

# Price Transmission to Ugandan Coffee Growers in a Liberalized Market

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# T70: Price Transmission to Ugandan Coffee Growers in a Liberalized Market

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## Abstract

Ugandan Coffee Development Authority (UCDA) provides price information in terms of Indicator price to coffee growers. The reliance on Indicator price is a narrow approach. Growers need better information to deal with price volatility in a liberalized market. Retail prices at the major coffee importing countries in Europe and future prices of coffee may provide improved information and hence greater bargaining power for growers.

## Background

- Uganda is the second largest coffee producer and the largest Robusta producer in Africa.
- Coffee contributes 23.4% of Uganda's GDP and half its export earning; a quarter of Uganda's population depend on coffee sector.
- Coffee price volatility has been a fact of life because of supply and demand side shocks.
- In 1990/1 market liberalization lead to the disappearance of the cooperative channel and a vast majority of coffee is now marketed through private traders.
- Cooperatives shielded coffee growers from price fluctuations but the post liberalization, farmers face the risk associated with price volatility in the world market.
- Growers principally rely on the composite Indicator price provided by the UCDA to bargain for a fair price.
- Uganda exports 86% of its coffee to the EU countries where Spain and Belgium import the largest share.
- The coffee futures markets, Intercontinental Exchange in New York and London International Financial Futures and Options Exchange, are mainly used as benchmarks for Arabica and Robusta Coffee respectively.

## Objective

Investigate price transmissions to Ugandan growers and examine how they react to indicator, futures and retail coffee prices. What prices should growers look at in addition to Indicator price?

## Data

Monthly data (in U.S. cents/pound) from January 1988 to June 2010 on the following:

- Price paid to Uganda Robusta growers (UGR)
- Retail Coffee Price in Belgium (BPR)
- Retail Coffee Price in Spain (SPR)
- Composite Indicator Coffee Price (IDP)
- London Coffee Futures (LFR)
- New York Coffee Futures (NFR)

## Methodology

I. Directed Acyclic Graphs (DAGs) are used to investigate the causal flows between the variables.

In the graphs, given two variables X and Y, there are five possibilities between the variables; (1) no causal relationship when edges are removed, (2) Y causes X ( $Y \rightarrow X$ ), (3) X causes Y ( $X \rightarrow Y$ ), (4) Y and X simultaneously cause each other ( $X \leftrightarrow Y$ ), and (5) the causal flow cannot be directed by information contained in the sample ( $(X - Y)$ )

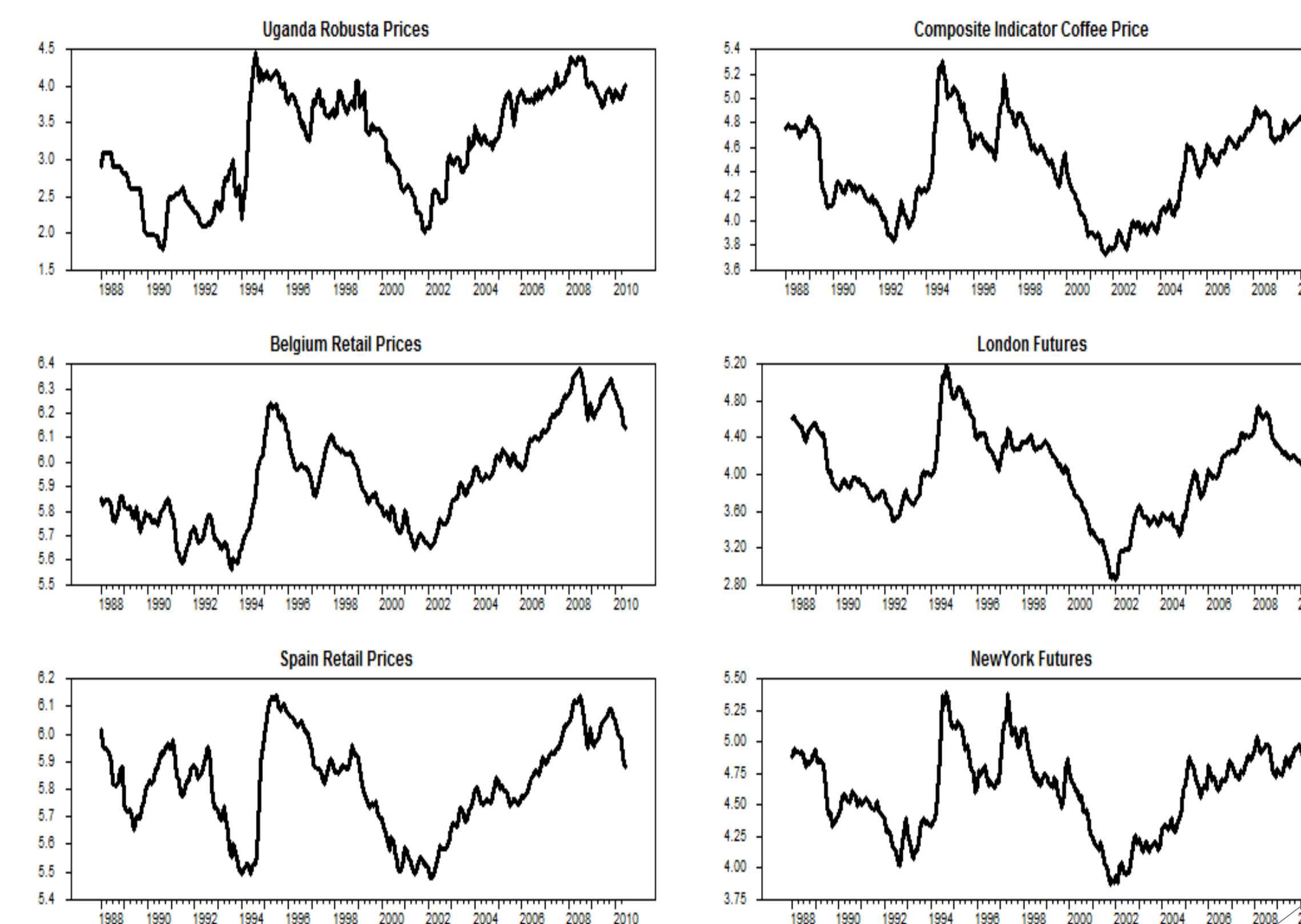
II. Vector auto regression (VAR) was used to model the interdependencies in the coffee markets.

$X_t = (X_{1t}, \dots, X_{kt})'$  described by the equation  $X_t = \mu + \phi_1 X_{t-1} + \dots + \phi_p X_{t-p} + \varepsilon_t$  where the  $\phi_i$  are  $K \times K$  coefficient matrices and the  $\varepsilon_t$  are uncorrelated and satisfy  $E(\varepsilon_t) = 0, E[\varepsilon_t \varepsilon_t'] = \Sigma$  for some positive definite covariance matrix  $\Sigma$ .

Where is  $p=1$  in this estimation.

III. Impulse Response Functions were obtained to examine the response of the growers' price to a one time only shock in every other price

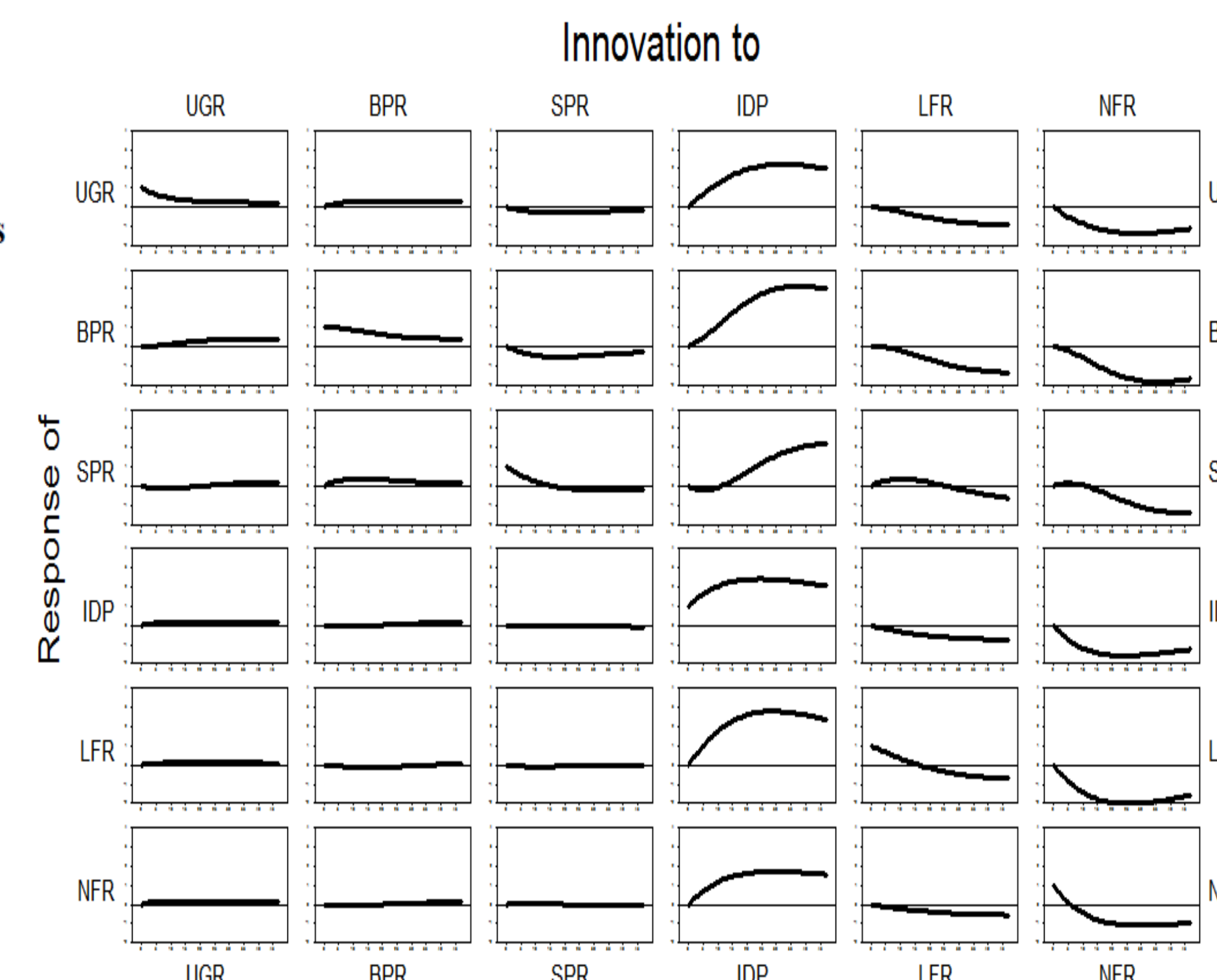
## Time Series Plots of Coffee Prices



## Results from VAR Estimation

Dependent Variable : Price Paid to Uganda Growers (UGR)				
Variable	Coeff	Std Error	T-Stat	Signif
UGR{1}	0.911	0.029	30.901	0.000
BPR{1}	0.255	0.118	2.161	0.032
SPR{1}	-0.190	0.094	-2.021	0.044
IDP{1}	0.292	0.150	1.942	0.053
LFR{1}	-0.030	0.060	-0.504	0.615
NFR{1}	-0.209	0.125	-1.676	0.095
Constant	-0.326	0.432	-0.753	0.452

## Impulse Response Functions



## Discussion and Conclusion

- Market prices are driven by supply and demand. In 2003, the world prices were at a 30 year low because of an 8 percent increase in supply.
- The price spike in 2009 was due to reduction in supply from Brazil, the largest coffee producer.
- An increase in Belgium retail prices has a positive effect on the price paid to Ugandan growers but an increase in Spain retail price has a negative effect on the growers price. Belgium's effect is as expected, since it's one of the largest importer.
- The impulse response functions indicate that a positive shock in the futures markets has a negative effect on the price paid to the growers. This can be explained by the fallacy of composition. The individual reaction of the growers to increase in futures prices leads to an aggregate increase in supply. Consequently, there is over supply of coffee and hence a fall in prices received by growers.
- An increase in Indicator price leads to increase in prices received by growers. However, Indicator price includes 34% Robusta price, Columbian Mild Arabica 12%, Brazilian and other Natural Arabica 31%, other Mild Arabica 23% so the results should be interpreted with caution.

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