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Post Livestock Mandatory Price Reporting: An Assessment of Effects on Cattle Cash Prices

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POST LIVESTOCK MANDATORY PRICE REPORTING: AN ASSESSMENT OF EFFECTS ON CATTLE CASH PRICES

Man-Keun Kim* and Hernan A. Tejada*

1. Motivation

- ❖ The objective of this paper is to identify the effect of livestock mandatory price reporting (MPR) on cattle cash prices.
 - ❖ Specifically determine if cash prices were higher post MPR implementation - as supporters of MPR legislation contended (Koontz, 2011).
- ❖ The MPR of 1999 was implemented in April 2001. In July 2010, the MPR is extended to end in September 2015.
- ❖ With more complete price and transaction data available to the public than previously existed under voluntary reporting, an increase in integration between spatial markets higher market transparency is anticipated.
- ❖ Studies have focused on the impact of MPR on market integration and information, not on (fed) cattle prices itself. This research seeks to shed light on this question applying an ad hoc analysis to determine if post-MPR fed cattle prices (and other beef related prices) increase and, if so, by how much.

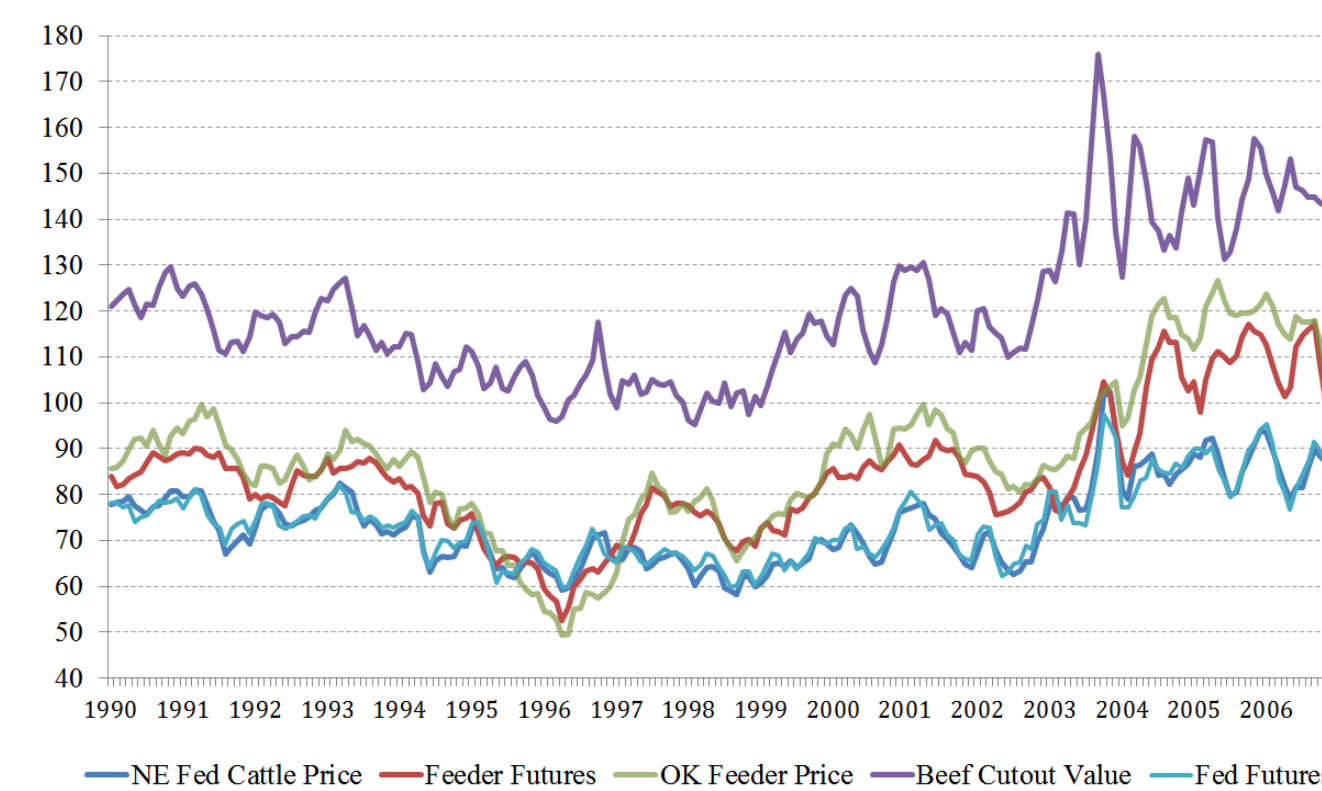
2. Literature Review

- ❖ Following the MPR act, various theoretical studies have addressed matters of market behavior among packers, operational preferences and the variability of prices, as well as cattle feeder's benefits, among others. (Azzam, 2003; Azzam and Salvador, 2004; Njoroge, 2003; Njoroge et al., 2007; Boyer and Brorsen, 2013).
- ❖ Pendell and Schroeder (2006) and Fausti et al. (2007) study spatial market integration among regional cattle-feeding states, and within a particular state, respectively. The first find an increase in market integration following MPR implementation, while the latter study does not.
- ❖ Perry et al. (2005) find that price volatility increased after MPR, in contrast to previous Azzam (2003) results.

3. Data

- ❖ Monthly data (from January 1990 to December 2006) that describes the US cattle market from various sources:
 - ❖ Fed cattle price (Nebraska live heifer: FED_CTL_P - LMIC), Feeder price (Oklahoma feeder price: FEEDER_P - LMIC), Beef cutout price (Choice: BEEF_WH_P - LMIC), Nearby feeder futures price (FEEDER_FUTURE - CRB), Nearby fed (live) futures price (FED_FUTURE - CRB), and captive supply (CAPTIVE - GIPSA).

❖ Price movement



4. Methods and Estimation, cont'd.

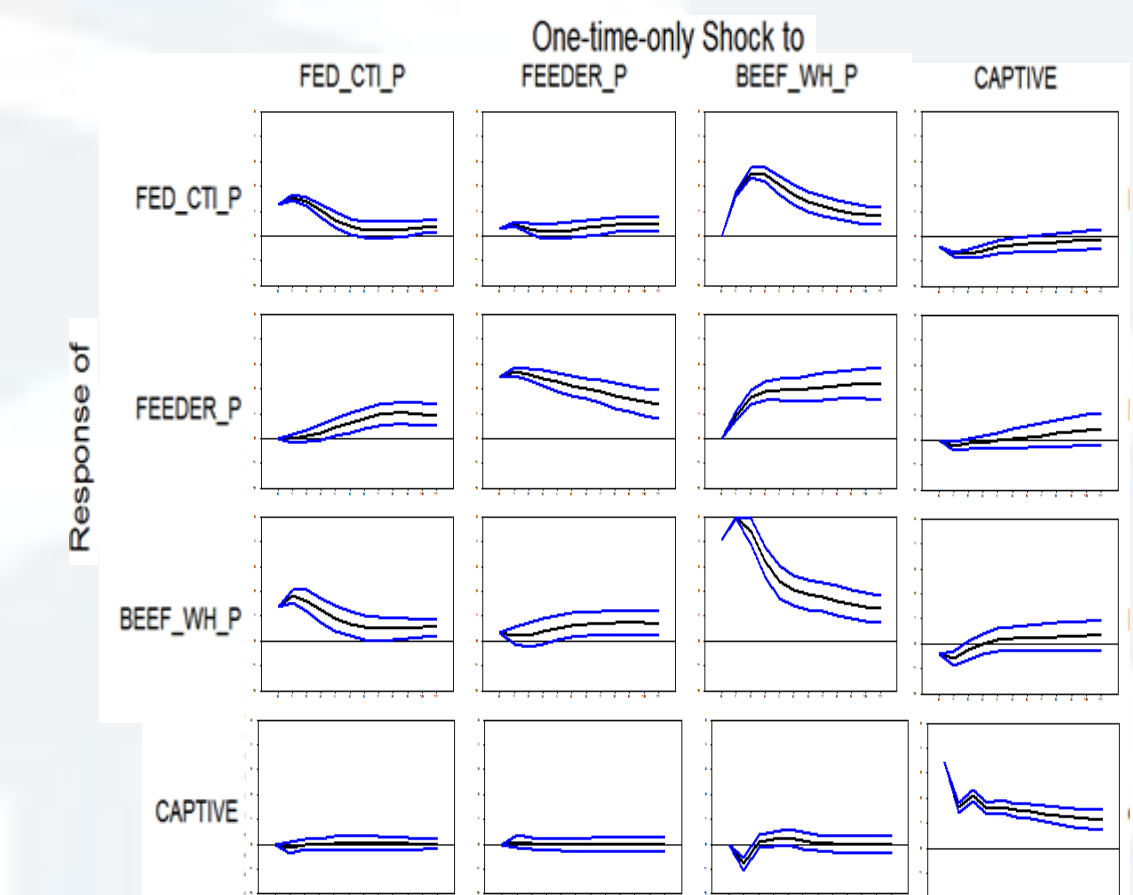
- ❖ In addition, through re-organizing the MAR, we generate a historical decomposition of the variables in consideration to see if there is any change following MPR implementation.
 - ❖ Historical decomposition has been used for evaluating the impacts of external shocks (here MPR implementation) on market prices (e.g. Park, Jin, and Bessler, 2008), for analyzing the impact of policy changes on the economy (e.g. Amuedo-Dorantes and Wheeler, 2001), and for investigating the impact of free trade on greenhouse gas emissions (Yu, Kim and Cho, 2011).

- ❖ The historical partition of each variable at a particular time $t = t_0 + k$ is computed by using

$$G_{t_0+k} = \sum_{s=k}^{\infty} \Theta_s \epsilon_{t_0+k-s} + \sum_{s=k}^{k-1} \Theta_s \epsilon_{t_0+k-s} \quad (2)$$

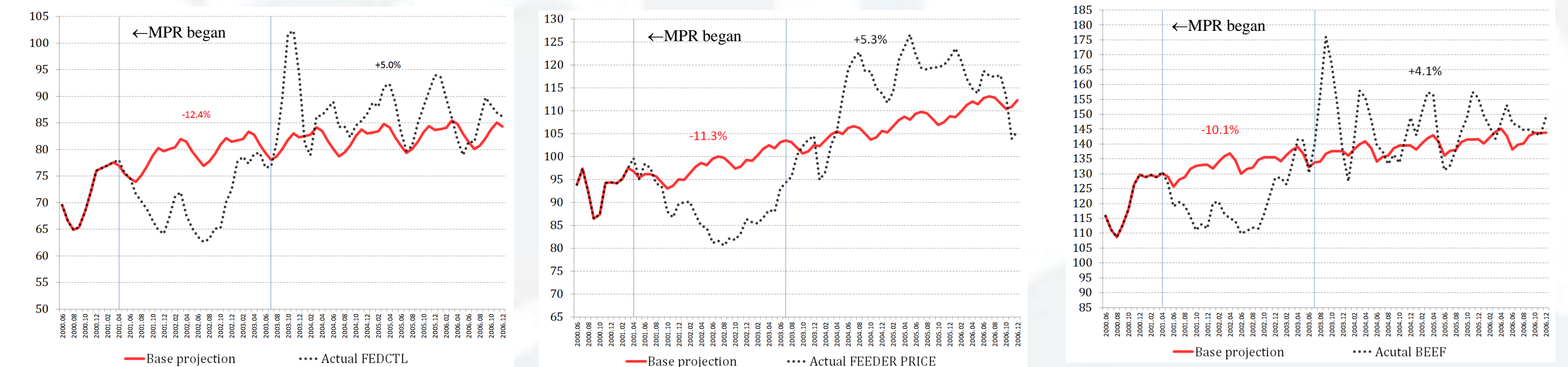
where G_{t_0+k} is the actual prices at $t_0 + k$. The first term in RHS is the base projection which is generated based on information up to t_0 (MPR implementation).

- ❖ Impulse response function (below) suggests that beef cutout price (BEEF_WH_P) dominates prices movement except at captive supply (3rd column) while beef cutout price is not responsive to other variables (3rd row).
- ❖ Fed cattle price (FED_CTL_P)(1st row) is sensitive to beef cutout value. Note that captive supply has negative impact to fed cattle price.



5. Historical Decomposition

- ❖ Historical decomposition: red solid line is the base projection using equation (2) and black dot line is the actual price (unit: \$/cwt)



- ❖ *Steady increase in prices above projection after MPR*, however

- ❖ Initial (2001-mid 2002) periods of lower 'actual' price(s) respond to historical record supply in markets from: unexpected large number of cattle on feed, heavier carcass per cattle, and drop in exports.
- ❖ From mid-2002 onwards, sharp and steady supply decrease (to regular levels) coupled with price increases.
- ❖ BSE announcement at end-2003 had severe (albeit brief) effect on fed cattle and beef cut-out prices, less effect on feeder cattle.