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What counter seasonal hedging is revealing about the motives of hedging

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Abstract:

Like their North American colleagues, also South American grain merchants prefer to hedge their corn and soybean forward contracts at the CBoT in the United States. This is an interesting fact because it contradicts with the common belief that grain merchants always prefer a close hedge at a local futures exchange. In this paper, we show that the South American grain merchants prefer a loose hedge at the CBoT because of the counter seasonal price pattern in North and South America. The latter provides them with a unique hedging opportunity: Thanks to the counter seasonal price pattern, the South American grain merchants cannot only buy grain at more favorable conditions, but also resell it at more favorable conditions. Our discussion of counter seasonal hedging reconfirms that grain merchants are at first basis traders that seek to maximize their profit margins; the minimization of price risk only comes second.

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JEL Codes: Q11, Q13

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Keywords. South American grain markets, grain merchants, counter seasonal hedging, loose hedge.

JEL. G13, Q11, Q13

Introduction

At least since Working (1962) it is well-known that hedging is not only done for the purpose of risk-avoidance but also for a variety of other reasons. Grain merchants, for instance, do not hedge their grain stocks to avoid price risk but to assure profits from storage. Exporters, again, hedge their forward sales to buy time for the origination of the grain that they just have sold forward (Working, 1953). In the end, Working identified five different hedging practices¹ that all serve different purposes.

One important hedging practice Working, however, left out, not because he missed it, but because it was of no relevance at his lifetime. The talk is about counter seasonal hedging.

Counter seasonal hedging refers to a hedging practice that is common among South American grain merchants. Like their North American colleagues, also South American grain merchants hedge their corn and soybean forward contracts at the Chicago Board of Trade (CBoT) in the United States. The counter seasonal price pattern at the CBoT and in South America provide them with a unique hedging opportunity. Thanks to the counter seasonal price pattern, the South American grain merchants cannot only buy grain at more favorable conditions, but also resell it at more favorable conditions. For South American agriculture, counter seasonal hedging turned out to be an important competitive advantage. It not only increased the

¹ Working (1962) differentiates between carrying-charge hedging, operational hedging, selective hedging, anticipatory hedging and pure risk-avoidance hedging.

incomes of farmers but also further stimulated the grain production in South America. According to Ann E. Berg (2007)—a former board member of the CBoT—counter seasonal hedging has been one of the main drivers of the South American grain market growth in the 1990s and the early 2000s.

Because, no one has ever done further research on counter seasonal hedging, we will do so in this paper. We will work out how counter seasonal hedging functions and why it causes a competitive advantage for South American agriculture. Furthermore, we want to analyze what counter seasonal hedging is revealing about the motives of hedging.

However, before we get on to counter seasonal hedging, we will recapitulate the concept of basis trading (cp. Working, 1953). Basis trading lays the groundwork for counter seasonal hedging. Hence, a basic understanding of basis trading is fundamental to understand how counter seasonal hedging functions.

Basis trading recapitulated

Basis trading dates back to the late 19th century (Williams, 1989). At that time, the first grain merchants began to trade the basis (i.e., the price relationship between the cash price and the futures price: $\text{basis} = \text{cash price} - \text{futures price}$). The grain merchants had figured out that hedging not only helps them to get rid of the price risk, but also that the basis risk that they receive in exchange for the price risk reveals a strong seasonal pattern. They had observed that the basis is usually weaker at harvest time (i.e., the cash price is significantly lower than the futures price), and strengthens over the marketing year (i.e., the cash price relatively increases compared to the futures price). Contrary to prices, that are generally much harder to predict, the basis had turned out to be a reliable indicator for the profitability of storage: Whenever the basis is weak, grain merchants have a strong incentive to store grain, and when the basis strengthens this can be regarded as a sell signal. The profit margin then equals the difference between the weaker buy basis and the stronger sell basis (Working, 1953).

The former concept can also be illustrated by means of a practical example (cp. figure 1).

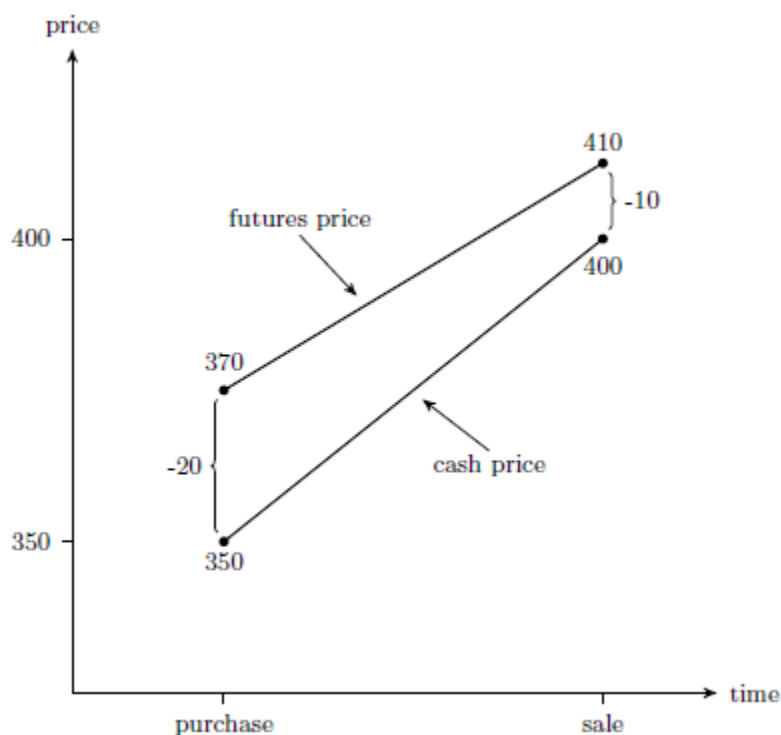


Figure 1. Illustration of the concept of basis trading

For instance, a grain merchant might have bought corn on the cash market at harvest time for 350 cents/bushel. Then, to get rid of the price risk, the grain merchant hedges the price risk on the corn futures market for 370 cents/bushel, which locks in a buy basis of -20 cents/bushel. Later, the basis strengthens and the grain merchant decides to resell the corn on the cash market for 400 cents/bushel. In order to close the basis transaction, the grain merchant offsets his futures position for 410 cents/bushel, which locks in a sell basis of -10 cents/bushel. The profit margin then equals +10 cents/bushel—the difference between the weaker buy basis and the stronger sell basis.

Counter seasonal hedging

In principle, counter seasonal hedging already replicates the previous trading strategy, but with one exception: South American grain merchants, as mentioned above, do not hedge their price risk at a South American futures exchange but at the CBoT in the United States. This is an interesting fact because it contradicts with the common belief that grain merchants always prefer a close hedge (i.e., a hedge at a futures market that closely tracks the price developments of the commodity that they want to hedge) at a local futures exchange (Brorsen et al., 1998). The reason why South American grain merchants still favor a loose hedge at the CBoT becomes clear when one takes a closer look at figure 2 and 3, respectively.

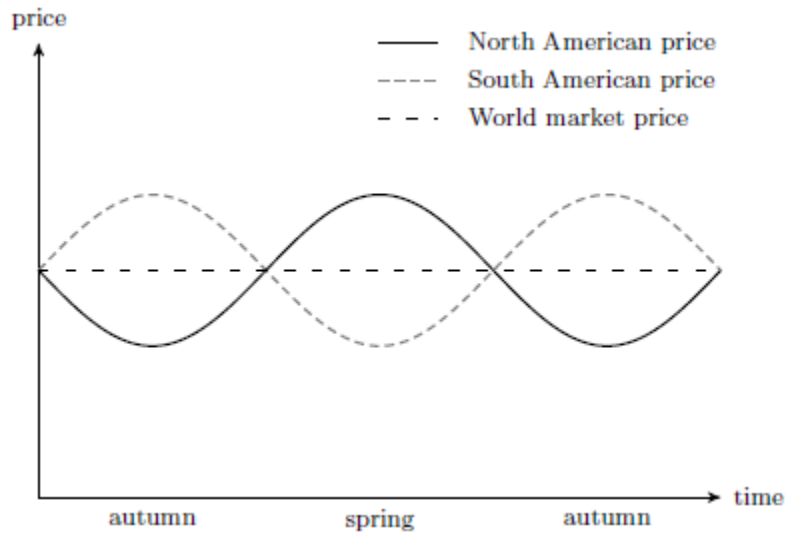


Figure 2. Illustration of counter seasonal price pattern

Figure 2 contrasts the idealized price pattern² at the CBoT with that at a South American futures exchange. For simplicity, we have assumed a flat world market price and stable demand and supply conditions in North and South America. Furthermore, the seasonal price increases in North and South America may reflect the fact that grain is only harvested once the year; the price increases then reflect increasing storage costs.

The most important aspect of figure 2, however, is that the price pattern in North and South America run counter seasonal to each other. This originates from the fact that grain is harvested in North America in autumn and in South America in spring. Because of the different harvest times, also the seasonal price lows are made at various times. In North America, the seasonal price lows are made sometime at harvest (i.e., in autumn) when most of the North American farmers try to sell at least a part of their harvest on the cash market. The corresponding price pressure (aka harvest pressure) then depresses both the cash price and the futures price. For the same reason, also the prices in South America make their harvest lows sometime in spring.

To fully understand why the counter seasonal price pattern in North and South America provide South American grain merchants with a unique hedging opportunity, it is useful to recall the basic idea of basis trading: Buy a weak basis and resell a stronger basis. That this trading rule does not necessarily coincide with a close hedge becomes clear when one compares the outcome of a close hedge at a South American futures exchange with that of a loose hedge at the CBoT (cp. figure 3).

² In fact, between 1995 and 2004, the CBoT corn price index had a tendency to decrease on average 5 percent from spring to autumn, whereas the Brazilian corn price index increased on average 10 percent (Mattos & Silveira, 2015). The real corn price indices are represented in appendix A.

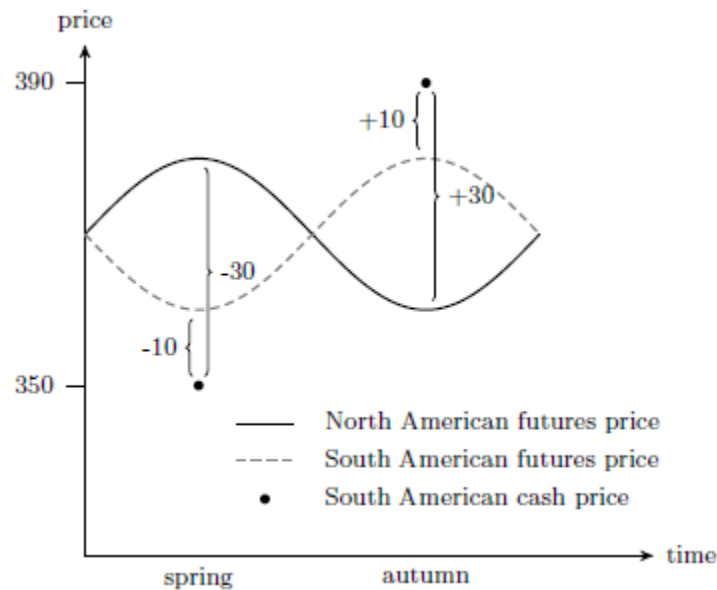


Figure 3: Illustration of the concept of counter seasonal hedging

For instance, assume that it is harvest time in South America (i.e., spring) and a grain merchant just has bought corn on the cash market for 350 cents/bushel. The grain merchant now has two options to hedge his price risk: Either he can hedge the price risk at the South American futures exchange, where the futures prices are usually lower in spring, or at the CBoT, where the futures prices are usually higher. A higher futures price, however, allows to lock in a weaker buy basis. Accordingly, if one only compares the buy bases, the loose hedge at the CBoT has a clear advantage over the close hedge at the South American futures exchange. While the former allows to lock in a buy basis of -30 cents/bushel, the latter only allows to lock in a buy basis of -10 cents/bushel.

The loose hedge at the CBoT, however, not only allows to lock in a weaker buy basis, but also it allows to lock in a stronger sell basis. For instance, if the grain merchant can resell his corn on the cash market for 390 cents/bushel in autumn, the close hedge at the South American futures exchange would allow to lock in a sell basis of +10 cents/bushel, whereas the loose at the CBoT would allow to lock in a sell basis +30 cents/bushel. Obviously, the loose hedge at the CBoT profits again from the fact that the CBoT price runs counter seasonal to the South American cash price. While the South American cash price usually increases after harvest (i.e., spring), the CBoT price has a tendency to decrease. A lower futures price, however, allows to lock in a stronger sell basis. Accordingly, the loose hedge at the CBoT has not only an advantage in the origination of grain but also in grain marketing. In both cases, the grain merchant can lock in a “better” (i.e., weaker or stronger) basis.

The ultimate beneficiaries of counter seasonal hedging, however, are not the South American grain merchants but the South American farmers. The latter have profited in the past from the fact that the grain merchants have used the additional profits to bid up the cash price to win additional (forward) contracts. The higher cash prices, however, have not only increased the incomes of the farmers but also further stimulated the grain production in South America. In fact, between 1990/91 and 2005/06 the corn (soybean) production in Brazil increased by 3.7

(9.0) percent/crop year, whereas the US production increased by 2.3 (3.2) percent/crop year.³ According to Ann E. Berg (2007), the higher cash prices were one of the main reasons⁴ for the rapid grain market growth in South America in the 1990s and the early 2000s.

The discussion of counter seasonal hedging has also revealed another new insight, namely that the liquidity of a futures market (i.e., the number of market participants engaged on a futures market) is not the sufficient but only the necessary condition for the existence of a futures market. There are many grain markets worldwide whose market size is not comparable to that of South America, that still have an own futures market, whereas South America has none (or at least no futures market of significant size)⁵. The reason for this is obvious: The South American grain merchants can make a much better deal when they hedge their price risk at the CBoT and not in South America. The CBoT hedge provides them with a higher profit margin. However, if not the lack of liquidity but a lower profit margin explains the absence of grain merchants on South American futures markets, only the latter can be the sufficient condition for the existence or nonexistence of a futures market.

Furthermore, the previous discussion has reconfirmed that the assumption that grain merchants are pure risk-avoidance hedgers, i.e., that grain merchants only hedge their grain to minimize price risk, is a rather bad description of the reality (Working, 1962). Grain merchants, as the South American example shows, are at first basis traders that seek to maximize their profit margins. The minimization of price risk only comes second. The latter is an interesting insight because it contradicts with the theory of an optimal hedge ratio, which assumes that grain merchants are pure risk-avoidance hedgers that always favor a close hedge (Johnson, 1960). Obviously, this behavioral assumption is at odds with the real hedging behavior of (South American) grain merchants.

Conclusions

In this paper, we have analyzed the hedging behavior of South American grain merchants. This analysis is insofar interesting as the South American grain merchants do not behave as it is predicted by the optimal hedge ratio theory, which assumes that grain merchants are pure risk-avoidance hedgers that always favor a close hedge. In fact, the opposite is the case: The South American grain merchants prefer a loose hedge at the CBoT in the United States.

We have shown in this paper that the South American grain merchants favor a loose hedge at the CBoT because of the counter seasonal price pattern in North and South America. Thanks to the counter seasonal price pattern, the South American grain merchants cannot only buy grain for a weaker basis, but also resell it for a stronger basis. The loose hedge at the CBoT provides them with a higher profit margin.

³ Geometric means are calculated. The corresponding production data have been extracted from the PSD-Online database of the United States Department of Agriculture.

⁴ The other two factors that were crucial for development of the South American grain market, were improvements in soil science and plant breeding for subtropical areas (Allen & Valdes, 2016).

⁵ Contrary to short hedgers, long hedgers cannot profit from a loose hedge at the CBoT. Therefore, long hedgers prefer a close hedge at a local futures exchange in South America provided that the latter offers enough liquidity for hedging.

Our discussion of counter seasonal hedging has not only reconfirmed that grain merchants are at first basis traders that seek to maximize their profit margins, but also it has shown that basis trading does not necessarily coincide with a close hedge. It always depends on the situation whether a grain merchant favors a loose hedge or a close hedge. The latter is important because it questions the optimal hedge ratio theory and its assumption that grain merchants always favor a close hedge over a loose hedge. In fact, our results suggest that there is a need to develop a new theory explaining the hedging behavior of grain merchants.

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Appendix A

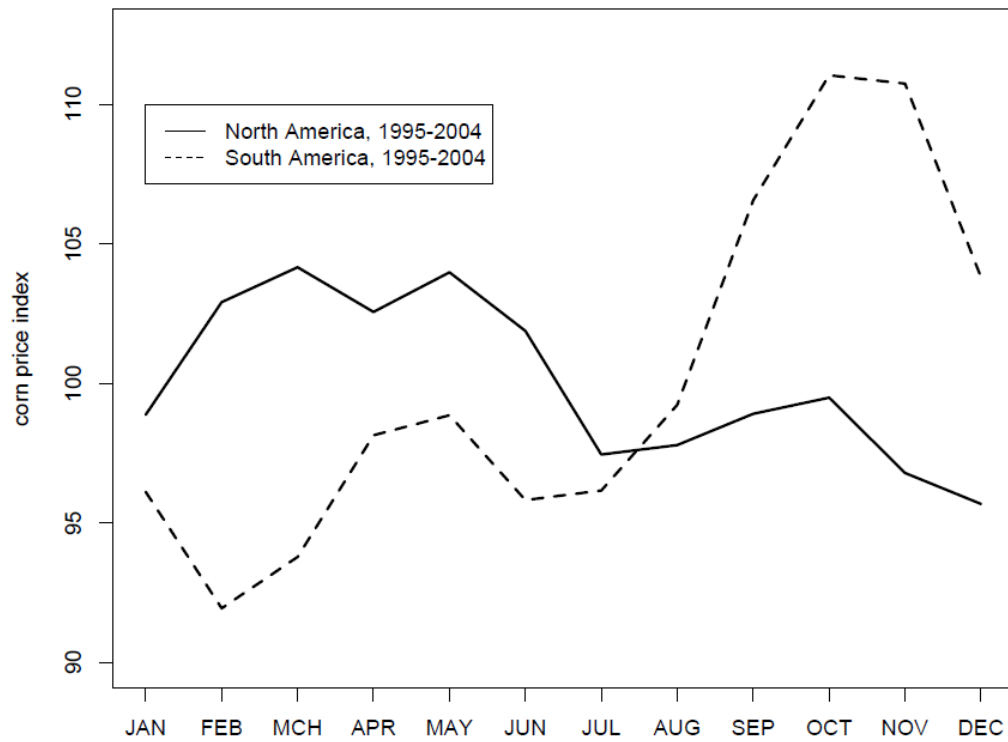


Figure A: Comparison North American vs. South American corn price index (1995-2004)