



# Diffusion of Art: An Investigation of the Evolution of Modern Indian Art and Artists

Srinivas K. Reddy\*  
Mayukh Dass\*  
Umesh Gaur\*\*

\* University of Georgia  
\*\* Gaur Asset Management Inc.

# Outline

- Art markets and artists
  - Art as investment
  - Art as a product
  - Artists as brands
- Research agenda and questions
  - Price evolution of emerging art markets and artists
    - Modern Indian Art
- Preliminary results
- Future directions





# Art Markets and Artists

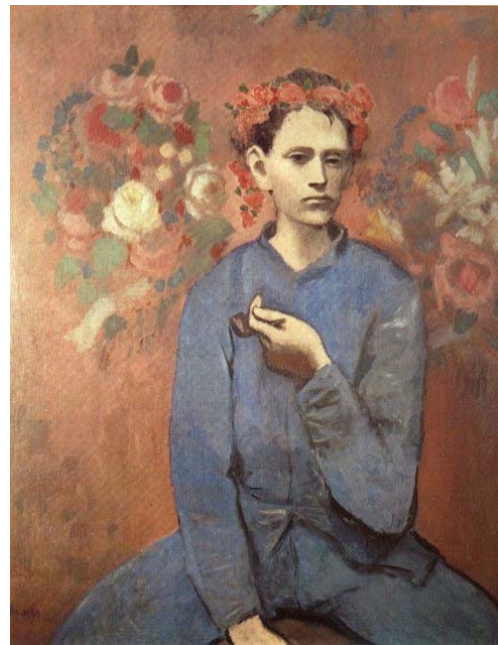
- Over \$3.5 billion worth of art (200,000 lots) was sold by the major art auction houses in 2004 (Art Price, 2005).
  - 378 pieces sold for over a million dollars each in 2004 compared to 229 in 2003.
  - Picasso leads the pack with over 1000 lots sold worth over \$241 million.
  - The top 10 artists contributed \$662 million (18.6%) of the total turnover.

# Art as Investment

- Unlike stocks it has an aesthetic/hedonic appeal.
- Like real estate it is tangible.



# The Most Expensive Real Estate



- Picasso's "Boy With A Pipe" ("Garçon a la Pipe"), (39x32). Sotheby's May 5, 2004.
- Sold for **\$104.1 million** with buyer's premium (**\$83k/sq inch**).
- The Picasso, completed in 1905 when the artist was 24, is considered one of the Spanish artist's best works still in private hands. The Whitneys bought it from a gallery (Walter Feilchenfeldt) in Zurich, for **\$30,000** in January 1950.

- The previous auction record was set in 1990 when Vincent van Gogh's "Portrait of Dr. Gachet" (26<sup>3</sup>/<sub>8</sub>x22) sold at Christie's for **\$82.5 million** with premium (**\$149k/sq in**).



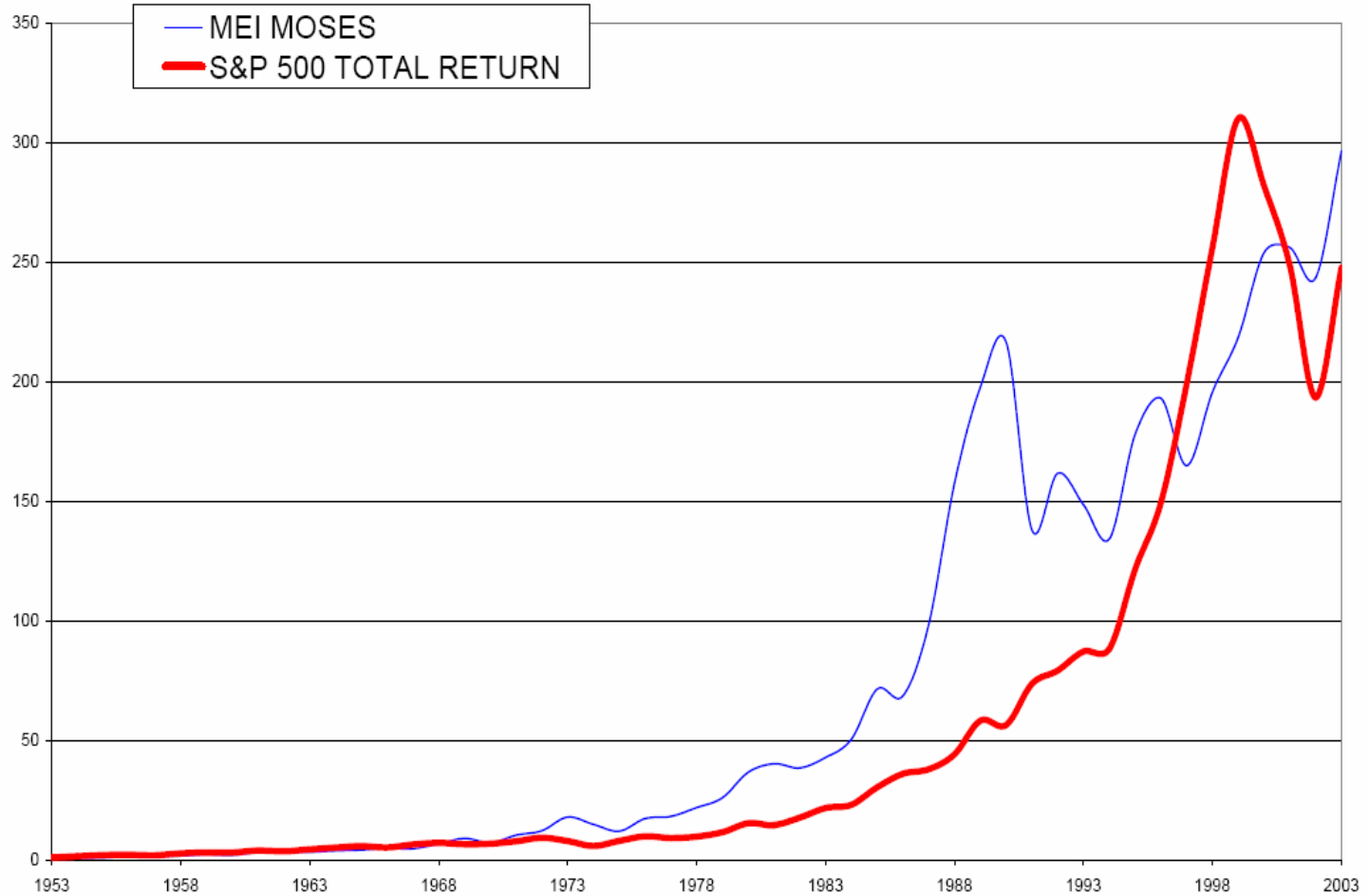
# Art as Investment



- Research on art as an investment until recently has been inconclusive
  - Anderson (1974); Baumol (1986); Frey and Pommerehne (1988); Keen (1971); Stein (1977)
- Recent work by Mei and Moses (2002) has revived interest in art as investment:
  - Over the last 50 years
    - Art outperformed stocks (12.6% vs. 11.7% ACR)
  - Over the last 25 years
    - Stocks outperformed art (13.8% vs. 11% ACR)
  - Over the last 5 years
    - Art outperformed stocks (8.7% vs. -0.7% ACR)
  - Lower volatility and lower correlation with other assets makes art investment attractive for portfolio diversification
  - Evidence of underperformance of masterpieces

# ROI Comparison: Art Vs. S&P 500

MEI MOSES ANNUAL ALL ART INDEX VS. S&P 500



# Art as a Product



- Art has the characteristics of a tangible hedonic product (Moe and Fader, 2001)
  - Consumption is primarily characterized by affective experience (Dhar and Wertenbroch 1997)
  - Typically purchased to be a part of a portfolio.
  - Long useful life and no replacement.
  - Unlike other tangible hedonic products like LP Records and books, art is unique/one-of-a-kind (except for prints)
- It is bought and “consumed” by unique segments – collectors, museums, investors.
- It is distributed through unique channels – galleries, art-auction houses.
- Economic principles of supply and demand in addition to aesthetics determine the value.

# Artists as Brands

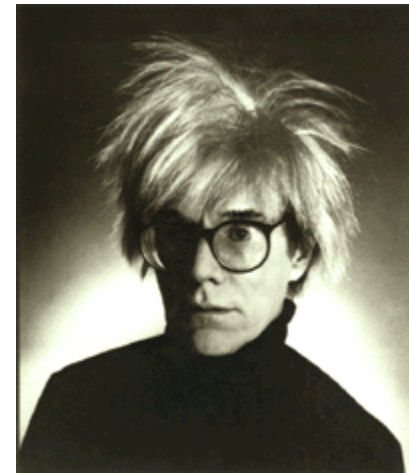
- Like brands, artists have their unique attributes (style) which differentiates from other artists. This differentiation or originality provides the basis for demand and hence value of the work of the artist.
- Like brands, artists can leverage their equity
  - Merchandising/Extensions
    - Prints, posters (Andy Warhol sold \$77.5 million worth at auction in 2004 and was ranked number 3 in the world after Picasso and Monet. 72% of the sales (lots) that were sold from 1997-2004 were prints and posters)
- Like brands, artists also tend to uniquely position themselves in the market place not only through their art, but also through their unique physical features and controversial life.



James Abbott Whistler (1834-1903)



Salvador Dali  
(1904-1989)



Andy Warhol  
(1928-1987)

# Artists as Brands (cont.)

- Unlike brands, artists rarely benefit from the escalation in value during their lifetime.
  - Exceptions – Pablo Picasso, Andy Warhol, M.F. Husain
    - MF Husain had multi million dollar private sales in the last few years.
  - Moti Shniberg's Artists Pension Trust
    - <http://www.wired.com/wired/archive/13.04/pension.html>
  - UK's Resale Right for the benefit of the Author of an Original Work of Art, 2006
    - <http://www.patent.gov.uk/about/consultations/resalerights/summary.htm>





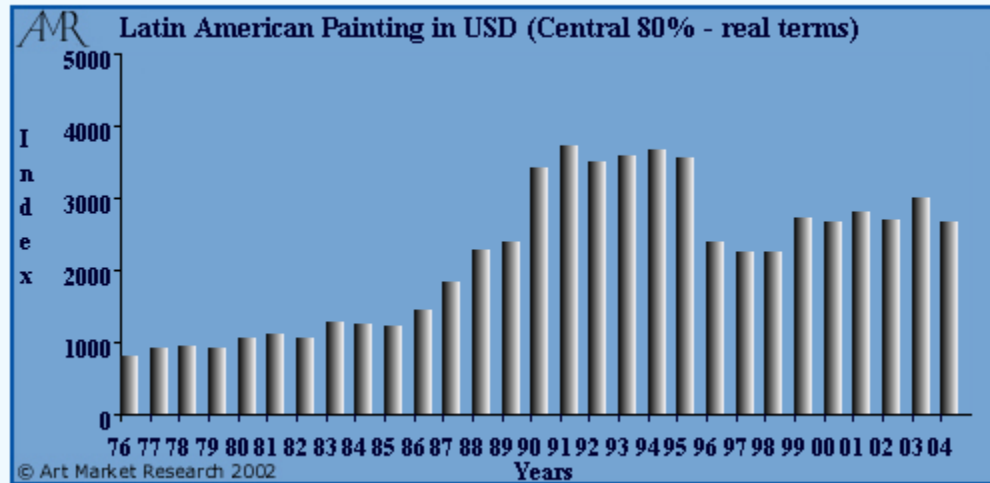
# Evolution of Art and Artists

- Art markets like products and brands show the typical phases of growth, maturity and decline.
- They also exhibit characteristics of business cycles.
- The evolution patterns vary by different art markets and artists.
- Unlike some consumer products, which are replaced with alternative products when their popularity declines, popularity of artists and art markets may follow multiple life cycles:
  - **John Singer Sargent (1856-1925)**
    - Very popular in the late 1920's and early 1930s but in 1950s, one could buy his paintings for a fraction of what was paid in the 1920s. For example, a watercolor by Sargent would cost \$20,000 in 1925, but would cost no more than \$1000 in 1955 (Fortune, December 1955). Since then, there has been a revival. In 2004, Sargent was ranked #8 in the world. A recent Sargent sold for a record \$23.5 million on Dec 1, 2004 in Sotheby's.

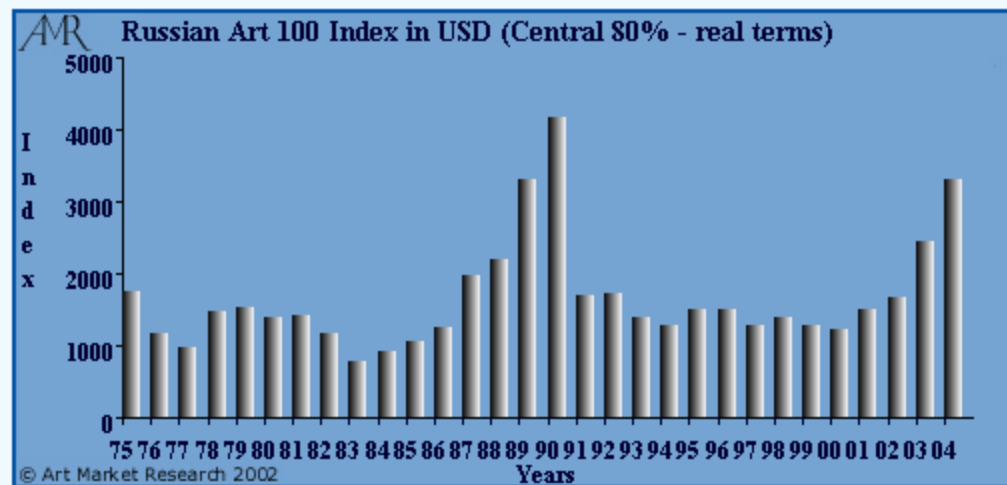
# Life Cycles Are Different For Different Art Markets



1976 to date



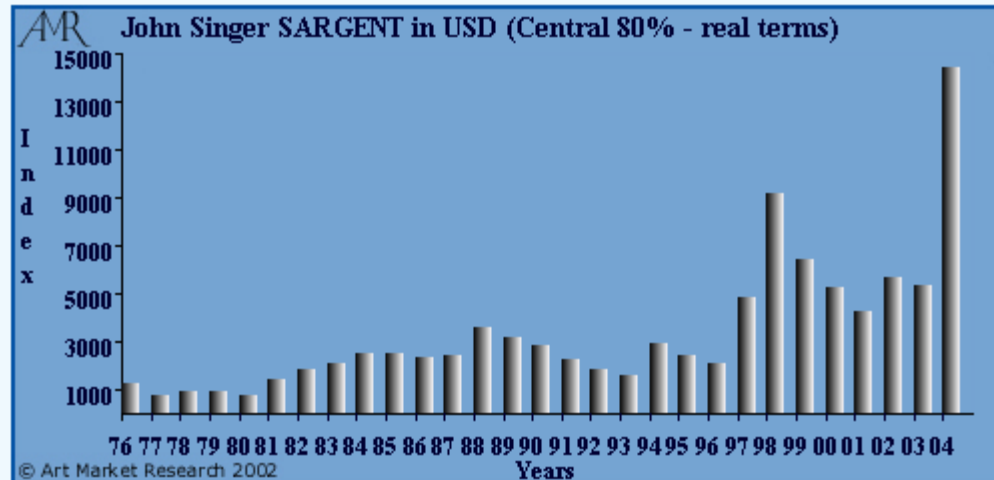
1975 to date



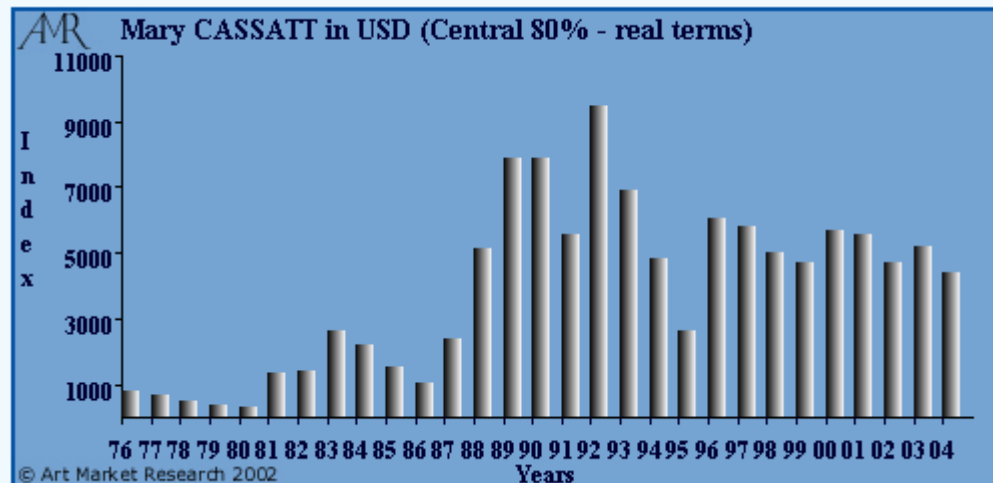
# ... and for Individual Artists



1976 to date



1976 to date





# Research Questions

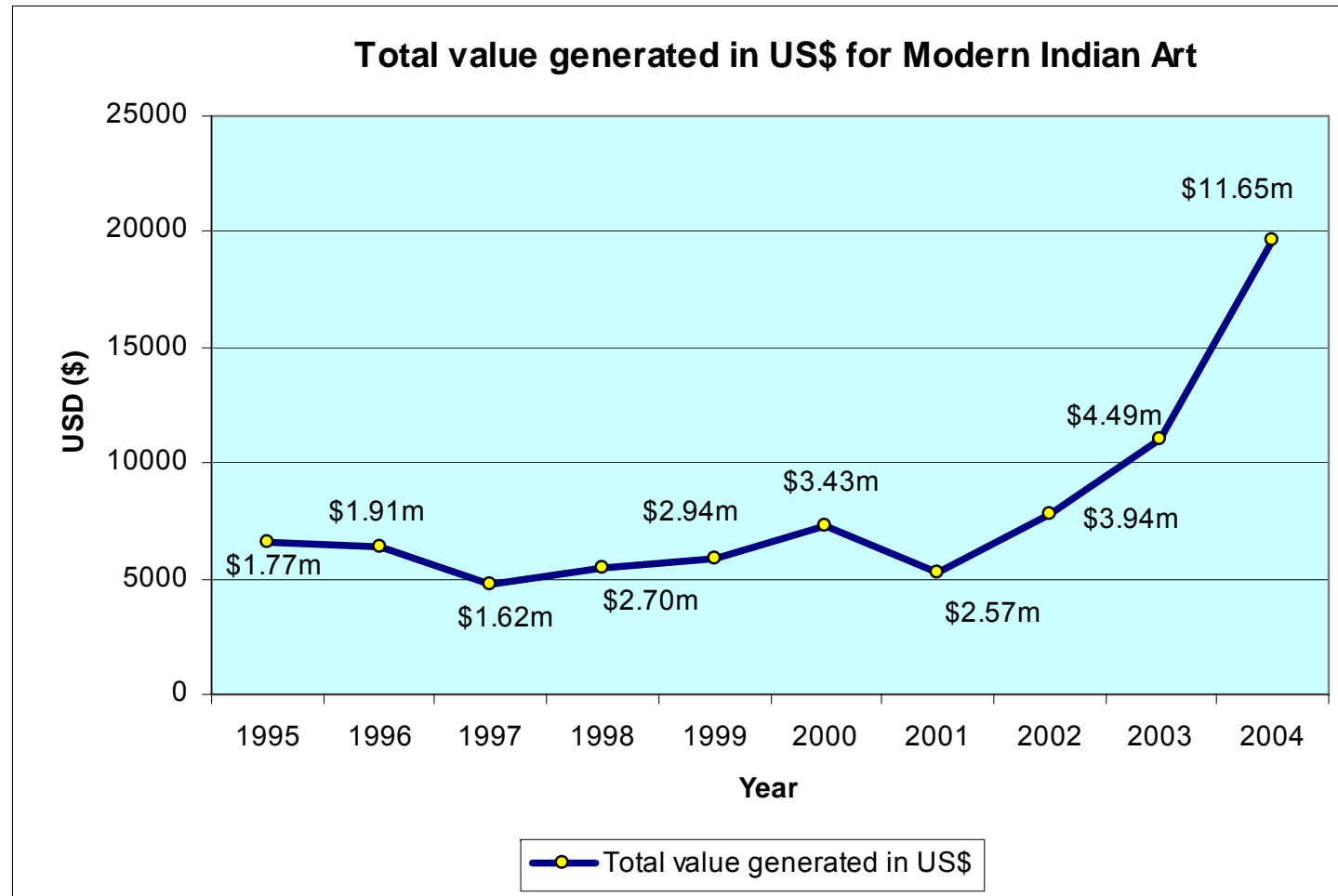
- What determines the value of art?
  - Painter, painting, auction house, location, economic, supply and demand characteristics
- How do prices of different art markets and artists evolve?
  - What determines the patterns of this evolution?



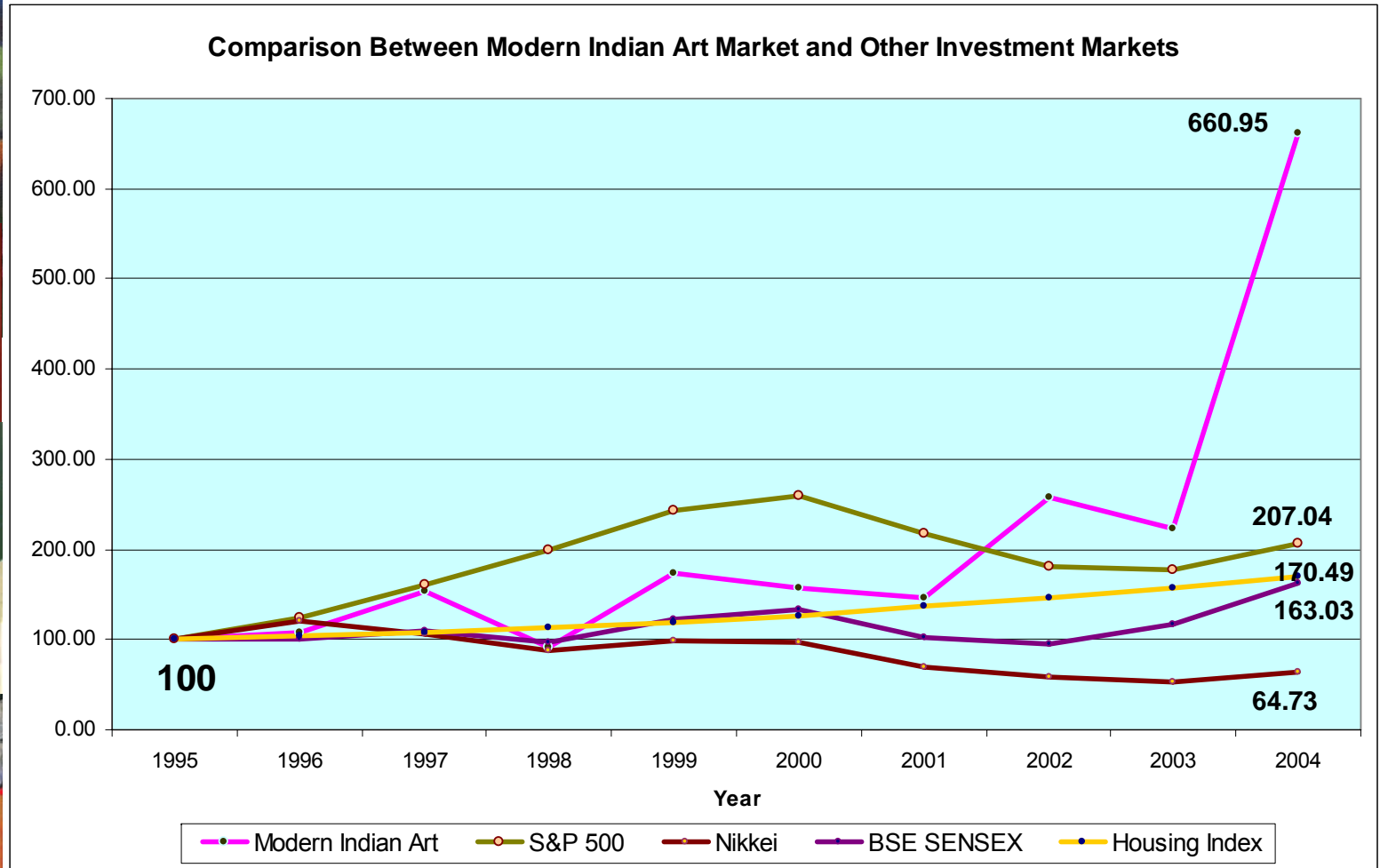
# Emerging Art Markets

- Forbes (April 2005) and Business Week (December 2004) recently have identified Modern Indian and Modern Chinese art as the emerging art markets
  - In the first half of 2005, the three major auction houses sold close to \$13 million of Modern Indian Art more than \$2 million achieved in all of 2004.
  - In October 2004, Sotheby's and Christie's in their auctions of Modern Chinese Art in Hong Kong generated over \$15 million in sales. This compares well with the sales achieved in November 2004 in NY by the two major auction houses of the more mature Latin American Art.
- MF Husain (b. 1915), the leading Indian artist sold over \$2.3 million in 2004 at auctions and sold over \$3.1 million in the first half of 2005. If this pace continues, he could be placed in the top 100 in the world.
- Zao Wou-Ki (b. 1921), the leading Chinese artist is the highest ranked Asian artist (#70) in 2004 with sales of \$7.6 million at auctions.
- Opportunity to study the evolution of these emerging art markets and artists with a complete set of their auction records.

# Modern Indian Art Market Value by Year



# Modern Indian Art vs. Other Investment Options





# Preliminary Analysis Involves:

## • 5 Modern Indian Artists (representing an early stage emerging market)

- **M.F. Husain (1915):** Also known as the Indian Picasso. He belongs to the Progressive Artist group. Presently ranked 347 in the world. In 2004, his works had a turnover of \$2.31 million.
  - **F.N. Souza (1924-2002):** He brought artistic revolution in Indian Art through his paintings. He also belongs to the Progressive Artist Group. Presently ranked 497 in the world. In 2004, his works had a turnover of \$2.011m
  - **S.H. Raza (1922):** Based in Paris, his paintings feature the famous tantric figures “Bindu.” He also belongs to the Progressive Artist Group. Presently ranked 1186 in the world. In 2004, his works had a turnover of \$0.999m
  - **A. Padamsee (1928):** He also belongs to the Progressive Artist Group. In 2004, his works had a turnover of \$0.528m.
  - **B. Prabha (1933-2001):** Her works are modern, freely rendered paintings. After her marriage to another painter B. Vithal, she began to experiment and changed her style from modern abstract form to more decorative watercolors. After her death in 2001, the value of her paintings increased substantially. In 2004, her works had a turnover of \$0.155m.
- These 5 artists contributed 17% of the total lots auctioned, generating 36.5% of the total value.**

## •1 Indonesian Artist (representing a late stage emerging market)

- **K. Affandi (1907- 1990):** This Indonesian Artist started painting at the age of 40 and now is ranked 219 in the world. In 2004, his works had a turnover of \$2.32m. Around 95% of his works are on canvas.

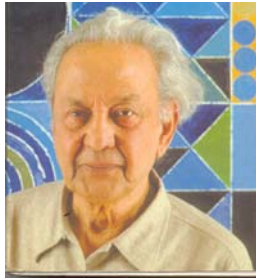
## •1 Latin American Artist (representing a mature market)

- **Diego Rivera (1886-1957):** He is one of the famous Latin American artists. Presently ranked 190 in the world, his works had a turnover of \$2.67m in 2004. Most of his works are on paper

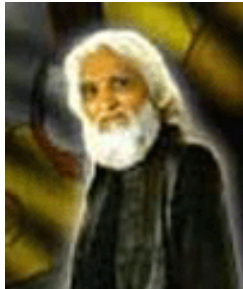
# Some Art Works



Raza



Husain



Husain



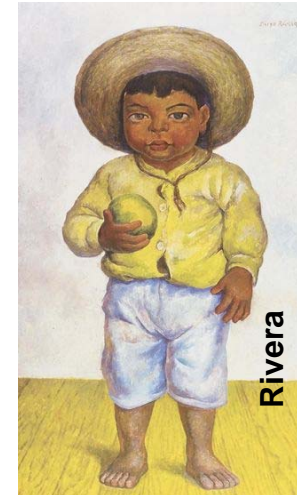
Affandi



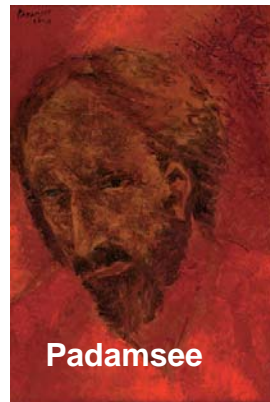
Souza



Souza



Rivera



Padamsee



Prabha





# Outcome Variable in our study

- Based on the auction records that we have collected since 1995 (over 8000 records), we compute the following three indicators of price movement for each artist for each year.
  - **Average \$ value per lot sold.**
  - **Total value in \$ (number of lots sold x average price/lot)**
  - **Average \$ value/ square area (Auction price in \$/ Square Inch)**
- Today we will present the results obtained using average value per sq. inch generated by the sold items as our outcome variable.



# Data

- Complete auction records for the seven artists between 1995-2004.
  - Have complete auction records for over 600 Indian artists (over 8000 records)
  - In the process of collecting complete records for the top 25 SE Asian and Latin American Artists

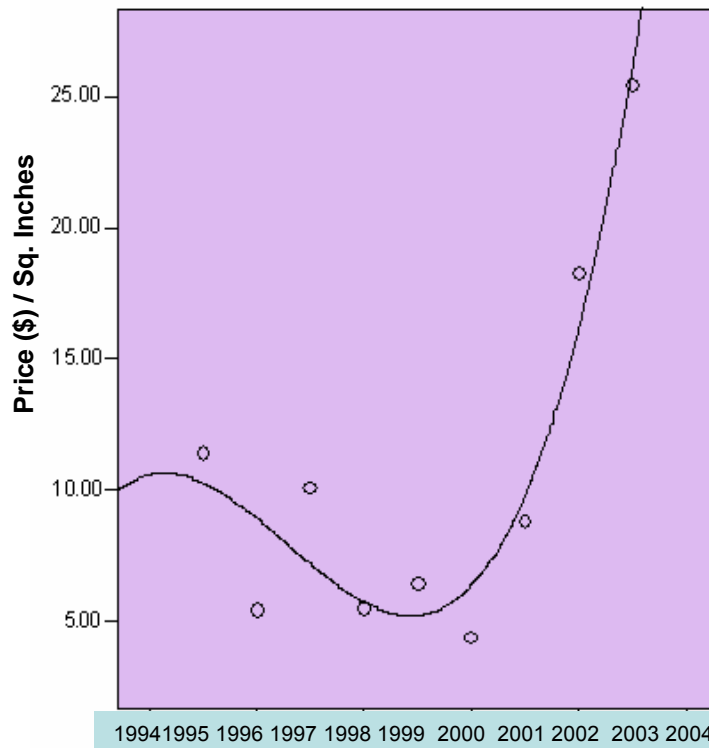
	Husain	Raza	Souza <sub>1</sub>	Prabha	Padamsee	Rivera	Affandi
Total Value (w/o Commission)	\$6.98m	\$2.21m	\$2.97m	\$0.369m	\$0.979m	\$22.31m	\$7.39m
Total Lots	542	197	327	69	79	355	190
Total Lots sold	408	154	246	56	61	241	161
% Lots Sold	75%	78%	75%	81%	77%	69%	85%
No. of Paintings	391	141	208	66	46	70	182
No. of Drawings	151	56	119	3	33	285	8
Avg. \$/sq. inch*	\$16.07	\$24.79	\$14.97	\$7.91	\$17.59	\$233.41	\$26.83
Avg. \$/lot sold*	\$17,127	\$14,355	\$12,077	\$6597	\$16,056	\$91,047	\$45,895

<sub>1</sub> Data is available from 1996

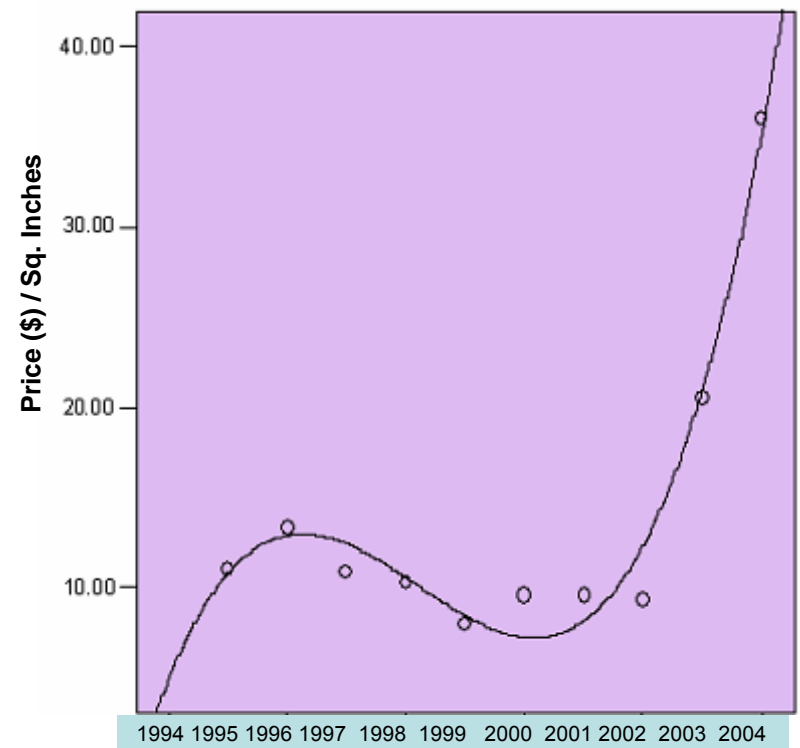
# Price Paths Over Time



M.F. Husain (b. 1915)



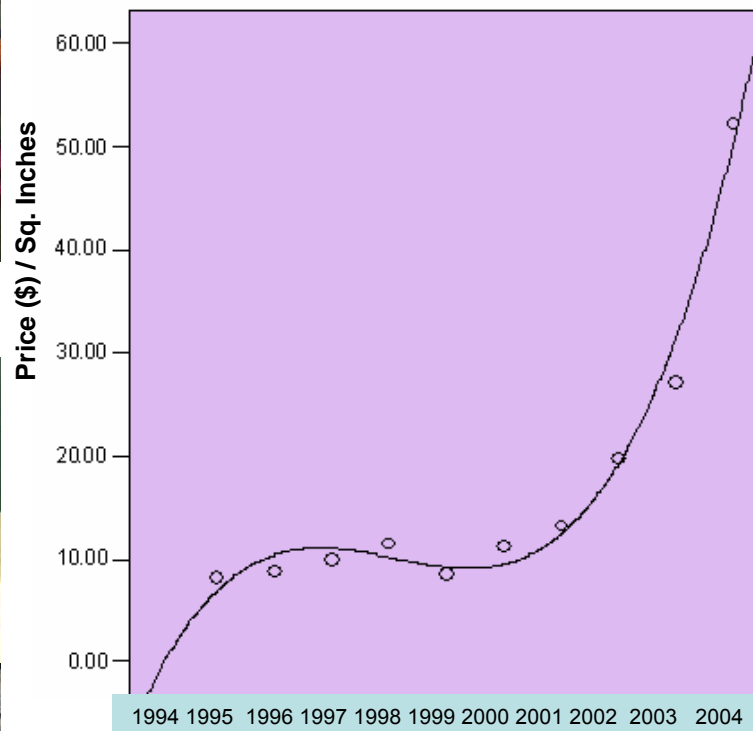
F.N. Souza (1924-2002)



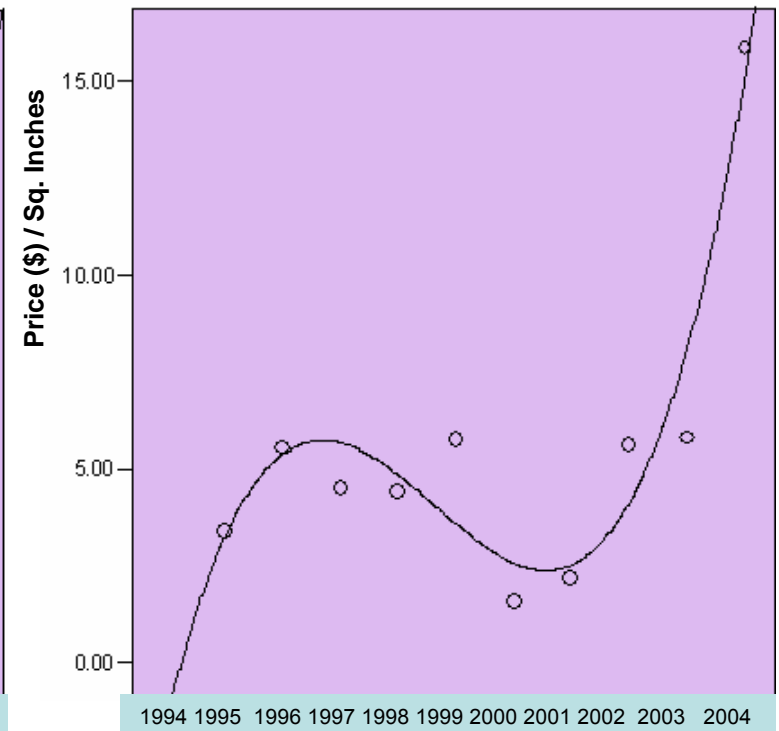
# Price Paths Over Time



S.H. Raza (b. 1922)

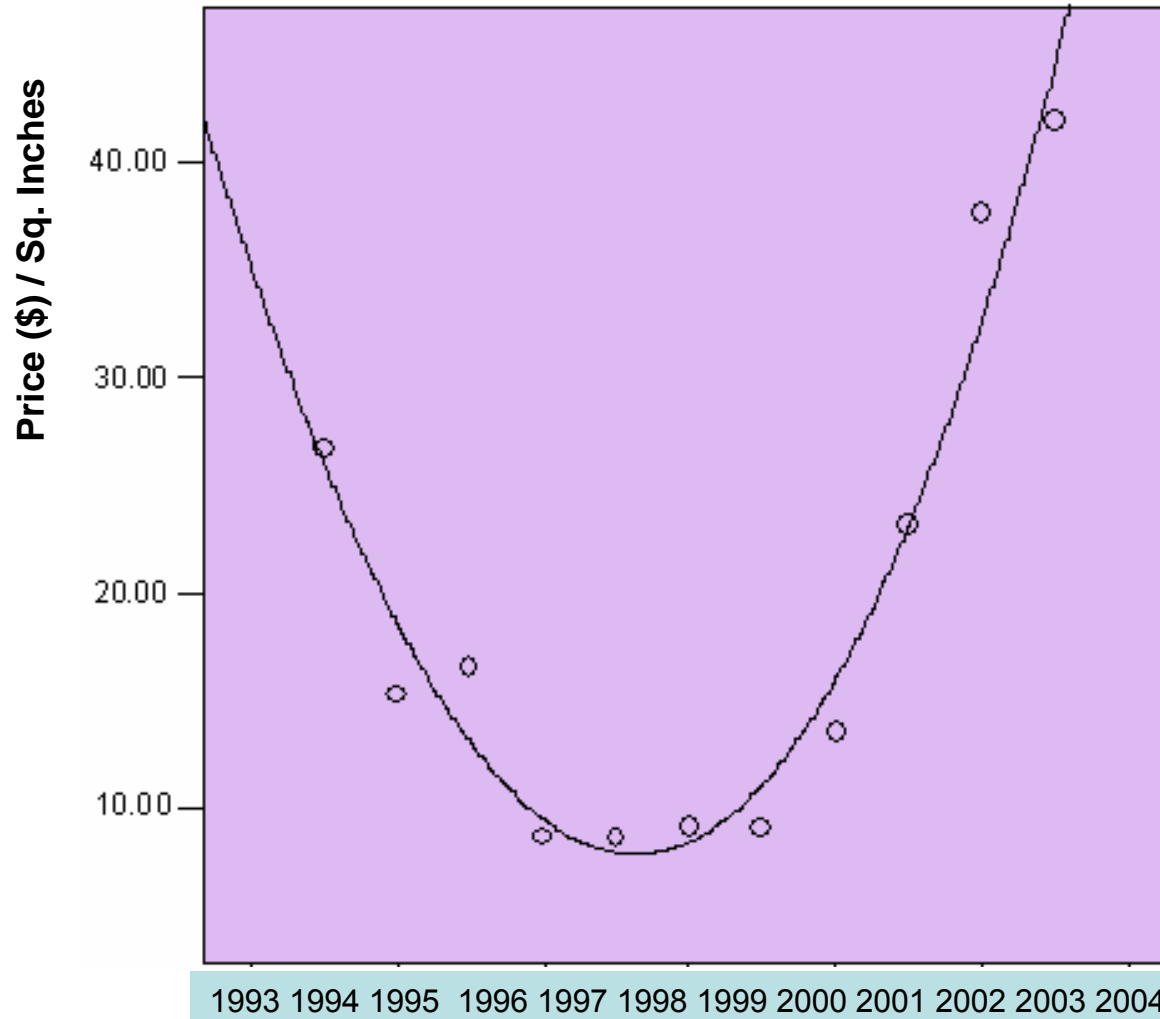


B. Prabha (1933-2001)



# Price Paths Over Time

Kusuma Affandi (1907-1990)

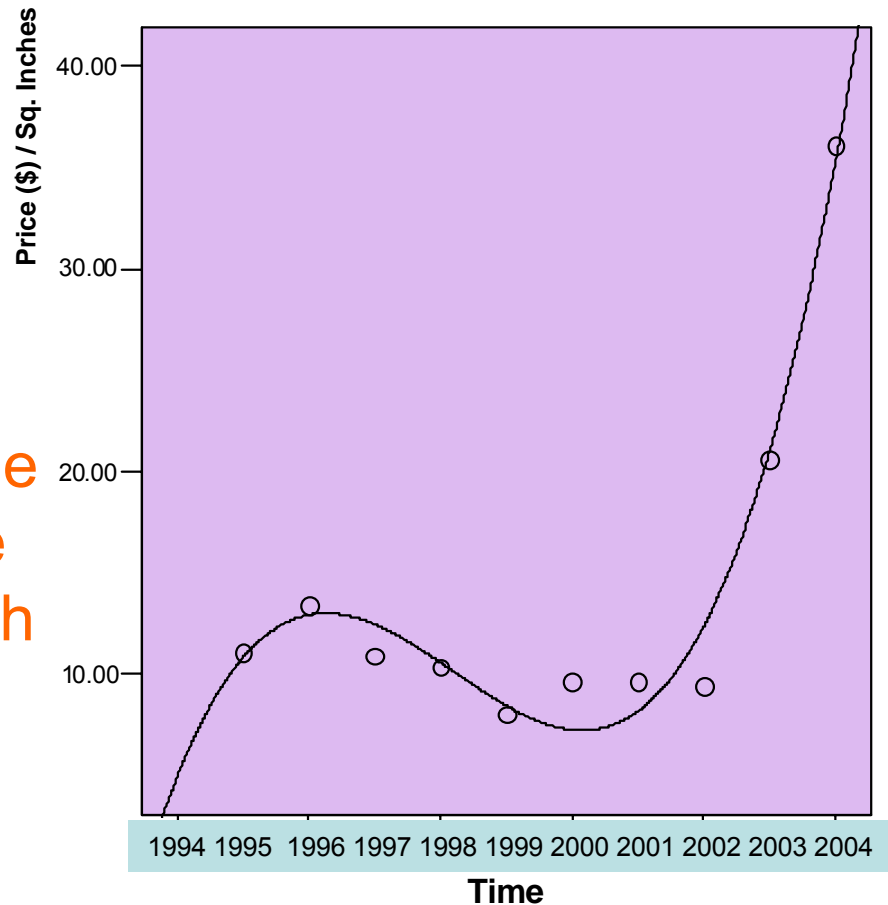


# Understanding the Dynamics of Price Evolution



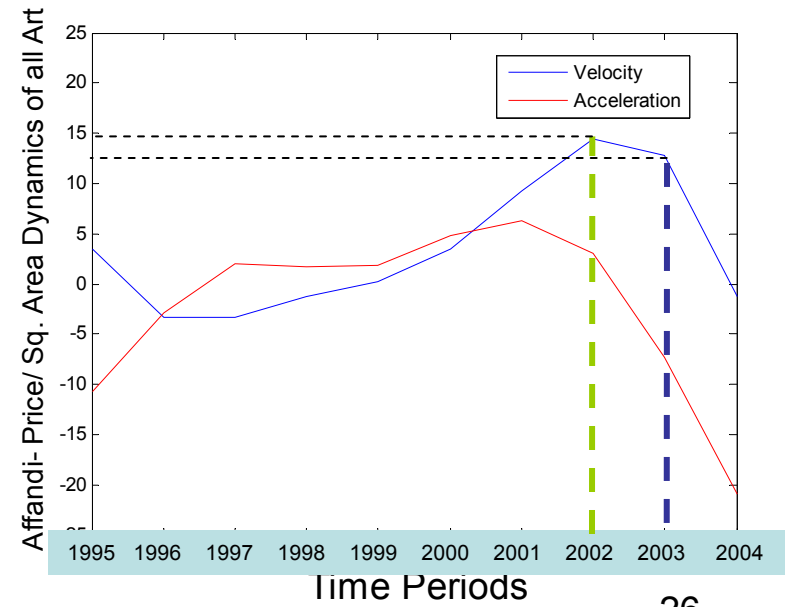
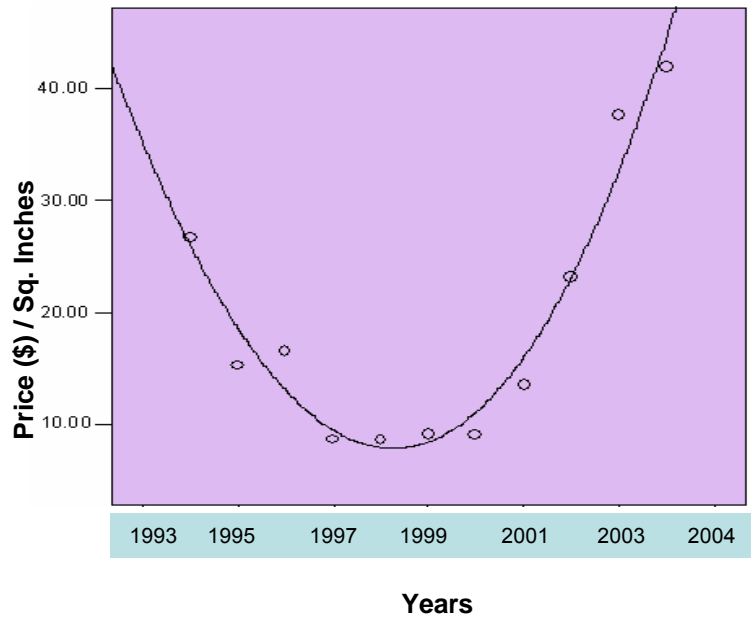
- The curve represents the price path of the individual artist over time.
- Speed and acceleration of the price path can be measured through derivatives of the curve.

M.F. Husain (b. 1915)



# Why do we need Price Dynamics?

Kusuma Affandi (1907-1990)





# Recovering the Price Path via Smoothing

- **Using a Penalized Smoothing Spline:**

- We recover the price (deflated, base =1995) path by using a piecewise polynomial (b-spline) on the price/ sq. inch.

$$f(t) = b_0 + b_1t + b_2t^2 + \dots + b_p t^p + \sum_{l=1}^L b_{pl}(t - \eta)_+^p$$

- by minimizing the following least square criterion (penalty function for curvature)

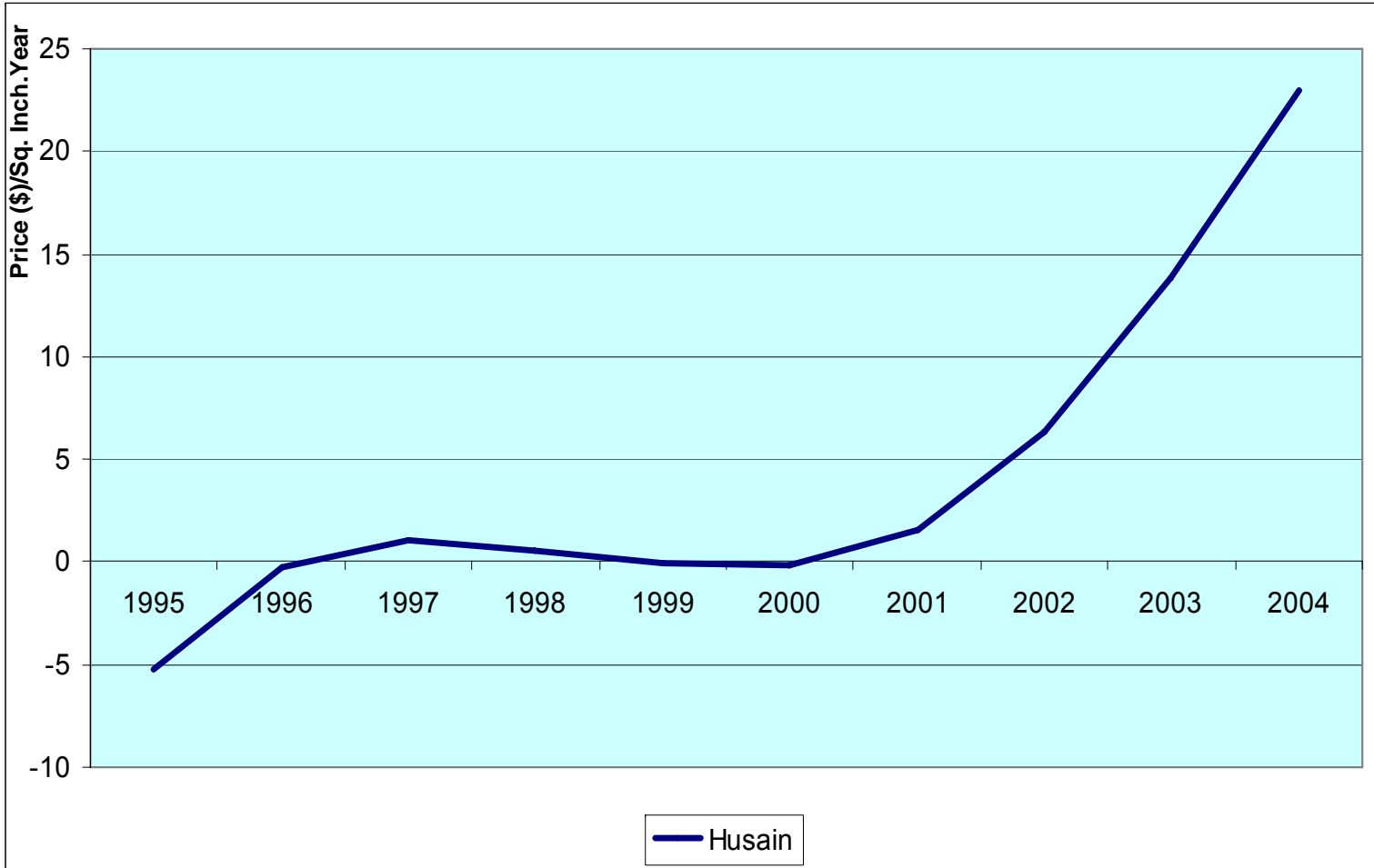
$$\text{PENSSE}_\lambda(f) = \sum \{y_j - f(t_j)\}^2 + \lambda \int \{f''(x)\}^2 dx$$

(Ramsay and Silverman 1997, 2002)

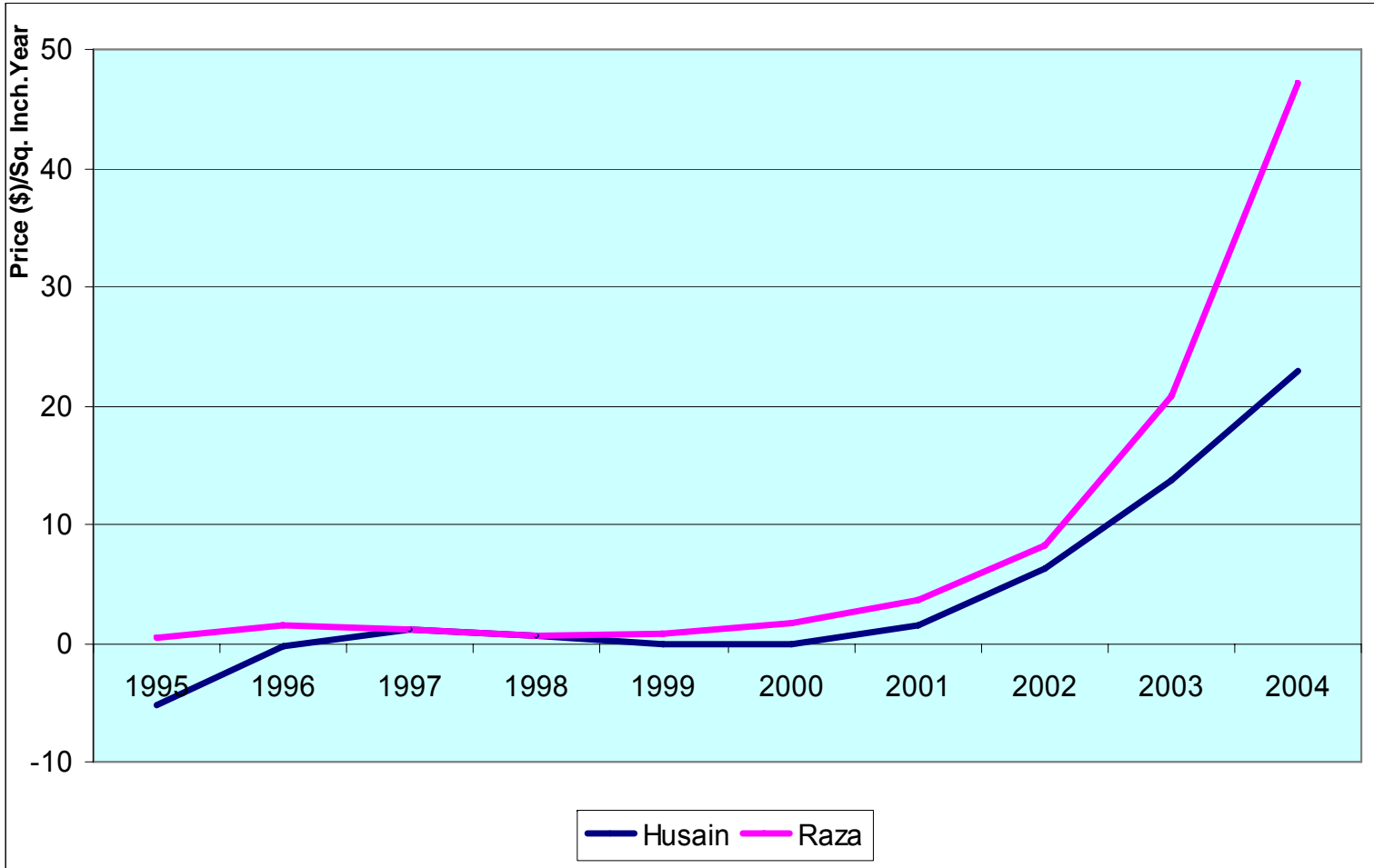
- **Understanding the Price Dynamics:**

- 1<sup>st</sup> derivative of the curve = velocity of the price path
- 2<sup>nd</sup> derivative = acceleration of the price path.

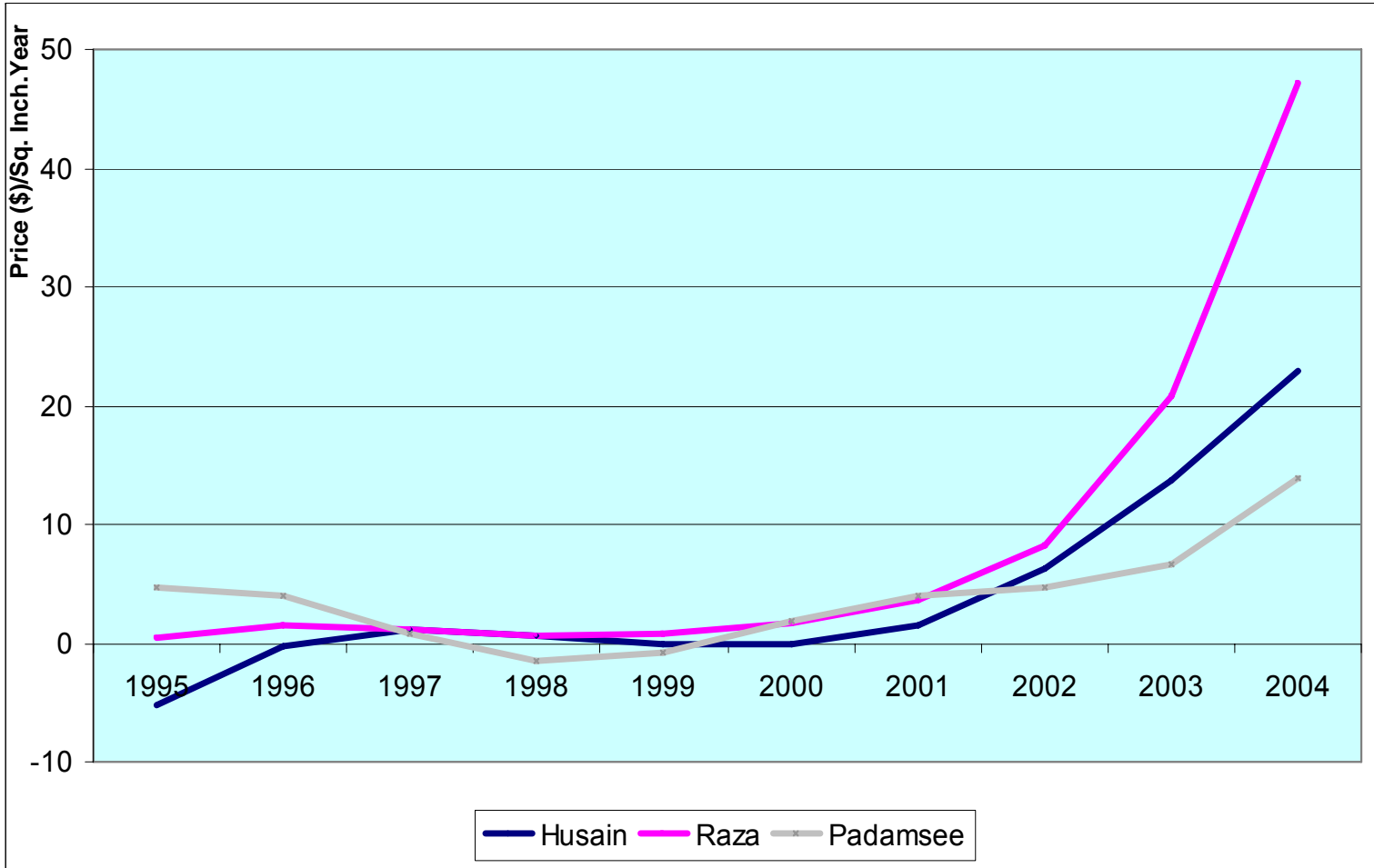
# Price Dynamics - Velocity



# Price Dynamics - Velocity

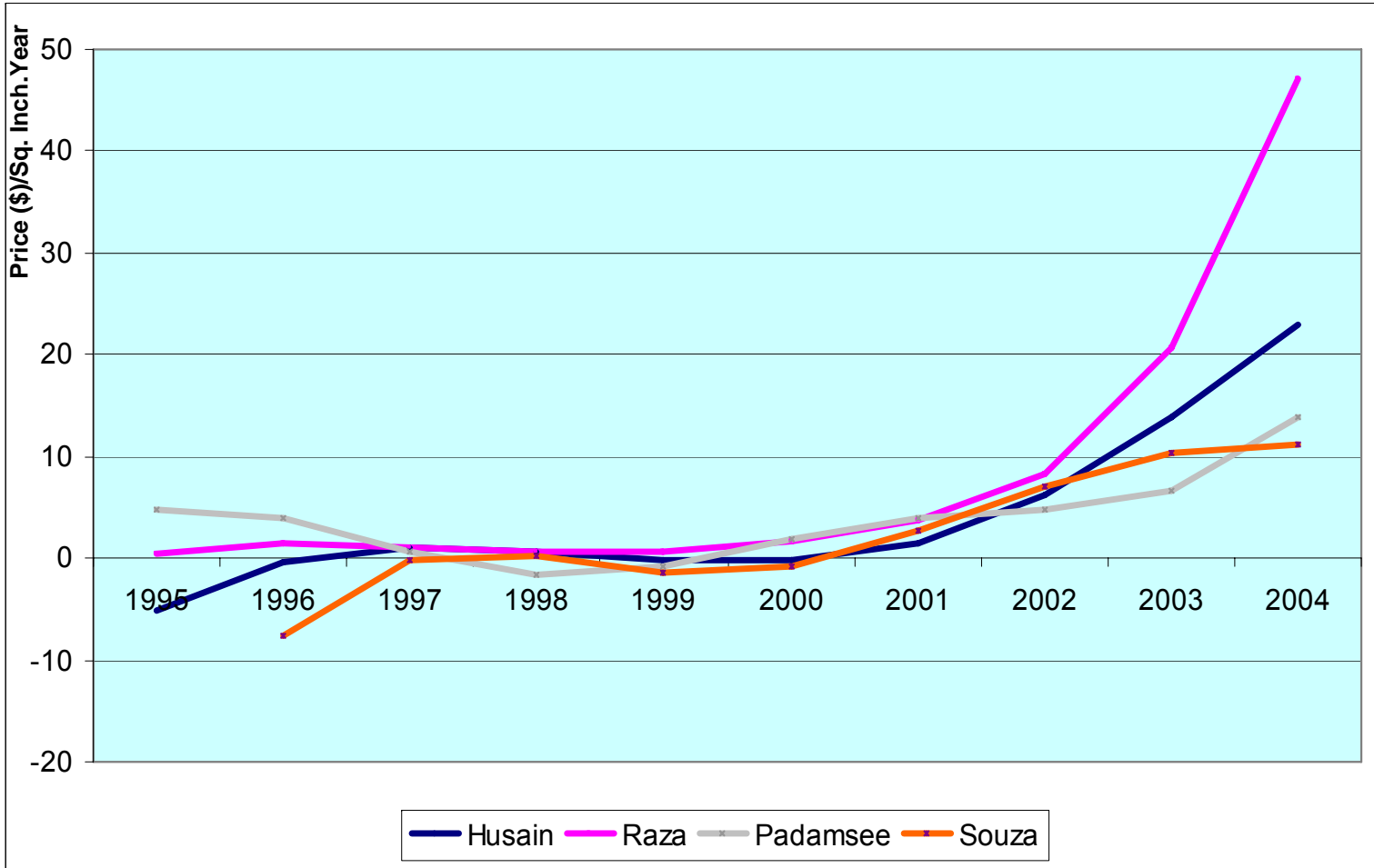


# Price Dynamics - Velocity



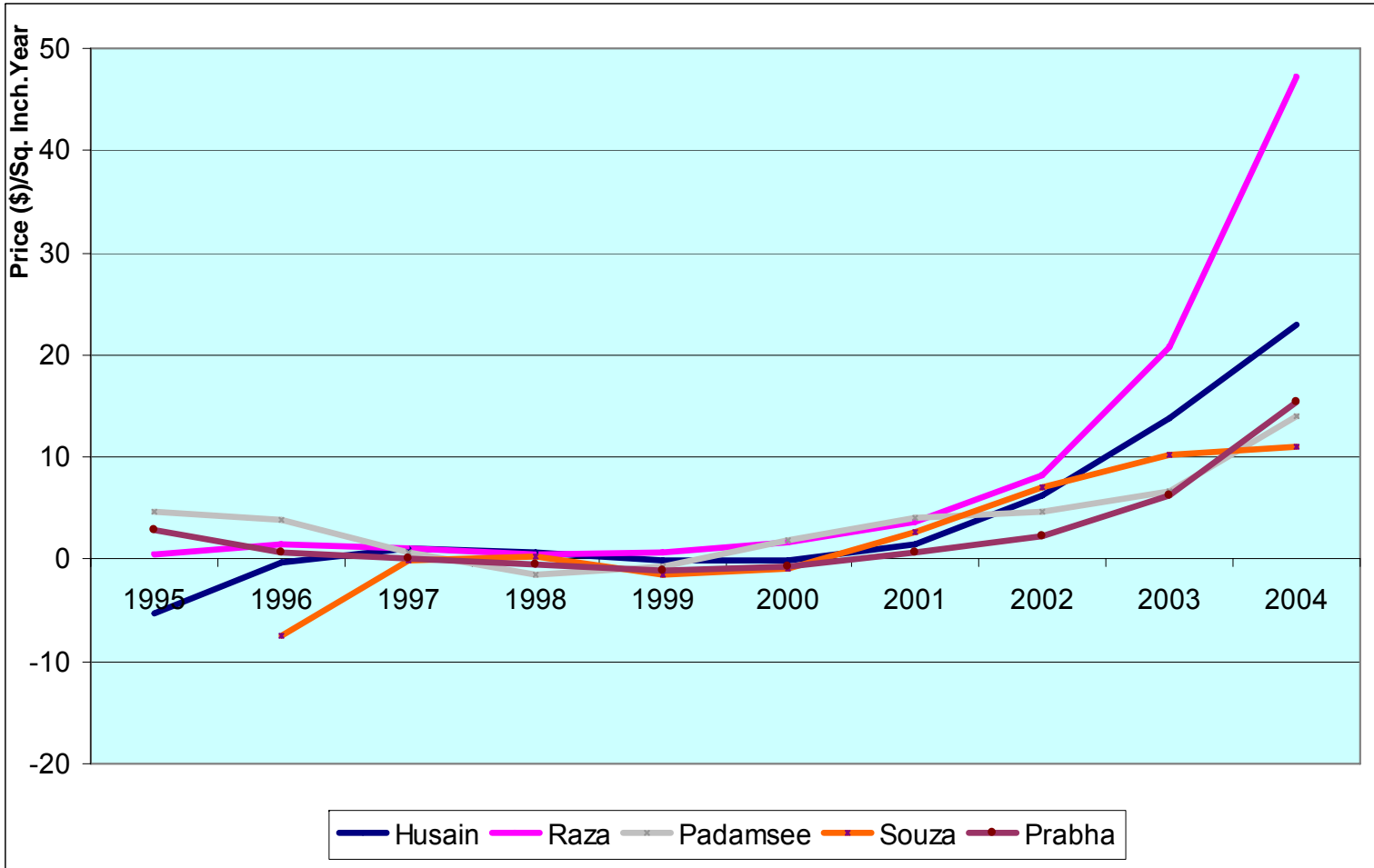


# Price Dynamics - Velocity



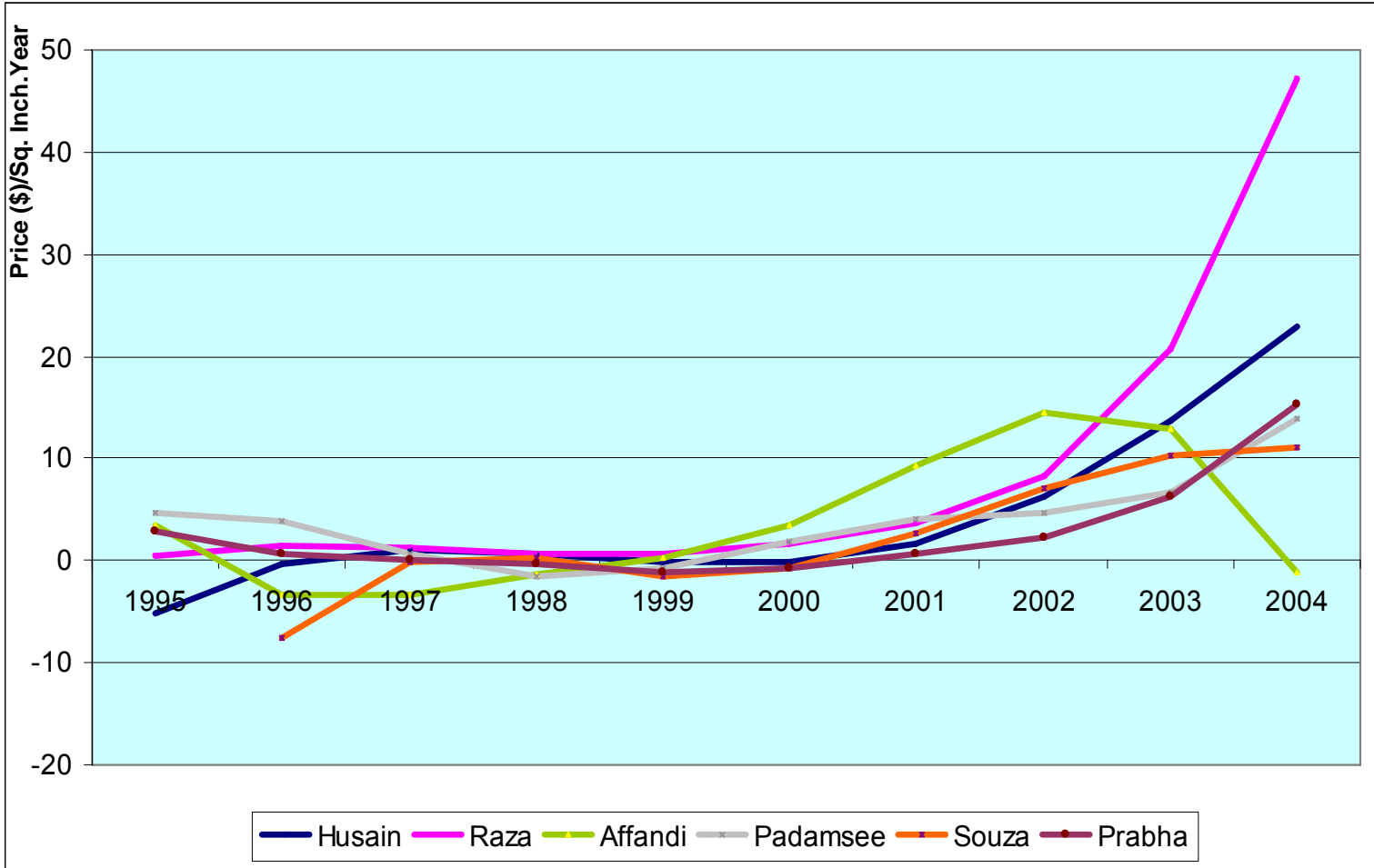


# Price Dynamics - Velocity

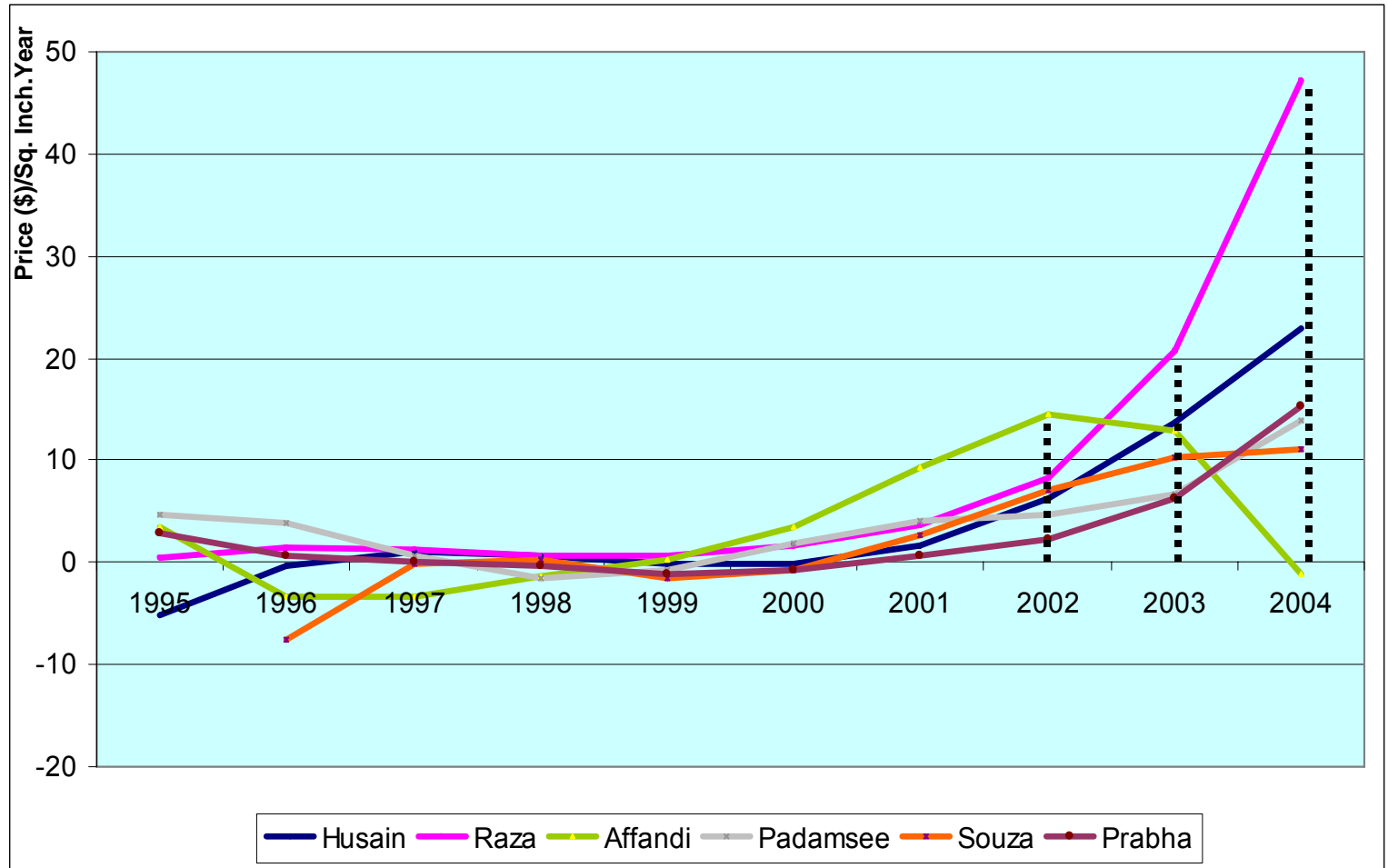




# Price Dynamics - Velocity

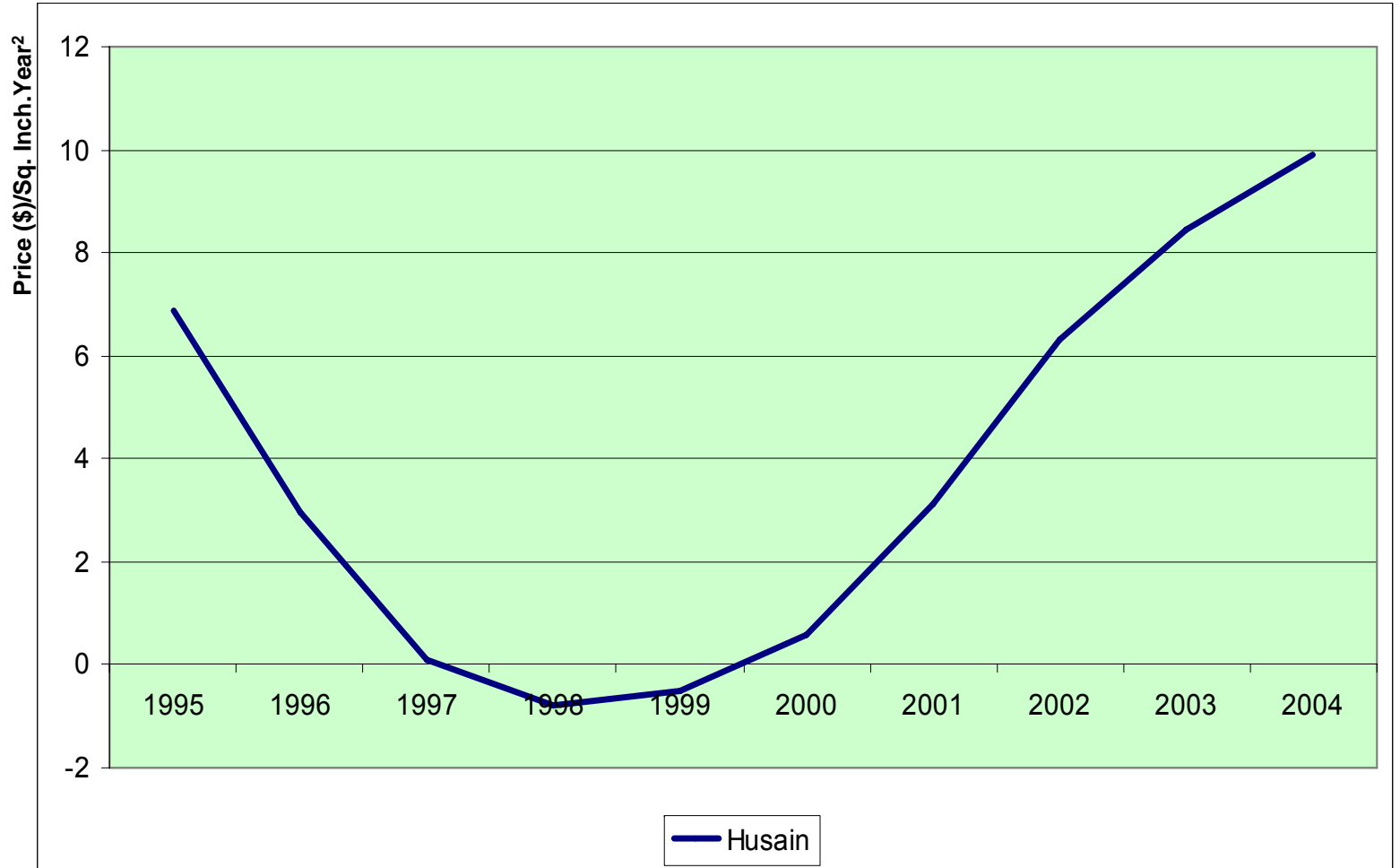


# Price Dynamics - Velocity

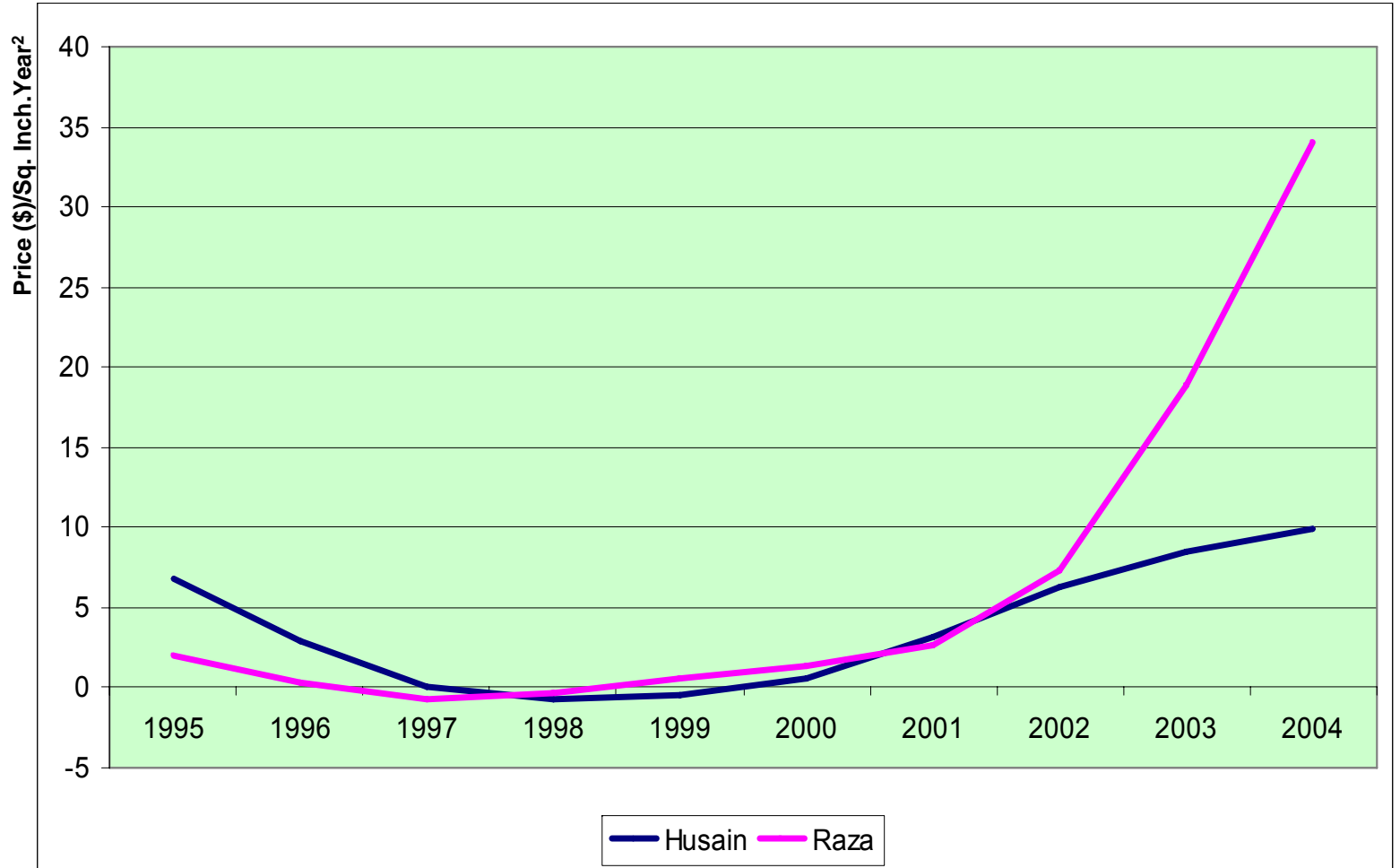


Affandi = decreasing rate (\$12 to -\$2/year); Husain = increasing rate (\$13 to \$22/ year)  
 Souza = increasing rate (\$10 to \$11/year); Prabha= increasing rate (\$6 to \$15/ year)  
 Raza = increasing rate (\$20 to \$47/year)

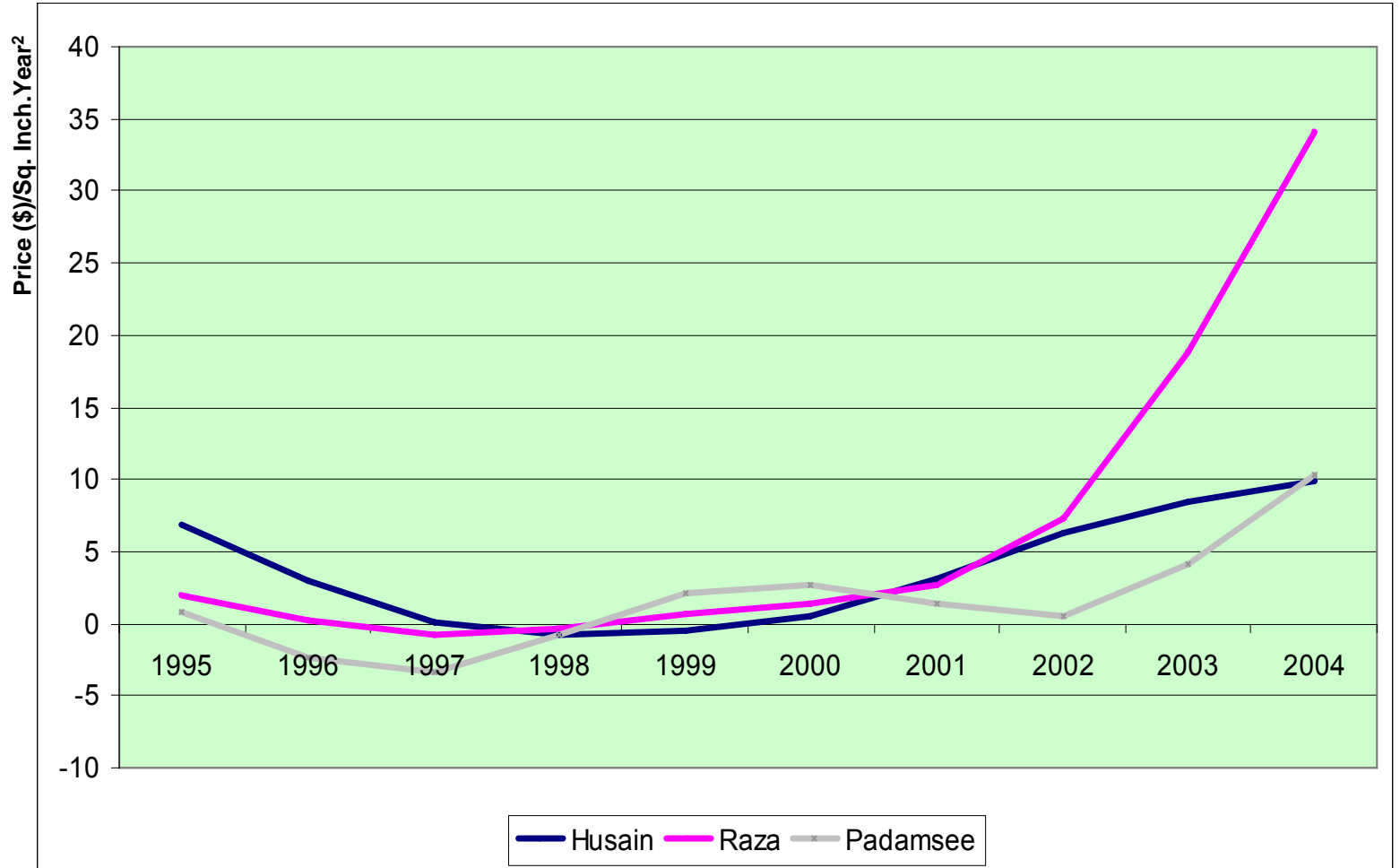
# Price Dynamics - Acceleration



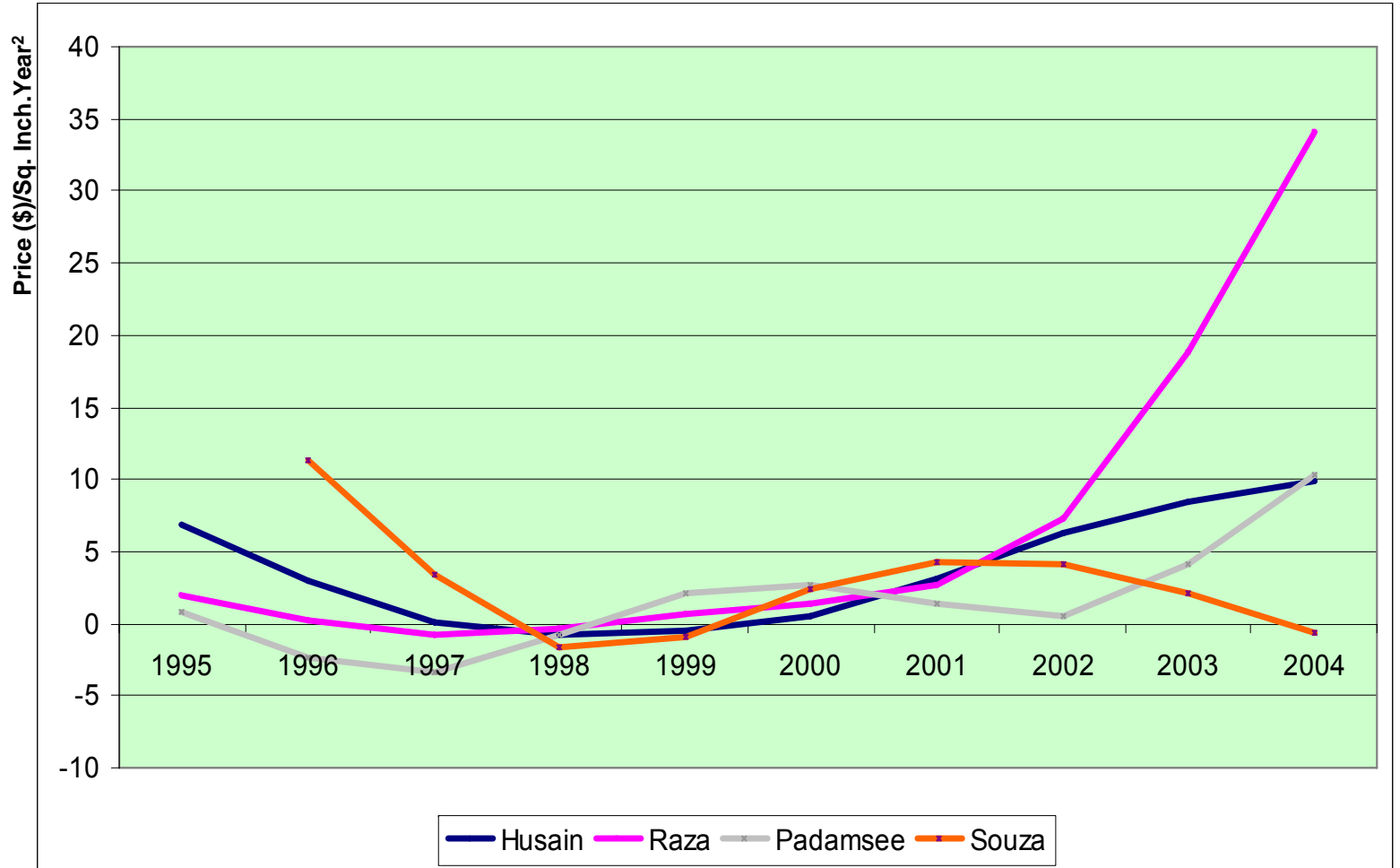
# Price Dynamics - Acceleration



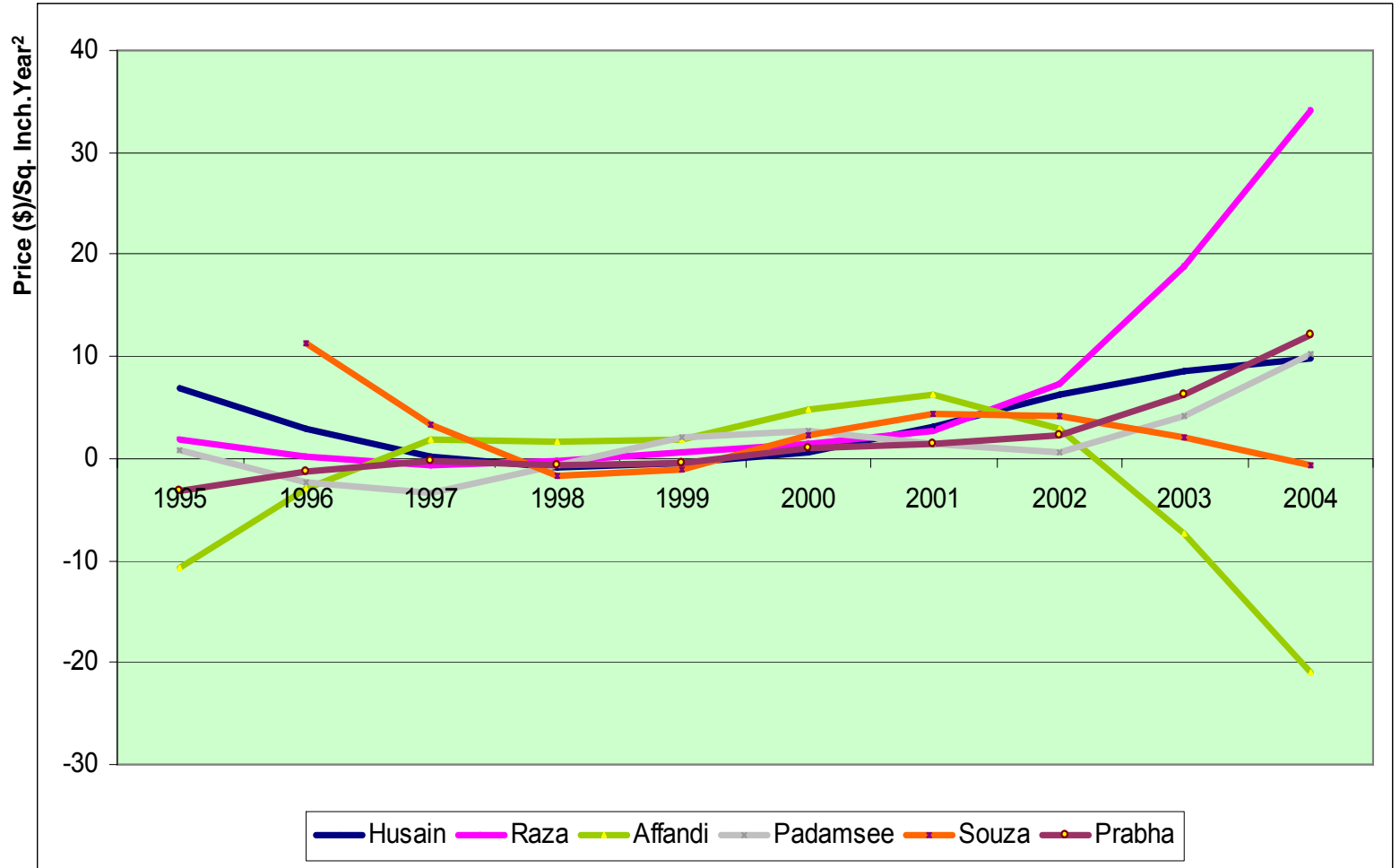
# Price Dynamics - Acceleration



# Price Dynamics - Acceleration

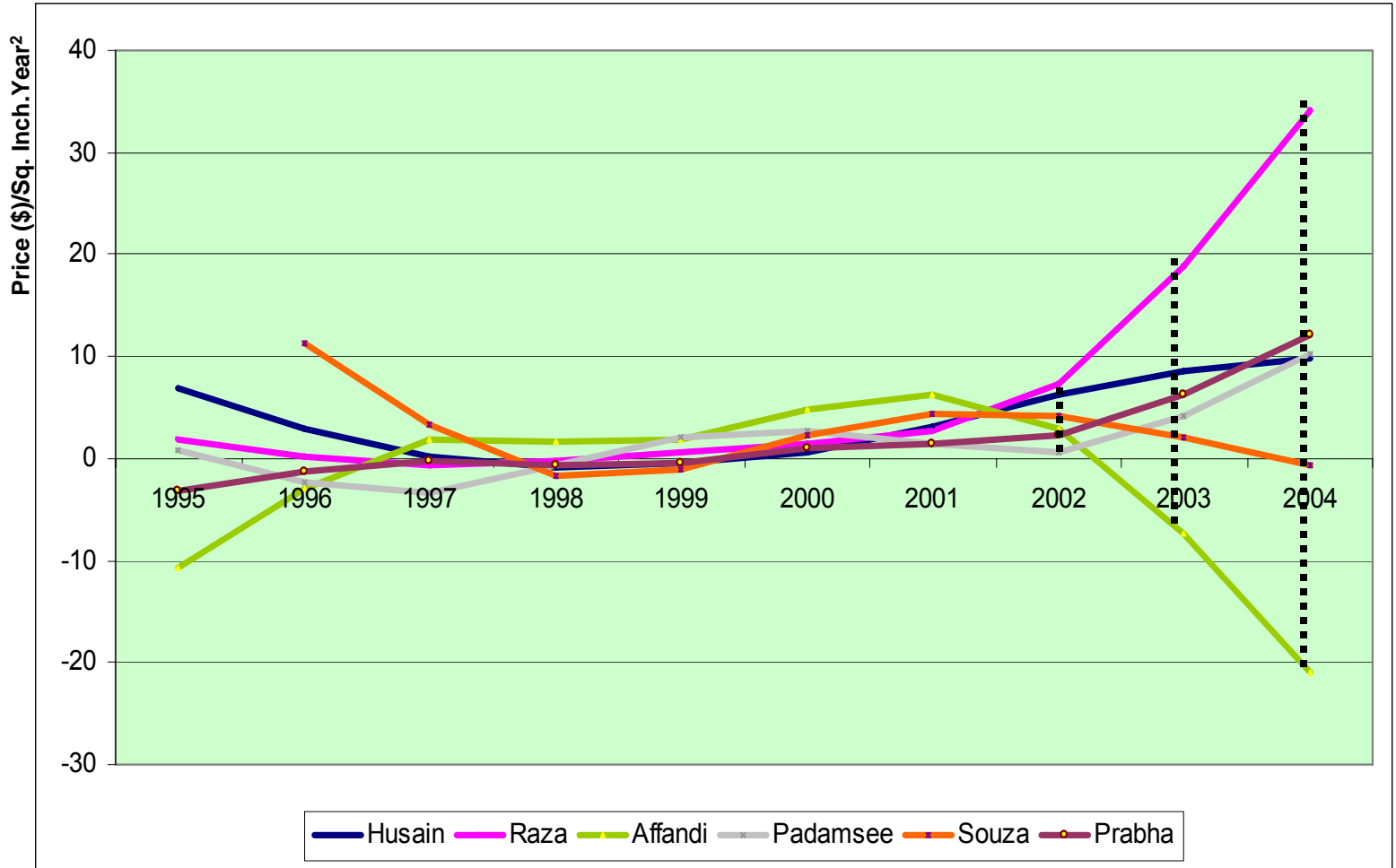


# Price Dynamics - Acceleration





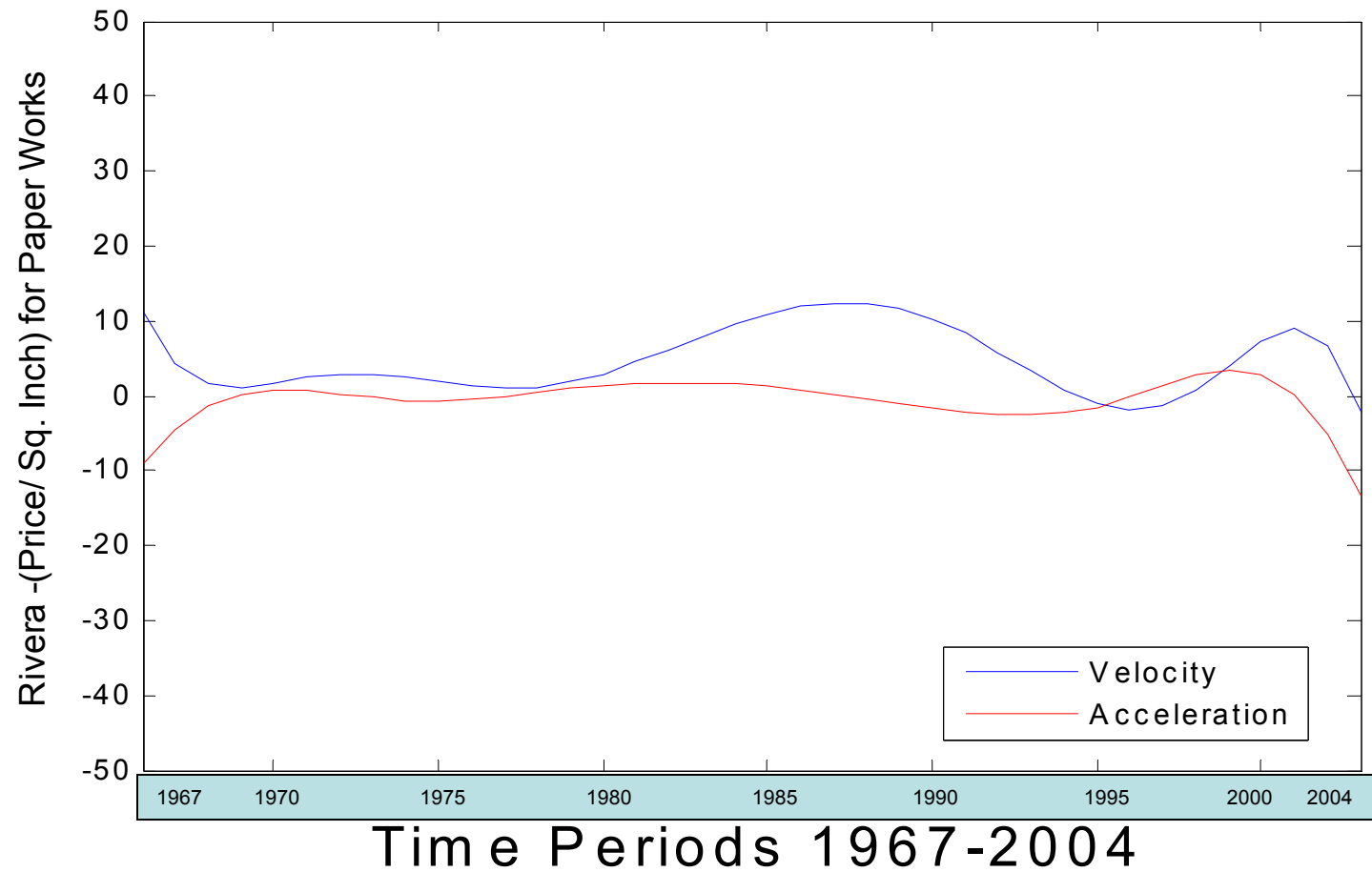
# Price Dynamics - Acceleration



Affandi = decreasing rate (\$-7 to -\$20/year); Husain = increasing rate (\$8 to \$9/ year)  
 Souza = decreasing rate (\$2 to -\$0.5/year); Prabha= increasing rate (\$6 to \$12/ year)  
 Raza = increasing rate (\$18 to \$34/year)

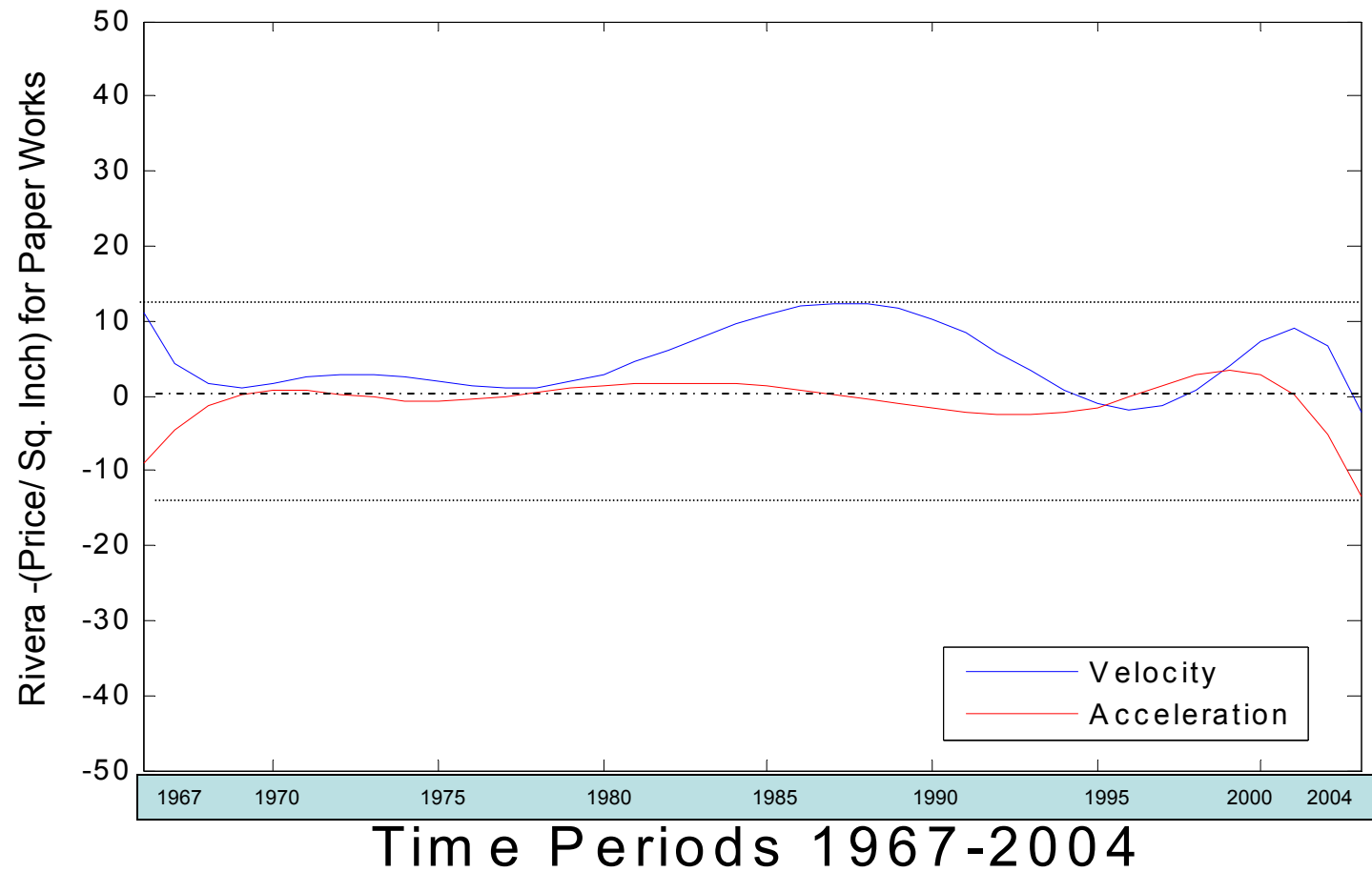


# Price Dynamics-Rivera



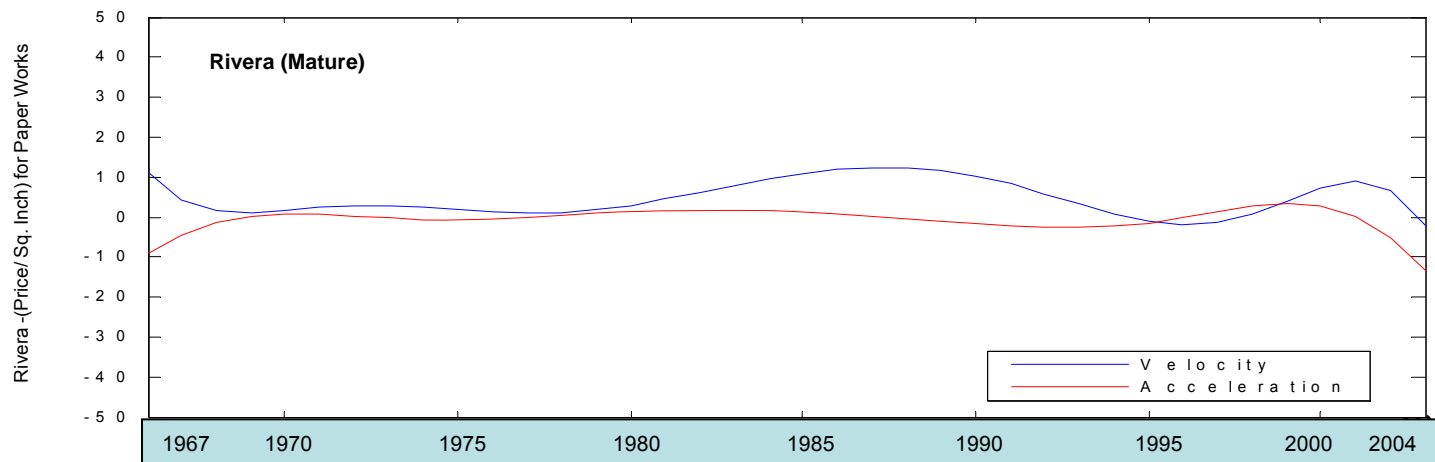
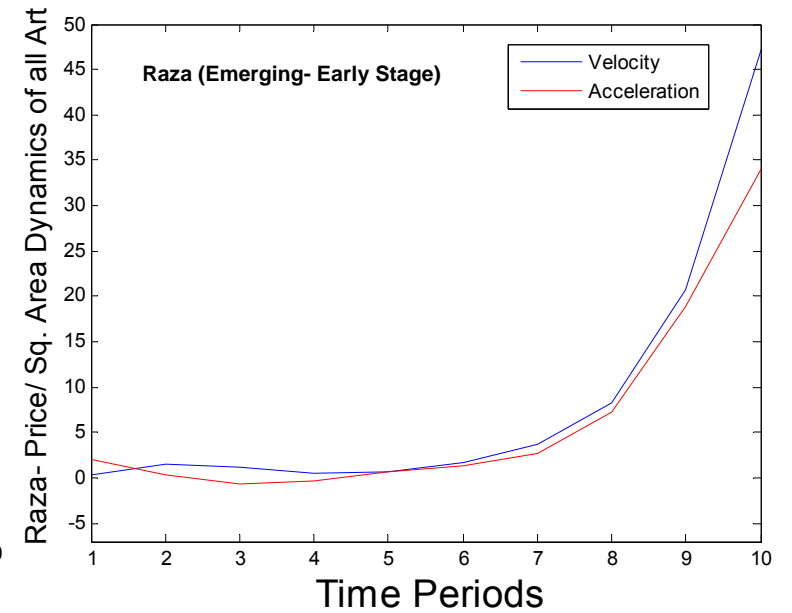
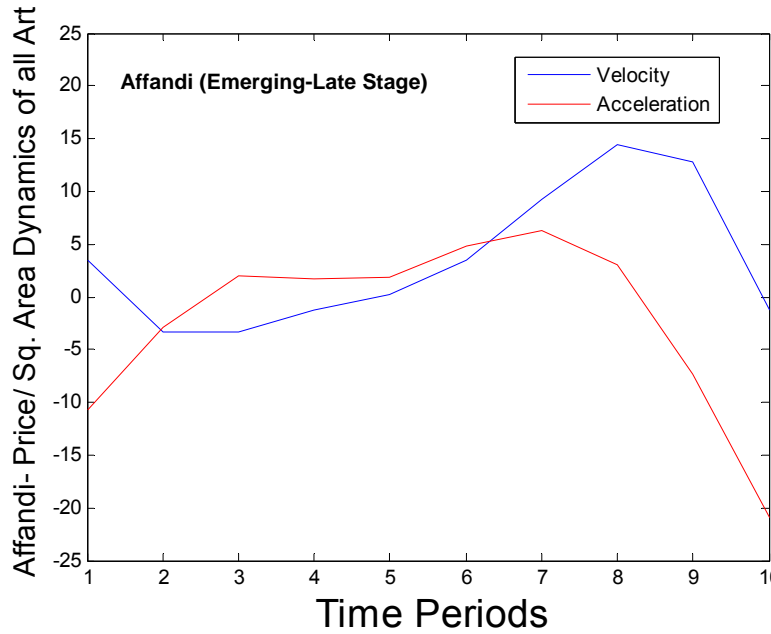


# Price Dynamics-Rivera





# Price Dynamics Comparison



# Insights from the Analysis



- Artists exhibit differing price dynamics with different price velocity and acceleration.
- Contrary to what would be expected, MF Husain does not show the higher velocity nor acceleration.
- SH Raza shows the highest velocity and acceleration.
  - This could be due to
    - Supply worries (Raza's age and productivity)
    - Better works coming into the market
    - Raza's prices catching up with Husain and Souza.
- Husain and Souza's prices show a moderate levels of velocity and acceleration.
- Affandi shows a constant velocity and acceleration
  - More mature artist, may be fully priced
- Diego Rivera shows a constant velocity and acceleration
  - Although steady until 1978, we see some activity after 1978 (Christie's and Sotheby's started "Latin American Art" auctions)
  - The fluctuations are well within the value range of -\$10 to \$10 per sq. inch.



# Future Directions

- Analyze the remaining Indian artists where there is adequate auction data (top 100 artists)
  - price dynamics – velocity and acceleration
- Investigate the influence of painter (age, master vs. newcomer, cumulative lots sold so far, etc.), painting (medium, genre, size, year of painting) etc. on the dynamics via Functional Regression Analysis.
- Comparison of the dynamics with more artists from more mature art markets.
- Investigate the potential for the prediction of future price movements.
- Developing a comprehensive model of valuing art.

# Conceptual Model of Art Market Value



## Painter Characteristics

- Artist provenance/fame
  - # of books on artist
- Artist alive or dead
  - # of museums holding the artist's paintings.
- Type of Artist (e.g., Progressives, Newcomers)

## Demand/Supply Characteristics

- Supply
  - # of lots of artist in the auction
  - Total number of lots in the auction
  - # of galleries selling artist's work
- Demand
  - Economic power of potential market
  - # of millionaires
  - # of museums
  - # of investment funds

## Painting Characteristics

- Medium
  - Canvas/paper
- Signed/ Unsigned.
- Genre of painting
- Age of artist when painting was done.
- Painting provenance
  - Featured in books
  - Previous ownership

**Realized Value**

## Market/Economic Characteristics

- Economic conditions
  - Economic growth
  - Unemployment rate etc.
  - General welfare (Happiness index?)
- Investment alternatives
  - Stock market
  - Real estate etc.

## Auction Characteristics

- Auction House
- Location
- Traditional vs. Online



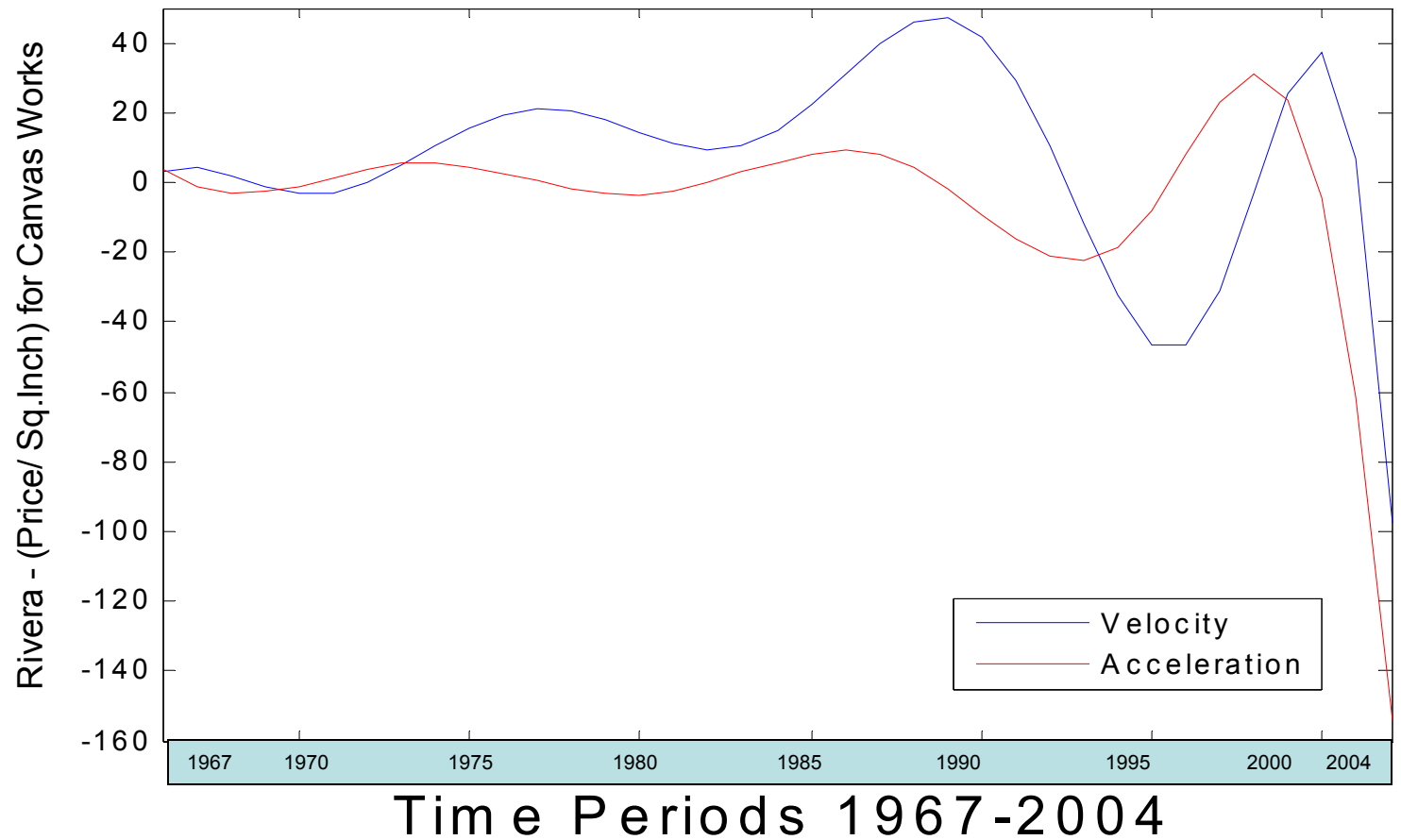
# Questions & Comments



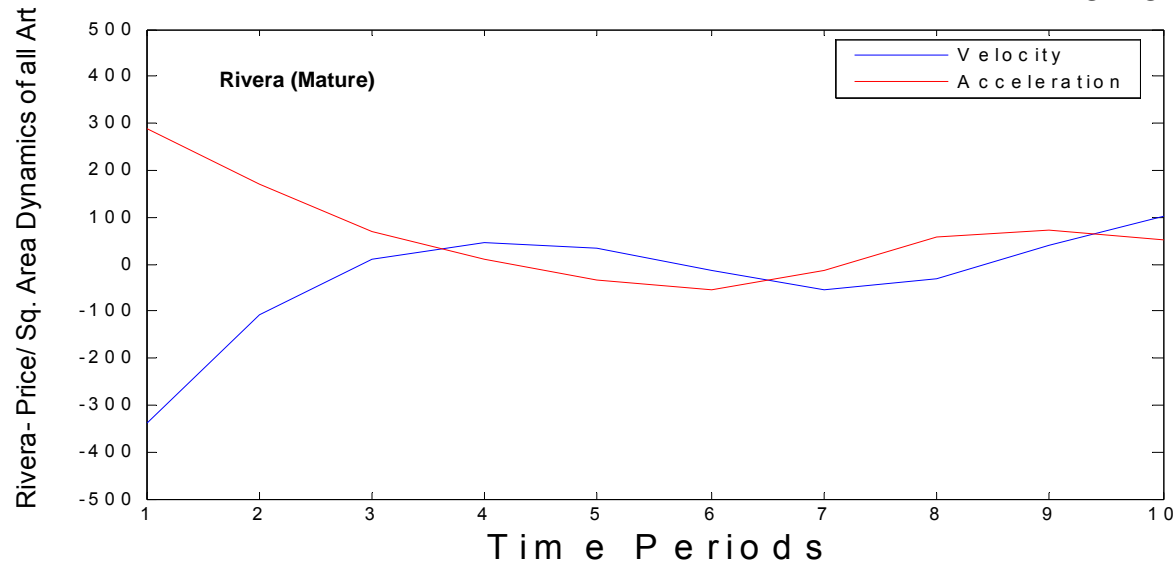
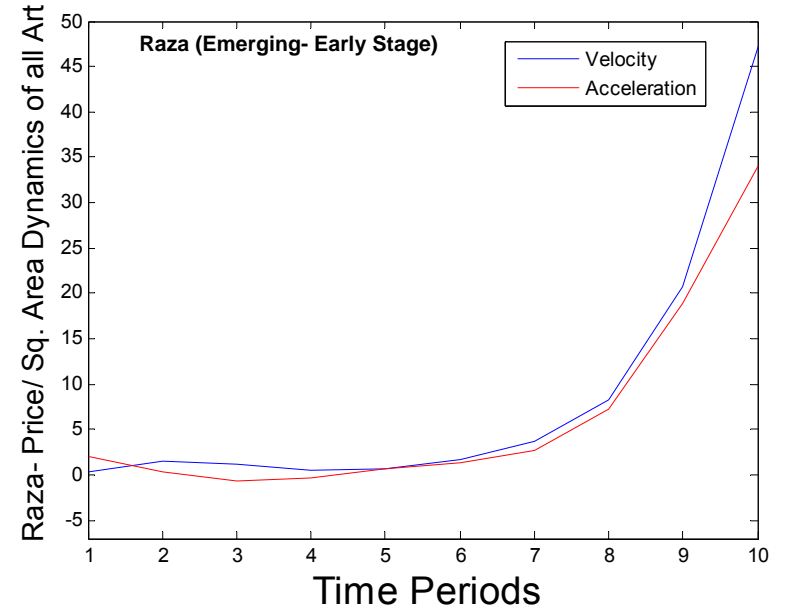
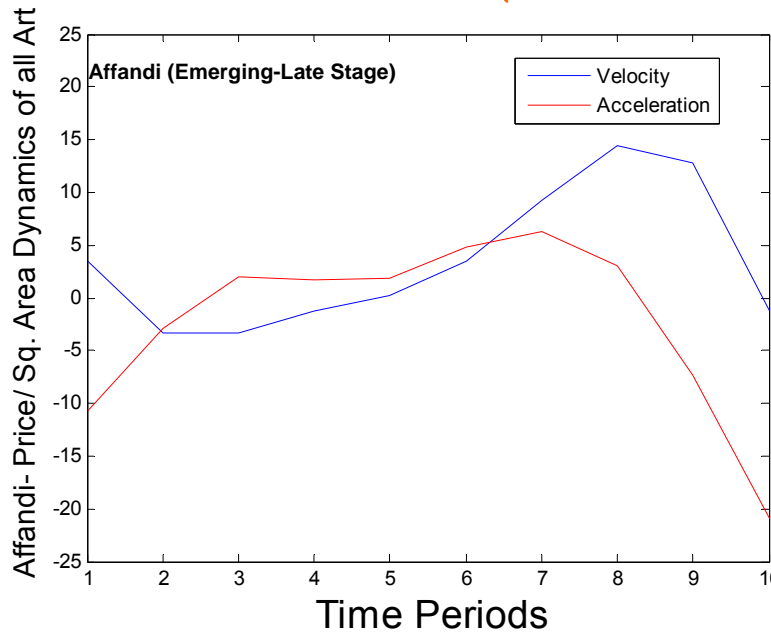
# Appendix



# Dynamics Plot of Rivera

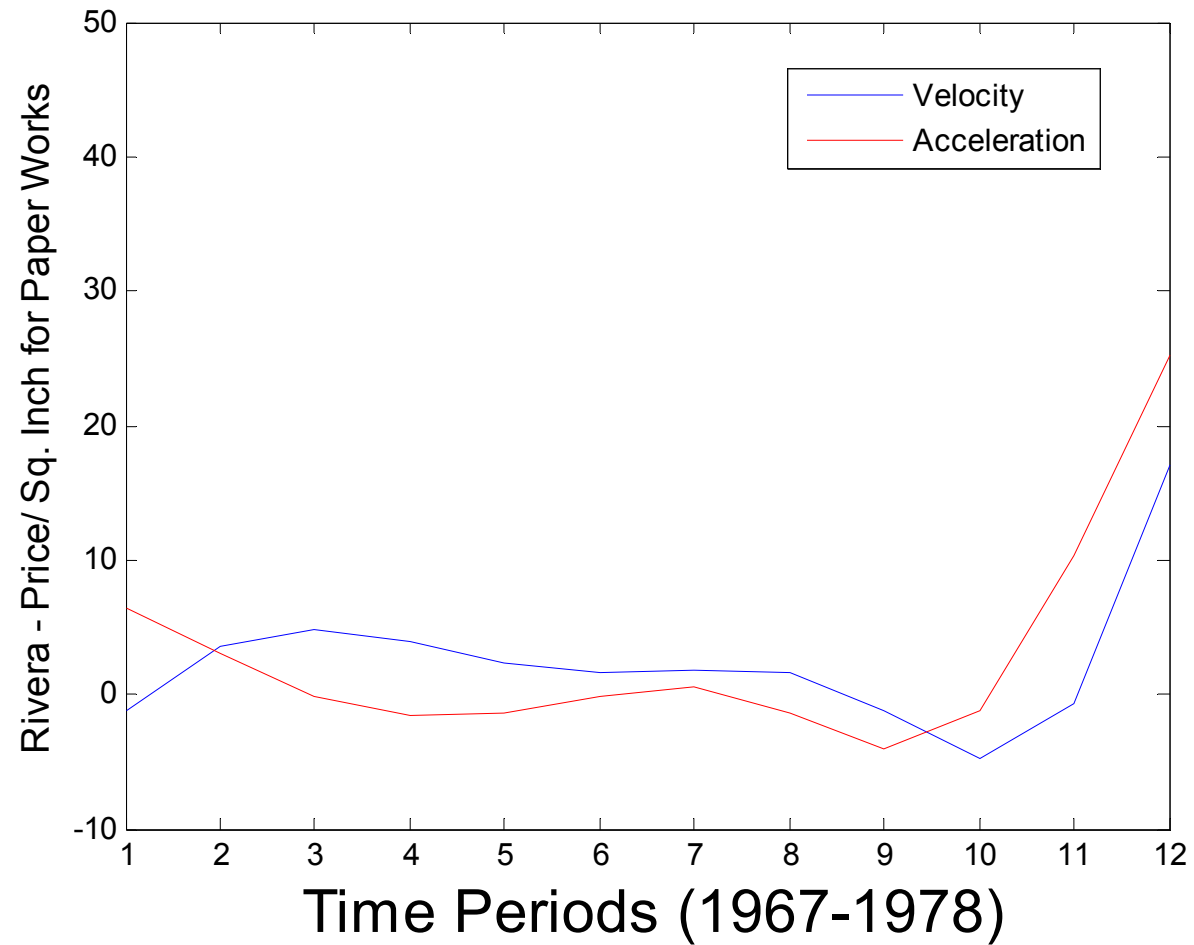


# Price Dynamics Comparison (1995-2004)



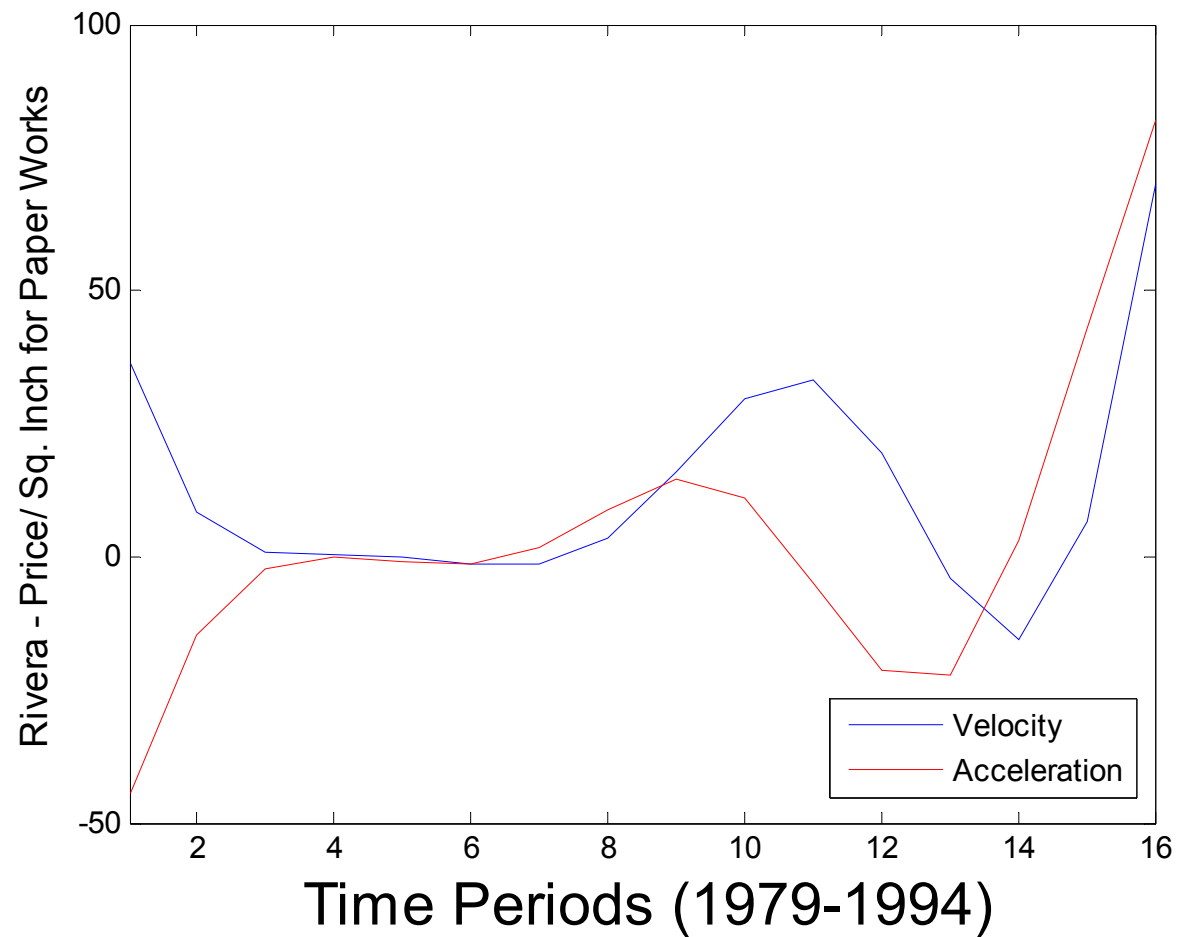


# Price Dynamics Rivera (1967-1978)



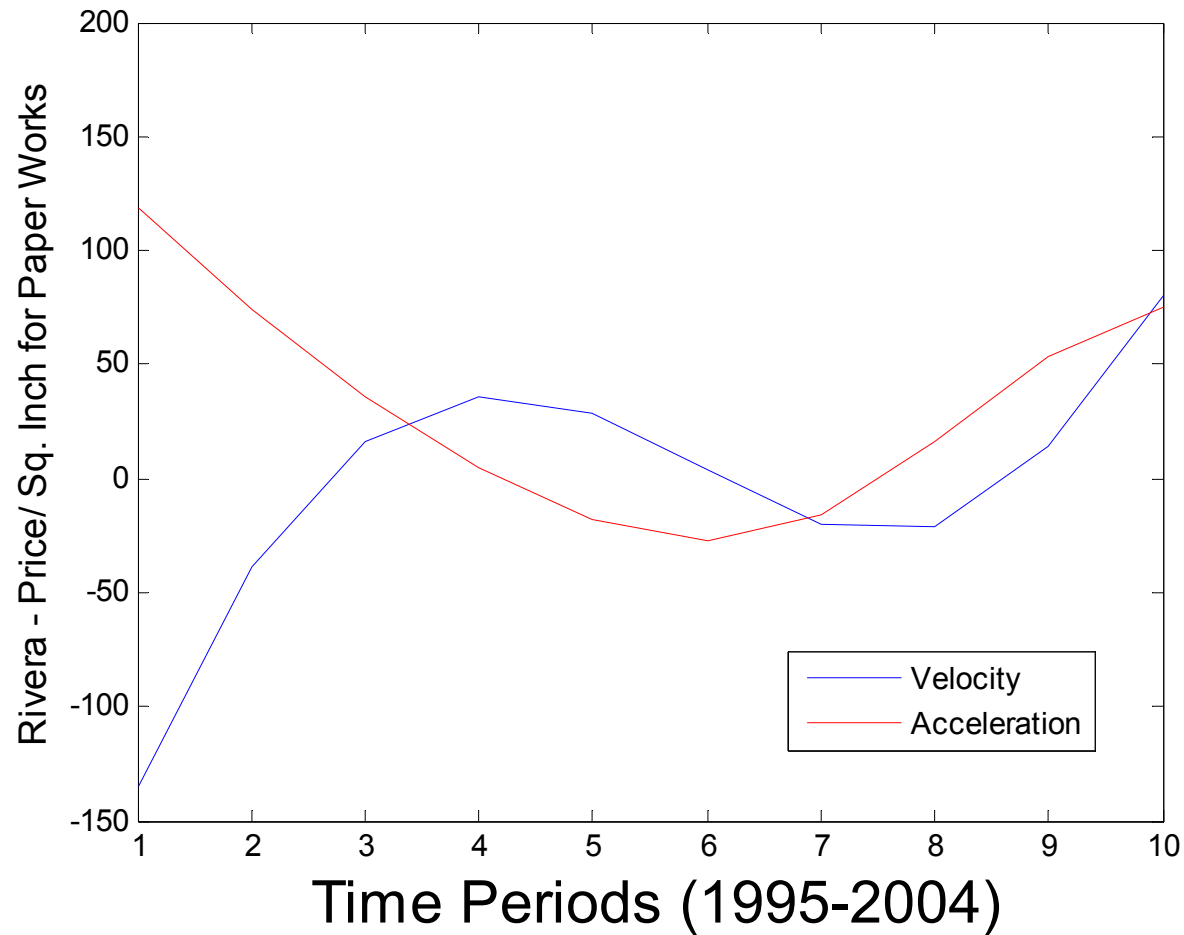


# Price Dynamics Rivera (1979-1994)



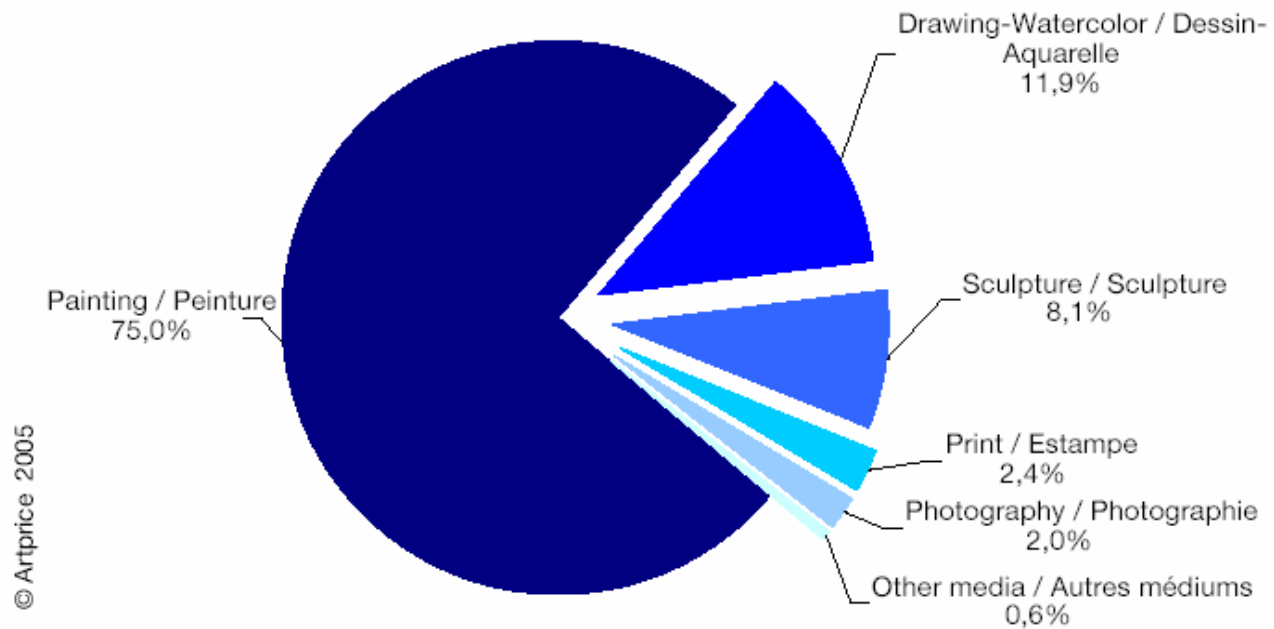


# Price Dynamics Rivera (1995-2004)





## 2004 Sales: Types of Art\*



\* Taken from ArtPrice.com

© 2005 Srinivas K. Reddy, Mayukh Dass, Umesh Gaur



# World's Top 10 Artists

Rank	Artists	Auction Sales Turnover (\$) 2004	# of Lots Sold
1	Pablo Picasso (1881-1973)	\$241 million	1264
2	Claude Monet (1840-1926)	\$80.4 million	25
3	Andy Warhol (1928-1987)	\$77.5 million	493
4	Auguste Renoir (1841-1919)	\$44.6 million	220
5	Amedeo Modigliani (1884-1920)	\$42.6 million	19
6	Henri Matisse (1869-1954)	\$38.5 million	199
7	Paul Gauguin (1848-1903)	\$38.1 million	29
8	John Singer Sargent (1856-1925)	\$37.5 million	15
9	Edgar Degas (1834-1917)	\$31.4 million	59
10	Joan Miro (1893-1983)	\$30.2 million	576

[Back](#)