Challenges for financial stability and systemic risk

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What is systemic risk?

The authorities (IMF/FSB/BIS) define it as a financial disruption causing economic problems

- Investors often use "*tail risk*" to mean the same thing
- How does that get translated into something practical?
- When different people talk about systemic risk they often mean very different things

How people who study systemic risk see it

- Theory often refers to very severe and infrequent events (like the collapse of the payment system)
- The IMF/WB database implies a systemic crisis every 42 years on average
- But, empirical analysis and common practice likes very frequent events (like 99% VaR or ES)
  - 2.5 crises a year
  - does not remotely captures systemic (or tail) risk

Dialogue of the deaf

about systemic risk

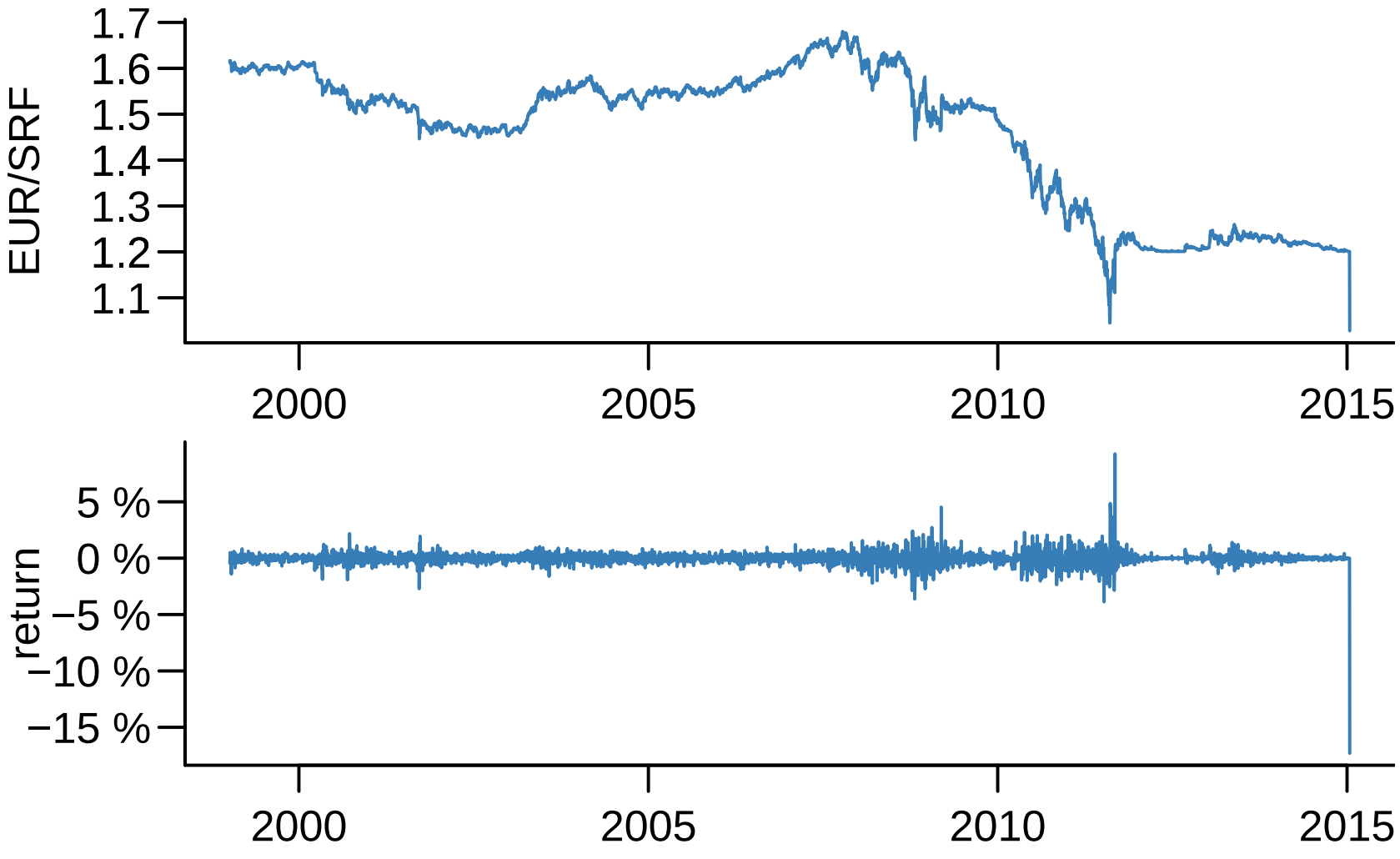
- One person might mean an *end of the world* scenario
- Another a typical *monthly hiccup* in markets
- Policy often focuses on the easily measurable, the hiccup
- While being justified by the former

- What does all the fudging allow?

Impact of systemic risk on policy

- 95% politics — Prime minister tells central bank to "*do something about finance*"
- The problem is that economic growth is incompatible with too little systemic risk — have to pick one or the other
- This impacts on issues such as
  - Financial regulations
  - Macro prudential policy
  - SME funding and the CMU
  - SIFI status

€/CHF


EUR/SRF
1.7
1.6
1.5
1.4
1.3
1.2
1.1
2000
2005
2010
2015
return
5 %
0 %
−5 %
−10 %
−15 %
2000
2005
2010
2015

Lets forecast risk...

with "reputable" models generally accepted by authorities and industry

- Value–at–Risk (*VaR*) and Expected Shortfall (*ES*)
- Probability 1%
- Using as model

MA	moving average
EWMA	exponentially weighted moving average
GARCH	normal innovations
t–GARCH	student–t innovations
HS	historical simulation
EVT	extreme value theory

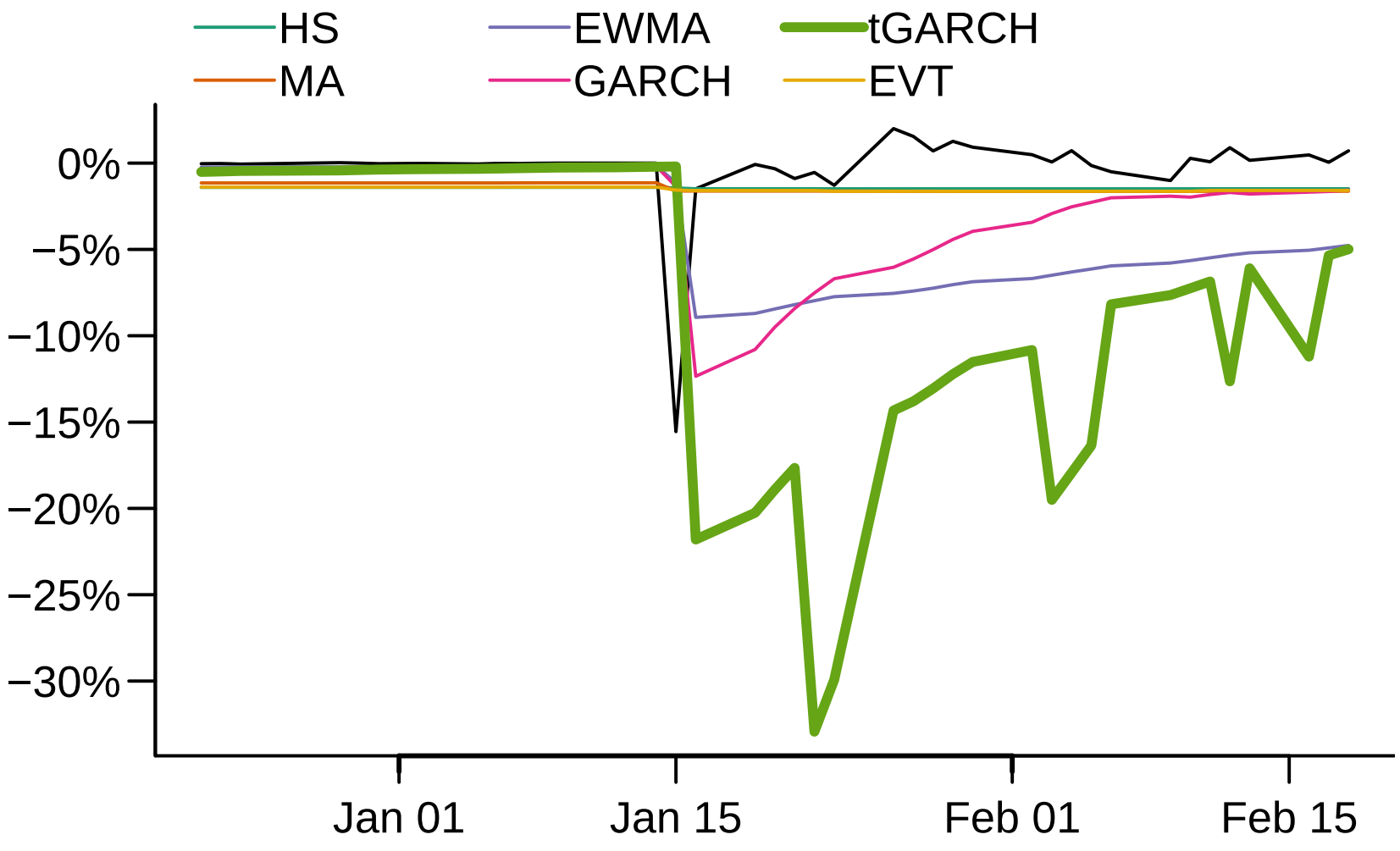
- Estimation period 1,000 days

How frequently do the Swiss appreciate by 15.5%?

measured in once every X years

Model	frequency	
EWMA	never	
GARCH	never	
MA	2.7×10^{217}	age of the universe is about 1.4×10^{10}
tGARCH	1.4×10^{7}	age of the earth is about 4.5×10^{9}
EVT	109	

Even more interesting after the event



When risk is created

Andrew Crockett, then head of the BIS, 2000

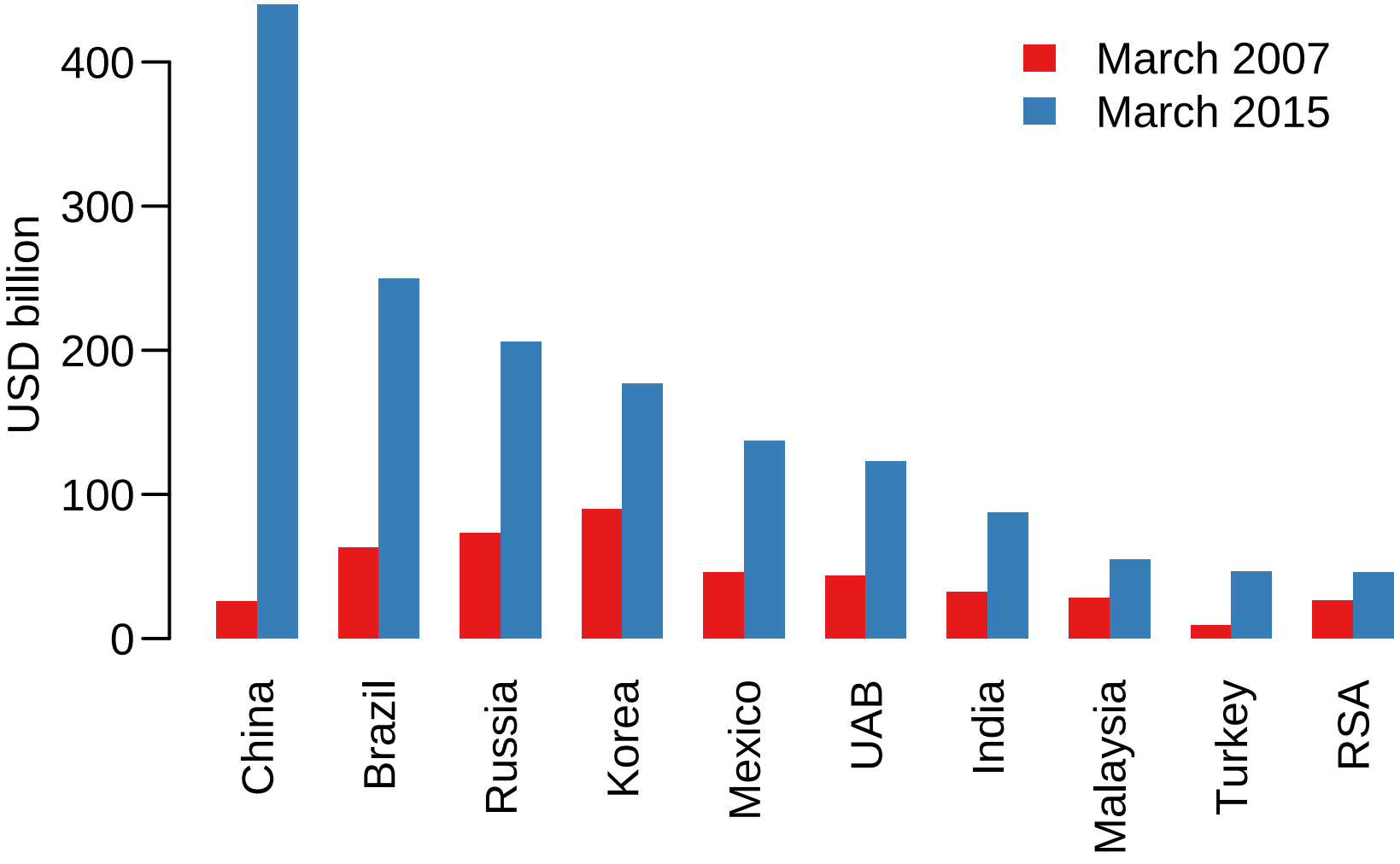
"The received wisdom is that risk increases in recessions and falls in booms. In contrast, it may be more helpful to think of risk as increasing during upswings, as financial imbalances build up, and materialising in recessions."

- Consistent with Minsky's observation "*Stability is destabilizing*"

Is systemic risk visible or hidden?

- There are 2 schools of thought
  1. Systemic risk is visible and revealed via market prices
  2. It is hidden, and market prices provide information after an event is happening
- We at the Systemic Risk Centre belong to the second
  - If relying on market prices might as well just subscribe to the financial Times
- Size may not be useful: Subprime in a worst case might have been a couple of hundred billion

Private debt in developing countries



Shocks vs. mechanisms

- The financial system experiences shocks all the time
- Typically these are absorbed without difficulty but a few blow up into a crisis
- The same shock could easily lead to either outcome
- With so many shocks, focusing on them is a waste of time
- One should focus on the mechanism that causes some to blow up
- The liquidity imbalances on the last slide may result in a crisis. The trigger will be inciential

The financial system is not invariant under observation

- The point of studying the system is to react to it
- And by doing so we change it

Endogenous risk vs. Exogenous risk

Danielsson and Shin (2002) "Endogenous Risk"

Endogenous risk: risk from shocks that are generated and amplified *within* the financial system

Exogenous risk: shocks that arrive from *outside* the financial system

- Analogies
  - a financial hedge (futures contract) vs. a weather hedge (umbrella)
  - poker vs. roulette
- Where an agent affects outcomes
  vs.
  Situations where the agent cannot

Implications

- Most financial and policy analysis implicitly assumes risk is exogenous
- But (almost) all financial risk, except day–to–day, is endogenous
- *Systemic risk is all about endogenous risk*
- By assuming risk is exogenous we
  - fail to capture fundamental dangers to the financial system
  - risk implementing costly, useless and even counterproductive policies

Implications

Heterogeneity

- Endogenous risk analysis implies that financial stability is maximized when market participants are as different from each other as possible
- Financial regulations often (like Basel II/III) move in the opposite direction — *maximize homogeneity*
- Dilemma for the authorities
  - it is hard to accept two financial institutions finding very different risk for the same portfolio
  - but forcing them to measure risk in the same way is procyclical — *increasing systemic risk*

Fallacy of composition

Danielsson, Shin, Zigrand (2010)

- If we make everybody prudent, we perversely destabilize the financial system
- A shock hits, nobody can absorb the shock, prices fall, spill into other assets and markets, contagion
- Selling into falling markets, risk goes up, distress goes up
- Those less prudent and different counteract those forces

Two faces of risk

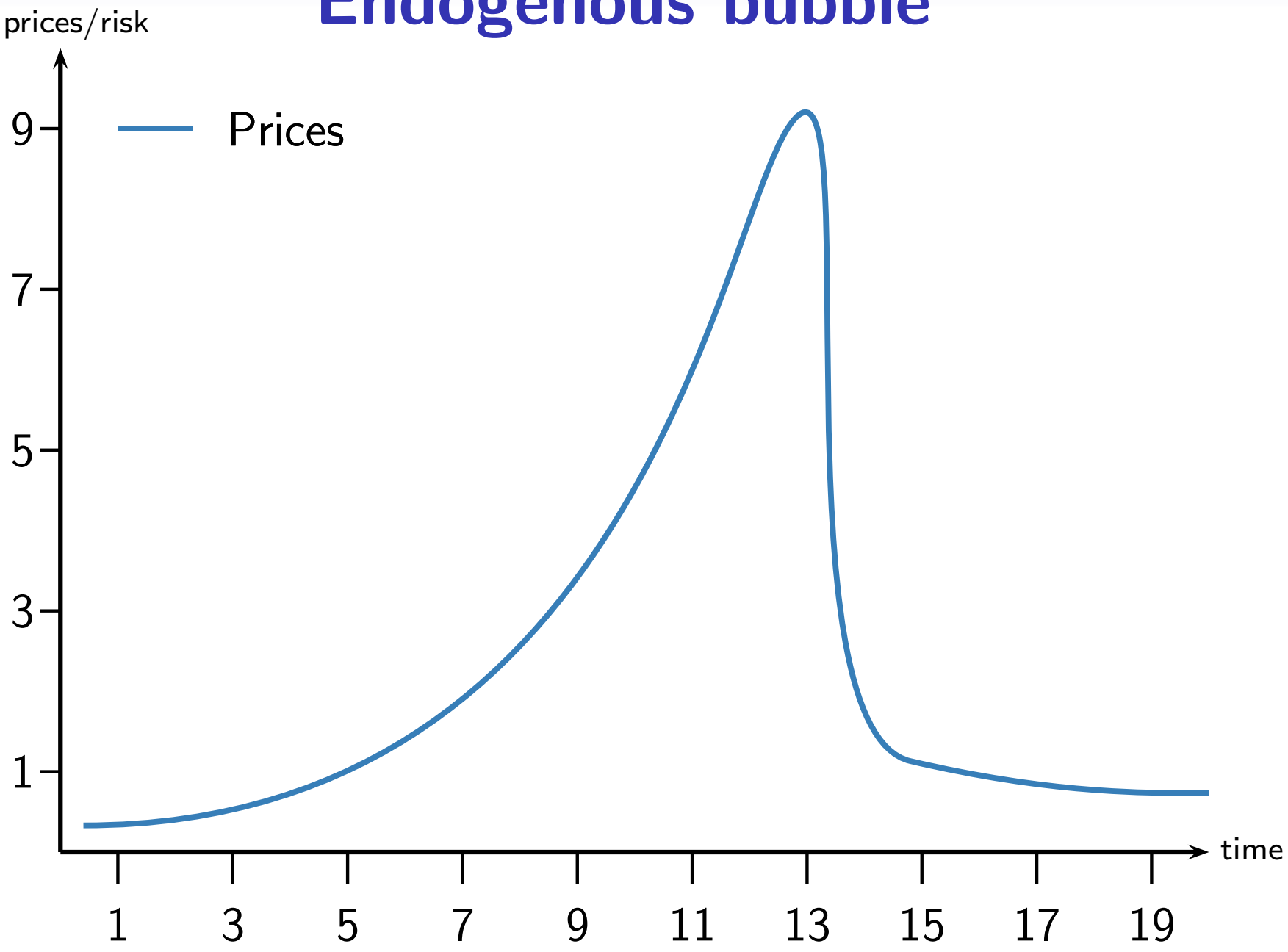
Danielsson, Shin, Zigrand (2010) "Endogenous and Systemic Risk"

Perceived risk: reported by risk forecast models

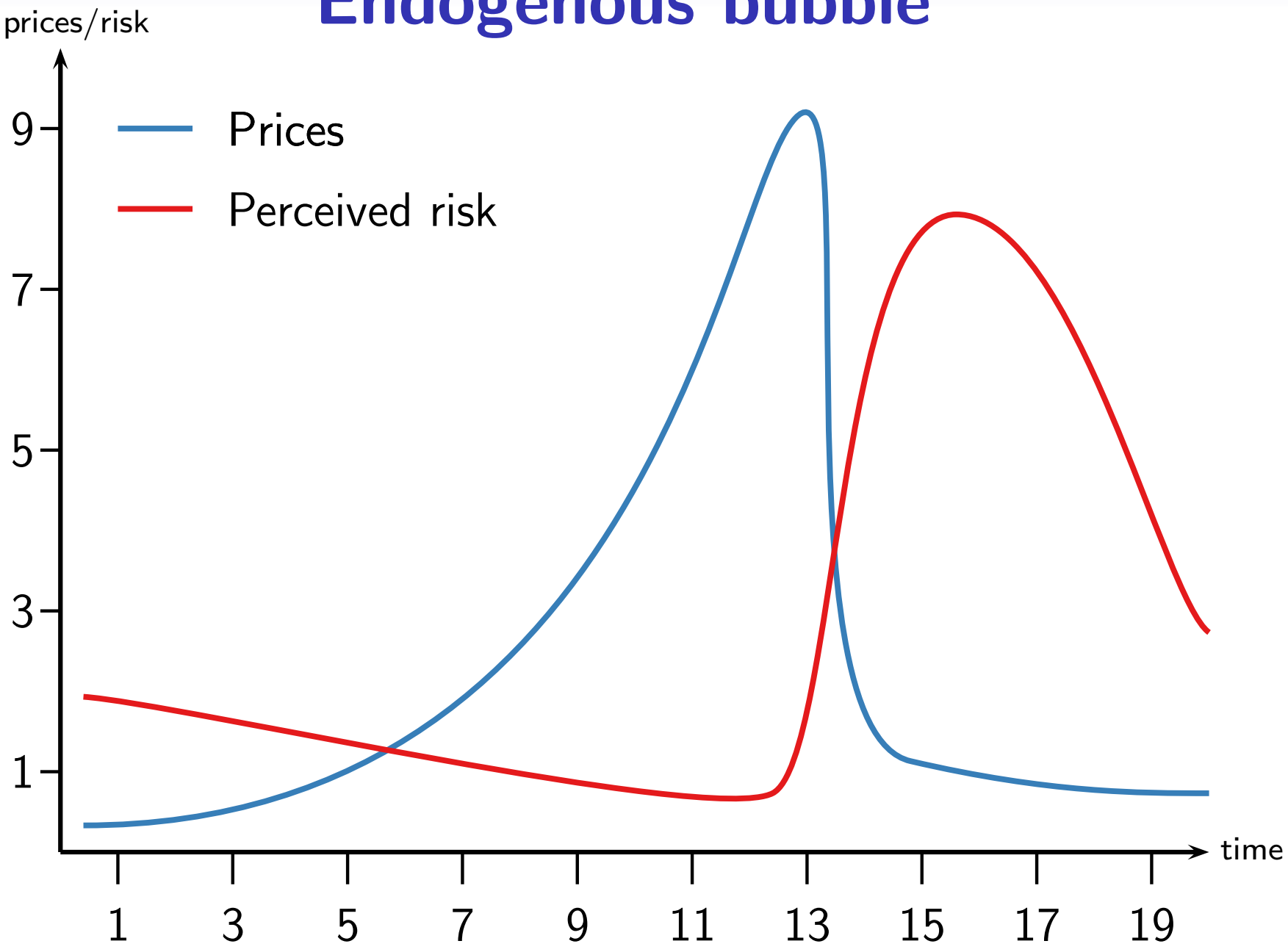
Actual risk: hidden but ever present

- Actual risk arises from the mechanism
- And hidden triggers

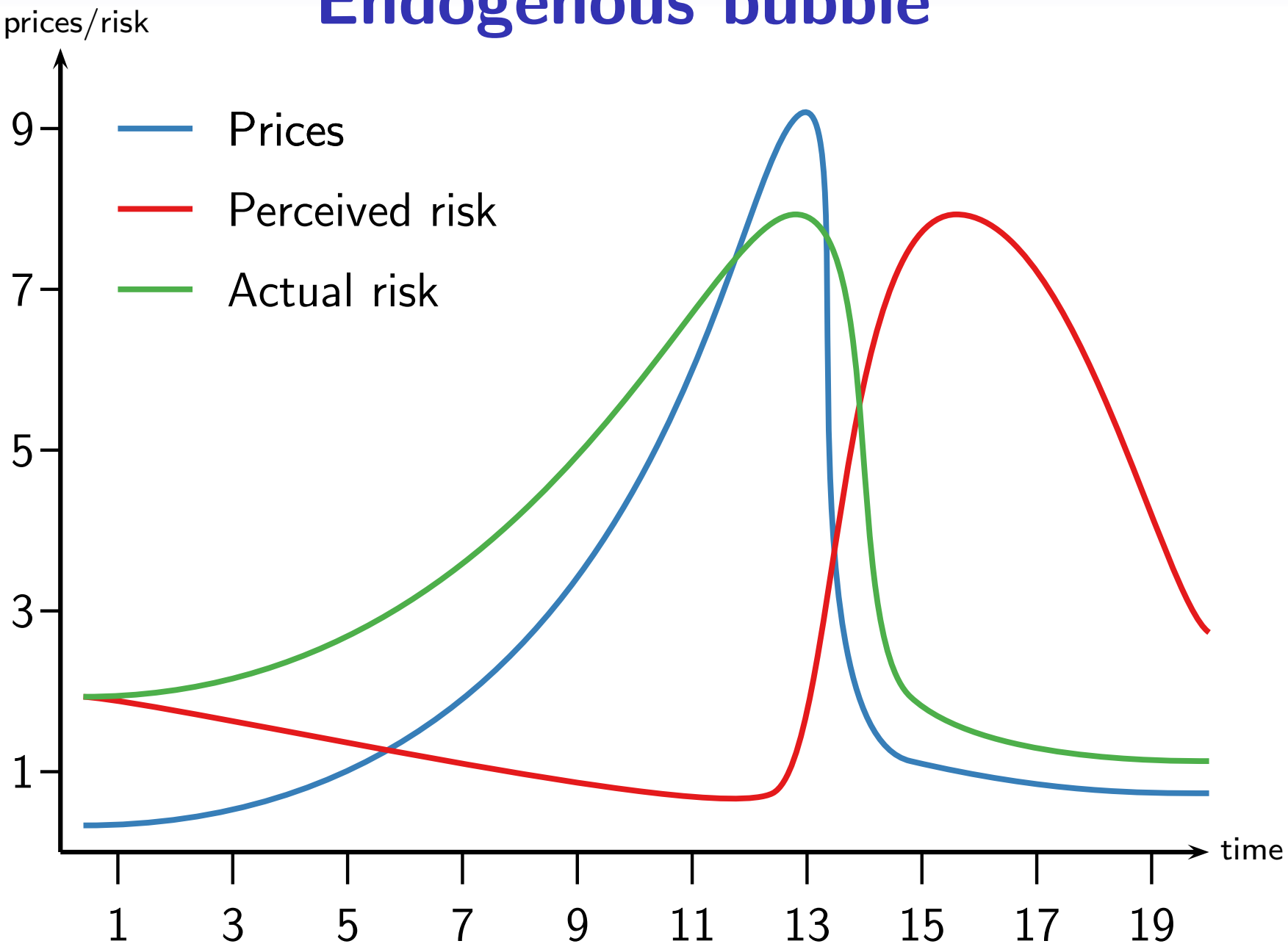
Endogenous bubble



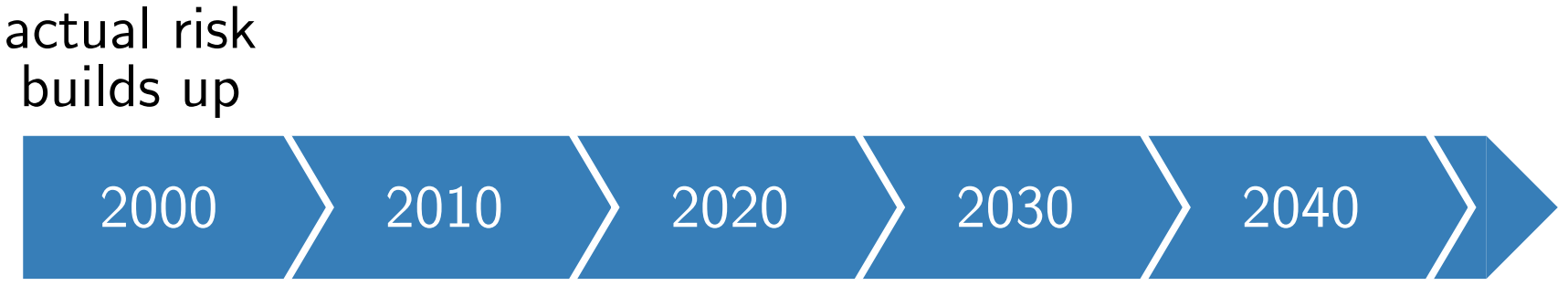
Endogenous bubble



Endogenous bubble



The 42 year cycle of systemic risk



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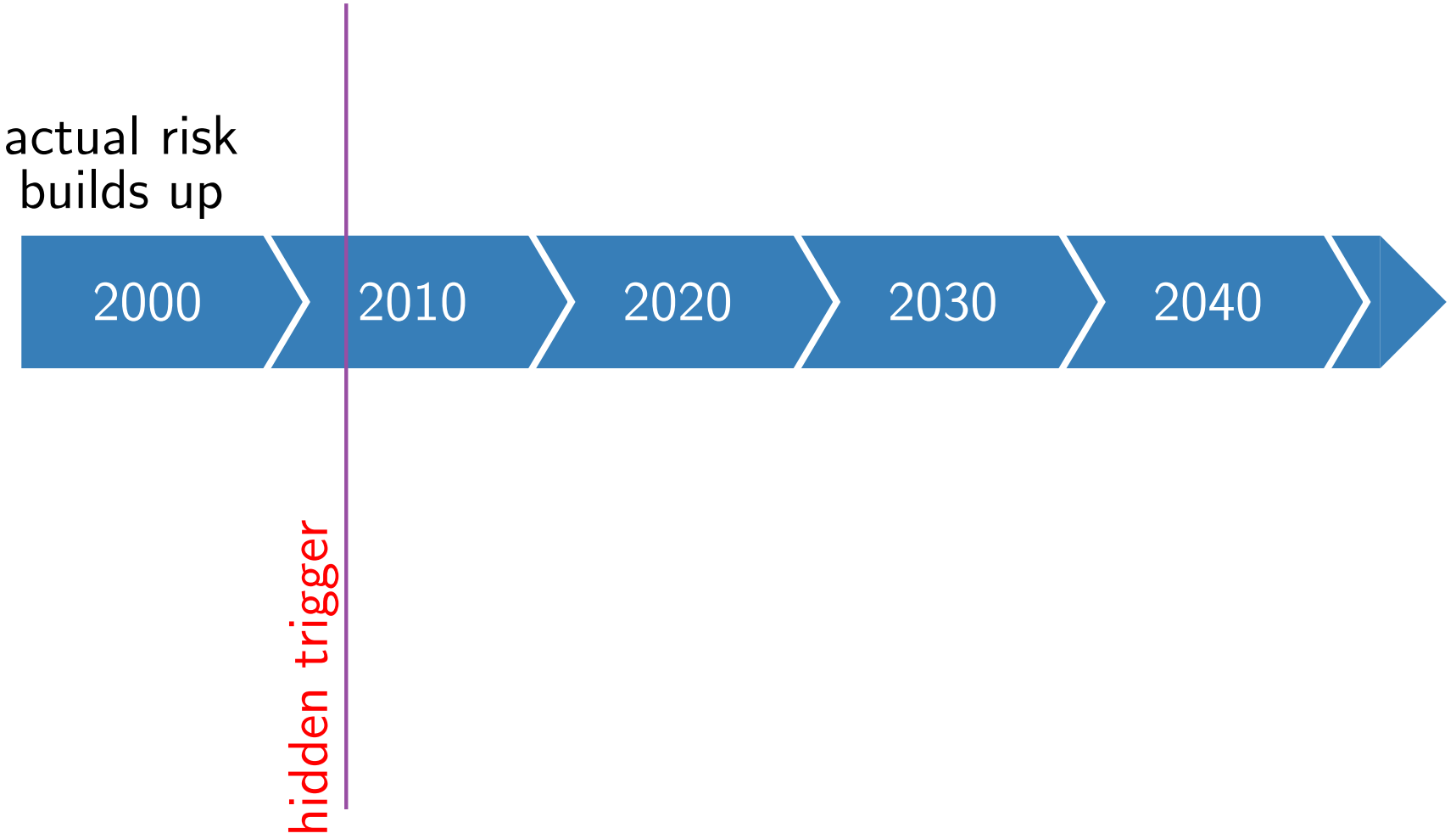

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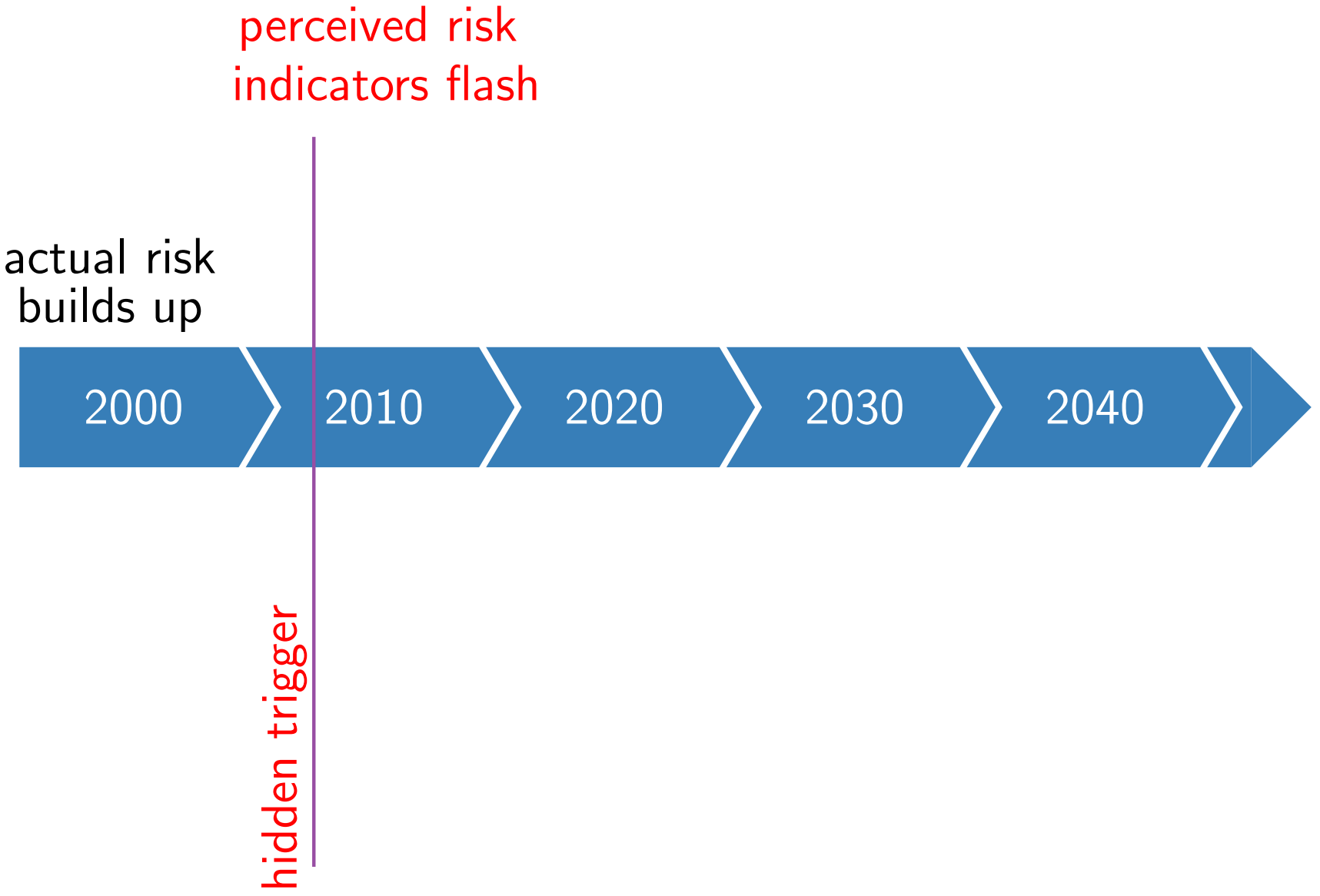

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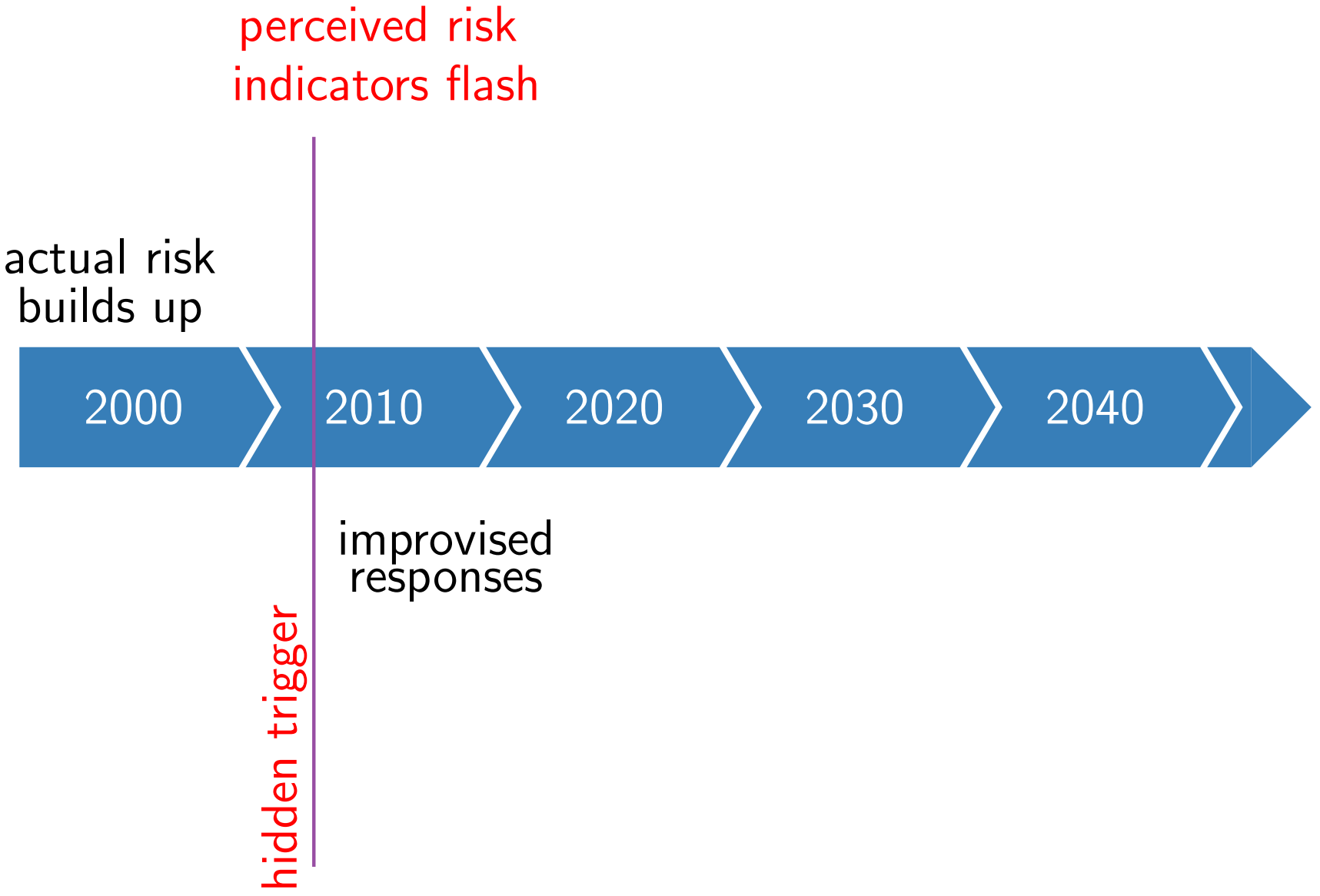

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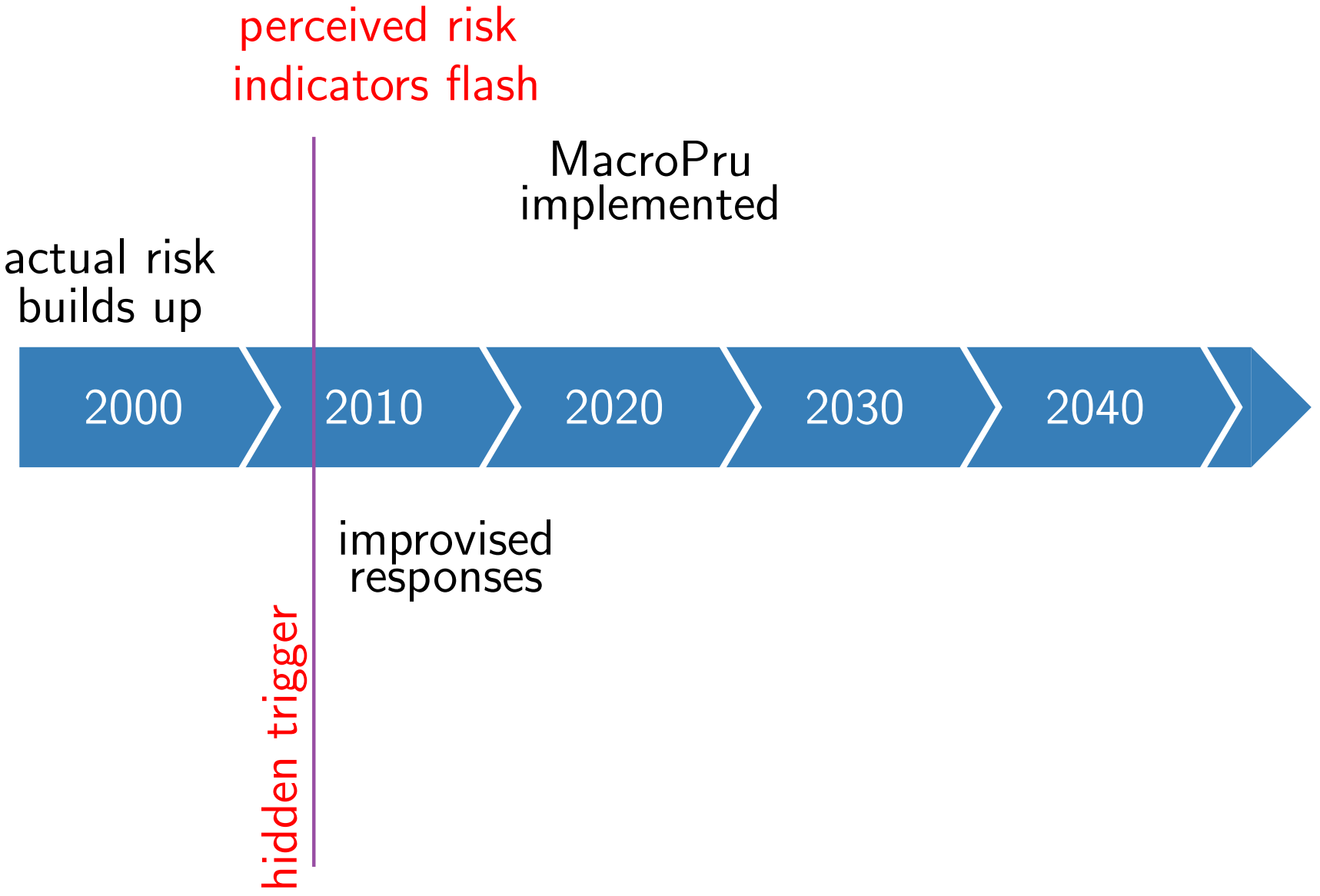

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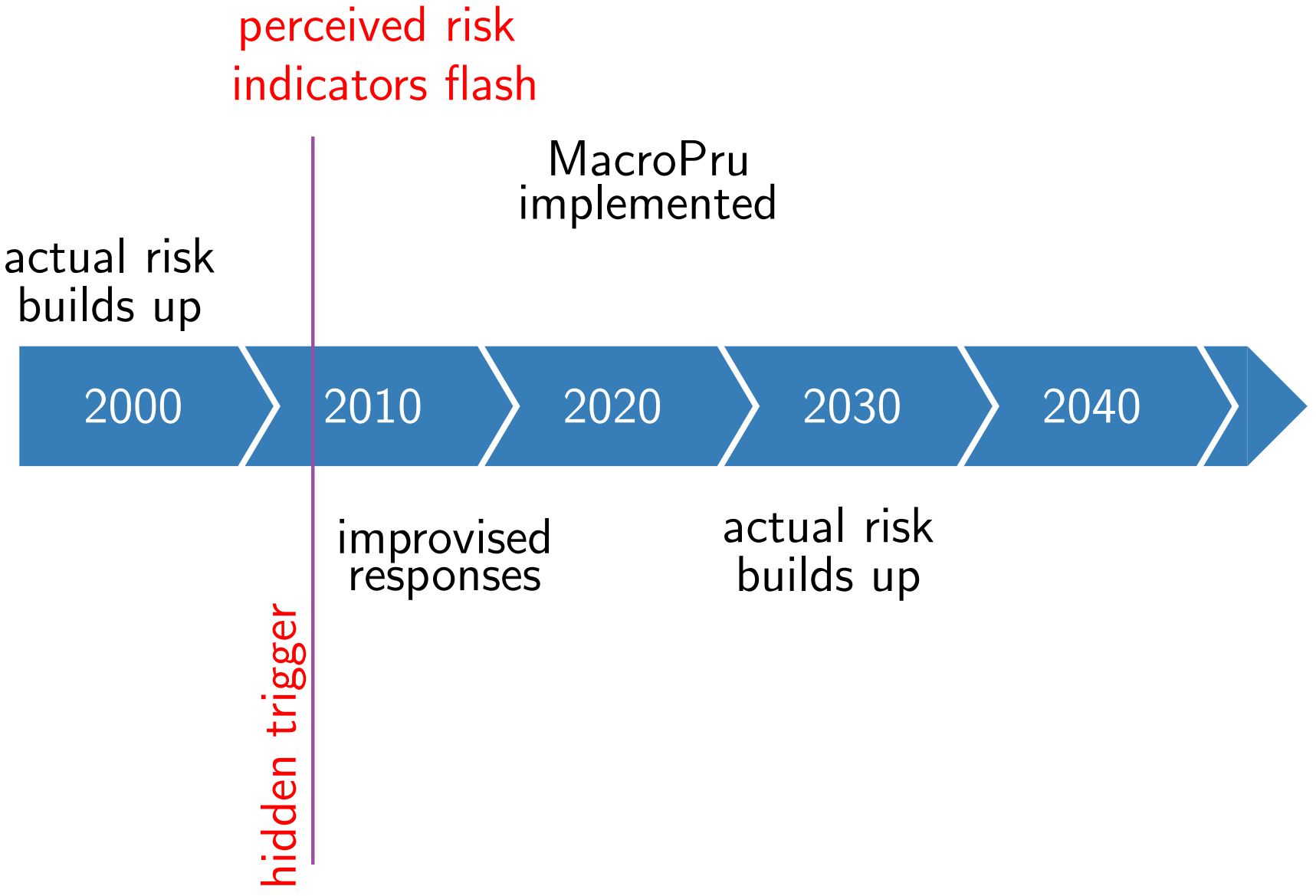

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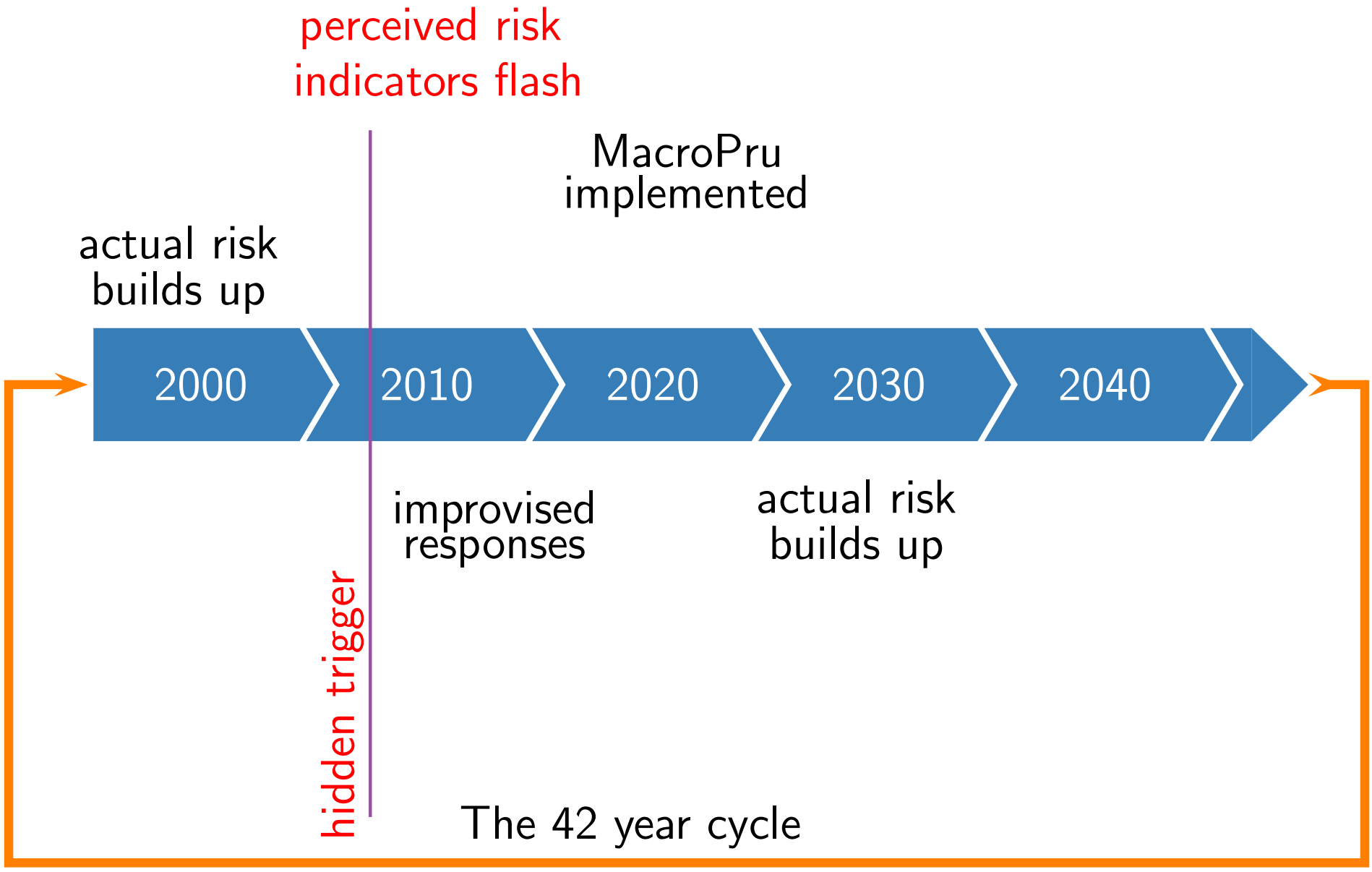

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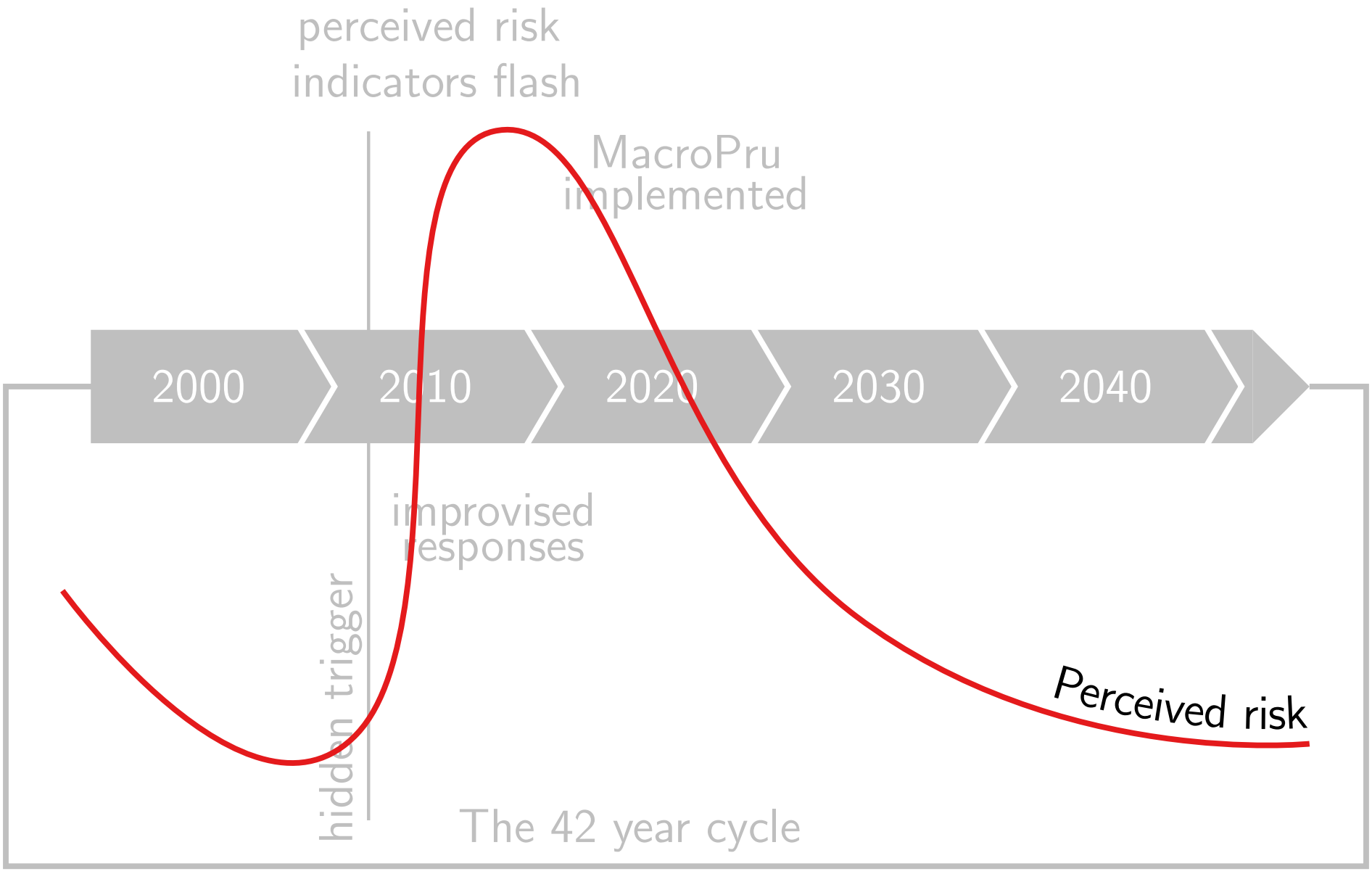

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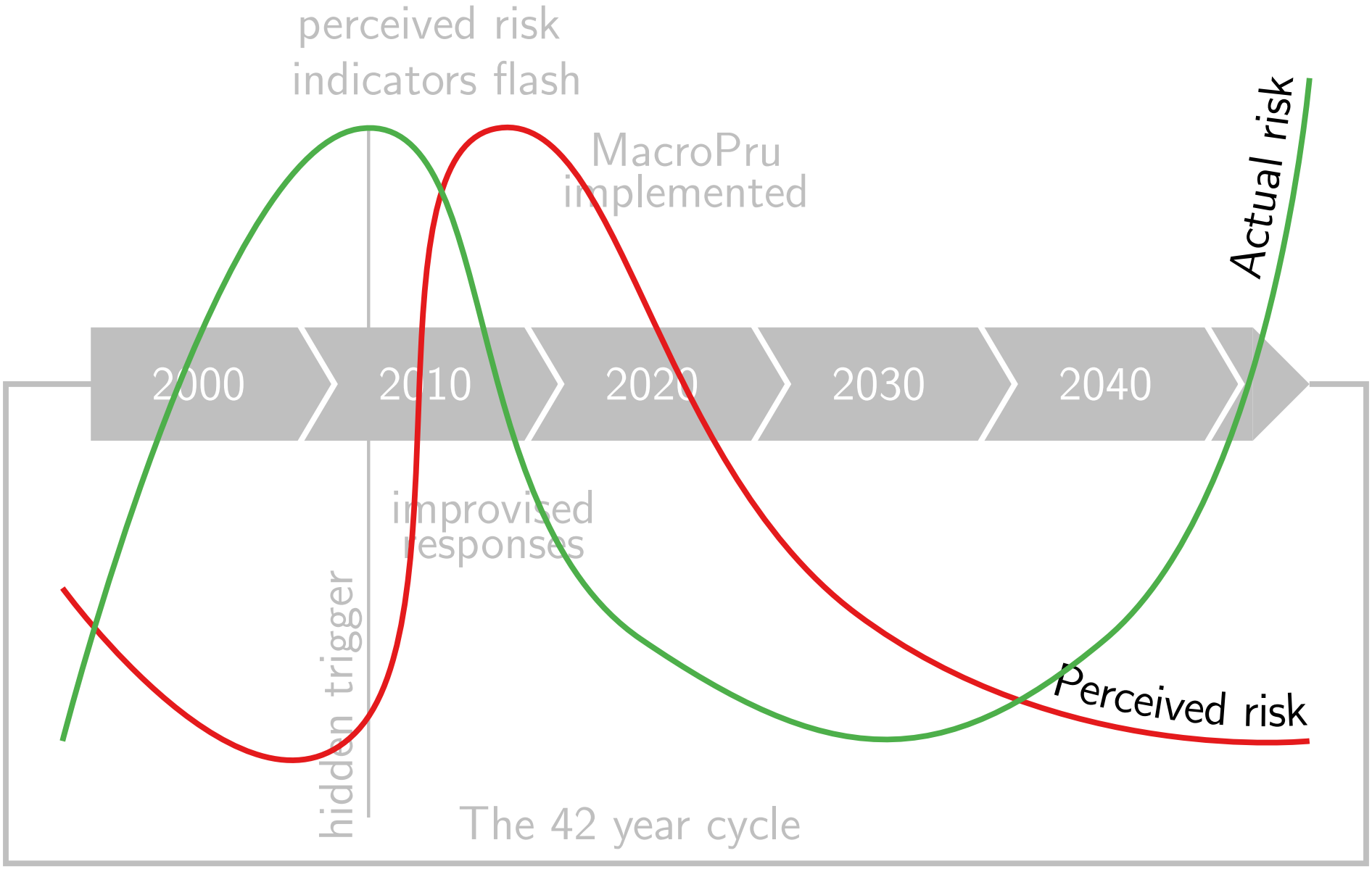

Implications

- By focusing on most measurable outputs, especially market prices and risk indicators, detect too late
  - prices, volatility, CDS spreads all react after crisis starts
  - some indicators may work (credit growth), but type I/II error and political economy arguments
- By implementing policy based on these measurable outputs, risk reacting inappropriately

- Market prices during periods of calm are a poor input into forecast models
- They are not informative about the distribution of prices that follow after a crisis is triggered
- Price dynamics during one crisis are quite different from the next, limiting the ability to draw inference from crises events

Risk models underestimate risk during calm times and overestimate risk during crisis — they get it wrong in all states of the world

Financing small and medium-sized enterprises

The capital markets union (CMU)

Dilemma

- How can we implement effective macro prudential policies that simultaneously
  1. allow banks to take enough risk to contribute to economic growth
  2. without an excessively high chance of financial crises
- We may have gone too far into the safety direction

Post crisis response

- Make bank safe at all costs
- Sharply increase bank capital
- The impact studies said this would not be costly (next slide)

Faulty assumptions

- The impact studies assumed banks would reduce lending uniformly
- But, some types of lending have higher capital charges than others
  1. they make it much cheaper to lend to the largest companies and for real estate and asset purchases
  2. than for small and medium-sized enterprises (SMEs)
- In Europe over 80% of SME funding comes from banks (35% in USA)
- As a consequence, we have a simultaneous asset price bubble and SMEs being starved of credit

The European response

The Capital Markets Union (CMU)

- Launched by the president of the European commission, Junker, summer of 2014
- Aiming to find new ways to fund SMEs
- Focus is on bypassing banks with new sources of financial intermediation, like
  1. Fintech
  2. Securitization

Will it succeed?

Danielsson, Zigrand et al. (2015)

- What is needed is willingness to embrace creative destruction
- The jurisdiction most receptive is London which is actively embracing the new technologies
- But
  1. Tax and legal system gets in the way
  2. Therefore has to work via regulations — a lot of resistance both by regulators and banks
  3. Much effort is being invested in this, but has the wind gone out of the enterprise?

Are asset managers systemically important?

Systemically Important Financial Institution (SIFI)

G20 and SIFIs

- The G20 instructed the FSB in 2011 to investigate whether asset managers and insurance companies should be designated as SIFIs
- Some banks, including Mizuho, are already SIFIs (1% extra capital)
- Banks generally seem to have little objection to this and may quite possibly welcome being SIFIs
- The insurance companies and asset managers strongly oppose
- The insurance companies already lost the fight
- The verdict is still out on asset managers

The official case

- FSB-IOSCO report (2015) sends mixed signals but seems to be in favor (the two agencies apparently disagree)
- The case is mostly based on size
- They say that asset managers are very big, opaque, we don't understand them, we know what happened with the big banks in the crisis, and better safe than sorry
- That we better regulate

Our analysis

Danielsson and Zigrand (2015)

- Size is the wrong approach to the problem
- The crucial test is

Suppose a fund acts in a way that creates systemic risk. If the same investments had instead been made directly by end investors, would they have behaved differently, in a way that did not create systemic risk?

- If the answer is no, there is no benefit in designating asset managers as SIFIs
- It is not obvious how asset managers create endogenous systemic risk *above and beyond* what the end investors would do regardless

Conclusion

Conclusion

- Systemic risk builds up out of sight and only materializes when a hidden trigger is hit
- Risk sensitive safeguards generally focus on perceived risk, and therefore may lead to undesirable outcomes
    - too much risk pre–crisis, too little post crisis
- One should not focus on individual crisis events but on the mechanism that leads to them
- The probability of outcomes is relatively unimportant ex–post, and impossible to quantify ex–ante
- Policy should focus on maximizing heterogeneity and minimizing complexity