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Ted C. Schroeder

J R. Mintert

John M. Blair

THE REACTION OF SLAUGHTER HOG CASH AND FUTURES PRICES TO USDA HOGS AND PIGS REPORTS

T. C. Schroeder, J. R. Mintert, and J. Blair[1]

Summary

This study examined the reaction of slaughter hog cash and futures prices to USDA Hogs and Pigs reports. Over the 1972-87 period, the nearby live hog futures price had $1/cwt or larger absolute price changes on 48% of the trading days immediately after the Hogs and Pigs report release compared to 6% of the days of the release, suggesting that the reports are providing important new information to the market. Average price moves in cash and futures markets following the report releases were positive, suggesting that price usually increased the day after the reports. Over the 1972-87 period, the cash price declined on only 38% of the first trading days after the report releases, and the futures market price declined on 43%. The day of the week on which the Hogs and Pigs reports were released had no significant impact on the market's price variability following release.

(Key Words: USDA Hogs and Pigs Reports, Futures Market, Price Movements.)

Introduction

Recently, questions have been raised regarding the responsiveness of livestock futures markets to U.S. Department of Agriculture (USDA) livestock inventory reports. Concerns have long been present that the inventory reports lead to futures price behavior that has a negative impact on cash market prices. In addition, it has been suggested that the USDA should release livestock inventory reports only on Fridays. Supporters of Friday release dates contend that market volatility would decline if a 2-d "cooling-off period" followed the release of each inventory report. Finally, some observers also have questioned whether or not the USDA livestock inventory reports provide the market with new information not already incorporated in current prices. As a result of these concerns, some industry participants have suggested eliminating the USDA livestock inventory reports, arguing that the reports do not provide new useful information and that they disrupt the market. This study was undertaken to address these issues as they relate to the impacts of quarterly USDA Hogs and Pigs Reports on the live hog futures and slaughter hog cash markets.

[1]Department of Agricultural Economics, Kansas State University.

Procedures

This study examined the short-term responses of the Chicago Mercantile live hog futures contract prices and the Omaha slaughter hog cash prices to the quarterly USDA Hogs and Pigs Reports over the 1972 through 1987 period. In particular, the average price movements and frequency of increasing and decreasing prices that occurred during the days immediately following the report releases were studied. Tests for biases in market returns surrounding inventory release dates and tests for release day-of-the-week effects on price variability also were conducted. To test for biases in market returns, we examined whether mean abnormal market returns and cumulative abnormal returns were present on the days surrounding the inventory report releases. The presence of statistically significant abnormal returns would suggest that market participants could adopt a routine trading strategy prior to the report's release and, on average, earn a positive return, implying that the market had a persistent tendency to move in the same direction following the release of the inventory reports.

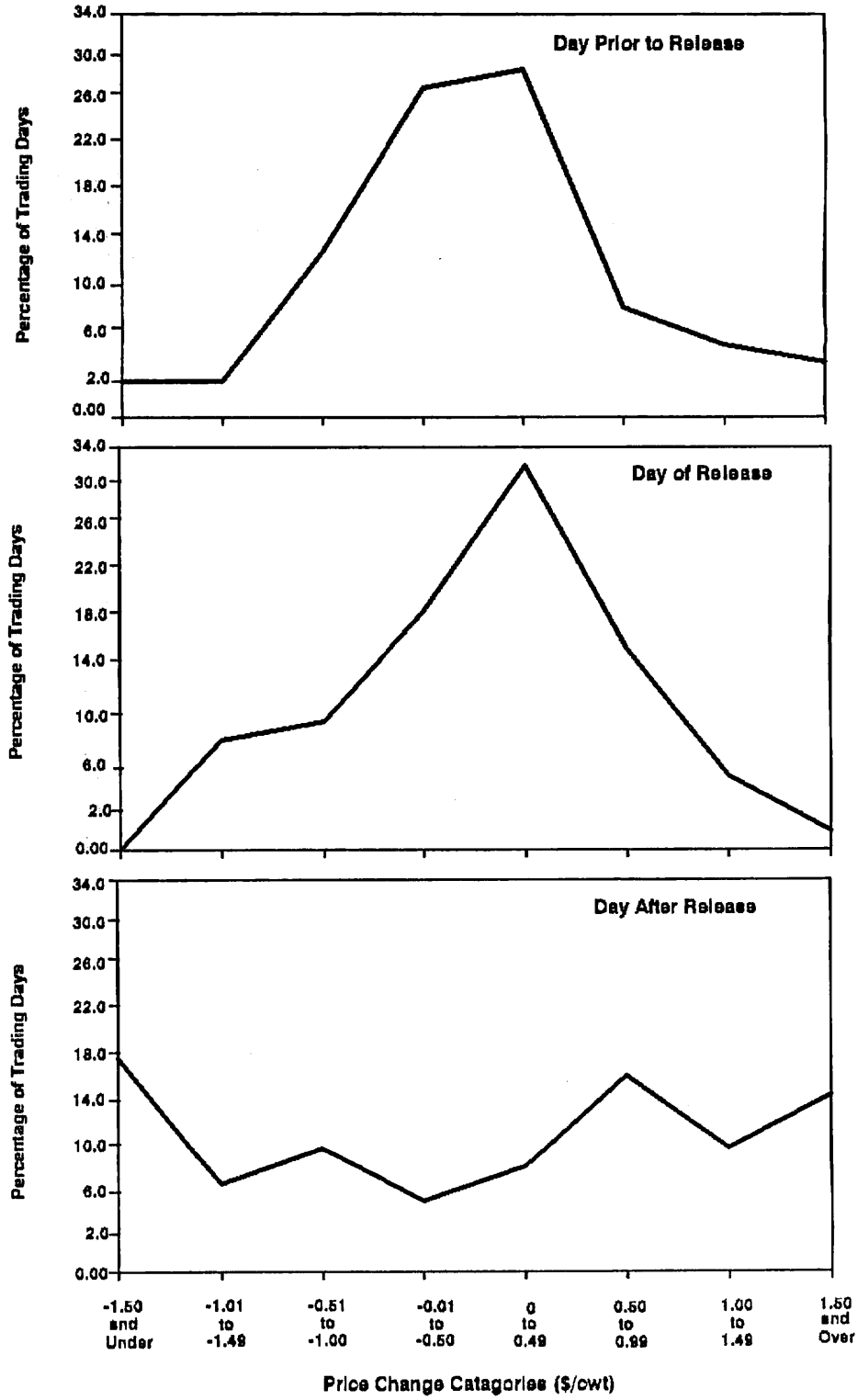
Results and Discussion

The quarterly USDA Hogs and Pigs reports are publicly released in March, June, September, and December. They contain information on hog inventories across four weight ranges, sow farrowings in recent quarters, farrowing intentions, and pig crop estimates of recent quarters.

One reason livestock industry participants are concerned with the impacts of inventory reports on futures prices is the significant increase in the frequency of large price changes that occur immediately following the report releases. Figure 1 shows the distributions of nearby live hog futures price changes around the quarterly Hogs and Pigs inventory release dates. As can be seen, the frequency of $1/cwt or larger price changes increased roughly eightfold on the day after the report releases compared to the day before or the day of the report releases. The nearby live hog futures price had $1/cwt or larger absolute price changes on roughly 48% of the trading days immediately after the Hogs and Pigs report release compared to 6% of the days of the release over the 1972-87 period. The sharp price changes associated with the report releases have led some observers to question the inventory reports' effectiveness. However, if the reports were providing the markets with a significant amount of new information, relatively large price changes following a report's release would be expected, as the hog market sought a new equilibrium price level. Consequently, one possible interpretation of these shifting price change distributions is that the reports are actually providing important new information to the hog market, thereby improving market efficiency.

A summary of price movements of Omaha slaughter hogs and live hogs futures following the Hogs and Pigs report releases is shown in Table 1. Average price moves are positive for the first day after the report releases for both futures and cash markets, suggesting that, on average, prices increased on the day after the reports were released. Futures price continued to have positive average price changes through the third day after the report releases whereas the cash market had negative average price moves on the second and third days after the report releases. Both the cash and futures prices increased more often than they declined on the days just after the report releases over the 1972-87 period. For example, the cash price declined on

Figure 1. Percentage Distribution of Nearby Live Hog Futures Price Changes on the Day Prior, Day of, and Day after the Release of the Quarterly Hogs and Pigs Reports, 1972-1987.



only 38% of the first trading days after the report releases, and the futures market price declined on 43% (Table 1).

Table 1. Summary of Hog Cash and Futures Price Moves during Days around the Quarterly USDA Hogs and Pigs Reports, 1972-1987

Days around report release	Average price change ($/cwt)	Standard deviation ($/cwt)	Percentage of time price declined	Percentage of time price increased[a]	Largest price decline ($/cwt)	Largest price increase ($/cwt)
Omaha Cash Hogs						
1 day prior	0.03	0.90	43	57	-2.63	1.63
Release day[b]	0.22	0.97	38	62	-2.13	2.13
1 day after	0.18	1.02	38	62	-2.50	4.13
2 days after	-0.07	1.20	46	54	-2.75	2.75
3 days after	-0.03	1.00	49	51	-1.88	3.00
4 days after	-0.01	1.02	52	48	-2.50	3.00
5 days after	-0.20	1.15	46	54	-3.75	1.75
Nearby Live Hog Futures						
1 day prior	0.01	0.74	51	49	-1.50	1.50
Release day	0.02	0.69	43	57	-1.50	1.47
1 day after	0.14	1.14	43	57	-1.50	1.50
2 days after	0.13	0.89	48	52	-1.50	1.50
3 days after	0.05	0.68	44	56	-1.50	1.50
4 days after	-0.08	0.69	60	40	-1.50	1.50
5 days after	-0.03	0.75	49	51	-1.50	1.55

[a]Includes days in which the (closing) price did not change from the previous day's price.
[b]The report is released in the afternoon after the market closes, thus, the day after the report is the first day on which the market can react.

No statistically significant abnormal returns were found in the live hog futures prices in the first through tenth days following the release of the Hogs and Pigs reports for nearby or deferred contracts. The absence of abnormal returns suggests that no persistent pressure was present for prices to either increase or decrease following the report releases. Thus, on average, the Hogs and Pigs reports did not induce downward price movements.

Futures market price variability tended to increase for two days following the report's release, compared to the price variability on the remaining days surrounding the report release. For each of the live hogs futures contracts tested, price variability on the first day the

information was available to the market (the day after the release) was roughly twice as large as variability on most of the days just prior to the report release.

The estimates of the day-of-the-week effects of the quarterly Hogs and Pigs reports on the nearby live hog futures price are shown in Figure 2, for the first through fifth trading day following the release dates. The graph shows the average squared price change on the days following the inventory report release dates categorized by the day of the week the report was released. Statistical tests showed that price movements on the first through third days following the report releases were not significantly different from each other, suggesting that the day of the week on which the Hogs and Pigs report was released had no impact on short-term price variability. In general, the average price movement was largest (for all report release days of the week) on the first trading day after the inventory report release, and the price variability declined through the third day following the report release. This is consistent with our other findings suggesting that hog futures prices generally take two days to complete the majority of their short-term adjustment to the information contained in the inventory reports.

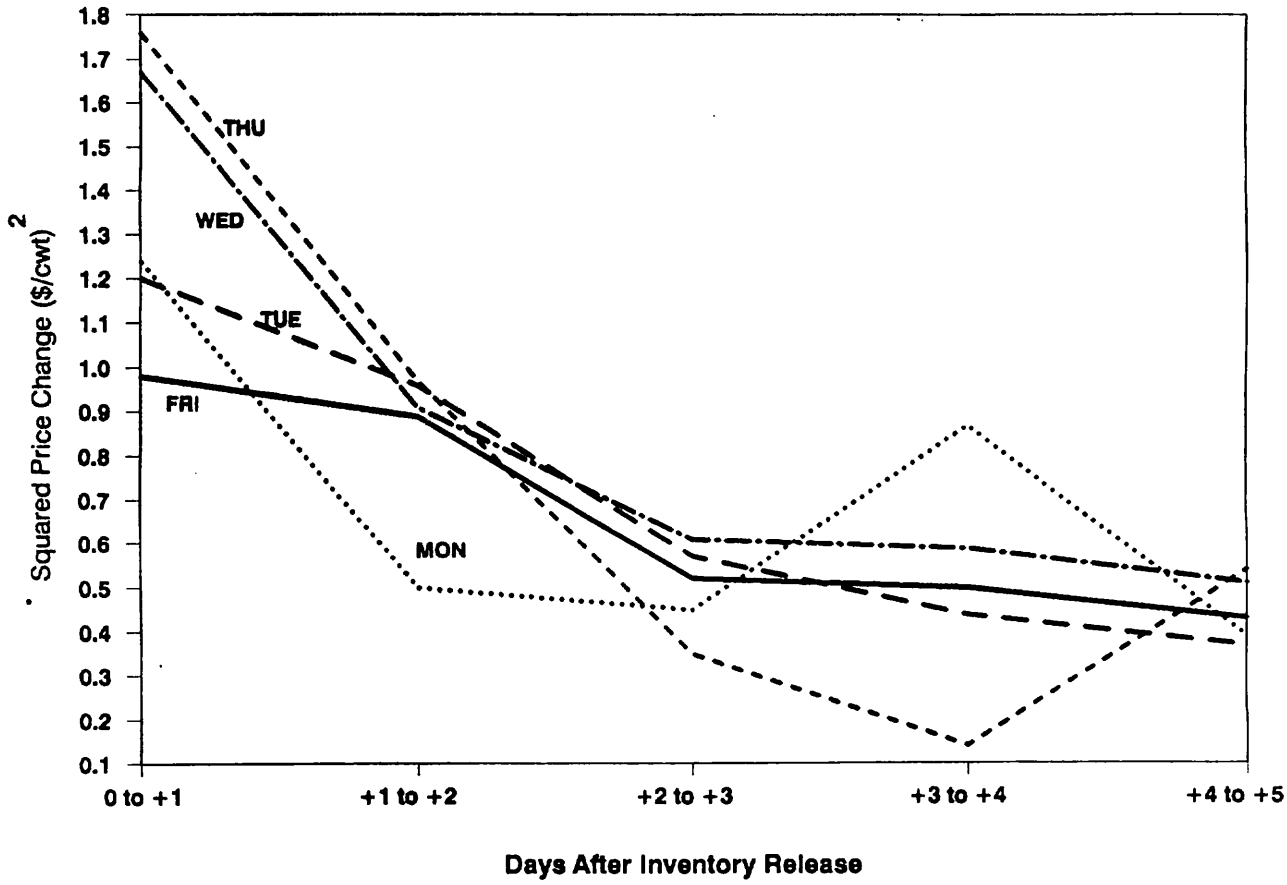


Figure 2. USDA Quarterly Hogs and Pigs Report, Day-of-the-Week Release Day Effects on Nearby Live Hog Futures Price Variability, 1972-1987.