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U.S. LAMB MARKET IN 2010, 2011, AND 2012

**United States Department of Agriculture
Grain Inspection, Packers and Stockyards Administration
Packers and Stockyards Program (P&SP)**

December 2013

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Executive Summary

USDA's Grain Inspection, Packers and Stockyards Administration's Packers and Stockyards Program (P&SP) initiated an investigation of the lamb market on October 18, 2012, after eight U.S. Senators requested an investigation in a joint letter to the Secretary of Agriculture's office. One U.S. Representative also requested the investigation in a separate letter. In November 2012, the Secretary of Agriculture's office received a third letter from a group of nine agriculture advocacy organizations also requesting an investigation.

The letters addressed a broad range of issues in the lamb market. Many of those issues were outside P&SP's jurisdiction. P&SP did not address issues such as opening foreign export opportunities, monitoring the effectiveness of Agricultural Marketing Service (AMS) commodity purchases, or reviewing and adjusting procedures concerning Risk Management Agency (RMA) lamb insurance policies because the issues were outside of P&SP's jurisdiction.

A large swing in prices was at the root of the complaints. Beginning in January 2010 and continuing through 2012, prices for fed lambs doubled then fell back to levels similar to where they started in 2010. From January 1, 2010 to July 9, 2011 the weekly average dressed weight price for fed lambs more than doubled, reaching a peak of \$392.35/cwt. After July 9, 2011, prices for fed lambs started on a long decline that continued throughout 2012. For the last week in 2012, the weighted average dressed formula price for fed lambs was \$220.02/cwt., which was about 56 percent of the peak price.

Wholesale boxed lamb prices, or the lamb cutout, followed a similar pattern as fed lamb prices, but starting in the first half of 2011, the increase in prices for lambs outpaced the increases in cutout prices causing a price squeeze on packers. As prices decreased after July 2011, decreases in prices for dressed formula lambs outpaced the decreases in the cutout values giving packers a larger margin. For the week of October 13, 2012, the difference between the dressed formula price of lambs and the cutout value increased to nearly \$90/cwt. This caused concern that packers were making large profits at lamb producers' expense.

The P&SP investigation found that many market factors interacted to cause the sharp increase and subsequent decrease in lamb prices that occurred during 2010, 2011, and 2012. The cost of imported lamb was likely the most important factor. The United States imports a substantial share of the lamb consumed domestically each year. Australia and New Zealand supply about 90 percent of the world export market. Production issues in Australia and New Zealand reduced availability of imported lamb, increasing prices. Prices for imported lamb increased throughout 2010 and reached a peak in July 2011. Import prices fell throughout the rest of 2011 and 2012 while prices for fed lambs also decreased.

Prices for lamb eventually reached such high levels that consumers curtailed the amount of lamb they purchased. Restaurants and retailers that attempted to keep their prices stable suffered losses when prices increased, and some chose to stop offering lamb. The seasonal nature of demand, which increases around the Christmas and Easter holidays, may have prevented price

signals from fully reaching producers and packers until restaurants and retail firms began placing their orders for Christmas 2011. Those orders were smaller than expected.

This caused a problem that the lamb market has experienced several times. With smaller orders, packers reduced slaughter. Feeders were forced to hold lambs on feed longer than optimal, causing the lambs to get larger, fatter, and older than optimal. The size of the lambs affected demand because the cuts were larger than consumers preferred. Trimming the fat from lambs increased packers' and further processors' costs. Age may have been the biggest problem, because older lamb begins to develop a mutton taste, which many find undesirable.

P&SP investigated packers' procurement of lambs through alternative marketing arrangements and did not find that alternative marketing arrangements caused the large swing in prices that occurred in 2010, 2011, and 2012. The proportion of the lambs that the largest packers purchased through alternative marketing arrangements in 2010, 2011, and 2012 remained relatively constant compared to the changes in prices.

A common complaint from producers and packers involved livestock risk insurance for lambs that RMA and the American Sheep Industry Association sponsored. P&SP investigated whether lamb packers used the lamb insurance program to manipulate prices, and did not find evidence of manipulation.

Many lamb producers complained that when fed lambs were backed-up in feedlots from January through October 2012, packers processed the lambs that they owned in feedlots before they purchased lambs from producers, forcing producers to accept the cost of feeding lambs longer. P&SP found that carcass weights for lambs that packers fed for slaughter were significantly higher than average carcass weights for all lambs that each firm processed. This indicates that packers delayed processing their own lambs on feed as long as or longer than they delayed processing other feeders' lambs.

Finally, the packers had access to information about rivals' production. Some packers can estimate rivals' production from AMS Market News reports. Superior Farms also distributed monthly estimates of the number of lambs in Colorado feedlots to rivals and to the public. Information about rivals' production and prices does not indicate that packers manipulated prices, although the information available to them increases the potential for cooperation among packers.

In summary, the investigation found that a combination of many market factors caused the increase and subsequent decrease in lamb prices in 2010, 2011, and 2012. P&SP did not find evidence of price manipulation.

U.S. LAMB MARKET IN 2010, 2011, AND 2012

USDA's Grain Inspection, Packers and Stockyards Administration's Packers and Stockyards Program (P&SP) initiated an investigation into the U.S. lamb market on October 18, 2012, after eight U.S. Senators requested an investigation in a joint letter to Secretary Vilsack and one U.S. Representative also requested the investigation in a separate letter to Secretary Vilsack. In November 2012, a group of nine agriculture advocacy organizations also sent Secretary Vilsack a letter requesting the investigation.

The members of Congress and agriculture organizations requested that USDA address a broad range of issues. This paper addresses only those that were within P&SP's jurisdiction. P&SP did not address issues such as opening foreign export opportunities, monitoring the effectiveness of Agricultural Marketing Service (AMS) commodity purchases, or reviewing and adjusting procedures concerning Risk Management Agency (RMA) lamb insurance policies. The Packers and Stockyards Act of 1921 gives P&SP authority to regulate and investigate packers, market agencies, livestock dealers, and stockyards. Therefore, P&SP focused the investigation on lamb packers, and the following issues.

1. The sharp increase and subsequent decrease in lamb prices that occurred during January 2010 to October 2012;
2. Committed procurement of slaughter lambs during January 2010 to October 2012; and
3. Whether the RMA-sponsored insurance policy for lamb enabled packers to manipulate lamb prices.

Interviews and Data and Record Reviews

P&SP interviewed over forty-five people involved in the sheep and lamb market, including sheep and lamb producers, dealers, livestock auction managers, lamb feeders, packers, market analysts, and federal regulators.

P&SP reviewed transaction data, procurement agreements, and inventories among other records for the period of January 1, 2010 through October 31, 2012 at three lamb packers, Superior Farms, Mountain States Lamb Cooperative, and JBS USA, LLC. AMS provided purchasing and sales data that it collected from packers under the Mandatory Price Reporting Act and regulations, and RMA provided records of lamb insurance contracts and indemnities paid.

P&SP used many of the market news reports available on the AMS Internet site at <http://www.ams.usda.gov>. P&SP also obtained market data from Livestock Marketing Information Center's member spreadsheets at <http://www.lmic.info>.

Brief Market Background

The United States sheep and lamb market has been contracting for decades. Sheep and lamb inventory reached a peak in 1942 at 54 million head and since then has fallen to 5.3 million head in January 2013. Federally inspected slaughter of sheep and lambs in 2012 was about two million head. There are several reasons for the contraction including changes in consumer

preferences for meats, improved efficiency in competing meats and poultry, low cost imports, and low cost fibers that compete with wool.

A trend in the lamb market has been growth in the nontraditional market. Determining the size of the nontraditional market is difficult because the lambs typically are not processed in federally inspected plants. Shiflet, Williams, and Rodgers¹ estimated that 995,000 lambs were sold directly from producers to consumers in 2009. The nontraditional market tends to serve specific ethnicities and lambs entering the nontraditional market are typically slaughtered at lighter weights. Shiflet, Williams, and Rodgers also found that nontraditional buyers preferred lambs weighing 90 lbs. or less compared to an average of 149 lbs. for federally inspected lambs in 2009.

The market for lambs is seasonal. Lamb feeders may purchase a six to eight month supply of feeder lambs in September and October each year when producers in the mountain west weaned their lambs. To prevent all of those lambs from finishing at the same time, lamb feeders tended to place the lambs on pasture where they gain weight more slowly than they would in feedlots. Then they could move the lambs to feedlots over time so that the lambs will not all finish at the same time. Alfalfa fields in the Imperial Valley in California have been an important source for winter pasture.

Concentration

P&SP obtained data from USDA, Food Safety Inspection Service (FSIS) identifying the number of lambs that FSIS inspected at each lamb plant each year. Combining the FSIS data with reports that packers submit to P&SP annually, P&SP measured the four firm concentration ratio² (CR4) at about 68 percent, the eight firm concentration ratio³ (CR8) at 77.5 percent and a Herfindahl-Hirschman Index (HHI) at 1,658 in 2012. The Federal Trade Commission and Justice Department *Horizontal Merger Guidelines*⁴ would consider the slaughter sheep and lamb market moderately concentrated.⁵

The market shares and other concentration measurements listed above likely overstate concentration in the lamb market because many of the lambs entering the nontraditional market were not slaughtered at federally inspected plants. Shiflet, Williams, and Rodgers estimated that the nontraditional market accounted for nearly a million lambs in 2009, which is almost half the number processed in the traditional market. If there were an additional 1 million lambs in 2012 that were not processed in federally inspected plants, the CR4 would be 45 percent. The CR8

¹ Julie Stepanek Shiflet, Gary Williams, and Paul Rodgers. February 2010. *Nontraditional Lamb Market in the United States: Characteristics and Marketing Strategies*. American Sheep Industry Association and American Lamb Board. http://www.sheepusa.org/user_files/file_592.pdf

² CR4 is the four firm concentration ratios, which is the sum of the market shares of the four largest firms.

³ CR8 is the eight firm concentration ratios, which is the sum of the market shares of the eight largest firms.

⁴ U.S. Department of Justice and the Federal Trade Commission. August 2010. *Horizontal Merger Guidelines*. <http://www.justice.gov/atr/public/guidelines/hmg-2010.html>. 7/15/13.

⁵ The *Horizontal Merger Guidelines* define a market with an HHI less than 1,500 as unconcentrated. Markets with an HHI of 1,500 to 2,500 are moderately concentrated. Markets with an HHI greater than 2,500 are highly concentrated.

would be about 52 percent. The HHI would be less than 750, and the *Horizontal Merger Guidelines* would consider the market unconcentrated.

Pricing Methods for Fed Lambs

Packers and fed lamb sellers determine the price of fed lambs in a variety of ways. Negotiated or “spot” pricing is one common way to determine prices. Under this method, buyer and seller negotiate and agree to a price “on the spot,” at the time of the transaction. Sales prices determined through public auctions are considered negotiated prices. Negotiated prices can be either on a live weight basis, or a dressed weight basis.⁶

However, negotiated pricing is not the most common way packers and sellers determine fed lamb prices, therefore negotiated lamb prices are not the most representative measure of fed lamb prices. During 2010 through 2012, the largest three lamb packers combined bought about 26 percent of their lambs on the spot market. In general, the fed lamb spot market is often thinly traded.

The most common method of fed lamb procurement is through marketing agreements and contracts. During 2010 through 2012, the largest three lamb packers combined bought about 46.6 percent of their lambs with marketing agreements and contracts. While pricing methods under these arrangements vary, price is usually determined by an agreed-upon formula, most commonly a dressed weight formula based on a currently reported market price,⁷ often with premiums and discounts based on carcass quality. These prices are reported by AMS as dressed formula prices. The livestock risk insurance program for lambs uses dressed formula prices to determine indemnity payouts. Dressed formula lamb prices are a more representative measure of fed lamb prices than negotiated prices. Therefore, this report uses dressed formula prices when discussing and analyzing fed lamb prices. However, market forces generally cause negotiated and formula prices to move in the same direction.

Packers also procure lambs for feeding and later to slaughter (packer fed lambs), but those prices are for a different class of livestock, namely feeder lambs, and thus those feeder prices are not necessarily comparable to fed lamb prices. In the case of packer fed lambs, there is no market price for the fed lambs because there is no corresponding market transaction at that level. Carcass prices are the prices at which lamb packers sell whole carcasses to breakers for further processing.

Cutout prices are the prices of lamb meat at the wholesale level. The weighted average cutout price is the average price of individual cuts of lamb meat at the wholesale level weighted by the pounds of each cut that make up an average carcass. AMS reports lamb cutout prices each week.

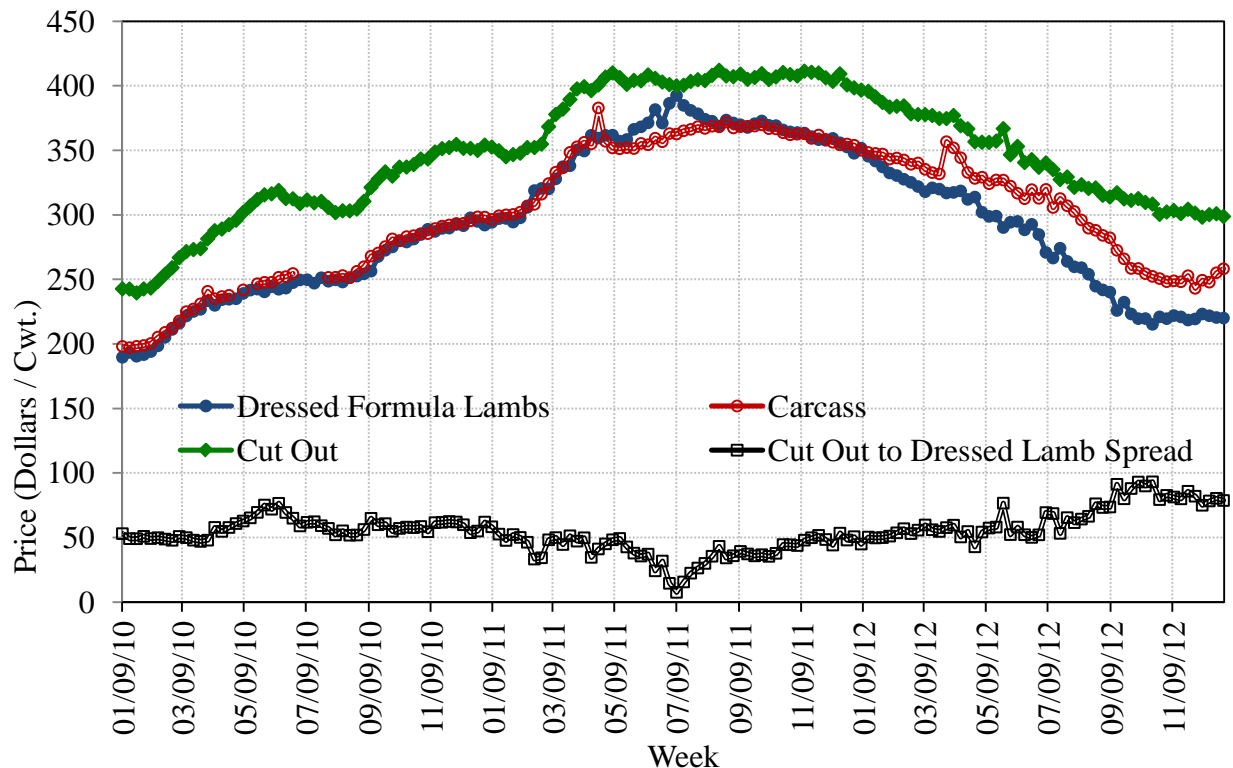
⁶ Dressed weight is the weight of the carcass after slaughter and dressing. Dressed weight is also referred to as “hot weight,” because it is determined immediately after the carcass has been dressed and has not yet been chilled.

⁷ Specific dressed formula pricing methods depend on industry tradition and preferences of individual sellers.

2010 to 2012 Price Swing

A large swing in prices was at the root of the complaints. As the graph below demonstrates, beginning in January 2010 and continuing through 2012, dressed formula prices for fed lambs doubled then fell back down to levels similar to where they started in 2010. In the first week of 2010, the weekly average dressed weight formula price for finished lambs was \$189.71/cwt. During the next eighteen months, dressed weight formula prices for lambs more than doubled, reaching a peak of \$392.35/cwt. for the week that ended on July 9, 2011. After July 9, 2011, prices for fed lambs started on a long decline that continued throughout 2012. For the last week in 2012, the weighted average dressed formula price for fed lambs was \$220.02/cwt., which was about 56 percent of the peak price.

WEEKLY WEIGHTED AVERAGE DRESSED FORMULA PRICE FOR SLAUGHTER LAMBS, WEEKLY WEIGHTED AVERAGE PRICE FOR CHOICE AND PRIME YIELD GRADE 1 TO 4 LAMB CARCASSES, WEEKLY LAMB CUT OUT PRICE AND THE SPREAD BETWEEN THE CUTOUT AND DRESSED FORMULA LAMB PRICE: WEEKS ENDING JANUARY 9, 2010 THROUGH DECEMBER 29, 2012



Sources: USDA, AMS Datamart Export *LM_XL555-CHOICE AND PRIME, YG 1-4*. <http://mpr.datamart.ams.usda.gov/>. USDA, AMS Market News Reports *LM_LM352 National Weekly Slaughter Sheep Review* compiled in LMIC spreadsheet *Weekly352SlaughterSheep.xls*. LMIC spreadsheet *LambCutout.xls* <http://www.lmic.info/tac/spreadsheets/spreadsheets.html>.

Starting in the first half of 2011, the increase in prices for fed lambs outpaced the increases in cutout values causing a price squeeze on packers. The difference between the weekly average dressed weight lamb price and the weekly average lamb cutout value for the week of July 9, 2011 fell to about \$8/cwt. As prices decreased after July 2011, decreases in prices for dressed formula lambs outpaced the decreases in the cutout values giving packers a larger margin. For

the week of October 13, 2012, the difference between the dressed formula price of lambs and the cutout value increased to nearly \$90/cwt.

The increase in this price spread caused concern among some market observers and participants that lamb packers were making large profits. However, the difference between cutout and lamb prices does not represent packers' profits. It only represents the contemporaneous difference in prices between the cutout and formula dressed lamb prices. Packers' processing costs are not included in the difference.

Another factor that influenced packers' profits during 2010 to 2012 was inventories of both packer fed lambs and product in storage. As carcass prices and cutout prices increased, the value of packers' inventories increased as well. The spread understated packers' profits when prices were increasing because packers sold increasingly valuable lamb meat produced from lambs that they had procured at earlier lower prices. When prices were decreasing, the value of packers' inventories decreased too. The price spread overstated packers' profits when prices were decreasing, because packers sold less valuable meat produced from lambs procured at earlier higher prices. The effect was larger during the downturn because packers increased the amount of product they held in inventory.

The large price swings in feeder lamb prices, fed lamb prices, carcass prices, and cutout values during 2010 to 2012 are interrelated. The report now turns to detailing the timing of the price swing, and discussing market events and conditions that may have contributed to the sharp increase and subsequent decrease in lamb and sheep prices during that time.

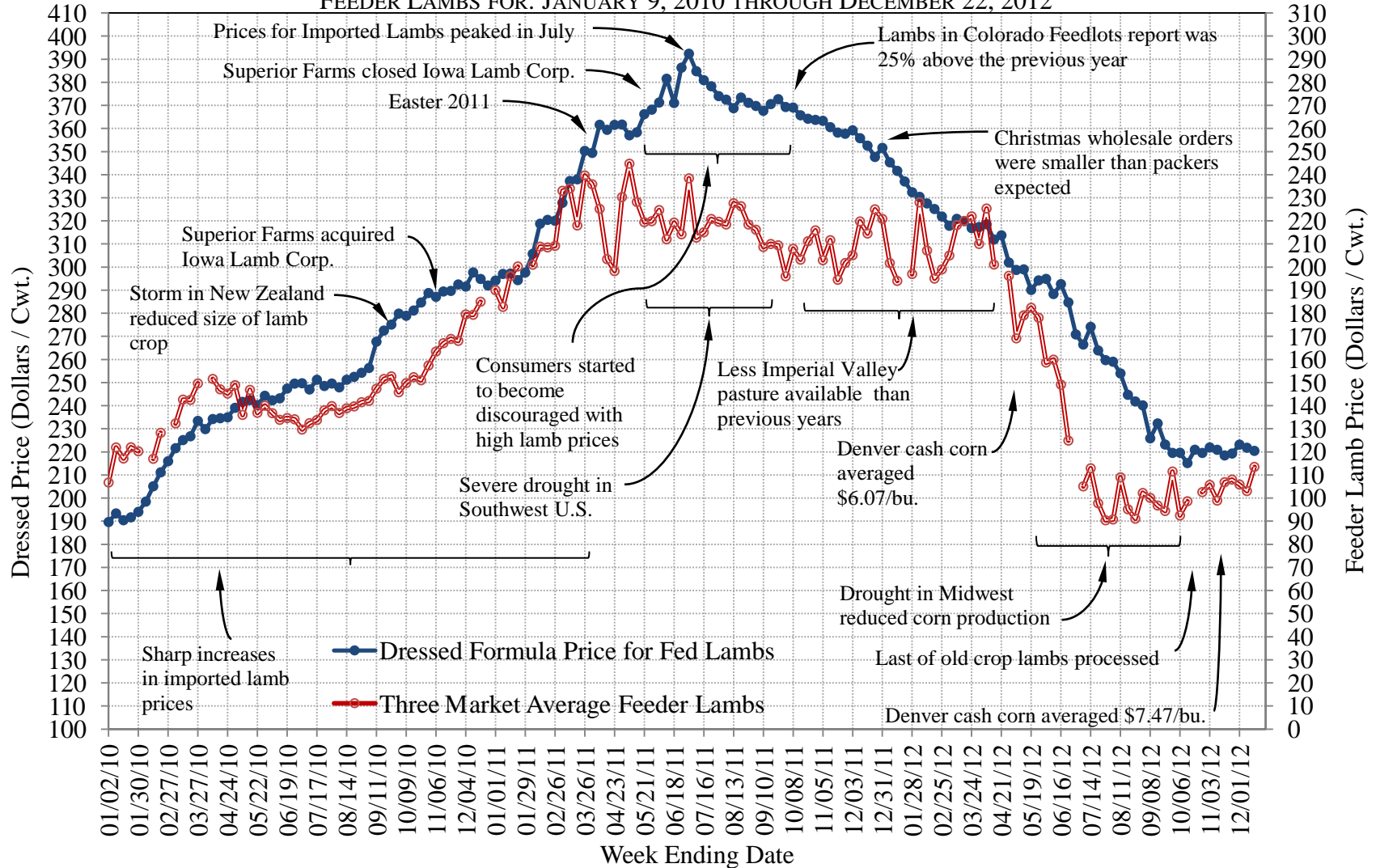
The lamb market has previously experienced large corrections. Similar corrections took place in the late 1950s, in the late 1980s, and in 2001,⁸ although the correction that took place in 2011 and 2012 was more severe.

Many market factors interacted to cause the sharp increase and subsequent decrease in lamb prices that occurred during January 2010 to October 2012. They include seasonality in the lamb market, availability of imported lamb, and drought in the United States, among others. The graph on the following page has weekly prices for fed lambs and for feeder lambs in 2010, 2011, and 2012. It also lists several of the events that likely contributed to the movements in prices.

A consensus of the people interviewed in the investigation attributed the start of the increase in prices to a world-wide shortage of lamb. Roughly half of the lamb consumed in the United States has been imported in recent years. Australia is the largest supplier of imported lamb and New Zealand supplies most of the rest. Drought affected Australian production, and a large storm killed as many as a million lambs in New Zealand in September 2010.

⁸ Anderson, David. 2013. "Adventures in Thin Markets, Contracting, and Concentration: Today's Lamb Market." Proceedings, Western Society of Animal Science. 2013 Sheep Symposium. Vol. 64, 2013.

WEEKLY AVERAGE DRESSED FORMULA PRICE FOR U. S. SLAUGHTER LAMBS AND WEEKLY AVERAGE THREE MARKET* PRICE FOR FEEDER LAMBS FOR: JANUARY 9, 2010 THROUGH DECEMBER 22, 2012



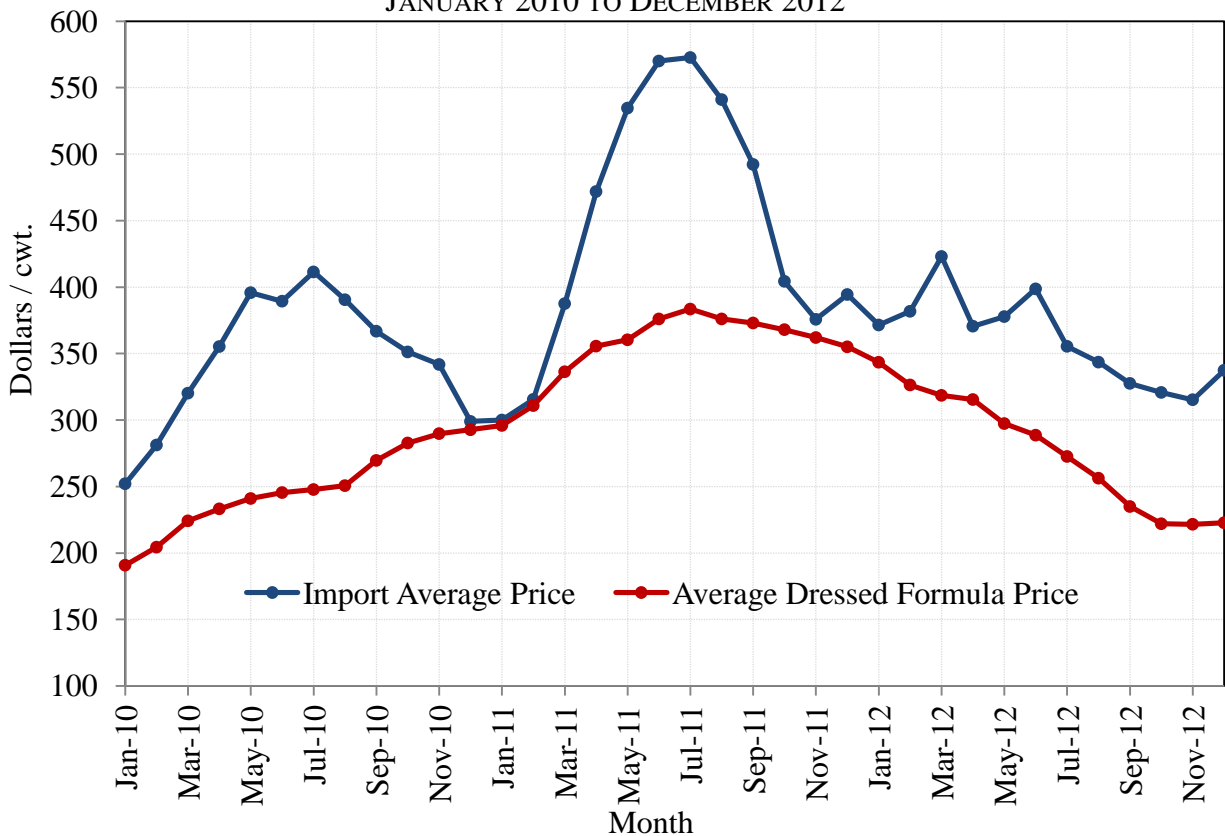
*Three Markets are Producers Livestock Auction Company, San Angelo, Texas; Centennial Livestock Auction, Fort Collins, Colorado; and Sioux Falls Regional Stockyards, Worthing, South Dakota.

Several stakeholders also suggested that exchange rates caused import prices to increase. In addition, many stated that they believed the livestock risk insurance program for lambs was a factor in the increase in prices for lambs. Exchange rates would affect the price of imported lamb. The graph below has import prices in U.S. dollars. Changes in the exchange rate for Australian dollars would appear as changes in price in the graph.

Prices for domestic lamb tended to increase with prices for imported lamb because buyers could substitute domestic lamb for imported lamb as prices increased. As buyers switched from imported lamb to domestic lamb the prices for U.S. lamb would increase. For the same reason, prices for American lamb and imported lamb would also tend to move together when prices for imported lamb decrease.

The graph below shows the prices of imported lamb cuts and carcasses and the average dressed formula price for domestic lambs. Both imported lamb meat and dressed formula prices for domestic lamb reached their peak in July 2011.

MONTHLY AVERAGE VALUE (IN DOLLARS PER HUNDREDWEIGHT) OF FRESH AND FROZEN BONELESS AND BONE IN CUTS AND FRESH AND FROZEN CARCASSES IMPORTED FROM AUSTRALIA AND MONTHLY AVERAGE DRESSED FORMULA PRICE FOR U.S. FED LAMBS: JANUARY 2010 TO DECEMBER 2012



Sources: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics distributed in USDA, FAS Global Agricultural Trade System database <http://www.fas.usda.gov/gats/ExpressQuery1.aspx>. USDA, AMS weekly Market News reports LM_LM352 *National Weekly Slaughter Sheep Review* compiled in LMIC Microsoft Excel spreadsheet, *Weekly352SlaughterSheep.xls*. <http://www.lmic.info/tac/spreadsheets/spreadsheets.html>.

In November 2010, Superior Farms acquired Iowa Lamb Corporation (Iowa Lamb) in Hawarden, Iowa. Iowa Lamb was among the largest packers at the time. Superior Farms stated that it expected to realize cost savings when it purchased Iowa Lamb. Others in the industry speculated that Superior Farms purchased Iowa Lamb because it wished to control the lamb market in the Midwest. If Superior Farms had planned to “take control” of the lamb market in the Midwest, the plan failed when it closed the plant six months later.

Packers indicated that by fall of 2010 they were not able to purchase enough lambs to fill their customers’ orders. In late 2010 and early 2011, Kroger and Walmart started programs to sell exclusively lamb produced in the United States.

By Easter 2011 consumers had begun to reject the high retail prices. Retail stores and food service providers took losses on lamb as prices increased because they attempted to keep their sales prices steady while the price for the lamb they purchased continued to increase.

Restaurants change their menus infrequently creating a lag in both price and orders when consumer demand changes. The seasonal nature of demand, which increases around the Christmas and Easter holidays, may have prevented price signals from quickly reaching producers and packers. Retail and food service orders typically decrease after Easter each year, and packers may not have known that much had changed until food services and retail firms began placing their orders for Christmas 2011. Those orders were smaller than expected.

In May 2011, while prices for slaughter lambs were still increasing, Superior Farms stopped slaughtering lambs at the Iowa Lamb plant, although Superior Farms continued to use the plant as a buying station. It operated the Iowa Lamb plant for only six months. Superior Farms stated the reason it shut down the Iowa Lamb plant was that it could not purchase enough lambs to keep it open.

Closing Iowa Lamb took one of the largest plants out of the market. Iowa Lamb’s closing made it more difficult for producers in South Dakota and Iowa to market their lambs. After the plant closed in May 2011, lamb feeders who had previously sold their lambs in Iowa had to ship the lambs to the JBS or Superior Farms plants in Colorado or to the Strauss Brands, Inc. plant in Chicago.

Fed lamb prices and imported lamb prices both peaked in July 2011. At \$392.35/cwt., the weekly average dressed formula price reached a record high that was more than double the price at the start of 2010, which, at the time, was near the record high. Throughout the rest of 2011 and most of 2012, prices for fed lambs decreased steadily. By the last week of 2012, the dressed formula price for lambs had fallen to \$220.02/cwt., which was more than \$30/cwt. higher than the price at the start of 2010.

During the summer of 2011, Texas, Oklahoma, New Mexico, and parts of Colorado and Kansas experienced a severe drought. Pastures could not support flocks, and prices for hay increased sharply. Lamb feeders that expected to pasture lambs in the southwest found the pastures unavailable. Alfalfa producers in California’s Imperial Valley chose to harvest the alfalfa rather than lease alfalfa fields for stocker lambs, and much of the winter pasture typically available for

lamb was not available in late 2011 and early 2012. With pasture unavailable, lambs were forced into feedlots.

In October 2011, Superior Farms released its report of the number of lambs in Colorado feedlots. According to the report, there were over 25 percent more lambs in Colorado feedlots in October 2011 than October 2010.

Three likely causes for the additional lambs in Colorado feedlots in October 2011 were drought, Iowa Lamb's closing, and the nontraditional market.

Drought reduced the amount of pasture available for lambs in fall 2011 and forced lambs into feedlots earlier than they would have been placed on feed otherwise. Closing the Iowa Lamb plant shifted lambs that would have been fed in the Midwest to feedlots in Colorado.

A third potential cause for the additional lambs in Colorado feedlots in October 2011 was the nontraditional market. Shiflet, Williams, and Rodgers' study⁹ reported that nearly one million lambs were sold in the nontraditional market in 2009. These lambs weigh around 90 pounds when they are slaughtered, while lambs slaughtered in the traditional market weigh around 150 pounds at slaughter. In 2011, lamb prices reached levels that caused buyers in the nontraditional market to reduce the number of lambs they purchased. Instead of going to slaughter, many of the lambs that would have been sold in the nontraditional market were placed on feed in Colorado feedlots.

Customer orders for the December 2011 holiday season were smaller than packers expected. Food services and retail stores had taken losses as wholesale prices increased and reduced the amount of lamb they offered or stopped offering lamb altogether. As a result packers began building large inventories of lamb in cold storage.

Retail stores do not tend to change their product offerings very often. Once one decides to discontinue an item it typically stays with the decision for some time. Restaurants are also reluctant to change their menus. The effect of retail stores and food services dropping lamb would likely persist for a number of months or even years due to their reluctance to change product and menu offerings.

By January 2012, there were over 100,000 more lambs in feedlots in Colorado than in January 2011. Lambs on feed gain weight faster than lambs on pasture. Packers were unable or unwilling to process the lambs at a faster rate, and lambs in feedlots continued to grow. Nearly everyone agreed that lambs in feedlots got larger and fatter than optimal.

Overweight and overfed lambs reduced demand for fed lambs in several ways. Fat lambs forced breakers to trim the fat from the cuts, increasing their costs and reducing the yield. Oversized carcasses did not fit customers' specifications. Some restaurants found that the lamb cuts they received were too large causing the portion sizes to be too large. Also, the industry took until October 2012 to finish processing the lambs born in 2011. As lamb gets older it begins to develop a mutton taste, which many find undesirable.

⁹ Shiflet, Williamson, and Rodgers. *Nontraditional Lamb Market in the United States*.

Overweight lambs also have the effect of increasing the quantity of lamb meat supplied. Heavier lambs produce more meat. For example, if carcass weights average 80 lbs., a five-pound increase in carcass weights, increases the amount of lamb 6.25 percent.

In the summer of 2012, drought encompassed most of the United States, and feed prices increased sharply. Prices for feeder lambs are derived from prices for slaughter lambs, and increases in feed prices caused prices for feeder lambs to decrease even further. Many lamb producers selling lambs in the fall of 2012 received prices that were less than half the price that they received in 2011, and some lamb producers had difficulty selling lambs at all because lamb feeders still had the previous year's lambs in feedlots. Old crop lambs, that is, feeder lambs that entered the market in 2011, remained in feedlots until October 2012.

Alternative Marketing Arrangements

The GIPSA Livestock and Meat Marketing Study defined alternative marketing arrangements as livestock procurement methods other than those in the cash or spot market.¹⁰ Types of alternative marketing arrangements include forward contracts, marketing agreements, and packer owned lambs. Marketing agreements are agreements to purchase lambs over a long period of time such as a year or more, while forward contracts are agreements to purchase a fixed number of lambs to be delivered at a specified date.

Considering the price changes that occurred from 2010 to 2012, the percentage of lambs that the three packers procured through alternative marketing arrangements was relatively stable from year to year. In 2010, the percentage was 70.9. In 2011, it was 76. In 2012 it was 75.1.

Carcass-based formula pricing

One concern raised by market stakeholders was the difference between dressed formula prices and negotiated lamb prices that AMS Market News reported. Unlike most fed cattle marketing agreements, in which the base price is determined by a reported negotiated price for fed cattle, the largest marketing agreements in the lamb market use a base price that is determined by prices for lamb carcasses that packers sell to breakers. These transactions occur at a different market level, further downstream in the production chain than packer purchases of fed lambs or feeder lambs. If the prices for carcasses and live lambs diverge, the prices for dressed formula lambs and live lambs will likely diverge as well.

A second issue with basing dressed formula prices on carcass prices is the fact that the market for lamb carcasses is very thin. Packers are only required to report carcass sales to AMS if they process more than 75,000 head of sheep or lambs annually. Some packers fabricate the carcasses into boxed lamb and do not sell carcasses at all. Consequently, few packers reported to AMS Market News that they sold carcasses. Although the investigation did not find that packers had manipulated carcass prices, basing dressed formula lamb prices on a market with few sellers increases the potential for manipulation.

¹⁰ Mary Muth, Sheryl Cates, Michaela Coglaiti, et al. January 2007. *GIPSA Livestock and Meat Marketing Study*. RTI International. http://www.gipsa.usda.gov/Publications/P&SP/livemarketstudy/LMMS_Vol_1.pdf.

Carcass Weights

A common complaint was that packers processed their own lambs on feed when the lambs were ready for slaughter but forced other feeders to hold their lambs letting them get overweight. Packers agreed that lambs were fed too long and became overweight. Packers also stated that their own lambs were fed too long and that they delayed processing their own lambs as long as or longer than they delayed purchasing lambs from others. Lamb feeders that custom fed lambs for packers confirmed packers' statements.

P&SP reviewed carcass weights to determine whether packers processed their own lambs on feed before purchasing lambs from others and found that packers processed their own lambs at weights that were heavier than or as heavy as lambs they purchased from other sources.

P&SP reviewed carcass weights for lambs that Superior Farms, JBS, and Mountain States processed during January through October 2012. Lamb feeders explained that lambs were backed-up in feedlots from January through October 2012, and average carcass weights were above the weights for the same period in 2011. Weekly average carcass weights for lambs increased throughout most of 2012 until October when the market finished processing old crop lambs. Weights dropped dramatically after packers finished processing the last old crop lambs in October.

P&SP compared weekly average carcass weights for lambs that packers fed for slaughter to weekly average carcass weights for lambs that they purchased from others using paired difference and pooled variance t-tests. P&SP performed the hypothesis tests for JBS, Mountain States, and each of Superior Farms' two plants. For three of the four tests, average weights for lambs that packers fed for slaughter were significantly higher than the average carcass weights at a minimum of a 99.9 percent level of confidence using either a paired difference or a pooled variance test. In one of the four tests weights were not significantly different. The comparison of carcass weights indicate packers delayed processing their own lambs as long as or longer than they delayed purchasing lambs from others.

Livestock Risk Protection Insurance for Lambs

Both of the letters that USDA received from Congress requested a review of the livestock risk protection insurance program for lambs (LRP-Lamb). In addition, many stakeholders stated that they believed LRP-Lamb was a factor in the changes in prices for lambs. Many of the complaints were outside P&SP jurisdiction, and the scope of this review is limited to whether packers attempted to manipulate lamb prices with LRP-Lamb.

LRP-Lamb is an insurance product offered by RMA and the American Sheep Industry Association (ASI) and is designed to protect lamb producers from unexpected market price declines. The program is available to lamb producers in 28 states. Each Monday (or Tuesday if Monday is a federal holiday), producers may purchase a Specific Coverage Endorsement (SCE) to protect against price changes 13, 20, 26, or 39 weeks out. Producers can insure up to 2,000 lambs per SCE, and producers can purchase multiple SCEs on the same day. Producers may

insure a maximum of 28,000 lambs per reinsurance year, which runs from July 1 to June 30 of the following year.

LRP-Lamb offers an Expected Ending Value (EEV) for each SCE. The EEV is an estimate of what the carcass formula price will be 13, 20, 26, and 39 weeks out. The EEV is estimated using a series of price forecasting models. Producers can choose a coverage price from 80 to 95 percent of the EEV. At the end of the SCE, RMA sets the Actual Ending Value (AEV), which is the carcass formula price divided by the average dressed yield. Both the carcass formula price and the dressed yield are reported in AMS Market News LS_LM_352 report. If the AEV is below the coverage price, then the producer receives an indemnity, which based on the difference between the coverage price and the AEV. If the AEV is above the coverage price, then the producer receives no indemnity. It is important to understand that the indemnity payout for LRP-Lamb is based completely upon the level of coverage chosen and the difference between the EEV and the AEV, which is a national weekly average price. The actual cash value the producer receives is irrelevant to LRP-Lamb indemnity payments. In fact, the producer does not even need to sell lambs in order to collect an indemnity payment.

The industry insured over 1 million head of lambs with end dates from April 12, 2010 through October 22, 2012, using LRP-Lamb. During this same period, producers paid roughly \$6 million in premiums, and LRP-Lamb paid about \$32 million in indemnities.

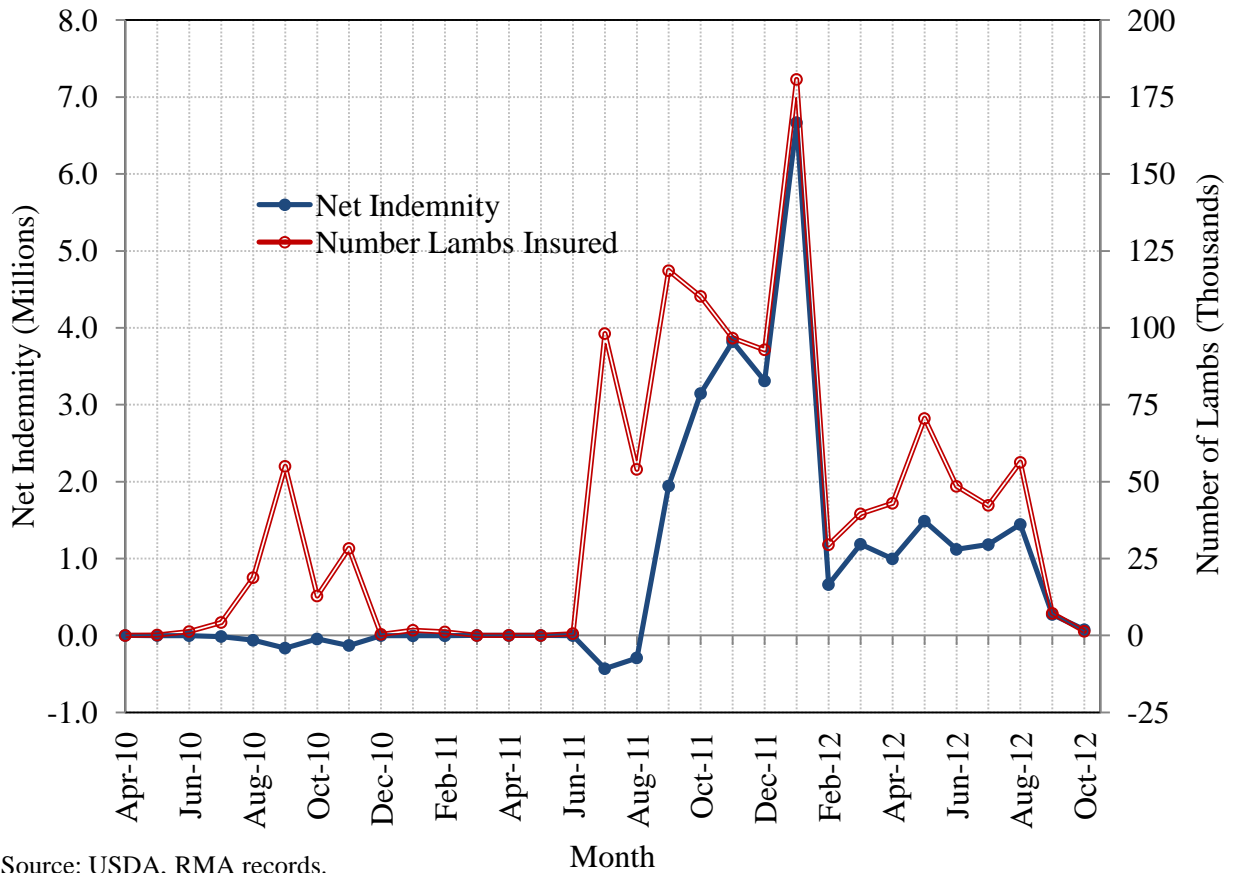
LMIC determined the EEV for each SCE with a series of price forecasting models. It is unlikely that anyone would attempt manipulating the insurance EEV by manipulating data used in the forecasting models. Most of the data are taken from public reports. If some entity is capable of manipulating the reports, the market would be at least as likely to respond to the manipulated reports as to the LRP-Lamb program, and there would be no need to use LRP-Lamb to manipulate market prices.

The graph below has the net indemnities paid each month under LRP-Lamb and the total number of lambs insured with LRP-Lamb each month. While prices were increasing in 2010 and early 2011, there were few insured and the LRP-lamb did not pay indemnities. The number of lambs insured increased in July 2011 when prices for fed lambs started to decline. The policies began paying indemnities in September 2011.

In the graph below the month of January 2012 stood out. In weekly data, the week of January 2, 2012 stood out even more. More indemnities were paid on that date than any other date. In January 2012, lamb feeders received nearly \$7 million dollars in indemnity payments. Just over 180,000 lambs were insured for January 2012. A large majority of the endorsements that paid indemnities in January 2012 were 13 week endorsements, which producers would have begun purchasing on October 3, 2011.

PSP found a likely explanation for the large indemnity payments in January 2012 in trade news reports. A market newsletter in September 2011, explained that funding for livestock coverage had been limited in Fiscal Year 2011. However, LRP-Lamb would be available on October 3, 2011, at the start of Fiscal Year 2012. The newsletter also warned that RMA's insurance funding may not last long.

MONTHLY NET INDEMNITIES PAID AND NUMBER OF LAMBS INSURED WITH LRP-LAMB INSURANCE ENDORSEMENTS ENDING APRIL 2010 THROUGH OCTOBER 2012



Source: USDA, RMA records.

Market Effects

The LRP-Lamb program may have affected prices for feeder lambs. The LRP-Lamb insurance effectively set a floor price that lamb feeders would receive for selling fed lambs. From a producer's perspective, it functioned much like purchasing a put option on the Chicago Mercantile Exchange, if such a product were available.

Lamb feeders were able to use the EEV to estimate break-even prices for feeder lambs when making their purchasing decisions. For example, if a lamb feeder wanted to buy feeder lambs to place on feed for 13 weeks, the feeder could use the most recent 13-week EEV to determine the estimated selling price for the lambs 13 weeks later. Then the feeder could subtract the estimated feeding cost for the lambs to determine an appropriate bid price for the feeder lambs. For most of 2010 and early 2011, the weekly EEV was well below the AEV, and it is not likely that LRP-Lamb had much effect on feeder prices. Policies producers purchased from July 2011 to June 2012 tended to pay indemnities to producers. Although feeder prices generally decreased during that period, the insurance program may have prevented them from decreasing further.

Market Information

The lamb market is relatively small, and the largest plants are physically close to each other in Denver and Greeley, Colorado. Many of the same feeders supplied all three of the packers P&SP investigated. With the exception of their own packer fed lambs, one feeder was the largest supplier for two of the three packers.

Mountain States contracted with JBS to slaughter lambs for Mountain States at the JBS plant in Greeley, Colorado. A Mountain States subsidiary, Mountain States Rosen, leased and operated the breaking facilities at the JBS plant. As a consequence, JBS and Mountain States would have been aware of each other's production levels and at least some of their production costs.

The three packers were able to monitor one another's production levels through the AMS Market News SJ_LS713 Report, *U.S. Federally Inspected Slaughter by Region*, which is made available to the public on Thursday each week. The report lists federally inspected slaughter in several regions, but the number of lamb packers in each region is small. For example, if Superior Farms subtracts the number of lambs that it slaughtered from the number of lambs slaughtered in the Colorado region, the result is relatively close to the number of lambs processed at the JBS plant in Greeley. The same information is available to JBS and Mountain States, and each can easily monitor Superior Farms' production level in the same way.

Since 2007, Superior Farms has provided a monthly estimate of the number of lambs on feed in Colorado to a number of market stakeholders. Superior Farms obtained its estimates by surveying feedlots in Colorado. The report is unique. P&SP is not aware of any comparable publicly available estimates of the number of lambs in feedlots. The report also has potential to influence prices. Some stakeholders indicated that the October 2011 report changed people's expectations about the lamb market. Information about rivals' production and prices does not indicate that packers manipulated prices. However, the information available to them makes cooperation among packers more likely.

Conclusion

P&SP examined the price swing that occurred in the U.S. fed lamb market from 2010 to 2012 and found that several factors contributed to the increase in prices, primarily an international shortage of lamb. Factors that contributed to the subsequent decrease in U.S. fed lamb prices included drought, seasonality in the lamb market, a decrease in the quantity of lamb demanded due to high prices, overweight lambs resulting in a less desirable product, and others.

The P&SP investigation did not find that packers manipulated prices. Lamb packers did not process their own lambs while delaying purchases from others. LRP-Lamb was not likely a source of price manipulation. Superior Farms' purchase and ensuing closing of the Iowa Lamb plant was detrimental to many Midwest producers and feeders. However, the information collected in this investigation suggests that Superior Farms closed the Iowa Lamb plant because it could not purchase sufficient numbers of lambs to operate the plant efficiently. A limited amount of information about rivals' production levels is available to packers, but P&SP did not find that packers manipulated prices.