Must Liberalized Markets Create Crises?

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Early Signs of Trouble: Northern Rock

Northern Rock had been a bank that specialized
in housing loans with low (even negative) collateral.

Many of its borrowers were "buying to let" rental properties.

Much of its capital was raised in commercial loan markets,
rather than through depositors.

During the summer of 2007,
it experienced difficulty in raising commercial loans.

On 14 September 2007, needed a liquidity support facility
from the Bank of England to replace funds it could not raise.

This led to panic among individual depositors,
and eventually a bank run — the UK's first in 150 years.

Institutional "Murder" on Wall Street

The height of the crisis: Tuesday, 16th September 2008.

Joseph Tidman (2009) *The Murder of Lehman Brothers:
An Insider's Look at the Global Meltdown*
(Brick Tower Press, New York)
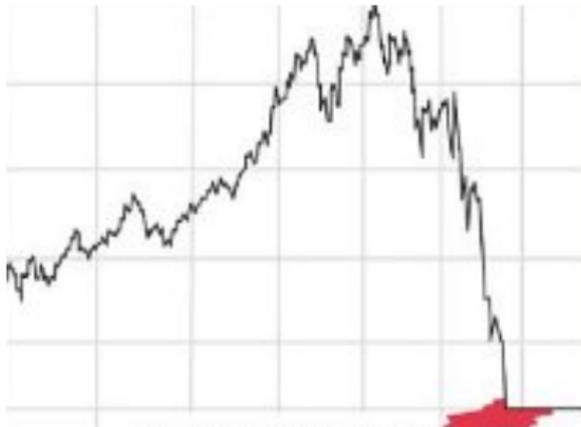
Other Banking Casualties

Iceland and Ireland in late September 2008.

A Prior Event in !999

In the US, the Glass–Steagall act of 1933
had separated investment from retail banking.

Repealed in 1999, replaced by the Gramm-Leach-Bliley Act.

President Clinton's signing statement: this legislation would
"enhance the stability of our financial services system"
by permitting financial firms to
"diversify their product offerings and thus their sources of revenue"
and make financial firms
"better equipped to compete in global financial markets."

— i.e., able to compete
with the City of London's lightly regulated setup
(following the Big Bang of 27th October 1986).

The Rise of Credit Derivatives

Started in 1993.
By 1996 there was around $40 billion of outstanding transactions,
half involving the debt of developing countries.

A credit default swap (or CDS) amounts to a bet
that a named party will default on its credit contracts
— it is like life insurance for corporations.

It is a form of insurance for those holding the party's debt.

But third parties can trade the swaps, as in a betting market.

An Underestimated Legal Development, I

John Kay "Of cows, communities and credit default swaps"
Financial Times, 07 April 2010, or at http://www.johnkay.com

> *The growth of the market for credit default swaps*
> *after 1997 relies on a legal opinion by Robin Potts QC.*

QC = Queen's Counsel, advising the monarch on her legal decisions

> *In Mr Potts view of English law, such contracts are*
> *are neither insurance (in which case purchases by traders*
> *who did not hold the relevant debt*
> *would have been illegal)*
> *nor gambling (in which case the contracts would,*
> *at least until the law changed in 2005,*
> *have been unenforceable).*

An Underestimated Legal Development, II

If someone who buys a CDS is neither insuring
— protecting himself against possible losses
from the borrower's default
— nor wagering
— judging that the probability of default
is greater than the odds implied
by the market rate for a CDS contract
— then what is the nature of the transaction?

More on the Potts Opinion

Oskari Juurikkala (2011)
"Credit Default Swaps and Insurance: Against the Potts Opinion"
Journal of International Banking Law and Regulation
26: 128–135.

The US "Dodd-Frank" legislation of July 21, 2010
— the "'Wall Street Reform and Consumer Protection Act"
— explicitly exempts CDSs from insurance market regulation.

Two Parallel Developments

Two parallel developments leading up to the crisis:

- in practice, the accelerating liberalization of financial markets, especially for exotic products like credit default swaps (CDSs), collateralized debt obligations (CDO), even CDO^2s;

- a preceding trend in economic theory
  toward more and more sophisticated mathematical models
  that offered intellectual support for the liberalizing trend;
  the increasingly exotic models did this by concentrating:

  1. on prescribing how markets ought to work, following
     (the economists' caricature of) Adam Smith's "invisible hand",
     as well as the elusive goal of Pareto efficiency;
  2. rather than on describing
     how markets do (or do not) actually work in practice.

# Joan Robinson's *Economic Philosophy*

Subtitle *An essay on the progress of economic thought* (1962)

 "Economics is not only a branch of theology."

She saw much of the economics profession
as having been subverted by business people.

The effect was that standard "neoclassical" economics,
especially that practised in the neighbourhood of Cambridge MA,
came to accept the free enterprise system
and the pursuit of profit
as appropriate instruments of economic policy.

"Model of a Perfect Economic System"
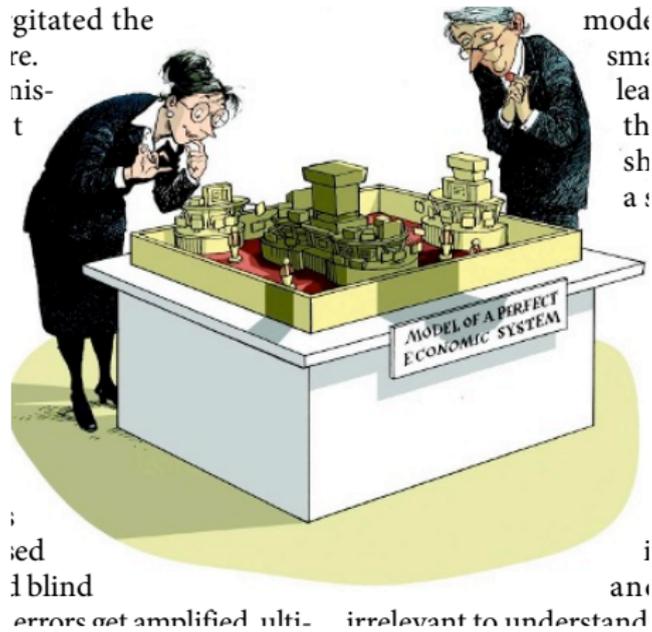
Doomed "Model of a Perfect Economic System"

Challenge for Economics

Jean-Philippe Bouchaud "Economics needs a scientific revolution"
Nature (30 October 2008)

Sub-head for this essay

Financial engineers have put too much faith
in untested axioms and faulty models,
says **Jean-Philippe Bouchaud**.
To prevent economic havoc, that needs to change.

The author is both a physicist and a finance professional.

Also: "classical economics has no framework
through which to understand 'wild' markets"

Economists' Predictions are not "Even Wrong"

Doyne Farmer (also a physicist and finance professional)
with Duncan Foley in *Nature* (6 August 2009)

Opening text: "In today's high-tech age,
one naturally assumes that [policy makers] are using
sophisticated quantitative computer models
to guide us out of the current economic crisis. They are not."

They note that equilibrium models in current use
exclude banks and derivatives. Then they write:

"When it comes to setting policy,
the predictions of these [equilibrium] models aren't even wrong,
they are simply non-existent".

Not being "even wrong" may be the ultimate insult
that a physicist can apply to a model: it is not even falsifiable.

Ben Bernanke's Plea for Financial Reform

"Financial Reform to Address Systemic Risk"
http://www.federalreserve.gov/newsevents/
speech/bernanke20090310a.htm

Accessed via Al Roth's blog
http://marketdesigner.blogspot.com.

Ben Bernanke's Plea for Fundamental Reform

*At the same time that we are addressing . . .
immediate challenges, it is not too soon
for policymakers to begin thinking about the reforms
to the financial architecture, broadly conceived,
that could help prevent a similar crisis
from developing in the future.*

*We must have a strategy that regulates
the financial system as a whole, in a holistic way,
not just its individual components.*

*In particular, strong and effective regulation
and supervision of banking institutions,
although necessary for reducing systemic risk,
are not sufficient by themselves to achieve this aim.*

Research Agenda

If our models of financial markets are not even wrong,
what should we do about them?

1. Science adjusts theories to explain the facts.
   This is presumably what Farmer and Foley had in mind.

2. Engineers, like Alvin Roth,
   create facts constrained by theories.

3. Architects, like those Ben Bernanke wants to see,
   change both theory and fact to accord with each other
   and to combine aesthetic form with function.

Do we need a new market architecture,
especially for banking and finance?

If so, it is a major task for economic theory.

Comparing Prescription with Description

- ▶ Compare theoretical prescription with practical description.
- ▶ Wonder why there is no good theoretical description.
- ▶ Wonder whether markets should be organized better so that
    1. their working is easier to describe and predict;
    2. there is a fitting description
       that more closely matches a befitting prescription.

Consider three different kinds of market setting:

1. spot markets in which goods are exchanged for cash;
2. credit markets allowing the exchange of goods (or money)
   available at different times;
3. insurance and other financial markets
   where risk plays an essential role.

Outline

Adam Smith

The division of labour in pin manufacturing
(and the great increase in the quantity of work that results)

Adam Smith on Unilateral Gains, I

From *The Wealth of Nations* (1776):

> *As every individual ... endeavours as much as he can*
> *both to employ his capital*
> *in the support of domestic industry,*
> *and so to direct that industry*
> *that its product may be of the greatest value;*
> *every individual necessarily labours to render*
> *the annual revenue of the society as great as he can.*

> *He generally, indeed,*
> *neither intends to promote the public interest,*
> *nor knows how much he is promoting it.*

Adam Smith on Unilateral Gains, II

*By preferring the support of domestic
to that of foreign industry,
he intends only his own security;
and by directing that industry in such a manner
as its produce may be of the greatest value,
he intends only his own gain,
and he is in this, as in many other cases,
led by an invisible hand to promote an end
that was no part of his intention. [p. 423]*

These are Pareto gains from unilateral self-improvement.

Adam Smith on Multilateral Gains, I

From *The Wealth of Nations* (1776):

*It is the maxim of every prudent master of a family,
never to attempt to make at home
what it will cost him more to make than to buy.*

*The taylor does not attempt to make his own shoes,
but buys them of the shoemaker.*

*The shoemaker does not attempt
to make his own clothes, but employs a taylor.*

*The farmer attempts to make neither the one
nor the other, but employs those different artificers.*

Adam Smith on Multilateral Gains, II

All of them find it for their interest
to employ their whole industry in a way
in which they have some advantage over their neighbours,
and to purchase with a part of its produce,
or what is the same thing, with the price of a part of it,
whatever else they have occasion for.

These are Pareto gains from division of labour,
enabled by bilateral exchange.

There is exchange, but no obvious competitive markets.

There is certainly no claim
that one needs competitive markets for Pareto efficiency.

Single Market Equilibrium: Cournot and Marshall

Antoine Augustin Cournot (1838) *Recherches
sur les principes mathématiques de la théorie des richesses*

Pioneering work on supply and demand analysis.

Jules Dupuit (1844) "De la mesure de l'utilité des travaux publics"
Annales des ponts et chaussées, Second series, 8.

A demand curve indicates
how quickly the demand for bridge crossings falls
as the price charged for each crossing rises.

The area beneath the curve
measures consumers' aggregate willingness to pay,
a possible estimate of the benefits from the bridge.

Alfred Marshall (1890) *Principles of Economics*

Supply and demand analysis; its relation to consumer surplus.

General Equilibrium: Walras, Edgeworth, Pareto

Léon Walras (1874) *Éléments d'économie politique pure, ou théorie de la richesse sociale*

Simultaneous equation system used to represent
general equilibrium between demand and supply
in many perfectly competitive markets
— i.e., markets in which agents neglect
any influence they may have on market-clearing prices.

Francis Ysidro Edgeworth (1881) *Mathematical Psychics: An Essay on the Application of Mathematics to the Moral Sciences.*

Vilfredo Pareto (1906) *Manuale di Economia Politica*

Market Socialism: Barone, Lange, Lerner

Enrico Barone (1908)
"Il Ministro della Produzione nello Stato Collettivista"
Giornale degli Economisti 2: 267–293, 392–414.

The ministry of production in a collectivist state
ought to behave in the same way
as a profit-maximizing private firm should
when faced with competitive markets
where, by definition, it has no influence over any price.

Oskar R. Lange (1937) "On the Economic Theory of Socialism"
Review of Economic Studies 4: 53–71 and 123–142.

Abba P. Lerner (1944) *The Economics of Control*

Efficiency Theorems in Static Models

Two efficiency theorems of welfare economics
concerning allocations which are achieved
by general equilibrium of demand and supply
in perfectly competitive markets:

1. The first theorem states
   that every equilibrium allocation is Pareto efficient
   — meaning that no reallocation
   can make all consumers better off simultaneously.

2. The second theorem states that,
   provided there has been pre-distribution of initial endowments,
   any Pareto efficient allocation
   can be decentralized through a market equilibrium.

Samuelson and Arrow: Static Models

Paul A. Samuelson (1947) *Foundations of Economic Analysis* (Harvard University Press)

Calculus methods used to demonstrate efficiency theorems under appropriate continuity and curvature conditions, such as diminishing marginal rates of substitution.

Kenneth J. Arrow (1951) "An Extension of the Basic Theorems of Classical Welfare Economics" *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability* (University of California Press), 507–532.

Careful statement and proof of both efficiency theorems, particularly the second, using methods of convex analysis, especially the separating hyperplane theorem.

Existence of Static Market Equilbrium

Walras had essential counted equations and unknowns.

Better arguments, using mathematical fixed point theorems
for mappings from a convex body into itself.

Kenneth J. Arrow and Gérard Debreu (1954),
"Existence of Equilibrium for a Competitive Economy"
Econometrica 22: 265–290.

Lionel McKenzie (1959, 1961) "On the Existence
of General Equilibrium for a Competitive Market";
and "——: Some Corrections,"
Econometrica 27: 54–71; and 29: 247–8.

Gérard Debreu (1959) *Theory of Value: An Axiomatic Analysis
of Economic Equilibrium* (New York: John Wiley).

Perfect Competition with Many Agents

Gérard Debreu and Herbert Scarf (1963)
"A Limit Theorem on the Core of an Economy"
International Economic Review 4: 235–246.

Robert J. Aumann (1964)
"Markets with a Continuum of Traders"
Econometrica 32: 39–50.

Robert J. Aumann (1966) Existence of Competitive Equilibria
in Markets with a Continuum of Traders" *Econometrica* 34: 1–17.

Werner Hildenbrand (1974)
Core and Equilibrium of a Large Economy,
(Princeton: Princeton University Press).

Outline

Traditional Markets

Medieval market places, concentrated in town squares,
survive to this day.

They work by helping buyers and sellers to find each other.

They also tend to attract orderly crowds,
which may help reduce theft.

Local markets also help buyers compare prices and quality
among several closely located sellers.

Saumaty Wholesale Fish Market near Marseilles

Some of Alan Kirman's Papers on Saumaty

Alan Kirman and Annick Vignes (1991)
"Price Dispersion: Theoretical Considerations
and Empirical Evidence from the Marseilles Fish Market"
in Kenneth J. Arrow (ed.) *Issues in Contemporary Economics,
Volume 1: Markets and Welfare*
IEA Conference Volume series (London: Macmillan).

Wolfgang Härdle and Alan Kirman (1995)
"Nonclassical Demand: A Model-Free Examination
of Price–Quantity Relations in the Marseille Fish Market"
Journal of econometrics 67: 227–257.

Gérard Weisbuch, Alan Kirman, and Dorothea Herreiner (2000)
Market Organisation and Trading Relationships
Economic Journal 110: 411–436.

Saumaty Data

Wholesale fish market,
extensively studied by Alan Kirman and his associates.

Database of every transaction from January 1988 to June 1991,
so 1056 days of active transactions.

Long enough for some entry and exit.

Daily average of 120 buyers, and over 3000 in total,
who typically faced around 17 different sellers.

Average daily number of transactions is 225,
involving close to 3 tons of fish,

Total daily sales about 123,000 French francs,
(roughly $20,000 in U.S. currency at contemporary exchange rate).

Data Analysis

Data include buyer and seller identified by code number,
as well as the date (though not the time),
the kind of fish, the agreed price, and the quantity.

Widely dispersed prices per kilo for each kind of fish,
even for the same seller on any a given day.

Strong evidence that some buyers are loyal
to particular seller, despite having to pay more.

Other buyers seem to search for the lowest price.

Little evidence of price uniformity,
as required in standard model of a competitive market.

In General Equilibrium, Who Determines Prices?

Walras postulated an auctioneer, who would adjust prices
according to a tâtonnement procedure,
raising/lowering prices in the face of excess demand/supply.

Alan P. Kirman
"Whom or What Does the Representative Individual Represent?"
Journal of Economic Perspectives,
Vol. 6, No. 2 (Spring 1992): pp. 117–136.

> *economists have no adequate model*
> *of how individuals and firms*
> *adjust prices in a competitive model.*

> *If all participants are price-takers by definition,*
> *then the actor who adjusts prices*
> *to eliminate excess demand is not specified"*

English Auction

In an English auction, the auctioneer:

▶ keeps a record of the currently highest bid and who made it;

▶ calls out a new price to solicit a higher bid;

▶ updates this record whenever a new higher bid occurs;

▶ ends the auction when no higher bid occurs;

▶ sells the item to the highest bidder of record
  at the bid price.

Tsukiji Fish Market

Attribution: Chris 73 / Wikimedia Commons

Japanese Button Auction

Paul R. Milgrom and Robert J. Weber (1982)
"A Theory of Auctions and Competitive Bidding"
Econometrica 50: 1089–1122.
In a Japanese button auction:

- ▶ the auctioneer provides each bidder with a button device;

- ▶ the auctioneer raises the price regularly;

- ▶ each bidder keeps the button pressed down
  as long as he wishes;

- ▶ the auctioneer ends the auction
  when only one bidder is still holding down his button;

- ▶ sells the item to that one remaining bidder;

- ▶ for the price at which the last but one bidder
  released his button.

An Efficiently Run Market?

Land Transport Authority
We Keep Your World *Moving*

Singapore **Government**
Integrity · Service · Excellence

In Singapore, a Certificate of Entitlement (COE) provides
"the legal right of the holder to register, own and use
a vehicle in Singapore for a period of 10 years."

COEs are sold in a government run market,
organized on lines that seem a model of transparency.

Website: `http://www.lta.gov.sg/content/ltaweb/`
`en/roads-and-motoring/owning-a-vehicle/`
`vehicle-quota-system/certificate-of-entitlement-coe.html`

COE Bidding Rules, I

- ▶ *Bidders outbid each other to obtain a COE during the bidding exercise.*
- ▶ *Bidders can submit their bids by keying in the reserve price into the COE Open Bidding System or through the Systems various channels listed at* `ONE.MOTORING`.
- ▶ *The COE Open Bidding System will automatically revise the bid upwards, at an increment of S\$1, until the reserve price is reached.*

COE Bidding Rules, II

- *The bid is in the running*
  as long as the reserve price is equal or higher
  than the Current COE Price (CCP).
- *The number of successful bidders*
  is limited by the COEs available
  for each particular COE category.
  The CCP is
  the price of the highest unsuccessful bid plus S\$1.
- *If the CCP rises above the bidder's reserve price,*
  the bidder is then out of the running for a COE
  unless he revises his reserve price upwards.

COE Bidding Rules, III

- ▶ The CCP will stop rising
  when the number of bidders who are prepared to pay
  more than or at the CCP
  equals the quota at the close of the exercise.
- ▶ At the close of the exercise,
  bidders whose bids are above or equal to the CCP
  will get a COE.
- ▶ The latest CCPs at the close of bidding
  are the Quota Premiums for the bidding exercise.
  All successful bidders in the vehicle category
  will pay the same Quota Premium for that category.

Outline

From Dante's Inferno to Italian Banking

Dante's *Inferno* confined usurers to a particular circle of hell.

Banca Monte dei Paschi di Siena, 1472

Banche rotte a Firenze

Banchi lombardi

Lombard Street, at the heart of the City of London.

Shakespeare's *Hamlet*

Polonius advising Laertes, in Shakespeare's Hamlet Act I, scene 3

> *Neither a borrower nor a lender be;*
> *For loan oft loses both itself and friend,*
> *And borrowing dulls the edge of husbandry.*

Letter from John Patten of Runcorn, Cheshire, published in the *Observer* 22nd Sept. 2013, under the title "A barb from the Bard" (regarding a different part of the same speech)

> *. . . is making an error in assuming that, because Shakespeare wrote it, he believed it.*
>
> *As he gave these words to a mischief-maker, we can safely deduce that he was telling us that Polonius is an ass.*

Shakespeare's *Merchant of Venice* Act IV, Scene 1

Portia A pound of that same merchant's flesh is thine.
The court awards it, and the law doth give it.
Shylock Most rightful judge!
Portia And you must cut this flesh from off his breast.
The law allows it, and the court awards it.
Shylock Most learnd judge, a sentence! Come, prepare.
Portia Tarry a little. There is something else.
This bond doth give thee here no jot of blood.
The words expressly are "a pound of flesh."
Take then thy bond, take thou thy pound of flesh,
But in the cutting it if thou dost shed
One drop of Christian blood, thy lands and goods
Are by the laws of Venice confiscate
Unto the state of Venice.

Thomas Hobbes *Leviathan*, Cover

Thomas Hobbes (1651) *Leviathan or The Matter,
Forme and Power of a Common Wealth Ecclesiasticall and Civil*

Thomas Hobbes *Leviathan*, I

CHAPTER XIV:
OF THE FIRST AND SECOND NATURAL LAWS,
AND OF CONTRACTS

*If a covenant be made
wherein neither of the parties perform presently,
but trust one another,
in the condition of mere nature (which is a condition
of war of every man against every man)
upon any reasonable suspicion, it is void:
but if there be a common power set over them both,
with right and force sufficient to compel performance,
it is not void.*

Thomas Hobbes *Leviathan*, II

*For he that performeth first
has no assurance the other will perform after,
because the bonds of words are too weak to bridle
men's ambition, avarice, anger, and other passions,
without the fear of some coercive power;
which in the condition of mere nature,
where all men are equal,
and judges of the justness of their own fears,
cannot possibly be supposed.*

*And therefore he which performeth first
does but betray himself to his enemy,
contrary to the right he can never abandon
of defending his life and means of living.*

Outline

Introduction

The Road Ahead

Spot Markets

Financial Markets
   History of Ideas
   Theory of Interest

Irving Fisher, Maurice Allais, John Hicks

Irving Fisher (1892)
"Mathematical Investigations in the Theory of Values and Prices"
Transactions of Connecticut Academy of Arts and Sciences
9, 1–124.

Irving Fisher (1930) *The Theory of Interest* Macmillan, New York.

John R. Hicks (1939) *Value and Capital:*
An Inquiry into some Fundamental Principles of Economic Theory

Maurice Allais (1947) *Économie et Intérêt*

General equilibrium with dated commodities.

Temporary equilibrium in each Hicksian week.

Arrow and Debreu: Risk, Time and Uncertainty

Kenneth J. Arrow (1953; 1964) "Le Role Des Valeurs Boursières
pour la Répartition la Meilleure des Risques"
International Colloquium on Econometrics, 1952,
Centre National de la Recherche Scientifique, Paris, 1953, pp. 1–8.
original English text published as:
The Role of Securities in the Optimal Allocation of Risk Bearing
Review of Economic Studies 86: 91–96.

Debreu, *Theory of Value*, last chapter.

Von Neumann and Morgenstern on Extensive Games

John von Neumann (1928) "Zur Theorie der Gesellschaftsspiele"
Mathematische Annalen 100, 295–320;
translated as "On the theory of games of strategy"
in: Luce, R.D., Tucker, A.W. (Eds., 1959) *Contributions to the Theory of Games*, Vol. IV. Princeton University Press, Princeton.

John von Neumann and Oskar Morgenstern (1944; 3rd edn. 1953)
Theory of Games and Economic Behavior
Princeton University Press, Princeton.

In an extensive form game, the players each make their moves
in several successive stages.

Von Neumann's normal form invariance hypothesis:
Any extensive form game can be reduced to a strategic form
in which each player announces a complete strategy
or course of action, or computer programme, to an umpire.

Markets for Dated Contingent Contracts

Deal with time and uncertainty by having *ex ante* trade
in contracts for dated contingent commodities.

Each contract promises delivery of a specified quantity of a good
at a specified time, contingent upon the occurrence
of a specified state of the world.

Clearly inspired by von Neumann and Morgenstern's
approach to extensive games.

Each economic agent announces to an auctioneer/market maker
a single trading strategy for all time.

Prices are set; contracts are exchanged;
the economic history of the world is set for all time.

Intertemporal Lifetime Budget Constraint

Let β_t denote the discount factor,
indicating the PDV of present discounted value of 1 euro at time t.

$$\text{The PDV of} \left\{ \begin{array}{c} \text{consumption} \\ \text{income} \end{array} \right\} = \sum_{t=1}^{H} \beta_t \left\{ \begin{array}{c} c_t \\ y_t \end{array} \right\}$$

where H denotes the planning horizon.

The lifetime budget constraint is

PDV of consumption $+$ PDV of bequest

$$\leq \text{initial wealth} + \text{PDV of income}$$

To be balanced on one's deathbed,
as in Giacomo Puccini's opera *Gianni Schichi*?

Borrowing Constraints

Duncan K. Foley and Martin F. Hellwig (1975)
"A Note on the Budget Constraint in a Model of Borrowing"
Journal of Economic Theory 11: 305–314.

The PDV of accumulated consumption (respectively, income)
up to time t is defined as $\sum_{s=1}^{t} \beta_s c_s$ (respectively, $\sum_{s=1}^{t} \beta_s y_s$.)

The borrowing constraint for each time t is

PDV of accumulated consumption − initial wealth
$\leq$ PDV of accumulated income + credit facility for time t

Foley and Hellwig require the credit facility at each time
to be the maximum amount that the borrower
can afford to repay with probability 1.

Enforcing Borrowing Constraints

Christopher Bliss (1976) "Capital Theory in the Short Run"
in *Essays in Modern Capital Theory*,
ed. M. Brown, K. Sato and P. Zarembka. Amsterdam:
North-Holland, pp. 187–205.

Faced with multiple competing lenders,
a borrower should choose the best terms possible.

This leaves the borrower facing the set-theoretic union
of several different budget constraints.

The set-theoretic union of convex sets is typically non-convex,
so this creates difficulties for the existence, second efficiency,
and core equivalence theorems of general equilibrium theory.

Payday Loans: `wonga.com` Website

Payday Loans: `wonga.com` Text

Welcome to Wonga.

We can send up to £400
within 5 minutes of your loan being approved.

Borrowing £111 + Interest & fees £24.14

= Total to repay £135.14

Representative example

- Amount of credit: £150 for 18 days. Interest: £27.99.
  Interest rate: 365%pa (fixed).

- Transmission fee: £5.50. One total repayment of: £183.49.
  Representative 5853% APR.

Are Borrowing Constraints Unenforceable?

We can send up to $400
within 5 minutes of your loan being approved.

`wonga.com` appears not to check the credit history
of anybody asking for no more than £400.

Existing customers may be able to borrow up to $1,000,
depending on your current trust rating.

And to check only superficially
if you ask for up to £1000.

Checking properly would involve considering
all the candidate borrower's other debt,
and what income stream might be able to repay it.

Are Borrowing Constraints Unenforceable?

Keeping track of credit histories is a public service
that seems vital to the orderly functioning of credit markets.

Peter J. Hammond (1992)
"On the Impossibility of Perfect Capital Markets"
in P. Dasgupta, D. Gale, O. Hart, and E. Maskin (eds.)
Economic Analysis of Markets and Games:
Essays in Honor of Frank Hahn
(Cambridge, Mass.: M.I.T. Press, 1992), pp. 527–560.
http://www.stanford.edu/ hammond/imperfCap.pdf

with references to

Peter J. Hammond (1987) "Markets as Constraints:
Multilateral Incentive Compatibility in Continuum Economies"
*Review of Economic Studies* 54: 399–412.

Liberalized Financial Markets

Liberalized financial markets cannot avoid crises
except by solving the collective action problem
involved in enforcing borrowing constraints.

Avoiding crises requires exceptionally well
and tightly regulated financial markets.

Such regulation is incompatible with liberalization!

Are Crises Avoidable?
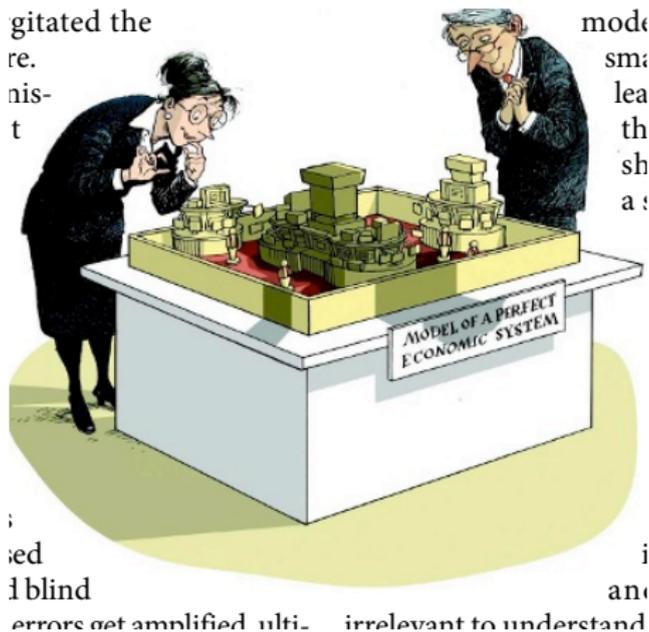
Crises Are Probably Unavoidable

Envoi

Even if crises are unavoidable,
— or perhaps particularly if crises are unavoidable,
— it is surely time to abandon "market fundamentalism".

We need mechanisms in place in order to limit
the economic damage that a crisis causes
to blameless individual economic agents.

Many thanks for the kind invitation,
and for your attention.