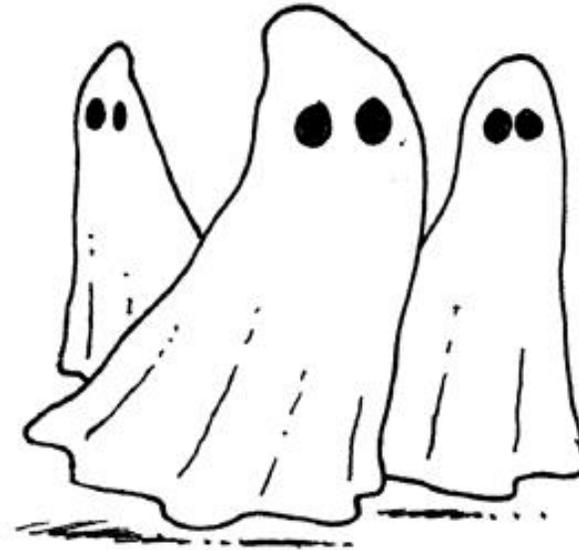"Would it be so bad if the market could see you?"

# Can we shed some light on the Invisible Hand?



If a hand is invisible, how do we know it's there?

© Czinkota & Clark

# The Invisible Hand is Dead!

It's time to rethink the foundational economic metaphor

◆

**DAVID SLOAN WILSON**

David S. Wilson is SUNY Distinguished Professor of Biology and Anthropology at Binghamton University and Arne Næss Chair in Global Justice and the Environment at the University of Oslo. His most recent book is *Does Altruism Exist?* Twitter: @David_S_Wilson

"I am not the first person to declare this notion of the invisible hand dead, but my grounds for doing so are somewhat novel. Evolutionary theory makes it crystal clear that the unregulated pursuit of self-interest is often toxic for the common good. [...] [W]e can see that nearly all cooperative efforts require time, energy, and risk on the part of the cooperative individuals that place them at a relative disadvantage compared to less cooperative individuals within the same group."

# Where is the Mistake?

- Adam Smith is the last one to say that unfettered self-interests are good for the society.

- He was professor of philosophy, not economics. His first book "The Theory of Moral Sentiments" was on moral philosophy.

- Non-cooperation occurs in non-cooperative games, such as Prisoner's Dilemma or Public Good games. Here, each player has a **strictly dominant strategy** to defect. No other action is even feasible for self-interested players.

- **Altruism is indeed a remedy to non-cooperation in Public Good games**.

- Pure exchange markets are not these type of games, as every deal is better than no deal (and all deals at equilibrium are Pareto Efficient!).

- **Selfishness or altruism does not make much difference in pure exchange markets with respect to efficiency (size of the cake).**

# The Old paradigm – Mustn't there be something central for markets to work?

- Why do people sell near equilibrium prices?

- 1. <u>Walrasian Auctioneer</u>: Price Tatonnement

- Problem: Tatonnement process may not converge to a stable equilibrium.

- Problem: Auctioneer is nowhere to be seen.

- 2. <u>Common Knowledge</u>:

- Everybody knows demand and supply and can therefore guess the equilibrium price.

- This requires not only perfect rational market participants, but common perfect market knowledge.

- Problem: Number of omniscient beings in the universe is strictly limited.

# Chamberlain's Market Experiment

▶ Edward Chamberlin (1948) Classroom Experiment

▶ Every Student is either buyer or seller and have private values and costs assigned by the experimenter. They are paid off the difference to the price.

▶ The market is unstructured and unregulated. Students are allowed to walk around and negotiate freely.

▶ The market turned out inefficient.

▶ Was no cause for concern to anybody. Somehow the invisible hand was absent from this classroom.

▶ There was, however, one Student named Vernon L. Smith…

# The POW field experiment

▶ A few years before Chamberlain's experiment, in German POW camps a field experiment was run by the captivated US soldiers. R.A. Radford took notes (Econometrica 1945)

▶ Soldiers were initially endowed with equal red cross food parcels.

▶ At the beginning, trading went **bilateral** like three years later in Chamberlains experiment with the same disappointing results.

▶ "Stories circulated of a padre who started off round the camp with a tin of cheese and, five cigarettes and returned to his bed with a complete parcel in addition to his original cheese and cigarettes."

▶ After some weeks, **one sided auctions** arose with cigarettes as numeraires.

▶ "People started by wandering through the bungalows calling their offers- 'cheese for seven' (cigarettes)."

▶ This was an improvement, but not optimal.

# Double Auctions

▶ Several weeks later, an even better mechanism evolved:

▶ "[An] Exchange and Mart notice board [was established] in every bungalow, where under the headings 'name', 'room number', 'wanted' and 'offered' sales and wants were advertised."

▶ This is called a **Double Sided Auction**, as both buyers and sellers can make bids and offers.

▶ These are, by our best knowledge, the most efficient types of markets.

▶ Have we found the Invisible Hand? Is it the notice board?

▶ Double Auctions can also be executed orally in the classroom with the teacher writing down bid and ask on the blackboard.

▶ Attention: There is no auctioneer! No central agent is calling out prices.

▶ The auction leader only notices when a deal is made, i.e. when a bid or offer is accepted. Then all previous bids are erased and a new round starts.

# Prices are learned from the market

- "The public and semi-permanent records of transactions led to cigarette prices being well known and thus tending to equality throughout the camp, although there were always opportunities for an astute trader to make a profit from arbitrage [across bungalows]."

- The market has to be there first. Prices are learned only when an equilibrium is reached.

- "It is difficult to reconcile this fact with the labour theory of value."

- No knowledge of demand or supply is needed to ensure equilibrium formation. This was later confirmed by Vernon Smith in his classroom experiments, where all values and costs were known only in private.

- Repeated DA markets are very efficient from the first period. A slight learning effect can be seen by a reduction of volatility in later rounds of an identical market.

# V. Smith's Double Auction Market
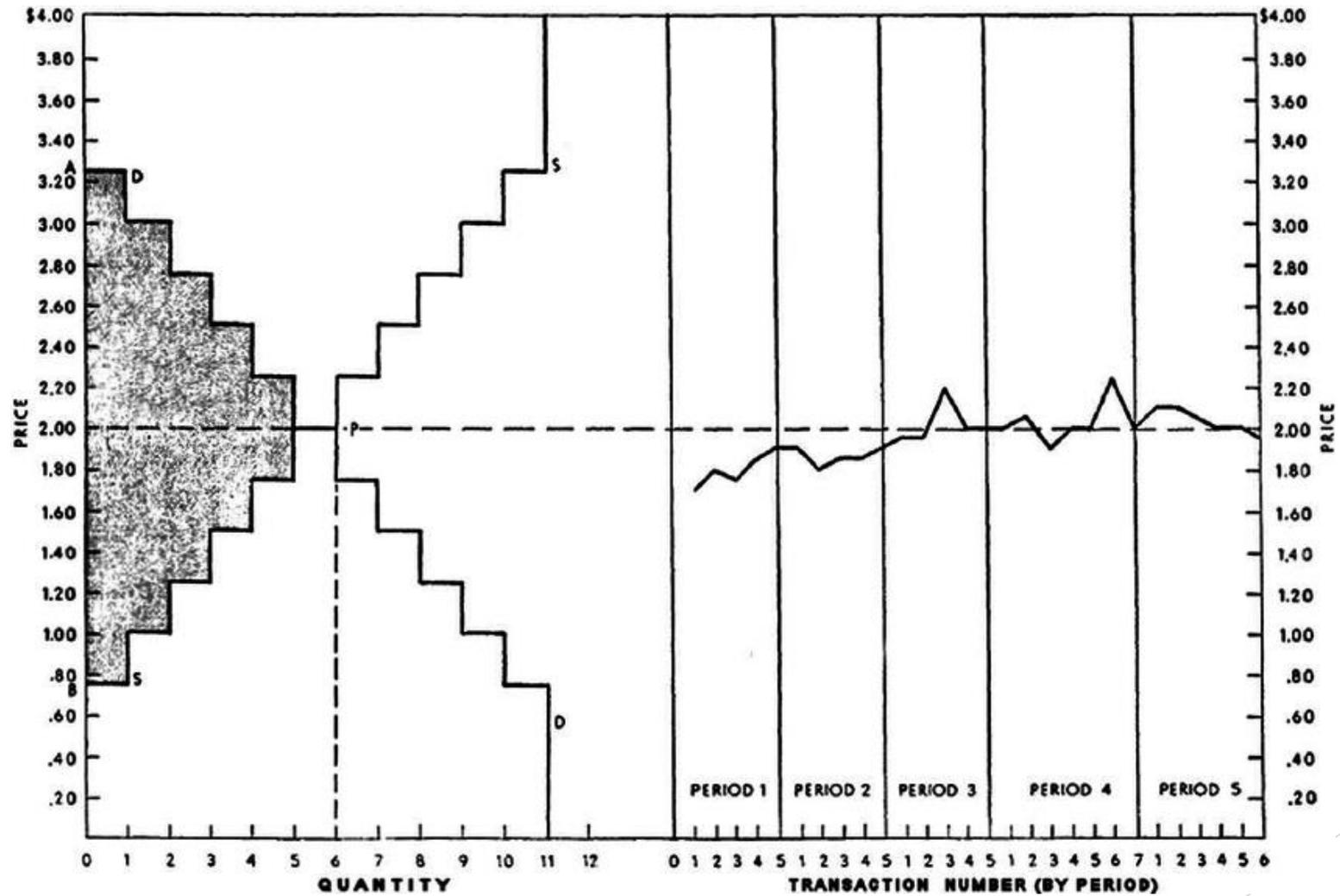
# The Role of Information

▶ It seems that information about past deals make the difference between the experiments of Smith and Chamberlain.

▶ Indeed, presentation of historical bid-ask spreads can improve convergence to equilibrium price.

▶ However, as with price learning, market efficiency is hardly improved, since it is already high.

▶ There is a twist which questions the role of rationality in market efficiency.

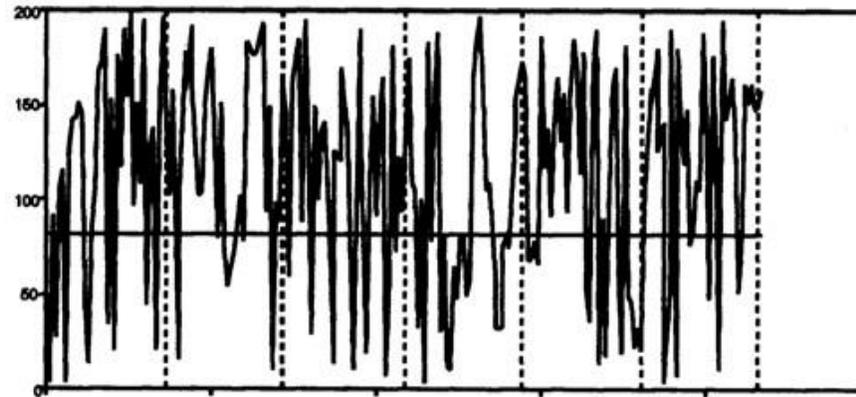▶ Imagine monkeys on a computer. Can they trade efficiently?

# Gode and Sunder's Computer Simulations (Zero Intelligence Traders)



ZI Traders with Budget Constraint
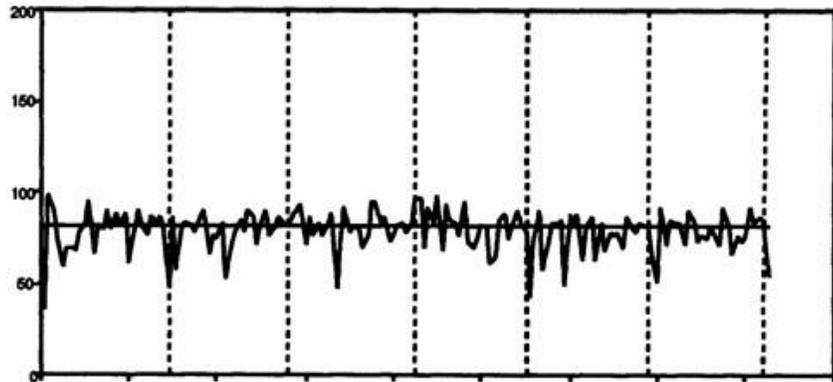
ZI Traders without Budget Constraint

▶ Computer simulated DA markets with randomly generated bids and offers.

▶ Agents have no memory and do not form beliefs.

▶ In the left simulation, agents never trade at losses.

▶ In the right simulation, unprofitable deals are included.

▶ **We found the invisible hand: It is the DA mechanism together with the discipline not to trade at losses – arising from self-interest.**

# DA Markets – Why are they so good?

- DA markets are almost automatically highly efficient, independently how smart the traders are.

- The closing price is almost sure near the equilibrium, since the last deal ist most likely the marginal deal.

- There is not much what can go wrong:

1. People trading at losses. There is painful feedback.

2. Missed opportunities. Can happen when the surplus is so small that no side want to give in. Not a big deal. Does not happen in computerized ZI markets.

3. Wrong people are trading: One trading partner is extramarginal and the surplus is suboptimal, blocking a better deal.

- However, the good news only holds for static items.

- Even the most harmless dynamic asset markets produce huge bubbles.

# Overpricing in Non-speculative riskless Asset Markets
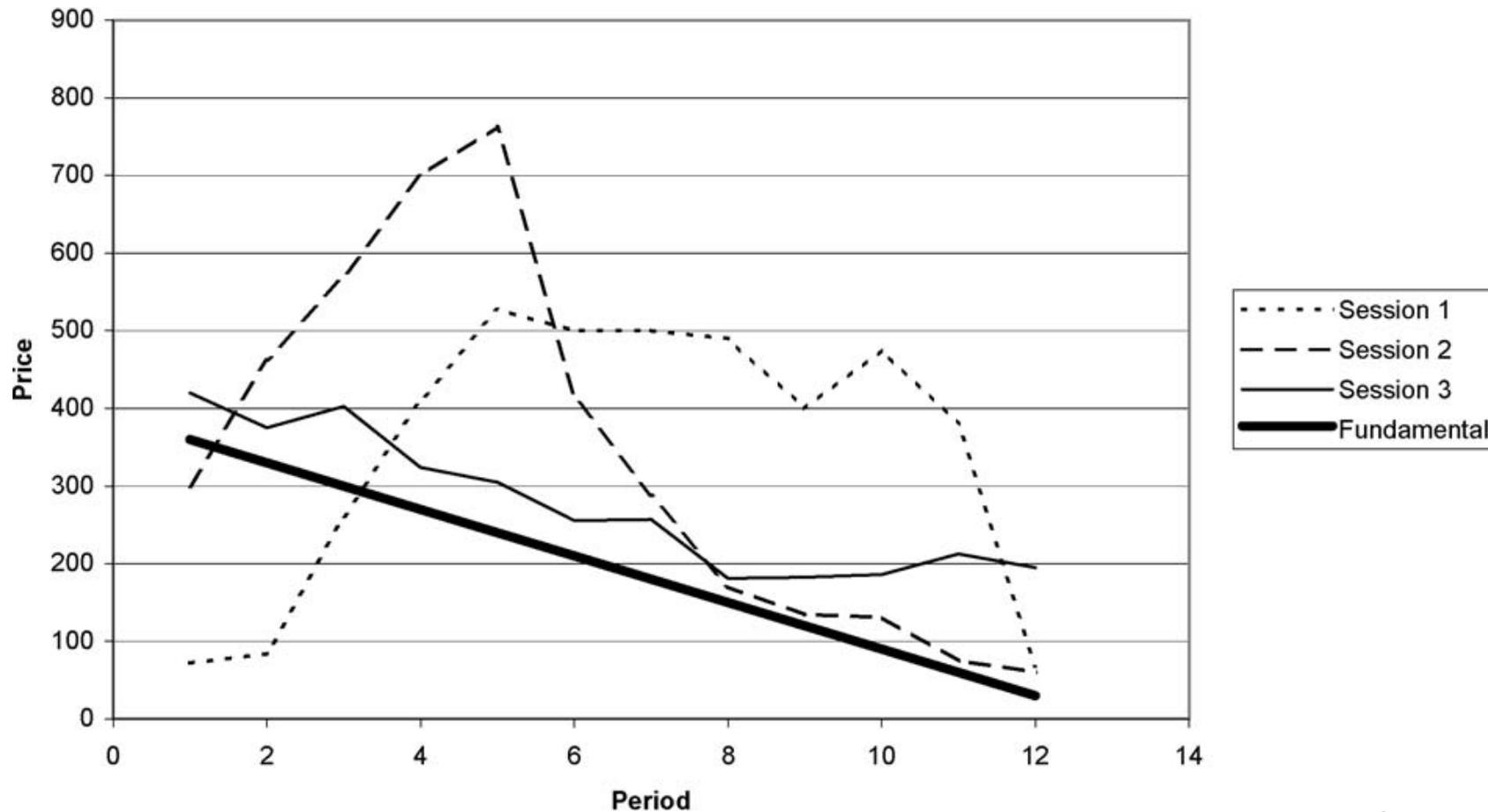
# Non-Speculative Asset Markets

- An asset is paying a fixed dividend d each time period. If there are T periods to go, the fundamental value of the asset is Td.

- There is no risk involved.

- There is no speculative demand, as the asset could not be resold.

- People fail to realize the unique and sure fundamental value, and trade at sure losses.

- They are noise traders of the bad type, who lack market discipline. They simply overtrade. When kept busy, they improve.

- Bubbles are stubbornly persistent, learning from experience short lived.

- Classical regulations fail (in particular, financial transaction taxes).

- Short selling can drive prices down, but do too much.

- Cash endowment can weaken regulatory efforts.

# So, how realistic is the Invisible Hand paradigm?

- A "Good Institution" achieves a socially good (optimal? Efficient?) outcome with selfish actors.

- Good Institutions are defined through rules and discipline. They require a certain level of organization and design.

- With the DA market, we have found such an institution. It produces a good matching of buyers and sellers with the final marginal trade likely being close to equilibrium.

- By the best of our knowledge, from theory, experiment and real world experience, they are optimal market designs.

- The term "Invisible Hand" is best approximated by "Good (market) Institution".

- Vernon Smith vindicates Adam Smith.