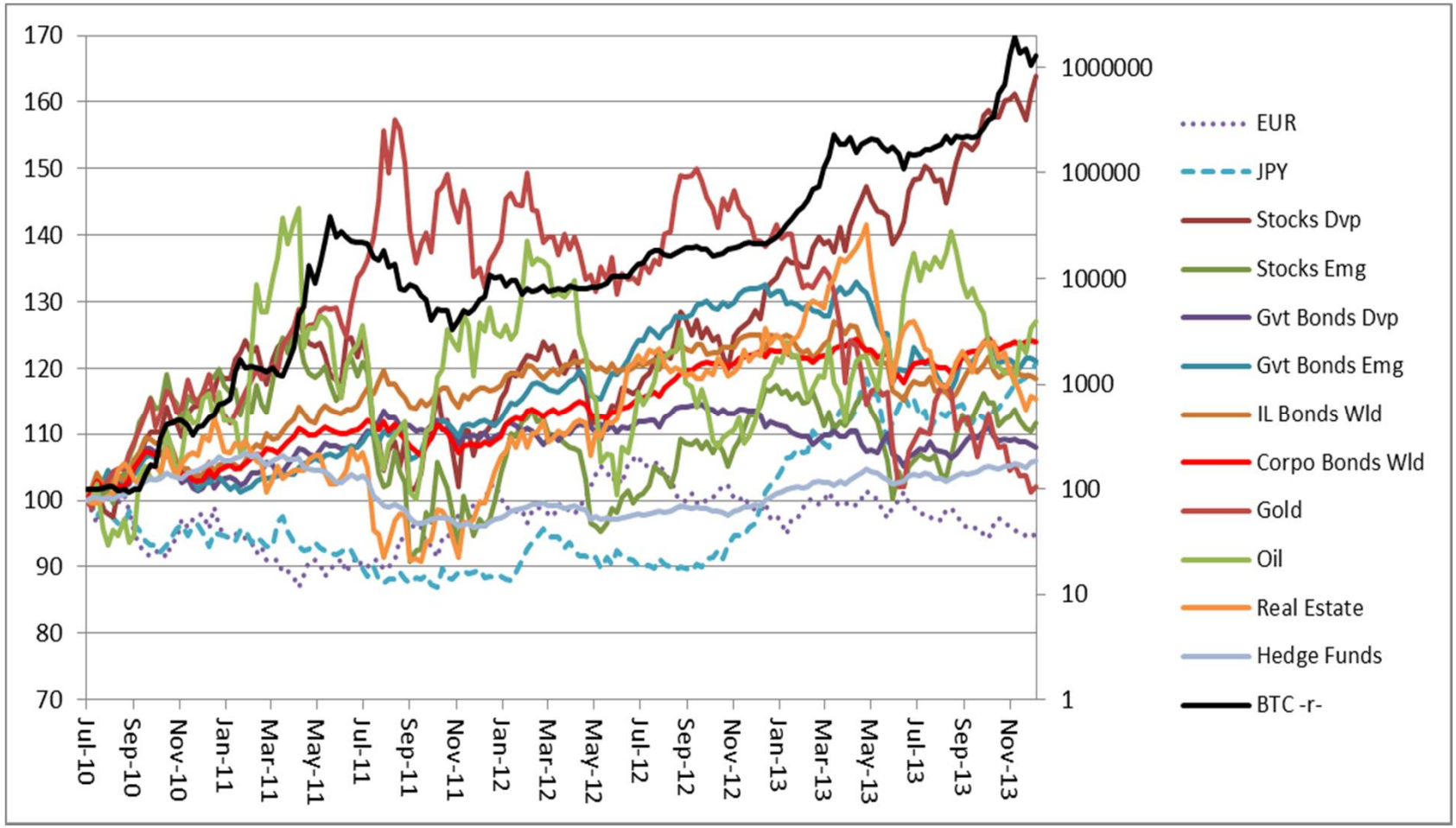
Risk return and diversification

- Differs a lot from one alternative investment to the other
- Some assets are characterized by a low correlation with traditional investment and are thus good hedges. A hedge is defined here as an asset that is uncorrelated or negatively correlated with another asset or portfolio on average (Baur and Lucey, 2010)
- Baur and Lucey (2010), on average gold good hedge against stock market changes
- Bitcoins: extremely risky (high standard deviation) but almost uncorrelated with other assets (Brière et al., 2015), hence good hedge

Bitcoins…

- Brière et al (2015)



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How to value returns for heterogeneous goods?

- Real estate, artworks, collectibles may belong to the same class but are usually intrinsically different
- One house is not the other…
- How can we then compute an index for real estate or heterogeneous goods?
- Two different approaches
- Repeated sales or Hedonic regressions

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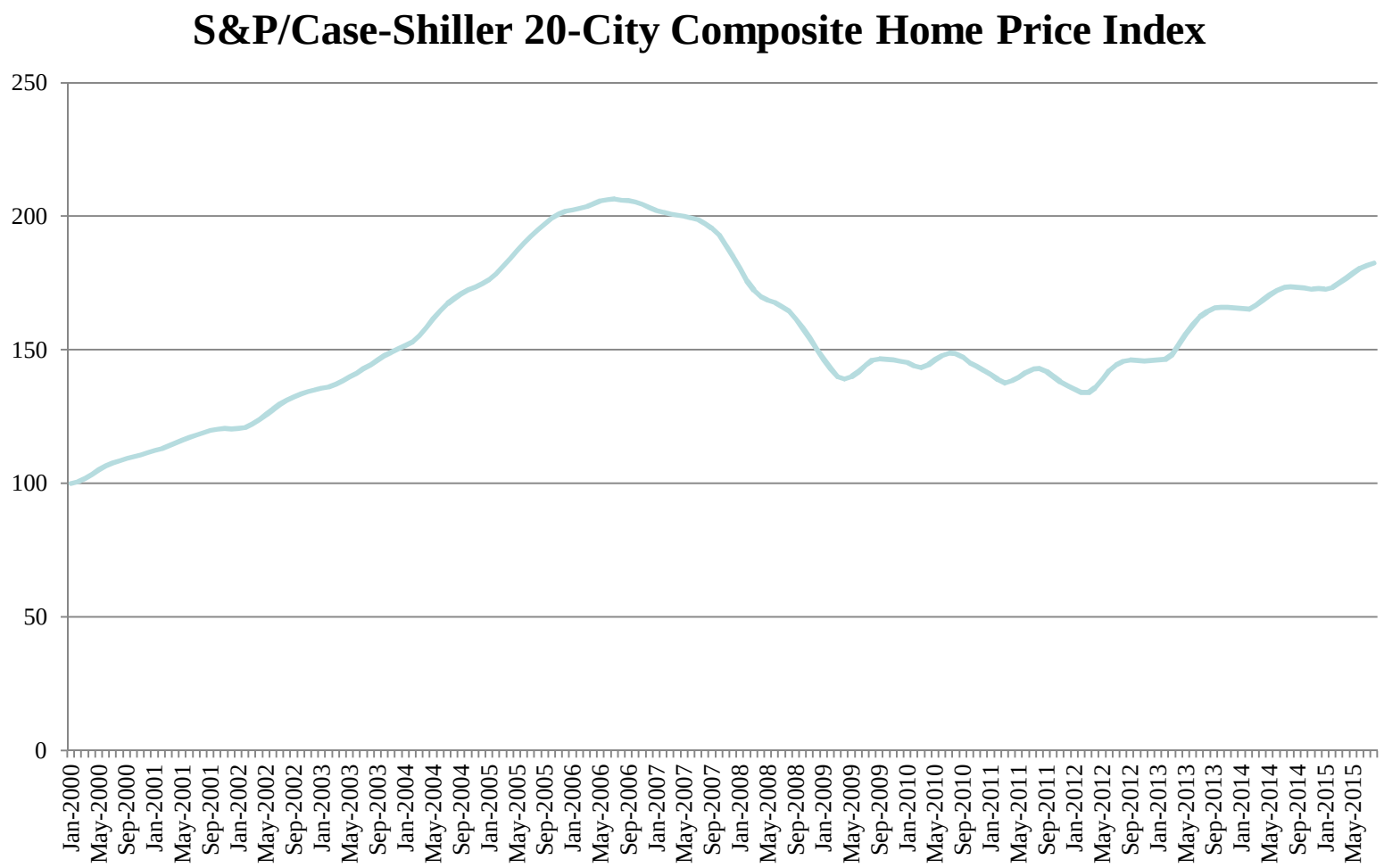
Repeated sales

- Idea: overcome the heterogeneity issue by comparing the price of goods resold on the market (the same house for example)
- Same artwork: no change in attributes (probably true most of the time but for reattribution or restoration…)
- Potential bias or problem:
  - Sample bias: sample of artworks resold may be ≠ from the art market in general
  - Size: the number of artworks coming back on the, market is limited (7%, 13% and 15% for 10, 20 and 30 years time-span)

For example, Case-Shiller Index



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Hedonic regressions

- Idea: prices of goods are a function of a series of attributes, dummy variables capture the time trend
- Advantages:
  - Possible to use all sales
  - Possible to quantify the impact of a given attribute
- Problems or biases
  - Less intuitive!
  - Necessity to determine the attributes
  - Possible to have time-varying attributes
  - Results depend on specification
  - Omitted variable issue

Hedonic regressions

- Any functional form, for example following model:

$$lnp_{it} = \sum_{k=1}^{m} \alpha_k X_{ik} + \sum_{t=0}^{T} \beta_t \delta_{it} + \sum_{t=0}^{T} \sum_{j=1}^{n} \theta_{jt} \omega_{ijt} + \varepsilon_{it}$$

- p_{kt} = the price of good k at time t,
- X_{ik} time-invariant characteristic
- ω_{ijt} time-variant characteristic
- δ_t is a time dummy variable

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How to value returns for heterogeneous goods?

Best method hard to assess in the absence of a "true" value

- Ashenfelter and Graddy (2002): high correlation (95.59%) between the two methods when applied on the same sample

- Ginsburgh, Mei and Moses (2006): Monte Carlo experimentation to find the "best" method. They conclude that Hedonic Regressions perform better than Repeated Sales Regressions even if some variables are omitted!

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One example: the Art Market

- Many potential alternative assets. Focus here on one major class of alternative investment => artworks
- Why artworks ? Relatively large market, Has known a renewed interest lately (with some (un)successful art funds)
- Shares characteristics with other alternative assets such as collectibles and real estate, most notably:
  - Heterogeneous goods
  - Market with limited liquidity
  - And for the high end of the market substantial amounts per asset (// real estate)

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The Art Market

- A quick review on how it works and a critique on commonly held views
- A discussion of methodologies used to construct indices when goods are heterogeneous
- An analysis of art as an investment
- A presentation of strategies believed to work on this market and on elements perceived to influence the price of artworks (death of the artist, estimates made by auction houses, auction setting, unsuccessful previous auction etc.)

Commonly held views

- Debatable commonly held views

- Prices are crazy and always going up, record breaking sales follow each other all the time
- The Art market is all about auctions
- When the artist dies, the price of his work experiences a huge jump
- It is better to buy famous artists, the price of their work never goes down

The Art Market

- Size? Hard to measure properly => What is art?
- *The Economist* (2006) ⇔ $30 billions
- Artprice, « Fine Arts » ⇔ $8.3 billions

  => Seems high but compared to other markets: very small market (daily foreign exchange operations $3.2 trillions in April 2007)
- Main countries: USA, UK, France and China

Share of total art market, Auctions are dominated!

Gaillard (1999), Dealers ⇔ €6200 millions;
Auctions ⇔ €1800 millions

Velthuis (2005) USA, millions USD

Dealers (galleries)	⇔	2834
Auctions	⇔	1298

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Auctions

- A few elements:
- Rising importance of the auction houses
- Retail prices usually higher than auction prices for similar paintings
- Price formation ≠ : fixed price for galleries (Velthuis, 2005), auction procedure in auction house
- Meaning of the price?
- Winner of the auction: right price or winner's curse? (Important element when one wants to value what are basically unique goods)

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Auctions

- Most data used for the index construction comes from auctions…
- Market microstructure issues
- Ashenfelter and Graddy (2002):
  - Art market: illiquid (auctions ≠ continuous process)
  - Price fixing (Sotheby's and Christies in 1995)
  - Reserve price and fictitious bids ("off the chandelier")
  - Bought-in (+/-30%) versus sold artworks?
  - (guarantees)

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Art as an Investment

- Idea to invest in artworks attested for a long time, :“La peau de l’ours” art fund created in 1904 (paintings resold in 1914)
- Nowadays art market funds (Fine Art Fund but also ABN-AMRO or Fernwood)
- Returns influenced by the data used
  - Data regarding galleries: almost never available
  - Auction data :
    - Potential biases
    - Only small part of the market
    - Transaction costs!
- Analysis mostly conducted on paintings since it is the largest market (+/-75% in terms of annual turnover)

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Art as an Investment

Art market index some specificities:

1. Returns made of price increase (no dividend)
2. Price opacity
3. Non-Fungible goods and no real substitutes ⇔ monopoly on a given artwork (Baumol, 1986)
4. Illiquidity: long time period before an artwork is resold
5. No economic model to assess the “true” value of the artwork (≠ shares and NPV for example) => prices may be viewed as exuberant by buyers but also by artists

Art as an Investment

Or in other words, Ruskin (1889), p. 113:

"(…) the idea that the high prices paid for modern pictures are either honourable, or serviceable, to the painter. So far from this being so, I believe one of the principal obstacles to the progress of modern art to be the high prices given for modern pictures."

And remark made by Degas when his *"Danseuses à la barre"* were sold for 430.000 FF in April 1912

"Cette œuvre, que j'avais vendue 500 francs", maugréa Degas en apprenant que ses "Danseuses à la barre" venaient d'être adjugées, en cet après-midi de 1912 à l'hôtel Drouot, pour 430.000 francs. Il ajouta : "Je ne crois pas que celui qui a peint ce tableau soit un sot, mais ce dont je suis certain, c'est que, celui qui l'a acquis est un con."

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Art as an Investment? Repeated sales

- Rush (1961) : “modern” finance approach => notions of risk and diversification, attempt to construct art indexes
- Baumol (1986): limited database, (640 sales from 1652 to 1961), terrible rate of return : 0.55% !!!And far inferior to those obtained for a “risk-free” asset, Is the return for the art market always so low??? Importance of the aesthetic dividend flow!!!
- Goetzmann (1993): larger database (3329 sales from 1715 to 1986), Returns show a high correlation with the Stock Exchange

⇒ Long term returns (3.3%) higher than inflation on the long run

⇒ Second half of 20th century ⇔ stock exchange BUT high risk has to be taken into account!

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Art as an Investment?

- Mei and Moses (2002) larger database (4896 sales from 1875 to 2000)
  - ⇒ Also creation of sub-indices by movement
  - ⇒ Art “more glamorous” than previously thought : better return and less correlation!
- Hedonic regressions: Chanel, Gérard-Varet and Ginsburgh (1996) period 1855-1969, rate of return = 4.8%
- Renneboog and Spaenjers (2009): more than 1.1 million sales, very large number of characteristics taken into account
  - Yearly real return from 1951-2007: 4.03%
  - However, yearly real return from 2002-2007: 11.60%

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Mei et Moses (2002)

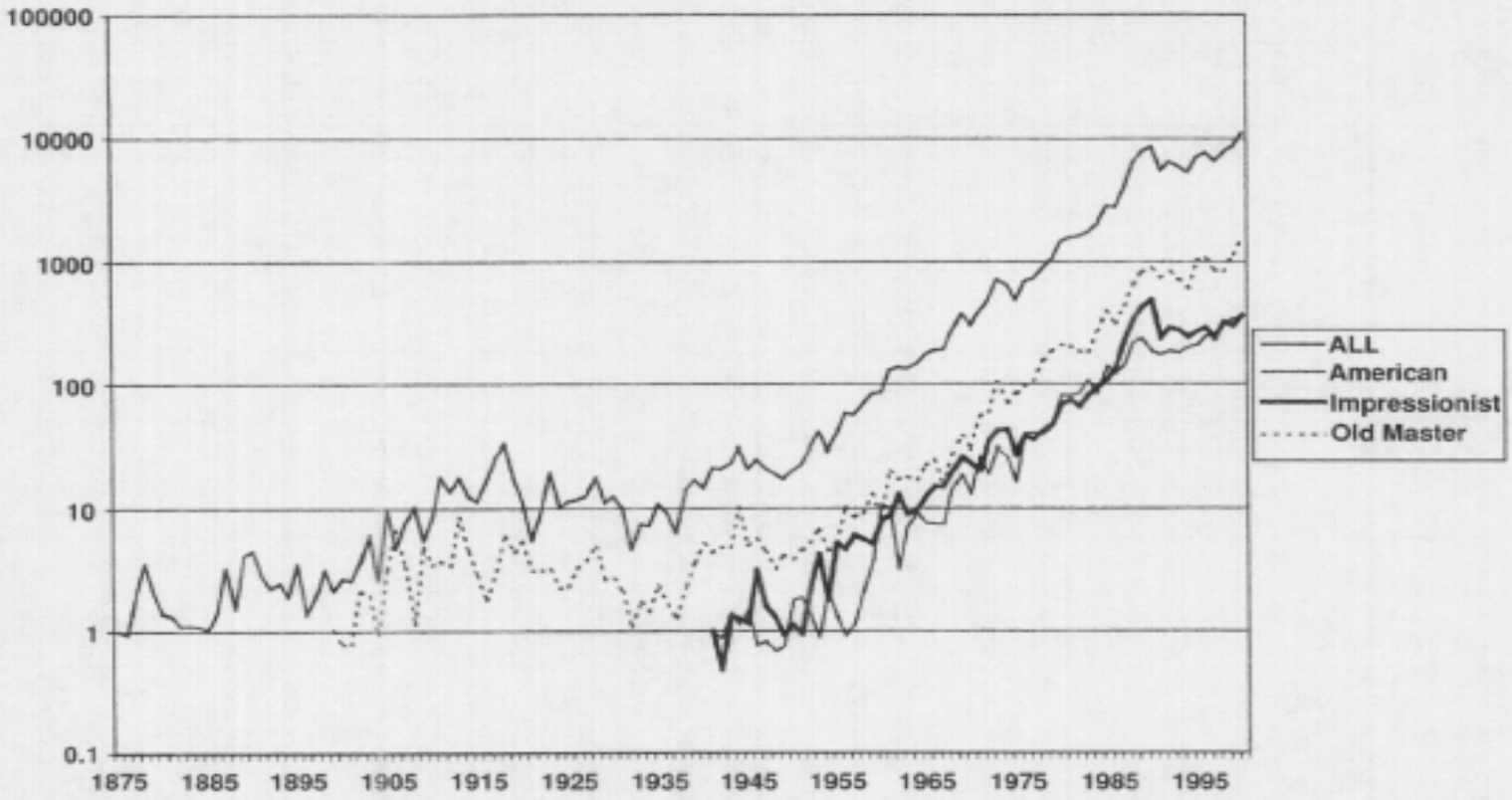


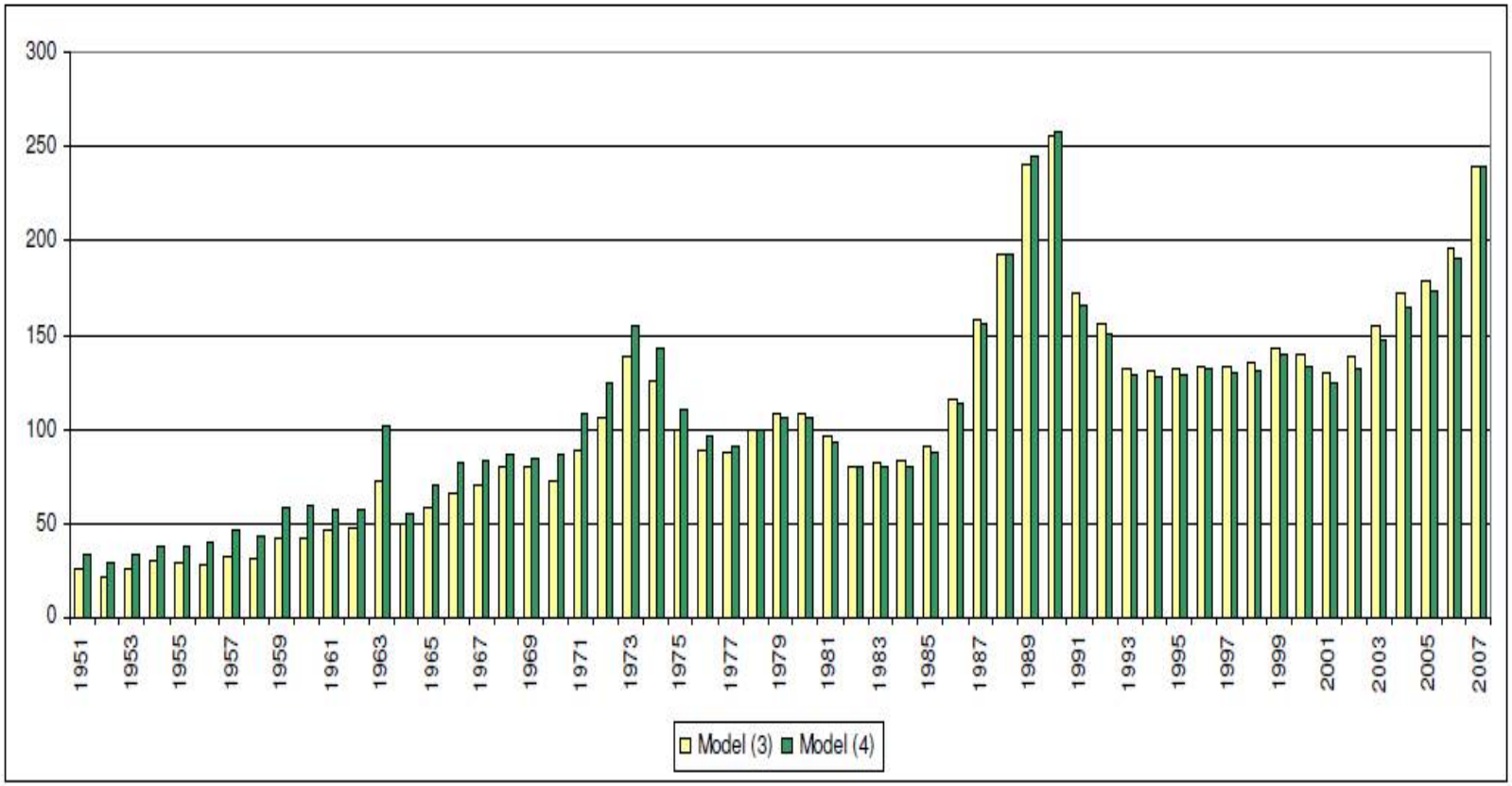
FIGURE 2. NOMINAL INDICES (BASE YEAR: ALL 1875 = 1, AMERICAN 1941 = 1, IMPRESSIONIST 1941 = 1, OLD MASTER 1900 = 1)

Notes: For the All Art Index, regression statistics for the three-stage generalized least-square RSR estimation of Case and Shiller (1987): $R^2 = 0.64$, $F(125, 4{,}771) = 104.32$ with a significance level equal to 0.000. Annual returns are computed as $\exp(\mu_t + \sigma^2/2) - 1$, σ^2 is estimated in the second stage of RSR.

Renneboog and Spaenjers (2009)

Figure 2: Hedonic price index 1951-2007 for benchmark models

Figure 2 presents our general hedonic price indices since 1951, based on the results of models (3) and (4). The index values in 1978 are set equal to 100.



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Poor investment in general

- Limited returns due to: Aesthetic dividend, Conspicuous consumption (Mandel, 2009), Collectors: not profited oriented and thus suffer from “behavioral anomalies” (Frey and Eichenberger ,1995)
    - Endowment effect
    - Opportunity cost effect
    - Sunk cost effect
    - Bequest effect
- Volatility extremely high
    - Vermeer and El Greco: rediscovered
    - On the other hand fallen from fashion artists…
- But are there periods when artworks or alternative investments outperform? Notion of safe haven investment

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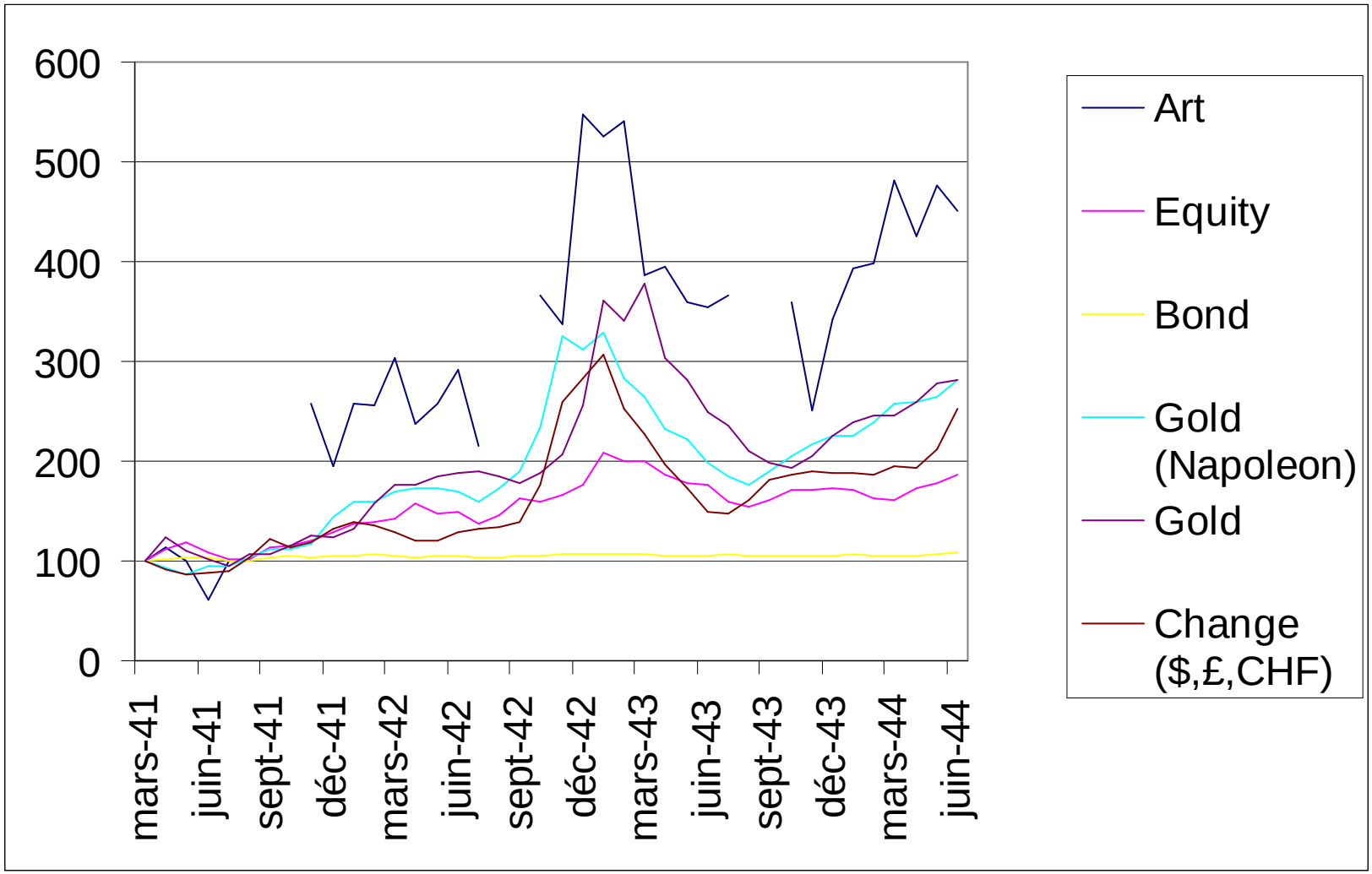
Safe haven investment

- Baur and Lucey (2010), “A safe haven is defined as an asset that is uncorrelated or negatively correlated with another asset or portfolio in times of market stress or turmoil”
- Gold safe haven in case of extreme stock market conditions (Baur and Lucey)
- Of course times of stress may differ, one may imagine economic crises but also other forms of crises, for example wars or in times of foreign occupation. What about wars? Oosterlinck (2009) occupied France (WW2), David and Oosterlinck (2011) post-WW2 Belgium

WWII: Art as wartime investment?



Source Oosterlinck (2009)

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Art as wartime investment?

	Monthly Return (March 1941-May 1944)	Standard Deviation	Sharpe Ratio	Beta	Treynor
3% Rente	0.22%	1.23%	NA	0.09	NA
Equity	1.81%	6.42%	0.25	1	0.04
Foreign exchange (£, USD, CHF)	3.04%	11.94%	0.24	0.43	0.03
Gold Napoleon	3.14%	10.06%	0.29	0.44	0.32
Gold	3.26%	11.27%	0.27	0.86	0.07
Art	6.32%	22.73%	0.27	0.37	0.17

Source Oosterlinck (2009)

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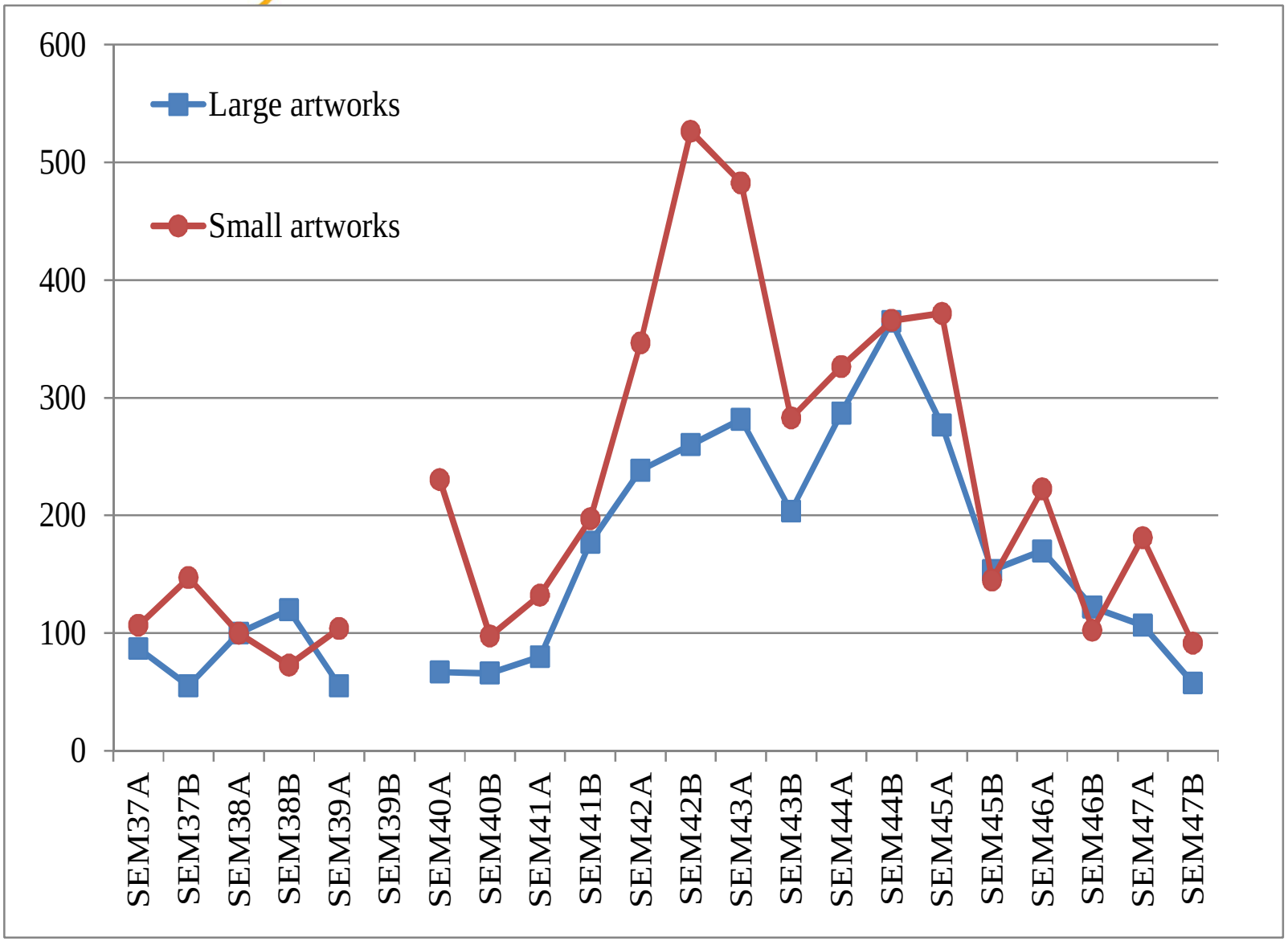

Other elements linked to paintings' value

- Several elements are often believed to play a role:
  - Are unsold artworks "burned"?
  - Impact of fake discoveries?
  - Is there a masterpiece effect?
  - What about the law of one price?
  - Auctions and order of sales?
  - Is there a death effect?

“Burned?” and Fakes?

- Artworks who are advertised but fail to be sold at an auction are often viewed as being “burned”
- Ashenfelter and Graddy (2002): check whether this is the case for a sample of Impressionist and Modern painters
- Evidence of a double “burning effect”
  - Artworks take much longer to come back on the market
  - Sell on average at a lower price
- Fake discoveries may play an important role in theory. In practice limited impact on prices but more marked on sales venue (Bocart and Oosterlinck, 2011)

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"Masterpiece Effect"

- Ruskin (1857), "in the long run, the dearest pictures are the best bargain"
- Pesando (1993): market for modern prints (1977-1992), return for prints but also analysis of the "masterpiece effect"
- Test of the proposition by using deciles (price) and evolution of returns for each sub-group: rejection of the hypothesis, negative effect!, Mei and Moses (2001): negative effect, Ashenfelter and Graddy (2002): no or negative effect
- Problem: identification as masterpiece based on price…
- Renneboog and Spaenjers (2009), alternative measure (Grove art online word count, Gardner): positive masterpiece effect!

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"Law of one Price"

- Pesando (1993): great price variations for artworks sold almost at the same time (≠ 30 days maximum)
- Geographical ≠ may be huge: noise or ???
- Picasso's *Repas frugal* in Nov. 1991, => From 374 000$ to 189 980$ in two weeks!
- Pesando (1993): average price higher in the US and Sotheby's NY > Christie's NY (by an average of 14%) ⇔puzzle
- Mei and Moses (2002): mixed results, when ≠ exist between auction houses they are small
- What if the "same" object is sold at the auction? Ashenfelter (1989) and the "afternoon effect" (as well as Beggs and Graddy, 1997)

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“Death Effect”

- “The moment he [the artist] dies, his pictures, if they are good reach double their former value” Ruskin, 1889, p. 122.
- Is there such an effect?
- Death: end of production => limit of supply
- Renneboog and Spaenjers (2009): slightly positive effect in one specification, negative in the other
- Ekelund, Ressler et Watson (2000): death effect
- Other studies: indirect evidence?

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Conclusion

- Alternative investment => limited interest if viewed in isolation
- Source of return varies, sometimes no stream of revenue but only capital appreciation, sometimes revenues
- Some have interesting characteristics in terms of correlation and may be viewed as either good hedges or safe haven investments