

Agricultural price instability and optimal stabilisation policies

PhD Defence

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Context

Agricultural price instability is costly:

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To mitigate these effects most countries pursue some kind of stabilisation policies:

- Countercyclical agricultural trade policies (Andersen & Nelgen, 2010),
- Self-sufficiency in major cereals (China, India),
- Staple food subsidies (MENA),
- Insurance subsidies or commodity price policies in developed countries,
- ...

Are these policies justified and properly designed?

2 economic questions:

- Is it possible to improve the situation through public intervention?
 - In developed countries, the answer is ambiguous since producers have many ways to insure against their risk.
 - In developing countries, insurance possibilities are extremely limited, and the risk for consumers may be very high given their important food budget share.
- If it is the case, what is the best way to do it?

Inspiration from modern macroeconomics

Modern macroeconomics synthesis

- Built around the neoclassical stochastic growth model.
- Study agents' interactions based on their microeconomic behaviour.
- Acknowledge the importance of consistent intertemporal decisions and the endogeneity of expectations.
- Monetary policies are effective in improving welfare since there are many market imperfections (e.g., prices or wages rigidity).

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Introducing a relevant market imperfection

Price instability matters because agents (farmers, middlemen, consumers) are unable to insure against it.

For simplicity, I consider in the thesis only the effect on consumers and assume other agents to be risk-neutral.

Market incompleteness and risk-averse consumers

- Consistent with the literature on the welfare cost of price instability (Waugh, 1944; Turnovsky et al., 1980; Wright & Williams, 1988), which assumes that consumers are unable to insure.
- In line also with Newbery & Stiglitz (1981) approach, which uses market incompleteness as a justification for public intervention.

Which policies?

Considering this market imperfection, there are many ways for government to improve welfare:

- Staple food subsidies,
- Food rations,
- Conditional cash transfers,
- Food-for-work schemes,
- Storage policies,
- Trade policies.

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Policies directly targeting consumers would require heterogeneous consumers to be properly designed.

Methodological challenges I

Defining a consistent welfare objective in partial equilibrium

- Partial equilibrium \Rightarrow Need to carefully account for each agent welfare,
- Usual practice: sum of surpluses, but fails to account for risk-aversion,
- Here definition of a social welfare function weighting the welfare of each agent and valuing risk-neutral agents' welfare to the average marginal value of consumer's utility.

Methodological challenges II

Designing optimal policies with occasionally binding constraints

- Need for recognising the importance of complementarity conditions and the way we can handle them.
- Policy design following the literature on optimal dynamic policies (Kydland & Prescott, 1980; Marcet & Marimon, 1999).
- Development of a Matlab solver for dynamic stochastic equilibrium models with occasionally binding constraints.

Optimal price stabilisation policy

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Problem: create large distributive effects and destabilise producers' income.

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Problem: create large distributive effects and destabilise producers' income.
- Optimal policies show limited problems of time-inconsistency.

Simple rules of storage

Simple rules of storage can generate welfare gains close to fully optimal rules:

- An optimal constant subsidy to private storage is equivalent to a discretionary rule.
- An optimal price-band achieves $4/5$ of maximum welfare gains by being designed in a very peculiar way: the optimal price-band is a price peg.
Alternative choice of bands may lead to welfare loss.

Trade and storage policy

Some results are reversed in **open economy**:

- **An optimal storage policy may decrease consumers' welfare** because it increases mean price.
- Trade policy is the most efficient way to stabilise domestic prices. It consists of:
 - Import subsidies.
 - Export taxes.
- Distributive effects are very important and dwarfs efficiency gains.
- Export restrictions are essential to render the stabilisation policy beneficial to consumers.

Conclusion

This thesis has set up a framework for designing optimal food price policies.

Price stabilisation policies can improve welfare, but:

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The results should be seen as benchmark, not as policy recommendations.

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- The risk-premium from an EU framework accounts for static effects, but neglects dynamic effects and **peculiarities of food consumption**.
- Dynamics:
 - Decrease investment in health and in children education.
 - Lower food consumption entails long-run health problems and a lower productivity.

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Problem which can be analysed as a **two-sided lack of commitment problem**: what is the trade equilibrium when the countries cannot commit to not restricting export?

Thank you for your attention.