How to manufacture a financial crises

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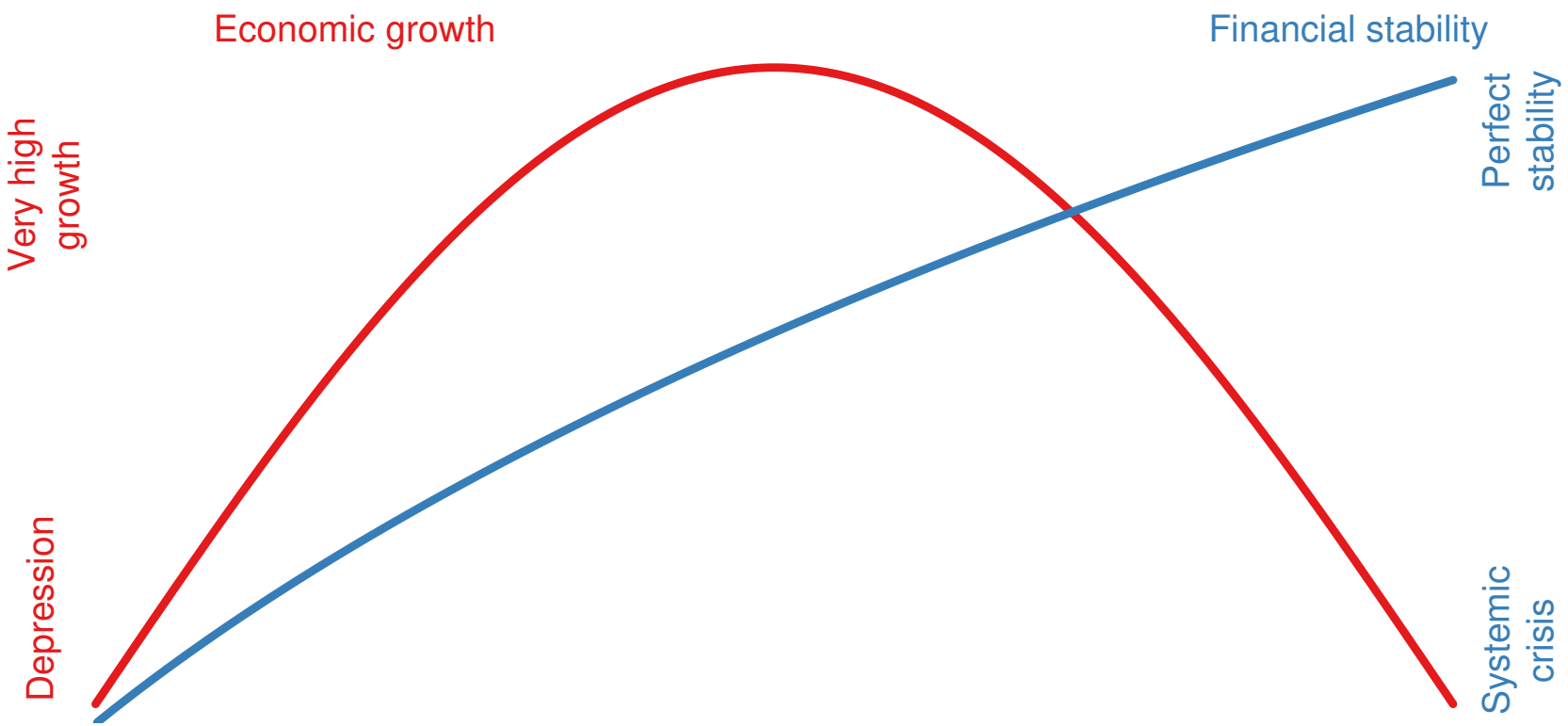
Who manufactures a crisis matters

- The current regulatory process — macro prudential regulations — implicitly assumes hostile actors are *profit maximizing*
  1. that either take too much risk
  2. or deliberately create instability to profit from it
- A different actor does not care about profits
- War of attrition
- Implies different rationality and policy approaches

The financial system

- One of the most complex things created by humans
- Not only *effectively infinively complex*, it is *endogenously complex*
- Nobody has an incentive to reduce the complexity — everybody wants to increase it
- It is also resilient — many forces work to keep it going
- *Systemic crises* happen one year out of every 43 for OECD countries (at most)
- For the UK it is not an event with costs in the £ billions or tens of billions
- Instead more than 10% of GDP
  (perhaps *half a trillion pounds*, 25% of GDP)

The growth–stability tradeoff



It is all about liquidity — Trust

- Systemic crises are all about *liquidity*
- And for liquidity we need *trust*
- When everything works well, liquidity is seemingly infinite
- It evaporates at the first sign of a crisis
- When everybody wants the *safest assets*, used to be gold, now *cash* or *deposits* with the central bank
- Anybody intent on manufacturing a crisis will have to cause liquidity to dry up
- The 2008 crisis was allowed to happen because the policy authorities *forgot* the importance of liquidity

Liquidity and crises

- If savers withdraw cash (a "bank run") then banks collapse
- Or creditors refuse to roll over loans/ or fund (like Northern Rock)
- Banks can collapse
- And their creditors also collapse
- The financial system is a network — everybody is connected to everybody
- Left unchecked, this chain of events shuts down most commercial activity

$\Rightarrow$ *Systemic crisis*

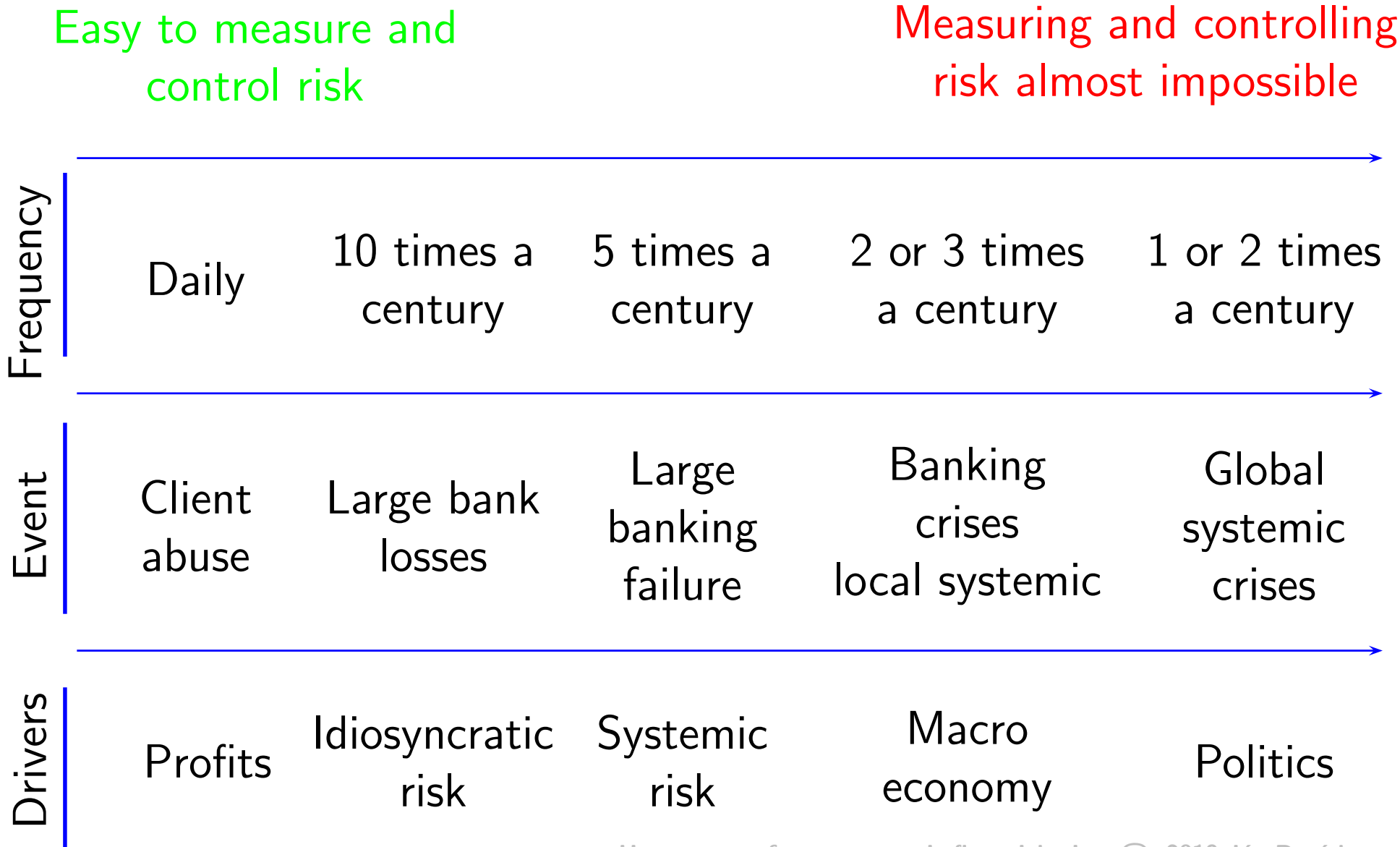
Biggest systemic crisis in British history — 1914

- Archduke Ferdinand assassinated 28 June 1914
- A systemic crisis immediately ensued, a month before the war
- *Anticipation* a month before the war caused the European countries to stop delivering on clearing with foreigners
- Trust went away, everybody wanted gold and cash
- The London Stock exchange closed for half a year

Systemic risk is all about the unknown unknowns

- The US stock market goes down by $200 billion in one day and nobody cares
- Potential subprime losses of less than $200 billion in 2008 and a global crisis happens
- Risk we know we prepare for — *known unknowns*
- Risk we don't know is the dangerous type
- *Unknown unknowns* are most damaging
- Almost axiomatic that the next crisis will *not happen* where the authorities are looking
- They can only look at small parts of the system because it is effectively infinitely complex

The time dimension of risk



Risk is endogenous

Danielsson–Shin (2002)

- Risk is *exogenous* or *endogenous*

  Exogenous Shocks to the financial system arrive from outside the system, like an asteroid

  Endogenous Financial risk is created by the interaction of market participants

"The received wisdom is that risk increases in recessions and falls in booms. In contrast, it may be more helpful to think of risk as increasing during upswings, as financial imbalances build up, and materialising in recessions."
Andrew Crockett, then head of the BIS, 2000

What drives risk?

Time between decisions and crises is many years

- 2008 happened because of decisions made years earlier
- In 2003 all the signs pointed to risk being low
- The authorities and the private sector thought we were safe
- And so it was perfectly OK to take extra risk
- But
- "*Stability is destabilizing*" (Minsky)

- Since the time between decisions and crises is so long
- By the time a crisis is almost underway, there is little the authorities can do — *except react*
- Even if the authorities are convinced a crisis might happen in a few months they *might not be able to prevent* it
- Events that happened five years ago a put in place a chain of events that cannot be stopped
- The vulnerability is in place, and it can take years to unwind it
  1. it is deeply hidden
  2. with very complex interactions with the rest of the system, so hard to unwind
  3. the authorities need to be trusted, careful and very knowledgeable

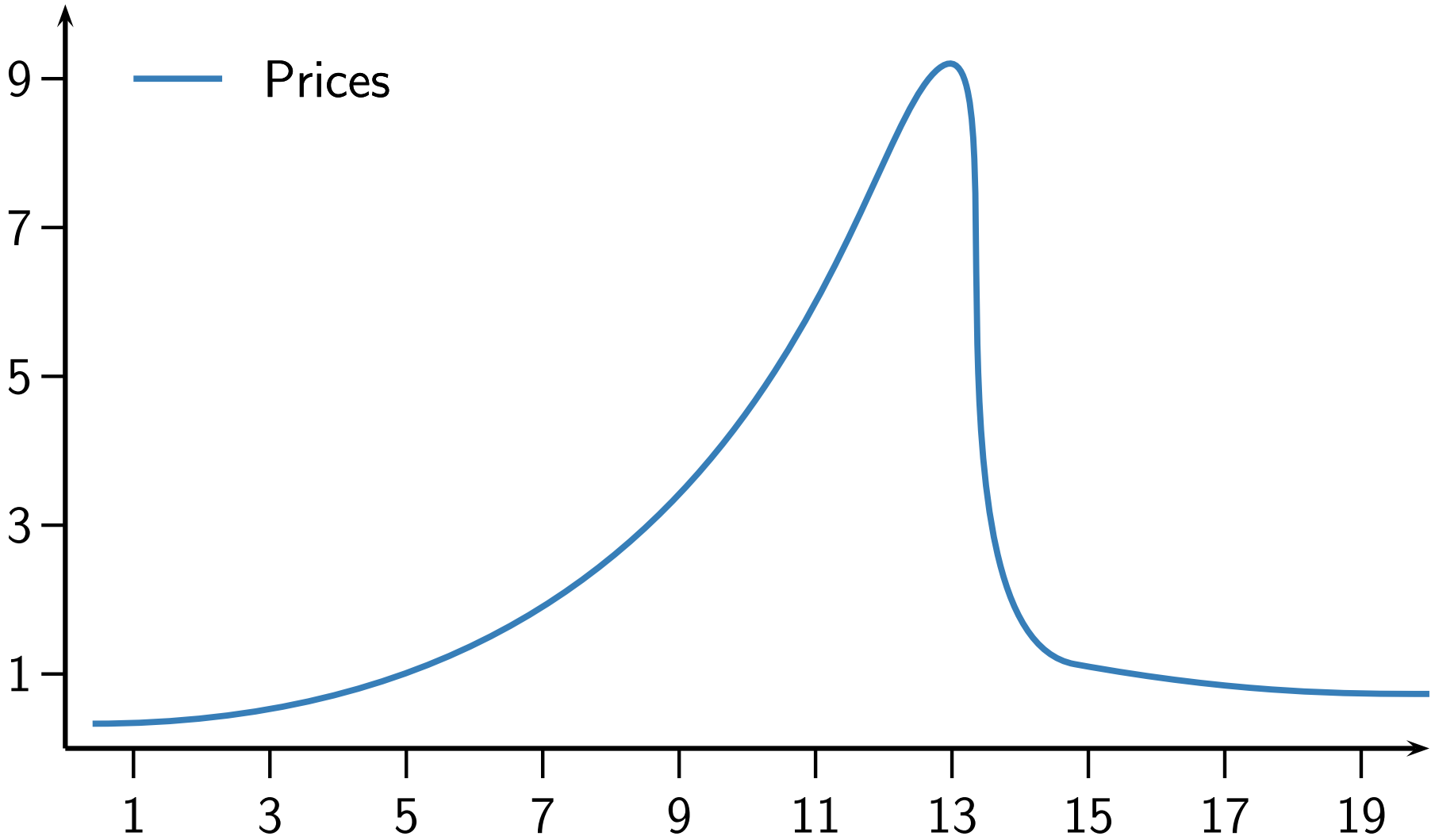
The political economy of booms

- The politics works against those who want to prevent a crisis
- Especially is we are in a pre-crisis boom, as usually is the case
- The boom delivers short-term tangible benefits
- The long-term downside will be dismissed by everybody
- Practically impossible to warn or reduce risk

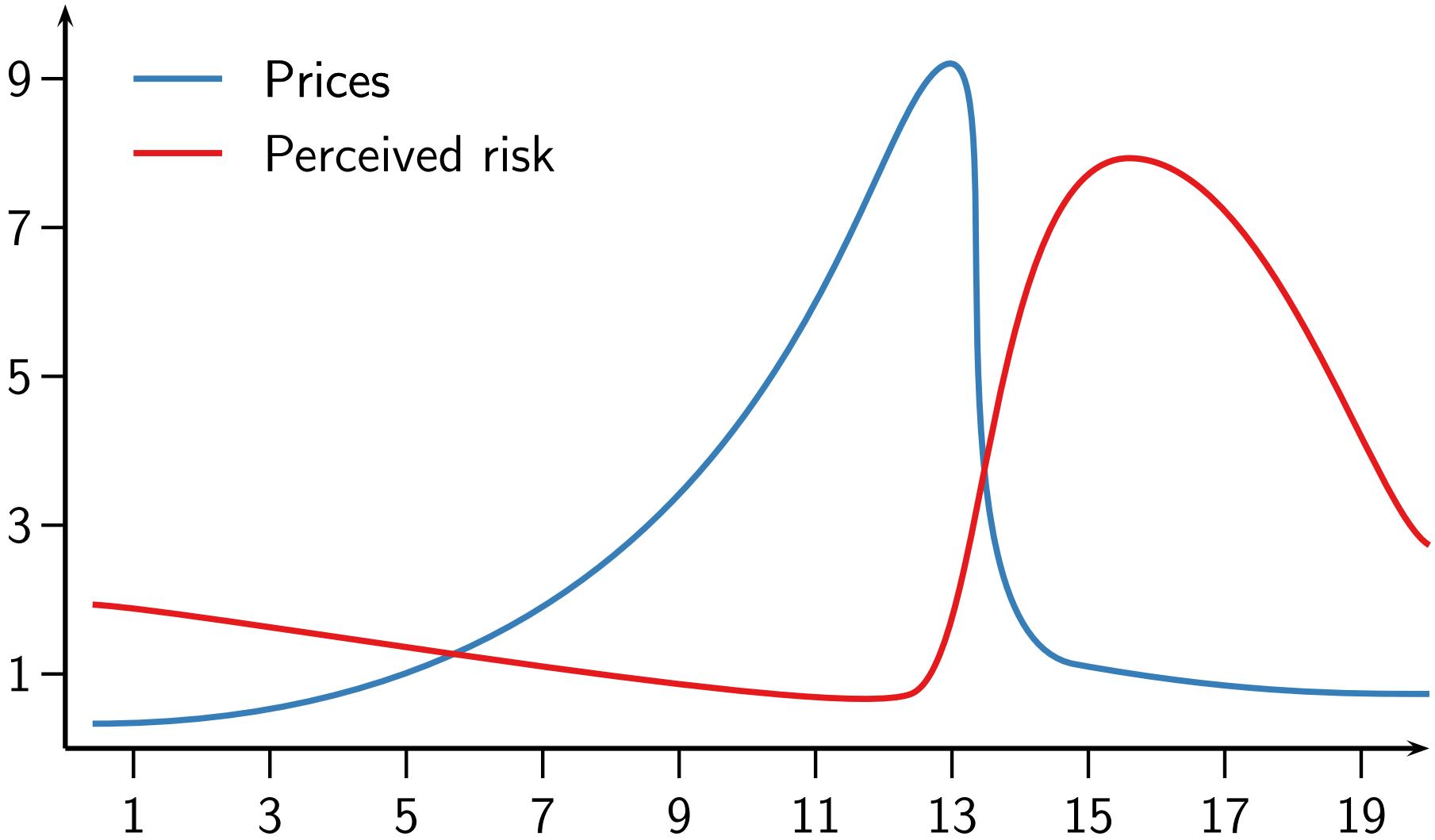
Two faces of risk

- When individuals observe *and* react — affecting their operating environment
- Financial system is not invariant under observation
- We cycle between virtuous and vicious feedbacks
  - *perceived risk* — as reported by risk models
  - *actual risk* — hidden but ever present

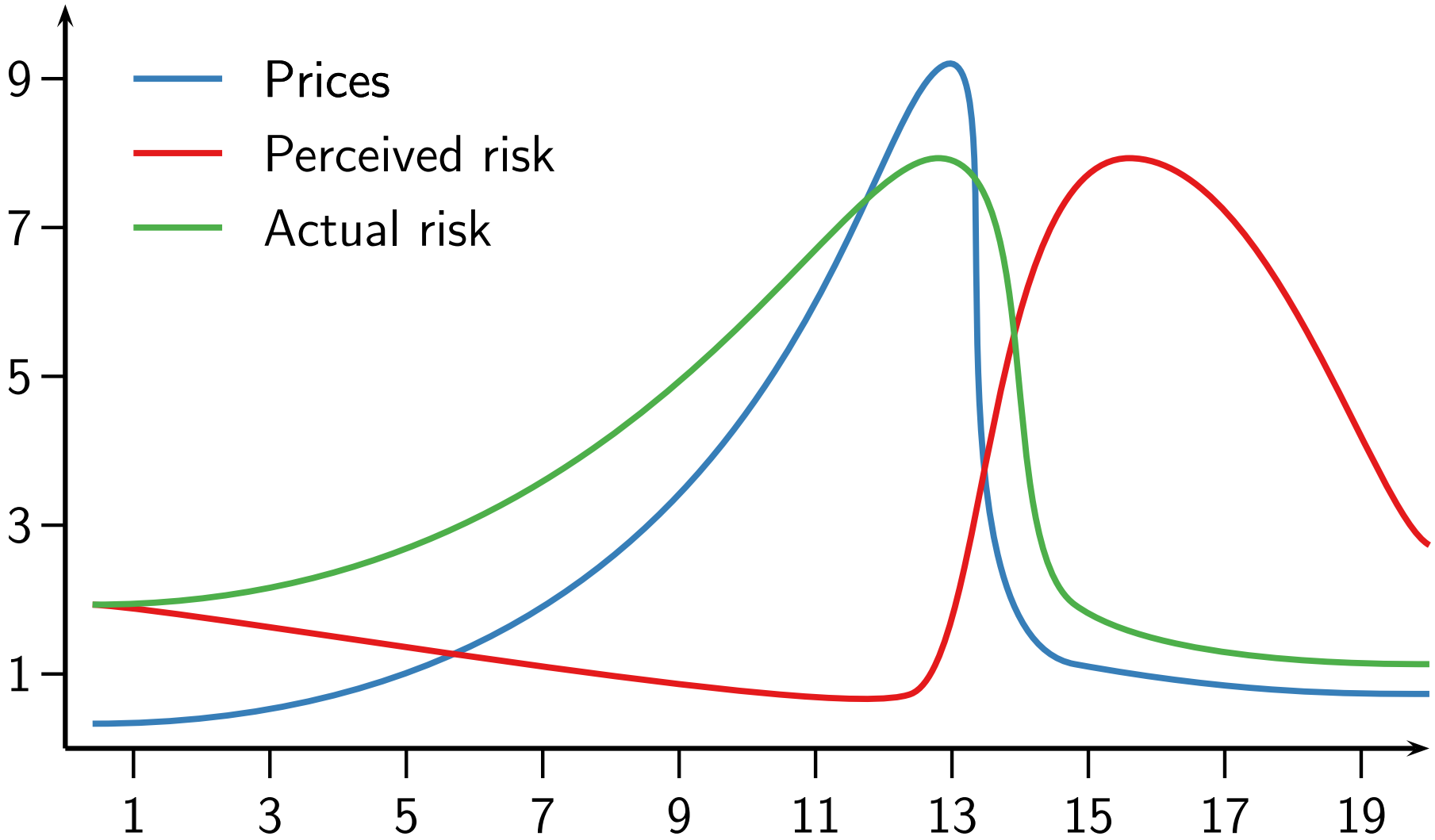
Endogenous bubble



Endogenous bubble



Endogenous bubble



Implications

- Because of the infinite complexity of the financial system, we depend on statistical measurements of risk for the management of systemic risk
- Most measurement technologies for systemic risk only capture perceived risk
- Therefore, *risk dashboards* and the like only show perceived risk
- Which can give the impression that everything is fine when it is not
- Important vulnerability is *fooling yourself you got things under control* — Like the financial authorities in 2007

Putative systemic-cyber links

Fact A cyber event can be very disruptive and costly

Fact A financial crisis happens when the system is unable to fulfil its usual function

Conjecture A cyber event could prevent the system from functioning and is hence systemic. For example: from functioning and is hence systemic. For example:

1. Cyber event: Payment system fails
2. Financial consequence: Liquidity dries up
3. Systemic event: Bankruptcies and crisis

We suspect not

Triggering a systemic crisis

Fact Very few fundamental causes of crisis

Fact Infinite number of triggers

Type I Fundamental causes

- Excessive risk taking driven by overoptimistic assumptions of liquidity

Type II Intentional action — trigger

Key question is whether a well-resourced adversary can trigger a sufficient collapse in liquidty

Timing matters

- The financial system is resilient
- In normal times backup and resolution processes will kick in
- Cost high, but does not mean it is systemic
- Such events are anticipated and war-gamed
- More a known–unknown than unknown–unknown
- However, if same event happens 1 October 2008, can become systemic

To become systemic, usually we need double coincidence

1. Hit multiple systems simultaneously, *or*
2. By chance coincide with heightened uncertainty, *or*
3. Be deliberately paired with another shock, *and then*
4. Attack vector kept in place, undetected, until timing is right (years or decades)

- These are low probability events
- Consequently they are unlikely to co-occur by chance, but could do so in an intentional attack — on two, or more, fronts

Roadmap for manufacturing crises

- Have to cause liquidity to evaporate
  i. Trust
  ii. Natural weaknesses of the policy authorities
  iii. (Inter) dependence
  iv. Fundamentals
  v. Policymaking process
  vi. Institutions
  vii. Flash crash
  viii. Cash

Liquidity

- The most fundamental vulnerability of any financial system
- Highly dependent on state-of-the-art technology, communications, power
- Disruption to liquidity can either cause a crisis, or be one half of double coincidence
- Disappearance of liquidity is at the *heart* of every financial crisis
- What Occupy Wall Street tried to do — unsuccessfully
- but
- "To stop the duke, go for gold", 1831-1832, worked

Trust

- The financial system is all about liquidity, in which trust plays a key role
  a. We have to know our money is safe in the bank
  b. That institutions will protect us (Bank of England, regulator, courts, government, . . .)
- Otherwise we *act in a way that makes a crisis inevitable*
- Bank of England October 2007 Northern Rock announcement

Dependence

Albert Hirschman (1945) "National power and the structure of foreign trade"

- International trade generates dependency
  1. supply chains
  2. threat of interruptions
- The power to interrupt commercial or financial relations
- How to?
  1. Granting better terms of trade to the exporter
  2. Targeting exporters with a limited array of products to sell (commodities), easy to source elsewhere
- China and Australia?

Turkey's 2011 systemic crisis — Deliberate attack

- A start-up family owned a rapidly growing bank — Demir
- Which was dependent on overnight borrowing
- Several *denial of liquidity attacks* on Demir bank by corporate interests in Turkey — Which wanted to make it collapse
- Eventually the attack was successful at the end of the quarter — Double coincidence
- A systemic crisis ensued

Exploit the natural weaknesses of the policy authorities

- The need for transparency, fairness
- Perceived risk techniques for measuring systemic risk
- They are constantly attacked, so very defensive
- Usually on the receiving end of political economy type prosperity criticism
- Always looking in the *rear window* — not forward-looking
- Like to argue everything is under control
- An implicit assumption is that hostile actors are profit maximizing
  - implies rationality
  - but
  - someone intent on causing a crisis *does not care about profit*
  - policy not designed for that

Exploit the policymaking process to your advantage

- The more formulaic, the more model driven, the more bureaucratic the regulatory processes
- The easier it is to manufacture a crisis
- How to make regulations even more formulaic?
  1. membership in international committees
  2. domestic lobbying
  3. policy debates
  4. legal challenges

Undermine institutions

- Find some subterfuge to attack the Bank of England, the Treasury, the legal system, the security services, the press, ...
  1. the country had enough of experts
  2. enemies of the people
  3. traitors
  4. deep state
  5. lying press — lügenpresse
- So when the attack comes, they will not be trusted
- Amplify impact of BoE October 2007 Northern Rock announcement

Manufacturing a crisis

- It is expensive and takes time
- In the war of attrition a useful tactic because the cost to the victim is much higher than the cost of attack
- Work on two fronts
  1. undermine the fundamentals
  2. find the right triggers