# The Behavior of Stock Prices

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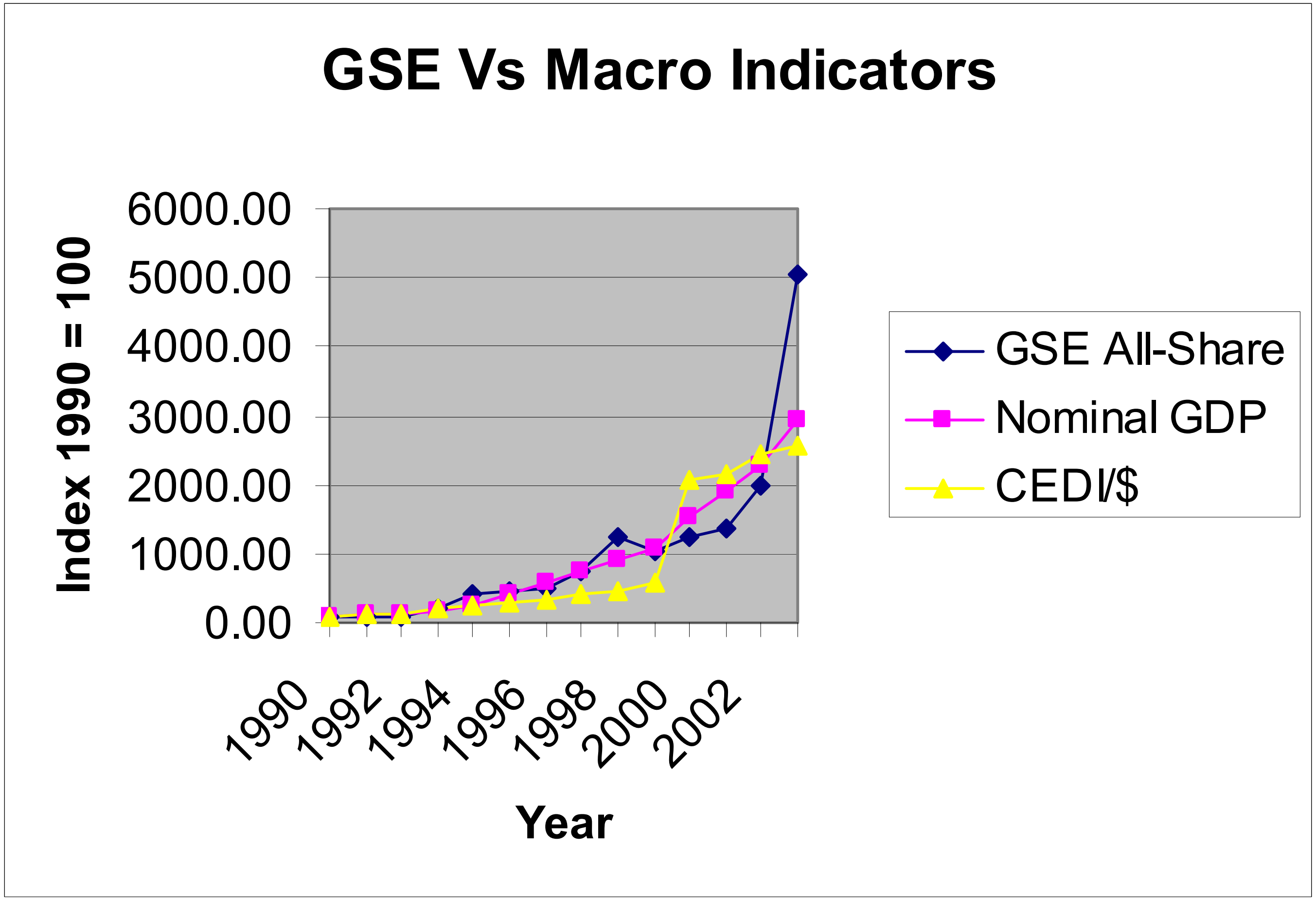
# Is GSE pricing linked to economic fundamentals?



# Some Mysteries of the Stock Market

- Stock Prices are too volatile
- Stock volatility is too unstable
- Noise in the Market – Silence on the Street
- The Silence after the closing bell
- Going Global extends the length of your trading day and the risk of your stock

# Stock Prices are too volatile!

- Price of a share is the present value of future dividends
- If this is the case, it follows that over the long term, the volatility of stock prices should be consistent with the volatility of dividends. But they are not!
- Evidence indicates that the volatility of stock prices is much too high relative to the variability of the dividend stream

# Stock Volatility is too Unstable

- If pricing is fully rational, prices would move only in response to new and unanticipated information about the prospects of a firm
- Volatility of price changes would be ion response to the intensity ogf flow of new information

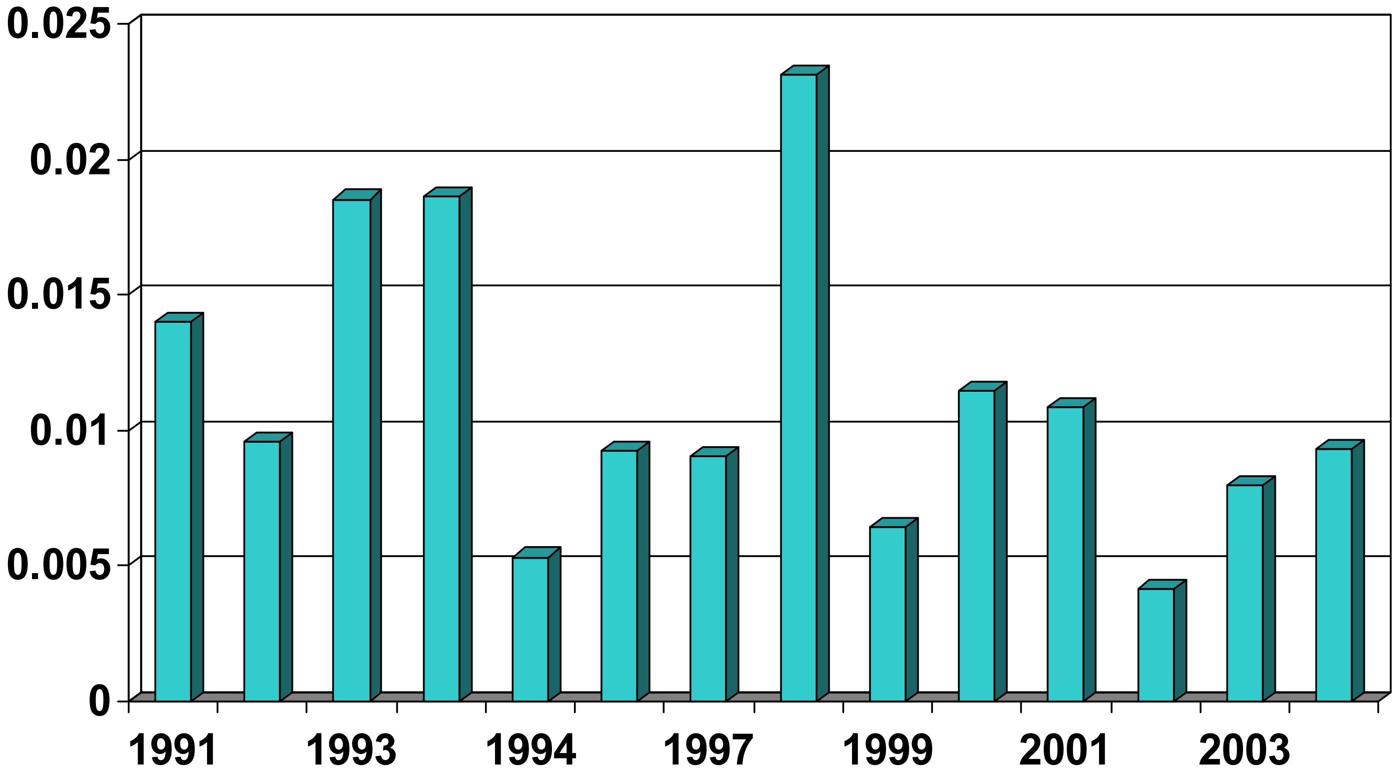
# What is information?

- Individual firms
  - Earnings announcements
  - Labor disputes
  - Takeovers, etc
- Market aggregate
- Market volatility is not stable

# Volatility Shifts of the GSE

- STD
- 1991 0.01399
- 1992 0.00957
- 1993 0.01853
- 1994 0.01865
- 1995 0.00532
- 1996 0.00923
- 1997 0.00903
- 1998 0.02315
- 1999 0.00641
- 2000 0.01144
- 2001 0.01087
- 2002 0.00415
- 2003 0.00796
- 2004 0.00934

# Volatility Per Trading Session



# Issues

- Are there any events associated with big bursts in volatility?
- There is no evidence that shifts in volatility are induced by identifiable real world events
- In the case of the GSE, is it remotely possible that the uncertainty associated with underlying business conditions is shifting that often? Is it possible that changes in economic uncertainty are responsible for the apparent increase in volatility?

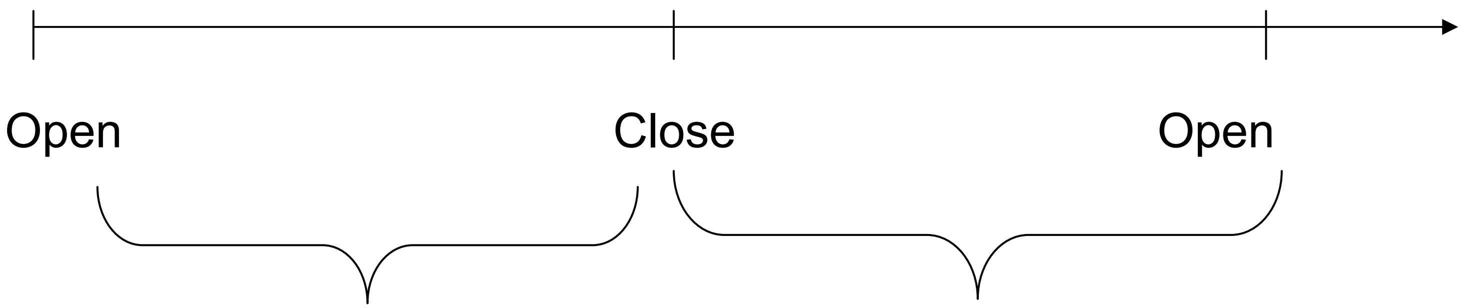
# Noise in the market – Silence on the Street

- Do economic/financial conditions drive the market?
- A large fraction of market volatility goes unexplained
- Economic factors only explain about 18% of differences in monthly return (82% of the variability of returns is attributed to unknown forces)

# The Silence After the Bell

- Prices still move after the market is closed
- After trading closes things do happen – in the economy, politics, etc. Therefore prices should be responding to new information after the market closes
- Implies that today's closing price and tomorrow's opening should collectively reflect these responses

# Comparing Price Behavior of Closed versus Open Markets




- Variance of stock return is 70 times greater when the NYSE is open than when it is closed
- Can it be that the flow of information is much more intense when the market is open than when it is closed
- Implication – the major driving force behind the volatility of the market comes from within the market itself

## Global trading extends the length of your trading day and the risk of your stock

- Anglogold Ashanti continues in New York after Johannesburg closes; continues in Australia after New York closes
- Evidence that volatility increases after cross-listing
- Volatility increases as the number of trading hours increases!

# Summary

- Three components of volatility
  - Event-driven volatility: In an efficient market, this would be the only volatility, i.e. volatility related to changing conditions and firm prospects
  - Error-driven volatility: An inefficient market makes mistakes. It overreacts to some events and under reacts to others. These are time-varying mistakes in pricing relative to the receipt of new information
  - Price-driven volatility: These are sequences of past price changes that can induce investors to buy or sell *now*
  - Price-driven volatility stops when trading stops. When it stops, total volatility drops by 75%

# Market Efficiency is a Continuum

Zero Efficiency

Absolute Efficiency

Price-driven volatility only

Event-driven volatility only

- No place for under- or overvalued stocks in efficient market. Forget about active investment; models based on rational economic behavior
- As you move towards left, rational economic behavior loses power; behavioral models dominate
- Where does GSE lie on continuum? May be closer to the left because of cost of collecting information

# More on Price-Driven Volatility

- Price changes that occur as reactions to previous price changes as opposed to real economic events
- Error-driven volatility is caused by over- or under reaction to event shocks. Investors are not experts in determining the impact of events, therefore they watch others for signals. At the same time others are watching them. An investor moves in response to a price change; another investor reacts to the first movement –possibly by overacting. A third investor overacts in turn to the overreaction of the second. This dynamic interaction between investors can become excessive and unstable

# Irrational Man

- Faced with a sure gain, most investors are risk averse. Faced with a sure loss, investors become risk takers
- People often see order where it doesn’t exist and interpret accidental success to be the result of skill
- People tend to be overconfident in making predictions in areas where they have a bit of knowledge
- Most investors see other peoples decisions as the results of their disposition but their own choices as rational
- People often treat the highly probable as certain and the improbable as impossible
- Investors typically give too much weight to a recent experience. Recent gains beget over confidence; recent losses over cautiousness
- Most people are willing to bet with other people’s money than their own. But the desire to keep getting paid may make investment managers risk averse.

# Implications for Economy

- Efficient allocation of capital is undermined by price-driven volatility. If capital is to move to its most efficient use, the prices of these securities must accurately reflect the efficiency by which goods and services are produces, the risk undertaken in their production and the desirability of the goods in satisfying consumer demand
- Capital structure can be skewed towards instruments with less price volatility

# Implications for Investors

- Given present rules and regulations, investors simply have to live with price-driven volatility.
- If we can predict volatility shifts, we can avoid getting into caught up in market crashes but this is almost impossible
- Therefore, when the market crashes or overheats upwards, don’t call Dr. Mensah for “an expert opinion” on today’s market developments

# Policy Implications

- Price-driven volatility is created in the marketplace
- Magnitude is related to the rules and practices of the capital marketplace
  - Length of trading day
  - The speed with which orders are processed Instantaneous auction can reduce volatility (Benefits of call-over).
  - The extent to which stocks are cross-listed
  - Increase production and dissemination of information. Review corporate releases for quality and quantity as is done by US SEC