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EMPIRICAL ANALYSIS OF BIOMASS AND ENERGY PRICE VOLATILITY

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Introduction

High price volatility increases costs along the supply chain and detains investments and sectoral development.

Factors and linkages in the timber and bioenergy market influencing price volatility:

- Implementation of RES policies
- Increase in biomass trade
- Fossil fuel prices
- Calamities like windfalls

Objectives

- Compute and empirically analyze historic price volatility of woody biomass.
- Analyze structural changes in price volatility to answer the question if biomass price volatility has increased over time.
- Compare the price volatility of woody biomass and fossil fuels.

Data & Method

Times series of nominal monthly prices (excl. VAT) of roundwood commodities, sawmill by-products and crude oil were analyzed.

- Detecting structural changes by using the supFtest.
- Using Mann-Whitney non-parametric rank based test to test log-differences to compare commodity price volatilities.
- Compute historic price volatility by using the standard deviation of the monthly log price differences.

Results: Historic commodity price volatility

In all analyzed times the volatility changed over time. The price volatility of firewood, log wood and pulpwood remains below 6% (Figure. 1).

The volatility of firewood prices decreased in the last years; the price volatility of log wood and pulpwood increased significantly in recent years.

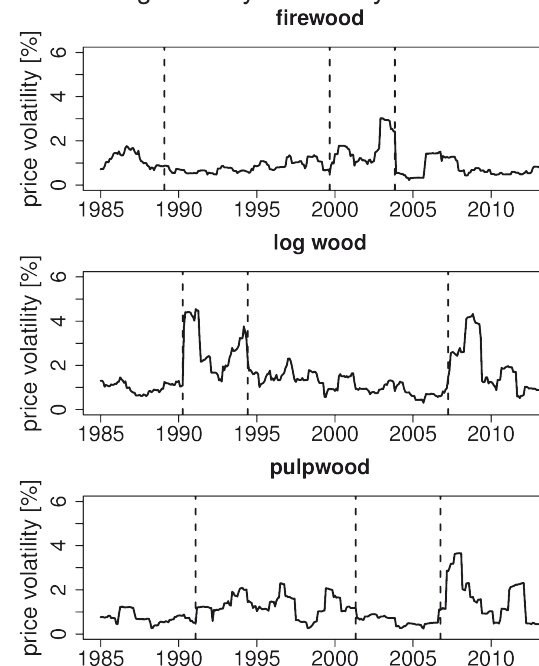


Fig. 1: Volatility of monthly wood prices including the structural breaks.

Price volatility of fossil fuels is up to seven times higher than of woody biomass commodities (Fig 2).

Saw mill by-product and wood pellet price volatility is on average two times higher than roundwood price volatility (Fig. 3).

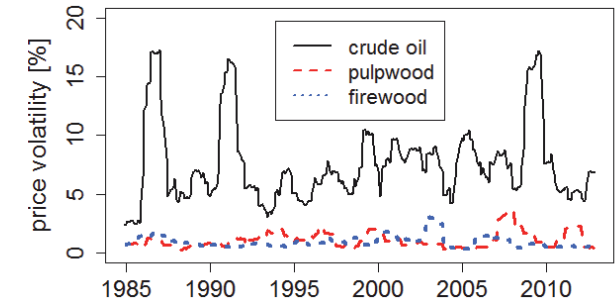


Fig. 2: Volatility of monthly wood and crude oil prices.

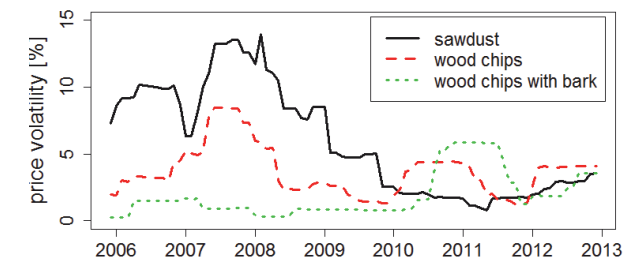


Fig. 3: Volatility of monthly sawmill by-product prices.

Conclusion

Forest owners can profit from low volatile biomass prices since they can plan the wood harvest with more certainty.

Due to the lower price volatility of woody biomass plant operators can reduce costs along the supply chain.

Future price volatility of woody biomass may be particularly affected by supply shortages. Therefore the importance of long-term supply contracts and storage of biomass will increase.

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