# Price transmission under the influence of the pork cycle

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# Motivation

- Extensive literature on asymmetric price transmission (APT)
- APT appears to be prevalent in many food chains
- Often attributed to exercise of market power in concentrated links of the chain (e.g. processing, retailing)
- However,  linking APT to market power or concentration empirically has proven difficult

# The idea

- In the course of the pork cycle, pork markets fluctuate between phases of over- and undersupply
- The market power of pork processors vis-à-vis pig farmers might thus be expected to fluctuate as well:

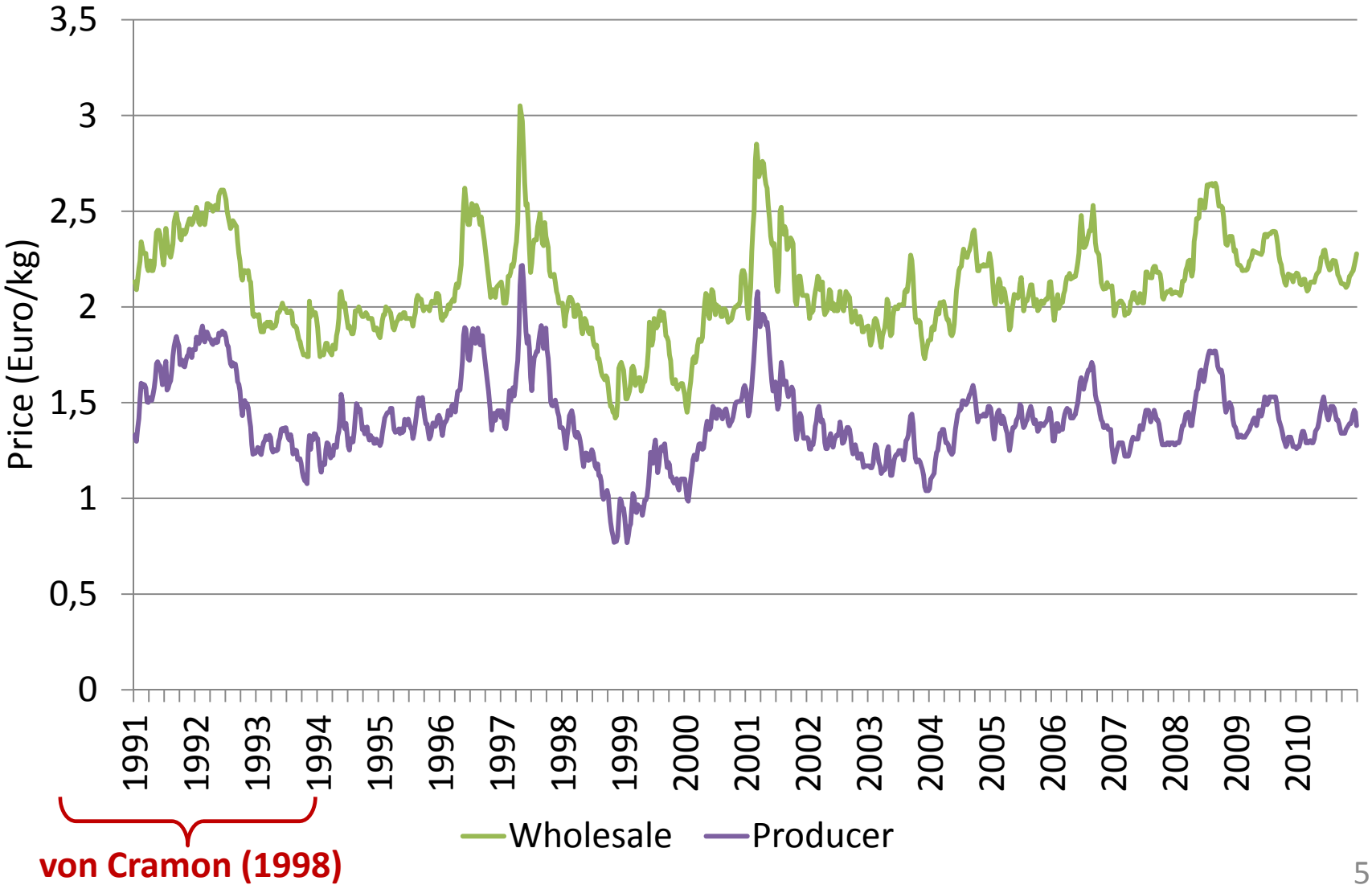
  Prices falling → oversupply, processors at an advantage

  Prices rising → undersupply, farmers at an advantage
- Test whether the pattern of APT on pork markets varies across phases of the pork cycle

# Method

1. Compile a lengthy series of producer and wholesale prices for pork (extend the 4 years of weekly data used by von Cramon (1998))
2. Isolate the pork cycle
3. Estimate asymmetric vector error correction models of vertical price transmission between producer and wholesale prices in different phases of the pork cycle

# Pork prices in Northern Germany (1991-2010)



# Isolating the pork cycle

- Goal: to extract a long-run cyclical component from a series of pork prices
- Different methods possible (e.g. Hodrick-Prescott filter)
- We employ a new, non-parametric, fully data-driven technique based on penalised splines proposed by Rosales and Krivobokova (2012)
- Results similar to Hodrick-Prescott
- Holst and von Cramon (2012) shows that the resulting price cycle is negatively correlated with slaughter volume cycles

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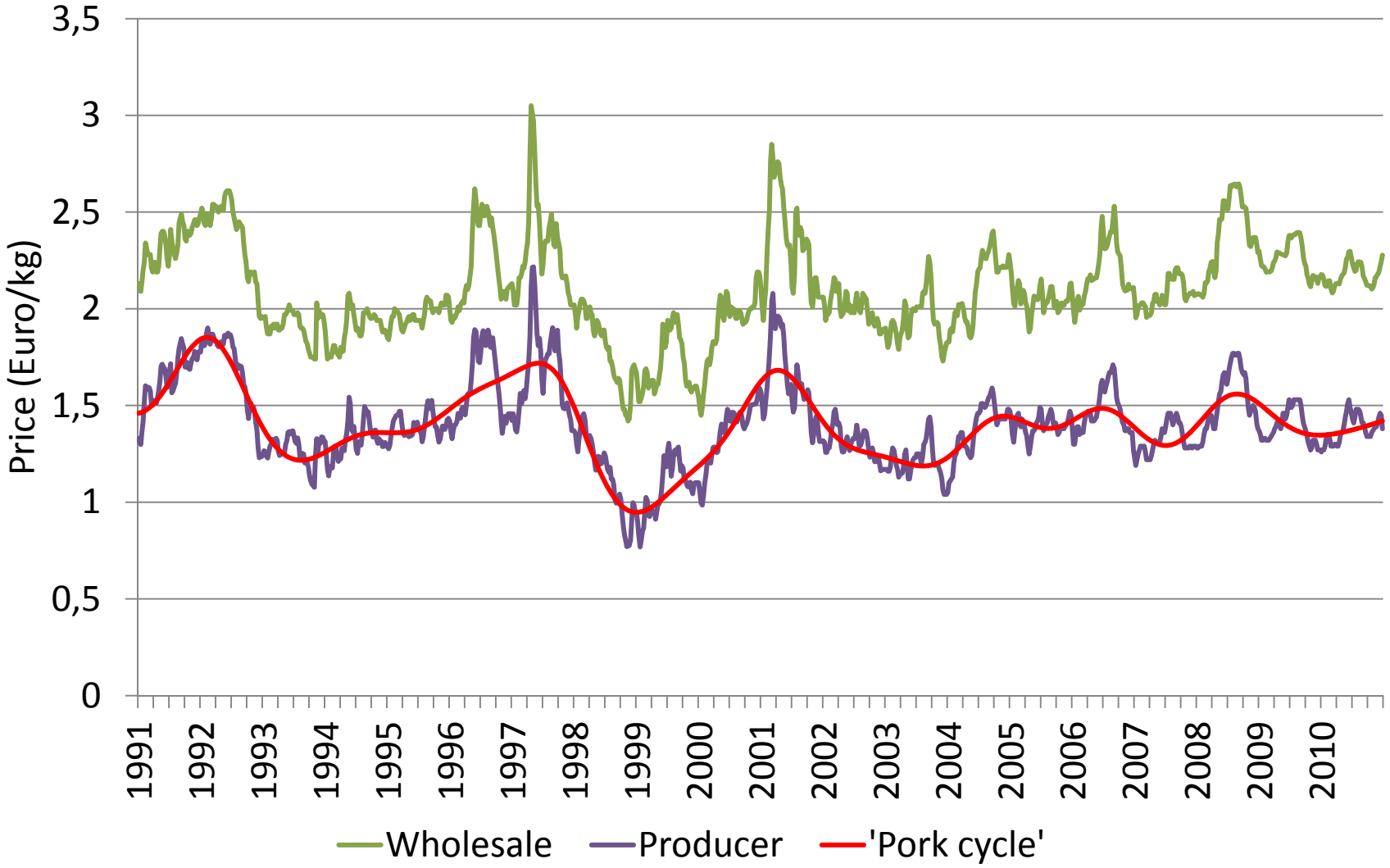
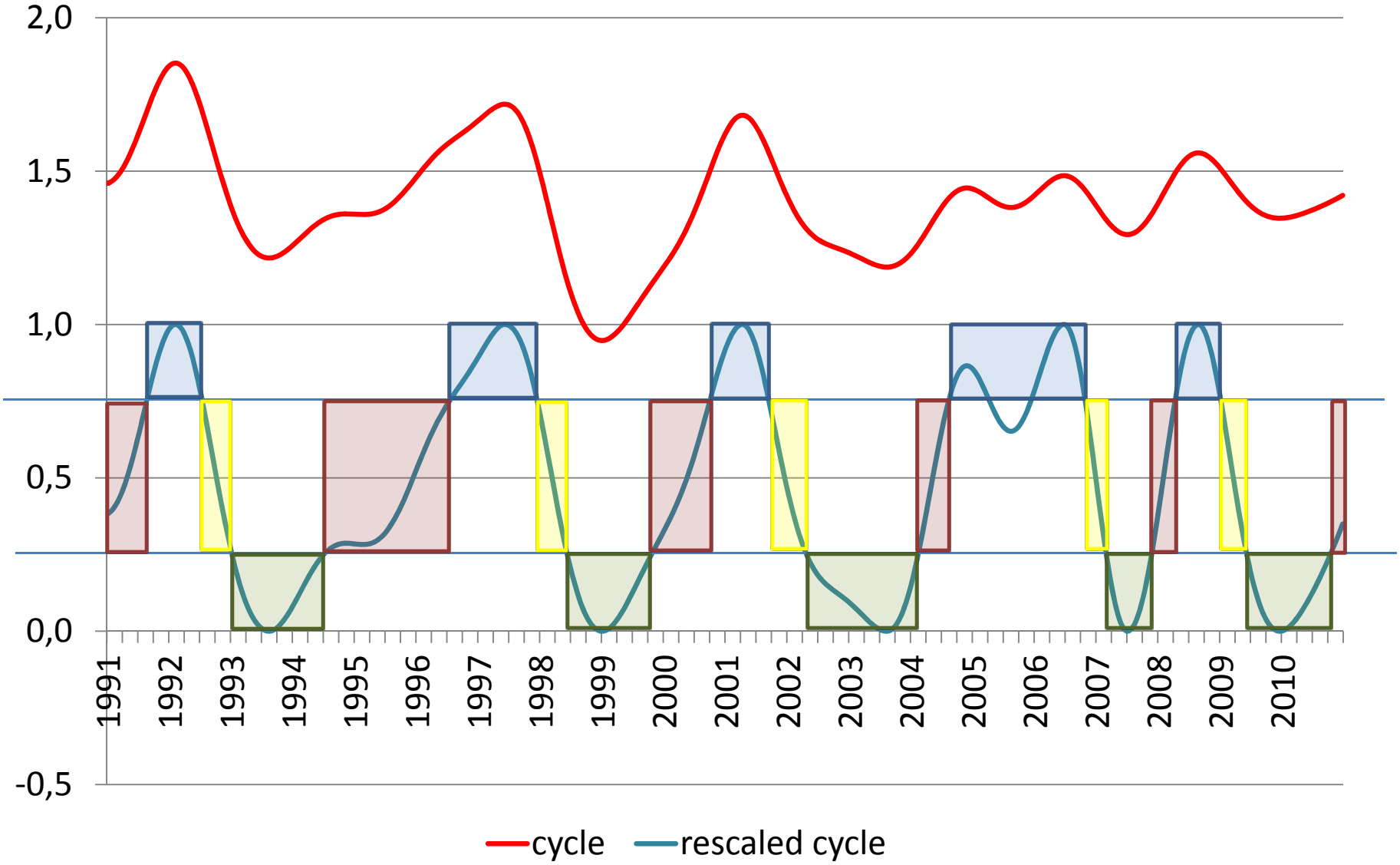


# Decomposing the pork cycle into phases

- Rescale so that the distance between peak and trough is always equal to 100%
  - The top 25% of each cycle = ‘peak’
  - The bottom 25% of each cycle = ‘trough’
  - The stretch between ‘peak’ and ‘trough’ = ‘falling’
  - The stretch between ‘trough’ and ‘peak’ = ‘increasing’

# Decomposing the pork cycle into phases



# Results (adjustment parameters)

| | Trough | | Increasing | | Peak | | Falling | |
|---|---|---|---|---|---|---|---|---|
| | $ect^+$ | $ect^-$ | $ect^+$ | $ect^-$ | $ect^+$ | $ect^-$ | $ect^+$ | $ect^-$ |
| $\Delta P_{P,t}$ | 0.071* | 0.183** | 0.148*** | -0.008 | -0.016 | 0.033 | 0.002 | 0.136 |
| $\Delta P_{W,t}$ | -0.052 | -0.081 | 0.019 | -0.071* | -0.176*** | -0.083** | -0.100 | -0.165 |

Trough: Oversupply of pigs, only producer prices react, especially when margin is squeezed ($ect^-$) producer prices are pushed further down

Increasing: Undersupply of pigs, if margin is stretched ($ect^+$) producer prices increase, if margin is squeezed ($ect^-$) wholesale prices increase

Peak: Undersupply of pigs, only wholesale prices react, especially when margin is stretched ($ect^+$) wholesale prices are reduced (producer prices do not fall)

Falling: No significant reactions

- All of these reactions are in line with expectations about relative market power and the direction of APT

# Work in progress

- Explore different methods of isolating the pork cycle
- How sensitive are the results to different definitions of where one phase of the pork cycle ends and the next begins?
  - Different arbitrary cut-offs (25-50-25 vs. 20-60-20, etc.)
  - Data-driven methods (smooth transition regression, Markov-switching)
- Different lag-lengths
- Test significance of the observed APT
- Look at impulse-response functions (and not only adjustment parameters)
- Study piglet price – producer price transmission

# Thank you