

Food price stabilization in an open country

Christophe Gouel

World Bank (DECARG) – CEPII

May 3, 2012

Questions

What is the optimal food price stabilization policy in a small open economy when consumers are risk averse?

▶ Is increasing buffer stocks a good answer to food price instability?

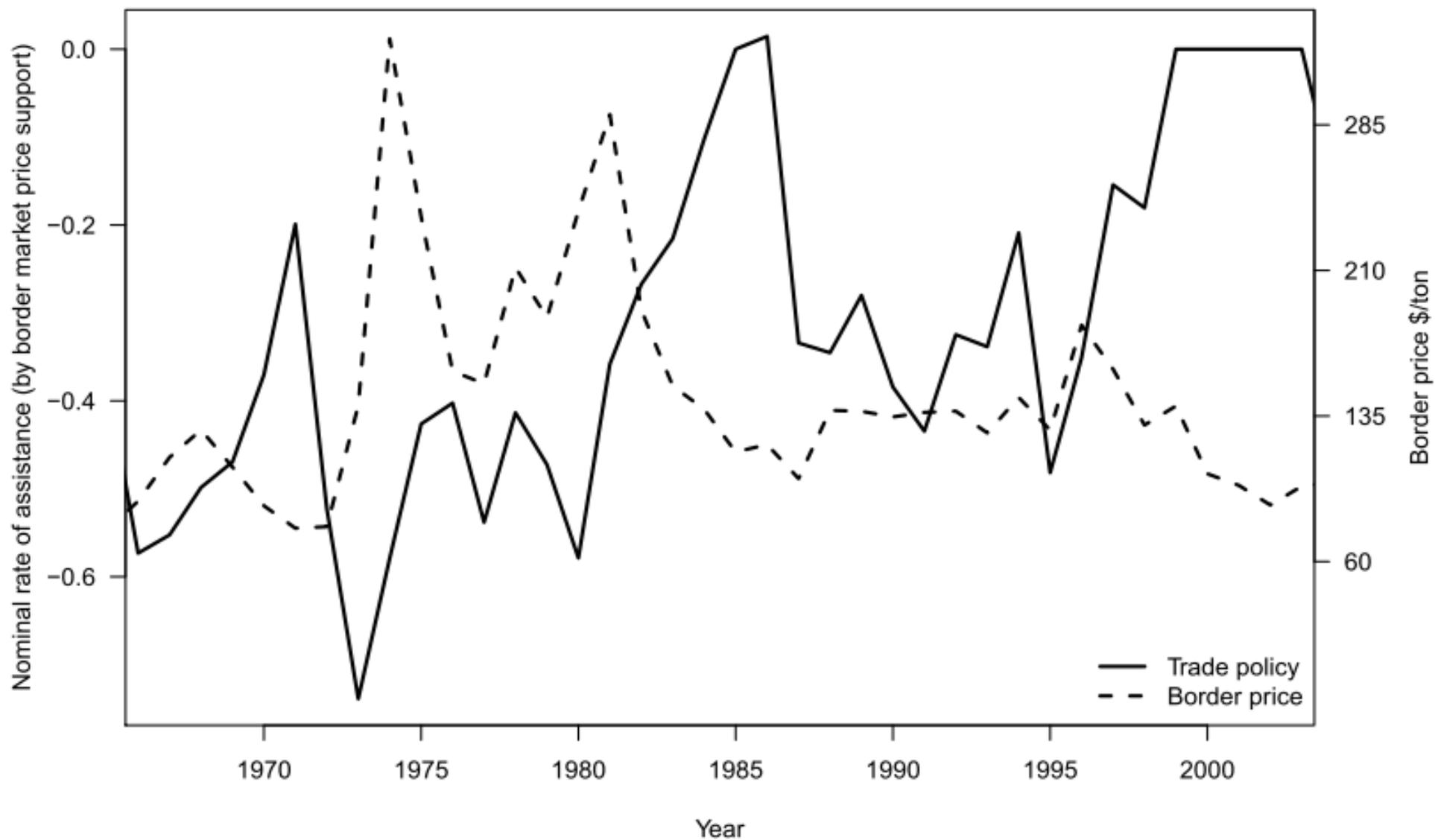
▶ What is the optimal combination of trade and storage policy?

Delicate situation for an economist: trade policies known to be non-cooperative and to hurt trade partners.

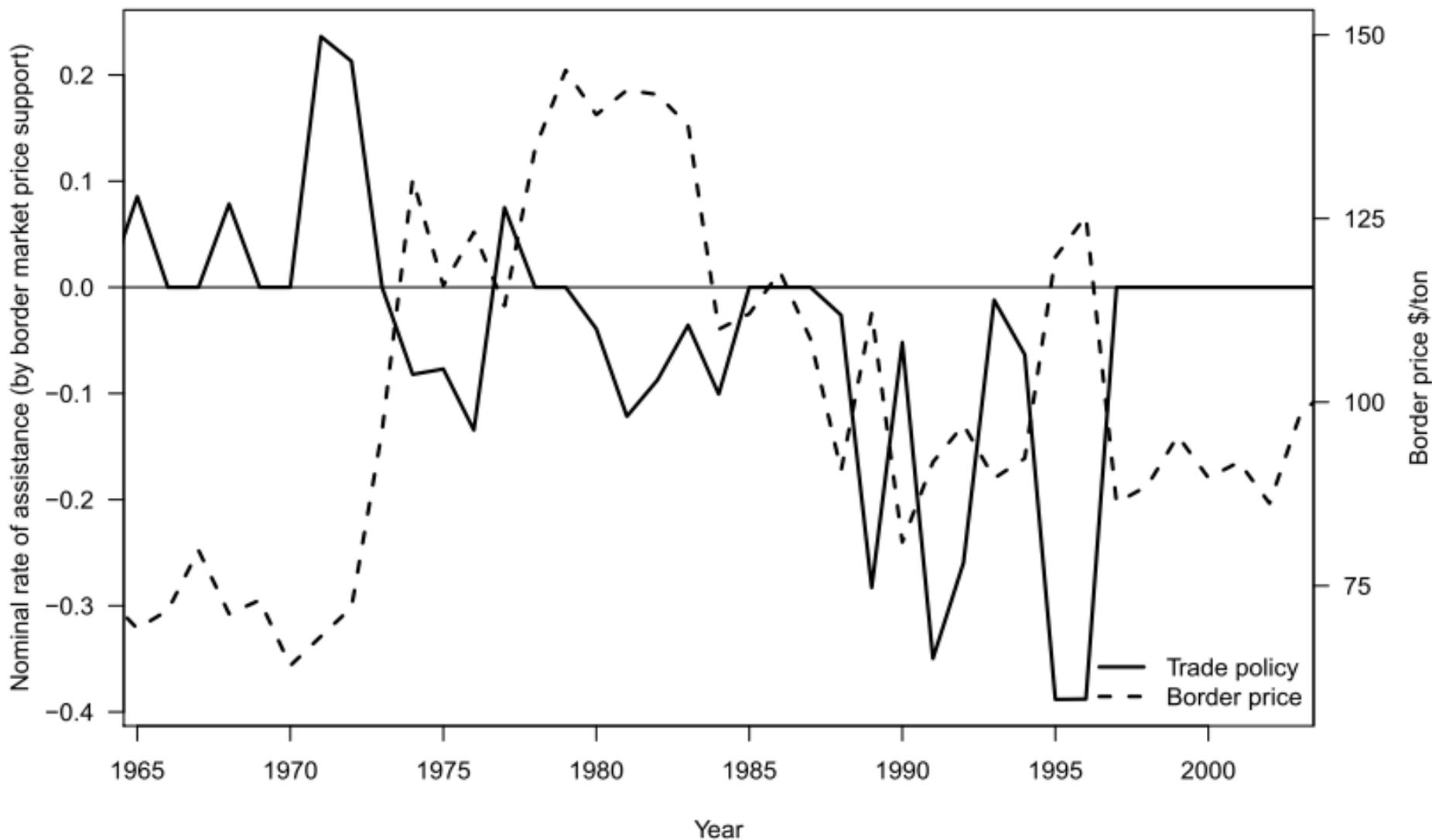
Policy makers aversion to price risk

- ▶ Large use of trade policies in the two recent food price spikes (evidence of counter-cyclical agricultural trade policies, Andersen & Nelgen, 2012):
 - Exporters have used export restrictions to isolate their markets.
 - Many importers reduce their tariffs to reduce their domestic price volatility.
- ▶ Push for safeguards against low prices

Indian rice trade policy



Indian wheat trade policy



Policy situation

- ▶ Policy advice from economists: don't mess with the price distribution, go for safety nets!
- ▶ But even countries with large systems of safety nets use price stabilization policies (e.g., India). Why?
 - Safety nets may be imperfect?
 - They are targeted, so part of the population will have to bear the burden of higher food prices \Rightarrow politically, relying only on safety nets may not be feasible.
 - It may be less costly to use export restrictions than to scale up safety nets.



It seems likely that price stabilization policies will be here for a long time.

Our approach

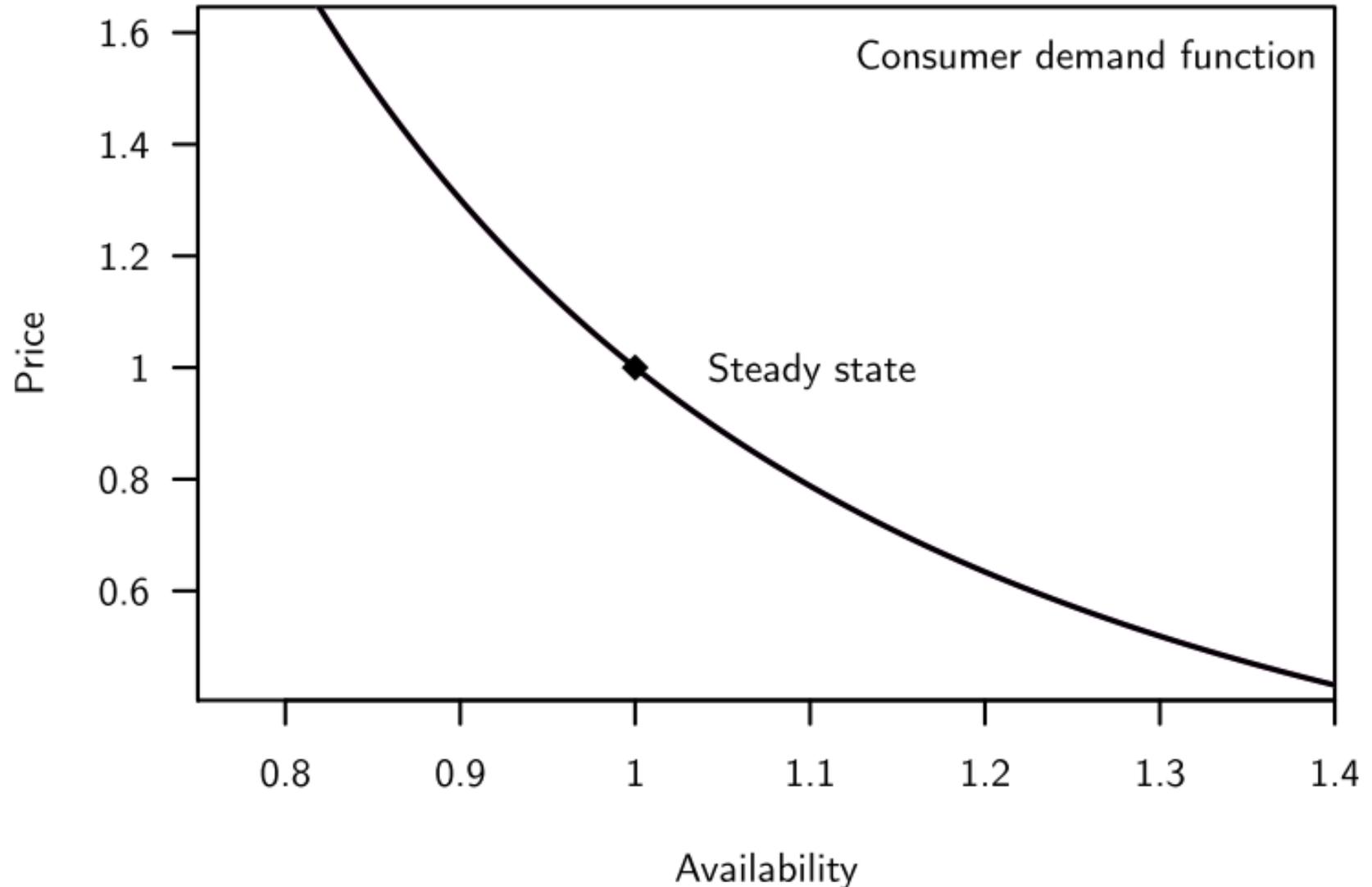
Small model representing cereals market of a small open developing country

- ▶ Storage
 - Private storage without public intervention.
 - Storage subsidy (decentralizes storage policy to private agents).
- ▶ Stochastic shocks to domestic and world yields.
- ▶ No supply response to price.
- ▶ Normally self-sufficient country
 - Differences between import parity and export prices
- ▶ Risk-averse consumers ($R=2$)
- ▶ World market is infinitely large with respect to the country and there are speculative storers in the world market.

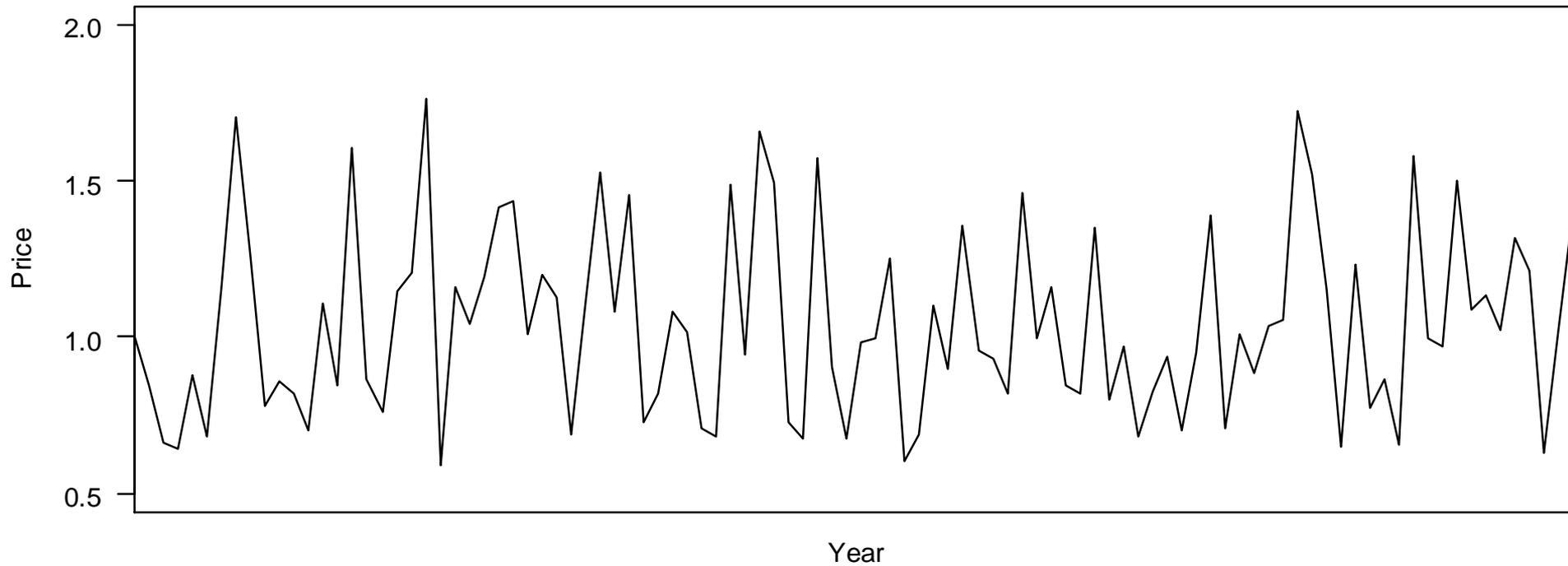
Interest of this approach

- ▶ **Taking policy-makers seriously**: there is a reason to use stabilization policies
 - Can they be better designed?
- ▶ Consistent representation of the **world market**.
Need to account for
 - storage abroad;
 - for the fact that the world market can help smooth production shocks, but also subjects the country to shocks independent of its domestic market equilibrium.
- ▶ **Endogeneity of expectations**.

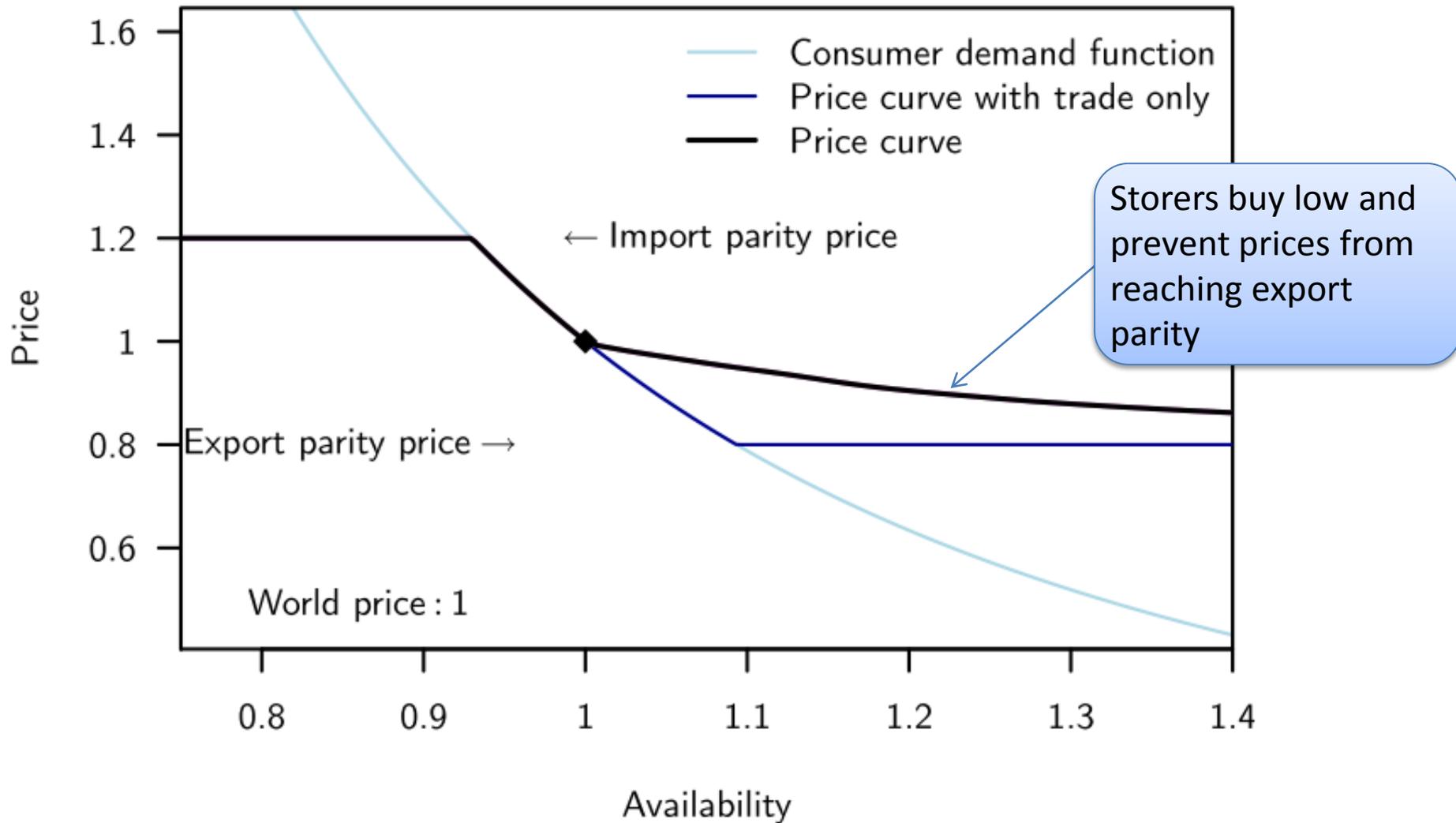
Price behavioral diagram without trade and storage



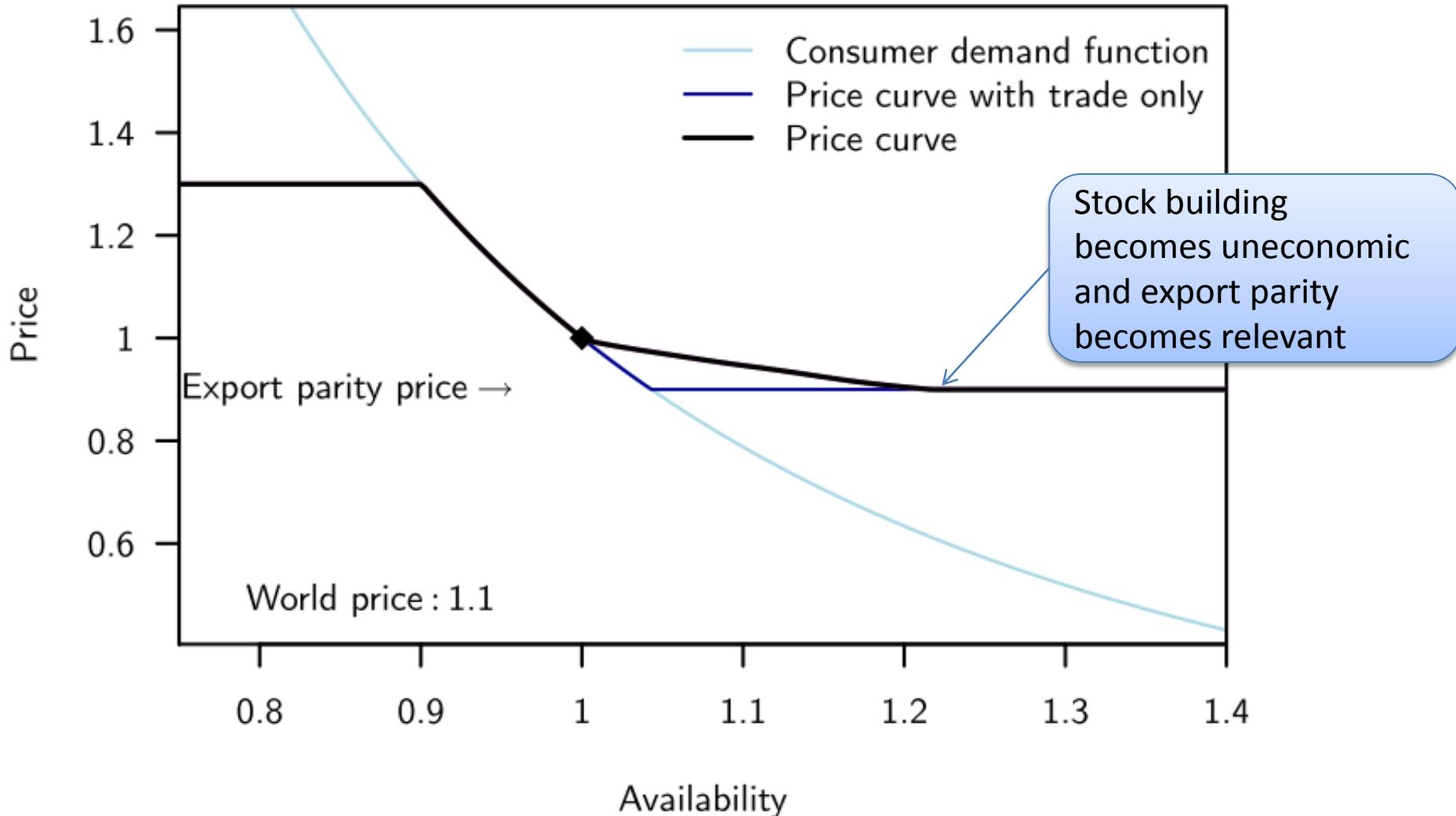
Price simulation without trade and storage



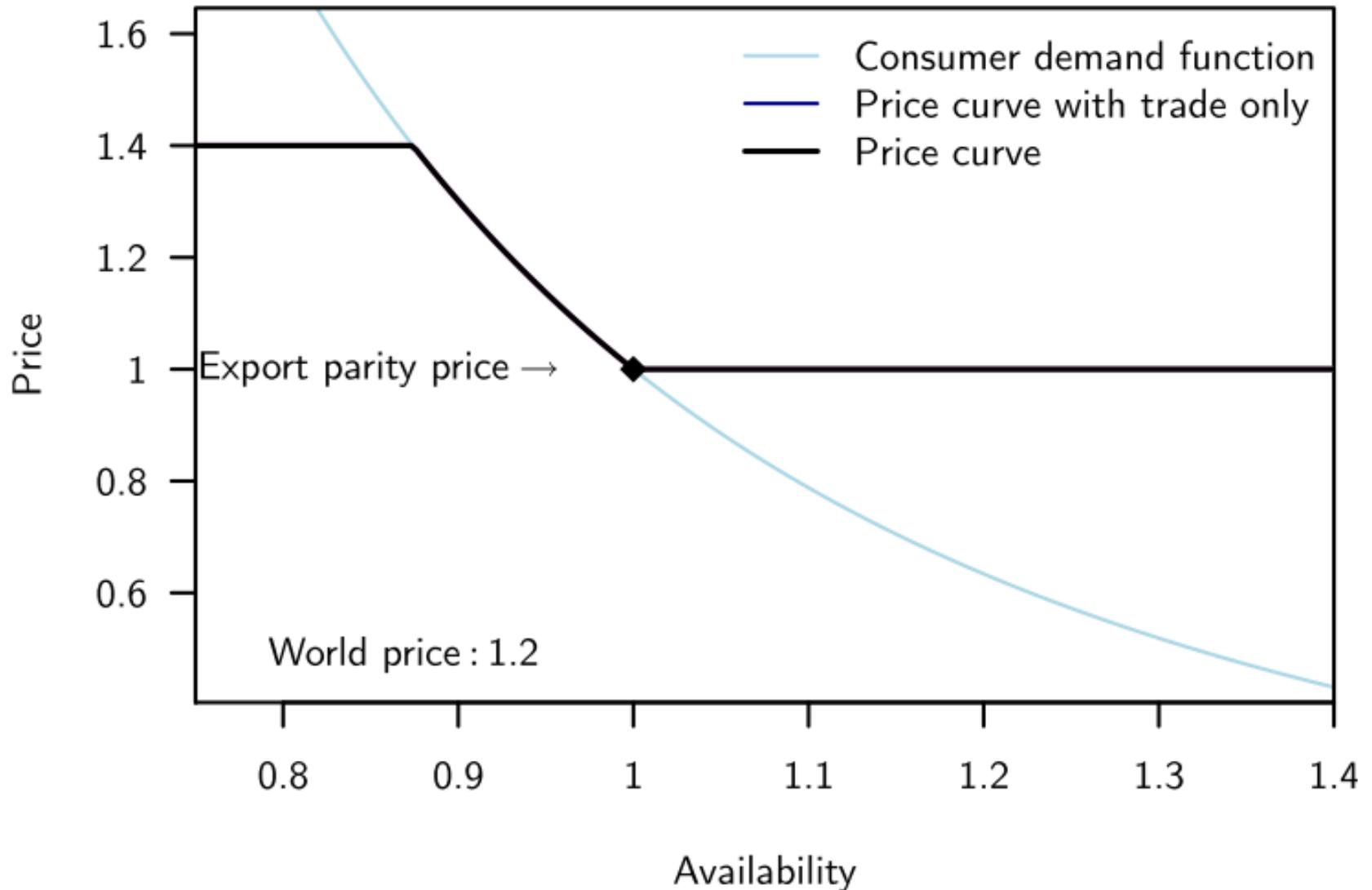
Trade and storage – Medium world price



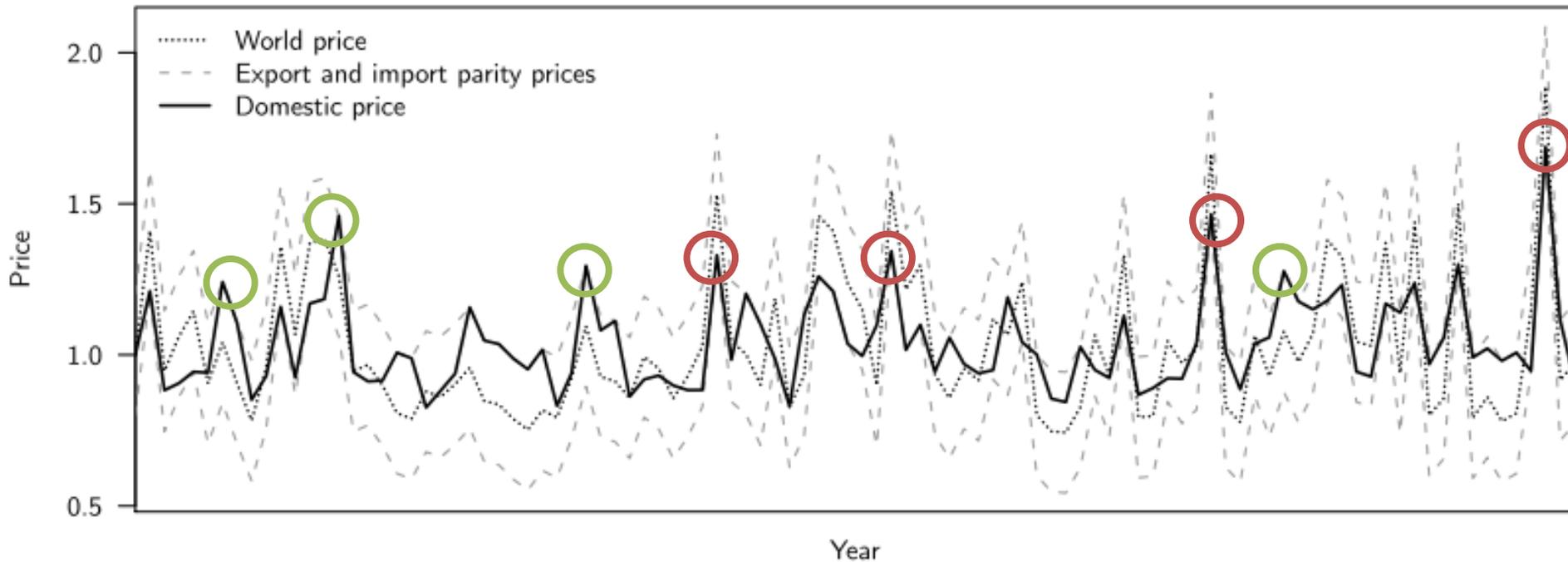
Higher world price



High world price = No storage



Simulated price history without public intervention



- Private storers provide stabilization: they **buy low and sell high**.
- Trade imposes a **moving price band** between
 - export parity price
 - import parity price

Optimal policy approach

Consumers dislike risk, but this is not accounted for by private traders or storers.

Public intervention could improve welfare in this setting

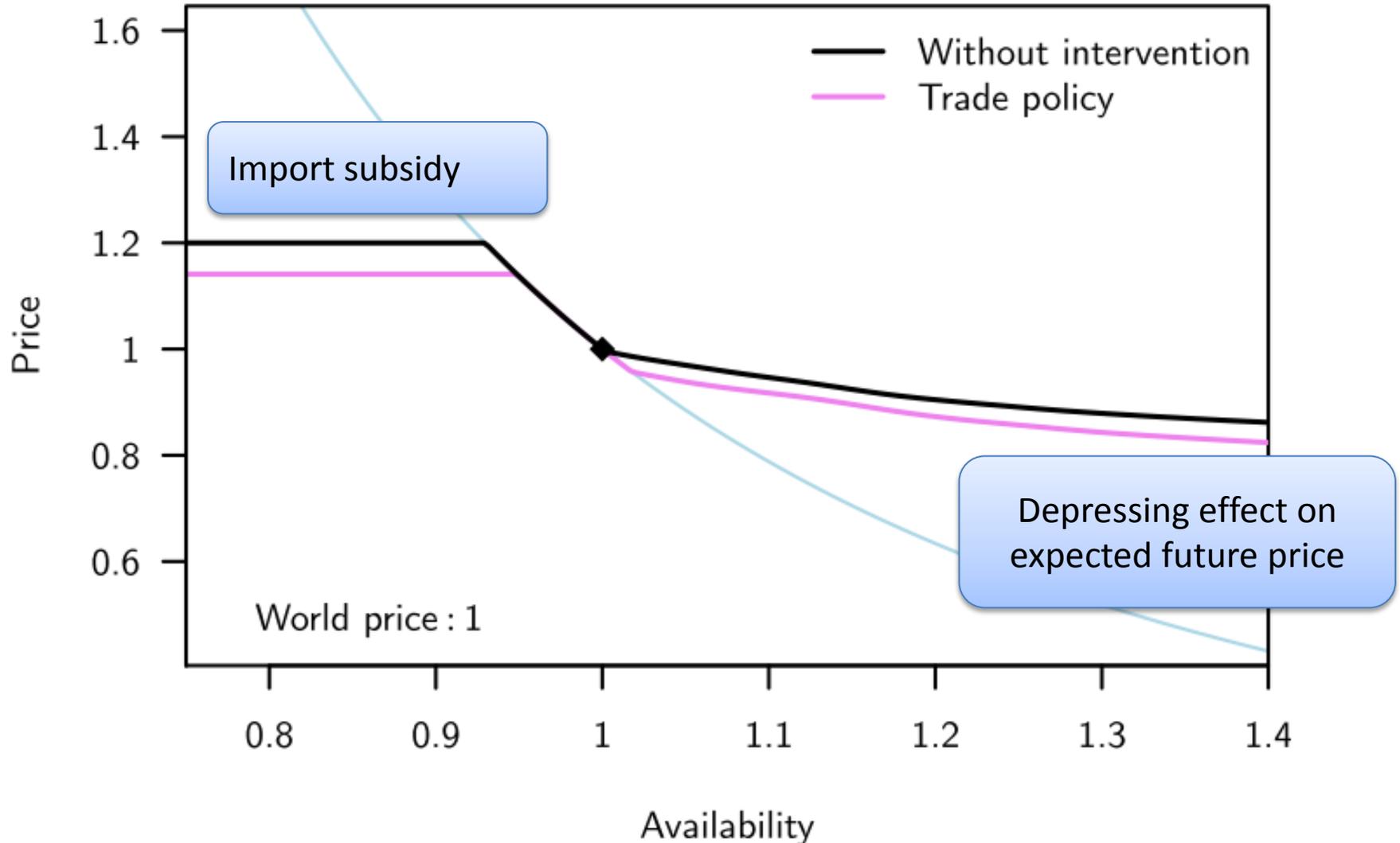
Best policy \Rightarrow **countercyclical safety nets.**

Here second-best policy: **price stabilization policy** with

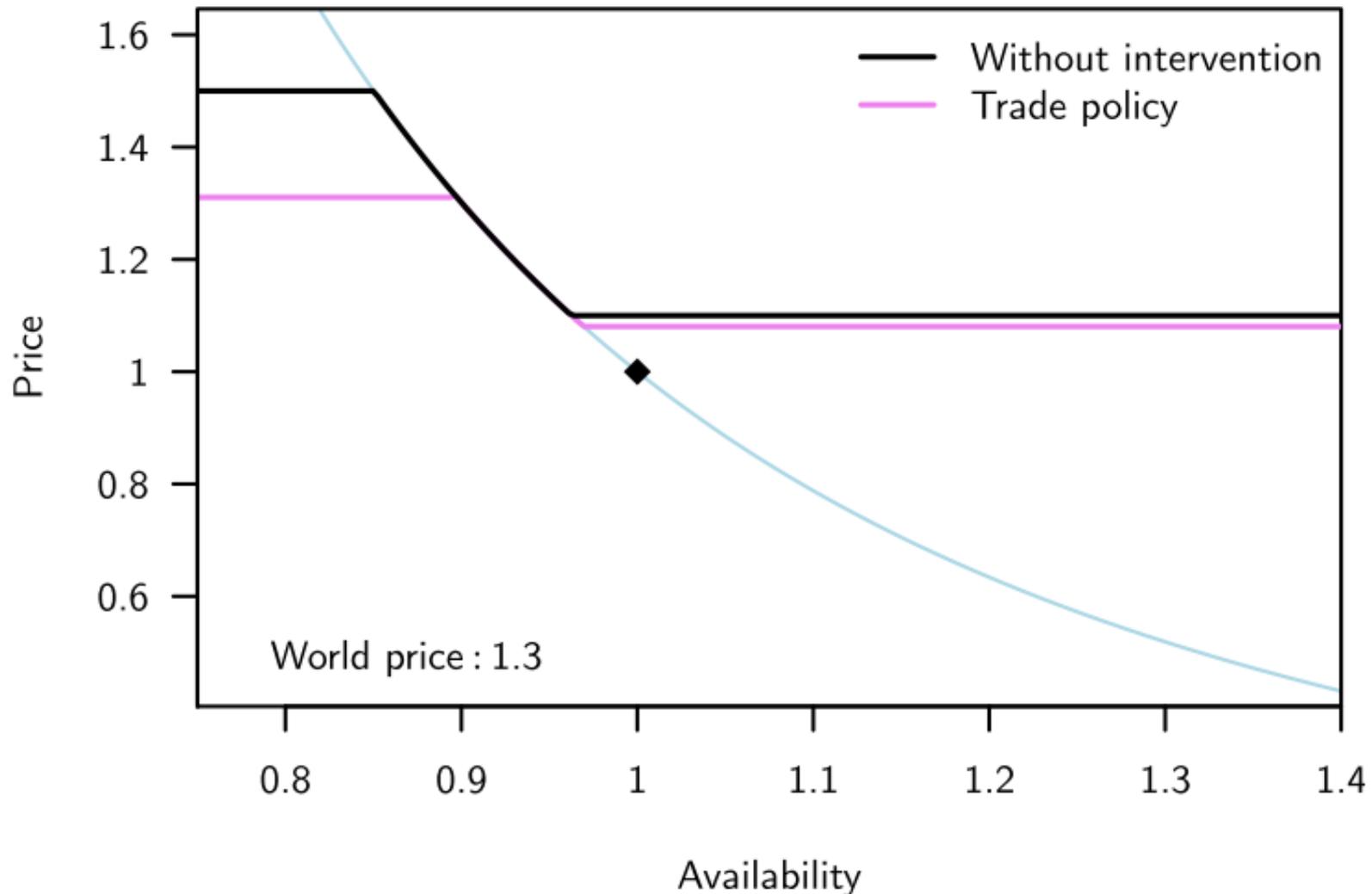
▶ Trade policy

▶ storage policy.

Optimal trade policy – Medium world price



High world price: export tax and large import subsidy

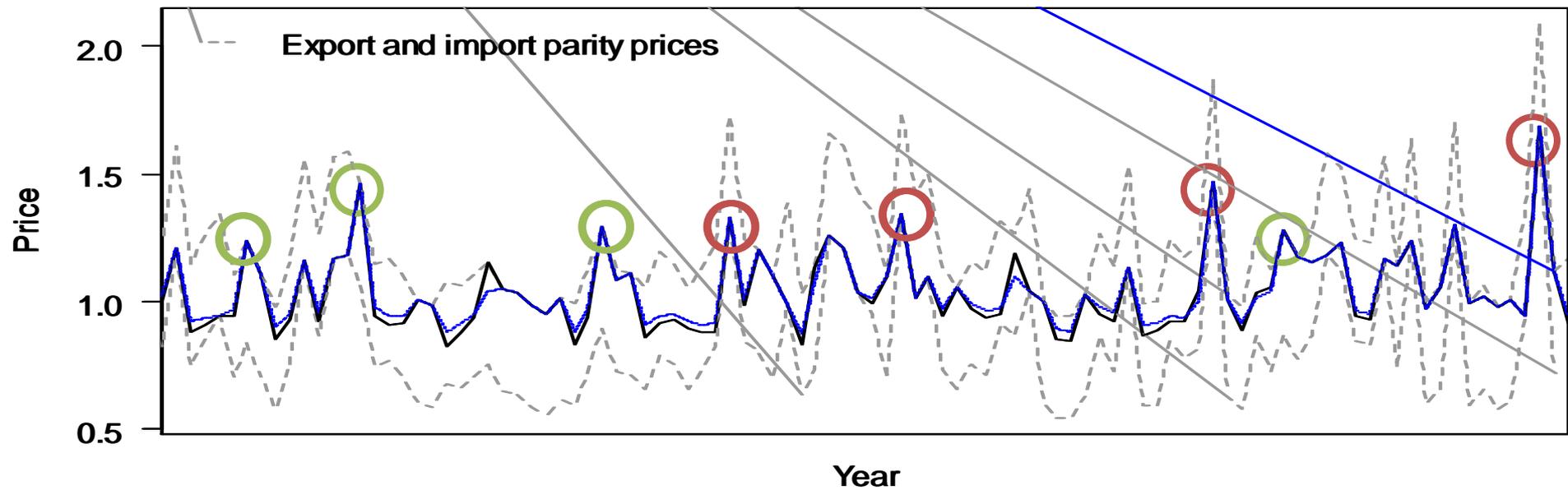
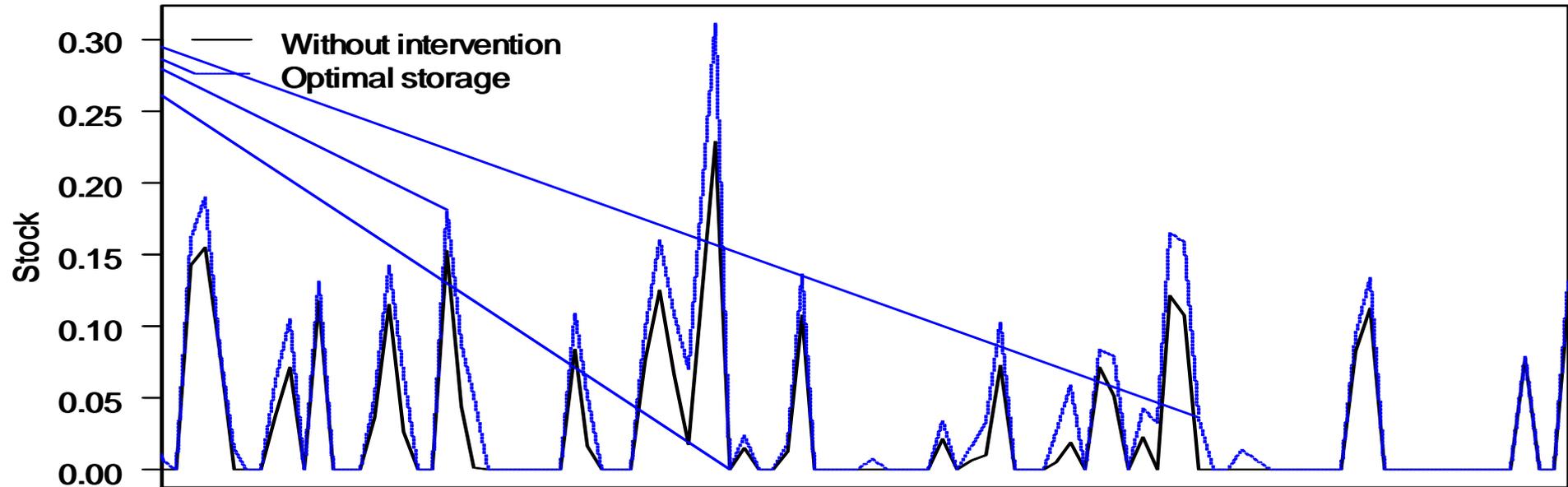


Optimal trade policy

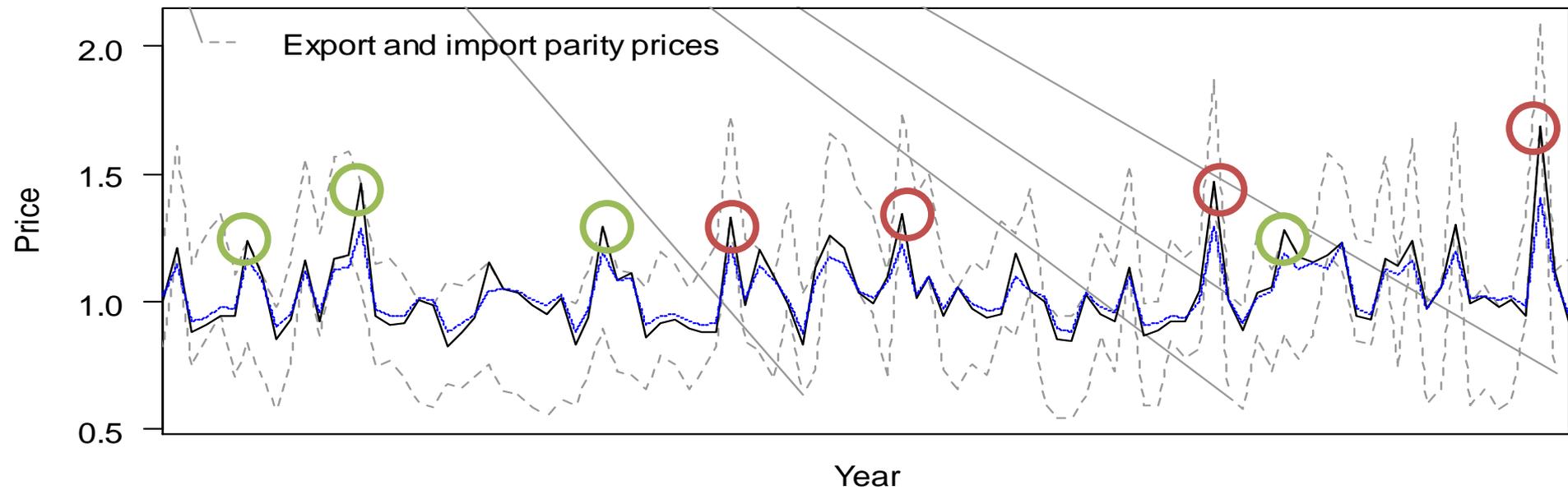
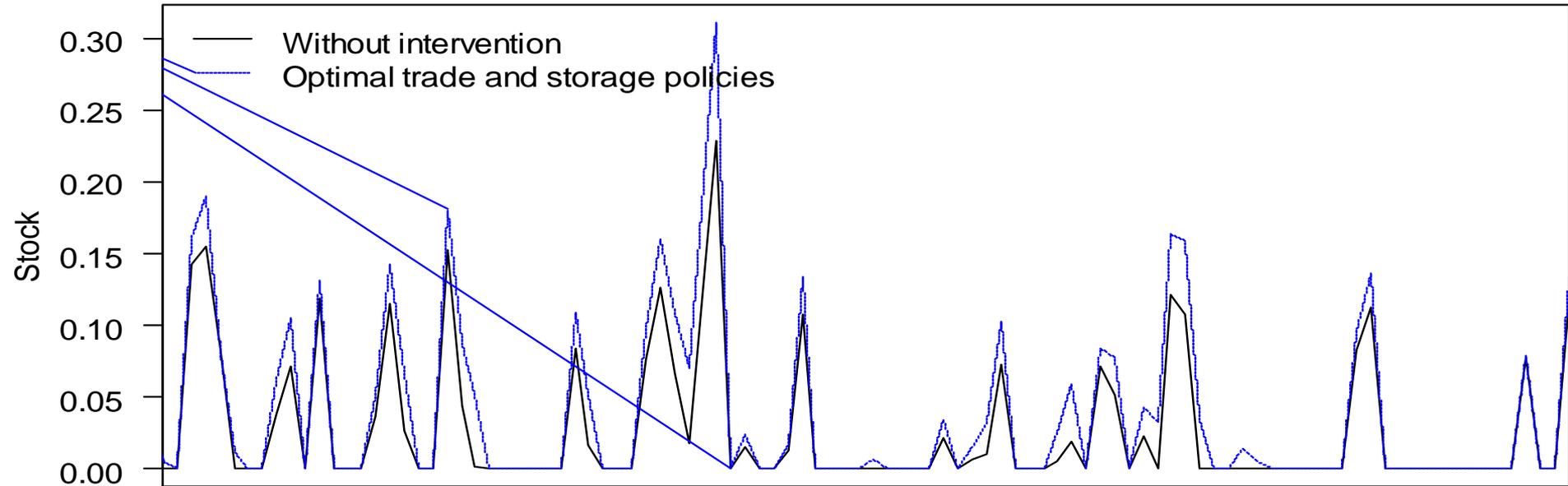
- ▶ Subsidize imports at low availability
- ▶ Tax exports at high availability
- ▶ \Rightarrow trim high prices from the distribution
- ▶ Export subsidies may happen, but only rarely.

In reality, we do not see import subsidies so often, but **decreases in import tariffs** are very common.

Optimal storage



Optimal trade and storage policies



Price and welfare results

Benchmark Trade policy Storage subsidy Both

Statistics on the asymptotic distribution

Mean price	1.045	1.020	1.054	1.034
CV of price	0.173	0.141	0.159	0.121

Welfare effects (% of commodity budget share)

Consumers		2.47	-0.94	1.05
Producers		-2.53	1.08	-0.92
Government		0.12	-0.12	-0.03
Total		0.06	0.03	0.10

Conclusion

- ▶ Stabilization by storage alone may not protect consumers because of the leakage to the world market.
 - A storage policy alone is effective at raising low prices, but not high prices (link to the world market & non-negativity).
- ▶ Trade policy can reduce volatility significantly, but strongly reduces incentive to store.
- ▶ A combination of trade and storage is preferred
- ▶ Food price stabilization policies entail distributive effects much larger than the total welfare gains
 - welfare effects are dominated by mean price changes rather than volatility change.

Limits of the approach/Possible extensions

- ▶ **Introducing supply reaction** would have ambiguous effects
 - Risk-averse producers may enjoy decreased price volatility and increase production levels.
 - Trade policies reduce volatility, but also incentives to produce.
- ▶ **Optimal simple rules**: find simple trade and storage rules that could mimic optimal ones or simple trade interventions.
- ▶ Extension to a **large country**.

Thank you for your attention