SMU COX
SCHOOL OF BUSINESS

What is "Excessive Speculation" and Why is There So Much of It?

(with apologies to Gertrude Stein)

James L. Smith
Southern Methodist University, Dallas TX USA
March 21, 2014

Objectives

- To clarify the meaning of “excessive speculation.”
- To investigate the causes of “excessive speculation.”
- To chart the consequences of “excessive speculation.”

The Debate over Excessive Speculation

- **“Speculation is not illegal, but excessive speculation is a concern of the Commodity Futures Trading Commission.”**

  -- Division of Market Oversight, CFTC, 2013

- **“Federal legislation should bar oil speculators entirely from commodity exchanges in the United States.”**

  -- Joseph Kennedy II, 2012

An Opposing View of Speculation

- **"Though statistical evidence, accumulated first by the Grain Futures Administration, long ago afforded proof to the contrary, it is still rather generally believed that futures markets are primarily speculative markets. They appear so on superficial observation, as the earth appears, from such observation, to be flat."**

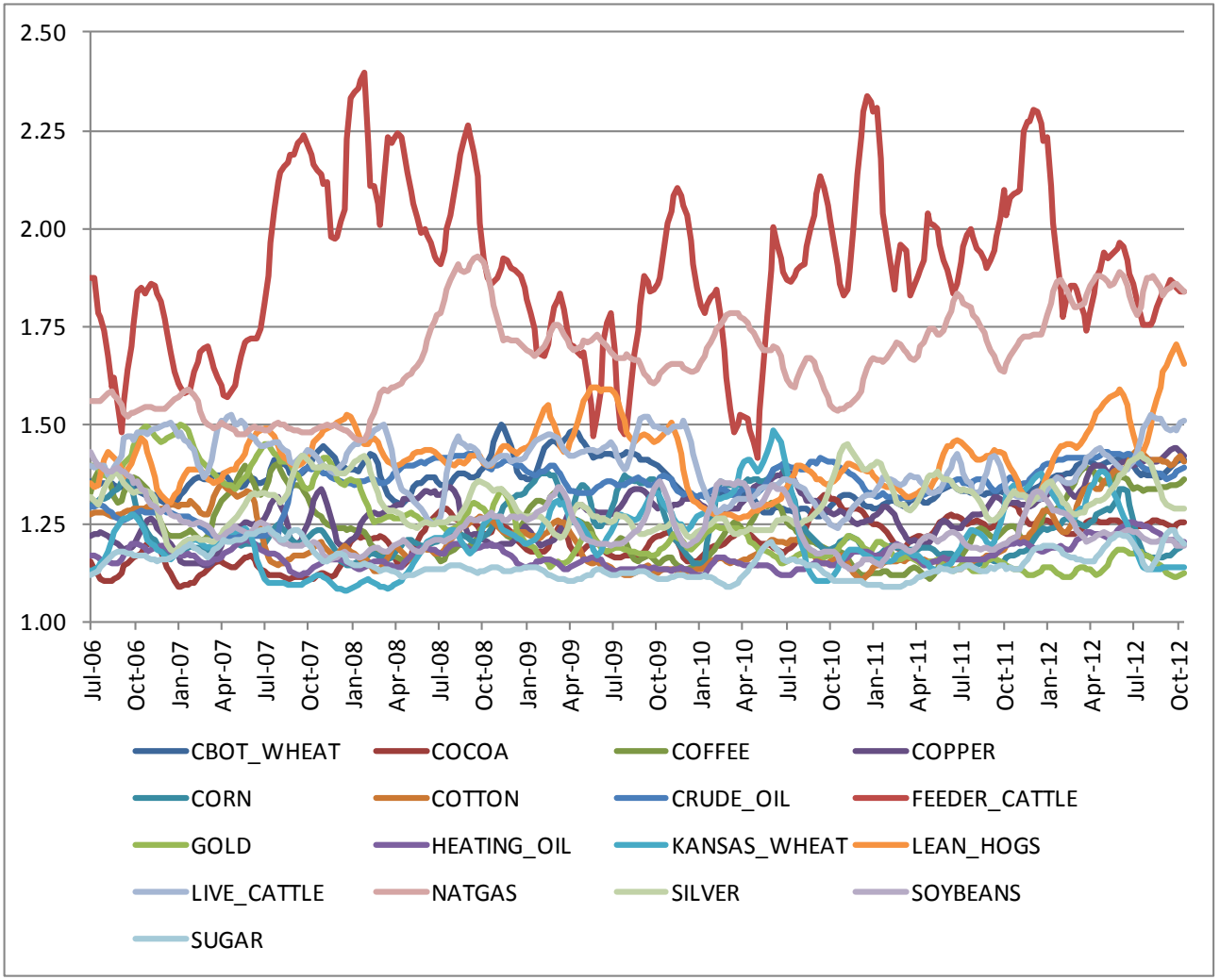
  -- Holbrook Working, 1960

- **<u>Interpretation</u>: Speculators provide needed liquidity and are called to the market by hedgers.**

What is “Excessive Speculation”?

- **A trade between two speculators, each hoping to profit.**
- **A trade that does not provide liquidity (i.e., serve as counterparty) to commercial hedging activity.**
- **Speculative positions as measured by “Working’s T” speculative index.**

Speculative Ratio: Working's T



SMU COX

A Theory of Excessive Speculation

- ***S. Grossman, The Existence of Futures Markets, Noisy Rational Expectations and Informational Externalities, REStud. 1977.***

  "It is shown how the private and social incentives for the operation of a futures market depend on how much information spot prices alone can convey from 'informed' to 'uninformed' traders."

- ***Smith, Thompson, and Lee, The Informational Role of Spot Prices and Inventories, working paper 2013.***

  "It is shown how fundamental characteristics of the commodity and market in question determine the scope for financial speculation."

Our Contribution

- We provide a rational explanation for variations in:
  - the degree of information revelation,
  - alignment of expectations, and
  - the scope of futures trading

  … based on fundamental characteristics of the commodities in question and the markets involved.

- Potential to explain cross-sectional and time-series variation in observed “excessive speculation.”

Alternative Approaches

- Behavioral theories attribute excessive speculation to the limited rationality of traders:
  - Herding behavior (too many traders)
  - Noise traders (overconfident & misinformed traders)
- Although behavioral theories contain elements of truth, they don't explain why the degree of speculation varies across commodities, or across time for a given commodity.

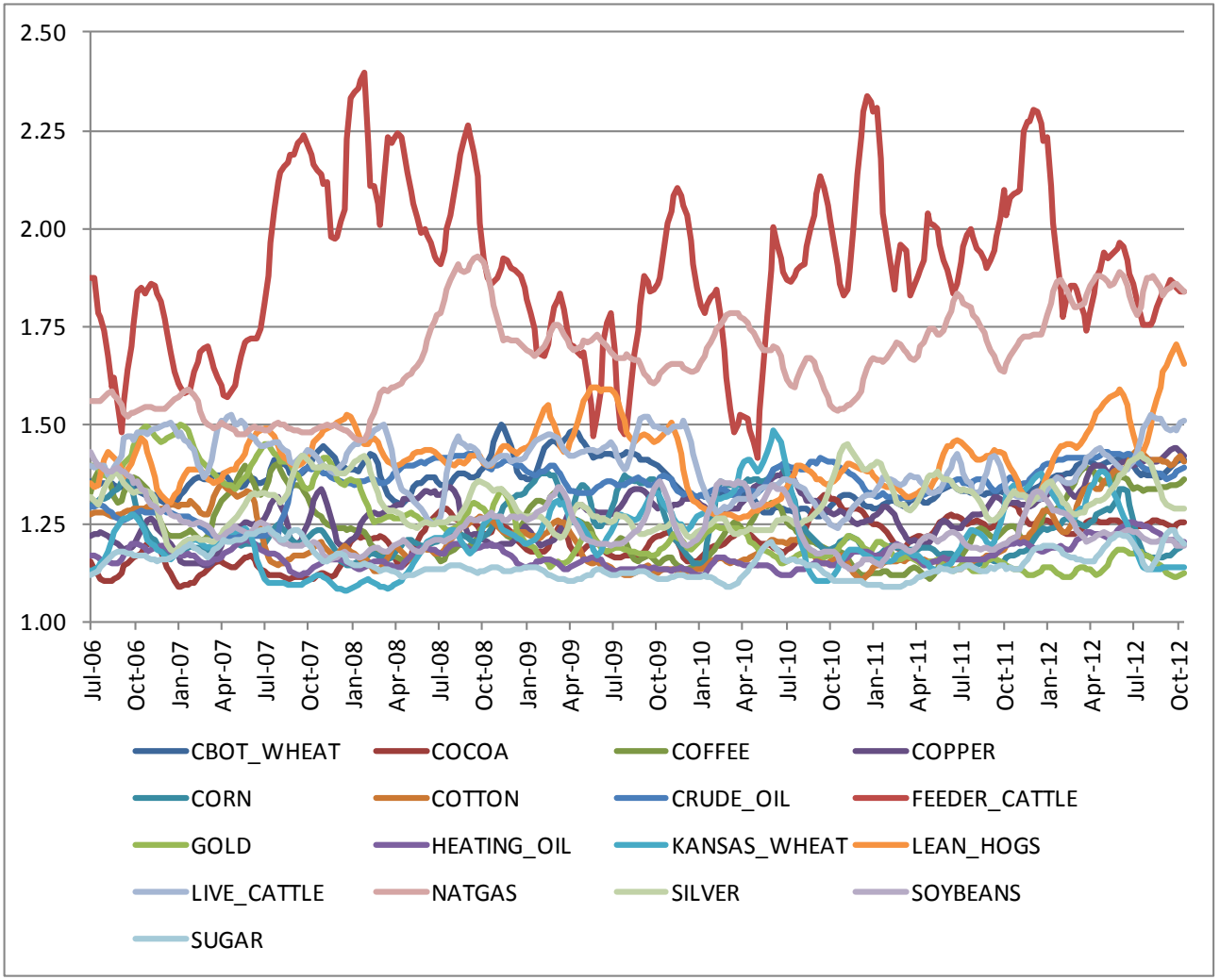
Alternative Approaches

- Behavioral theories attribute excessive speculation to the limited rationality of traders:
  - Herding behavior (too many traders)
  - Noise traders (overconfident & misinformed traders)
- Although behavioral theories contain elements of truth, they don't explain why the degree of speculation varies across commodities, or across time for a given commodity.
- Perhaps it's time to refine the question:
  - Why so much speculation?

Alternative Approaches

- Behavioral theories attribute excessive speculation to the limited rationality of traders:
  - Herding behavior (too many traders)
  - Noise traders (overconfident & misinformed traders)
- Although behavioral theories contain elements of truth, they don't explain why the degree of speculation varies across commodities, or across time for a given commodity.
- Perhaps it's time to refine the question:
  - Why so much speculation?
  - Why so much speculation at some times but not others, and in some markets but not others?

Speculative Ratio: Working's T



SMU COX

A Rational Expectations Model

Commodity Supply — *fixed supply (endowment)*

Demand for t = 1, 2 — *stochastic variation*

"n" informed traders who have a noisy forecast of future demand.

"m" uninformed traders who cannot forecast demand.

Each trader may purchase some inventory now (P_1) and hold for sale next period (P_2).

Traders are risk neutral, looking to make capital gain.

Our Extensions of Grossman

- Multiple traders of each type, not one of each.
- Robust treatment of inventory costs
  (Grossman's cost function embedded as special case).
- Endogenous entry of informed traders.
- Introduction of "passive traders" who invest regardless of price.
- Comparative statics re: market fundamentals.

Information Revelation

- P_1 reflects the inventory demand of informed traders.
- Inventory demand of informed traders depends on their forecast of future demand and expectation of future price. So, P_1 reflects their informed forecast.
- Uninformed traders, seeing P_1, are exposed to the expectations of informed traders.
- But P_1 also reflects a contemporary demand shock, so uninformed traders can't be sure if a high P_1 is due to informed traders' optimistic forecast, or simply to a transient demand shock.

Equilibrium Difference in Beliefs

- Apart from degenerate cases, some but not all private information is revealed by trading in the spot market.
- The result is a difference in beliefs between informed and uninformed traders regarding the future price.
- The degree of revelation determines the size of the difference in beliefs and thus the scope of speculative futures trading.
- The degree of information revelation is itself determined by commodity and market fundamentals.

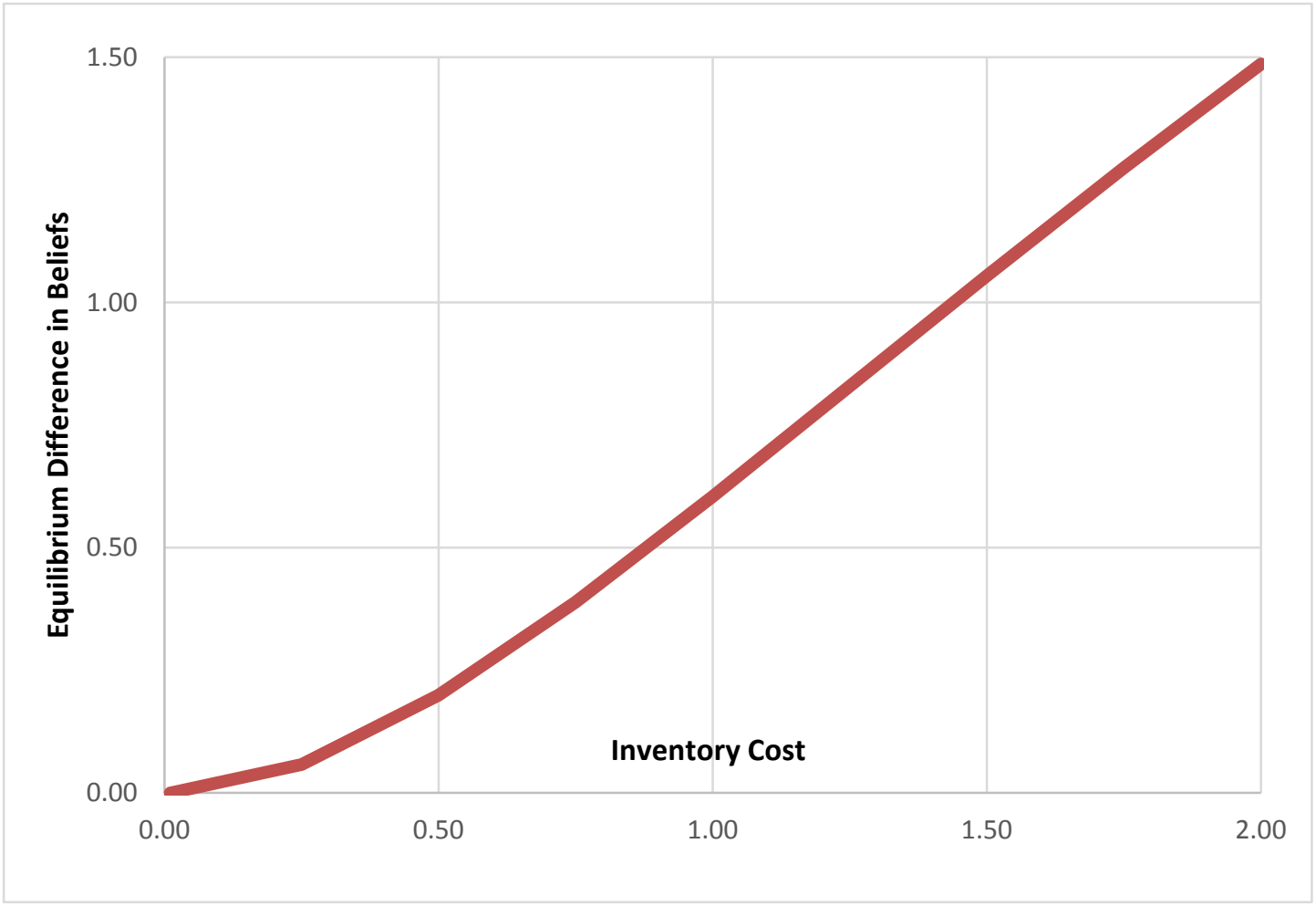
Two Degenerate Cases

1. If uninformed traders correctly observe current demand, they can infer the informed forecast and all private information is revealed through the spot price.

2. If uninformed traders can correctly observe inventories, they can also infer the informed forecast and all private information is revealed through inventories.

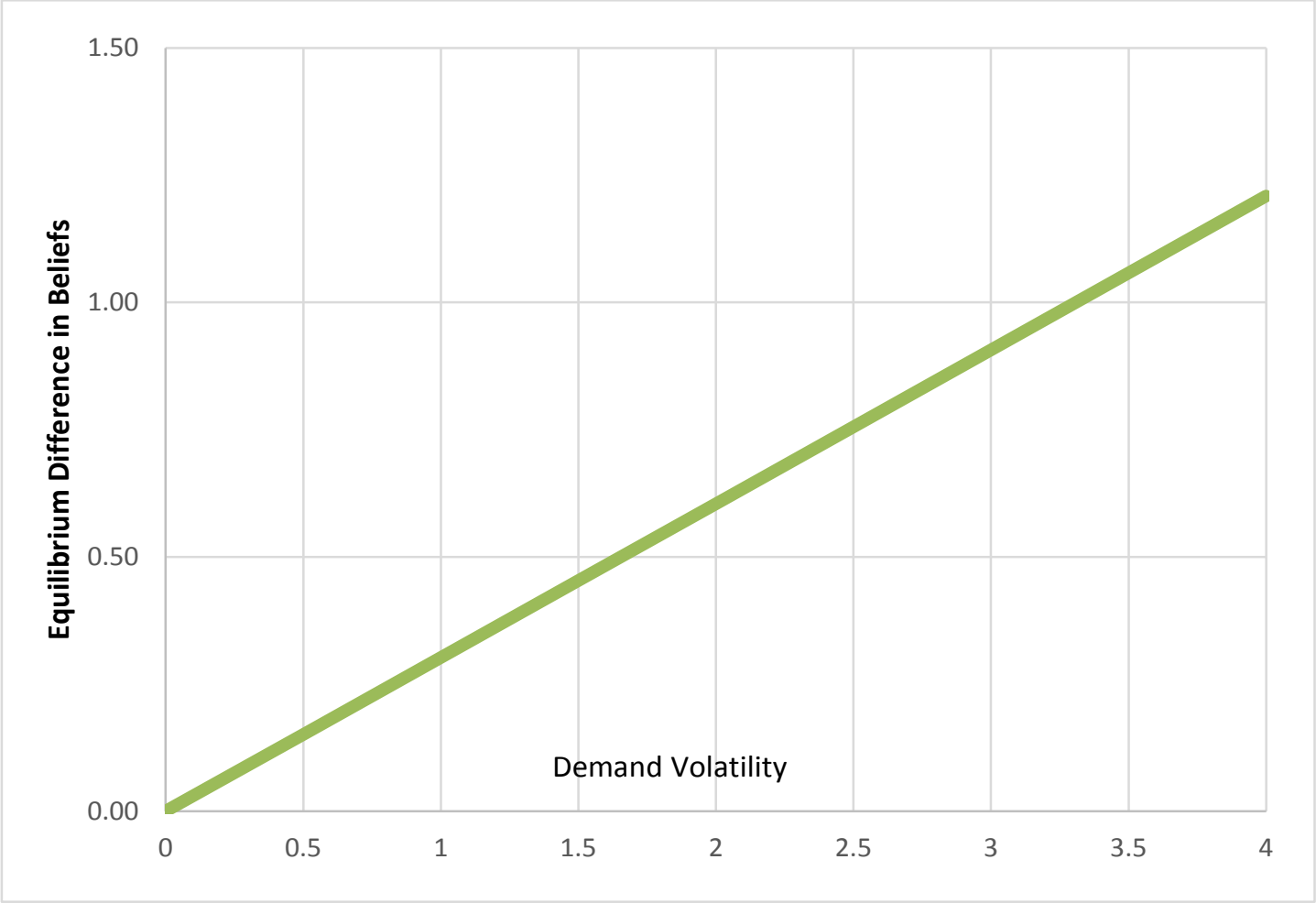
- In either case, the informed traders' expectation is fully revealed, so both trader types make the same expected profit, which provides no private incentive to become informed.

Impact of Inventory Cost on Difference in Beliefs



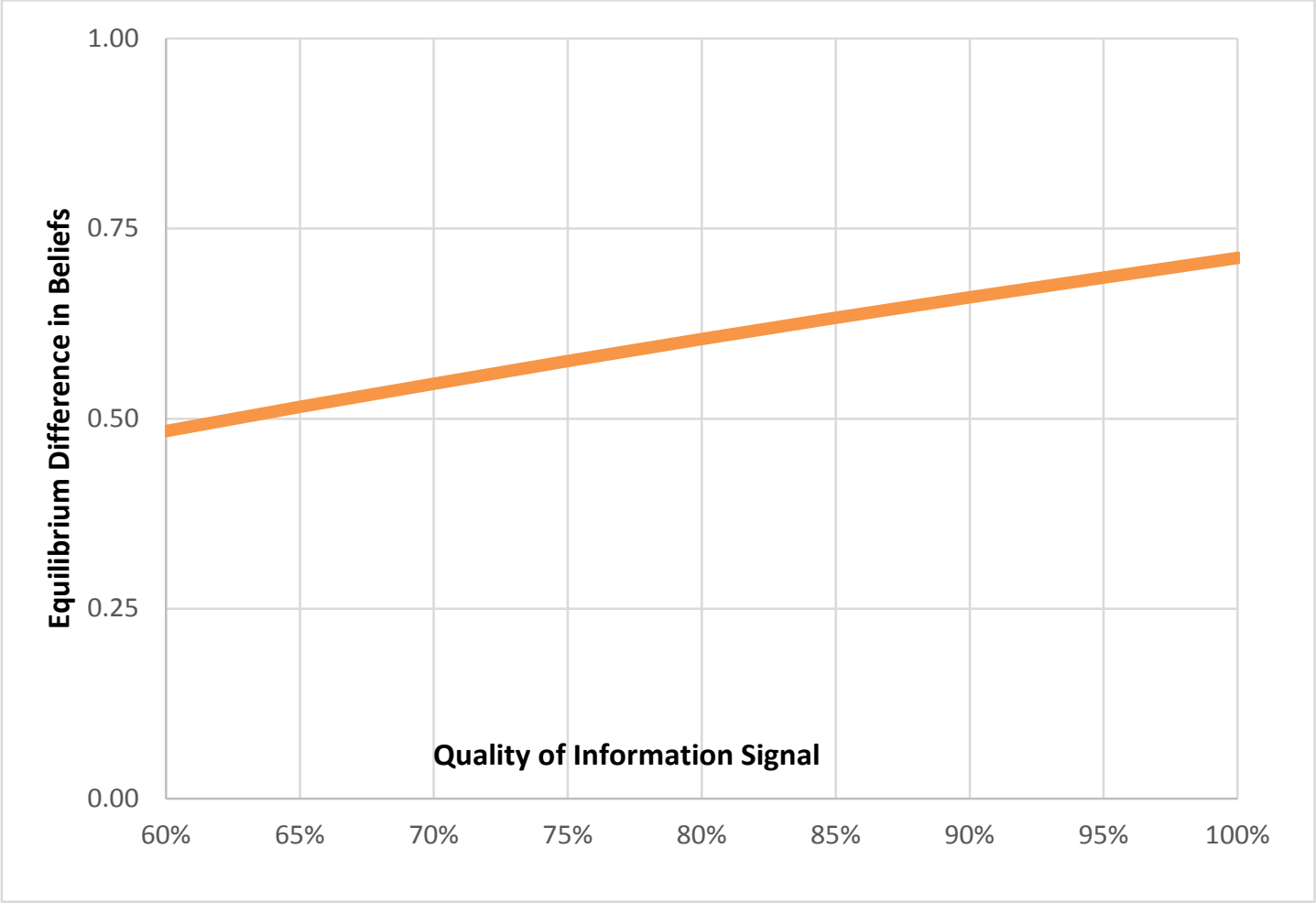
SMU COX

Impact of Demand Volatility on Difference in Beliefs



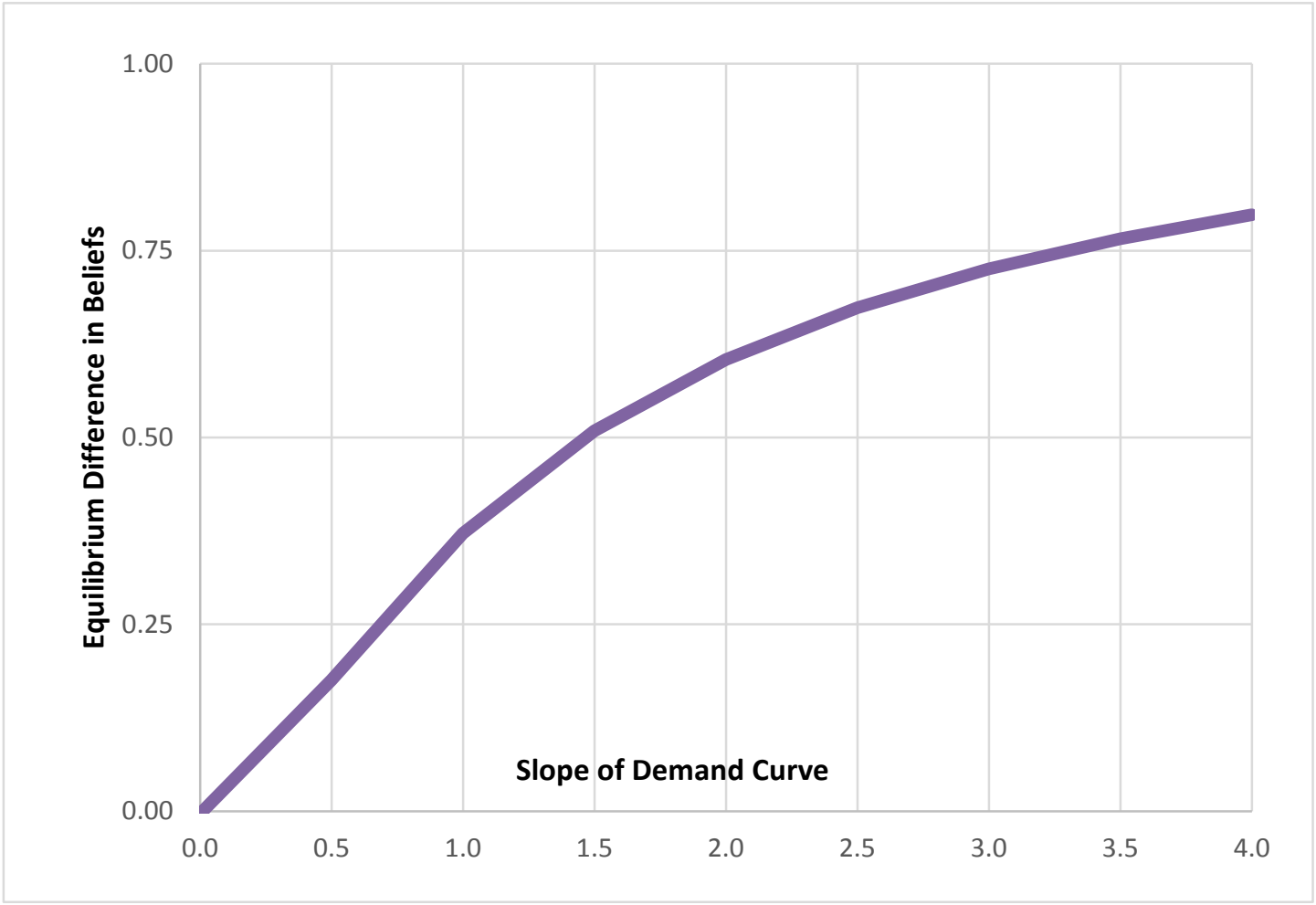
SMU COX

Impact of Quality of Demand Forecast on Difference in Beliefs

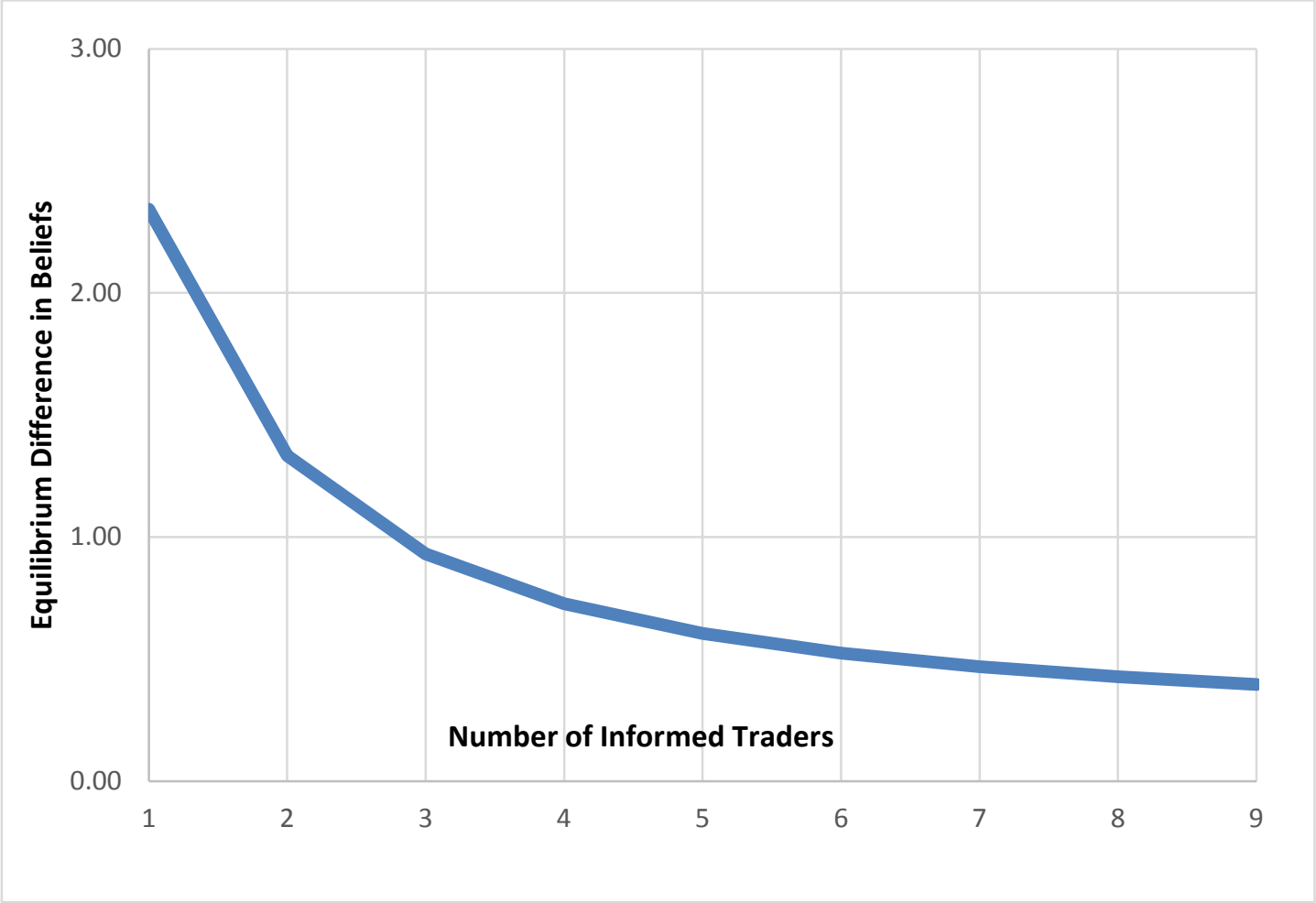


SMU COX

Impact of Demand Elasticity on Difference in Beliefs

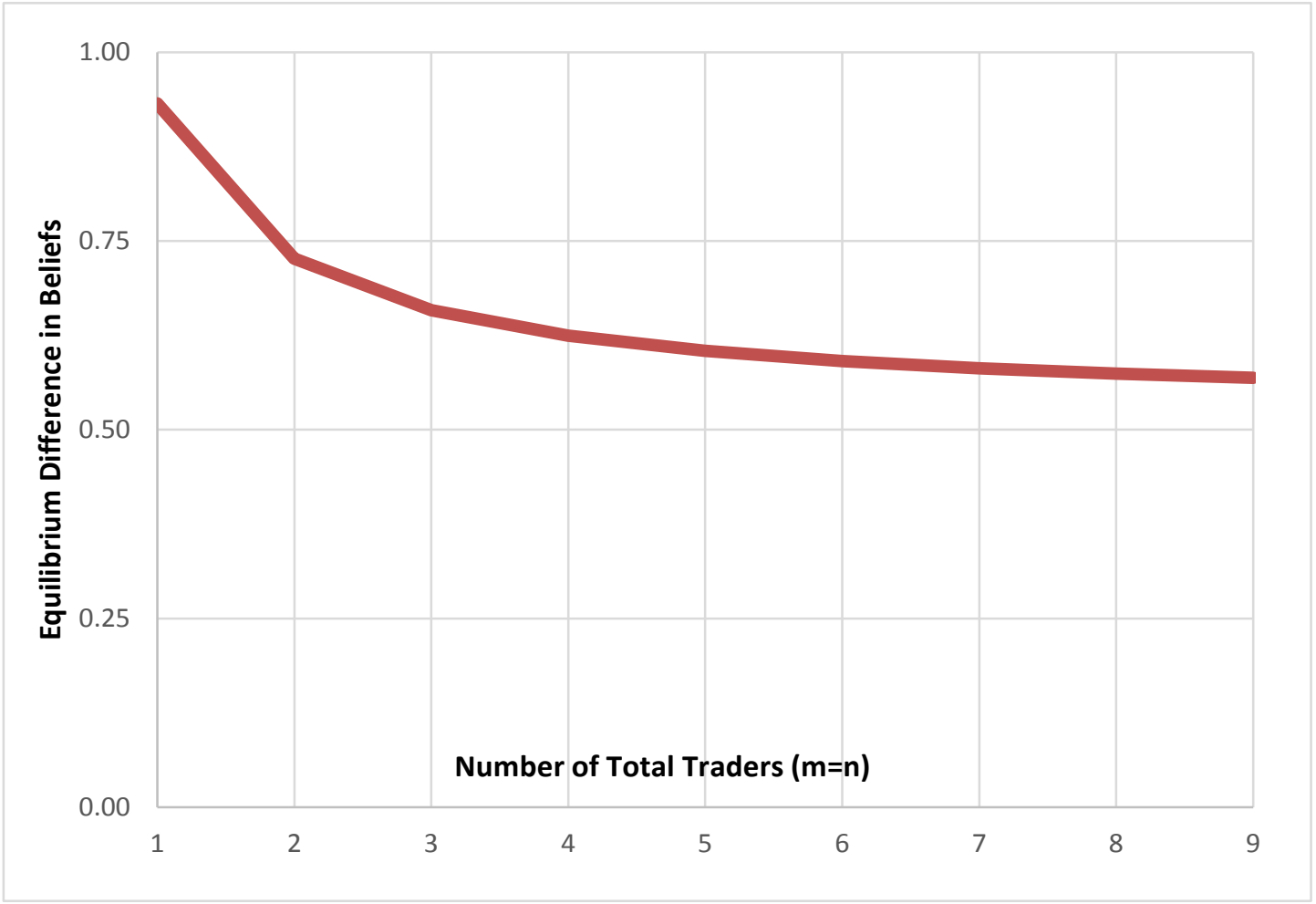


Impact of Number of Informed Traders on Difference in Beliefs



SMU COX

Impact of Total Number of Traders on Difference in Beliefs



A New Type of Investor?

Global

Deutsche Bank

17 November 2009

Commodities As An Asset Class

Commodities Special

- **Institutional investor interest in commodities has increased significantly during this decade. In our view this reflects a much lower investment returns environment in this decade compared to the 1990s as well as powerful cyclical and structural forces working in favour of commodities.**
- **As an asset class, commodities have historically displayed a low or negative correlation with stocks and bonds, delivering naturally occurring returns and providing protection in the event of geopolitical or inflationary shocks.**
- **As a result, these unique properties of commodities can make them an attractive addition to an investor portfolio.**

One of the benefits of investing in commodities via an index is that an investor can gain exposure to a broad range of commodities, which tends to enhance diversification, reduce volatility and maximise the Sharpe ratio. In addition, index investment can exploit the benefits of downward sloping forward curves, which delivering a positive return. Equity investment, meanwhile, has tended to be unable to give broad exposure to the entire commodity complex. Rather, it provides an investor exposure to just one sector or simply one commodity. In this article we outline the properties of commodities and how the inclusion of commodities in a portfolio can enhance returns, reduce volatility and hence enhance risk adjusted returns.

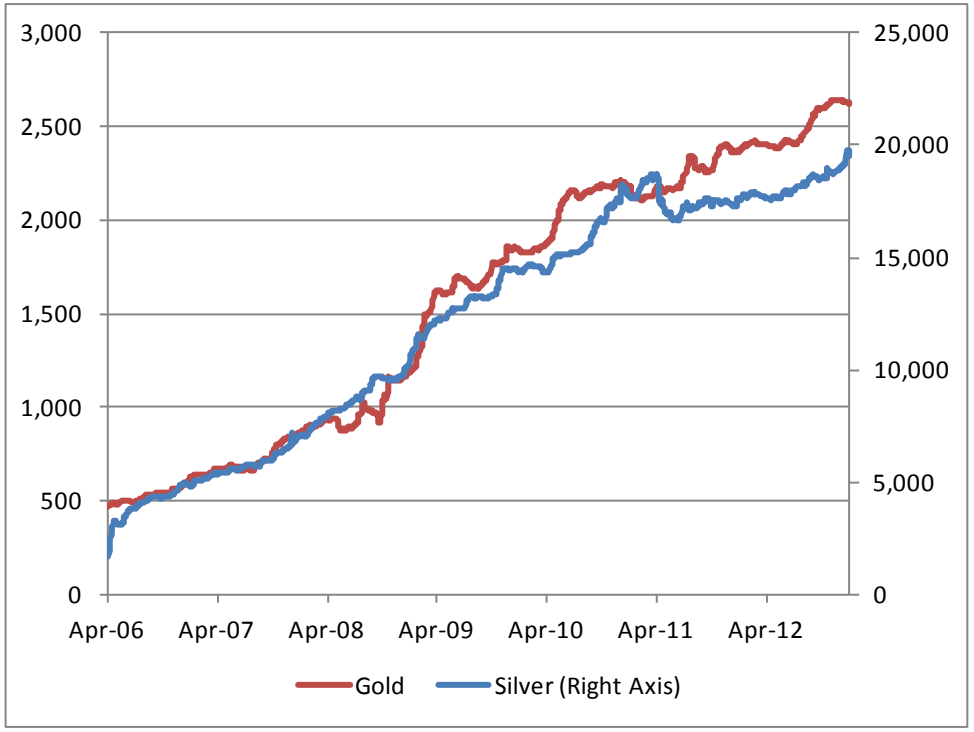
1) Weak or negative correlation to traditional asset classes

We believe long-term institutional investors have become

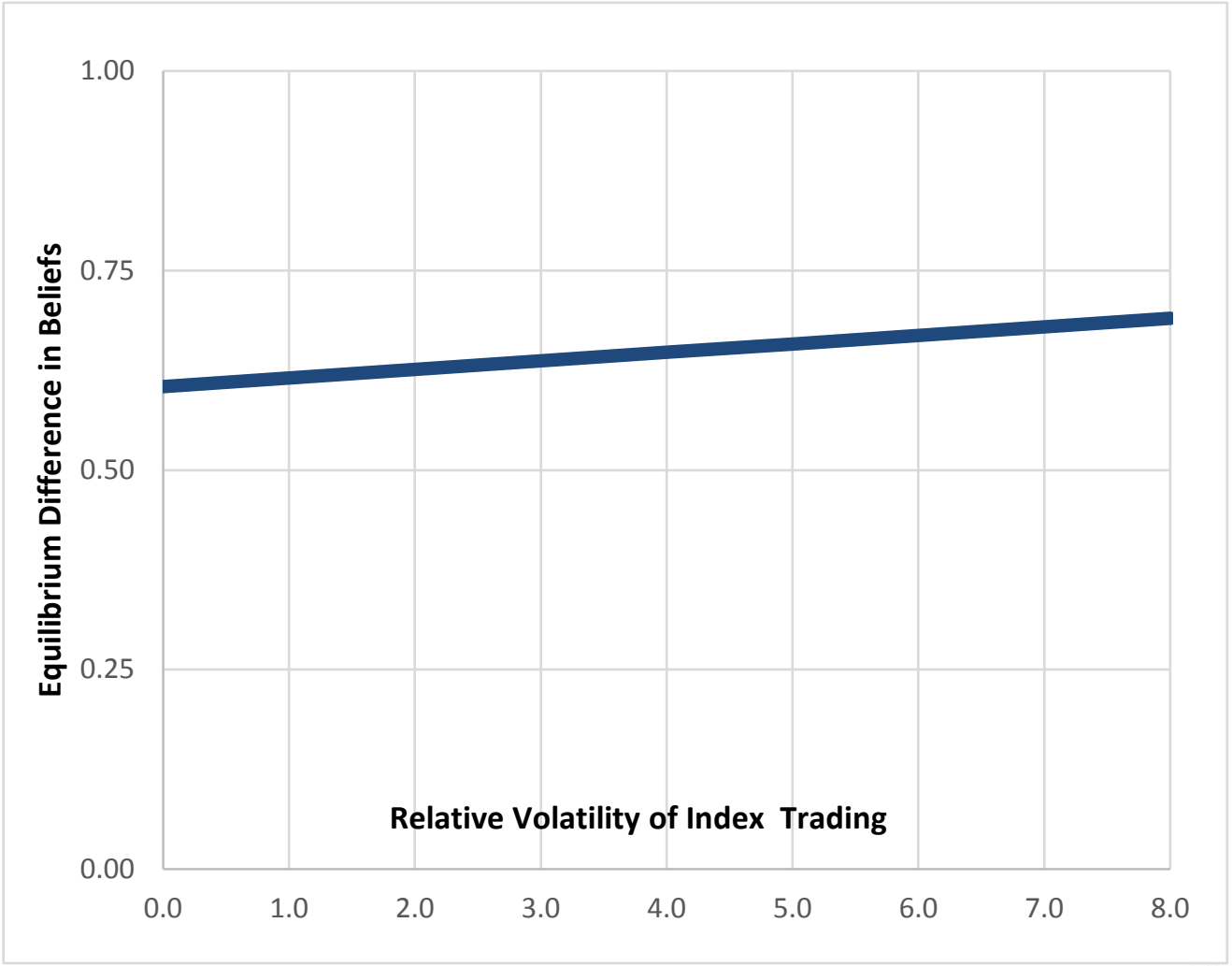
SMU COX

“Passive” Investors

- Physically-backed ETF funds, commodity index funds, etc. who purchase and hold the physical commodity for “diversification” motive, not based on current price.



Impact of Passive (Index) Traders on Difference in Beliefs

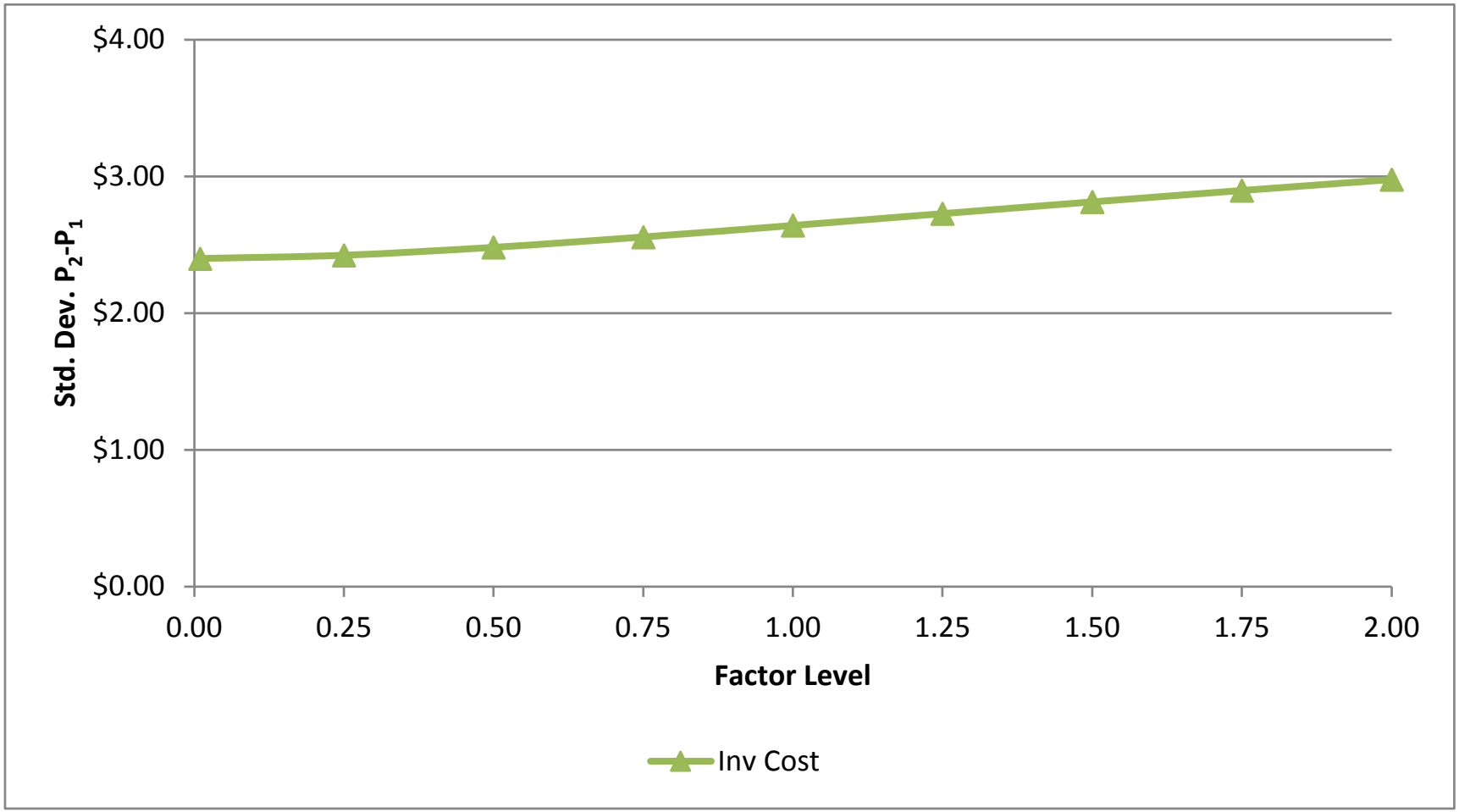


SMU COX

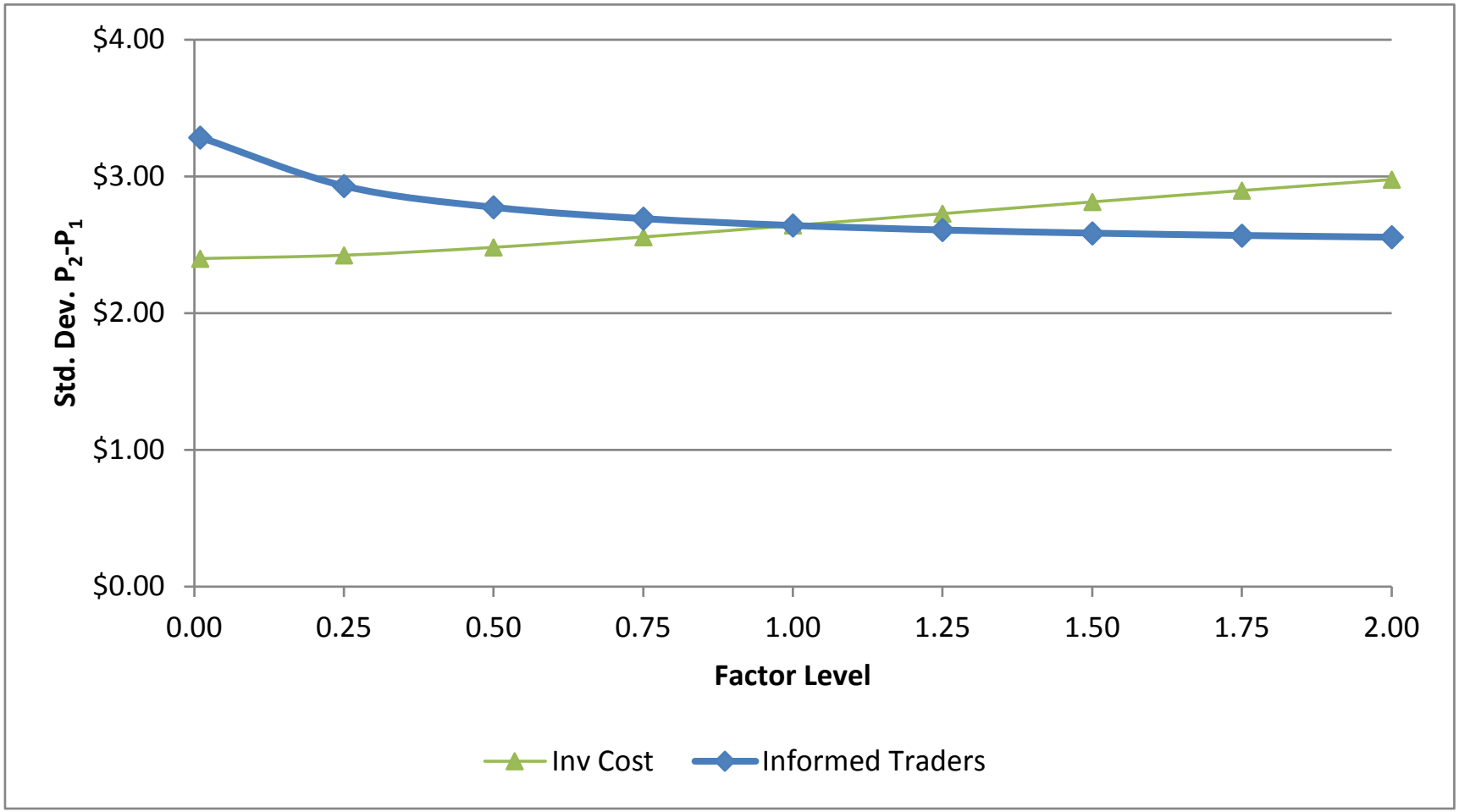
Implications for Price Stability

- Market fundamentals determine the inherent volatility of commodity prices. (shocks, inelastic demand, etc.)
- Speculators profit from volatility by creating inventories to balance current and future scarcity.
- Holding (and liquidating) speculative inventories disseminates information, effects arbitrage, and mitigates the inherent volatility of prices.

Impact of Inventory Cost on Volatility

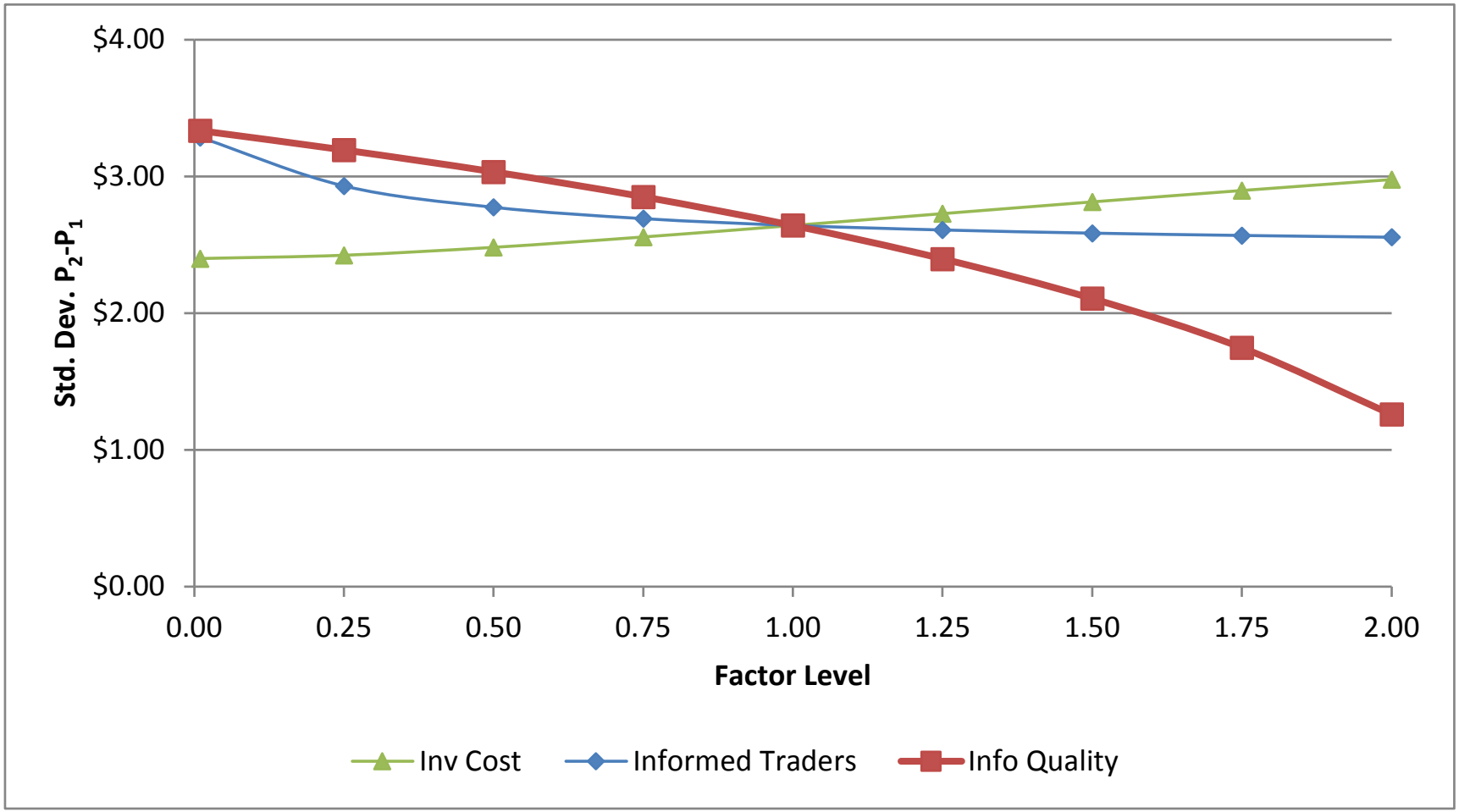


Impact of “n” (informed traders) on Volatility

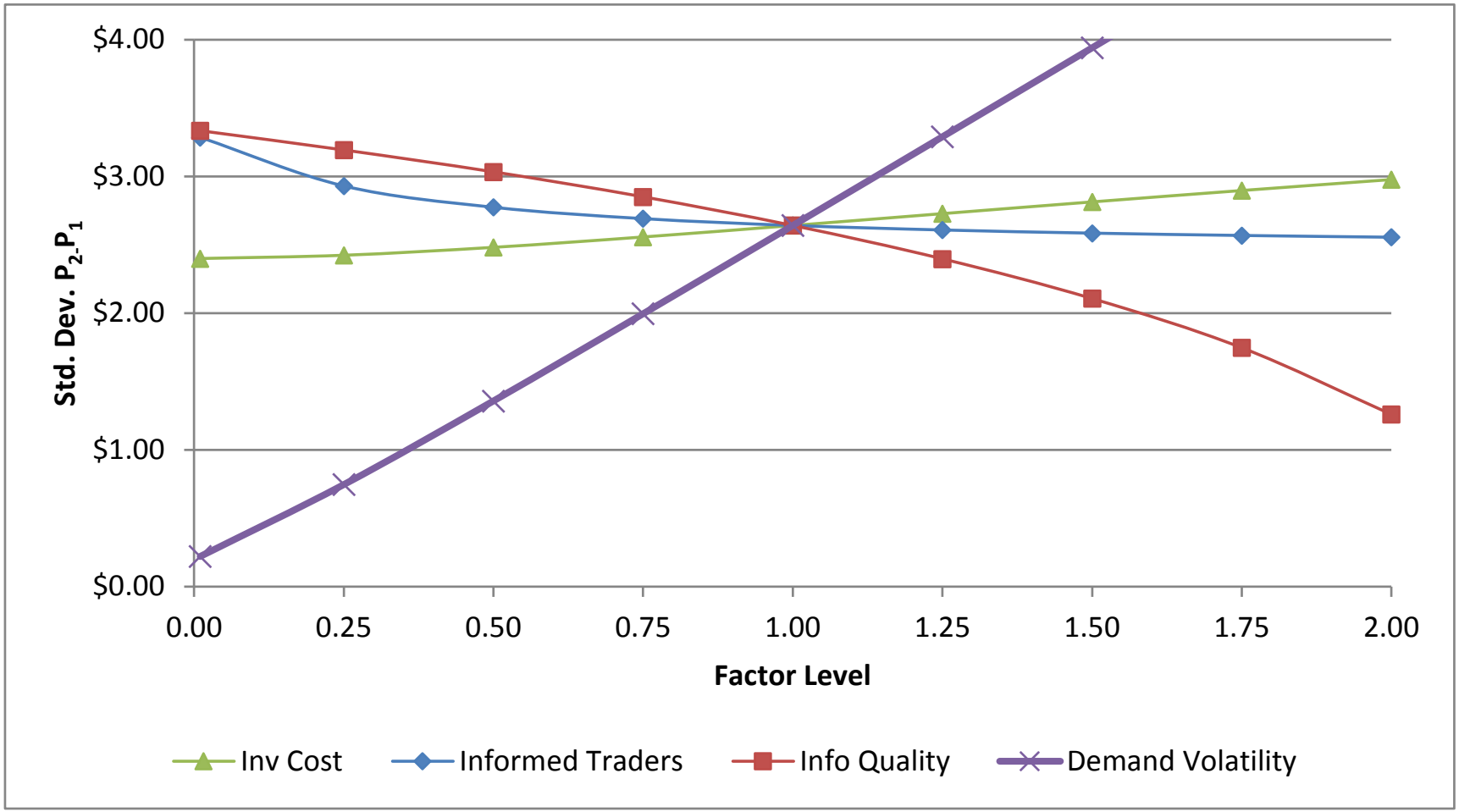


SMU COX

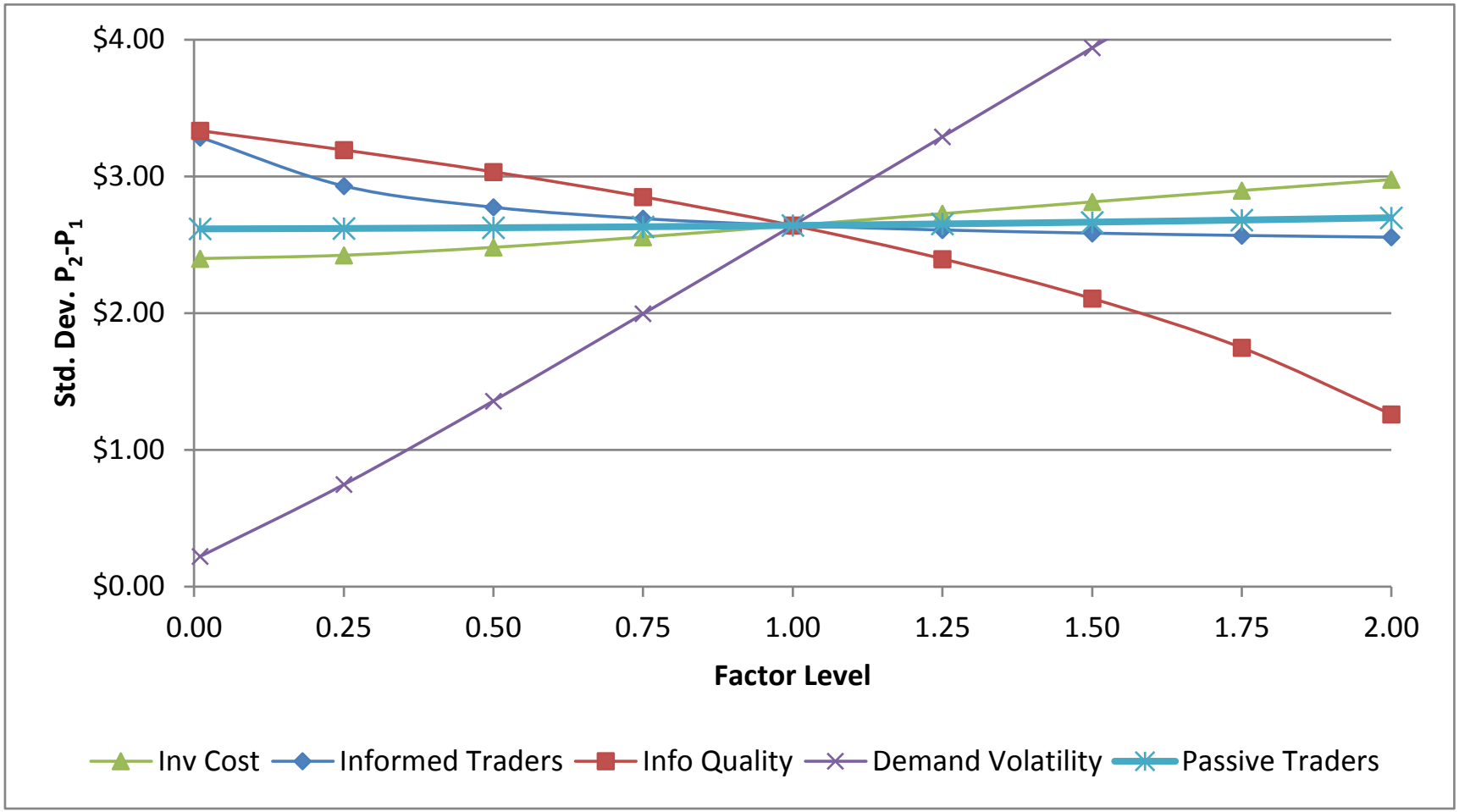
Impact of Forecast Quality on Price Volatility



Impact of Demand Volatility on Price Volatility



Impact of Passive Traders on Price Volatility



Some Conclusions

- Commodity characteristics that impede revelation of information increase scope for futures speculation.
- Spot prices transmit info, but so do inventory levels.
- Government/NGO initiatives to increase market "transparency" often amount to broadcasting inventory levels.
- In the limit, this leads to full revelation and extinguishes the incentive to become informed (the law of unintended consequences).
- If governments want to reduce the scope of futures speculation, they might look to the factors that generate demand for futures trading, and not attempt simply to suppress that demand via regulation.

SMU COX
SCHOOL OF BUSINESS

Thank You!