EXPORT RESTRICTIONS ON WHEAT MARKETS IN SERBIA DURING GLOBAL COMMODITY PRICE PEAKS – DID CONSUMERS REALLY BENEFIT?

Ivan Djuric, Linde Götz and Thomas Glauben
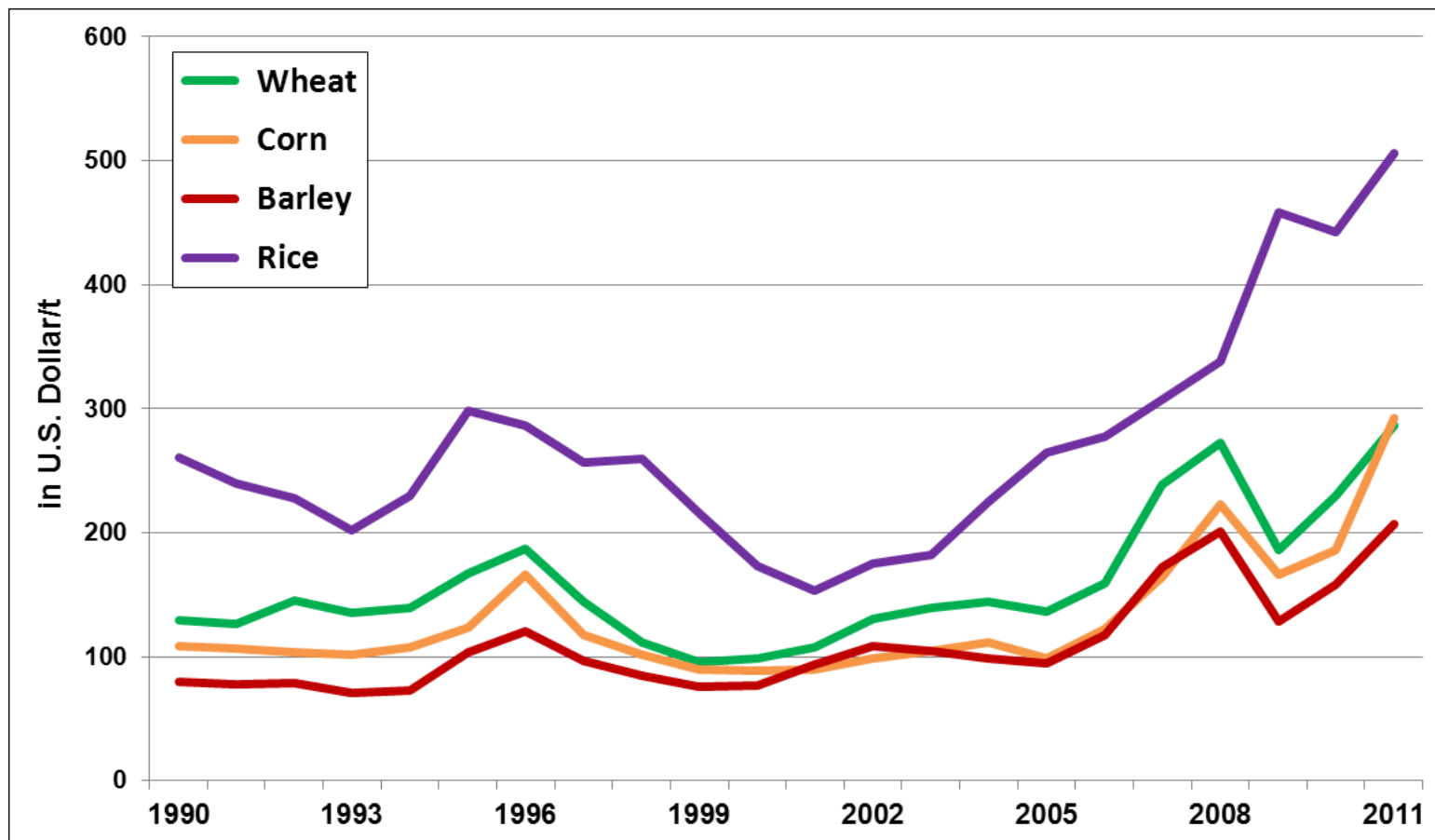
IATRC Annual Meeting

- NEW RULES OF TRADE -

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Global commodity price peaks 2007/08 and 2010/11

- Significant price increase of cereals and other commodities (since 2007).

Source: World Bank

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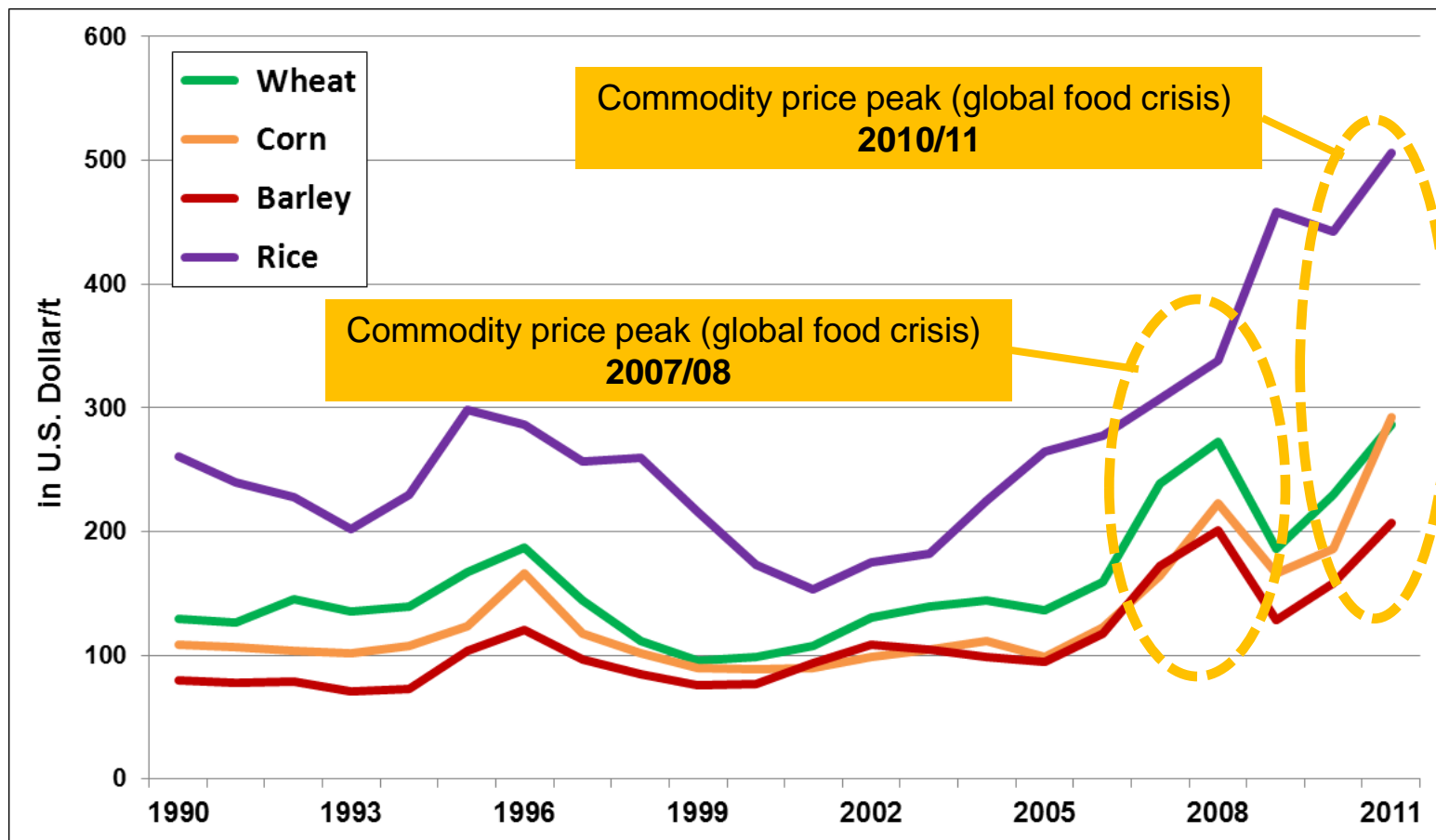
Source: World Bank

Global commodity price peaks 2007/08 and 2010/11

- Many countries intervened on their domestic markets, mainly by implementing some type of export restrictions

Types of export restrictions:

- Export tax
- Export quota
- Export ban

Aim:

- Reduce exports induced by high world market prices
- Increase domestic supply
- Dampen domestic food prices

Policy interventions – wheat and flour markets (Serbia)

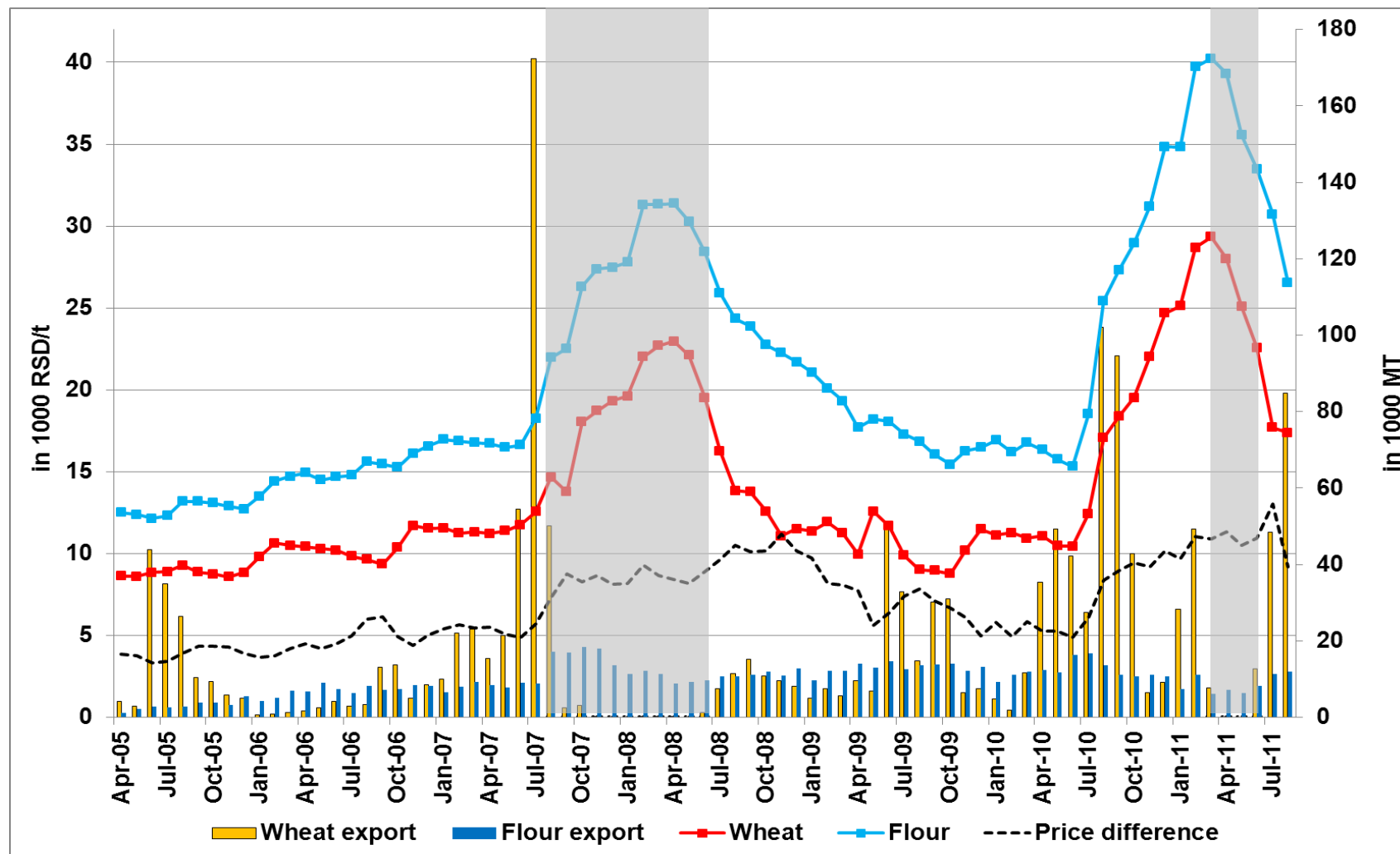# Policy interventions – wheat and flour markets (Serbia)

Policy interventions 2007/2008

Wheat market:

1. **Wheat export ban (August 2007)**
2. **Governmental buy-out (September 2007)**
3. **Export ban – 1st extension (October 2007)**
4. **Export ban – 2nd extension (February 2008)**
5. **Governmental buy-out (March 2008)**
6. **Wheat import tariff was abolished (March 2008)**
7. **Wheat export ban was cancelled (June 2008)**

Legend: Wheat export | Flour export | Wheat | Flour | Price difference

Policy interventions – wheat and flour markets (Serbia)

Policy interventions 2007/2008

Wheat market:

1. **Wheat export ban (August 2007)**
2. **Governmental buy-out (September 2007)**
3. **Export ban – 1st extension (October 2007)**
4. **Export ban – 2nd extension (February 2008)**
5. **Governmental buy-out (March 2008)**
6. **Wheat import tariff was abolished (March 2008)**
7. **Wheat export ban was cancelled (June 2008)**

Flour market:

1. **Flour export quota (October 2007)**
2. **Additional export quota (February 2008)**
3. **Flour export quota was cancelled (June 2008)**

Legend: Wheat export | Flour export | Wheat | Flour | Price difference

Policy interventions – wheat and flour markets (Serbia)

Policy interventions 2011

Wheat market:

1. Wheat export ban (March 2011)
2. Wheat import tariff was abolished (March 2011)
3. Wheat export ban was cancelled (June 2011)

Legend: Wheat export · Flour export · Wheat · Flour · Price difference

Policy interventions – wheat and flour markets (Serbia)

Policy interventions 2011

Wheat market:

1. Wheat export ban (March 2011)
2. Wheat import tariff was abolished (March 2011)
3. Wheat export ban was cancelled (June 2011)

Flour market:

1. Flour export ban (March 2011)
2. Flour export quota (March 2011)
3. Flour export quota was cancelled (June 2011)

Legend: Wheat export | Flour export | Wheat | Flour | Price difference

Policy interventions – bread market (Serbia)
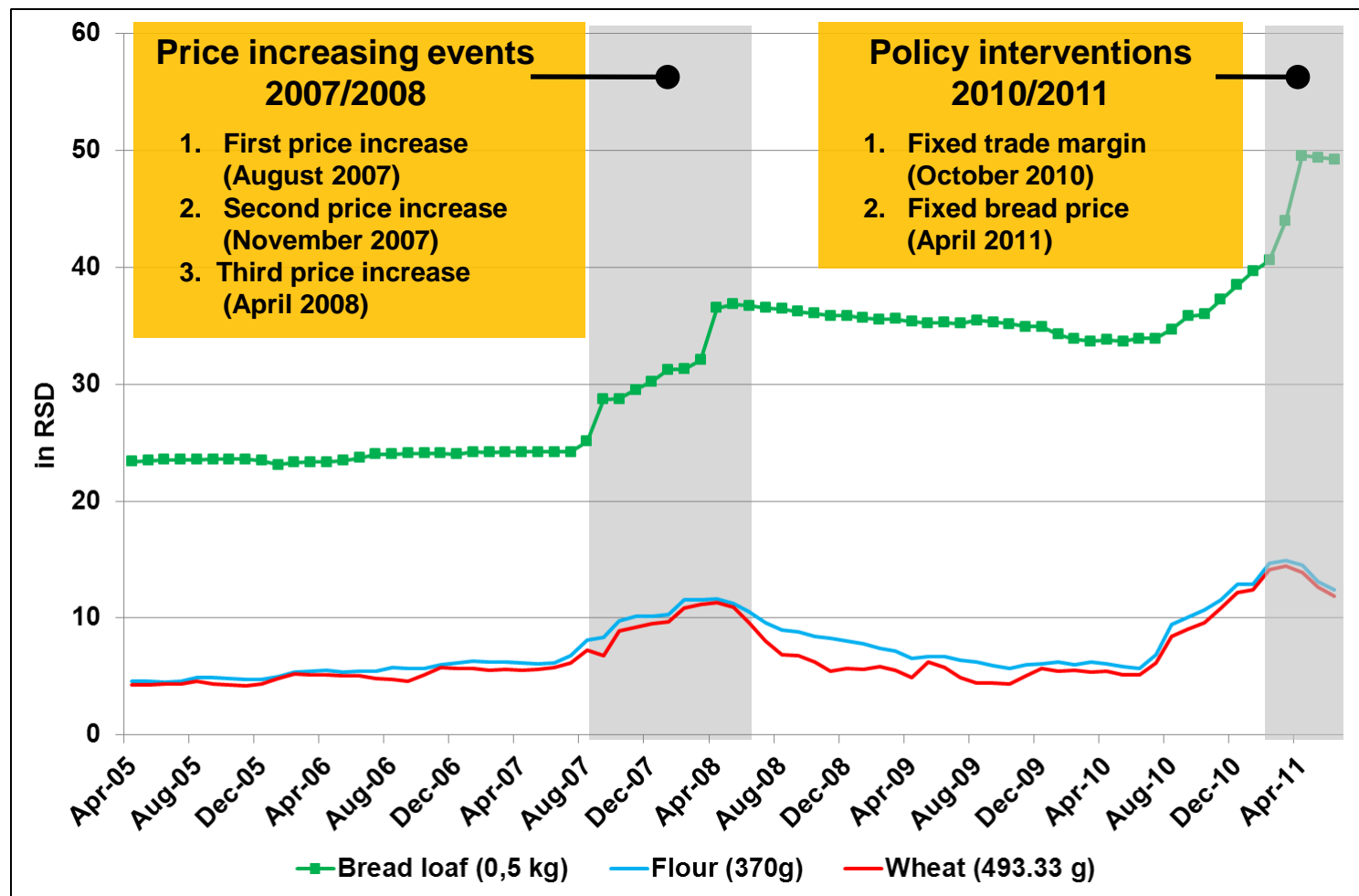
Objective and hypothesis

The main objective:

to identify the effects of Serbia's crisis policy on domestic wheat-to-bread supply chain during the global commodity price peaks and food crisis in 2007/08 and 2010/11.

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to identify the effects of Serbia's crisis policy on domestic wheat-to-bread supply chain during the global commodity price peaks and food crisis in 2007/08 and 2010/11.

Hypothesis:

- **The state of the Serbian wheat-to-bread supply chain changed due to the comprehensive governmental market interventions during the observed crisis periods;**

- **Consumers bear the biggest burden caused by the crisis and governmental interventions.**

Research questions

1) **Did the governmental interventions in 2007/08 and 2010/11 influence the price transmission along the wheat-to-bread supply chain in Serbia?**

2) **Who benefitted/lost from the governmental interventions?**

Research approach

Stage wheat-to-bread supply chain	Research question 1: Price transmission	Research question 2: Welfare effects
Mills to bakeries (wheat to flour)	• Markov-Switching VECM	• Millers' profit simulations • Simulated millers' profits for the laissez-faire case
Bakeries/retailers to end consumers (wheat to bread)	• Development of bread production costs versus bread end consumer price	• Distributable bread margin

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Data		data description	currency	frequency	obs.	time frame
1	**Price transmission**	**wheat** F.C.A. silo selling price	RSD	weekly	335	4/2005-8/2011
2		**flour** F.C.A. mill selling price	RSD	weekly	335	4/2005-8/2011

Price transmission analysis: model

Full Markov-Switching *unrestricted* VECM specification:

$$\Delta p_t^f = \nu(s_t) + \alpha(s_t) p_{t-1}^f + \delta(s_t) p_{t-1}^w + \sum_{i=1}^{k} A_i(s_t) \Delta p_{t-i}^f + \sum_{j=0}^{l} B_j(s_t) \Delta p_{t-j}^w + \varepsilon_t$$
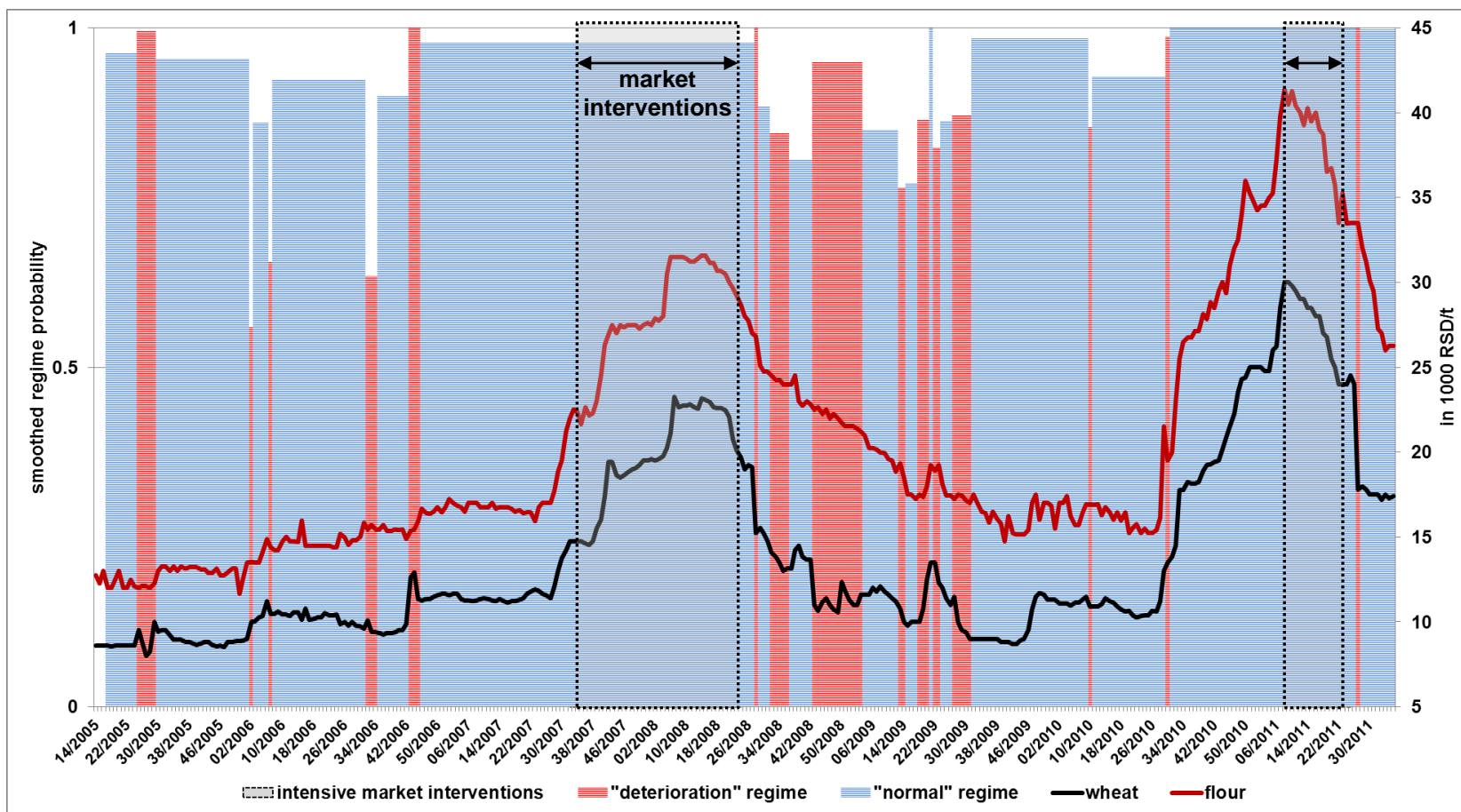
α - speed of adjustment

A_i, B_j - short-run price transmission parameters

$\beta_1 = -\dfrac{\delta}{\alpha}$ - long-run price transmission

s_t - state variable (unobserved)

Price transmission analysis: results

Regime classification for MS(2)-VECM(2)

Price transmission analysis: results

Selected parameter estimates MS(2)-VECM(2)

Market	Indicator	"normal" regime	"deterioration" regime
long-run price transmission	Elasticity (β_1)	0.908* (0.092) [a]	0.598 (0.402) [a]
	Constant (β_0)	1.293	4.142
equilibrium deviation from equilibrium	Regime specific avg. ECT	-0.0179	0.1136
adjustment dynamics	Speed of adjustment [b]	-0.1126**	-0.0181
stability price fluctuation	Residual standard error [b]	0.0354	0.0115

[a]   difference from the perfect price transmission ($\beta=1$), in absolute values.
[b]   regarding the most probable price transmission regime prevailing in this time period.
*   indicates statistical significance at 5 %.
**   indicates statistical significance at 1 %.
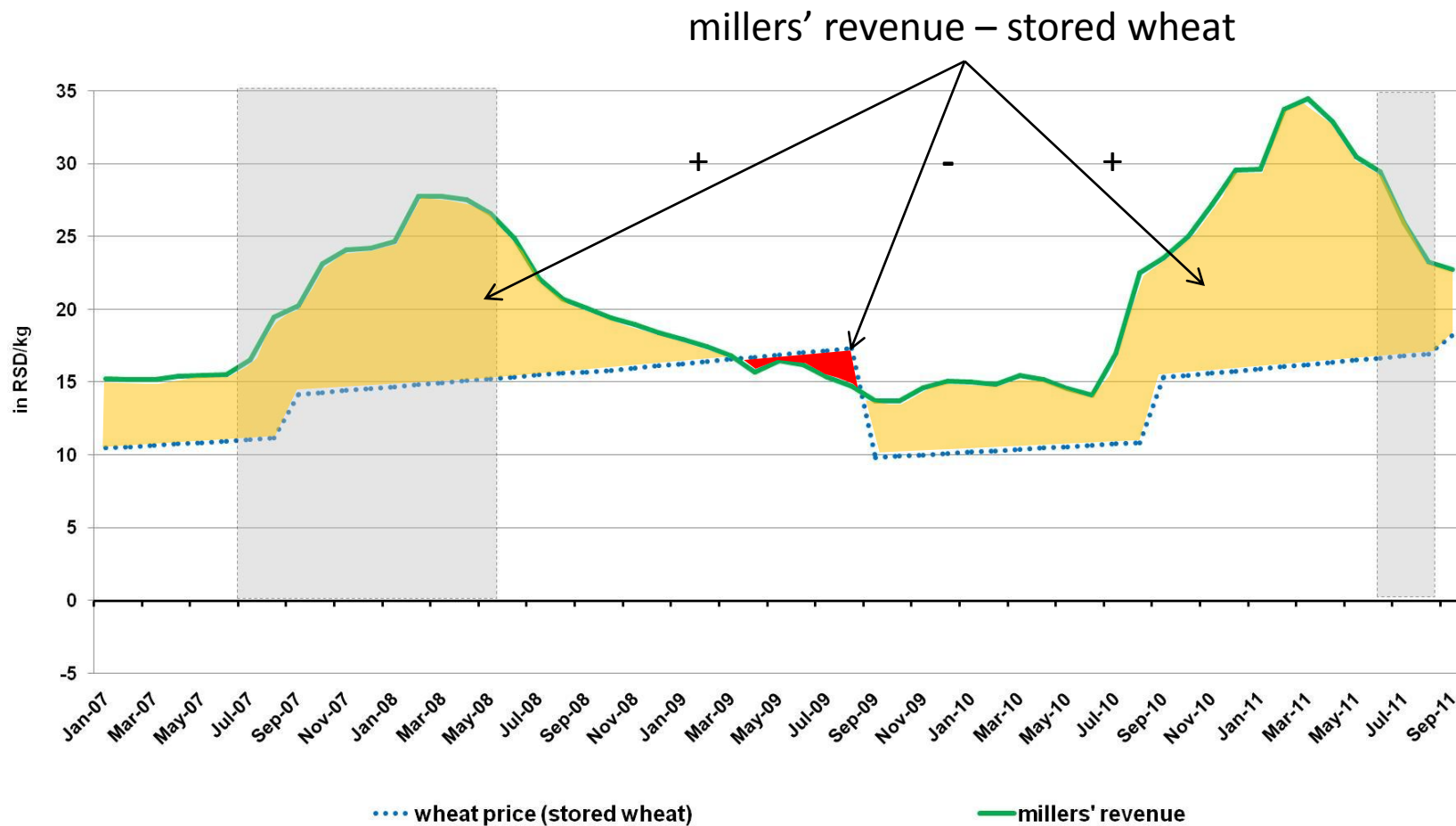
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Data		data description	currency	frequency	obs.	time frame
1	**Production costs simulations (flour)**	flour diff. types	F.C.A. mill selling price	RSD	monthly	58	1/2007-10/2011

Welfare effects - millers' profits (large mills)
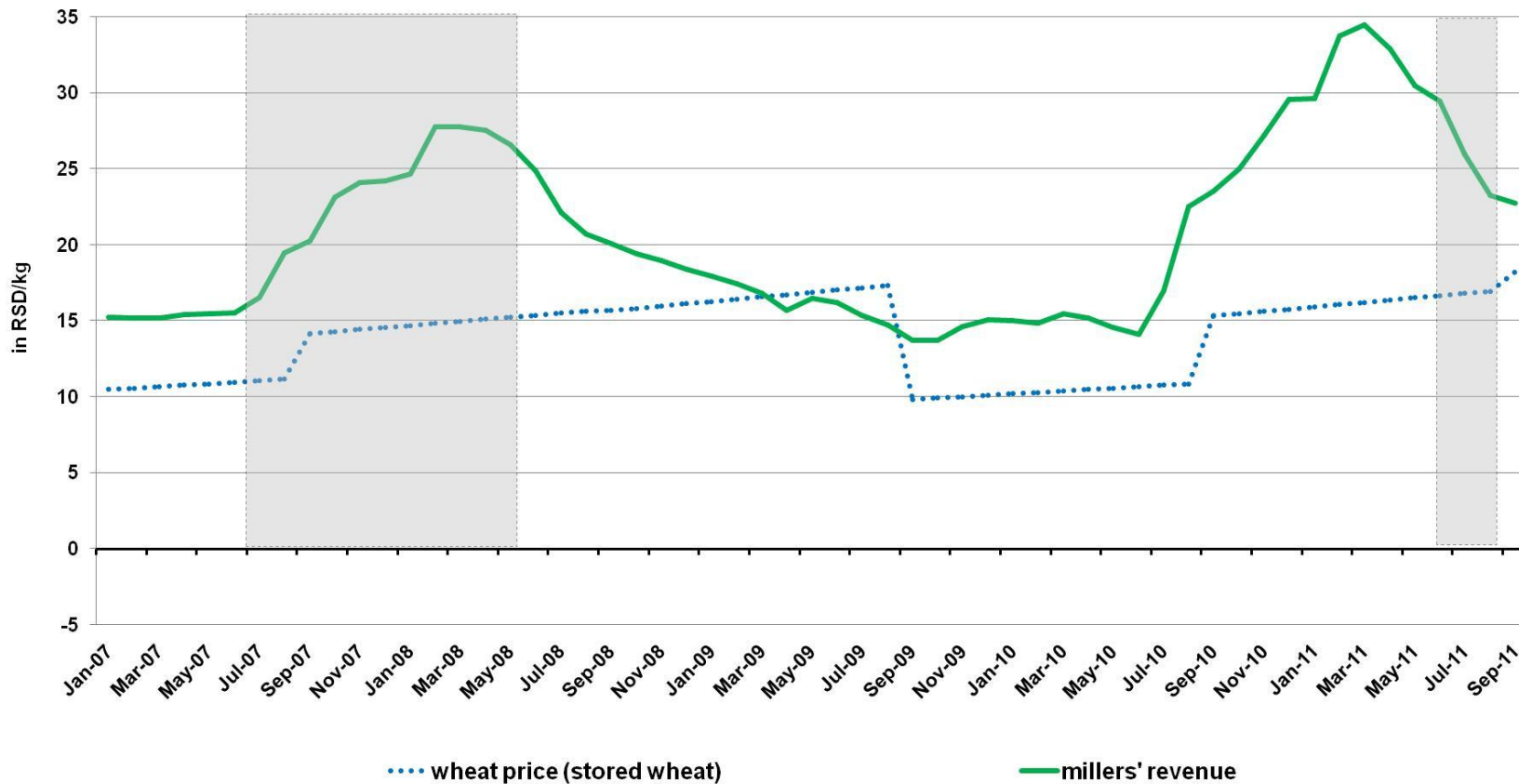
Welfare effects - millers' profits (large mills)
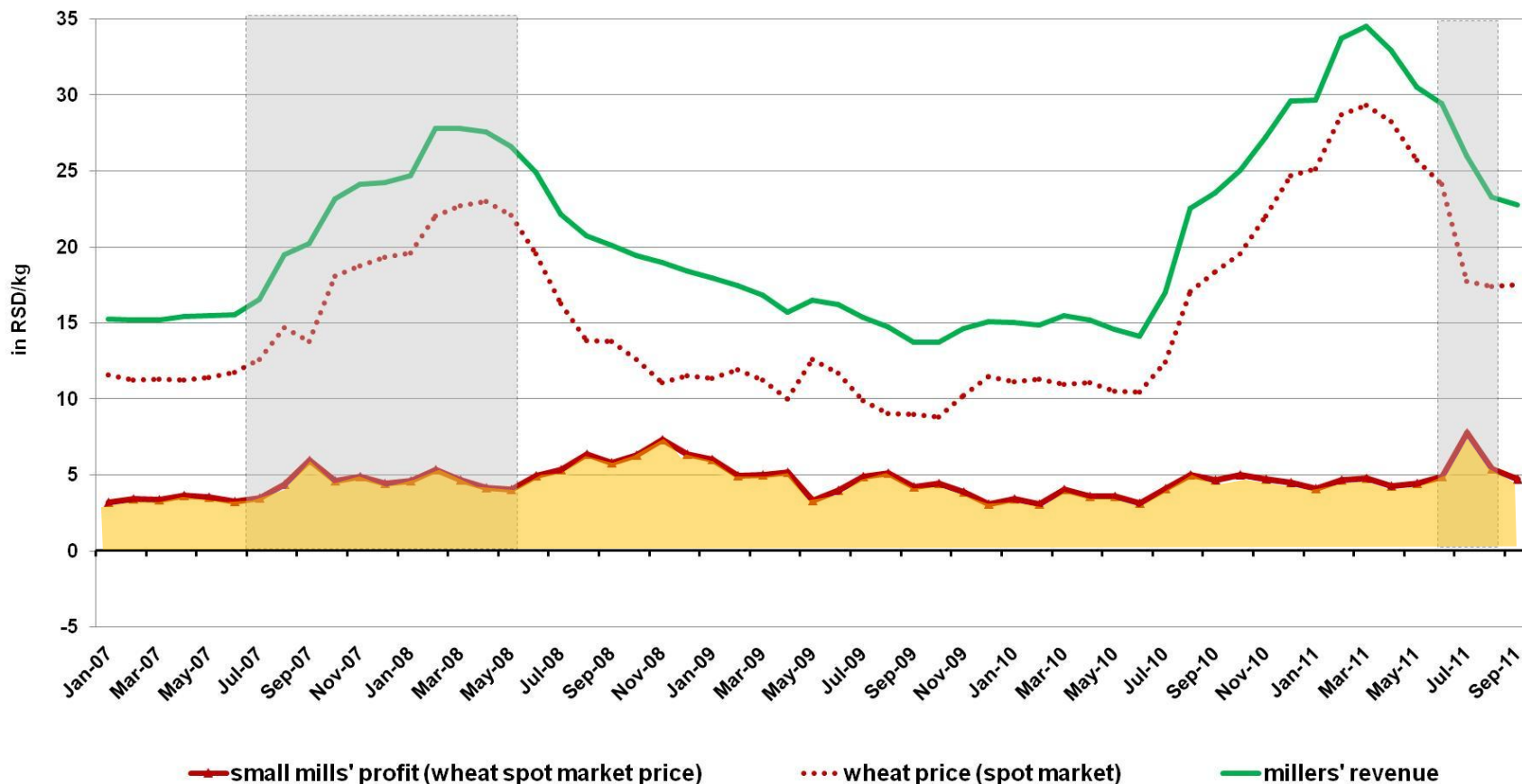

millers' revenue – stored wheat

Welfare effects - millers' profits (large mills)

millers' profit/loss = millers' revenue – stored wheat – packaging costs
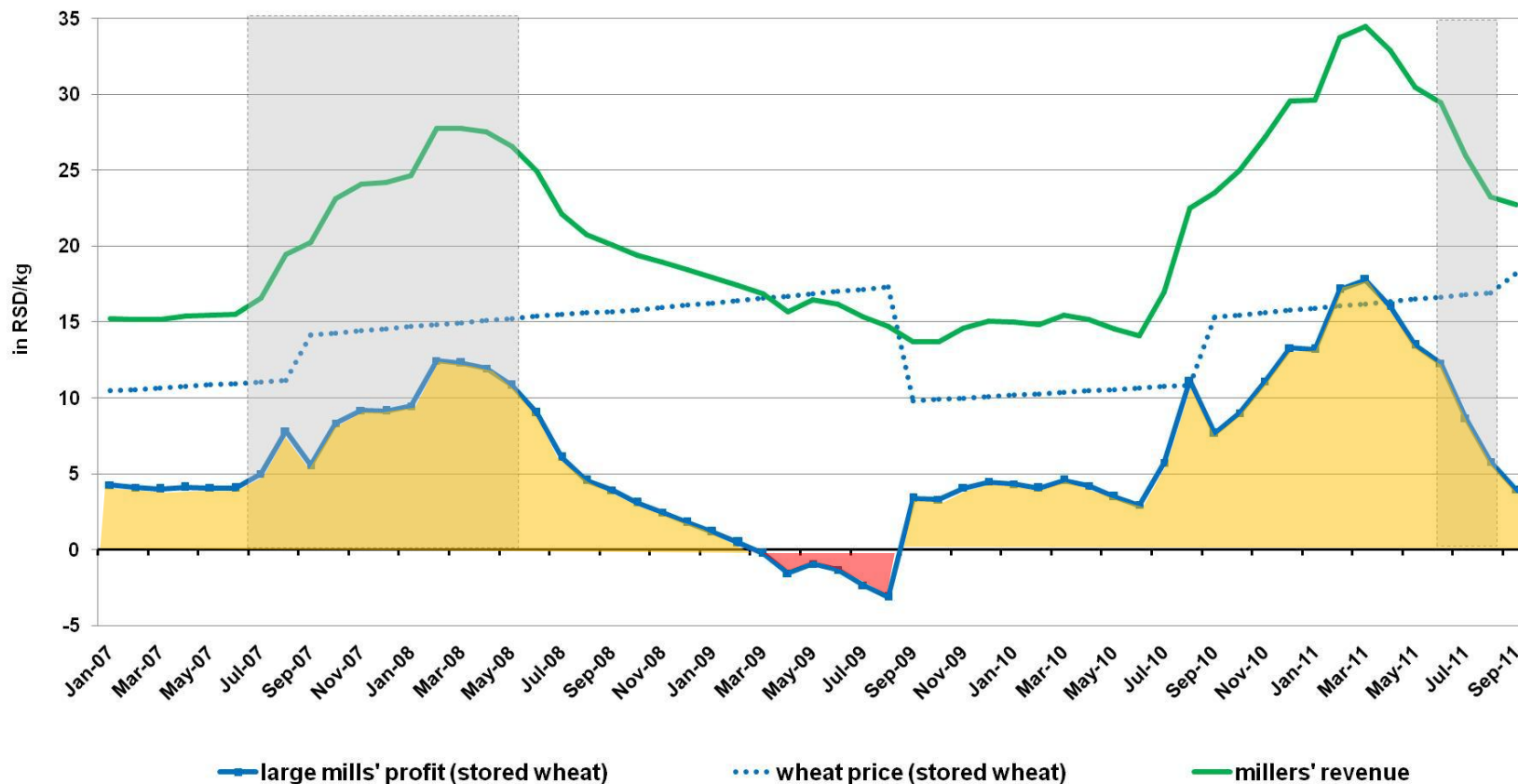
Welfare effects - millers' profits (small mills)

millers' profit/loss = millers' revenue – wheat spot market price – packaging costs

Legend:
- small mills' profit (wheat spot market price)
- wheat price (spot market)
- millers' revenue

Research approach

Stage wheat-to-bread supply chain	Research question 1: Price transmission	Research question 2: Welfare effects	
Mills to bakeries (wheat to flour)	• Markov-Switching VECM	• Millers' profit simulations	
		• Simulated millers' profits for the laissez-faire case	
Bakeries/retailers to end consumers (wheat to bread)			

Data			data description	currency	frequency	obs.	time frame
1	**Laissez-faire policy**	wheat	EXW silo selling price (Hungary – world market)	RSD	weekly	235	6/2007-12/2011

Welfare effects - millers' profits (laissez-faire policy)

Assumptions:

- Millers' profits calculated based on:

- World wheat market price (wheat spot market price/stored wheat)
- Simulated flour prices according to MSVECM results:

$$p_t^f = \beta_0^{reg1} + \beta_1^{reg1} * p_t^w$$

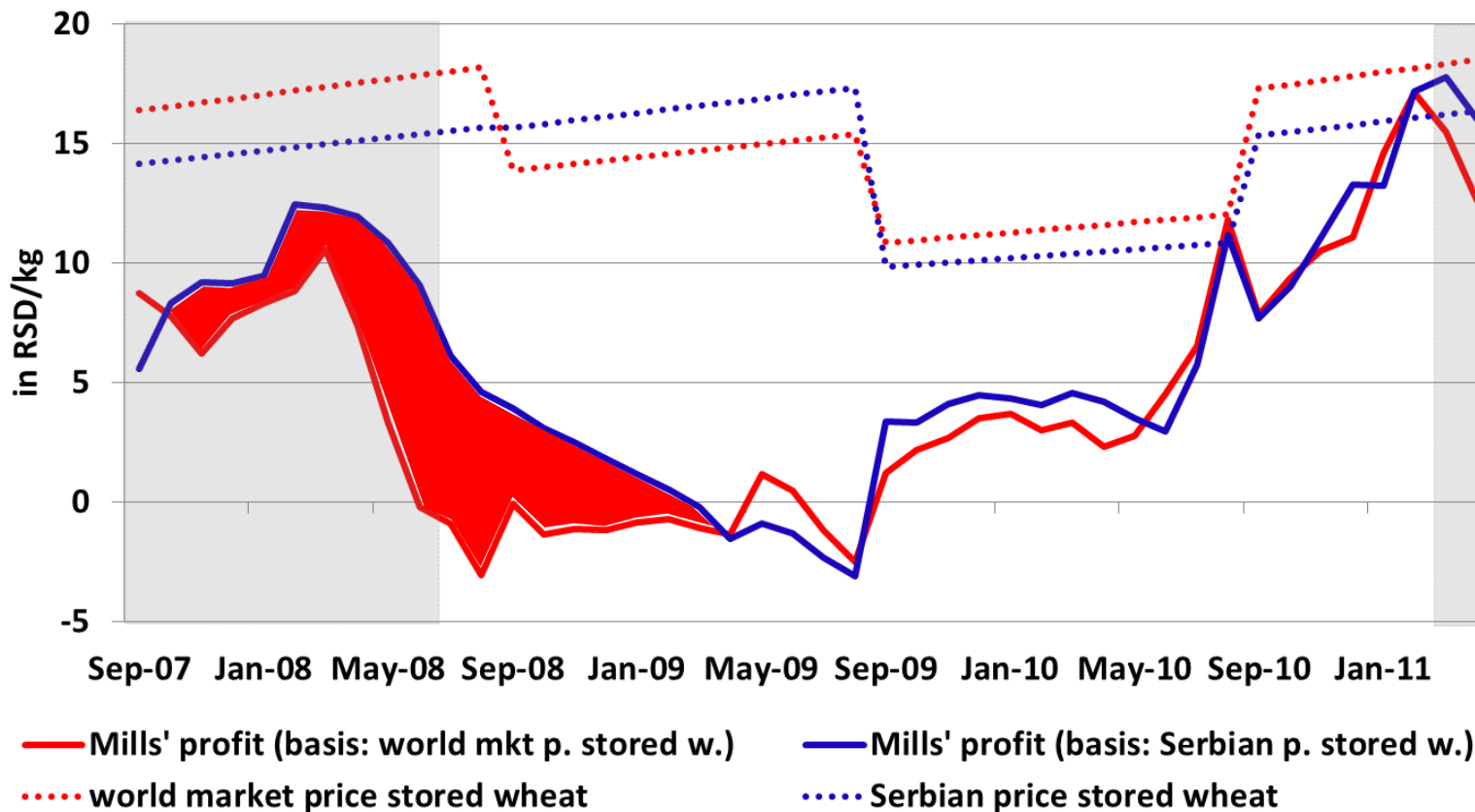$$p_t^f = \beta_0^{reg2} + \beta_1^{reg2} * p_t^w$$

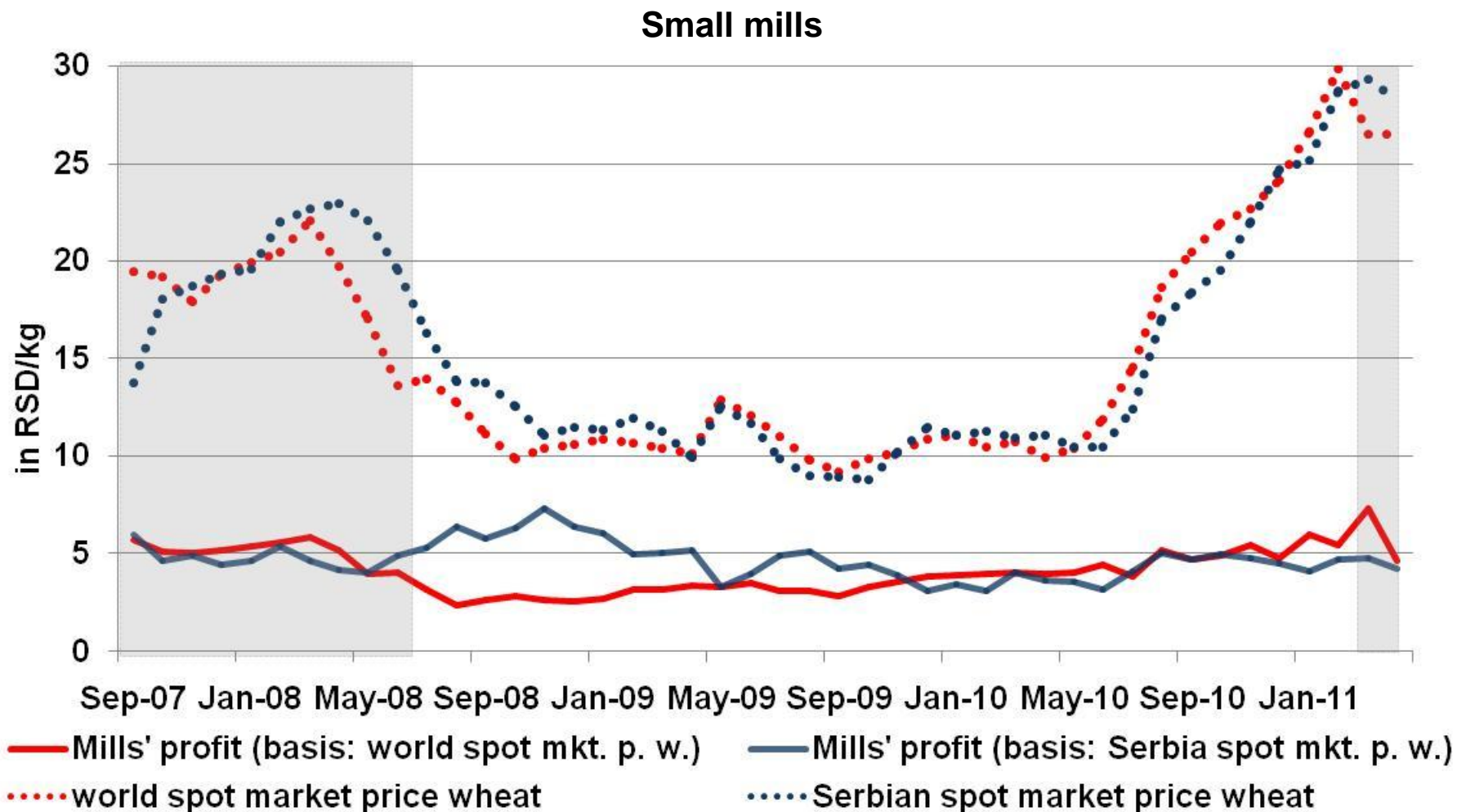## Welfare effects - millers' profits (laissez-faire policy)
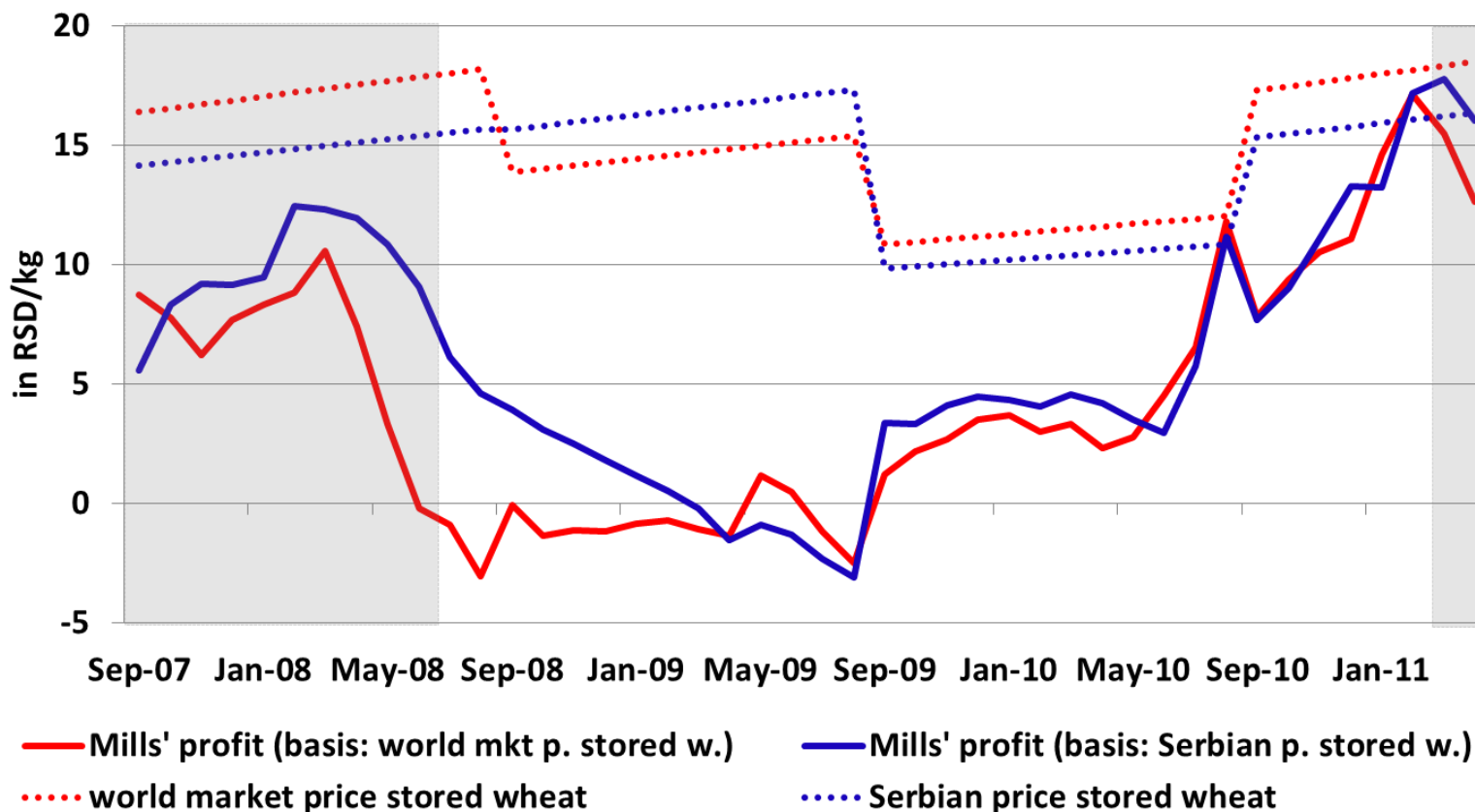
Large mills

Welfare effects - millers' profits (laissez-faire policy)
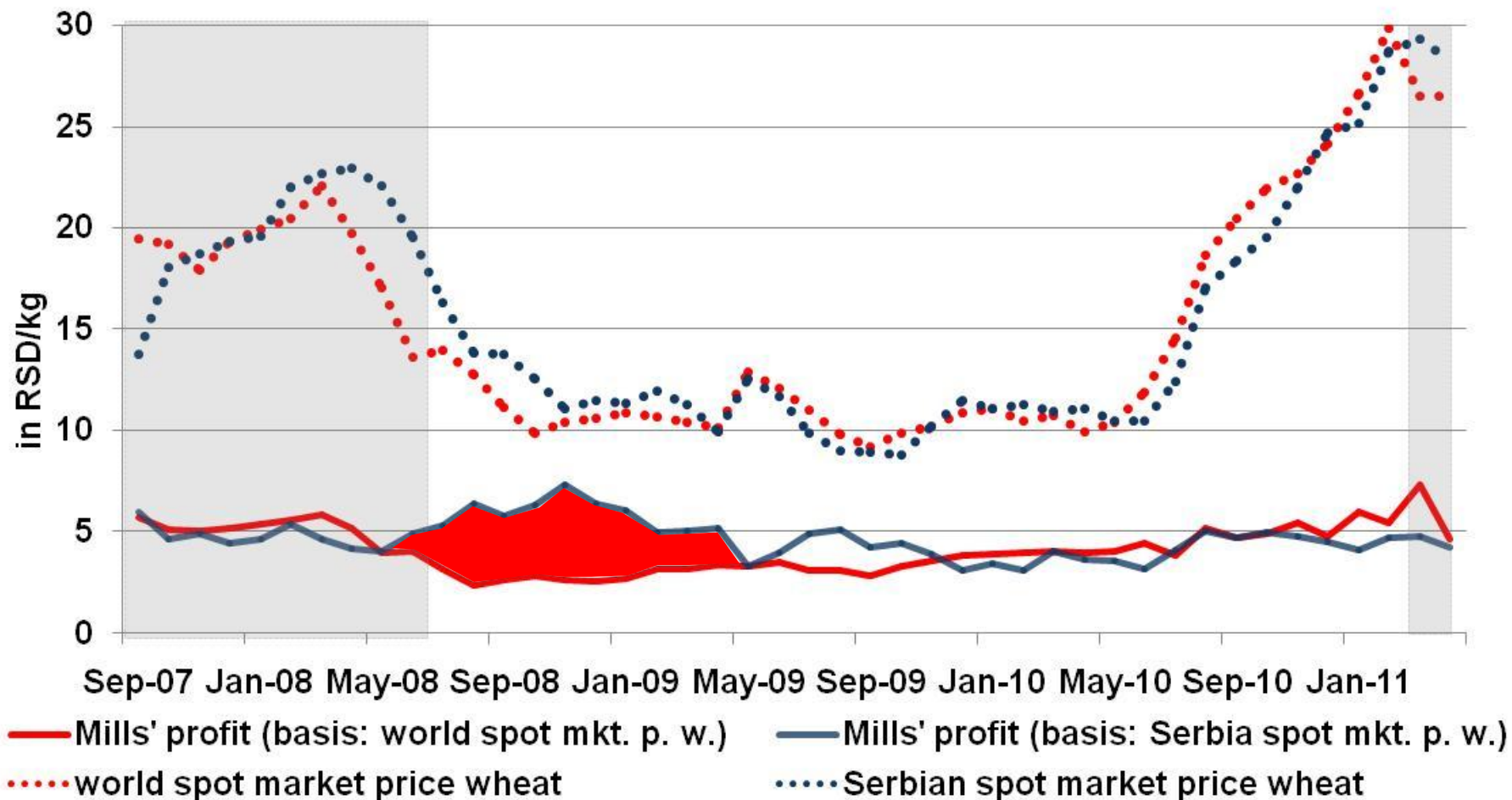

Large mills

Welfare effects - millers' profits (laissez-faire policy)

Small mills

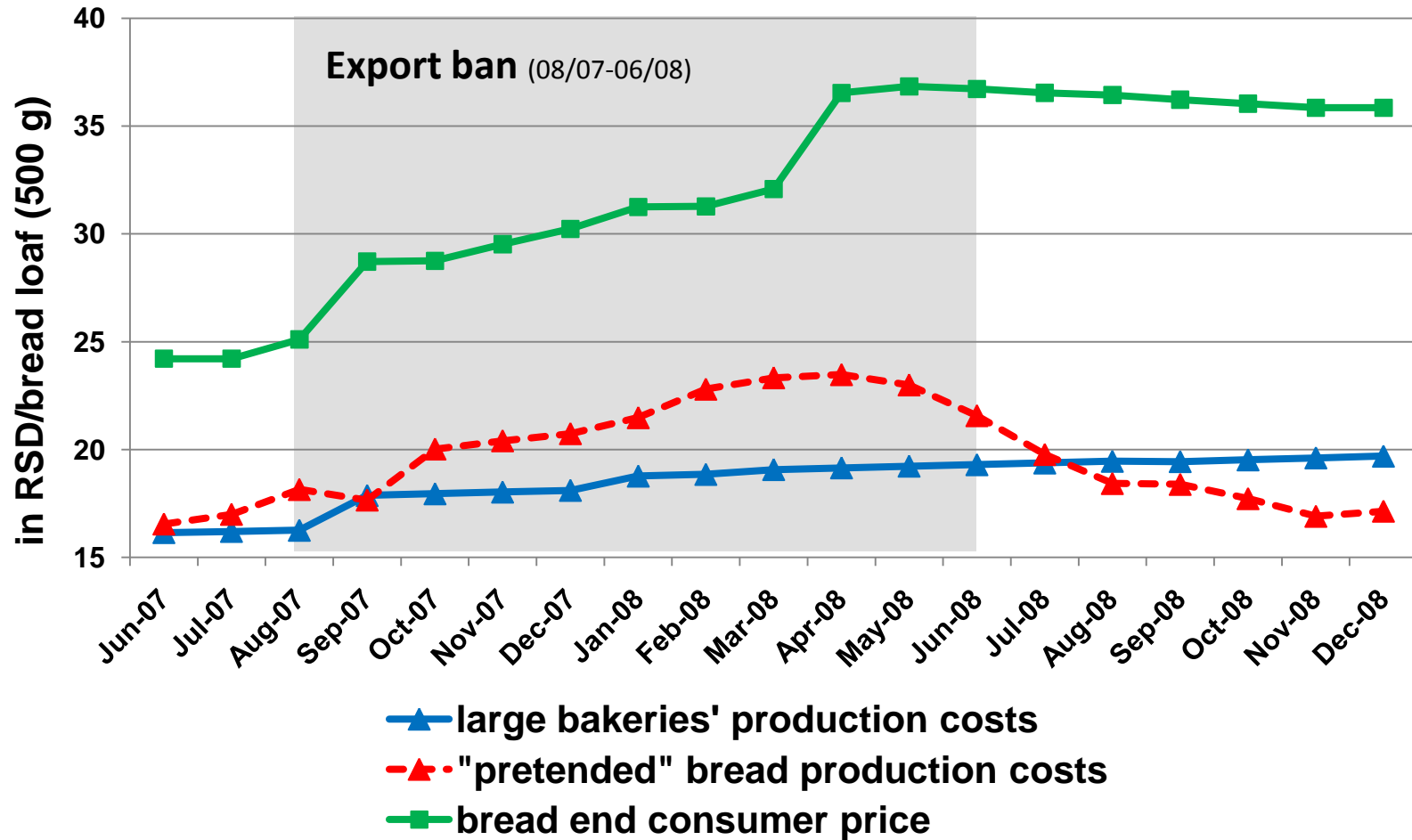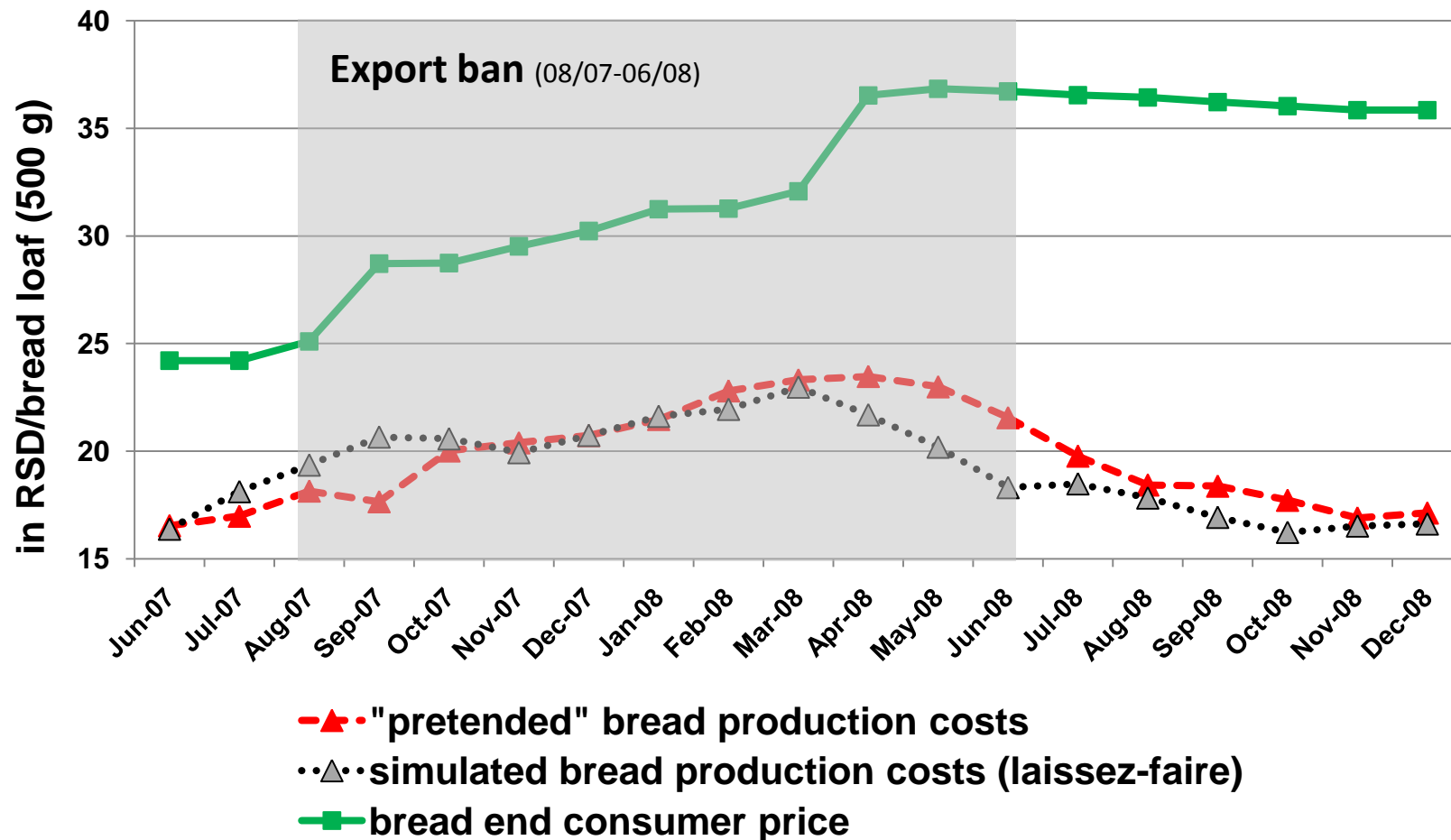## Welfare effects - millers' profits (laissez-faire policy)

Small mills

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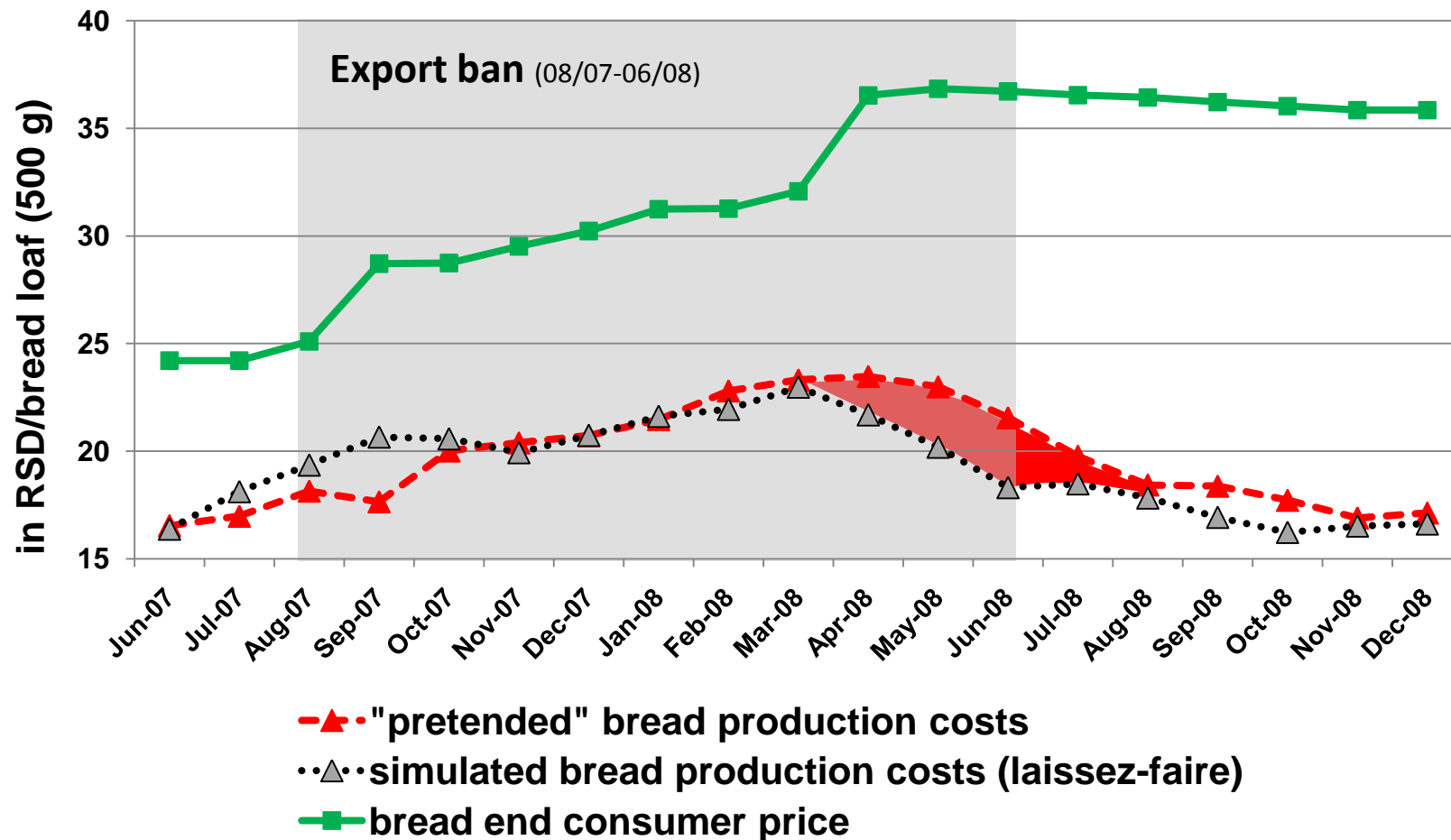| Data		data description	currency	frequency	obs.	time frame
1	**Production costs simulations (bread)**	bread	end consumer price	RSD	monthly	75	4/2005-7/2011

Bread production costs (large bakeries)

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## Bread production costs (large bakeries)

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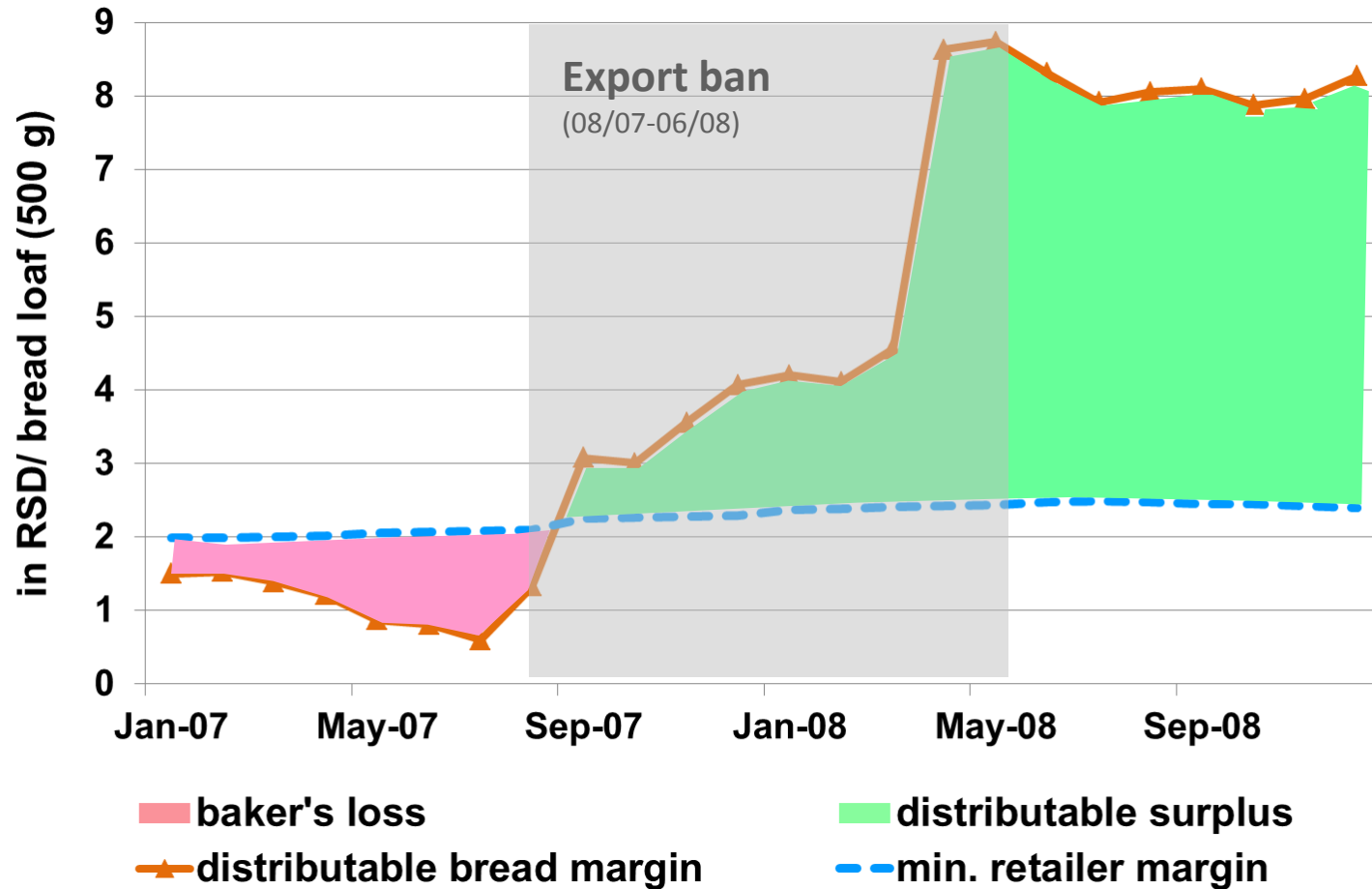| Data		data description	currency	frequency	obs.	time frame
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Distributable bread margin
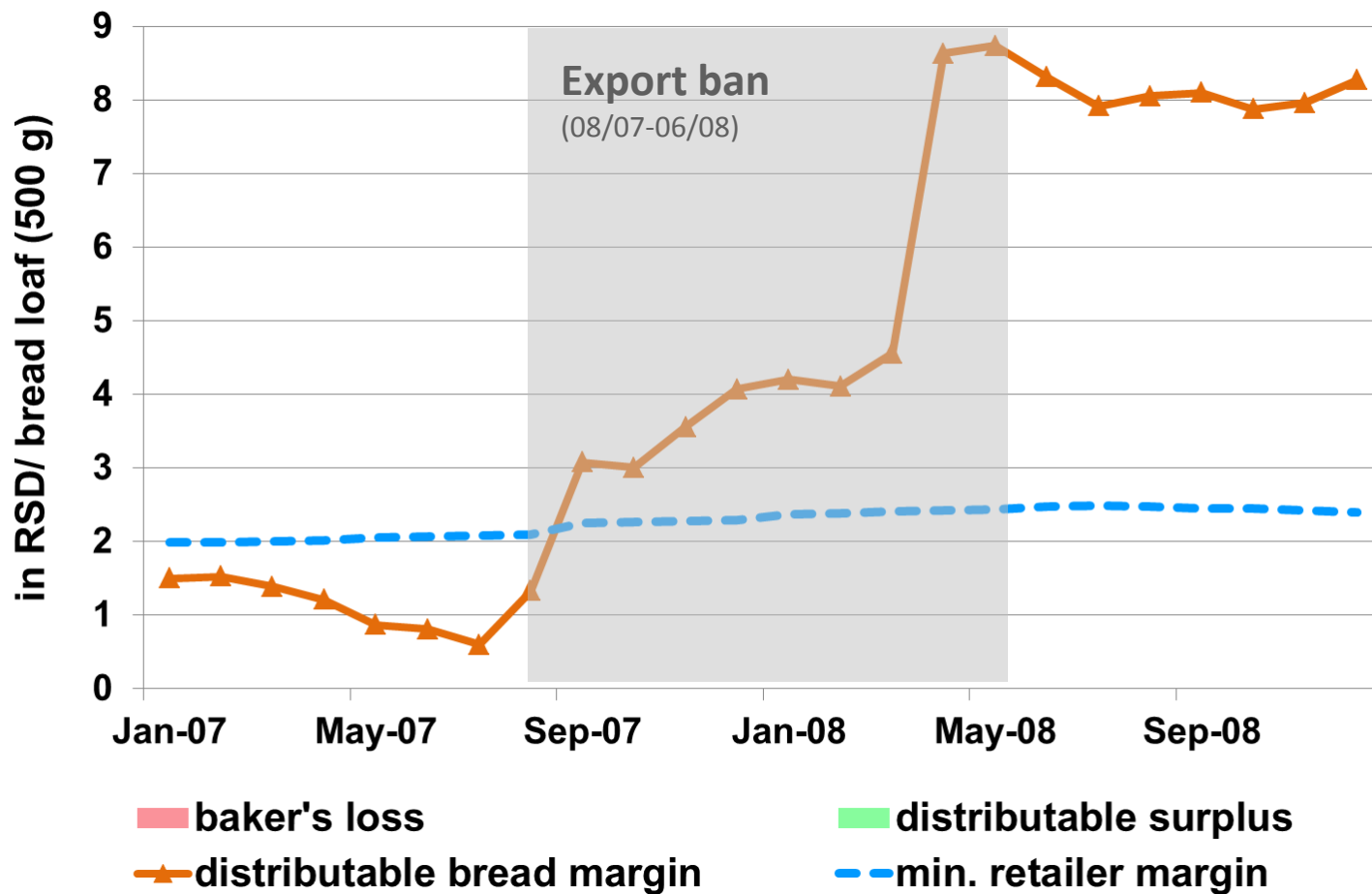
Distributable bread margin
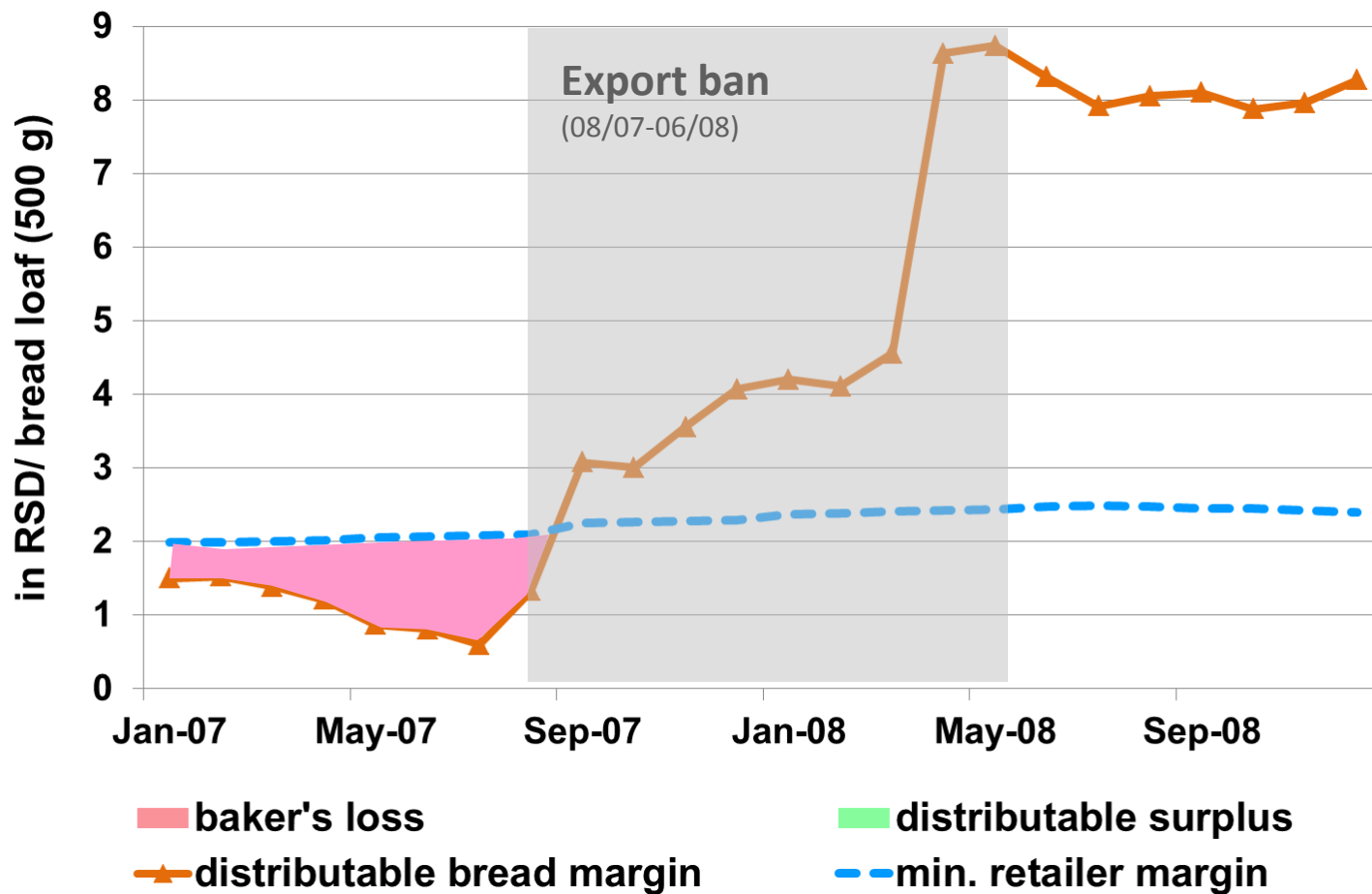
Distributable bread margin

Conclusions

Who benefitted, who lost from the governmental interventions?

Farmers	Intermediate actors			Consumers
	Large/ small Mills	Large Bakeries	Retailers	
-	+	+	+	-

Conclusions

- Results make evident that welfare effects for consumers are influenced by:

    - price behaviour of intermediate actors, i.e. mills, bakeries and retailers;
    - additional policy measures (governmental purchases), wrong sequencing, i.e. policy failure;

- Export ban as an effective means to dampen domestic food inflation is highly questionable:

    - vulnerable to policy failure;
    - can easily be counteracted by behavior of actors in the supply chain;
    - might rather foster food inflation;
    - similar developments: Kazakhstan 2007/2008; Russia 2010/11.

Questions, comments, suggestions . . .

Thank you for your attention!

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