CHAPTER 25

Incorporating Inflation

Nothing so weakens government as persistent inflation.

—John Kenneth Galbraith

In designing price-forecasting models, it is essential to keep in mind that the measure of prices—the dollar—is itself a variable. Thus, using nominal prices to compare widely separated years makes as much sense as comparing the dollar price of a commodity in one season to the euro price in another season. It is safe to say that any model that does not adjust for inflation is critically flawed.

Figures 25.1 through 25.4 illustrate the difference between nominal and inflation-adjusted prices in different futures markets from 1995 to 2015. These charts illustrate that adjusting for the effect of inflation can alter the relationship between past highs and lows, as well as the relative magnitudes of prior past moves. For example, in Figure 25.1, the 2004 highs in lumber nearest futures were above the 1996 and 1999 highs in nominal terms (solid line), but lower than these previous peaks on an inflation-adjusted basis (dashed line). In Figure 25.2, in March 2004 soybean nearest futures eclipsed their March 1997 high on a nominal basis, but the inflation-adjusted series made a lower high in March 2004.

Figure 25.3 compares nominal and inflation-adjusted copper nearest futures. Successively higher highs in 2007 and 2008 in the nominal series were slightly lower highs in the deflated series. Also note that although nominal prices were substantially higher at the end of the period than at the start, inflation-adjusted prices were near unchanged for period as a whole.

Finally, in Figure 25.4, the nominal price graph reflects a strong uptrend in live cattle prices during 1995 through 2011 (the sharp correction in 2008 notwithstanding), while the inflation-adjusted

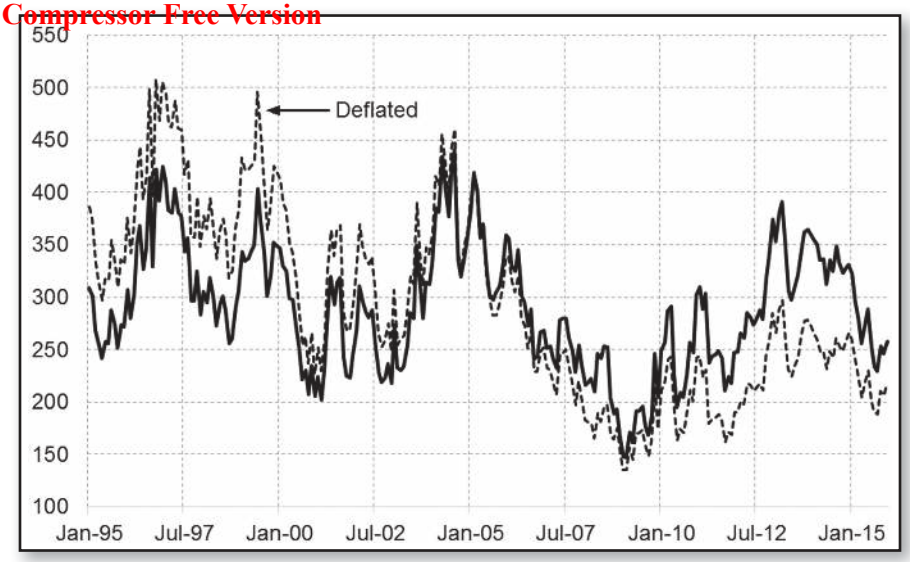

FIGURE 25.1 Lumber: Nearest Futures, Nominal vs. Deflated by PPI*
*Monthly closing prices deflated by PPI indexed to June 2005 = 100.

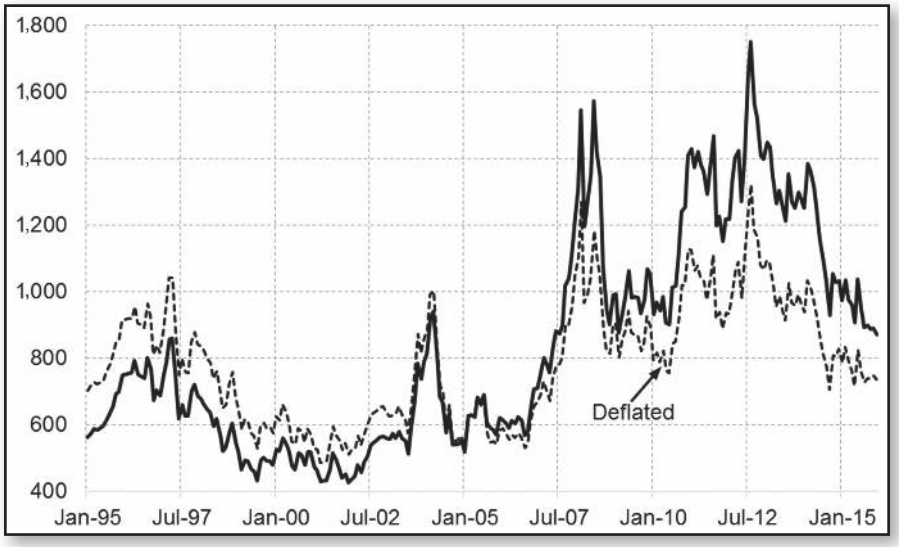

FIGURE 25.2 Soybeans: Nearest Futures, Nominal vs. Deflated by PPI*
*Monthly closing prices deflated by PPI indexed to June 2005 = 100.

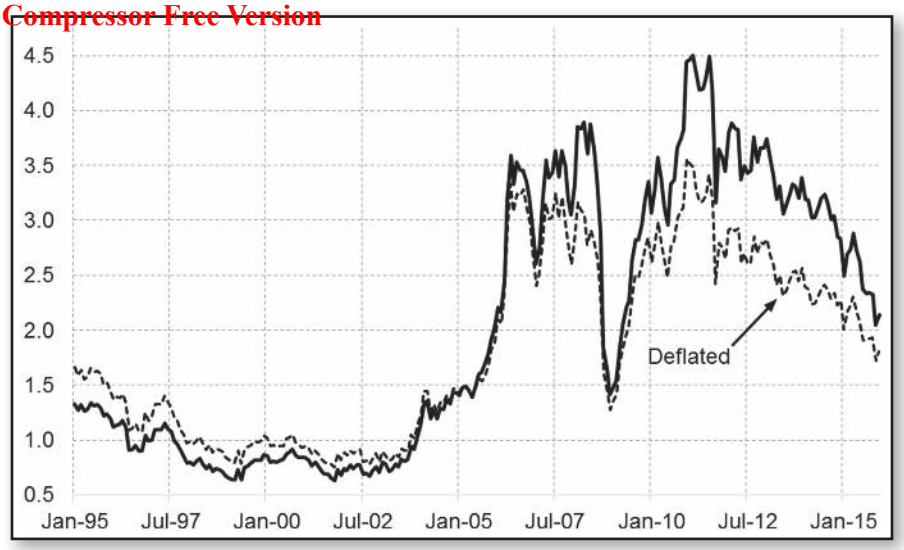

FIGURE 25.3 Copper: Nearest Futures, Nominal vs. Deflated by PPI*
*Monthly closing prices deflated by PPI indexed to June 2005 = 100.

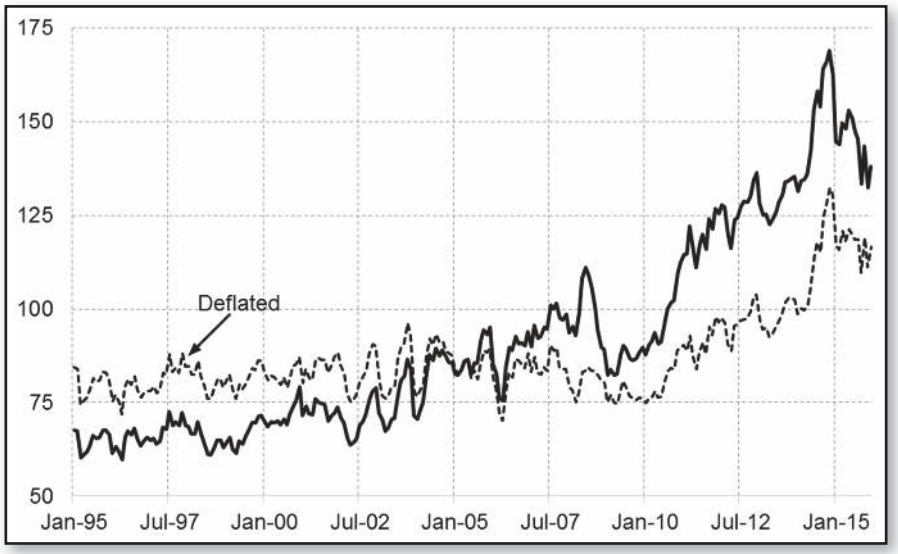

FIGURE 25.4 Live Cattle: Monthly Nearest Futures, Nominal Versus Deflated by PPI*
*Monthly closing prices deflated by PPI indexed to June 2005 = 100.

price series moved essentially sideways during the same period, with little net change for the period as a whole. In other words, the entire rise in nominal prices during this 17-year period was nothing more than the inflation effect.

Some of the ways inflation can be incorporated into the price-forecasting model include the following:

1. A representative inflation index is chosen, such as the producer price index (PPI), consumer price index (CPI), or the gross domestic product (GDP) deflator, and each historical price is divided by the contemporaneous index value, yielding a deflated price series. (Actually, the reported index value is divided by 100, since the index figures are quoted as a percent of a base of 100.) The inflation-adjusted price series in Figure 25.1 through 25.4 were deflated in this manner, using monthly PPI data with June 2005 as the base month (i.e., June 2005 PPI = 100). Table 25.1 applies this method to corn futures price data. A price forecast derived using this approach would be translated into current dollar terms by multiplying the projection by an estimate of the inflation index for the forecast period.
2. Alternately, all historical prices can be transformed into current dollar equivalents by multiplying each past price by the ratio of the estimated inflation index for the forecast period to the index value during the given past period. Table 25.2 illustrates this approach for a September–November 2015 forecast period, based on the assumption that PPI numbers are available only through August 2015. The table estimates the average September–November 2015 PPI by assuming the year-to-year percentage PPI change for this period will be the same as the known year-to-year percentage change in the June–August 2015 average PPI. (The estimated 7.5 percent decrease in PPI using this approach compared with an actual decrease of 7.3 percent.)

   Note that even when the PPI estimate used for the forecast period proves somewhat out of line, the distortion to the price analysis will be limited for two reasons. First, any reasonable inflation estimate will almost invariably be within a few percentage points of the actual figure and usually much closer. Second, all past prices will be overstated or understated equivalently (in percentage terms), thereby maintaining their relative relationship and leaving any price-explanatory model virtually unaffected. In any case, the forecast error attributable to an inaccurate inflation projection would be minuscule compared with the distortion that would result from the use of nominal rather than inflation-adjusted prices.
3. The inflation influence can be incorporated through its impact on the demand curve. Inflation implies an upward shift in the demand curve. All else being equal, the amount consumed at each given price level will increase over time, since each nominal price level represents a lower real price. However, because of the previously discussed problems in quantifying demand curves, this method represents more of a theoretical concept than a practical approach.

The actual method used to adjust for inflation is of secondary importance. The key point is that inflation is a critical input that should be incorporated in any fundamental price-forecasting model.

TABLE 25.1 Corn Monthly Nearest Futures Prices: Nominal and Deflated

Year	Avg. Dec Futures Price, Sep–Nov	Avg. Sep–Nov PPI[a]	Inflation-Adjusted Avg. Price
1995	325.00	81.21	400.20
1996	277.83	83.04	334.57
1997	269.67	82.78	325.77
1998	215.58	80.23	268.70
1999	198.42	82.96	239.18
2000	204.17	87.51	233.31
2001	209.42	84.99	246.41
2002	246.42	86.11	286.17
2003	237.50	90.02	263.83
2004	200.17	97.02	206.32
2005	196.42	106.31	184.76
2006	320.08	106.33	301.03
2007	377.67	113.89	331.61
2008	412.83	121.00	341.19
2009	370.92	113.78	325.99
2010	535.92	120.80	443.63
2011	613.58	130.96	468.54
2012	753.33	131.71	571.95
2013	428.33	131.26	326.33
2014	357.75	131.93	271.17

[a]Reported index values would be divided by 100.0, since reported figures are quoted as a percentage of June 2005 base = 100.0.

Ironically, in the post-1979 period there were some instances when naïve price-forecasting models that totally ignored the effect of inflation may actually have provided more accurate projections than models incorporating this important factor. This apparent paradox can be explained by the extraordinarily high real interest rates (nominal rates minus inflation) witnessed in 1979–1980, which triggered a permanent change in inventory psychology. The high cost of holding commodity inventories provided a strong incentive to reduce inventories all along the pipeline (from raw product to retail). In effect, this widespread decision to hold lower inventories represented a classic example of a downshift in the demand curve. Once set in motion by the shock of the high inflation/high interest rate environment of 1979–1980, and abetted by technological advances and new inventory theories (e.g., "just-in-time"), inventory demand continued to contract even when inflation and interest rates fell sharply. The resulting sustained downshift in demand tended to counterbalance the influence of inflation.

The preceding discussion certainly is not intended to imply that inflation can be safely ignored, but rather that major shifts in the demand for commodities, which can run counter to the inflation

TABLE 25.2 Average September–November Price of December Corn Futures: Nominal and Estimated 2015 Dollar Equivalent Terms

Year	Avg. Dec Futures Price, Sep–Nov	Avg. Sep–Nov PPI[a]	Estimated Avg. Sep–Nov 2015 PPI	Multiplier to Convert Past Season Prices into 2015 Terms	Dec Futures Avg. Sep–Nov Price in 2015 $ Terms
1995	325.00	81.31	120.16	1.478	480.35
1996	277.83	83.24	120.16	1.444	401.19
1997	269.67	82.63	120.16	1.454	392.10
1998	215.58	80.02	120.16	1.502	323.80
1999	198.42	82.91	120.16	1.449	287.51
2000	204.17	87.84	120.16	1.368	279.30
2001	209.42	83.86	120.16	1.433	300.10
2002	246.42	86.24	120.16	1.393	343.26
2003	237.50	90.24	120.16	1.332	316.35
2004	200.17	97.56	120.16	1.232	246.61
2005	196.42	106.48	120.16	1.128	221.56
2006	320.08	106.37	120.16	1.130	361.69
2007	377.67	114.99	120.16	1.045	394.67
2008	412.83	115.38	120.16	1.041	429.76
2009	370.92	114.65	120.16	1.048	388.72
2010	535.92	121.84	120.16	0.986	528.42
2011	613.58	130.11	120.16	0.923	566.33
2012	753.33	131.09	120.16	0.917	690.80
2013	428.33	130.85	120.16	0.918	393.21
2014	357.75	129.90	120.16	0.925	330.92

[a]PPI indexed to June 2005 = 100.

effect, as was the case for the pronounced downward shift in demand evident in the 1980s and early 1990s, must also be incorporated. Some examples of ways the latter factor can be included (assuming a regression model) are the addition of a trend variable[1] and the use of a dummy variable to segment the data by different periods. (Dummy variables are discussed in Appendix E.)

[1] Note that a trend variable need not increase for the entire period used in the analysis, but can be assumed to level off if the trending variable (the downward shift in demand in our example) is assumed to dissipate at some point.

CHAPTER 26

Seasonal Analysis

The freeze may come in winter, but the seasonal rally comes in fall.

—Jack D. Schwager

The Concept of Seasonal Trading

Various markets exhibit seasonal tendencies. Sometimes these seasonal patterns can be attributed to obvious fundamental causes, such as harvest selling or buying in front of potential freeze danger periods for some agricultural markets. Financial markets can also exhibit seasonal patterns tied to fundamental causes (e.g., Treasury refundings, year-end book squaring). Sometimes, however, seasonal patterns will not be associated with any apparent fundamental factors.

The concept of utilizing seasonal patterns in making trading decisions is based on the assumption that seasonal influences will cause biases in the movements of market prices. Of course, such correlations will be far from perfect. It is hardly uncommon for markets to move opposite to their normal seasonal trends. The key question is whether, on balance, there is enough positive correlation between future price movements and past seasonal patterns for such information to be useful. Because (as will be detailed later) apparent seasonal patterns would be expected to appear even in random series, it is difficult to determine to what extent seasonal price patterns reflect true biases as opposed to random occurrences. Hence, there is an unavoidable degree of subjectivity in deciding how much weight to give past seasonal patterns. A reasonable approach is to use seasonal analysis as a supplement to fundamental and technical analysis in making trading decisions, but never as a sole input.

Cash versus Futures Price Seasonality

It is important to understand that seasonal patterns in futures and cash prices may not be equivalent. For example, even if cash prices move lower for a given crop during harvest time with great consistency, it doesn't mean this pattern will provide a trading opportunity. It is entirely possible the

futures market will discount harvest-time weakness in the cash market, thereby eliminating any profit opportunity. Because we are concerned with trading futures, not the cash commodities or financial instruments, the key question is whether a seasonal pattern exists in futures. Therefore, futures data should be used for all seasonality calculations.

The Role of Expectations

Because markets tend to discount expected events, such as changes in the seasons, true seasonal patterns often differ radically from conventional beliefs regarding such patterns. For example, it is widely believed that markets that are vulnerable to severe cold weather, such as heating oil, frozen concentrated orange juice, and coffee, exhibit strength during the winter. (For coffee, the relevant winter period is June through August.) However, these markets often exhibit seasonal strength *prior* to the advent of winter and tend to decline with the onset of winter.

Is It Real or Is It Probability?

Even if a market exhibits a seemingly pronounced seasonal pattern, this does not mean a true seasonal pattern exists. If enough markets are examined for enough periods of time, the emergence of some apparent seasonal patterns will be a virtual certainty *even if all the examined price series are random.* In other words, past seasonal patterns could simply be due to normal probability and not suggest any potential bias for future price behavior.

To illustrate how patterns can occur—in fact, are likely to occur—even if the distribution of price movements is random, we can use coin tosses to represent up or down price changes: heads represents a week with a net price gain; tails a week with a net price loss. Assume we flip a coin 10 times to represent the price movement in a given market in each of the past 10 years. We then repeat this 10-flip trial for a total of 52 times (one corresponding to each week in the year).

Although an equal number of heads and tails (i.e., an equal number of years of up and down price movement) will be the most common event, more than 75 percent of the trials will yield an unequal number of heads and tails (an unequal number of up and down years). In fact, some of these trials will result in a highly unbalanced number of heads and tails. It can be shown through probability theory that in 52 trials (weeks) there is a better than 75 percent chance of getting one or more 10-flip trials with at least 9 out of 10 heads or tails (one or more weeks with at least 9 out of 10 years of up or down price movements).

If the preceding process of 52 ten-flip trials is repeated a total of 25 times (to represent 25 different markets), then the probability of getting one or more 10-flip trials with at least 9 of 10 heads or tails is a virtual certainty (99.999999998 percent). In fact, there is a better than 99 percent probability there will be more than 15 ten-flip trials with at least 9 out of 10 heads or tails. To state this in market equivalent terms, even if the distribution of up and down price movements is random in all markets, in a group of 25 markets, there is a better than 99 percent chance of finding more than 15 instances in which a market moved higher (or lower) in at least 9 out of the past 10 years during a

given week. Thus, it is important to understand that a certain number of apparent seasonal patterns are inevitable even if the distribution of price movements is random.

Calculating a Seasonal Index

There are many methods for calculating a seasonal index. This section examines two basic approaches.

Average Percentage Method

The average percentage method is by far the simplest way to calculate a seasonal index. This method involves the following steps:

1. Calculate an annual average for each year or season.
2. Express each data item (daily, weekly, or monthly value) as a percentage of the corresponding annual average. Either daily, weekly, or monthly data can be used in constructing seasonal indices. A daily or weekly seasonal index is obviously preferable to a monthly index, particularly for trading purposes, but it also requires far more data manipulation. This section uses monthly indices solely for simplicity of illustration.
3. Average the percentage values for each period (month, week, or day). The resulting figures are the seasonal index.

To illustrate this method, we will calculate the seasonal index for heating oil. Table 26.1 lists the average monthly prices for the 1996–2015 December heating oil contracts (which expire in November). Note the first column of data (November) is listed for later use and is not included in calculating the annual average. The final column in Table 26.1 indicates the 12-month average for each contract. Table 26.2 expresses each monthly price as a percentage of the annual average. These percentage figures are then averaged for each month to yield a seasonal index at the bottom of the table.

In calculating a seasonal index, it is wise to check for any extreme years that might distort the results. The question of what constitutes an extreme year can only be answered subjectively. With regard to the heating oil market from 1996 through 2015, one year stands out: 2008. As Table 26.1 shows, the December 2008 heating oil contract traversed an extraordinarily wide range. It is usually best to exclude such uncharacteristic years when calculating a seasonal index, unless some adjustment scheme is used to modify their exaggerated influence. However, there are no concrete rules, and the ultimate decision must depend on the judgment of the researcher.

Although a sense of the seasonal pattern can be gained by examining the seasonal index at the bottom of Table 26.2, a graphic presentation is far more convenient and informative. Figure 26.1 shows the seasonal index, both with and without the inclusion of 2008. In this case, the extreme year does not have a significant impact on the basic seasonal pattern. As is readily apparent, there is a seasonal tendency for prices to reach relative highs around September–October and to bottom around December–January.

It is important to note the average percentage method does not remove any trend from the data. Thus, what appears to be a seasonal pattern might partially reflect a long-term trend in prices. In fact,

TABLE 26.1 December Heating Oil Contract: Average Monthly Prices

Year of Contract Expiration	Nov[a]	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec–Nov Avg
1996	0.507	0.515	0.510	0.509	0.527	0.543	0.538	0.543	0.572	0.601	0.672	0.711	0.701	0.579
1997	0.587	0.591	0.610	0.586	0.584	0.574	0.591	0.574	0.567	0.573	0.575	0.600	0.564	0.582
1998	0.572	0.553	0.528	0.514	0.495	0.500	0.489	0.458	0.435	0.398	0.417	0.416	0.358	0.463
1999	0.444	0.418	0.411	0.386	0.427	0.469	0.466	0.475	0.535	0.570	0.609	0.589	0.641	0.500
2000	0.563	0.570	0.601	0.651	0.686	0.647	0.720	0.794	0.794	0.877	0.977	1.016	1.004	0.778
2001	0.771	0.725	0.722	0.750	0.734	0.754	0.803	0.789	0.733	0.760	0.739	0.643	0.568	0.727
2002	0.600	0.596	0.597	0.596	0.665	0.702	0.707	0.685	0.709	0.735	0.787	0.778	0.720	0.690
2003	0.669	0.702	0.748	0.805	0.779	0.722	0.738	0.781	0.808	0.841	0.780	0.842	0.841	0.782
2004	0.760	0.785	0.828	0.841	0.899	0.916	1.018	1.036	1.120	1.219	1.272	1.491	1.402	1.069
2005	1.282	1.189	1.225	1.324	1.533	1.622	1.498	1.655	1.789	1.956	2.047	1.992	1.716	1.629
2006	1.807	1.857	1.934	1.959	1.949	2.128	2.135	2.171	2.239	2.177	1.916	1.729	1.725	1.993
2007	1.940	1.943	1.788	1.861	1.947	2.004	2.011	2.072	2.156	2.065	2.192	2.352	2.604	2.083
2008	2.445	2.477	2.531	2.624	2.897	3.115	3.634	3.902	3.917	3.383	3.001	2.438	1.926	2.987
2009	2.140	1.695	1.710	1.481	1.528	1.575	1.685	1.961	1.810	1.951	1.818	1.963	1.985	1.763
2010	2.261	2.213	2.209	2.118	2.231	2.378	2.234	2.162	2.090	2.140	2.163	2.279	2.343	2.213
2011	2.441	2.521	2.700	2.984	3.115	3.299	3.123	3.027	3.076	2.987	2.937	2.904	3.059	2.978
2012	2.971	2.919	3.000	3.160	3.276	3.214	2.988	2.657	2.811	3.019	3.139	3.122	3.014	3.027
2013	2.966	2.974	3.015	3.065	2.977	2.912	2.875	2.911	2.983	3.073	3.047	2.982	2.950	2.980
2014	2.904	2.963	2.915	2.921	2.937	2.917	2.921	2.986	2.952	2.879	2.763	2.558	2.374	2.840
2015	2.375	2.073	1.813	1.903	1.897	1.922	2.015	1.959	1.791	1.583	1.613	1.547	1.452	1.797

[a]November of year preceding the contract year. This column is needed to calculate Table 26.3.

TABLE 26.2 December Heating Oil Contract: Monthly Price as a Percentage of the December–November Average

Year of Contract Expiration	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1996	88.98	88.23	88.03	91.14	93.87	92.90	93.92	98.87	103.79	116.20	122.85	121.21
1997	101.58	104.71	100.63	100.21	98.54	101.46	98.50	97.29	98.46	98.71	103.09	96.82
1998	119.36	113.98	111.00	106.75	107.83	105.46	98.76	93.94	85.97	89.97	89.80	77.18
1999	83.77	82.32	77.32	85.38	93.79	93.27	95.04	107.05	114.11	121.92	117.81	128.22
2000	73.26	77.23	83.67	88.15	83.09	92.53	102.08	102.05	112.71	125.60	130.58	129.07
2001	99.76	99.44	103.16	101.02	103.82	110.46	108.63	100.83	104.54	101.72	88.50	78.11
2002	86.40	86.59	86.45	96.42	101.80	102.44	99.28	102.74	106.53	114.13	112.80	104.43
2003	89.80	95.63	102.86	99.60	92.25	94.41	99.82	103.24	107.49	99.76	107.59	107.56
2004	73.41	77.43	78.72	84.08	85.72	95.26	96.92	104.80	114.03	119.00	139.49	131.12
2005	72.99	75.22	81.29	94.12	99.56	91.94	101.64	109.82	120.06	125.69	122.28	105.39
2006	93.16	97.01	98.28	97.76	106.75	107.12	108.92	112.35	109.23	96.14	86.73	86.54
2007	93.28	85.82	89.37	93.47	96.21	96.54	99.48	103.50	99.13	105.23	112.94	125.01
2008	82.92	84.73	87.84	96.98	104.28	121.65	130.65	131.13	113.26	100.47	81.63	64.47
2009	96.14	96.95	83.98	86.64	89.31	95.56	111.19	102.64	110.63	103.11	111.31	112.57
2010	100.00	99.80	95.71	100.82	107.42	100.93	97.69	94.44	96.68	97.71	102.96	105.84
2011	84.67	90.67	100.21	104.60	110.78	104.88	101.66	103.31	100.33	98.62	97.54	102.73
2012	96.44	99.13	104.41	108.23	106.17	98.74	87.79	92.87	99.76	103.71	103.16	99.58
2013	99.77	101.17	102.83	99.89	97.72	96.47	97.68	100.08	103.11	102.25	100.05	98.98
2014	104.33	102.61	102.82	103.38	102.69	102.83	105.12	103.91	101.36	97.29	90.06	83.59
2015	115.31	100.86	105.88	105.53	106.95	112.14	108.97	99.66	88.07	89.77	86.08	80.77
Averages:												
All Years	92.77	92.98	94.22	97.21	99.43	100.85	102.19	103.23	104.46	105.35	105.36	101.96
Excl. 2008	93.28	93.41	94.56	97.22	99.17	99.75	100.69	101.76	104.00	105.61	106.61	103.93

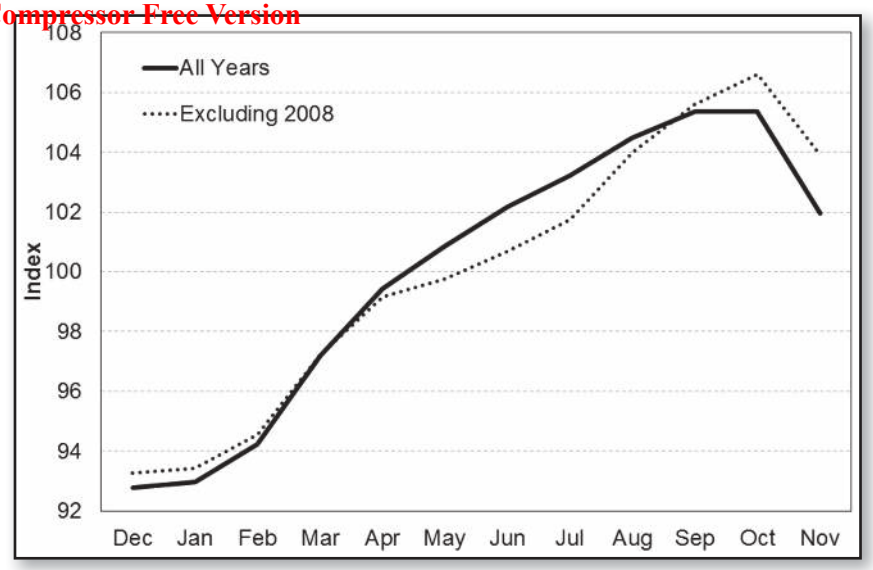

FIGURE 26.1 December Heating Oil Contract Seasonal Index: Average Percentage Method

for data exhibiting a strong trend, the effect of the trend will often totally swamp any true seasonal pattern. (By this we mean the seasonal pattern that remains after the trend has been removed from the data.) An unadjusted seasonal index, such as the average percentage method, is relevant because it more directly reflects the past results of implementing a position on a given date and exiting it on another given date. However, because secular trends may change, it can be argued that the *detrended seasonal index* might be more relevant in reflecting seasonal patterns. The next section describes one method for deriving a detrended seasonal index.

Link Relative Method

The link relative method involves the following steps:

1. Express each data value as a percentage of the previous month's value.
2. Average these percentage values for each month.
3. Set the first month's value at 100.0 and reexpress all the other monthly averages as relative percentages of the first month's value.
4. Adjust the resulting values for trend.
5. Multiply each of these values by the appropriate common factor so that the average monthly seasonal index value equals 100.0.

These steps will be clearer if we work through an example. Table 26.3 indicates each month's price as a percentage of the previous month's price. (These figures are derived from Table 26.1.) The monthly averages for all these percentages are listed at the bottom of the table.

TABLE 26.3 December Heating Oil Contract: Monthly Average Price as a Percentage of the Previous Month's Price

Year of Contract Expiration	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1996	101.51	99.16	99.77	103.53	103.00	98.97	101.10	105.26	104.98	111.95	105.73	98.66
1997	100.70	103.09	96.10	99.58	98.33	102.96	97.08	98.78	101.20	100.25	104.44	93.92
1998	96.74	95.50	97.39	96.17	101.01	97.80	93.65	95.11	91.52	104.65	99.82	85.94
1999	94.23	98.27	93.93	110.42	109.85	99.45	101.90	112.64	106.59	106.84	96.63	108.84
2000	101.21	105.43	108.33	105.35	94.26	111.37	110.31	99.97	110.45	111.43	103.97	98.84
2001	93.95	99.68	103.74	97.93	102.77	106.39	98.35	92.82	103.68	97.30	87.01	88.26
2002	99.38	100.23	99.83	111.53	105.59	100.63	96.91	103.49	103.68	107.13	98.84	92.58
2003	104.99	106.50	107.56	96.82	92.62	102.34	105.74	103.43	104.12	92.80	107.85	99.97
2004	103.24	105.47	101.67	106.81	101.95	111.13	101.74	108.14	108.81	104.36	117.22	94.00
2005	92.72	103.06	108.07	115.79	105.77	92.35	110.54	108.05	109.33	104.69	97.29	86.18
2006	102.77	104.13	101.31	99.48	109.20	100.34	101.69	103.15	97.22	88.02	90.21	99.78
2007	100.16	92.01	104.13	104.58	102.94	100.34	103.05	104.04	95.78	106.15	107.33	110.69
2008	101.31	102.18	103.67	110.41	107.52	116.65	107.40	100.37	86.38	88.71	81.24	78.98
2009	79.23	100.84	86.63	103.16	103.08	106.99	116.36	92.31	107.78	93.21	107.95	101.13
2010	97.90	99.80	95.91	105.33	106.55	93.96	96.79	96.67	102.38	101.06	105.38	102.79
2011	103.30	107.09	110.52	104.38	105.91	94.67	96.93	101.62	97.11	98.29	98.91	105.32
2012	98.24	102.79	105.32	103.66	98.10	92.99	88.92	105.79	107.41	103.97	99.47	96.52
2013	100.26	101.40	101.64	97.14	97.84	98.72	101.25	102.46	103.03	99.17	97.85	98.93
2014	102.05	98.35	100.21	100.54	99.33	100.13	102.23	98.85	97.55	95.98	92.57	92.82
2015	87.27	87.46	104.98	99.67	101.34	104.85	97.18	91.46	88.37	101.93	95.88	93.84
Average	98.06	100.62	101.54	103.61	102.35	101.65	101.46	101.22	101.37	100.89	99.78	96.40

TABLE 26.4 December Heating Oil Contract 1996–2015: Monthly Average Price as a Percentage of the Prior December Average Price

Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
100	100.62	102.17	105.86	108.35	110.14	111.74	113.10	114.65	115.67	115.42	111.26	109.10

As the next step, in Table 26.4 we express each month's value relative to the first month (December), which is set at 100.0. Thus, since the average ratio of January to December prices is 100.62 percent from Table 26.3, its value is set to 100.62 (i.e., 100.62 percent of 100.0). Similarly, since the average ratio of February to January prices is 101.54 percent, the February value would be set to 101.54 percent of 100.62 or 102.17. The value for March would be 103.61 percent of 102.17, or 105.86, and so on. Note that the entry for the second value of December is equal to 98.06 percent of the November value (98.06 is the average December value from Table 26.3).

The higher value for the second December entry reflects the trend in the data. To remove this trend, we must find the constant factor that will increase to 109.10 (the ratio of the second December value to the first) when multiplied by itself 12 times. In other words, we want to find a constant monthly growth factor X. This can be expressed as $X^{12} = 109.10$. The derivation of this value requires the use of logarithms (readers unfamiliar with logarithms can skip to the immediately following description of an alternative approach for detrending the data):

$$\begin{aligned} X^{12} &= (1.091) \\ 12 \log X &= \log(1.091) \\ \log X &= 1/12 \log(1.091) \\ \log X &= 0.003152 \\ \text{antilog of } 0.003152 &= 1.007284, \text{ rounded to } 1.0073 \end{aligned}$$

In other words, $(1.0073)^{12} = 1.091$.

We assume a constant growth trend. The first month's (December) value will still equal 100.0; the second month's value will be divided by 1.0073; the third month's value will be divided by $(1.0073)^2$; the fourth by $(1.0073)^3$, and so on. These calculations are illustrated in Table 26.5. The final month (the second December entry) will be divided by $(1.0073)^{12}$, thereby transforming its value to 100.0. Since both December values are equal after the adjustment of the data by the constant growth factor, the trend has been removed from the data.

Alternative Approach

The following steps, which do not require the use of logarithms, can be used to derive a reasonably good approximation of the last column in Table 26.5.

TABLE 26.5 Trend Adjustment for Monthly Index Values

Month	Values from Table 26.4	Trend-Adjustment Divisor	Trend-Adj. Divisor Numerical Equivalent	Adjusted Value
Dec	100			100
Jan	100.62	$(1.007284)^1$	1.007284	99.89
Feb	102.17	$(1.007284)^2$	1.014621	100.69
Mar	105.86	$(1.007284)^3$	1.022012	103.58
Apr	108.35	$(1.007284)^4$	1.029456	105.25
May	110.14	$(1.007284)^5$	1.036954	106.21
Jun	111.74	$(1.007284)^6$	1.044508	106.98
Jul	113.10	$(1.007284)^7$	1.052116	107.50
Aug	114.65	$(1.007284)^8$	1.059779	108.18
Sep	115.67	$(1.007284)^9$	1.067499	108.36
Oct	115.42	$(1.007284)^{10}$	1.075275	107.34
Nov	111.26	$(1.007284)^{11}$	1.083107	102.73
Total				**1256.71**

1. Find the difference between the two December values in Table 26.4 (9.10).
2. Multiply this difference by 1/12 and subtract the product from the second month's (January) value (100.62 − 0.76 = 99.86).
3. Multiply the difference found in step 1 by 2/12 and subtract the product from the third month's value. Multiply the difference found in step 1 by 3/12 and subtract the product from the fourth month's value. Continue this progression for the remaining months. Using this method, the adjusted values would be:

Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
100	99.86	100.65	103.59	105.32	106.35	107.19	107.79	108.58	108.85	107.84	102.92

These approximated figures are very close to the precise adjusted values shown in Table 26.5.

For the sake of uniformity, it is desirable that the average of the monthly seasonal index values equal 100, or equivalently, that the sum of the monthly index values equal 1200. Table 26.5 shows the sum of the index values in this case is more than 1200, which makes it necessary to adjust the figures by a multiplier:

$$\text{Multiplier} = \frac{1200}{1256.71} = 0.9549$$

Dividing each of the values in Table 26.5 by 0.9549 produces the seasonal index values in Table 26.6, which are plotted in Figure 26.2. The average percentage method and link relative method indices are compared in Figure 26.3. Note there is a great deal of similarity between the two methods. The basic

TABLE 26.6 Seasonal Index for December Heating Oil Contract Using the Link Relative Method

Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
95.49	95.38	96.15	98.91	100.50	101.42	102.15	102.65	103.30	103.47	102.50	98.09

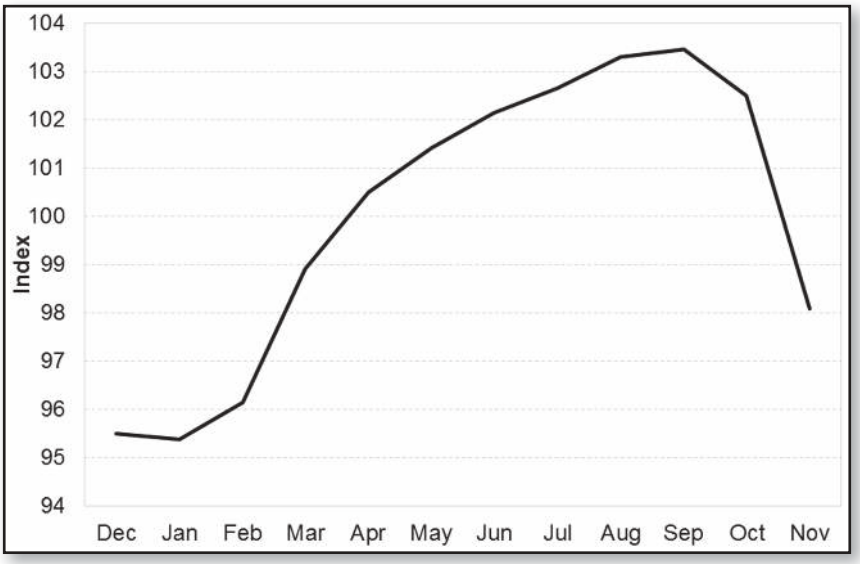

FIGURE 26.2 December Heating Oil Contract Seasonal Index: Link Relative Method

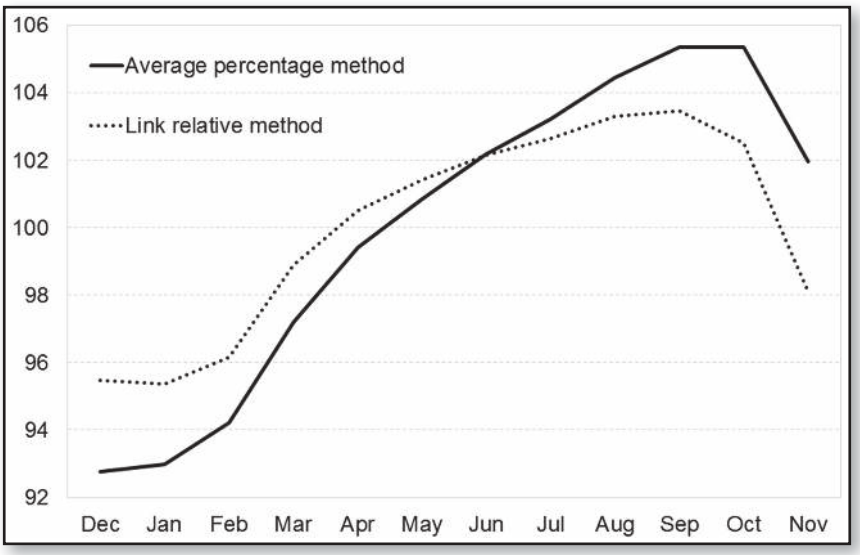

FIGURE 26.3 December Heating Oil Seasonal Index: Comparison of Average Percentage Method and Link Relative Method

difference is that the average percentage method index reflects the long-term trend, whereas the link relative method does not. Both approaches indicate a relative low in the December–January period and a relative high in September.

Figures 26.4 through 26.9 Illustrate the seasonal graphs for specific contract months in several futures markets, both unadjusted (average percentage method) and detrended (link relative method),

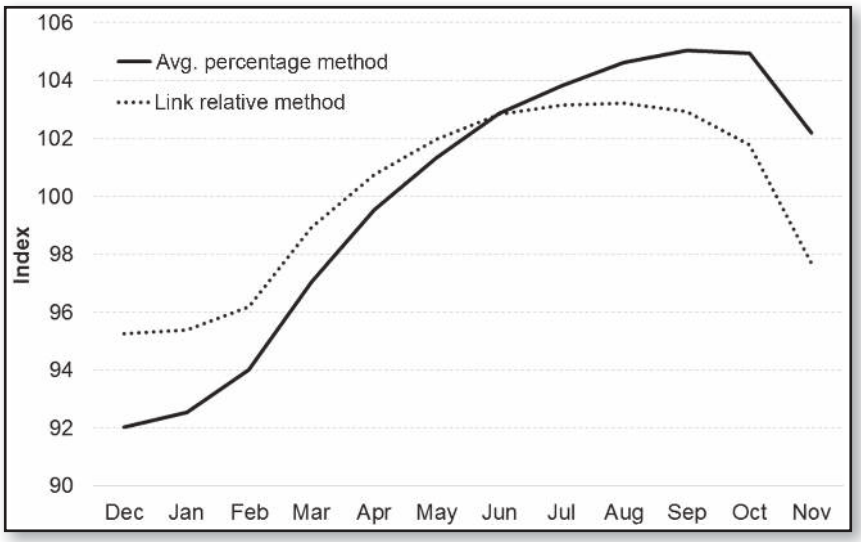

FIGURE 26.4 December WTI Crude Oil Seasonal Index: Comparison of Average Percentage Method and Link Relative Method

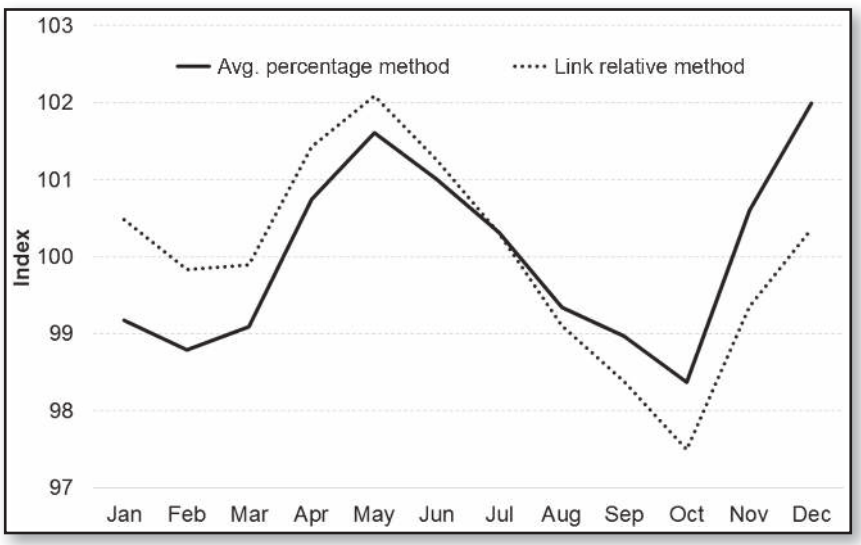

FIGURE 26.5 December E-Mini S&P 500 Seasonal Index: Comparison of Average Percentage Method and Link Relative Method

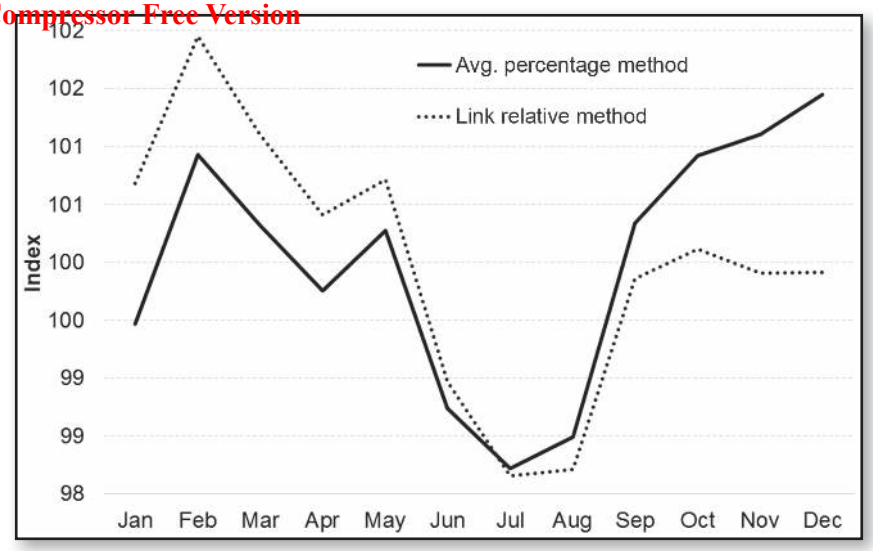

FIGURE 26.6 December Gold Seasonal Index: Comparison of Average Percentage Method and Link Relative Method

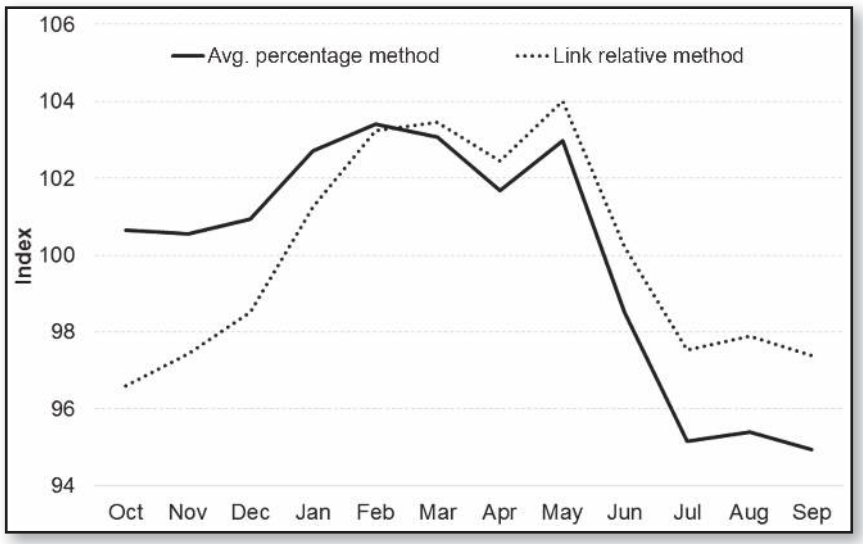

FIGURE 26.7 September Coffee Seasonal Index: Comparison of Average Percentage Method and Link Relative Method

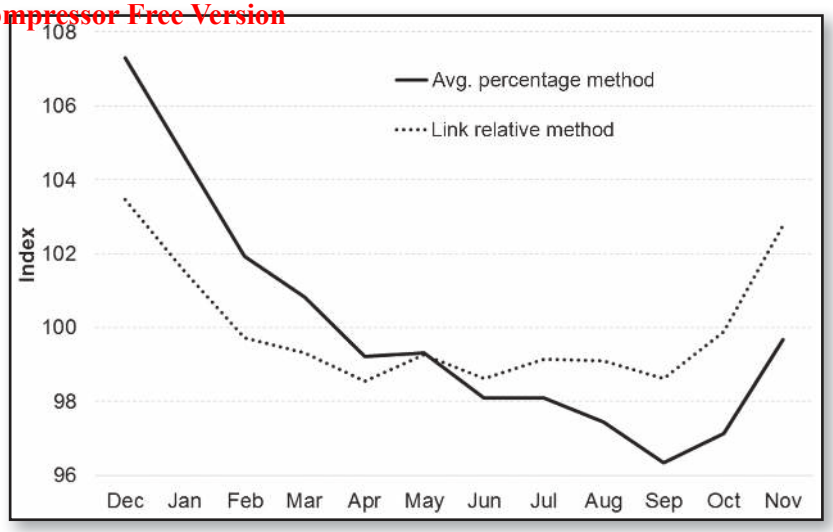

FIGURE 26.8 November Frozen Concentrated Orange Juice Seasonal Index: Comparison of Average Percentage Method and Link Relative Method

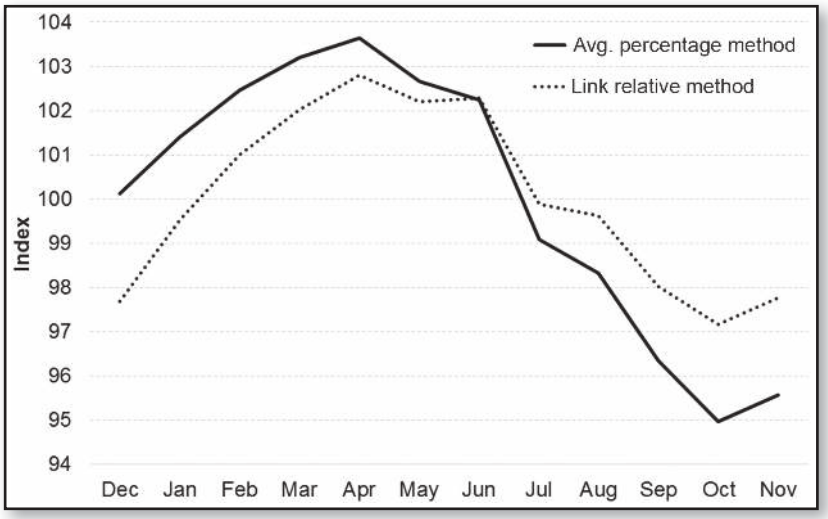

FIGURE 26.9 December Corn Seasonal Index: Comparison of Average Percentage Method and Link Relative Method

based on data from 1996 through 2015 (with the exception of the E-mini S&P 500 in Figure 26.6, which used data from 1998 through 2015).

It should be stressed that seasonal patterns should never be used as the sole basis for making trading decisions, as they are only one influence and can easily be swamped by fundamental and technical forces impacting the market.

CHAPTER 27

Analyzing Market Response

Markets are never wrong—opinions often are.

—Jesse Livermore

Evaluating Market Response for Repetitive Events

A market's response to key fundamental developments can provide important clues about the probable future price direction. When these developments are repetitive, such as the release of key economic numbers or U.S. Department of Agriculture (USDA) reports, a systematic approach can be used to analyze the implications of market response. The general analytic procedure would involve the following steps:

1. Identify the event to be studied (e.g., the Treasury market's response to the monthly employment report).
2. Construct a table comparing the market's immediate reaction to a report's release to subsequent price trends.
3. Search for consistent patterns.

There is no single correct format for analyzing market response. The objective of this chapter is to illustrate the analysis process rather than to provide specific market-response models for trading the markets. The observed responses in the following examples are moderate and there is not enough data to rule out that the results could simply be due to chance. The reader can apply a similar methodology for analyzing market reaction for other situations that may be of interest.

Example A: T-Note Futures Response to Monthly U.S. Employment Report

The U.S. employment situation report released by the Bureau of Labor Statistics is the most closely watched monthly economic release, capable of triggering volatile moves in a wide range of markets. Let's say our goal is to check whether the direction (and magnitude) of the price move in U.S. Treasury futures on the day the monthly employment report is released is indicative of the price action in subsequent weeks. In other words, we want to check the hypothesis that a "bullish" or "bearish" market response to the employment report is an indicator of probable near-term price direction. We might proceed as follows:

1. Determine the threshold to determine a bullish or bearish initial response to the employment report.
2. Measure the market's price action in the *N* days following employment report days that satisfy this criterion.

Table 27.1 shows how the U.S. 10-year-T-note futures traded in the first 10 trading days (two weeks) after the monthly employment report between 2006 and 2015 based on whether the move from the close of the day prior to the report to the report day's close was bullish or bearish. In this case, a bullish initial response was defined as a closing gain (measured from the previous day's close) of 0.50 points (16/32) or more on the day of the employment report, while a bearish initial response was defined as a 0.50-point or larger decline. (This nominal amount was selected solely for illustration purposes and has no special significance.)

Twenty-six employment report days fulfilled the bullish criteria from 2006 through 2015 (top half of table), while 33 fulfilled the bearish criteria (bottom half of table). Table 27.1 shows the cumulative average and median gains from the close of the employment report day to the closes of the next 10 days. For comparison, the table also includes the average price changes for all 1- to 10-day periods during the 10-year analysis window. The table also shows the percentage of times the T-note futures contract closed higher than the employment report day close after bullish and bearish initial responses to the report, along with the percentage of higher closes for all 1- to 10-day periods. For example, on the first day after bullish initial reactions to the employment report, 10-year T-note futures closed, on average, –0.054 points lower (–0.039 points median), compared to an average 0.021-point one-day gain for all days. The market closed higher 42.31 percent of the time one day after initial bullish responses, compared to 51.93 percent for all days.

Because it is often easier to digest such data visually, Figure 27.1 graphs the results for the bullish initial responses, while Figure 27.2 graphs the results for the bearish initial responses. Surprisingly, the analysis suggests that, if anything, there was a tendency for T-note price action in the near-term period following employment reports to move in the opposite direction of the market's initial response. Specifically, there seems to be a notable tendency for contrarian price action in the two days following a bullish initial response to the unemployment report (after which trading was mixed), while the price action was more consistently bullish after an initial bearish response. Figure 27.1 shows that after two days T-notes closed below the close of the employment report day 73 percent of the time, with an average decline of 0.205 points (around 6/32nds). This observation suggests that those seeking to enter a position in the direction of the market's bullish response to the report might

TABLE 27.1 10-Year T-Note Futures Response to Monthly Employment Report: Cumulative Change as of Indicated Day (2006–2015)

Bullish

26 instances	*Day 1*	*Day 2*	*Day 3*	*Day 4*	*Day 5*	*Day 6*	*Day 7*	*Day 8*	*Day 9*	*Day 10*
Median Post-Report Change	-0.039	-0.172	0.016	0.164	0.211	0.063	0.117	0.344	-0.055	0.117
Average Post-Report Change	-0.054	-0.205	-0.035	-0.030	0.119	0.214	0.093	0.189	0.082	0.111
Average Change All Days	0.021	0.042	0.063	0.084	0.105	0.126	0.147	0.168	0.188	0.208
Higher Close than Report Day (%Times)	42.31%	26.92%	50.00%	53.85%	65.38%	53.85%	53.85%	53.85%	46.15%	57.69%
All Days Higher Close (%Times)	51.93%	53.85%	55.09%	55.24%	54.94%	55.04%	56.09%	57.14%	56.79%	56.79%

Bearish

33 instances	*Day 1*	*Day 2*	*Day 3*	*Day 4*	*Day 5*	*Day 6*	*Day 7*	*Day 8*	*Day 9*	*Day 10*
Median Post-Report Change	0.031	0.219	0.141	0.328	0.484	0.422	0.406	0.609	0.313	0.484
Average Post-Report Change	0.081	0.285	0.306	0.401	0.474	0.605	0.707	0.649	0.622	0.603
Average Change All Days	0.021	0.042	0.063	0.084	0.105	0.126	0.147	0.168	0.188	0.208
Higher Close than Report Day (%Times)	51.52%	57.58%	57.58%	63.64%	63.64%	72.73%	69.70%	66.67%	72.73%	63.64%
All Days Higher Close (%Times)	51.93%	53.85%	55.09%	55.24%	54.94%	55.04%	56.09%	57.14%	56.79%	56.79%

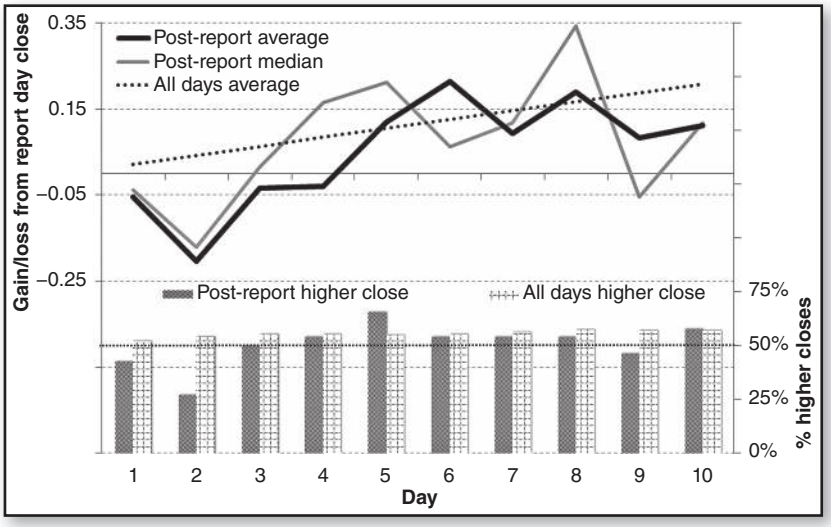

FIGURE 27.1 10-Year T-Note after Bullish Initial Response to Jobs Report (Cumulative)

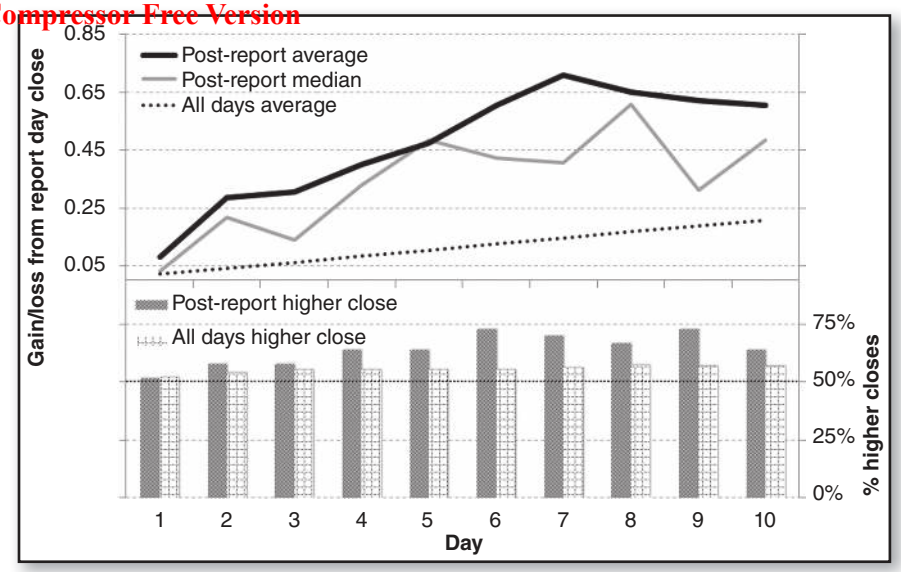

FIGURE 27.2 10-Year T-Note after Bearish Initial Response to Jobs Report (Cumulative)

be better off waiting a couple of days before entering a position. In contrast, Figure 27.2 highlights the market's tendency to move higher after bearish initial responses. It should be noted that the period surveyed was one that witnessed a long-term uptrend. Therefore, the appropriate comparison is to the corresponding changes for all days.

Figures 27.3 and 27.4 present a slightly different perspective of the performance of 10-year T-note futures after bullish and bearish initial responses to the monthly employment report. Instead of showing the cumulative performance from the close of the employment report day, these charts show each day's gain or loss. Figure 27.3 highlights the negative average returns in the first two days after bullish initial responses, while Figure 27.4 shows a tendency for higher prices in the first two days after bearish report responses.

In examining historical patterns (e.g., market response, seasonal tendencies), it is usually impossible to say whether apparent proclivities reflect true market biases (or inefficiencies) or whether such results are strictly a function of chance. Even clearly random events with a 50 percent expected outcome will sometimes deviate significantly from 50 percent simply by chance. For example, if you flipped 10 coins 1,000 times, approximately 17 percent of the time you would get seven or more heads. Getting seven or more heads on any individual toss of 10 coins certainly wouldn't imply the coins have a tendency to land on heads. Two factors should be considered in trying to assess whether a past pattern might be meaningful rather than due to chance:

1. **Number of observations.** The greater the number of observations, the more likely a past pattern might be significant.
2. **Theoretical explanation.** If there is a logical reason why a past pattern might have occurred, it enhances the potential significance of the observed tendency.

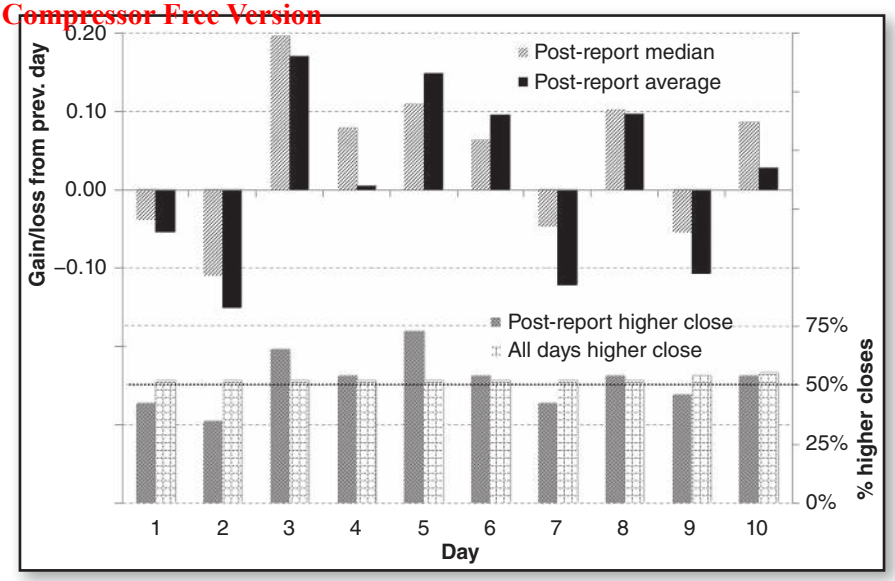

FIGURE 27.3 10-Year T-Note after Bullish Initial Response to Jobs Report (Daily)

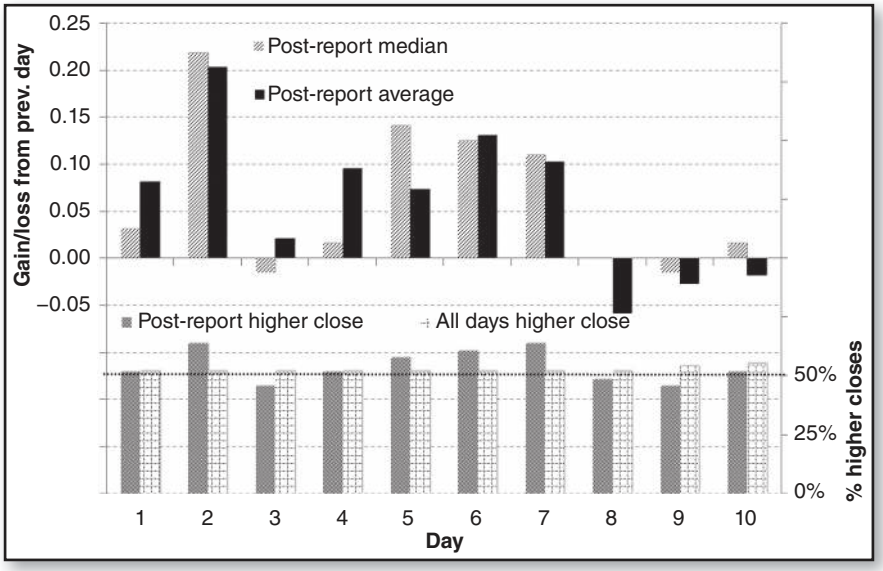

FIGURE 27.4 10-Year T-Note after Bearish Initial Response to Jobs Report (Daily)

Example B: Stock Index Futures Response to Employment Reports

Stock index futures also are prone to volatile moves in response to monthly employment reports. Figures 27.5 and 27.6 show the results of an analysis of the E-mini S&P 500 futures contract's performance in the first 10 trading days following bullish and bearish initial responses to employment reports from 2006 through 2015. In this case, however, bullish and bearish are defined not by the price change on the report day, but rather the location of the closing price within the report day's range:

1. A close within the upper 25 percent of the day's range is defined as a bullish initial response.
2. A close in the bottom 25 percent of the day's range is defined as a bearish initial response.

Of the 120 employment reports from 2006 through 2015, 42 satisfied the bullish response criteria, while 26 satisfied the bearish response criteria. Figure 27.5 shows the E-mini S&P's average and median cumulative gain/loss from the close of bullish response report days to the closes of the next 10 consecutive days, while Figure 27.6 provides an analogous chart for bearish response days. The most noticeable pattern is the tendency for follow-through weakness in the week following bearish response days (Figure 27.6). The chart for bullish response days (Figure 27.5) is fairly inconclusive.

Table 27.2 shows the results of a related analysis. In this case, an initial bullish reaction was defined as a close 1.35 percent or more above the previous day's close and a bearish reaction as a close 1.35 percent or more below the previous day's close. Initial responses between these thresholds were classified as neutral. These initial responses were then compared to the subsequent moves from the report day's close to the close of the day immediately preceding the next month's employment report (approximately 20 days, but ranging from 18 to 25 days for any given month). In this example, the cumulative price changes after bullish and neutral initial reactions were similar (and positive), while the

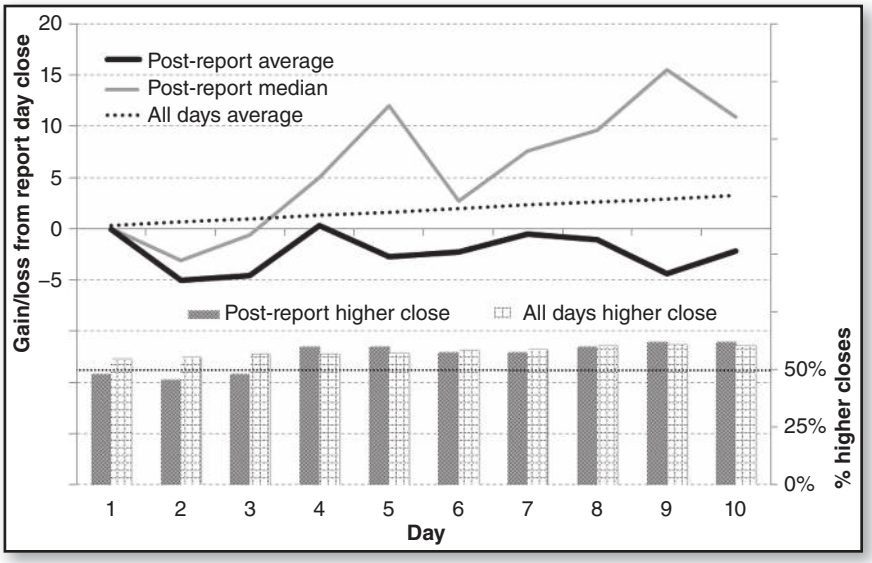

FIGURE 27.5 E-Mini S&P Change 500 after Bullish Initial Response to Jobs Report (Cumulative)

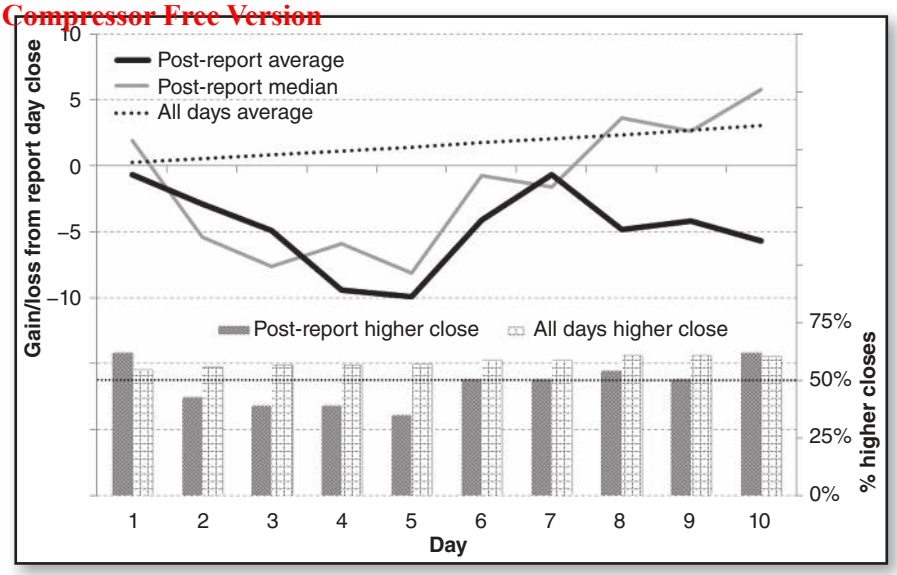

FIGURE 27.6 E-Mini S&P 500 Change after Bearish Initial Response to Jobs Report (Cumulative)

performance after bearish initial responses tended to be negative. Because there was a decisive uptrend in place during the survey period, there is a bias toward getting bullish price behavior following any defined event—a tendency reflected by the bullish result following neutral response days. Therefore, the bullish price action following bullish response days may be more a matter of reflecting the prevailing long-term trend than any meaningful pattern, particularly since the price responses following bullish and neutral response days were similar. The negative price action following bearish response days, however, seems potentially more significant since it runs counter to the prevailing long-term trend. Still, even here, there is the caveat that the results are based on a small number of observations.

Isolated Events

Expectations are the key to evaluating market response for any single event. In other words, the failure of a market to respond to a fundamental development as decisively as might have been anticipated could provide an important signal regarding the market's inherent strength or weakness.

TABLE 27.2 E-Mini S&P 500 Cumulative Change in Month Following Intitial Response to Employment Report, 2006–2015

	Bullish Initial Response	Bearish Initial Response	Neutral Initial Response
Average	5.54	–16.05	7.88
Median	18.13	–8.75	14.25
% Higher Close	64.29%	35.71%	65.91%

A classic example of this principle was the counter-to-anticipated response of the gold market during the 1991 Gulf War. As the United States' January 17 deadline for starting air strikes approached without any concessions from Iraq, gold prices firmed. The start of the air war during nighttime hours in the United States saw gold surge to a three-month high of $410/oz. in the overnight market. But this rally abruptly fizzled, and gold prices began to sink rapidly. By the time the gold market opened in the United States the next morning, prices were actually $28/oz. lower than the previous evening's close. This extremely weak price action in response to an event that could have been expected to rally prices—even allowing for what proved to be the market's correct anticipation for a quick U.S. victory—suggested that gold prices were vulnerable to further erosion. As can be seen in Figure 27.7, prices did indeed continue to slide in the ensuing months, falling to new contract lows.

The basic principle is that a price response to an important event that is radically different from what might normally have been anticipated may provide an important clue as to the market's probable near-term direction.

Limitations of Market Response Analysis

The following are some of the ambiguities that arise in conducting market response analysis:

1. In any type of market response analysis, the answers we obtain are dependent on the parameters used in the analysis. For example, the various thresholds used to define bullish and bearish response days in this chapter were representative values selected to illustrate the analysis process; they were not the result of any attempt to find optimal definitions of what constitutes strong (bullish) or weak (bearish) reactions. The choice of analysis parameters, which will often

FIGURE 27.7 April 1991 Gold
Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

be subjective, can have a large impact on the results—a reality that provides a strong argument for analyzing a range of parameters.

2. When dealing with market events that occur relatively infrequently, there is the problem of determining the significance of results based on samples that might be too small (or spread out across too long and varied an analysis period) to be considered statistically valid. For example, some of the examples in this chapter were based on only 13 or 14 observations.
3. Response patterns may shift over time. A market's response to a particular report or event might be consistent for an extended period during one type of economic environment or market regime, but that tendency could diminish or disappear if conditions change—for example, in the change from a rising interest rate environment to a declining rate environment.

In view of the foregoing limitations, market response patterns should be viewed as one potential indicator of near-term market direction, which could be combined with other analysis to support a trading opinion, as opposed to being used as a stand-alone market signal.

CHAPTER 28

Building a Forecasting Model: A Step-by-Step Approach

Economics as a positive science is a body of tentatively accepted generalizations about economic phenomena that can be used to predict the consequences of changes in circumstances.

—Milton Friedman

Because of the heterogeneous nature of commodity markets, there is no such thing as a standard fundamental model. Among the key substantive characteristics that differentiate markets are degree of storability, availability of substitutes, importance of imports and exports, types of government intervention, and sensitivity to general economic conditions. Consequently, in contrast to technical analysis, in which a specific system or methodology can often be applied to a broad spectrum of markets, the fundamental approach requires a separate analysis for each market.

The time-consuming nature of fundamental analysis makes it virtually impossible to cover a large number of markets adequately using this approach. Thus, as a practical matter, a trader wishing to employ fundamental inputs in trading decisions must resort to one of the following alternatives:

1. Restrict fundamental analysis to a superficial examination of the key statistics in a broad range of markets.
2. Employ in-depth fundamental analysis for only a few markets and trade all other markets based on technical input only.
3. Rely on published fundamental analysis.

The first alternative is usually a poor compromise. Market knowledge based on a cursory examination of fundamentals is often worse than total ignorance. In fact, next to poor money management,

perhaps the most common reason that nonprofessional traders lose money in commodities is that they base their trading decisions on superficial fundamental information (e.g., market blogs, online forums, brokers' two-sentence market summaries). The analytic approach outlined in this chapter implicitly assumes alternative 2. It is a good idea to start by analyzing and following only one or two markets fundamentally, expanding this list only after all research ideas on previously chosen markets have been investigated. The third alternative is a reasonable supplement to individual research, as long as one is selective. Unfortunately, a significant portion of published research is analytically unsound. However, if you have fully grasped the concepts of this section, you should have no difficulty in evaluating the analytic merit of available published research.

Once a market has been selected for fundamental study, the following step-by-step approach can be employed:

1. **Read background material.** The first step in any analysis must be a familiarization with the given market. Before beginning, an analyst must have a good idea of the key fundamentals that affect the market, as well as the primary sources of statistical information.
2. **Gather statistics.** Once you have a good understanding of the basic mechanics of a market, list all the statistics that might be relevant in formulating a price analysis. The U.S. Department of Agriculture (USDA), which publishes a wide variety of reports on domestic and foreign agricultural products, is an excellent source of information. Another major source of statistics is the *CRB Commodity Yearbook*, which contains extensive data for the complete range of commodity markets. For many markets, special statistical sources will have to be consulted. The familiarization process described in step 1 should provide the information regarding the primary statistical sources for a given market.
3. **Adjust price data for inflation.** This adjustment is an essential step in fundamental price forecasting. As a caveat, though, if there is a prevailing downward-shifting trend in demand (a circumstance that will offset inflation), then unadjusted prices could yield more accurate forecasts.
4. **Construct a model.** Select one or more of the approaches discussed in Chapter 23 and attempt to construct a price-explanatory model. Regression analysis, which is perhaps the most powerful and efficient of these approaches, is covered comprehensively in the Appendices.
5. **Modify model.** After identifying which past years, or seasons, failed to fit the general pattern, try to determine the factors that were responsible for the aberrant behavior. Attempt to incorporate these factors into the general model. In some cases, highly unusual price action in a past year might reflect the impact of isolated events (e.g., price controls, export embargoes, forced liquidation by huge speculators) that are not relevant to the current market. In such situations, it is often preferable to delete the abnormal year from the model. It should be emphasized, however, that the expedient deletion of a year simply because it does not fit the pattern constitutes improper methodology. The practical decision-making process in the deletion of years from a model is discussed in much greater detail in Appendix E.
6. **Incorporate expectations.** Check to see whether expectation-based statistics improve the model.

7. **Estimate the independent variables.** The independent variables are the factors used to explain and forecast prices in the model. These inputs must be estimated for the forecast period. For example, the coming season's corn crop, which would obviously be a key input in any corn price-forecasting model, could be estimated on the basis of planting intentions, historical yields, and weather conditions to date.
8. **Forecast a price range.** Allowing for a plausible range of values for each of the independent variables, use the model to forecast a price range for the upcoming period.
9. **Evaluate the potential impact of government regulations.** Consider whether existing government programs or international agreements are likely to interfere with the normal free market mechanism.
10. **Examine seasonal patterns.** Using the methods discussed in Chapter 26, determine whether there are any pronounced seasonal patterns for the given market. Furthermore, it is essential to check whether recent price action has violated normal seasonal patterns, since such behavior might reflect underlying weakness or strength.
11. **Search for market response patterns.** As detailed in Chapter 27, a market response to key fundamental information (e.g., major government reports) might provide important clues regarding the impending price direction.
12. **Assess the trade opportunity.** Compare the potential price range implied by the foregoing analytic steps with the prevailing price level. A trading opportunity is only indicated if the current price is outside the projected range. (This step will not be applicable for analytical approaches designed to forecast the *direction* of the market rather than the price *level*.)
13. **Time trade entry.** Some elements of the fundamental approach, such as seasonal analysis and market response patterns, and some fundamental methods, such as index models, might provide timing clues. Generally speaking, however, the timing of a trade entry should be based on technical input (e.g., chart analysis, technical model). Otherwise, the timing of fundamentally oriented trades is apt to be based on the date on which the analysis is completed—a ludicrous proposition. Furthermore, it should be emphasized that even if the fundamental analysis is correct, prices can always get more out of line before the trend is reversed. The practical aspects of combining fundamental analysis and trading are the subject of Chapter 29.

CHAPTER 29

Fundamental Analysis and Trading

All our knowledge brings us nearer to our ignorance.

—T. S. Eliot

Fundamental versus Technical Analysis: A Greater Need for Caution

Virtually every market student who has ever relied on fundamental analysis as the basis of a market opinion can recall instances in which his conclusions proved dead wrong. The same, of course, can be said for the technical analyst. However, there is a critical distinction between them. If the technical analyst's methodology leads to erroneous projections, the same analytic tools will eventually point to an opposite conclusion. In effect, technical analysis is a self-correcting approach. In contrast, the fundamental analyst treads on far more dangerous ground. If the fundamental analyst's assessment indicates wheat prices should be $7.00 when the market price is $6.00, by definition, he would be even more bullish if prices were to decline to $5.50—assuming the key economic statistics have remained unchanged.

Therein lies the great danger in using fundamental analysis: The more inaccurate the projection, the more adamant practitioners are apt to become regarding the current attractiveness of market positions in line with their original prognostications. Thus, traders who base their decisions strictly on fundamental considerations might find themselves pyramiding positions in those situations they are most incorrect—a blueprint for disaster. In other words, there is a real danger that a sole or near-exclusive reliance on fundamentals will sooner or later transform an error into a major trading loss.

In fact, this very experience has caused many fundamentalists to renounce their former analytic beliefs. One is reminded of Mark Twain's observation: "The cat that sits down on a hot stove lid will never sit down on a hot stove lid again . . . [nor on] a cold one." The problem lies not in the validity of fundamental analysis as a valuable analytic tool, but rather in the failure to recognize the limitations of this approach. This chapter focuses on these limitations.

Three Major Pitfalls in Fundamental Analysis

Even fundamental analysts who do everything right will eventually find themselves reaching the wrong conclusion. There are three possible reasons this could occur:

1. **The unexpected development.** In this case, the model is right, but the assumptions are wrong. The 1972–1973 cotton market provides a classic historical example of such a development. Before that time, the United States did not export any cotton to China. This situation changed dramatically during the 1972–1973 season, when the United States exported more than one-half million bales, or approximately 11 percent of its total shipments, to the People's Republic of China (PRC). Table 29.1 shows exports to the PRC further expanded in the 1973–1974 season. The sudden emergence of the PRC as a major importer of U.S. cotton was one of the key factors behind the historic 1972–1973 bull market in cotton.

Weather often plays the role of the unexpected development in agricultural markets. Figure 29.1 depicts the price impact of the 1989 freeze on the frozen concentrated orange juice (FCOJ) market. Figure 29.2 illustrates the price impact of the 2012 drought on the corn market. Although such developments in the weather are hardly extraordinary, they cannot be anticipated, since allowing for their possible occurrence would lead to inflated price projections in most other years.

An example of an impossible-to-predict sequence of events causing a major market reaction was the March 2011 Japanese earthquake, which triggered a tsunami that caused core meltdowns in three of the Fukushima Daiichi nuclear reactors. (Although the possibility that a tsunami could result in a major accident was anticipated by some, the timing of such a tsunami was, of course, unpredictable.) Figure 29.3 shows this disaster resulted in a 20 percent plunge in the Nikkei index futures over the course of four days.

TABLE 29.1 Early 1970s Shift in U.S. Cotton Exports to the People's Republic of China (1,000 bales)

Season	Exports to PRC	Total Exports	Exports to PRC as Percentage of Total
1971–1972	0	3,385	0
1972–1973	585	5,311	11.0
1973–1974	898	6,123	14.7
1974–1975	307	3,926	7.8
1975–1976	9	3,311	0.2
1976–1977	0	4,784	0

FIGURE 29.1 March 1990 FCOJ
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FIGURE 29.2 September 2012 Corn
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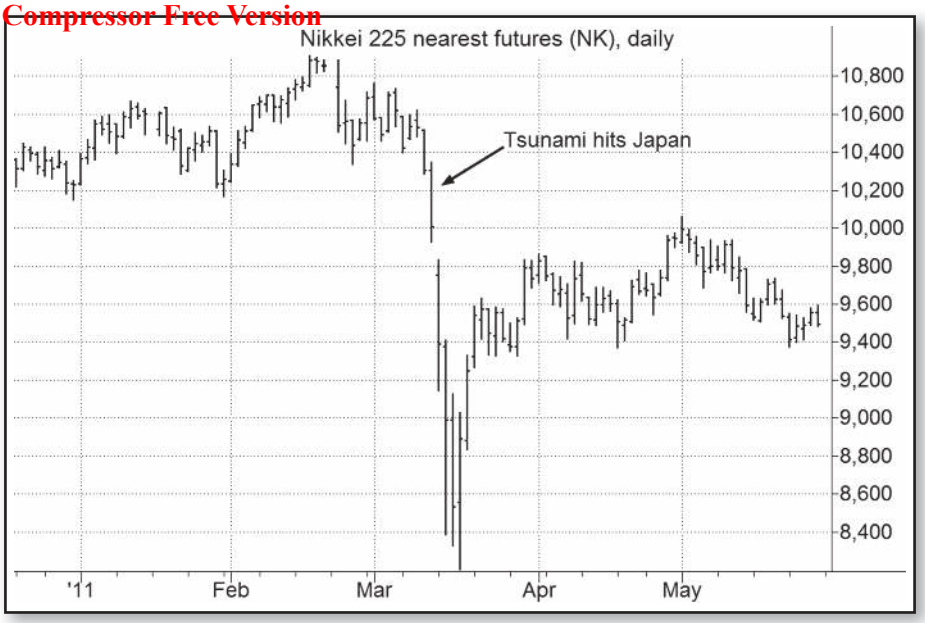

FIGURE 29.3 Nikkei 225 Continuous Futures
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Iraq's August 1990 invasion of Kuwait is another example of how an unanticipated event can dramatically alter the supply-demand balance and trigger a huge price shift. As depicted in Figure 29.4, this event was followed by a huge advance in crude oil prices, as the market's perceptions about available oil supplies shifted in response to interrupted Kuwaiti output, the embargo against Iraqi crude, and fears that the conflict would extend to threaten critical Saudi Arabian supplies.

Figure 29.5 shows the dramatic impact of the unexpected decision by Switzerland's central bank to remove a price cap on the Swiss franc that had been in place for approximately three years. This shock event caused an almost immediate 25 percent leap in the Swiss franc's value on January 15, 2015. Although this price surge was largely reversed over the subsequent two months, the sudden market move had a devastating impact on currency traders with short positions in the Swiss franc.

Surprises in government reports, which can trigger sharp price reactions, are a common source of unexpected developments. However, because the release dates of these reports are known, as are the reports that are apt to cause large price moves (typically, the initial planting and production estimates in agricultural markets), the resulting price moves are not completely unexpected in the way an unscheduled event might be (e.g., freeze, nuclear accident, invasion). Sometimes, however, a report that does not typically trigger a major price impact may do so. One such instance was the U.S. Department of Agriculture's (USDA) quarterly corn stocks report released on March 28, 2013. During what was perceived to be an exceptionally tight corn market (as a result of the drought referenced by Figure 29.2), the report indicated corn stocks were nearly 8 percent (387 million bushels) higher than previously estimated. In response, corn futures dropped more than 5 percent the next trading day, and more than 8 percent the day after that (see Figure 29.6).

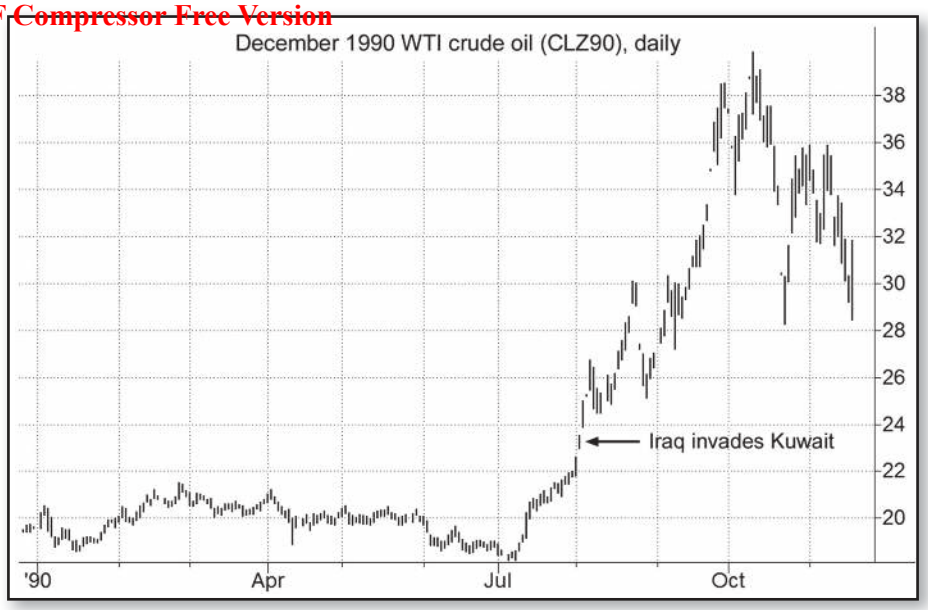

FIGURE 29.4 December 1990 WTI Crude Oil
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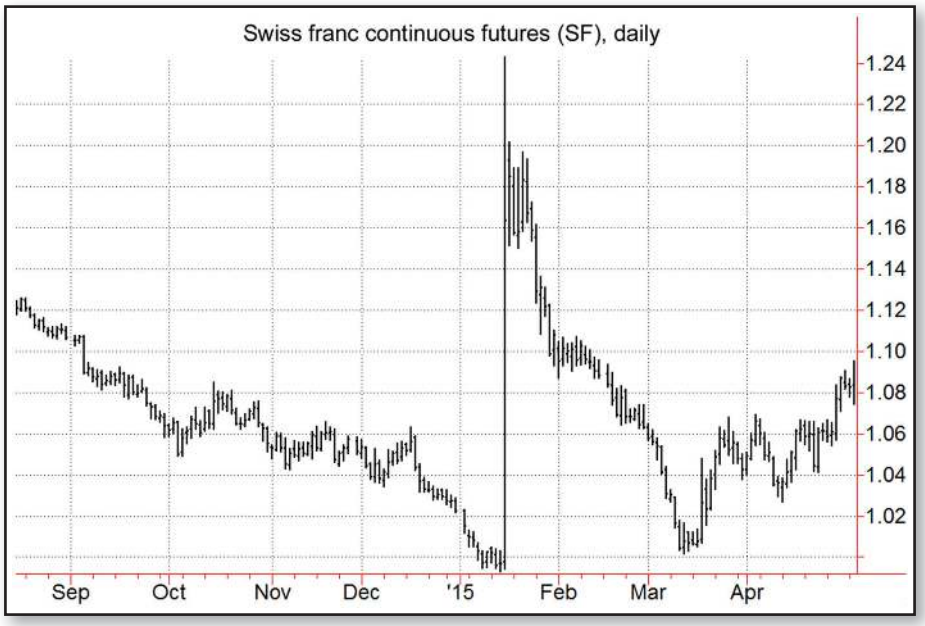

FIGURE 29.5 Swiss Franc Continuous Futures
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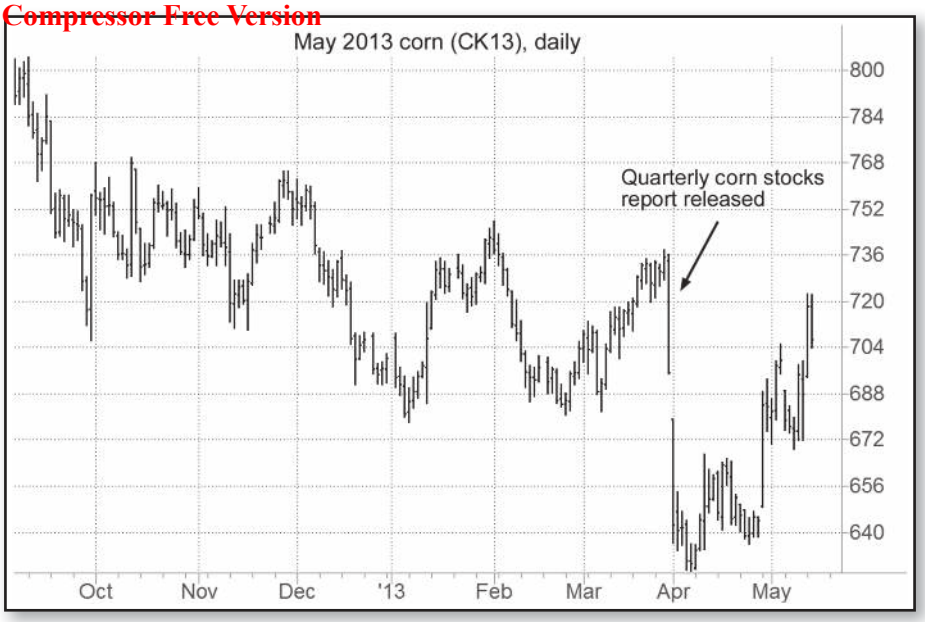

FIGURE 29.6 May 2013 Corn
Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

2. **The missing variable.** Quite often, a market whose price behavior has been adequately described by a set of variables for an extended period of time will suddenly be dramatically affected by an entirely new factor. The 1972–1973 inflationary boom, and its associated hoarding psychology, provides an excellent example of a missing key factor. During this period, price behavior in different markets became far more interdependent, and a wide variety of markets far exceeded the price levels suggested by their intrinsic fundamentals. Any fundamental analysis of a specific market that failed to take into account the potential price impact of the overall bullish wave would have yielded sharply understated price projections.

The 1981–1982 period provided an almost exact opposite example of a missing key variable. In this instance, failure to take into account the pronounced impact of simultaneous deflation and high real interest rates on inventory psychology would have resulted in overstated price forecasts for virtually any commodity market.

It is tempting to think that pivotal events such as the two aforementioned major shifts in commodity demand curves were so readily apparent they would have been quickly incorporated into any fundamental model. Such major transitions, however, tend to be far more conspicuous in retrospect than at the time of their occurrence. Often by the time such structural changes become evident, prices have already witnessed a major move.

3. **Poor timing.** Even if fundamental analysis is accurate and the assumptions are correct, a market can still move counter to the fundamental price projection over the short term—or even the intermediate term. In other words, generally speaking, fundamental models do not provide reliable timing information.

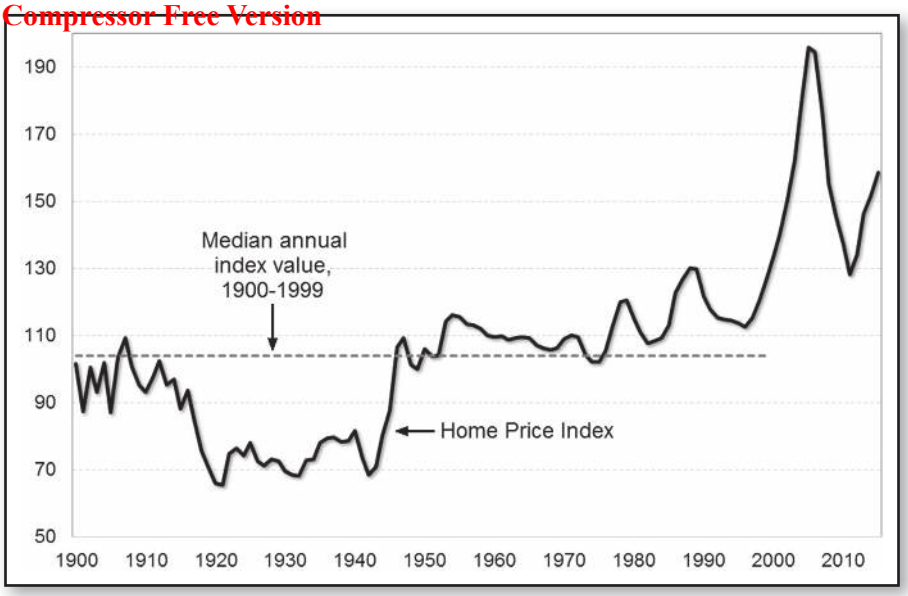

FIGURE 29.7 Case-Shiller National Home Price Index, Inflation Adjusted
Source: www.econ.yale.edu/~shiller/data.htm. Data reflect December values for each calendar year.
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The 2008 financial meltdown and the subsequent Great Recession provide an excellent illustration of the disconnect between changes in the fundamentals and the timing of price moves. There were many reasons for the 2008 financial crisis but certainly chief among them was the bursting of the housing bubble that had seen housing prices far exceed historical norms. For more than a century since the starting year of the Case-Shiller Home Price Index, the inflation-adjusted index level fluctuated in a range of approximately 65 to 130. At the peak of the 2003–2006 housing bubble, the index had nearly doubled its long-term median level (see Figure 29.7).

The extremes of the housing bubble were fueled by excesses in subprime mortgage lending: Loans were made to borrowers with poor credit, requiring little or no money down, and in its later phases no verification of income or assets. An insatiable demand for mortgages to bundle into mortgage-backed securities (MBSs) incentivized mortgage lenders to write as many mortgages as possible. These lenders were unconcerned about whether borrowers could pay back the loans because they passed on the ownership of mortgages to other financial institutions for use in securitizations. The competition among mortgage lenders to find new borrowers seemed like a race to issue the poorest quality mortgages possible.

The S&P Case-Shiller Home Price Index peaked in the spring of 2006 (see Figure 29.8). At the same time, the rate of delinquencies on subprime adjusted rate mortgages (ARMs) rose steadily throughout 2006 and accelerated in 2007 (see Figure 29.9). Despite these ominous developments, U.S. stock prices continued to move higher, ultimately extending to new record levels, as shown in Figures 29.8 and 29.9. In fact, the extension of the equity bull market after the peak in housing prices in mid-2006 occurred in the face of a more than doubling of sub-

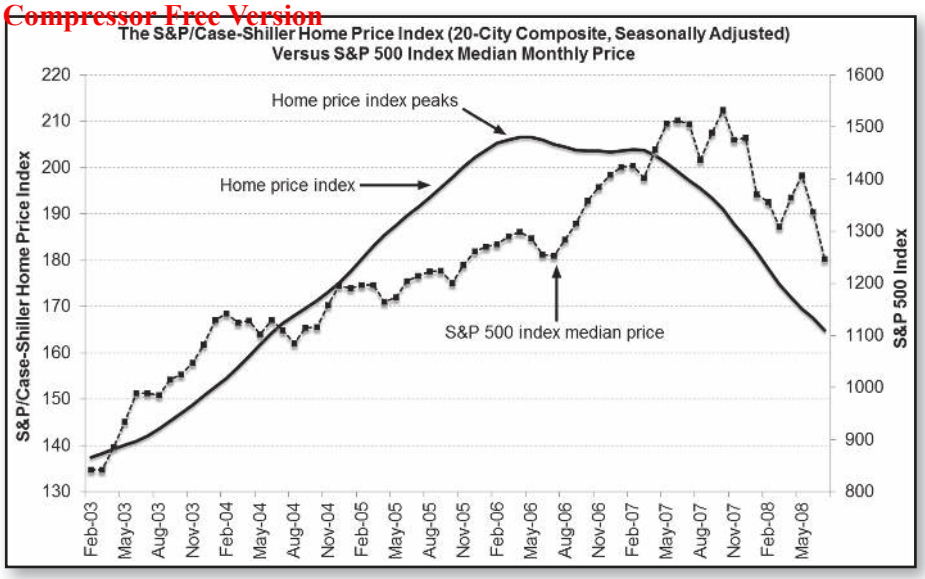

FIGURE 29.8 The S&P/Case-Shiller Home Price Index (20-City Composite, Seasonally Adjusted) vs. S&P 500 Index Median Monthly Price

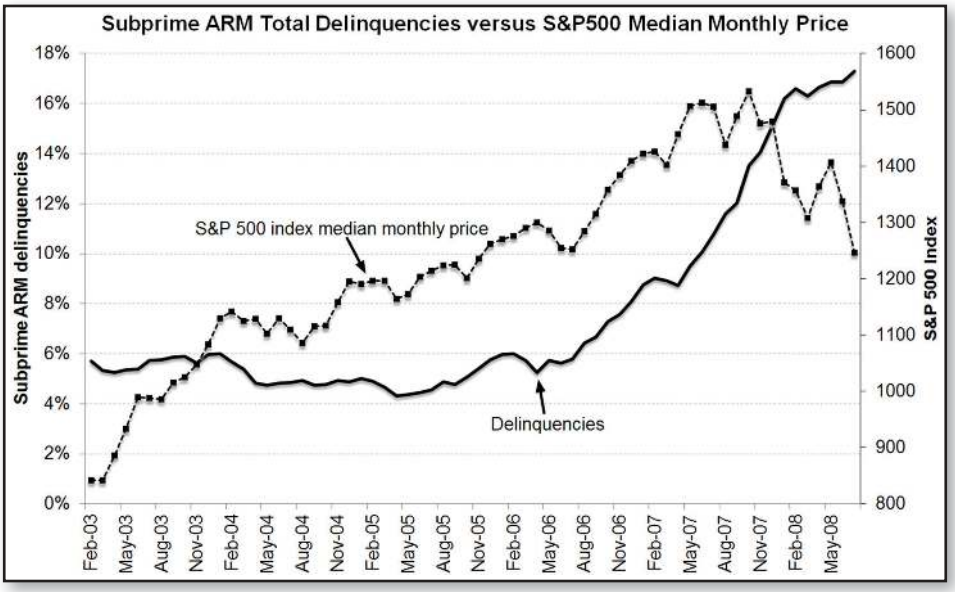

FIGURE 29.9 Subprime Arm Total Delinquencies vs. S&P 500 Median Monthly Price

Source: OTS (delinquency data)

prime delinquencies—a fundamental development that not only had very negative implications for housing prices and the economy, but also seriously imperiled the literally trillions of dollars of subprime MBS that had been issued. All these factors were bearish for the stock market. Nonetheless, it was not until 18 months after housing prices had peaked and a similar interim of sharply rising delinquencies on subprime mortgages that the stock market finally topped out in October 2007.

Assume a fundamental analyst came to the conclusion the prevailing bull market in equities during the mid-2000s was critically dependent on an ongoing housing bubble, which could not be sustained, and whose inevitable reversal would lead to a stock market collapse—a prognostication that would ultimately prove spectacularly correct. Further assume this analyst interpreted the reversal in the Case-Shiller Home Price Index in mid-2006 and the concurrent emerging uptrend in subprime mortgage delinquencies as early evidence that the housing bubble was unraveling—another correct assessment. Now consider the outcome if the analyst acted on this market assessment by implementing a short position in stock index futures in September 2006—the month after subprime delinquencies reached a new multiyear high. A short S&P position initiated at the median price in September 2006 would have been exposed to a 20 percent rise in the index before the stock market ultimately peaked in October 2007. Although the stock market subsequently collapsed, it is highly unlikely the analyst could have survived such a large adverse price move before giving up and liquidating the position at a large loss.

The point is not that fundamentally oriented traders should adamantly hold on to positions if they have a strong conviction in their market analysis—a mental attitude that would be almost certain to result in financial ruin, as it would take only one wrong forecast to lead to a devastating loss. Rather, the point is that even accurate fundamental analysis can lead to poor trading results *if fundamentals are used for timing.*

Crude oil prices in 1985 offer another classic example of a market that continued to extend its prior trend after an important fundamental change, only to witness a belated major reversal many months later. In March 1985 the Saudis announced they would no longer be the Organization of the Petroleum Exporting Countries' (OPEC) "swing supplier" (i.e., the producer that adjusted its output to keep supply and demand in balance). Their decision to abandon their price-supportive role had bearish implications. The Saudis implemented this policy by introducing netback crude oil pricing during the summer of 1985, or guaranteeing buyers of Saudi oil a profit margin. In essence, the Saudis were pricing their oil at whatever price was necessary to move all their production. Despite this ominous action, prices still continued to climb (see Figure 29.10). Prices did not collapse until OPEC officially decided to "pursue market share" at their December 1985 meeting, six months after the de facto implementation of such a policy by Saudi Arabia.

A fundamental analyst who decided in the summer of 1985 that the world oil market was vulnerable to a collapse would have been absolutely right—eventually. In the interim, any short positions implemented on this analysis would have been subject to a protracted, large loss. Thus, poor timing of trade entry based on the timing of fundamental events could have transformed a potential windfall trade into a major loss. The simple fact is that the timing of price moves is often out of sync with the timing of fundamental developments.

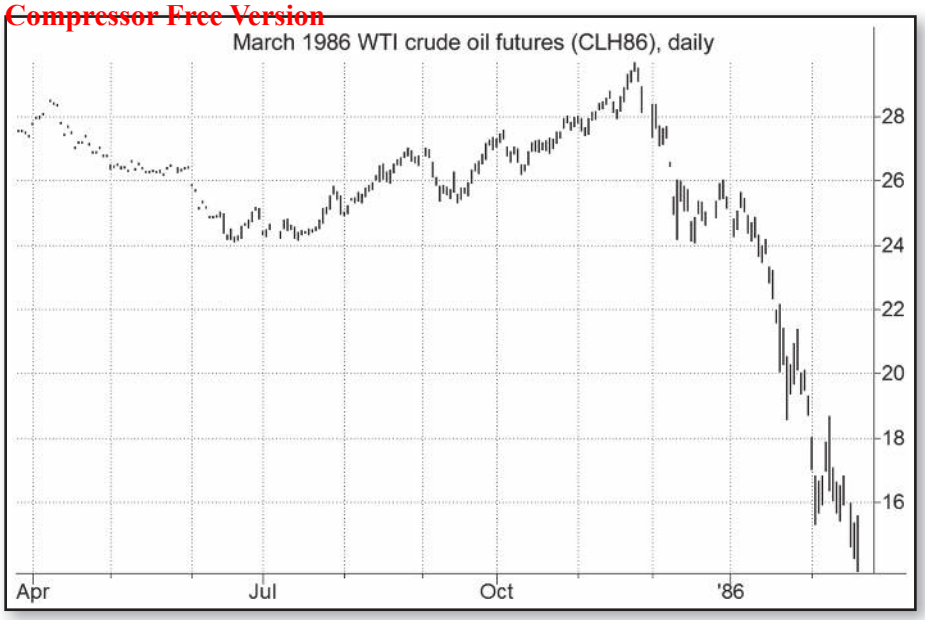

FIGURE 29.10 March 1986 WTI Crude Oil Futures
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Combining Fundamental Analysis with Technical Analysis and Money Management

As a result of the three pitfalls in fundamental analysis, a buy-and-hold or sell-and-hold trading strategy will eventually prove disastrous for virtually any fundamental analyst. Even assuming a price-forecasting model always managed to include all key variables, a fundamental analyst would still be vulnerable to large trading losses as a result of unexpected developments and poor timing. The observations in the previous section suggest the following important trading rule:

RULE: Never hold a fundamental opinion with complete rigidity.

Clearly, fundamental analysis alone is insufficient for making trading decisions. The two missing ingredients are technical analysis and money management. These various inputs can be combined in the following manner. Fundamental analysis is used as the initial step in the decision-making process in order to determine whether the market is underpriced, overpriced, or in line.

RULE: View fundamental analysis as a tool for gauging whether the market is out of line.

Once a fundamental indication is obtained, technical factors are checked for possible confirmation. This technical input can be in the form of charts or a mechanical system. The main point is that it is necessary to check whether the fundamentally suggested trade appears reasonable in terms of market action. For example, if fundamentals suggest the market is overpriced at a time when prices

are in an unbroken uptrend, it would usually be best to delay the implementation of any short position. However, such a fundamental projection might still provide the motivation for initiating shorts on the first signs the market is faltering.

Occasionally, it is reasonable to implement a fundamental trade counter to the prevailing price trend if the market is approaching a major resistance area. For example, assume corn prices are currently $6/bushel and in a virtually unbroken uptrend, while fundamental analysis suggests an equilibrium price level of only $5. If the market is approaching a major resistance area (e.g., a previous high, or the low end of a prior trading range), one might use fundamental analysis as the justification for anticipating a top. However, the trade should only be considered if the trader chooses a predetermined exit point.

This point introduces the third major element in making trading decisions: money management. Of course, the control of losses is essential even when the trading implications of fundamental and technical analysis are in full agreement. However, money management is particularly critical when one is anticipating a market turn.

RULE: An effective trading approach should combine fundamental analysis with technical analysis and money management.

Why Bother with Fundamentals?

At this point, the reader might well ask: If fundamental input must be used in conjunction with technical analysis, why should the trader even bother with fundamental analysis in the first place? There are several answers to this question:

1. Fundamental analysis provides an extra dimension of information not available to the purely technical trader. Knowing why a market is acting the way it is can be invaluable in trading decisions. For example, a rally in a declining market might be attributable to a news item that does not meaningfully alter a bearish fundamental outlook, or it might reflect that the market is oversold relative to the fundamentals. Technical analysts cannot distinguish between these two situations—they must treat all similar patterns alike, regardless of the underlying causes. The fundamental analyst, however, can use an awareness of existing market conditions and potential developments as an aid in assessing whether a rally is likely to be the beginning of a new bull market or a bull trap. Of course, such value judgments will not always be accurate, but this consideration is not a problem. For fundamental input to be of value, it is only necessary that profits (or reduced losses) tied to correct decisions exceed the losses (or reduced gains) resulting from incorrect decisions.
2. Fundamentals might sometimes portend a major price move well in advance of any technical signals. The trader who is aware of such a potential transition could have an important advantage over traders who are only following technical signals.
3. A knowledge of fundamentals would permit a trader to adopt a more aggressive stance when the fundamentals suggest the potential for a major move. The strictly technical trader, however, would have to treat all trading signals the same.

4. An understanding of the underlying fundamentals can provide the incentive to stay with a winning trade.
5. The way in which a market responds to fundamental news can be used as a trading tool, even by the technical trader.

Are Fundamentals Instantaneously Discounted?

One aspect of the *efficient market hypothesis*, a popular theory subscribed to by many economists, can be paraphrased as follows: At any given time, the market discounts all known information. Of course, if this premise were true, all market analysts—and readers of this book as well—would be suffering from mass delusion. However, there are more compelling reasons for contesting this hypothesis. One reason is the fundamental information responsible for a major price transition is frequently available well before the price trend actually develops. Another reason is that price moves often reflect a reaction to a preceding price swing that had carried the market well beyond fundamentally sustainable equilibrium levels. In both cases, dramatic price moves may materialize in the apparent absence of any significant *concurrent* change in the basic fundamentals. In fact, in the case in which a market has sharply overshot its equilibrium level, it is not unusual for prices to respond in the opposite direction one would anticipate for certain fundamental news (e.g., a rally following a bearish news item).

The aforementioned types of price behavior are inexplicable only if one assumes the market discounts all known information at any given time. However, a far more plausible view of market behavior is that prices sometimes lag or anticipate the levels implied by existing information.

Copper during 2002 through 2006 provides a good example of a market in which price moves occurred well after the fundamental changes responsible for those moves. In 2002, copper inventories reached enormous levels. Not surprisingly, the copper market languished at low prices. Inventories then embarked upon a long decline, but prices failed to respond for more than a year (see Figure 29.11). Beginning in late 2003, prices finally adjusted upward to a higher plateau, as inventories continued to slide. Prices then continued to move sideways at this higher level for about one year (early 2004 to early 2005), even though inventories fell still further. This sideways drift was followed by an explosive rally, which saw prices nearly triple in just over one year's time. Ironically, this enormous price advance occurred at a time when inventories had actually begun to increase moderately. A fundamental analyst who correctly anticipated both the peak and low in copper inventories and traded based on the timing of shifting fundamentals could well have fared poorly.

Price responses followed major changes in the fundamentals (inventory levels) with long lags. The market in 2006 traded at dramatically higher price levels on the same fundamentals as it did in early 2005. These long lags between changes in fundamentals and price adjustments contradict the immediate price adjustments implied by the efficient market hypothesis. The more plausible explanation is that the shift in market psychology from complacency regarding ample supply availability to heightened sensitivity over supply shortages occurred gradually over time rather than as an immediate response to changing fundamentals.

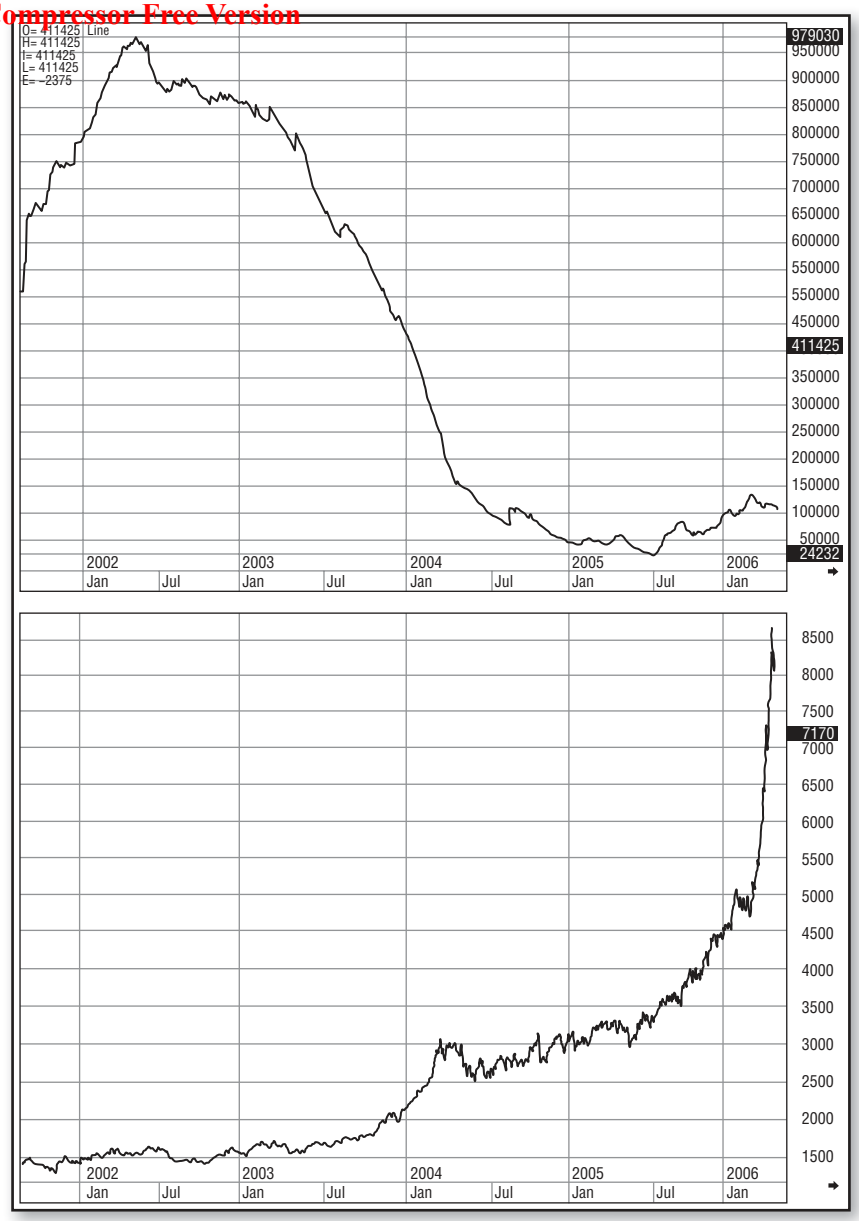

FIGURE 29.11 LME Copper Inventories vs. LME Copper Prices
CQG, Inc. ©

FIGURE 29.12 March 1986 Corn
Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

The 1985–1986 corn market provides another excellent illustration of the nonsynchronous relationship between fundamental information and price movements. Corn prices rose steadily from September through December 1985 (see Figure 29.12), despite repeated increases in the production estimate and reductions in the total usage projection, which resulted in a consistent expansion in the forecasted ending stock/usage ratio (see Table 29.2). This price action would be completely inexplicable if one assumed that prices always responded instantaneously to new fundamental information, a popular academic premise that is subject to frequent empirical contradiction in the real world. Rather, it makes far more sense to view the subsequent price collapse in January/February 1986 as a belated response to the steady deterioration in the fundamental picture in late 1985.

TABLE 29.2 **Corn: USDA Supply/Disappearance Estimates During 1985–1986 Season (million bushels)**

Month	Production	Total Use	Ending Stocks	Stock/Use Ratio (%)
August 1985	8,266	7,145	2,364	33.1
September 1985	8,469	7,070	2,717	38.4
October 1985	8,603	7,070	2,851	40.3
November 1985	8,717	7,045	3,052	43.3
December 1985	8,717	7,045	3,052	43.3
January 1986	8,717	7,045	3,052	43.3
February 1986	8,865	6,845	3,403	49.7

Fitting the News to Price Moves

Although day-to-day price moves often reflect ongoing adjustments to background fundamentals and shifting expectations rather than reactions to concurrent events, the media will usually seek to fit the news to market price movements. If the market is up sharply on a given day, some economic news will be found to explain the price strength. Similarly, if the market breaks precipitously, it's a safe bet that some bearish fundamental explanation will be found. This tailoring of news to fit the price action can sometimes reach absurd lengths, as exemplified by the following two excerpts. The first selection is from an article with the headline, "Strong Economic Reports Give a Lift to the Dollar":

> The dollar closed mostly higher yesterday after what currency traders saw as stronger-than-expected economic reports. "There was good reaction to surprisingly strong numbers," said . . . "The biggest one was retail sales." . . . The Commerce Department reported that retail sales rose three-tenths of 1 percent in November, after remaining unchanged in October. A fall in new weekly claims for unemployment also helped the dollar.

The next quotation comes from a story with the headline, "Long-Term Rates Fall on Reports":

> . . . bond prices benefited from a Commerce Department report that showed the Christmas buying season got off to a slow start in November. . . . At first blush, the numbers seemed to suggest that consumer activity had begun to pick up. But analysts said the increase was tainted because of the downward revisions in sales figures for September and October. "The revisions showed that consumers are still struggling," said . . .

Both of these stories come from the same newspaper, on the same day, on facing pages!

Of course, major unexpected developments will have an immediate market impact when they become known, but for the most part, the efficient market hypothesis assumption that prices instantaneously adjust to fundamental news has it exactly backwards. It is far more accurate to say the financial news will instantaneously adjust to price changes. Whether the market is up or down on a given day, financial reporters have to find an explanation for the price move. Therefore, an explanation will be drawn from the coincident news developments on that day, whether they are pertinent or not. This routine process can lead to the comical situation of the same development being used as both a bullish and bearish explanation on days where the market traverses widely between up and down or vice versa.

August 26, 2011, was a perfect example. On that day, the market sold off in the morning, and then rallied sharply into the afternoon. The key focus of market attention was a speech by Federal Reserve Chairman Ben Bernanke. The following two headlines announced stock market news stories issued by the *same* newswire service on the same day:

Wall Street Slides after Bernanke Comments
Wall Street Bounces as Bernanke Keeps Hopes Alive

The first story read, "Major indexes fell more than 1 percent after Federal Reserve Chairman Ben Bernanke said the U.S. economic recovery was much less robust than hoped but stopped short of signaling further action to boost growth." The second story saw things a bit differently: "Bernanke raised hope the Fed could consider further stimulus measures for the economy at an extended policy meeting in September."

Now, you could believe the same event was bearish before it was bullish. It seems considerably more plausible, though, to believe that the interpretation of the event was altered to fit the market price action. I can assure you that if the market had failed to rebound, there would not have been any stories about how the market ignored Bernanke's constructive comments. The market action determines the interpretation of the news, not the other way around.

Quite frequently prices move higher on the same longer-term fundamentals that have been known for some time or in reaction to a prior decline that took prices too low based on the underlying fundamentals. But while these types of longer-term underlying factors are what really move prices, rather than the often minor or irrelevant developments that are coincident on the same day, they apparently do not make acceptable news copy. When was the last time you saw a financial page headline that read, "Market Rallies Sharply because Bullish Fundamentals Unchanged" or "Market Plunges as Prices Correct Recent Speculative Mania"?

Fundamental Developments: Long-Term Implications versus Short-Term Response

In interpreting new developments, it is necessary to make a distinction between the long term and the short term. The long-term interpretation is fairly straightforward: All else being equal, a bullish news item suggests higher prices. However, the short-term interpretation of new developments is entirely different: The essential consideration is how the market responds to the news. In this regard, as summarized by the following rule, the significant occurrence is a divergence between fundamental news and subsequent price action.

RULE: A bullish fundamental development that is followed by a decline or that prompts a rally well below expectations should be viewed as a bearish signal. A bearish fundamental development that is followed by a rally or that prompts a significantly smaller-than-anticipated decline should be viewed as a bullish signal.

By no means is this rule sufficient by itself to allow trading decisions. But in conjunction with other market information, such as background fundamentals and the technical picture, an awareness of this rule should help improve a trader's performance.

Some examples of interpreting market response were provided in Chapter 27. Still, another example might help clarify this approach in using fundamental developments as a trading tool. The time was December 24, 1980, and the cotton market finished the holiday-shortened week just below contract highs and only a few cents below record highs. Despite the pronounced price advance over the previous six-month period, the fundamental picture still appeared bullish because supply and

usage trends suggested the potential for the lowest ending carryover since the early 1950s. The weekly export report released after the close indicated a huge net sales figure in excess of one-half million bales. This export figure confirmed rumors of potential large sales to China and virtually assured a very low season ending carryover.

On the basis of her analysis, Stephanie Statistics had been long for some time. After the release of the strikingly bullish December 24 export figure, Stephanie had to virtually restrain herself from calculating the potential increase in her open equity as a result of this latest news item. Monday morning the market opened with near limit gains. "Not bad," she thought, but the fact that the market did not open locked limit-up was disconcerting. As the day progressed, prices began to ease and warning bells went off in her mind. Something was wrong—the market was not really acting right, given the export news. On the basis of this input, Stephanie liquidated one-third of her position that day, one-third the next day, and the remaining third one week later. This scaled liquidation reflected her reluctance to give up a long position in the cotton market, given what she still perceived to be an extremely bullish fundamental outlook.

Stephanie's fundamental view of the market at that time could not have been more off target. As subsequent events would prove, that Monday was the top of the market (see Figure 29.13) and the start of a yearlong slide—the impending extremely low carryover notwithstanding. Eventually, the fundamental explanations for the market's weakness became evident: high interest rates, a deep recession, and expectations for a large new crop. However, by that time, prices had already moved substantially lower (albeit a large portion of the bear move still remained to be realized). The crucial point is that a contrarian interpretation of a bullish news item provided a long liquidation signal at the

FIGURE 29.13 July 1981 Cotton

Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

market top and prevented an incorrect fundamental market evaluation from transforming a profitable position into a large loss.

The preceding story was not a recreation based on artificial hindsight. The events described are true, only the names have been changed to protect the guilty.

A large price move in response to a seemingly neutral event can also be significant. The FCOJ market's response to the October 1993 Crop Production report, which was initially interpreted as "neutral," provides an excellent example. This situation and its implications are nicely described *from a trader's perspective* in the following excerpt of an interview of Russell Sands that appeared in *Commodity Traders Consumers Report*:

> Yesterday there was a crop report. They were expecting between 165 and 180 million boxes of orange juice. The number came out at 172—right in the middle. The early call this morning was unchanged to slightly lower. A few minutes before the open they changed the call to 300 lower. The market opened 700 lower. Now it's down 900.
>
> I have no idea what the fundamentals are. I read the crop report yesterday afternoon, and I thought it would be a quiet day. Maybe the estimates were wrong. Maybe somebody didn't believe the estimates. I have no clue as to why this happened. All I know is there was a neutral report, there was a close-to-unchanged call, but all of a sudden the market is sharply lower and I didn't get out. All the fundamental knowledge in the world is not going to save me. I'm scrambling to get out and cut my losses.

As readers can ascertain in Figure 29.14, getting out of longs even 900 points lower on the day in question looked awfully good a few days or a few weeks later. The preceding quotation, which

FIGURE 29.14 November 1993 FCOJ

Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

apparently was recorded at the moment of the market event being described, provides a good real-life illustration of how market response to fundamental news can be utilized as an aid in making trading decisions.

Summary

An awareness of the potential limitations of fundamental analysis is essential to its successful application. Perhaps the key point to keep in mind is that fundamental analysis is primarily a tool for forecasting intermediate or long-term price swings and should not be used as a timing indicator. The only exception to this basic premise is that a counter-to-anticipated market response to fundamental information could be viewed as a contrarian trading signal (e.g., a bullish fundamental development would have bearish near-term implications if it failed to elicit the anticipated positive price response).

PART VI

FUTURES SPREADS AND OPTIONS

CHAPTER 30

The Concepts and Mechanics of Spread Trading

There was a one-lot trader named Fred,
who tried to reduce risk with a spread.
But the spread was his demise—
He overdid position size,
trading not 1 but 10 instead.

Introduction

Despite widespread publicity and extensive information, spreads still remain an often misunderstood and relatively little-used trading vehicle. There is nothing inordinately complicated about spread trading; many traders simply lack the familiarity with the concepts involved. Ironically, it is usually the novice trader, for whom spreads can be a particularly useful trading vehicle, who shuns them as an esoteric operation confined to the "pros." Furthermore, even experienced traders often exhibit a bias against trading spreads, preferring to trade in outright positions because of their greater potential. These traders fail to realize that, at times, spreads may offer a more attractive reward/risk ratio than outright positions. In other words, at a given time, *X* number of spreads may offer equal potential to a one-contract outright position but imply a smaller risk. (Of course, such a judgment will always be subjective.)

Spreads—Definition and Basic Concepts

A spread trade involves the simultaneous purchase of one futures contract against the sale of another futures contract either in the same market or in a related market. Normally, the spread trader will initiate a position when he considers the price difference between two futures contracts to be out of line rather than when he believes the absolute price level to be too high or too low. In essence, the spread trader is more concerned with the *difference* between prices than the *direction* of price. For example, if a trader buys October cattle and sells February cattle, it would not make any difference to him whether October rose by 500 points and February by only 400 points or October fell by 400 and February fell by 500. In either case, October would have gained 100 points relative to February, and the trader's profit would be completely independent of the overall market direction.

However, this is not to say the spread trader will initiate a trade without having some definitive bias as to the future outright market direction. In fact, very often the direction of the market will determine the movement of the spread. In some instances, however, a spread trader may enter a position when he has absolutely no bias regarding future market direction but views a given price difference as being so extreme that he believes the trade will work, or at worst allow only a modest loss, regardless of market direction. We will elaborate on the questions of when and how market direction will affect spreads in later sections.

Why Trade Spreads?

The following are some advantages to not exclusively restricting one's trading to outright positions:

1. **In highly volatile markets, the minimum outright commitment of one contract may offer excessive risk to small traders.** In such markets, one-day price swings in excess of $1,500 per contract are not uncommon, and holding a one-contract position may well be overtrading for many traders. Ironically, it is usually these highly volatile markets that provide the best potential trading opportunities. Spreads offer a great flexibility in reducing risk to a desirable and manageable level, since a spread trade usually presents only a fraction of the risk involved in an outright position.[1] For example, assume a given spread is judged to involve approximately one-fifth the risk of an outright position. In such a case, traders for whom a one-contract outright position involves excessive risk may instead choose to initiate a one-, two-, three-, or four-contract spread position, depending on their desired risk level and objectives.
2. **There are times when spreads may offer better reward/risk ratios than outright positions.** Of course, the determination of a reward/risk ratio is a subjective matter. Nevertheless, given a trader's market bias, in a given situation spreads may sometimes offer a better means of approaching the market.

[1] For some markets, reduced-size contracts are available on one or more exchanges.

3. **Spreads often offer some protection against sudden extreme losses due to dramatic events that may spark a string of limit-up or limit-down moves counter to one's position (e.g., freeze, large export deal).** Such situations are not all that infrequent, and traders can sometimes lose multiples of the maximum loss they intended to allow (i.e., as reflected by a protective stop) before they can even liquidate their positions. In contrast, during a time of successive limit moves, the value of a spread might not even change as both months may move the limit. Of course, eventually the spread will also react, but when it does, the market may well be past its frenzied panic stage, and the move may be gradual and moderate compared with the drastic price change of the outright position.
4. **A knowledge and understanding of spreads can also be a valuable aid in trading outright positions.** For example, a failure of the near months to gain sufficiently during a rally (in those commodities in which a gain can theoretically be expected) may signal the trader to be wary of an upward move as a possible technical surge vulnerable to retracement. In other words, the spread action may suggest that no real tightness exists. This scenario is merely one example of how close observation of spreads can offer valuable insights into outright market direction. Naturally, at times, the inferences drawn from spread movements may be misleading, but overall they are likely to be a valuable aid to the trader. A second way an understanding of spreads can aid an outright-position trader is by helping identify the best contract month in which to initiate a position. The trader with knowledge of spreads should have a distinct advantage in picking the month that offers the best potential versus risk. Over the long run, this factor alone could significantly improve trading performance.
5. **Trading opportunities may sometimes exist for spreads at a time when none is perceived for the outright commodity itself.**

Types of Spreads

There are three basic types of spreads:

1. **The intramarket (or interdelivery) spread** is the most common type of spread and consists of buying one month and selling another month in the same commodity. An example of an intramarket spread would be long December corn/short March corn. The intramarket spread is by far the most widely used type of spread and will be the focus of this chapter's discussion.

   The **intercrop spread** is a special case of the intramarket spread involving two different crop years (e.g., long an old crop month and short a new crop month). The intercrop spread requires special consideration and extra caution. Intercrop spreads can often be highly volatile, and price moves in opposite directions by new and old crop months are not particularly uncommon. The intercrop spread may often be subject to price ranges and patterns that distinctly separate it from the intracrop spread (i.e., standard intramarket spread).
2. **The intercommodity spread** consists of a long position in one commodity and a short position in a related commodity. In this type of spread the trader feels the price of a given

commodity is too high or low relative to a closely related commodity. Some examples of this type of spread include long December cattle/short December hogs and long July wheat/short July corn. *The source/product spread*, which involves a commodity and its by-product(s)—for example, soybeans versus soybean meal and/or soybean oil—is a specific type of intercommodity spread that is sometimes classified separately.

Usually, an intercommodity spread will involve the same month in each commodity, but this need not always be the case. Ideally, traders should choose the month they consider the strongest in the market they are buying and the month they consider the weakest in the market they are selling. Obviously, these will not always be the same month. For example, assume the following price configuration:

	December	February	April
Cattle	120.00	116.00	118.00
Hogs	84.00	81.00	81.00

Given this price structure, a trader might decide the premium of cattle to hogs is too small and will likely increase. This trading bias would dictate the initiation of a long cattle/short hog spread. However, the trader may also believe February cattle is underpriced relative to other cattle months and that December hogs are overpriced relative to the other hog contracts. In such a case, it would make more sense for the trader to be long February cattle/short December hogs rather than long December cattle/short December hogs or long February cattle/short February hogs.

One important factor to keep in mind when trading intercommodity spreads is that contract sizes may differ for each commodity. For example, the contract size for euro futures is 125,000 units, whereas the contract size for British pound futures is 62,500 units. Thus, a euro/British pound spread consisting of one long contract could vary even if the price difference between the two markets remained unchanged. The difference in price levels is another important factor relevant to contract ratios for intercommodity spreads. The criteria and methodology for determining appropriate contract ratios for intercommodity spreads are discussed in the next chapter.

3. **The intermarket spread.** This spread involves buying a commodity at one exchange and selling the same commodity at another exchange, which will often be another country. An example of this type of spread would be long New York March cocoa/short London March cocoa. Transportation, grades deliverable, distribution of supply (total and deliverable) relative to location, and historical and seasonal basis relationships are the primary considerations in this type of spread. In the case of intermarket spreads involving different countries, currency fluctuations become a major consideration. Intermarket spread trading is often referred to as arbitrage. As a rule, the intermarket spread requires a greater degree of sophistication and comprehensive familiarity with the commodity in question than other types of spreads.

The General Rule

For many commodities, the intramarket spread can often, but not always, be used as a proxy for an outright long or short position. As a general rule, near months will gain ground relative to distant months in a bull market and lose ground in a bear market. The reason for this behavior is that a bull market usually reflects a current tight supply situation and often will place a premium on more immediately available supplies. In a bear market, however, supplies are usually burdensome, and distant months will have more value because they implicitly reflect the cost involved in storing the commodity for a period of time. Thus, if a trader expects a major bull move, he can often buy a nearby month and sell a more distant month. If he is correct in his analysis of the market and a bull move does materialize, the nearby contract will likely gain on the distant contract, resulting in a successful trade. It is critical to keep in mind that this general rule is just that, and is meant only as a rough guideline. There are a number of commodities for which this rule does not apply, and even in those commodities where it does apply, there are important exceptions. We will elaborate on the question of applicability in the next section.

At this point the question might legitimately be posed, "If the success of a given spread trade is contingent upon forecasting the direction of the market, wouldn't the trader be better off with an outright position?" Admittedly, the potential of an outright position will almost invariably be considerably greater. But the point to be kept in mind is that an outright position also entails a correspondingly greater risk. Sometimes the outright position will offer a better reward/risk ratio; at other times the spread will offer a more attractive trade. A determination of which is the better approach will depend upon absolute price levels, prevailing price differences, and the trader's subjective views of the risk and potential involved in each approach.

The General Rule—Applicability and Nonapplicability

Commodities to Which the General Rule Can Be Applied

Commodities to which the general rule applies with some regularity include corn, wheat, oats, soybeans, soybean meal, soybean oil, lumber, sugar, cocoa, cotton, orange juice, copper, and heating oil. (The general rule will also usually apply to interest rate markets.) Although the general rule will usually hold in these markets, there are still important exceptions, some of which include:

1. At a given point in time the premium of a nearby month may already be excessively wide, and consequently a general price rise in the market may fail to widen the spread further.
2. Since higher prices also increase carrying costs (see section entitled "The Limited-Risk Spread"), it is theoretically possible for a price increase to widen the discount of nearby months in a surplus market. Although such a spread response to higher prices is atypical, its probability of occurrence will increase in a high-interest-rate environment.

3. Spreads involving a spot month near expiration can move independently of, or contrary to, the direction implied by the general rule. The reason is that the price of an expiring position is critically dependent upon various technical considerations involving the delivery situation, and wide distortions are common.
4. A bull move that is primarily technical in nature may fail to influence a widening of the nearby premiums since no real near-term tightness exists. (Such a price advance will usually only be temporary in nature.)
5. Government intervention (e.g., export controls, price controls, etc.), or even the expectation of government action, can completely distort normal spread relationships.

Therefore, it is important that when initiating spreads in these commodities, the trader keep in mind not only the likely overall market direction, but also the relative magnitude of existing spread differences and other related factors.

Commodities Conforming to the Inverse of the General Rule

Some commodities, such as gold and silver, conform to the exact inverse of the general rule: In a rising market distant months gain relative to more nearby contracts, and in a declining market they lose relative to the nearby positions. *In fact, in these markets, a long forward/short nearby spread is often a good proxy for an outright long position, and the reverse spread can be a substitute position for an outright short.* In each of these markets nearby months almost invariably trade at a discount, which tends to widen in bull markets and narrow in bear markets.

The reason for the tendency of near months in gold and silver to move to a wider discount in a bull market derives from the large worldwide stock levels of these metals. Generally speaking, price fluctuations in gold and silver do not reflect near-term tightness or surplus, but rather the market's changing perception of their value. In a bull market, the premium of the back months will increase because higher prices imply increased carrying charges (i.e., interest costs will increase as the total value of the contract increases). Because the forward months implicitly contain the cost of carrying the commodity, their premium will tend to widen when these costs increase. Although the preceding represents the usual pattern, there have been a few isolated exceptions due to technical factors.

Commodities Bearing Little or No Relationship to the General Rule

Commodities in which there is little correlation between general price direction and spread differences usually fall into the category of nonstorable commodities (cattle and live hogs). We will examine the case of live cattle to illustrate why this there is no consistent correlation between price and spread direction in nonstorable markets.

Live cattle, by definition, is a completely nonstorable commodity. When feedlot cattle reach market weight, they must be marketed; unlike most other commodities, they obviously cannot be placed in storage to await better prices. (To be perfectly accurate, cattle feeders have a small measure of flexibility, in that they can market an animal before it reaches optimum weight or hold it for a while after. However, economic considerations will place strong limits on the extent of such marketing

shifts.) As a consequence of the intrinsic nature of this commodity, different months in live cattle are, in a sense, different commodities. June live cattle is a very different commodity from December live cattle. The price of each will be dependent on the market's perception of the supply-demand picture that it expects to prevail at each given time period. It is not unusual for a key cattle on feed report to carry bullish implications for near months and bearish connotations for distant months, or vice versa. In such a case, the futures market can often react by moving in opposite directions for the near and distant contracts. The key point is that in a bullish (bearish) situation, the market will sometimes view the near-term supply/demand balance as being more bullish (bearish) and sometimes it will view the distant situation as being more bullish (bearish). A similar behavioral pattern prevails in hogs. Thus, the general rule would not apply in these types of markets.

In these markets, rather than being concerned about the overall price direction, the spread trader is primarily concerned with how he thinks the market will perceive the fundamental situation in different time periods. For example, at a given point in time, June cattle and December cattle may be trading at approximately equal levels. If the trader believes that marketings will become heavy in the months preceding the June expiration, placing pressure on that contract, and further believes the market psychology will view the situation as temporary, expecting prices to improve toward year-end, he would initiate a long December/short June cattle spread. Note that if he is correct in the development of near-term pressure but the market expects even more pronounced weakness as time goes on, the trade will not work even if his expectations for improved prices toward year-end also prove accurate. One must always remember that a spread's life span is limited to the expiration of the nearer month, and substantiation of the spread idea after that point will be of no benefit to the trader. Thus, the trader is critically concerned, not only with the fundamentals themselves, but also with the market's perception of the fundamentals, which may or may not be the same.

Spread Rather Than Outright—An Example

Frequently, the volatility of a given market may be so extreme that even a one-contract position may represent excessive risk for some traders. In such instances, spreads offer the trader an alternative approach to the market. For example, in early 2014, coffee futures surged dramatically, gaining more than 75 percent from late January to early March, with average daily price volatility more than tripling during that period. Prices swung wildly for the next several months—pushing to a higher high in April, giving back more than half of the rally in the sell-off to the July low, and then rallying to yet another new high in October (see Figure 30.1). At that juncture, assume a low-risk trader believed that prevailing nearest futures prices near $2.22 in mid-October 2014 were unsustainable, but based on the market's volatility (which was still around three times what it had been early in the year) and his money management rules felt he could not assume the risk of an outright position. Such a trader could instead have entered a bear spread (e.g., short July 2015 coffee/long December 2015 coffee) and profited handsomely from the subsequent price slide. Figure 30.1 illustrates the close correspondence between the spread and the market. The fact that an outright position would have garnered a much larger profit is an irrelevant consideration, since the trader's risk limitations would have prevented him from participating in the bear move altogether had his market view been confined to outright trades.

FIGURE 30.1 July and December 2015 Coffee Futures vs. July/December 2015 Coffee Spread
Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

The Limited-Risk Spread

The limited-risk spread is a type of intracommodity spread involving the buying of a near month (relatively speaking) and the selling of a more distant month in a storable commodity in which the process of taking delivery, storing, and redelivering at a later date does not require reinspection or involve major transportation or storage complications. This definition would exclude such commodities as live cattle, which by definition are nonstorable, and sugar, which involves major complications in taking delivery and storing. Commodities that fall into the limited-risk category include corn, wheat, oats, soybeans, soybean oil, copper, cotton, orange juice, cocoa, and lumber.[2]

In a commodity fulfilling the above specifications, the maximum premium that a more distant month can command over a nearby contract is roughly equal to the cost of taking delivery, holding the commodity for the length of time between the two expirations, and then redelivering. The cost for this entire operation is referred to as *full carry*. The term *limited risk* will be used only when the nearby month is at a discount. For example, assuming full carry in the October/December cotton

[2] Although precious metals can easily be received in delivery, stored, and redelivered, they are not listed here because spreads in precious metals are almost entirely determined by carrying charges. Thus, the only motivation for implementing an intramarket precious metals spread is an expectation for a change in carrying charges. In contrast, the purpose of a limited-risk spread is to profit from an expected narrowing of the spread relative to the level implied by carrying charges (which are assumed to remain constant).

spread is equal to 200 points, a long October/short December spread initiated at October 100 points under might be termed a limited-risk spread. However, the same long October/short December cotton spread would not be termed limited risk if, for example, October were at a 300-point premium. Nevertheless, it should be noted that even in this latter case, the maximum risk would still be defined—namely, 500 points—and in this respect the spread would still differ from spreads involving the selling of the nearby contract, or spreads in markets that do not fulfill the limited-risk specifications detailed above.

The best way to understand why it is unlikely for the premium of a distant month to exceed carrying costs is to assume the existence of a situation where this is indeed the case. In such an instance, a trader who bought a nearby month and sold a more distant month would have an opportunity for speculative gain and, at worst, would have the option of taking delivery, storing, and redelivering at a likely profit (since we assumed a situation in which the premium of the distant month exceeded carrying charges). Sounds too good to be true? Of course, and for this reason differences beyond full carry are quite rare unless there are technical problems in the delivery process. In fact, it is usually unlikely for a spread difference to even approach full carry since, as it does, the opportunity exists for a speculative trade that has very limited risk but, theoretically, no limit on upside potential. In other words, as spreads approach full carry, some traders will initiate long nearby/short forward spreads with the idea that there is always the possibility of gain, but, at worst, the loss will be minimal. For this reason, spreads will usually never reach full carry.

At a surface glance, limited-risk spreads seem to be highly attractive trades, and indeed they often are. However, it should be emphasized that *just because a spread is relatively near full carry does not necessarily mean it is an attractive trade.* Very often, such spreads will move still closer to full carry, resulting in a loss, or trade sluggishly in a narrow range, tying up capital that could be used elsewhere. However, if the trader has reason to believe the nearby month should gain on the distant, the fact that the spread has a limited risk (the difference between full carry and the current spread differential) makes the trade particularly attractive.

The components of carrying costs include interest, storage, insurance, and commission. We will not digress into the area of calculating carrying charges. (Such information can be obtained either through the exchanges themselves or through commodity brokers or analysts specializing in the given commodity.) However, we would emphasize that the various components of carrying charges are variable rather than fixed, and consequently *carrying charges can fluctuate quite widely over time.* Interest costs are usually the main component of carrying charges and are dependent on interest rates and price levels, both of which are sometimes highly volatile. It is critical to keep changes in carrying costs in mind when making historical comparisons.

Can a trader ever lose more money in a limited-risk spread than the amount implied by the difference between full carry and the spread differential at which the trade was initiated? The answer is that although such an occurrence is unlikely, it is possible. For one thing, as we indicated above, carrying charges are variable, and it is possible for the theoretical maximum loss of a spread trade to increase as a result of fluctuations in carrying costs. For example, a trader might enter a long October/short December cotton spread at 100 points October under, at a time when full carry approximates 200 points—implying a maximum risk of 100 points. However, in ensuing months, it is possible higher

prices and rising interest rates could cause full carry to move beyond 200 points, increasing the trader's risk correspondingly. In such an instance, it is theoretically possible for the given spread to move significantly beyond the point the trader considered the maximum risk point. Although such an event can occur, it should be emphasized that it is rather unusual, since in a limited-risk spread increased carrying costs due to sharply higher price levels will usually imply larger gains for the nearby months. As for interest rates, changes substantial enough to influence marked changes in carrying costs will usually take time to develop.

Another example of a limited-risk spread that might contain hidden risk is the case in which the government imposes price ceilings on nearby contracts but not on the more distant contracts. Although highly unusual, this situation has happened before and represents a possible risk that the spread trader should consider in the unlikely event that the prevailing political environment is conducive to the enactment of price controls.

Also, for short intervals of time, spread differences may well exceed full carry due to the absence of price limits on the nearby contract. For a number of commodities, price limits on the nearby contract are removed at some point before its expiration (e.g., first notice day, first trading day of the expiring month, etc.). Consequently, in a sharply declining market, the nearby month can move to a discount exceeding full carry as the forward month is contained by price limits. Although this situation will usually correct itself within a few days, in the interim, it can generate a substantial margin call for the spread trader. It is important that spread traders holding their positions beyond the removal of price limits on the nearby contract are sufficiently capitalized to easily handle such possible temporary spread aberrations.

As a final word, it should be emphasized that *although there is a theoretical limit on the premium that a distant month can command over a nearby contract in carrying-charge markets, there is no similar limit on the premium that a nearby position can command.* Nearby premiums are usually indicative of a tight current supply situation, and there is no way of determining an upper limit to the premium the market will place on more immediately available supplies.

The Spread Trade—Analysis and Approach

Step 1: Straightforward Historical Comparison

A logical starting point is a survey of the price action of the given spread during recent years. Historical spread charts, if available, are ideal for this purpose. If charts (or historical price data that can be downloaded into a spreadsheet) are unavailable, the trader should, if possible, scan historical price data, checking the difference of the given spread on a biweekly or monthly basis for at least the past 5 to 10 years. This can prove to be a time-consuming endeavor, but a spread trade initiated without any concept of historical patterns is, in a sense, a shot in the dark. Although spreads can deviate widely from historical patterns, it is still important to know the normal range of a spread, as well as its "average" level.

Step 2: Isolation of Similar Periods

As a rule, spreads will tend to act similarly in similar situations. Thus, the next step would be a refinement of step 1 by means of isolating roughly similar periods. For example, in a high-priced year, we might be interested in considering the spread action only in other past bull seasons, or we can cut the line still sharper and consider only bull seasons that were demand oriented or only those that were supply oriented. An examination of the spread's behavior during different fundamental conditions in past years will usually reveal the relative comparative importance of similar and dissimilar seasons.

Step 3: Analysis of Spread Seasonality

This step is a further refinement of step 1. Sometimes a spread will tend to display a distinct seasonal pattern. For example, a given spread may tend to widen or narrow during a specific period. Knowledge of such a seasonality can be critically important in deciding whether or not to initiate a given spread. For example, if in nine of the past 10 seasons the near month of a given spread lost ground to the distant month during the March–June period, one should think twice about initiating a bull spread in March.

Step 4: Analysis and Implications of Relevant Fundamentals

This step would require the formulation of a concept of market direction (in commodities where applicable), or equivalent appropriate analysis in those commodities where it is not. This approach is fully detailed in the sections entitled "The General Rule" and "The General Rule—Applicability and Nonapplicability."

Step 5: Chart Analysis

A key step before initiating a spread trade should be the examination of a current chart of the spread (or the use of some other technical input). As in outright positions, charts are an invaluable informational tool and a critical aid to timing.

Pitfalls and Points of Caution

- Do not automatically assume a spread is necessarily a low-risk trade. In some instances, a spread may even involve greater risk than an outright position. Specifically, in the case of intercommodity spreads, intercrop spreads, and spreads involving nonstorable commodities, the two legs of the spread can sometimes move in opposite directions.
- Be careful not to overtrade a spread because of its lower risks or margin. A 5- to 10-contract spread position gone astray can often prove more costly than a bad one-contract outright trade. Overtrading is a very common error in spread trading.

- As a general rule, traders should avoid trading spreads in markets in which they are unfamiliar with the fundamentals.
- Check the open interest of the months involved to ensure adequate liquidity, especially in spreads involving distant back months. A lack of liquidity can significantly increase the loss when getting out of a spread that has gone awry. At times, of course, a given spread may be sufficiently attractive despite its less-than-desirable liquidity. Nevertheless, even in such a case, it is important that traders be aware of the extra risk involved.
- Place a spread order on a spread basis rather than as two separate outright orders. Some traders place their spread orders one leg at a time in the hopes of initiating their position at a better price than the prevailing market level. Such an approach is inadvisable not only because it will often backfire, but also because it will increase commission costs.
- When the two months of the spread are very close in price, extra care should be taken to specify clearly which month is the premium month in the order.
- Do not assume that current price quotations accurately reflect actual spread differences. Time lags in the buying and selling of different contracts, as well as a momentary concentration of orders in a given contract month, can often result in outright price quotations implying totally unrepresentative spread values.
- Do not liquidate spreads one leg at a time. Failing to liquidate the entire spread position at one time is another common and costly error, which has caused many a good spread trade to end in a loss.
- Avoid spreads involving soon-to-expire contracts. Expiring contracts, aside from usually being free of any price limits, are subject to extremely wide and erratic price moves dependent on technical delivery conditions.
- Do not assume the applicability of prior seasons' carrying charges before initiating a limited-risk spread. Wide price swings and sharply fluctuating interest costs can radically alter carrying costs.
- Try to keep informed of any changes in contract specifications, since such changes can substantially alter the behavior of a spread.
- Properly implemented intercommodity and intermarket spreads often require an unequal number of contracts in each market. The methodology for determining the proper contract ratio between different markets is discussed in the next chapter.
- Do not use spreads to protect an outright position that has gone sour—that is, do not initiate an opposite direction position in another contract as an alternative to liquidating a losing position. In most cases such a move amounts to little more than fooling oneself and often can exacerbate the loss.

- Because it is especially easy to procrastinate in liquidating a losing spread position, the spread trader needs to be particularly vigilant in adhering to risk management principals. It is advisable that the spread trader determine a mental stop point (usually on the basis of closing values) prior to entering a spread and rigidly stick to liquidating the spread position if this mental stop point is reached.

- Avoid excessively low-risk spreads because transaction costs (slippage as well as commission) will represent a significant percentage of the profit potential, reducing the odds of a net winning outcome. In short, the odds are stacked against the very-low-risk spread trader.

- As a corollary to the prior item, a trader should choose the most widely spaced intramarket spread consistent with the desired risk level. Generally speaking, the wider the time duration in an intramarket spread, the greater the volatility of the spread. This observation is as true for markets conforming to the general rule as for markets unrelated or inversely related to the general rule. Traders implementing a greater-than-one-unit intramarket spread position should be sure to choose the widest liquid spread consistent with the trading strategy. For example, it usually would make little sense to implement a two-unit March/May corn spread, since a one-unit March/July corn spread would offer a very similar potential/risk trade at half the transaction cost.

CHAPTER 31

Intercommodity Spreads: Determining Contract Ratios

. . . many more people see than weigh.

—Philip Dormar Stanhope, Earl of Chesterfield

By definition, the intention of the spread trader is to implement a position that will reflect changes in the price *difference* between contracts rather than changes in outright price levels. To achieve such a trade, the two legs of a spread must be equally weighted. As an obvious example, long 2 December corn/short 1 March corn is a spread in name only. Such a position would be far more dependent on fluctuations in the price level of corn than on changes in the price difference between December and March.

The meaning of *equally weighted,* however, is by no means obvious. Many traders simply assume that a balanced spread position implies an equal number of contracts long and short. Such an assumption is usually valid for most intramarket spreads (although an exception will be discussed later in this chapter). However, for many intermarket and intercommodity[1] spreads, the automatic presumption of an equal number of contracts long and short can lead to severe distortions.

Consider the example of a trader who anticipates that demand for lower quality Robusta coffee beans (London contract) will decline relative to higher quality Arabica beans (New York contract) and

[1] The distinction between intermarket and intercommodity spreads was defined in Chapter 30. An intermarket spread involves buying and selling the same commodity at two different exchanges (e.g., New York vs. London cocoa); the intercommodity spread involves buying and selling two different but related markets (e.g., wheat vs. corn, cattle vs. hogs).

attempts to capitalize on this forecast by initiating a 5-contract long New York coffee/short London coffee spread. Assume the projection is correct, and London coffee prices decline from $0.80/lb to $0.65/lb, while New York coffee prices simultaneously decline from $1.41/lb to $1.31/lb. At surface glance, it might appear this trade is successful, since the trader is short London coffee (which has declined by $0.15/lb) and long New York coffee (which has lost only $0.10/lb). However, the trade actually loses money (even excluding commissions). The explanation lies in the fact that the contract sizes for the New York and London coffee contracts are different: The size of the New York coffee contract is 37,500 lb, while the size of the London coffee contract is 10 metric tonnes, or 22,043 lb. (*Note:* In practice, the London coffee contract is quoted in dollars/tonne; the calculations in this section reflect a conversion into $/pound for easier comparison with the New York coffee contract.) Because of this disparity, an equal contract position really implies a larger commitment in New York coffee. Consequently, such a spread position is biased toward gaining in bull coffee markets (assuming the long position is in New York coffee) and losing in bear markets. The long New York/short London spread position in our example actually loses $2,218 plus commissions, despite the larger decline in London coffee prices:

$$\text{Profit/loss} = \#\text{ of contracts} \times \#\text{ of units per contract} \times \text{gain/loss per unit}$$
$$\text{Profit/loss in long New York coffee position} = 5 \times 37,500 \times (-\$0.10/\text{lb}) = -\$18,750$$
$$\text{Profit/loss in short London coffee position} = 5 \times 22,043 \times (+\$0.15/\text{lb}) = +\$16,532$$
$$\text{Net profit/loss in spread} = -\$2,218$$

The difference in contract size between the two markets could have been offset by adjusting the contract ratio of the spread to equalize the long and short positions in terms of units (lb). The general procedure would be to place $U1/U2$ contracts of the smaller-unit market (i.e., London coffee) against each contract of the larger-unit contract (i.e., New York coffee). ($U1$ and $U2$ represent the number of units per contract in the respective markets—$U1$ = 37,500 lb and $U2$ = 22,043 lb.) Thus, in the New York coffee/London coffee spread, each New York coffee contract would be offset by 1.7 (37,500/22,043) London coffee contracts, implying a minimum equal-unit spread of five London coffee versus three New York coffee (rounding down the theoretical 5.1-contract London coffee position to 5 contracts.) This unit-equalized spread would have been profitable in the above example:

$$\text{Profit/loss} = \#\text{ of contracts} \times \#\text{ of units per contract} \times \text{gain/loss per unit}$$
$$\text{Profit/loss in long New York coffee position} = 3 \times 37,500 \times (-\$0.10/\text{lb}) = -\$11,250$$
$$\text{Profit/loss in short London coffee position} = 5 \times 22,043 \times (+\$0.15/\text{lb}) = +\$16,532$$
$$\text{Net profit/loss in spread} = +\$5,282$$

The unit-size adjustment, however, is not the end of our story. It can be argued that even the equalized-unit New York coffee/London coffee spread is still unbalanced, since there is another significant difference between the two markets: London coffee prices are lower than New York coffee prices. This observation raises the question of whether it is more important to neutralize the spread against equal price moves or equal-percentage price moves. The rationale for the latter approach is that, all else being equal, the magnitude of price changes is likely to be greater in the higher-priced market.

The fact that percentage price change is a more meaningful measure than absolute price change is perhaps best illustrated by considering the extreme example of the gold/silver spread. The equal-unit approach, which neutralizes the spread against equal-dollar price changes in both markets, would imply the rather ludicrous spread position of 50 gold contracts versus 1 silver contract. (The contract size of silver is 5,000 oz; the contract size of gold is 100 oz.) Obviously, such a position would be almost entirely dependent upon changes in the price of gold rather than any movement in the gold/silver spread. The disparity is due to the fact that since gold is far higher priced than silver (by a ratio of 32-101:1 based on the past 30-year range), its price swings will also be far greater. For example, if gold is trading at $1,400/oz and silver at $20/oz, a $2 increase in silver prices is likely to be accompanied by far more than a $2 increase in gold prices. Clearly, the relevant criterion in the gold/silver spread is that the position should be indifferent to equal percentage price changes rather than equal absolute price changes. Although less obvious, the same principle would also appear preferable, even for intercommodity or intermarket spreads between more closely priced markets (e.g., New York coffee/London coffee).

Thus we adopt the definition that a *balanced spread* is a spread that is indifferent to equal percentage price changes in both markets. It can be demonstrated this condition will be fulfilled if the spread is initiated so the dollar values of the long and short positions are equal.[2] An equal-dollar-value spread

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[2] If the spread is implemented so that dollar values are equal, then:

$$N_1 U_1 P_{1,t=0} = N_2 U_2 P_{2,t=0}$$

where N_1 = number of contracts in market 1
N_2 = number of contracts in market 2
U_1 = number of units per contract in market 1
U_2 = number of units per contract in market 2
$P_{1,t=0}$ = price of market 1 at spread initiation
$P_{2,t=0}$ = price of market 2 at spread initiation

An equal-percentage price change implies that both prices change by the same factor k. Thus,

$$P_{1,t=1} = k\ P_{1,t=0} \text{ and } P_{2,t=1} = k\ P_{2,t=0}$$

where $P_{1,t=1}$ = price of market 1 after equal-percentage price move
$P_{2,t=1}$ = price of market 2 after equal-percentage price move

And the equity changes (in absolute terms) are:

$$\text{Equity change in market 1 position} = N_1 U_1 \mid kP_{1,t=0} - P_{1,t=0} \mid = N_1 U_1 P_{1,t=0} \mid k - 1 \mid$$
$$\text{Equity change in market 2 position} = N_2 U_2 \mid kP_{2,t=0} - P_{2,t=0} \mid = N_2 U_2 P_{2,t=0} \mid k - 1 \mid$$

Since, by definition, an equal-dollar-value spread at initiation implies that $N_1 U_1 P_{1,t=0} = N_2 U_2 P_{2,t=0}$, the equity changes in the positions are equal.

It should be noted that the equal-dollar-value spread only assures that equal-percentage price changes will not affect the spread if the percentage price changes are measured relative to the initiation price levels. However, equal-percentage price changes from subsequent price levels will normally result in different absolute dollar changes in the long and short positions (since the position values are not necessarily equal at any post-initiation points of reference).

can be achieved by using a contract ratio that is inversely proportional to the contract value (*CV*) ratio. This can be expressed as follows (see footnote 2 for symbol definitions):

$$\frac{N_2}{N_1} = \frac{CV_1}{CV_2} = \frac{U_1 P_{1,t=0}}{U_2 P_{2,t=0}}$$

$$\text{or, } N_2 = N_1 \left(\frac{CV_1}{CV_2} \right)$$

For example, if New York coffee is trading at \$1.41/lb and London coffee at \$.80/lb, the equal-dollar-value spread would indicate a contract ratio of 1 New York coffee/3 London coffee:

$$N_2 = N_1 \left(\frac{CV_1}{CV_2} \right) = N_1 \left(\frac{U_1 P_{1,t=0}}{U_2 P_{2,t=0}} \right)$$

$$\text{If } N_1 = 1 \text{ New York coffee contract,}$$

$$N_2 = 37{,}500 \times \$1.41/22{,}043 \times \$.080 = 3 \text{ London contracts}$$

Thus, in an equal-dollar-value spread position, 3 New York coffee contracts would be balanced by 9 (not 5) London contracts.

It may help clarify matters to compare the just-defined equal-dollar-value approach to the equal-unit approach for the case of the New York coffee/London coffee spread. Although the equal-unit spread is indifferent to equal absolute price changes, it will be affected by equal-percentage price changes (unless, of course, the price levels in both markets are equal, in which case the two approaches are equivalent). For example, given initiation price levels of New York coffee = \$1.41/lb and London coffee = \$.80/lb, consider the effect of a 25 percent price decline on a long 3 New York/short 5 London coffee (equal unit) spread:

$$\begin{aligned} \text{Profit/loss in long New York coffee position} &= 3 \times 37{,}500 \times (-\$0.3525) = -\$39{,}656 \\ \text{Profit/loss in short London coffee position} &= 5 \times 22{,}043 \times (-\$0.20) = +\$22{,}043 \\ \text{Profit/loss in spread} &= -\$17{,}613 \end{aligned}$$

The equal-dollar-value spread, however, would be approximately unchanged:

$$\begin{aligned} \text{Profit/loss in long New York coffee position} &= 3 \times 37{,}500 \times (-\$0.3525) = -\$39{,}656 \\ \text{Profit/loss in short London coffee position} &= 9 \times 22{,}043 \times (+\$0.20) = +\$39{,}677 \\ \text{Profit/loss in spread} &= +\$\quad 21 \end{aligned}$$

Returning to our original example, if the trader anticipating price weakness in London coffee relative to New York coffee had used the equal-dollar-value approach (assuming a 3-contract position for New York coffee), the results would have been as follows:

$$\begin{aligned} \text{Profit/loss in long New York coffee position} &= 3 \times 37{,}500 \times (-\$0.10) = -\$11{,}250 \\ \text{Profit/loss in short London coffee position} &= 9 \times 22{,}043 \times (+\$0.15) = +\$29{,}758 \\ \text{Profit/loss in spread} &= +\$18{,}508 \end{aligned}$$

Thus, while the naive placement of an equal contract spread actually results in a $2,218 loss despite the validity of the trade concept, the more appropriate equal-dollar-value approach results in a $18,508 gain. This example emphasizes the critical importance of determining appropriate contract ratios in intercommodity and intermarket spreads.

An essential point to note is that if intercommodity and intermarket spreads are traded using an equal-dollar-value approach—as they should be—the price difference between the markets is no longer the relevant subject of analysis. Rather, such an approach is most closely related to the price *ratio* between the two markets. This fact means that chart analysis and the definition of historical ranges should be based on the price ratio, not the price difference. Figures 31.1, 31.2, and 31.3 illustrate this point. Figure 31.1 depicts the September 2013 wheat/September 2013 corn spread in the standard form as a price difference. Figure 31.2 illustrates the price ratio of September 2013 wheat to September 2013 corn during the same period. Finally, Figure 31.3 plots the equity fluctuations of the approximate equal-dollar-value spread: 3 wheat versus 4 corn. Note how much more closely the equal dollar position is paralleled by the ratio than by the price difference.[3]

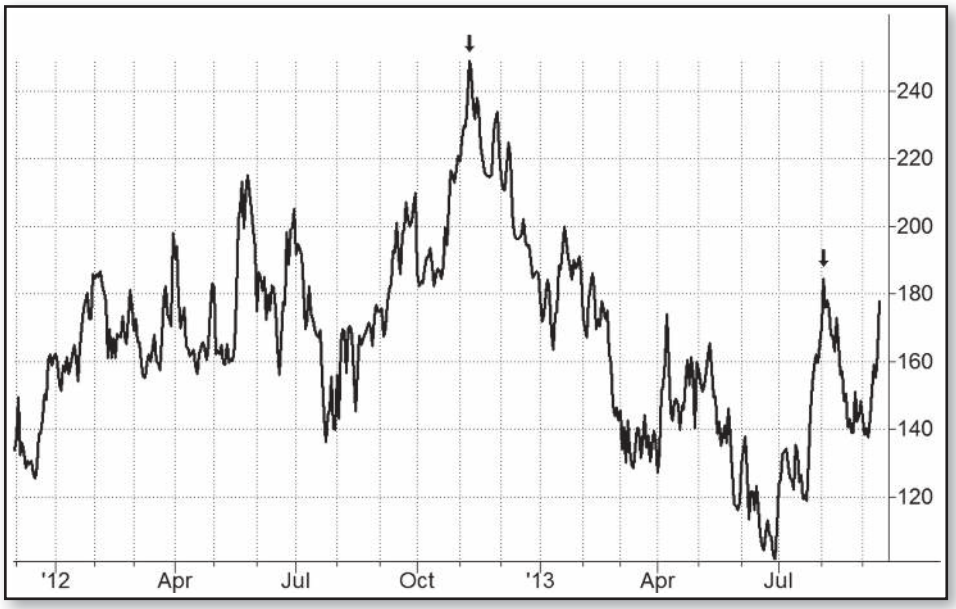

FIGURE 31.1 September 2013 Wheat Minus September 2013 Corn
Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

[3] The equal-dollar-value spread would be precisely related to the price ratio only if the contract ratios in the spread were continuously adjusted to reflect changes in the price ratio. (An analogous complication does not exist in equal-unit spreads, since the contract weightings are determined independent of price levels.) However, unless price levels change drastically during the holding period of the spread, the absence of theoretical readjustments in contract ratios will make little practical difference. In other words, equity fluctuations in the equal-dollar-value spread will normally closely track the movements of the price ratio.

FIGURE 31.2 Price Ratio of September 2013 Wheat to September 2013 Corn
Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

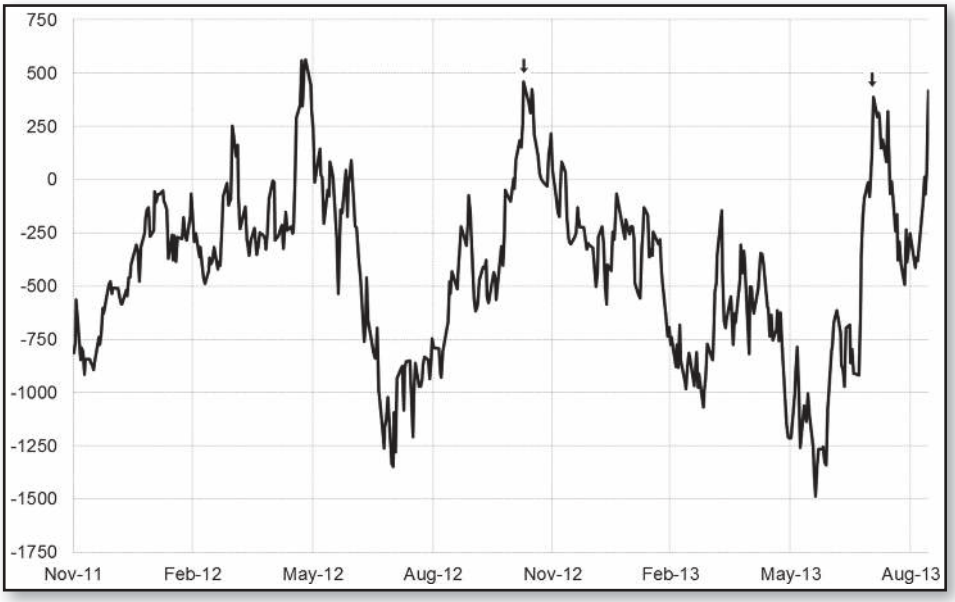

FIGURE 31.3 3 September 2013 Wheat Minus 4 September 2013 Corn

In the preceding example, because wheat is a larger contract than corn (in dollar-value terms), a long 1 wheat/short 1 corn spread would be biased in the direction of the general price trend of grains. For example, during November 2012–August 2013, a period of declining grain prices (see Figure 31.4), the equal contract spread seems to suggest that wheat prices weakened significantly relative to corn prices (see Figure 31.1). In reality, as indicated by Figures 31.2 and 31.3, the wheat/corn relationship during this period was best characterized by a trading range. To illustrate the trading implications of the spread ratio, consider a long wheat/short corn spread initiated at the late-November 2012 relative high and liquidated at the August 2013 peak. This trade would have resulted in a near breakeven trade if the spread were implemented on an equal-dollar-value basis (see Figure 31.2 or 31.3), but a significant loss if an equal contract criterion were used instead (see Figure 31.1).

It should now be clear why the standard assumption of an equal contract position is usually valid for intramarket spreads. In these spreads, contract sizes are identical, while price levels are normally close. Thus, the equal-dollar-value approach suggests a contract ratio very close to 1:1.

If, however, two contracts in an intramarket spread are trading at significantly different price levels, the argument for using the equal-dollar-value approach (as opposed to equal contract positions) would be analogous to the intercommodity and intermarket case. Wide price differences between contracts in an intramarket spread can occur in extreme bull markets that place a large premium on

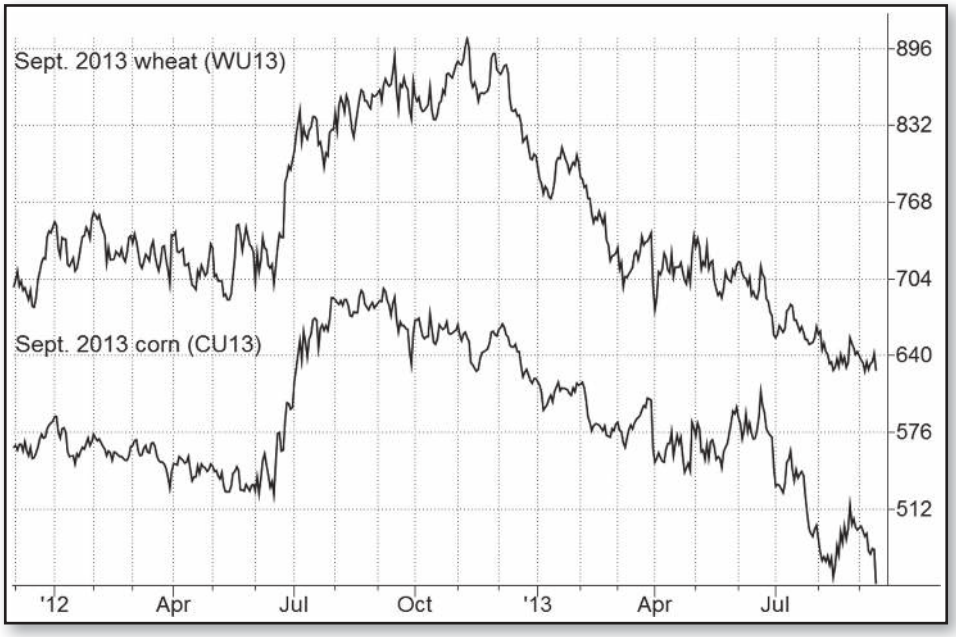

FIGURE 31.4 September 2013 Wheat and September 2013 Corn

nearby supplies (i.e., in markets conforming to the "general rule" defined in Chapter 30). Intercrop spreads (which are a subset of intramarket spreads) can also exhibit wide price differences. In these cases, the greater dollar volatility implicit in the higher-priced month suggests that the spread be initiated with a larger number of contracts in the lower-priced month.

It should be noted that the concept of equal dollar value is meaningless for interest rate futures. For example, a $1 million eurodollar contract is certainly not 10 times as large as a $100,000 T-bond contract. In fact, because of its much longer maturity, and, hence, much greater volatility, the T-bond contract is a substantially "larger" contract by any reasonable definition.

CHAPTER 32

Spread Trading in Stock Index Futures

The stock market is but a mirror which . . . provides an image of the underlying or fundamental economic situation.

—John Kenneth Galbraith

Intramarket Stock Index Spreads

Spreads in carrying charge markets, such as gold, provide a good starting point for developing a theoretical behavioral model for spreads in stock index futures. As is the case for gold, there can never be any near-term shortage in stock indexes, which means spreads will be entirely determined by carrying charges. As was explained in Chapter 30, gold spreads are largely determined by short-term interest rates. For example, since a trader could accept delivery of gold on an expiring contract and redeliver it against a subsequent contract, the price spread between the two months would primarily reflect financing costs and, hence, short-term rates. If the premium of the forward contract were significantly above the level implied by short-term rates, the arbitrageur could lock in a risk-free profit by performing a cash-and-carry operation. And if the premium were significantly lower, an arbitrageur could lock in a risk-free profit by implementing a short nearby/long forward spread, borrowing gold to deliver against the nearby contract and accepting delivery at the expiration of the forward contract. These arbitrage forces will tend to keep the intramarket spreads within a reasonably well-defined band for any given combination of short-term interest rates and gold prices.

The same arguments could be duplicated substituting a stock index for gold. In a broad sense this is true, but there is one critical difference between stock index spreads and gold spreads: Stocks pay

dividends. Thus, the interest rate cost of holding a stock position is offset (partially, or more than totally) by dividend income. The presence of dividends is easily incorporated into the framework of calculating a theoretical spread level. The spread would be in equilibrium if, based on current prices, interest rates, and dividends, there would be no difference between holding the actual equities in the index for the interim between the two spread months versus buying the forward index futures contract. Holding equities would incur an interest rate cost that does not exist in holding futures, but would also accrue the dividend yield the holder of futures does not receive. The theoretical spread level ($P_2 - P_1$) at the expiration of P_1 at which these two alternative means of holding a long equity position—equity and stock index futures—would imply an equivalent outcome can be expressed symbolically as follows:

$$P_2 - P_1 = P_1\left(\frac{t}{360}\right)(i - d)$$

where P_1 = price of nearby (expiring) futures contract
P_2 = price of forward futures contract
t = number of days between expiration of nearby contract and expiration of forward contract
i = short-term interest rate level at time of P_1 expiration
d = annualized dividend yield (%)

As is evident from this equation, if short-term interest rates exceed dividend yields, forward futures will trade at a premium to nearby contracts. Conversely, if the dividend yield exceeds short-term interest rates, forward futures will trade at a discount.

Since the dividend yield is not subject to sharp changes in the short run, for any given index (price) level, intramarket stock index spreads would primarily reflect expected future short-term rates (similar to gold spreads). If short-term interest rates exhibit low volatility, as characterized by the near-zero interest rate environment that prevailed in the years following the 2008 financial crisis, stock index spreads will tend to trade in relatively narrow range—a consequence of both major drivers of stock index spreads (interest rates and dividend yield) being stable.

Intermarket Stock Index Spreads

As is the case with intercommodity and intermarket spreads trading at disparate price levels, stock index spreads should be traded as ratios rather than differences—an approach that will make the spread position indifferent to equal percentage price changes in both markets (indexes). As a reminder, to trade a ratio, the trader should implement each leg of the spread in approximately equal contract value positions, which, as was shown in Chapter 31, can be achieved by using a contract ratio that is inversely proportional to the contract value ratio.

For example, if the E-mini Nasdaq 100 futures contract, which has a contract value of 20 times the index, is trading at 4,300 (a contract value of $86,000), and the Russell 2000 Mini futures contract,

which has a contract value of 100 times the index, is trading at 1,150 (a contract value of $115,000), the contract value ratio (CVR) of Nasdaq to Russell futures would be equal to:

$$CVR = (20 \times 4{,}300)/(100 \times 1{,}150) = 0.7478$$

Therefore, the contract ratio would be equal to the inverse of the contract value ratio: 1/0.7478 = 1.337. Thus, for example, a spread with 3 long (short) Russell contracts would be balanced by 4 Nasdaq short (long) contracts: 3 × 1.337 = 4.01.

Because some stock indexes are inherently more volatile than other indexes—for example, smaller-cap indexes tend to be more volatile than larger-cap indexes—some traders may wish to make an additional adjustment to the contract ratio to neutralize volatility differences. If this were done, the contract ratio defined by the inverse of the contract value ratio would be further adjusted by multiplying by the inverse of some volatility measure ratio. One good candidate for such a volatility measure is the average true range (ATR), which was defined in Chapter 17. As an illustration, if in the aforementioned example of the Nasdaq 100/Russell 2000 ratio, the prevailing ATR of the Nasdaq 100 is 0.8 times the ATR of the Russell 2000, then the Nasdaq/Russell 2000 contract ratio of 1.337 would be further adjusted by multiplying by the inverse of the ATR ratio (1 / 0.8 = 1.25), yielding a contract ratio of 1.671 instead of 1.337. If this additional adjustment is made, then a spread with 3 long (short) Russell contracts would be balanced by 5 short (long) Nasdaq contracts: 3 × 1.671= 5.01.

It is up traders to decide whether they wish to further adjust the contract ratio for volatility. For the remainder of this chapter, we assume the more straightforward case of contract ratios being adjusted only for contract value differences (i.e., without any additional adjustment for volatility differences).

The four most actively traded stock index futures contracts are the E-mini S&P 500, E-mini Nasdaq 100, E-mini Dow, and the Russell 2000 Mini. There are six possible spread pairs for these four markets:

- E-mini S&P 500 / E-mini Dow
- E-mini S&P 500 / E-mini Nasdaq 100
- E-mini S&P 500 / Russell 2000 Mini
- E-mini Nasdaq 100 / E-mini Dow
- E-mini Nasdaq 100 / Russell 2000 Mini
- E-mini Dow / Russell 2000 Mini

Traders who believe a certain group of stocks will perform better or worse than another group can express this view through stock index spreads. For example, a trader who expected large-cap stocks to outperform small-cap stocks could initiate long E-mini S&P 500/short Russell 2000 Mini spreads or long E-mini Dow/short Russell 2000 Mini spreads. A trader expecting relative outperformance by small-cap spreads would place the reverse spreads. As another example, a trader expecting relative outperformance by technology stocks might consider spreads that are long the tech-heavy Nasdaq 100 index and short another index, such as long E-mini Nasdaq 100/short E-mini S&P 500

spreads. Again, to trade these types of spreads as price ratios, the spreads would be implemented so the contract values of each side are approximately equal, a condition that will be achieved when the contract ratio between the indexes is equal to the inverse of the contract value ratio.

Figures 32.1 through 32.6 illustrate the contract value ratios for these six spread pairs during 2002–2015. In some cases, such as the S&P 500/Dow spread, the contract value ratio does not vary much. As can be seen in Figure 32.1, the contract value ratio for this pair ranged by a factor of only about 1.2 from low to high over the entire period. For other index pairs, however, the contract value ratio ranged widely. For example, Figure 32.4 shows that during the same period, the high Nasdaq/Dow contract value ratio was nearly 2.5 times the low ratio. Since the contract ratio required to keep the trade neutral to equal percentage price changes in both markets is equal to the inverse of the prevailing contract value ratio, the appropriate contract ratio for these spreads can range widely over time. For example, for the aforementioned Nasdaq 100/Dow ratio, a three-contract Dow position would have been balanced by a seven-contract Nasdaq position when the contract value ratio was at its low versus only a three-contract position (rounding up) when the ratio was at its high.

Figures 32.7 through 32.12 illustrate the price ratios for the six stock index pairs during the same period, along with an overlay of one of the indexes to facilitate visually checking of the relationships between the index price ratio and the overall stock market direction. Note that the price ratios in Figures 32.7 through 32.12 are identical in pattern to the contract value ratios in Figures 32.1 through 32.6, which is a consequence of the contract value ratio being equal to the price ratio times a constant—the constant being equal to the ratio of the multipliers for the indexes.

FIGURE 32.1 Contract Value Ratio: S&P 500/Dow E-Mini Futures

FIGURE 32.2 Contract Value Ratio: S&P 500/Nasdaq 100 E-Mini Futures

FIGURE 32.3 Contract Value Ratio: S&P 500/Russell 2000 Mini Futures

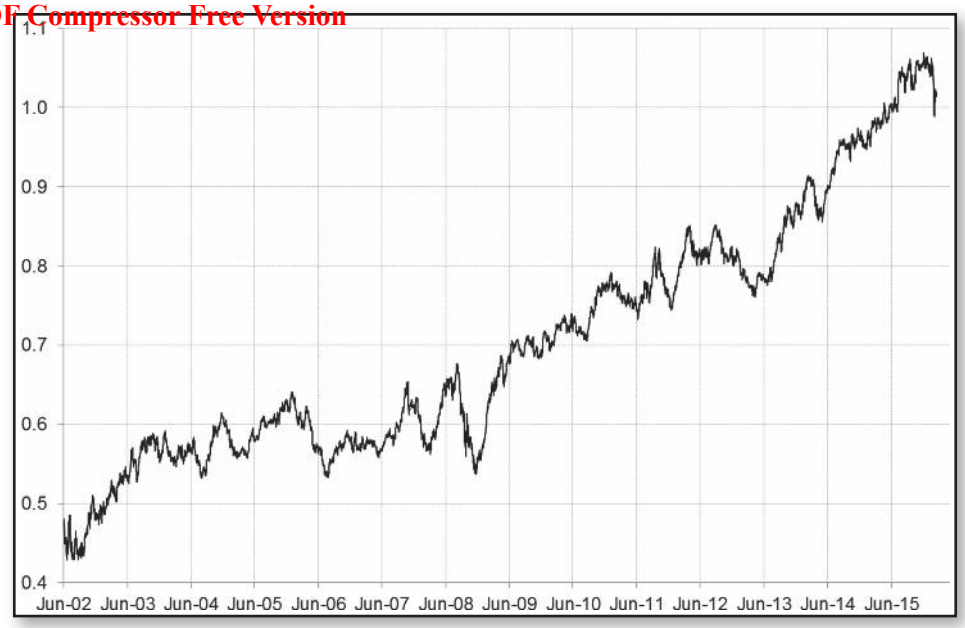

FIGURE 32.4 Contract Value Ratio: Nasdaq 100/Dow E-Mini Futures

FIGURE 32.5 Contract Value Ratio: Nasdaq 100/Russell 2000 Mini Futures

FIGURE 32.6 Contract Value Ratio: Dow/Russell 2000 Mini Futures

FIGURE 32.7 S&P 500/Dow E-Mini Futures Ratio vs. S&P

FIGURE 32.8 S&P 500/Nasdaq 100 E-Mini Futures Ratio vs. S&P

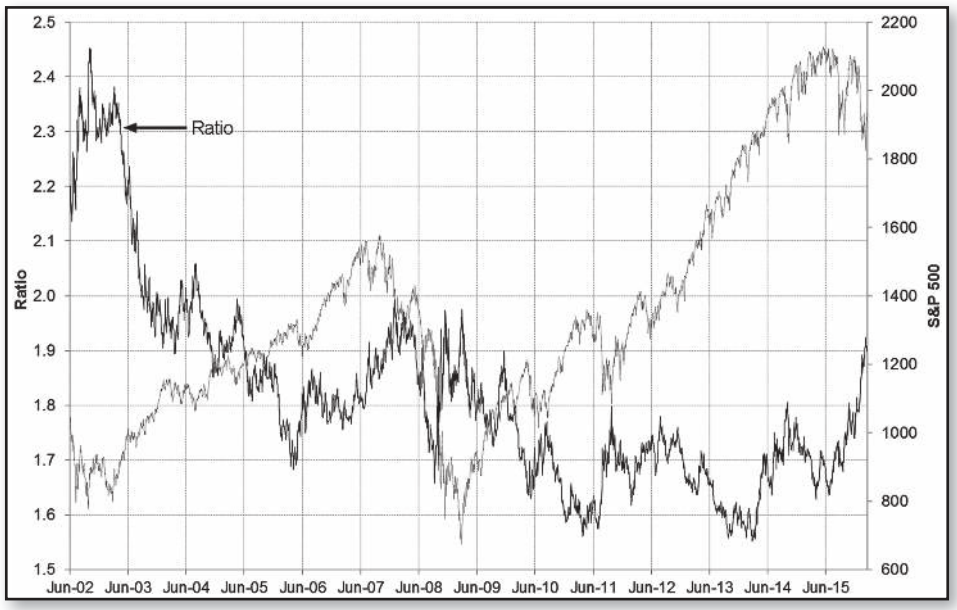

FIGURE 32.9 S&P 500/Russell 2000 Mini Futures Ratio vs. S&P

FIGURE 32.10 Nasdaq 100/Dow E-Mini Futures Ratio vs. Dow

FIGURE 32.11 Nasdaq 100/Russell 2000 Mini Futures Ratio vs. Russell 2000

FIGURE 32.12 Dow/Russell 2000 Mini Futures Ratio vs. Russell 2000

Generally speaking, at least during the 14-year period depicted in these charts, Figures 32.7 through 32.12 reflect a tendency for larger-cap indexes to lose ground to smaller-cap indexes during market uptrends and to outperform (i.e., decline less) during market downtrends. For example, Figure 32.12 compares the index ratio of the largest cap of the four indexes (Dow) to the smallest cap of the four indexes (Russell 2000) with the Russell 2000 index. On balance, there is a clear inverse correlation between the index ratio and the market direction. As another example, in Figure 32.7, in which both indexes in the spread are large-cap, but in which the smaller-cap of the two (S&P) is in the numerator of the ratio, the ratio is clearly positively correlated with the market direction. Another interesting aspect of Figure 32.7 is that there appears to be some tendency for the S&P/Dow ratio to lead major trend reversals in the outright market.

CHAPTER 33

Spread Trading in Currency Futures

Lenin was certainly right. There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose.

—John Maynard Keynes

Intercurrency Spreads

Conceptually, intercurrency spreads are identical to outright currency trades. After all, a net long or short currency futures position is also a spread in that it implies an opposite position in the dollar. For example, a net long Japanese yen (JY) position means that one is long the JY versus the U.S. dollar (USD). If the JY strengthens against the USD, the long JY position will gain. If the JY strengthens against the Swiss franc (SF) and euro but remains unchanged against the USD, the long JY position will also remain unchanged.

In an intercurrency spread, the implied counterposing short in the USD is replaced by another currency. For example, in a long JY/short euro spread, the position will gain when the JY strengthens relative to the euro, but will be unaffected by fluctuations of the JY relative to the dollar. The long JY/short euro spread is merely the combination of a long JY/short USD and a long USD short euro position, in which the opposite USD positions offset each other. (To be precise, the implied USD positions will only be completely offset if the dollar values of the JY and euro positions are exactly equal.)

There are two possible reasons for implementing an intercurrency spread:

1. The trader believes currency 1 will gain against the USD, while currency 2 will lose against the USD. In this case, a long currency 1/short currency 2 spread is best thought of as two separate outright trades.
2. The trader believes that one foreign currency will gain on another, but has no strong opinion regarding the movement of either currency against the USD. In this case, the intercurrency spread is analogous to an outright currency trade, with the implied short or long in the USD replaced by another currency. If, however, the two currencies are far more closely related to each other than to the USD, the connotation normally attributed to a spread might be at least partially appropriate.

If an intercurrency spread is motivated by the second of these factors, the position should be balanced in terms of equal dollar values. (This may not always be possible for the small trader.) Otherwise, equity losses can occur, even if the exchange rate between the two currencies remains unchanged.

For example, consider a long 4 December SF/short 4 December euro spread position implemented when the December SF = $1.000 and the December euro = $1.250. At the trade initiation, the exchange rate between the SF and euro is 1 euro = 1.25 SF. If the SF rises to $1.100 and the euro climbs to $1.375, the exchange rate between the SF and euro is unchanged: 1 euro = 1.25 SF. However, the spread position will have lost $12,500:

$$\text{Equity change} = \text{number of contracts} \times \text{number of units per contract} \times \text{gain/loss per unit}$$
$$\text{Equity change in long SF} = 4 \times 125{,}000 \times \$0.10 = \$50{,}000$$
$$\text{Equity change in short euro} = 4 \times 125{,}000 \times -\$0.125 = -\$62{,}500$$
$$\text{Net profit/loss} = -\$12{,}500$$

The reason the spread loses money even though the SF/euro exchange rate remains unchanged is that the original position was unweighted. At the initiation prices, the spread represented a long SF position of $500,000 but a short euro position of $625,000. Thus, the spread position was biased toward gaining if the dollar weakened against both currencies and losing if the dollar strengthened. If, however, the spread were balanced in terms of equal dollar values, the equity of the position would have been unchanged. For example, if the initial spread position were long 5 December SF/short 4 December euro (a position in which the dollar value of each side = $625,000), the aforementioned price shift would not have resulted in an equity change:

$$\text{Equity change in long SF} = 5 \times 125{,}000 \times \$0.10 = \$62{,}500$$
$$\text{Equity change in short euro} = 4 \times 125{,}000 \times (-\$0.125) = \underline{-\$62{,}500}$$
$$\text{Net profit/loss} = 0$$

The general formula for determining the equal-dollar-value spread ratio (number of contracts of currency 1 per contract of currency 2) is:

$$\text{Equal-dollar-spread ratio} = \frac{\left(\begin{matrix}\text{number of units per}\\ \text{contract of currency 2}\end{matrix}\right)\left(\begin{matrix}\text{price of}\\ \text{currency 2}\end{matrix}\right)}{\left(\begin{matrix}\text{number of units per}\\ \text{contract of currency 1}\end{matrix}\right)\left(\begin{matrix}\text{price of}\\ \text{currency 1}\end{matrix}\right)}$$

For example, if currency 1, the British pound (BP) = $1.50, and currency 2, the euro = $1.20, and the BP futures contract consists of 62,500 units, while the euro futures contract consists of 125,000 units, the implied spread ratio would be:

$$\frac{(125{,}000)(\$1.20)}{(62{,}500)(\$1.50)} = 1.6$$

Thus, the equal dollar value spread would consist of 1.6 BP contracts per euro contract, or 8 BP to 5 euro.

Equity fluctuations in an equal-dollar-value intercurrency spread position will mirror the price ratio (or exchange rate) between currencies. It should be emphasized that price ratios (as opposed to price spreads) are the only meaningful means of representing intercurrency spreads. For example, if the BP = $1.50 and SF = $1.00, an increase of $0.50 in both the currencies will leave the price spread between the BP and SF unchanged, even though it would drastically alter the relative values of the two currencies: a decline of the BP vis-à-vis the SF from 1.5 SF to 1.33 SF.

Intracurrency Spreads

An intracurrency spread—the price difference between two futures contracts for the same currency—directly reflects the implied forward interest rate differential between dollar-denominated accounts and accounts denominated in the given currency. For example, the June/December euro spread indicates the expected relationship between six-month eurodollar and euro rates in June.[1]

To demonstrate the connection between intracurrency spreads and interest rate differentials, we compare the alternatives of investing in dollar-denominated versus euro-denominated accounts:

S = spot exchange rate ($/euro)
F = current forward exchange rate for date at end of investment period ($/euro)
r_1 = simple rate of return on dollar-denominated account for investment period (nonannualized)
r_2 = simple rate of return on euro-denominated account for investment period (nonannualized)

Alternative A: Invest in Dollar-Denominated Account	**Alternative B: Invest in Euro-Denominated Account**
1. Invest $1 in dollar-denominated account.	1. Convert $1 to euro at spot.
2. Funds at end of period = $1 $(1 + r_1)$	Exchange rate is S, which yields $1/S$ euro. (By definition, if S equals dollars per euro, $1/S$ = euro per dollar.)
	2. Invest $1/S$ euro in euro-denominated account at r_2.
	3. Lock in forward exchange rate by selling the anticipated euro proceeds at end of investment period at current forward rate F.[2]
	4. Funds at end of period = $1/S\,(1 + r_2)$ euro.
	5. Converted to dollars at rate F, funds at end of period = $\$F/S\,(1 + r_2)$ (since F = dollars per euro).

[1] The eurocurrency rates are interest rates on time deposits for funds outside the country of issue and hence free of government controls. For example, interest rates on dollar-denominated deposits in London are eurodollar rates, while rates on sterling-denominated deposits in Frankfurt are eurosterling rates. The quoted eurocurrency rates represent the rates on transactions between major international banks.

[2] A short forward position can be established in one of two ways: (1) selling futures that are available for forward dates at three-month intervals; and (2) initiating a long spot/short forward position in the foreign exchange (FX) swap market and simultaneously selling spot.

If the proceeds of the two above alternatives are to be equivalent, then:

$$1 + r_1 = \frac{F}{S}(1 + r_2)$$

Thus, at this equilibrium level, given values for S, r_1, and r_2, F would be automatically determined. For example, if S = \$0.80/euro, r_1 = 2 percent per six-month period (4.04 percent annualized), and r_2 = 1 percent per six-month period (2.01 percent annualized), at equilibrium, the six-month forward rate would be:

$$F = \frac{S(1 + r_1)}{(1 + r_2)} = \frac{0.8(1.02)}{(1.01)} = 0.80792$$

At forward rate of $F = 0.80792$, both alternatives will yield \$1.02. This result is obvious for the dollar-denominated account; for the euro-denominated account:

$$\$F / S(1 + r_2) = \frac{\$0.80792(1.01)}{0.80} = \$1.02$$

Consider what would happen if the forward exchange rate F were greater than the equilibrium level (i.e., greater than \$0.80792/euro in the above example). For instance, using an assumed value of F = \$0.82/euro, the proceeds of Alternative B would be:

$$\frac{\$0.82(1.01)}{0.80} = \$1.03525$$

Thus, if F = \$0.82/euro, arbitrageurs could borrow dollars at r_1 convert the dollars into euro, invest the euro at r_2, and hedge the anticipated six-month forward euro proceeds at \$0.82/euro. In doing so, they would pay \$1.02 for the dollar loan, but would earn \$1.03525, thereby netting a risk-free profit of \$0.01525 per dollar borrowed. If such a wonderful opportunity existed (and it will soon be clear why it could not), all arbitrageurs who were awake and could add would rush to implement the above set of transactions. This activity by arbitrageurs would impact both the spot and forward exchange rates. In the spot market, the concentration of conversions of dollars into euros would cause the euro to gain against the dollar, and hence the spot rate S would rise. Similarly, in the forward market, heavy sales of euro against the dollar would cause the euro to weaken against the dollar and hence the forward rate F would fall.[3] These market forces would narrow the gap between the forward and spot rates until:

$$\frac{F}{S} = \frac{1 + r_1}{1 + r_2}$$

[3] In the futures market, such sales would occur directly. In the cash FX market, downward pressure on the implied forward rate would manifest itself through the initiation of long spot/short forward swaps (spreads).

Of course, the market forces just described would come into play well before the forward/spot ratio increased to 0.82/0.80 = 1.025. The intervention of arbitrageurs will assure the six-month forward/spot ratio would not rise significantly above $1 + r_1/1 + r_2 = 1.0099$. A similar argument could be used to demonstrate that arbitrage intervention would keep the forward/spot ratio from declining significantly below 1.0099. In short, arbitrage activity will assure that the forward/spot ratio will be approximately defined by the above equation. This relationship is commonly referred to as the *interest rate parity theorem*.

Since currency futures must converge with spot exchange rates at expiration, the price spread between a forward futures contract and a nearby expiring contract must reflect the prevailing interest rate ratio (between the eurodollar rate and the given eurocurrency rate).[4] Hence, a spread between two forward futures contracts can be interpreted as reflecting the market's expectation for the interest rate ratio at the time of the nearby contract expiration. Specifically, if P_1 = price of the more nearby futures expiring at t_1 and P_2 = price of the forward futures contract expiring at time t_2, then P_2/P_1 will equal the expected interest rate ratio (expressed as $1+r_1/1+r_2$) for term rates of duration $t_2 - t_1$ at time t_1. It should be stressed that the forward interest rate ratio implied by spreads in futures will usually differ from the prevailing interest rate ratio.

If the market expects the eurodollar rate to be greater than the foreign eurocurrency rate, forward futures for that currency will trade at a premium to more nearby futures—the wider the expected differential, the wider the spread. Conversely, if the foreign eurocurrency rate is expected to be greater than the eurodollar rate, forward futures will trade at a discount to nearby futures.

The above relationships suggest that intracurrency spreads can be used to trade expectations regarding future interest rate differentials between different currencies. If a trader expected eurodollar rates to gain (move up more or down less) on a foreign eurocurrency rate (relative to the expected interest rate ratio implied by the intracurrency futures spread), this expectation could be expressed as a long forward/short nearby spread in that currency. Conversely, if the trader expected the foreign eurocurrency rate to gain on the eurodollar rate, the implied trade would be a long nearby/short forward intracurrency spread.

As a technical point, a 1:1 spread ratio would fluctuate even if the implied forward interest rate ratio were unchanged. For example, if P_2 = \$0.81/euro and P_1 = \$0.80/euro, a 10-percent increase in both rates would result in a 810-point price gain in the forward contract and only a 800-point gain in the nearby contract, even though the implied forward interest rate ratio would be unchanged (since an equal percentage change in each month would leave F/S unchanged). In order for the spread position to be unaffected by equal percentage price changes in both contracts, a development that would not affect the implied forward interest rate ratio, the spread would have to be implemented so that the dollar value of the long and short positions were equal. This parity will be achieved when the contract ratio is equal to the inverse of the price ratio. For example, given the above case of P_2 = \$0.81 and

[4] All references to interest rate ratios in this section should be understood to mean $(1 + r_1)/(1 + r_2)$ where r_1 and r_2 are the nonannualized rates of return for the time interim between S and F. Thus, in the above example, the interest rate ratio for the six-month period given annualized rates of 4.04 percent and 2.01 percent is equal to 1.02/1.01 = 1.0099. The reader should be careful not to misconstrue the intended definition of interest rate ratio with a literal interpretation, which in the above example would suggest a figure of 0.02/0.01 = 2.

$P_1 = \$0.80$, an 80-contract forward/81-contract nearby spread would not be affected by equal price changes (e.g., a 10-percent price increase would cause a total 64,800-point change in both legs of the spread). As can be seen in this example, a balanced spread will only be possible for extremely large positions. This fact, however, does not present a problem, since the distortion is sufficiently small so that a 1:1 contract ratio spread serves as a reasonable approximation.

Intracurrency spreads can also be combined to trade expectations regarding two foreign eurocurrency rates. In this case, the trader would implement a long nearby/short forward spread in the currency with the expected relative rate gain, and a long forward/short nearby spread in the other currency. For example, assume that in February the June/December euro spread implies that the June six-month eurodollar rate will be 1 percent above the euro rate, while the June/December JY spread implies that the June eurodollar rate will be 2 percent above the euroyen rate. In combination, these spreads imply that the June euro rate will be higher than the June euroyen rate. If a trader expected euroyen rates to be higher than euro rates in June, the following combined spread positions would be implied: long June JY/short December JY plus long December euro/short June euro.

To summarize, intracurrency spreads can be used to trade interest rate differentials in the following manner:

Expectation	Indicated Trade
Eurodollar rate will gain on given eurocurrency rate (relative to rate ratio implied by spread).	Long forward/short nearby spread in given currency
Eurodollar rate will lose on given eurocurrency rate (relative to rate ratio implied by spread).	Long nearby/short forward spread in given currency
Eurocurrency rate 1 will gain on eurocurrency rate 2 (relative to rate ratio implied by spreads in both markets).	Long nearby/short forward spread in market 1 and long forward/short nearby spread in market 2

CHAPTER 34

An Introduction to Options on Futures

A put might more properly be called a stick. For the whole point of a put—its purpose, if you will—is that it gives its owner the right to force 100 shares of some godforsaken stock onto someone else at a price at which he would very likely rather not take it. So what you are really doing is sticking it to him.

—Andrew Tobias
Getting By on $100,000 a Year (and Other Sad Tales)

Preliminaries

There are two basic types of options: calls and puts. The purchase of a *call option* on futures[1] provides the buyer with the right, but not the obligation, to purchase the underlying futures contract at a specified price, called the *strike* or *exercise price,* at any time up to and including the *expiration date*.[2] A *put option* provides the buyer with the right, but not the obligation, to sell the underlying futures contract at the strike price at any time prior to expiration. (Note, therefore, that buying a put is a *bearish* trade, while selling a put is a *bullish* trade.) The price of an option is called the *premium,* and is quoted in

[1] Chapters 34 and 35 deal specifically with options on futures contracts. However, generally speaking, analogous concepts would apply to options on cash (physical) goods or instruments (e.g., bullion versus gold futures). Some of the advantages of basing an option contract on futures as opposed to the cash asset are discussed in the next section.

[2] For some markets, the expiration date on the option and the underlying futures contract will be the same; for other markets, the expiration date on the option will be a specified date prior to the expiration of the futures contract.

TABLE 34.1 Determining the Dollar Value of Option Premiums

Contracts Quoted on an Index				
Option premium (in points)	×	$ value per point	=	$ value of the option premium
Examples:				
E-mini S&P 500 options				
8.50 (option premium)	×	$50 per point	=	$425 (option premium $ value)
U.S. dollar index options				
2.30 (option premium)	×	$1,000 per point	=	$2,300 (option premium $ value)
Contracts Quoted in Dollars				
Option premium (in dollars or cents per unit)	×	No. of units in futures contract	=	$ value of the option premium
Examples:				
Gold options				
$42 (option premium)	×	100 (ounces in futures contract)	=	$4,200 (option premium $ value)
WTI crude oil options				
$1.24 (option premium)	×	1,000 (barrels in futures contract)	=	$1,240 (option premium $ value)

either dollars (or cents) per unit or points. Table 34.1 illustrates how to calculate the dollar value of a premium. As a specific example, a trader who buys a $1,000 August gold call at a premium of $50 pays $50/oz ($5,000 per contract) for the right to buy an August gold futures contract at $1,000 (regardless of how high its price may rise) at any time up to the expiration date of the August option.

Because options are traded for both puts and calls and a number of strike prices for each futures contract, the total number of different options traded in a market will far exceed the number of futures contracts—often by a factor of 10 to 1 or more. This broad variety of listed options provides the trader with myriad alternative trading strategies.

Like their underlying futures contracts, options are exchange-traded, standardized contracts. Consequently, option positions can be offset prior to expiration simply by entering an order opposite to the position held. For example, the holder of a call could liquidate his position by entering an order to sell a call with the same expiration date and strike price.

The buyer of a call seeks to profit from an anticipated price rise by locking in a specific purchase price. His maximum possible loss will be equal to the dollar amount of the premium paid for the option. This maximum loss would occur on an option held until expiration if the strike price were above the prevailing futures price. For example, if August gold futures were trading at $990 upon the expiration of the August option, a $1,000 call would be worthless because futures could be purchased more cheaply at the existing market price.[3] If the futures were trading above the strike price at expiration, then the option would have some value and hence would be exercised. However, if the difference

[3] However, it should be noted that even in this case, the call buyer could have recouped part of the premium if he had sold the option *prior* to expiration. This is true since the option will maintain some value (i.e., premium greater than zero) as long as there is some possibility of the futures price rising above the strike price prior to the expiration of the option.

between the futures price and the strike price were less than the premium paid for the option, the net result of the trade would still be a loss. In order for the call buyer to realize a net profit, the difference between the futures price and the strike price would have to exceed the premium at the time the call was purchased (after adjusting for commission cost). The higher the futures price, the greater the resulting profit. Of course, if the futures reach the desired objective, or the call buyer changes his market opinion, he could sell his call prior to expiration.[4]

The buyer of a put seeks to profit from an anticipated price decline by locking in a sales price. Similar to the call buyer, his maximum possible loss is limited to the dollar amount of the premium paid for the option. In the case of a put held until expiration, the trade would show a net profit if the strike price exceeded the futures price by an amount greater than the premium of the put at purchase (after adjusting for commission cost).

While the buyer of a call or put has limited risk and unlimited potential gain,[5] the reverse is true for the seller. The option seller ("writer") receives the dollar value of the premium in return for undertaking the obligation to assume an opposite position at the strike price if an option is exercised. For example, if a call is exercised, the seller must assume a short position in futures at the strike price (since by exercising the call, the buyer assumes a long position at that price). Upon exercise, the exchange's clearinghouse will establish these opposite futures positions at the strike price. After exercise, the call buyer and seller can either maintain or liquidate their respective futures positions.

The seller of a call seeks to profit from an anticipated sideways to modestly declining market. In such a situation, the premium earned by selling a call will provide the most attractive trading opportunity. However, if the trader expected a large price decline, he would usually be better off going short futures or buying a put—trades with open-ended profit potential. In a similar fashion, the seller of a put seeks to profit from an anticipated sideways to modestly rising market.

Some novices have trouble understanding why a trader would not always prefer the buy side of an option (call or put, depending on his market opinion), since such a trade has unlimited potential and limited risk. Such confusion reflects the failure to take probability into account. Although the option seller's theoretical risk is unlimited, the price levels that have the greatest probability of occurring (i.e., prices in the vicinity of the market price at the time the option trade occurs) would result in a net gain to the option seller. Roughly speaking, the option buyer accepts a large probability of a small loss in return for a small probability of a large gain, whereas the option seller accepts a small probability of a large loss in exchange for a large probability of a small gain. In an efficient market, neither the consistent option buyer nor the consistent option seller should have any advantage over the long run.[6]

[4] Even if the call is held until the expiration date, it will usually still be easier to offset the position in the options market rather than exercising the call.

[5] Technically speaking, the gains on a put would be limited, since prices cannot fall below zero; but for practical purposes, it is entirely reasonable to speak of the maximum possible gain on a long put position as being unlimited.

[6] To be precise, this statement is not intended to imply that the consistent option buyer and consistent option seller would both have the same expected outcome (zero excluding transactions costs). Theoretically, on average, it is reasonable to expect the market to price options so there is some advantage to the seller to compensate option sellers for providing price insurance—that is, assuming the highly undesirable exposure to a large, open-ended loss. So, in effect, option sellers would have a more attractive return profile and a less attractive risk profile than option buyers, and it is in this sense that the market will, on average, price options so that there is no net advantage to the buyer or seller.

Factors That Determine Option Premiums

An option's premium consists of two components:

$$\text{Premium} = \text{intrinsic value} + \text{time value}$$

The intrinsic value of a call option is the amount by which the current futures price is above the strike price. The intrinsic value of a put option is the amount by which the current futures price is below the strike price. In effect, the intrinsic value is that part of the premium that could be realized if the option were exercised and the futures contract offset at the current market price. For example, if July crude oil futures were trading at $74.60, a call option with a strike price of $70 would have an intrinsic value of $4.60. The intrinsic value serves as a floor price for an option. Why? Because if the premium were less than the intrinsic value, a trader could buy and exercise the option, and immediately offset the resulting futures position, thereby realizing a net gain (assuming this profit would at least cover the transaction costs).

Options that have intrinsic value (i.e., calls with strike prices below the current futures price and puts with strike prices above the current futures price) are said to be *in-the-money.* Options with no intrinsic value are called *out-of-the-money* options. An option whose strike price equals the futures price is called an *at-the-money* option. The term *at-the-money* is also often used less restrictively to refer to the specific option whose strike price is closest to the futures price.

An out-of-the-money option, which by definition has an intrinsic value of zero, nonetheless retains some value because of the possibility the futures price will move beyond the strike price prior to the expiration date. An in-the-money option will have a value greater than the intrinsic value because a position in the option will be preferred to a position in the underlying futures contract. Reason: Both the option and the futures contract will gain equally in the event of favorable price movement, but the option's maximum loss is limited. The portion of the premium that exceeds the intrinsic value is called the *time value.*

It should be emphasized that because the time value is almost always greater than zero, one should avoid exercising an option before the expiration date. Almost invariably, the trader who wants to offset his option position will realize a better return by selling the option, a transaction that will yield the intrinsic value plus some time value, as opposed to exercising the option, an action that will yield only the intrinsic value.

The time value depends on four quantifiable factors[7]:

1. **The relationship between the strike price and the current futures price.** As illustrated in Figure 34.1, the time value will decline as an option moves more deeply in-the-money or out-of-the-money. Deeply out-of-the-money options will have little time value, since it is unlikely the futures will move to (or beyond) the strike price prior to expiration. Deeply in-the-money options have little time value because these options offer very similar positions to the underlying futures contracts—both will gain and lose equivalent amounts for all but an extreme adverse price move. In other words, for a deeply in-the-money option, the fact that the

[7]Theoretically, the time value will also be influenced by price expectations, which are a non-quantifiable factor.

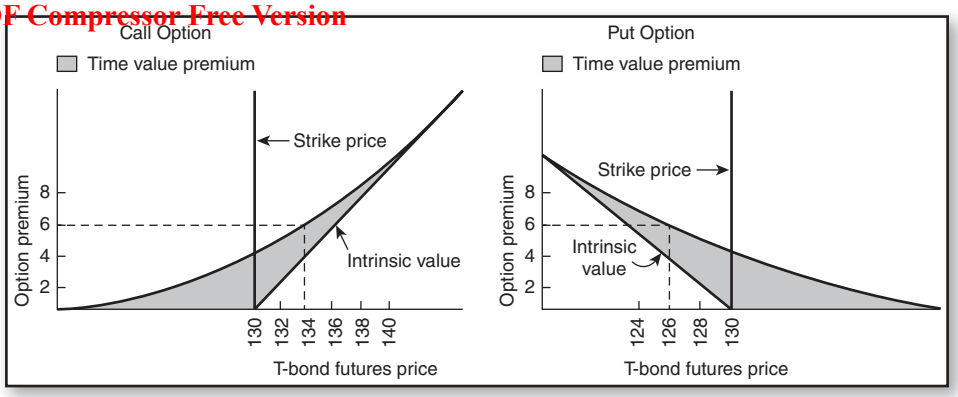

FIGURE 34.1 Theoretical Option Premium Curve
Source: Chicago Board of Trade, Marketing Department.

risk is limited is not worth very much, because the strike price is so far away from the prevailing futures price. As Figure 34.1 shows, the time value will be at a maximum at the strike price.

2. **Time remaining until expiration.** The more time remaining until expiration, the greater the time value of the option. This is true because a longer life span increases the probability of the intrinsic value increasing by any specified amount prior to expiration. In other words, the more time until expiration, the greater the probable price range of futures. Figure 34.2 illustrates the standard theoretical assumption regarding the relationship between time value and time remaining until expiration for an at-the-money option. Specifically, the time value is

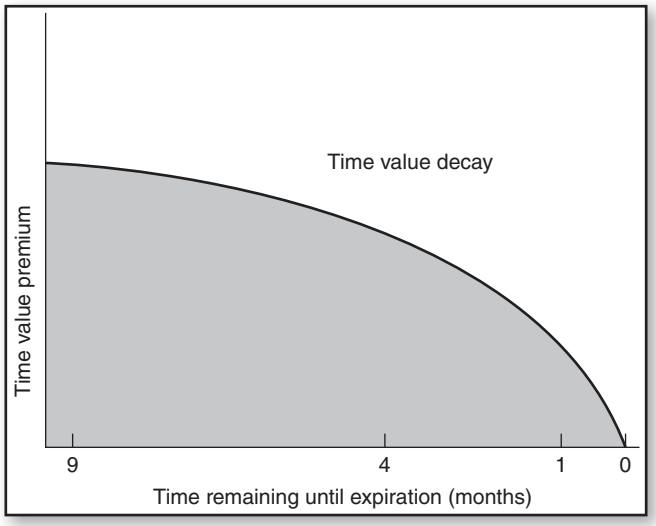

FIGURE 34.2 Time Value Decay
Source: Options on Comex Gold Futures, published by Commodity Exchange, Inc. (COMEX), 1982.

TABLE 34.2 Option Prices as a Function of Volatility in E-Mini S&P 500 Futures Prices[a]

Annualized Volatility	Put or Call Premium
10	22.88 ($1,144)
20	45.75 ($2,288)
30	68.62 ($3,431)
40	91.46 ($4,573)
50	114.29 ($5,715)

[a] At-the-money options at a strike price of 2000 with 30 days to expiration.

assumed to be a function of the square root of time. (This relationship is a consequence of the typical assumption regarding the shape of the probability curve for prices of the underlying futures contract.) Thus, an option with nine months until expiration would have 1.5 times the time value of a four-month option with the same strike price ($\sqrt{9} = 3$; $\sqrt{4} = 2$; $3 \div 2 = 1.5$) and three times the time value of a one-month option ($\sqrt{9} = 3$; $\sqrt{1} = 1$; $3 \div 1 = 3$).

3. **Volatility.** Time value will vary directly with the *estimated* volatility of the underlying futures contract for the remaining lifespan of the option. This relationship is the result of the fact that greater volatility raises the probability the intrinsic value will increase by any specified amount prior to expiration. In other words, the greater the volatility, the larger the probable range of futures prices. As Table 34.2 shows, volatility has a strong impact on theoretical option premium values.

Although volatility is an extremely important factor in determining option premium values, it should be stressed that the future volatility of the underlying futures contract is never precisely known until after the fact. (In contrast, the time remaining until expiration and the relationship between the current price of futures and the strike price can be exactly specified at any juncture.) Thus, volatility must always be estimated on the basis of historical volatility data. As will be explained, this factor is crucial in explaining the deviation between theoretical and actual premium values.

4. **Interest rates.** The effect of interest rates on option premiums is considerably smaller than any of the above three factors. The specific nature of the relationship between interest rates and premiums was succinctly summarized by James Bowe[8]:

> The effect of interest rates is complicated because changes in rates affect not only the underlying value of the option, but the futures price as well. Taking it in steps, a buyer of any given option must pay the premium up front, and of course the seller receives the money. If interest rates go up and everything else stays constant, the opportunity cost to the option buyer of giving up the use of his money increases, and so he is willing to bid less. Conversely, the seller of options can make more on the premiums by

[8] James Bowe, *Option Strategies Trading Handbook* (New York, NY: Coffee, Sugar, and Cocoa Exchange, 1983).

investing the cash received and so is willing to accept less; the value of the options fall. However, in futures markets, part of the value of distant contracts in a carry market reflects the interest costs associated with owning the commodity. An increase in the interest rate might cause the futures price to increase, leading to the value of *existing* calls going up. The net effect on calls is ambiguous, but puts should decline in value with increasing interest rates, as the effects are reinforcing.

Theoretical versus Actual Option Premiums

There is a variety of mathematical models available that will indicate the theoretical "fair value" for an option, given specific information regarding the four factors detailed in the previous section. Theoretical values will approximate, but by no means coincide with, actual premiums. Does the existence of such a discrepancy necessarily imply that the option is mispriced? Definitely not. The model-implied premium will differ from the actual premium for two reasons:

1. The model's assumption regarding the mathematical relationship between option prices (premiums) and the factors that affect option prices may not accurately describe market behavior. This is always true because, to some extent, even the best option-pricing models are only theoretical approximations of true market behavior.
2. The volatility figure used by an option-pricing model will normally differ somewhat from the market's expectation of future volatility. This is a critical point that requires further elaboration.

Recall that although volatility is a crucial input in any option pricing formula, its value can only be estimated. The theoretical "fair value" of an option will depend on the specific choice of a volatility figure. Some of the factors that will influence the value of the volatility estimate are the length of the prior period used to estimate volatility, the time interval in which volatility is measured, the weighting scheme (if any) used on the historical volatility data, and adjustments (if any) to reflect relevant influences (e.g., the recent trend in volatility). It should be clear that any specific volatility estimate will implicitly reflect a number of unavoidably arbitrary decisions. Different assumptions regarding the best procedure for estimating future volatility from past volatility will yield different theoretical premium values. Thus, there is no such thing as a single, well-defined fair value for an option.

All that any option pricing model can tell you is what the value of the option should be given the specific *assumptions* regarding expected volatility and the form of the mathematical relationship between option prices and the key factors affecting them. If a given mathematical model provides a close approximation of market behavior, a discrepancy between the theoretical value and the actual premium means the market expectation for volatility, called the *implied volatility,* differs from the historically based volatility estimate used in the model. The question of whether the volatility assumptions of a specific pricing model provide more accurate estimates of actual volatility than the implied volatility figures (i.e., the future volatility suggested by actual premiums) can only be answered empirically. A bias toward buying "underpriced" options (relative to the theoretical model fair value)

and selling "overpriced" options would be justified only if empirical evidence supported the contention that, on balance, the model's volatility assumptions proved to be better than implied volatility in predicting actual volatility levels.

If a model's volatility estimates were demonstrated to be superior to implied volatility estimates, it would suggest, from a strict probability standpoint, a bullish trader would be better off selling puts than buying calls if options were overpriced (based on the fair value figures indicated by the model), and buying calls rather than selling puts if options were underpriced. Similarly, a bearish trader would be better off selling calls than buying puts if options were overpriced, and buying puts rather than selling calls if options were underpriced. The best strategy for any individual trader, however, would depend on the specific profile of his price expectations (i.e., the probabilities the trader assigns to various price outcomes).

Delta (the Neutral Hedge Ratio)

Delta, also called the *neutral hedge ratio,* is the expected change in the option price given a one-unit change in the price of the underlying futures contract. For example, if the delta of an August gold call option is 0.25, it means that a $1 change in the price of August futures can be expected to result in a $0.25 change in the option premium. Thus, the delta value for a given option can be used to determine the number of options that would be equivalent in risk to a single futures contract *for small changes in price.* It should be stressed that delta will change rapidly as prices change. Thus, the delta value cannot be used to compare the relative risk of options versus futures for large price changes.

Table 34.3 illustrates the estimated delta values for out-of-the-money, at-the-money, and in-the-money call options for a range of times to expiration. Where did these values come from? They are derived from the same mathematical models used to determine a theoretical value for an option premium given the relationship between the strike price and the current price of futures, time remaining

TABLE 34.3 **Change in the Premium of an E-Mini S&P 500 Call Option for 20.00 ($1000) Move in the Underlying Futures Contract[a]**

	Increase in the 2000 call option premium if the futures price rises:					
	From 1900 to 1920		From 2000 to 2020		From 2100 to 2120	
Time to expiration	*$*	*Delta*	*$*	*Delta*	*$*	*Delta*
1 week	$10	0.01	$500	0.5	$1,000	1
1 month	$120	0.12	$510	0.51	$870	0.87
3 months	$260	0.26	$510	0.51	$750	0.75
6 months	$330	0.33	$520	0.52	$690	0.69
12 months	$390	0.39	$520	0.52	$650	0.65

[a]Assumed volatility: 15 percent; assumed interest rate: 2 percent per year.

Source: CME Group (www.cmegroup.com).

until expiration, estimated volatility, and interest rates. For any given set of values for these factors, delta will equal the absolute difference between the option premium indicated by the model and the model-indicated premium if the futures price changes by one point. Table 34.3 illustrates a number of important observations regarding theoretical delta values:

1. **Delta values for out-of-the-money options are low.** This relationship is a result of the fact that there is a high probability that any given price increase[9] will not make any actual difference to the value of the option at expiration (i.e., the option will probably expire worthless).
2. **Delta values for in-the-money options are relatively high, but less than one.** In-the-money options have high deltas because there is a high probability that a one-point change in the futures price will mean a one-point change in the option value at expiration. However, since this probability must always be equal to less than one, the delta value will also always be equal to less than one.
3. **Delta values for at-the-money options will be near 0.50.** Since there is a 50/50 chance that an at-the-money option will expire in-the-money, there will be an approximately 50/50 chance that a one-point increase in the price of futures will result in a one-point increase in the option value at expiration.
4. **Delta values for out-of-the-money options will increase as time to expiration increases.** A longer time to expiration will increase the probability that a price increase in futures will make a difference in the option value at expiration, since there is more time for futures to reach the strike price.
5. **Delta values for in-the-money options will decrease as time to expiration increases.** A longer time to expiration will increase the probability that a change in the futures price will not make any difference to the option value at expiration since there is more time for futures to fall back to the strike price by the time the option expires.
6. **Delta values for at-the-money options are not substantially affected by time to maturity until near expiration.** This behavioral pattern is true because the probability that an at-the-money option will expire in-the-money remains close to 50/50 until the option is near expiration.

[9] This section implicitly assumes that the option is a call. If the option is a put, read "price decrease" for all references to "price increase."

CHAPTER 35

Option Trading Strategies

Brokers are fond of pointing out to possible buyers of options that they are a splendid thing to buy, and pointing out to sellers that they are a splendid thing to sell. They believe implicitly in this paradox. Thus the buyer does well, the seller does well, and it is not necessary to stress the point that the broker does well enough. Many examples can be cited showing all three of them emerging from their adventures with a profit. One wonders why the problem of unemployment cannot be solved by having the unemployed buy and sell each other options, instead of mooning around on those park benches.

—Fred Schwed
Where Are the Customers' Yachts?

Comparing Trading Strategies

The existence of options greatly expands the range of possible trading strategies. For example, in the absence of an option market, a trader who is bullish can either go long or initiate a bull spread (in those markets in which spread movements correspond to price direction). However, if option-related trading approaches are included, the bullish trader can consider numerous alternative strategies including: long out-of-the-money calls, long in-the-money calls, long at-the-money calls, short out-of-the-money puts, short in-the-money puts, short at-the-money puts, "synthetic" long positions, combined positions in futures and options, and a variety of bullish option spreads. Frequently, one of these option-related strategies will offer significantly better profit potential for a given level of risk than an outright futures position. Thus, the trader who considers both option-based strategies and outright positions should have a decided advantage over the trader who restricts his trades to only futures.

There is no single best trading approach. The optimal trading strategy in any given situation will depend on the prevailing option premium levels and the specific nature of the expected price scenario. How does one decide on the best strategy? This chapter will attempt to answer this critical question in two steps. First, we will examine the general profit/loss characteristics (profiles) of a wide range of alternative trading strategies. Second, we will consider how price expectations can be combined with these profit/loss profiles to determine the best trading approach.

The *profit/loss profile* is a diagram indicating the profit or loss implied by a position (vertical axis) for a range of market prices (horizontal axis). The profit/loss profile provides an ideal means of understanding and comparing different trading strategies. The following points should be noted regarding the profit/loss profiles detailed in the next section:

1. All illustrations are based on a single option series, for a single market, on a single date: the August 2015 gold options on April 13, 2015. This common denominator makes it easy to compare the implications of different trading strategies. The choice of April 13, 2015, was not arbitrary. On that date, the closing price of August futures (1,200.20) was almost exactly equal to one of the option strike prices ($1,200/oz), thereby providing a nearly precise at-the-money option—a factor that greatly facilitates the illustration of theoretical differences among out-of-the-money, in-the-money, and at-the-money options. The specific closing values for the option premiums on that date were as follows ($/oz):

Strike Price	August Calls	August Puts
1,050	155.2	5.1
1,100	110.1	10.1
1,150	70.1	19.9
1,200	38.8	38.7
1,250	19.2	68.7
1,300	9.1	108.7
1,350	4.5	154.1

Option pricing data in this chapter courtesy of OptionVue (www.optionvue.com).

   The reader should refer to these quotes when examining each of the profit/loss profiles in the next section.
2. In order to avoid unnecessarily cluttering the illustrations, the profit/loss profiles do not include transaction costs and interest income effects, both of which are very minor. (Note the assumption that transaction costs equal zero imply that commission costs equal zero *and* that positions can be implemented at the quoted levels—in this case, the market close.)
3. The profit/loss profiles reflect the situation at the time of the option expiration. This assumption simplifies the exposition, since the value of an option can be precisely determined at that point in time. At prior times, the value of the option will depend on the various factors discussed in the previous chapter (e.g., time until expiration, volatility, etc.). Allowing for an evaluation of each option strategy at interim time stages would introduce a level of complexity that would place the discussion beyond the scope of this book. However, the key point to keep in mind

is that the profit/loss profile for strategies that include a net long options position will shift upward as the time reference point is further removed from the expiration date. The reason is that at expiration, options have only *intrinsic value;* at points prior to expiration, options also have *time value*. Thus, prior to expiration, the holder of an option could liquidate his position at a price above its intrinsic value—the liquidation value assumed in the profit/loss profile. Similarly, the profit/loss profile would be shifted downward for the option writer (seller) at points in time prior to expiration. This is true since at such earlier junctures, the option writer would have to pay not only the intrinsic value but also the time value if he wanted to cover his position.

4. It is important to keep in mind that a single option is equivalent to a smaller *position size* than a single futures contract (see section entitled "Delta—the Neutral Hedge Ratio" in the previous chapter). Similarly, an out-of-the-money option is equivalent to a smaller position size than an in-the-money option. Thus, the trader should also consider the profit/loss profiles consisting of various multiples of each strategy. In any case, the preference of one strategy over another should be based entirely on the relationship between reward and risk rather than on the absolute profit (loss) levels. In other words, strategy preferences should be totally independent of position size.
5. Trading strategies are evaluated strictly from the perspective of the speculator. Hedging applications of option trading are discussed separately at the end of this chapter.

Profit/Loss Profiles for Key Trading Strategies

Strategy 1: Long Futures

EXAMPLE. Buy August gold futures at $1,200. (See Table 35.1 and Figure 35.1.)

Comment. The simple long position in futures does not require much explanation and is included primarily for purposes of comparison to other less familiar trading strategies. As every trader knows, the long futures position is appropriate when one expects a significant price advance. However, as will

TABLE 35.1 Profit/Loss Calculations: Long Futures

Futures Price at Expiration ($/oz)	Futures Price Change ($/oz)	Profit/Loss on Position
1,000	–200	–$20,000
1,050	–150	–$15,000
1,100	–100	–$10,000
1,150	–50	–$5,000
1,200	0	$0
1,250	50	$5,000
1,300	100	$10,000
1,350	150	$15,000
1,400	200	$20,000

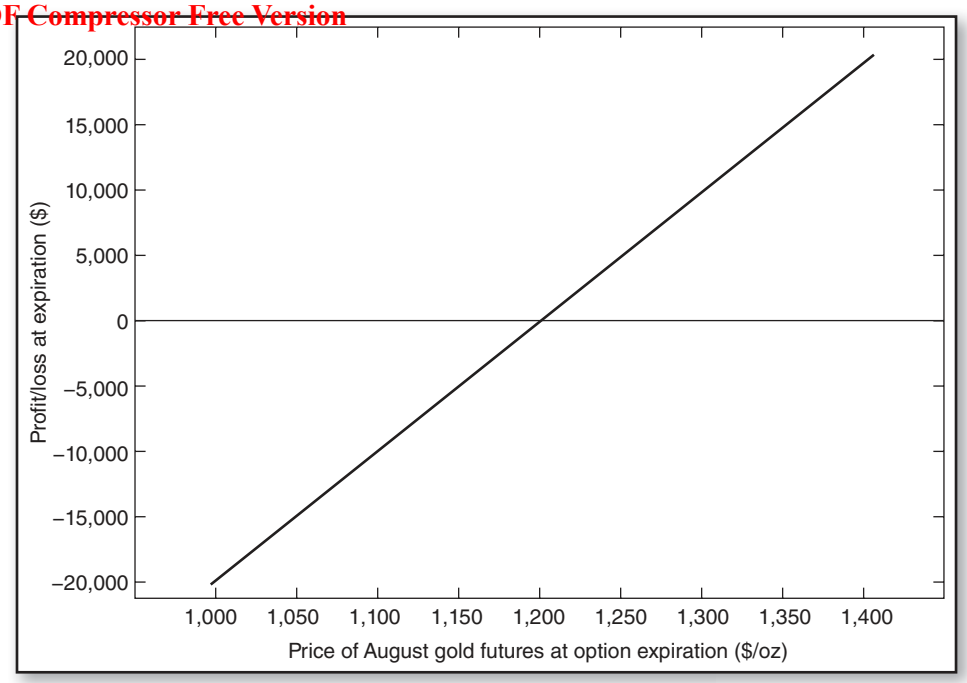

FIGURE 35.1 Profit/Loss Profile: Long Futures

be illustrated later in this section, for any given price scenario, some option-based strategy will often provide a more attractive trade in terms of reward/risk characteristics.

Strategy 2: Short Futures

Example. Sell August gold futures at $1,200. (See Table 35.2 and Figure 35.2.)

TABLE 35.2 Profit/Loss Calculations: Short Futures

Futures Price at Expiration ($/oz)	Futures Price Change ($/oz)	Profit/Loss on Position
1,000	200	$20,000
1,050	150	$15,000
1,100	100	$10,000
1,150	50	$5,000
1,200	0	$0
1,250	–50	–$5,000
1,300	–100	–$10,000
1,350	–150	–$15,000
1,400	–200	–$20,000

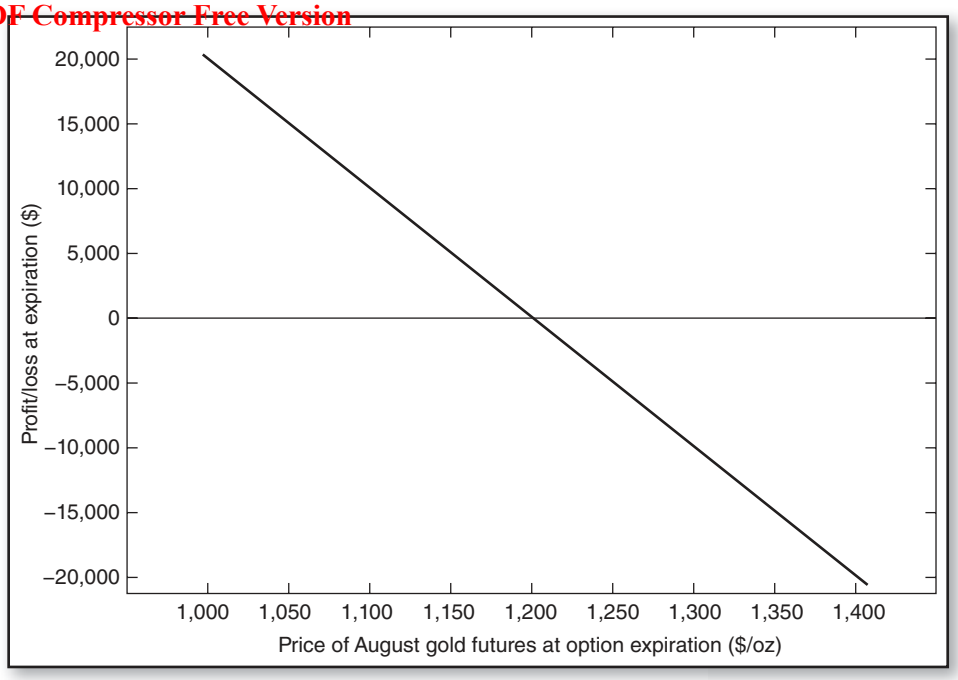

FIGURE 35.2 Profit/Loss Profile: Short Futures

Comment. Once again, this strategy requires little explanation and is included primarily for comparison to other strategies. As any trader knows, the short futures position is appropriate when one is expecting a significant price decline. However, as will be seen later in this chapter, for any given expected price scenario, some option-based strategy will often offer a more attractive trading opportunity in terms of reward/risk characteristics.

Strategy 3a: Long Call (At-the-Money)

EXAMPLE. Buy August $1,200 gold futures call at a premium of $38.80/oz ($3,880), with August gold futures trading at $1,200/oz. (See Table 35.3a and Figure 35.3a.)

Comment. The long call is a bullish strategy in which maximum risk is limited to the premium paid for the option, while maximum gain is theoretically unlimited. However, the probability of a loss is greater than the probability of a gain, since the futures price must rise by an amount exceeding the option premium (as of the option expiration) in order for the call buyer to realize a profit. Two specific characteristics of the at-the-money option are the following:

1. The maximum loss will only be realized if futures are trading at or below their current level at the time of the option expiration.
2. For small price changes, each $1 change in the futures price will result in approximately a $0.50 change in the option price. (At-the-money options near expiration, which will change by a greater amount, are an exception.) Thus, for small price changes, a net long futures position is equivalent to approximately two call options in terms of risk.

TABLE 35.3a Profit/Loss Calculations: Long Call (At-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Call Value at Expiration	(5) Profit/Loss of Position [(4) – (3)]
1,000	38.8	$3,880	$0	–$3,880
1,050	38.8	$3,880	$0	–$3,880
1,100	38.8	$3,880	$0	–$3,880
1,150	38.8	$3,880	$0	–$3,880
1,200	38.8	$3,880	$0	–$3,880
1,250	38.8	$3,880	$5,000	$1,120
1,300	38.8	$3,880	$10,000	$6,120
1,350	38.8	$3,880	$15,000	$11,120
1,400	38.8	$3,880	$20,000	$16,120

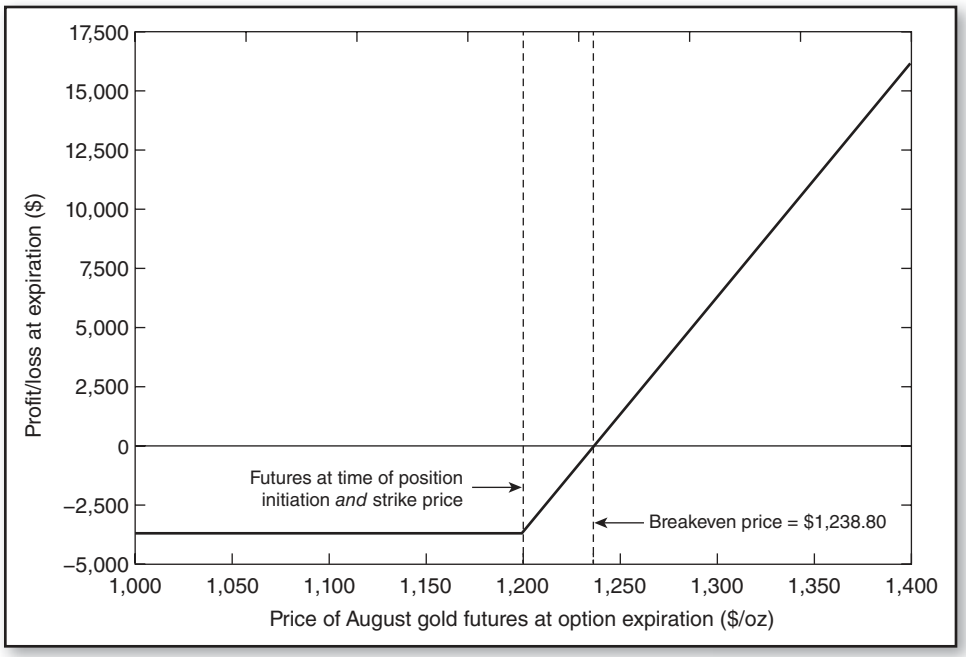

FIGURE 35.3a Profit/Loss Profile: Long Call (At-the-Money)

Strategy 3b: Long Call (Out-of-the-Money)

EXAMPLE. Buy August $1,300 gold futures call at a premium of $9.10/oz ($910), with August gold futures trading at $1,200/oz. (See Table 35.3b and Figure 35.3b.)

Comment. The buyer of an out-of-the-money call reduces his maximum risk in exchange for accepting a smaller probability that the trade will realize a profit. By definition, the strike price of an out-of-the-money call is above the current level of futures. In order for the out-of-the-money call position to realize a profit, the futures price (as of the time of the option expiration) must exceed the strike price by an amount greater than the premium ($9.10/oz in this example). Note that in the out-of-the-money call position, price increases that leave futures below the option strike price will still result in a maximum loss on the option. The long out-of-the-money call might be a particularly appropriate position for the trader expecting a large price advance, but also concerned about the possibility of a large price decline.

It should be emphasized that the futures price need not necessarily reach the strike price in order for the out-of-the-money call to be profitable. If the market rises quickly, the call will increase in value and hence can be resold at a profit. (However, this characteristic will not necessarily hold true for slow price advances, since the depressant effect of the passage of time on the option premium could more than offset the supportive effect of the increased price level of futures.)

For small price changes, the out-of-the-money call will change by less than a factor of one-half for each dollar change in the futures price. Thus, for small price changes, each long futures position will be equivalent to several long out-of-the-money calls in terms of risk.

TABLE 35.3b Profit/Loss Calculations: Long Call (Out-of-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,300 Call at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Call Value at Expiration	(5) Profit/Loss on Position [(4) – (3)]
1,000	9.1	$910	$0	–$910
1,050	9.1	$910	$0	–$910
1,100	9.1	$910	$0	–$910
1,150	9.1	$910	$0	–$910
1,200	9.1	$910	$0	–$910
1,250	9.1	$910	$0	–$910
1,300	9.1	$910	$0	–$910
1,350	9.1	$910	$5,000	$4,090
1,400	9.1	$910	$10,000	$9,090

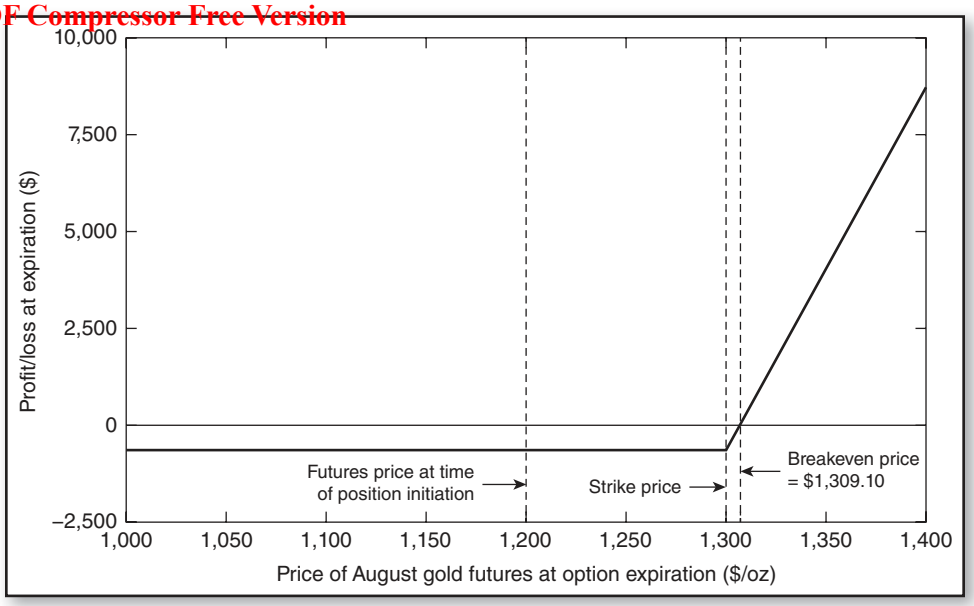

FIGURE 35.3b Profit/Loss Profile: Long Call (Out-of-the-Money)

Strategy 3c: Long Call (In-the-Money)

EXAMPLE. Buy August $1,100 gold futures call at a premium of $110.10/oz ($11,010), with August gold futures trading at $1,200/oz. (See Table 35.3c and Figure 35.3c.)

Comment. In many respects, a long in-the-money call position is very similar to a long futures position. The three main differences between these two trading strategies are:

1. The long futures position will gain slightly more in the event of a price rise—an amount equal to the time value portion of the premium paid for the option ($1,010 in the above example).
2. For moderate price declines, the long futures position will lose slightly less. (Once again, the difference will be equal to the time value portion of the premium paid for the option.)
3. In the event of a large price decline, the loss on the in-the-money long call position would be limited to the total option premium paid, while the loss on the long futures position will be unlimited.

In a sense, the long in-the-money call position can be thought of as a long futures position with a built-in stop. This characteristic is an especially important consideration for speculators who typically employ protective stop-loss orders on their positions—a prudent trading approach. A trader using a protective sell stop on a long position faces the frustrating possibility of the market declining sufficiently to activate his stop and subsequently rebounding. The long in-the-money call position offers the speculator an alternative method of limiting risk that does not present this danger. Of course, this benefit does not come without a cost; as mentioned above, the buyer of an in-the-money call will gain slightly less than the outright futures trader if the market advances, and will lose slightly more if the market declines *moderately*. However, if the trader is anticipating volatile market conditions, he might very

TABLE 35.3c Profit/Loss Calculations: Long Call (In-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,100 Call at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Call Value at Expiration	(5) Profit/Loss on Position [(4) – (3)]
1,000	110.1	$11,010	$0	–$11,010
1,050	110.1	$11,010	$0	–$11,010
1,100	110.1	$11,010	$0	–$11,010
1,150	110.1	$11,010	$5,000	–$6,010
1,200	110.1	$11,010	$10,000	–$1,010
1,250	110.1	$11,010	$15,000	$3,990
1,300	110.1	$11,010	$20,000	$8,990
1,350	110.1	$11,010	$25,000	$13,990
1,400	110.1	$11,010	$30,000	$18,990

well prefer a long in-the-money call position to a long futures position combined with a protective sell stop order. In any case, the key point is that the trader who routinely compares the strategies of buying an in-the-money call versus going long futures with a protective sell stop should enjoy an advantage over those traders who never consider the option-based alternative.

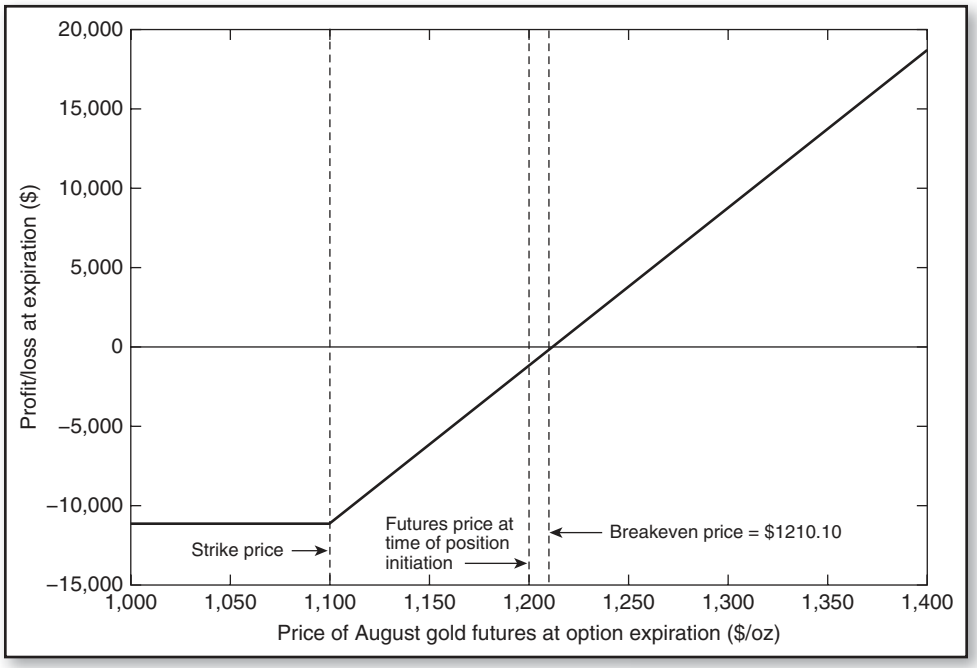

FIGURE 35.3c Profit/Loss Profile: Long Call (In-the-Money)

Table 35.3d summarizes the profit/loss implications of various long call positions for a range of price assumptions. Note that as calls move deeper in-the-money, their profit and loss characteristics increasingly resemble a long futures position. The very deep in-the-money $1,050 call provides an interesting apparent paradox: The profit/loss characteristics of this option are nearly the same as those of a long futures position for all prices above $1,050, but the option has the advantage of limited risk for lower prices. How can this be? Why wouldn't all traders prefer the long $1,050 call to the long futures position and, therefore, bid up its price so that its premium also reflected more time value? (The indicated premium of $15,520 for the $1,050 call consists almost entirely of intrinsic value.)

There are two plausible explanations to this apparent paradox. First, the option price reflects the market's assessment that there is a very low probability of gold prices moving to this deep in-the-money strike price, and therefore the market places a low value on the time premium. In other words, the market places a low value on the loss protection provided by an option with a strike price so far below the market. Second, the $1,050 call represents a fairly illiquid option position, and the quoted price does not reflect the bid/ask spread. No doubt, a potential buyer of the call would have had to pay a higher price than the quoted premium in order to assure an execution.

TABLE 35.3d **Profit/Loss Matrix for Long Calls with Different Strike Prices**

		Dollar Amount of Premiums Paid						
		$1,050 Call	$1,100 Call[a]	$1,150 Call	$1,200 Call[a]	$1,250 Call	$1,300 Call[a]	$1,350 Call
		$15,520	$11,010	$7,010	$3,880	$1,920	$910	$450
		Position Profit/Loss at Expiration						
		In-the-Money			At-the-Money	Out-of-the-Money		
Futures Price at Expiration ($/oz)	Long Futures at $1,200	$1,050 Call	$1,100 Call[a]	$1,150 Call	$1,200 Call[a]	$1,250 Call	$1,300 Call[a]	$1,350 Call
1,000	–$20,000	–$15,520	–$11,010	–$7,010	–$3,880	–$1,920	–$910	–$450
1,050	–$15,000	–$15,520	–$11,010	–$7,010	–$3,880	–$1,920	–$910	–$450
1,100	–$10,000	–$10,520	–$11,010	–$7,010	–$3,880	–$1,920	–$910	–$450
1,150	–$5,000	–$5,520	–$6,010	–$7,010	–$3,880	–$1,920	–$910	–$450
1,200	$0	–$520	–$1,010	–$2,010	–$3,880	–$1,920	–$910	–$450
1,250	$5,000	$4,480	$3,990	$2,990	$1,120	–$1,920	–$910	–$450
1,300	$10,000	$9,480	$8,990	$7,990	$6,120	$3,080	–$910	–$450
1,350	$15,000	$14,480	$13,990	$12,990	$11,120	$8,080	$4,090	–$450
1,400	$20,000	$19,480	$18,990	$17,990	$16,120	$13,080	$9,090	$4,550

[a]These calls are compared in Figure 35.3d.

Figure 35.3d compares the three types of long call positions to a long futures position. It should be noted that in terms of absolute price changes, the long futures position represents the largest position size, while the out-of-the-money call represents the smallest position size. Figure 35.3d suggests the following important observations:

1. As previously mentioned, the in-the-money call is very similar to an outright long futures position.
2. The out-of-the-money call will lose the least in a declining market, but will also gain the least in a rising market.
3. The at-the-money call will lose the most in a steady market and will be the middle-of-the-road performer (relative to the other two types of calls) in advancing and declining markets.

Again, it should be emphasized that these comparisons are based upon single-unit positions that may differ substantially in terms of their implied position size (as suggested by their respective delta values). A comparison that involved equivalent position size levels for each strategy (i.e., equal delta values for each position) would yield different observations. This point is discussed in greater detail in the section entitled "Multiunit Strategies."

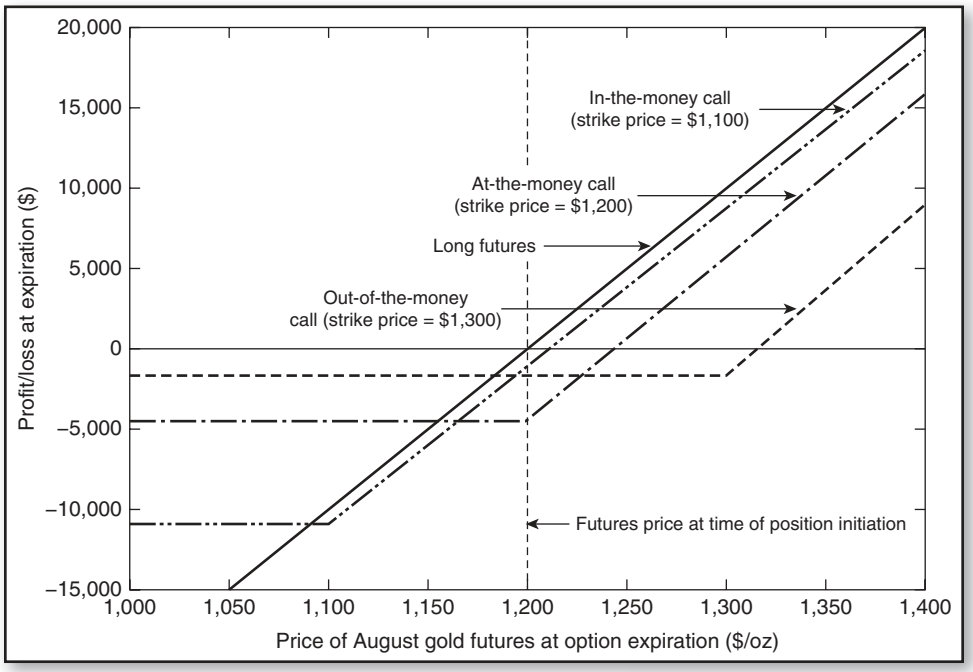

FIGURE 35.3d Profit/Loss Profile: Long Futures and Long Call Comparisons (In-the-Money, At-the-Money, and Out-of-the-Money)

Chart created using TradeStation. ©TradeStation Technologies, Inc. All rights reserved.

Strategy 4a: Short Call (At-the-Money)

EXAMPLE. Sell August $1,200 gold futures call at a premium of $38.80/oz ($3,880), with August gold futures trading at $1,200/oz. (See Table 35.4a and Figure 35.4a.)

TABLE 35.4a Profit/Loss Calculations-Short Call (At-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) $ Amount of Premium Received	(4) Call Value at Expiration	(5) Profit/Loss on Position [(3) – (4)]
1,000	38.8	$3,880	$0	$3,880
1,050	38.8	$3,880	$0	$3,880
1,100	38.8	$3,880	$0	$3,880
1,150	38.8	$3,880	$0	$3,880
1,200	38.8	$3,880	$0	$3,880
1,250	38.8	$3,880	$5,000	–$1,120
1,300	38.8	$3,880	$10,000	–$6,120
1,350	38.8	$3,880	$15,000	–$11,120
1,400	38.8	$3,880	$20,000	–$16,120

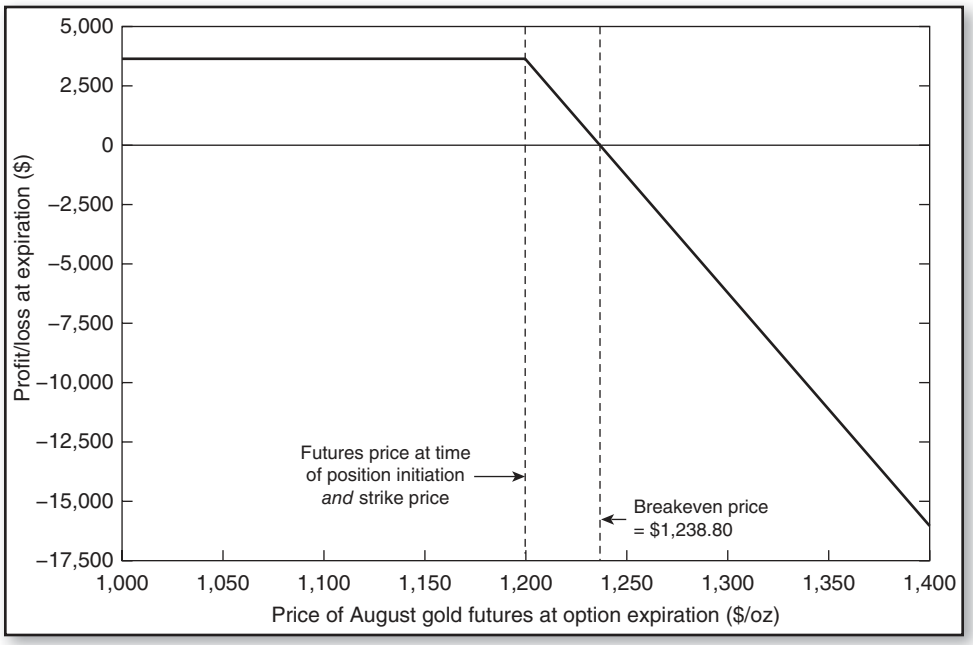

FIGURE 35.4a Profit/Loss Profile: Short Call (At-the-Money)
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Comment. The short call is a bearish position with a maximum potential gain equal to the premium received for selling the call and unlimited risk. However, in return for assuming this unattractive maximum reward/maximum risk relationship, the seller of a call enjoys a greater probability of realizing a profit than a loss. Note the short at-the-money call position will result in a gain as long as the futures price at the time of the option expiration does not exceed the futures price at the time of the option initiation by an amount greater than the premium level ($38.80/oz in our example). However, the maximum possible profit (i.e., the premium received on the option) will only be realized if the futures price at the time of the option expiration is below the prevailing market price at the time the option was sold (i.e., the strike price). The short call position is appropriate if the trader is *modestly* bearish and views the probability of a large price rise as being very low. If, however, the trader anticipated a large price decline, he would probably be better off buying a put or going short futures.

Strategy 4b: Short Call (Out-of-the-Money)

EXAMPLE. Sell August $1,300 gold futures call at a premium of $9.10/oz ($910), with August gold futures trading at $1,200/oz. (See Table 35.4b and Figure 35.4b.)

Comment. The seller of an out-of-the-money call is willing to accept a smaller maximum gain (i.e., premium) in exchange for increasing the probability of a gain on the trade. The seller of an out-of-the-money call will retain the full premium received as long as the futures price does not rise by an amount greater than the difference between the strike price and the futures price at the time of the option sale. The trade will be profitable as long as the futures price at the time of the option expiration is not above the strike price by more than the option premium ($9.10/oz in this example). The short out-of-the-money call represents a less bearish posture than the short at-the-money call position. Whereas the short at-the-money call position reflects an expectation that prices will either decline or increase only slightly, the short out-of-the-money call merely reflects an expectation that prices will not rise sharply.

TABLE 35.4b Profit/Loss Calculations: Short Call (Out-of-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,300 Call at Initiation ($/oz)	(3) $ Amount of Premium Received	(4) Value of Call at Expiration	(5) Profit/Loss on Position [(3) – (4)]
1,000	9.1	$910	$0	$910
1,050	9.1	$910	$0	$910
1,100	9.1	$910	$0	$910
1,150	9.1	$910	$0	$910
1,200	9.1	$910	$0	$910
1,250	9.1	$910	$0	$910
1,300	9.1	$910	$0	$910
1,350	9.1	$910	$5,000	–$4,090
1,400	9.1	$910	$10,000	–$9,090

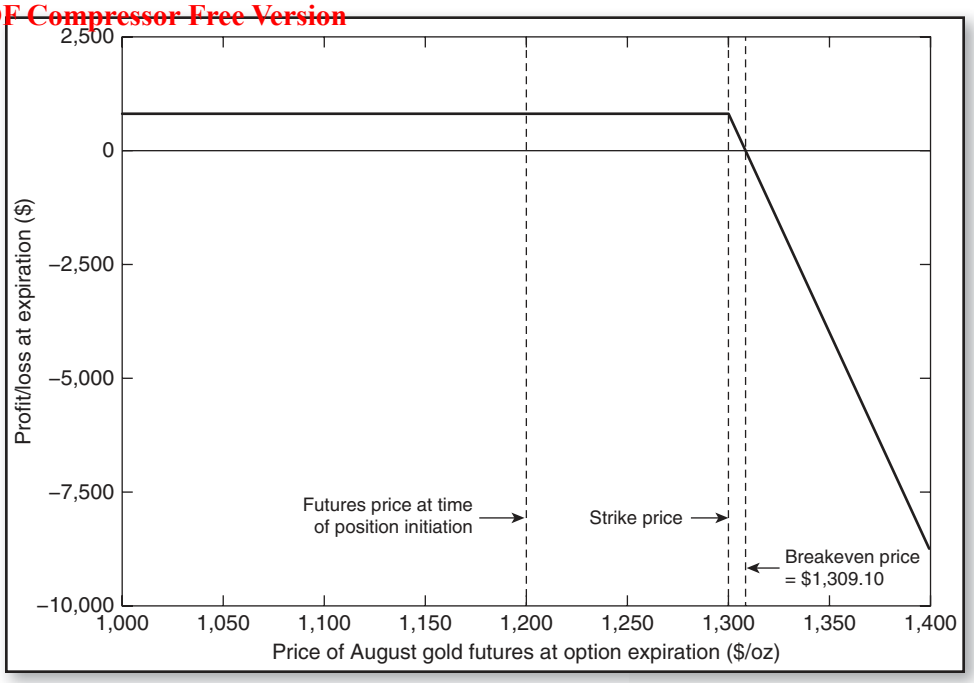

FIGURE 35.4b Profit/Loss Profile: Short Call (Out-of-the-Money)
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Strategy 4c: Short Call (In-the-Money)

EXAMPLE. Sell August $1,100 gold futures call at a premium of $110.10/oz ($11,010), with August gold futures trading at $1,200/oz. (See Table 35.4c and Figure 35.4c.)

TABLE 35.4c Profit/Loss Calculations: Short Call (In-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,100 Call at Initiation ($/oz)	(3) Dollar Amount of Premium Received	(4) Value of Call at Expiration	(5) Profit/Loss on Position [(3) – (4)]
1,000	110.1	$11,010	$0	$11,010
1,050	110.1	$11,010	$0	$11,010
1,100	110.1	$11,010	$0	$11,010
1,150	110.1	$11,010	$5,000	$6,010
1,200	110.1	$11,010	$10,000	$1,010
1,250	110.1	$11,010	$15,000	–$3,990
1,300	110.1	$11,010	$20,000	–$8,990
1,350	110.1	$11,010	$25,000	–$13,990
1,400	110.1	$11,010	$30,000	–$18,990

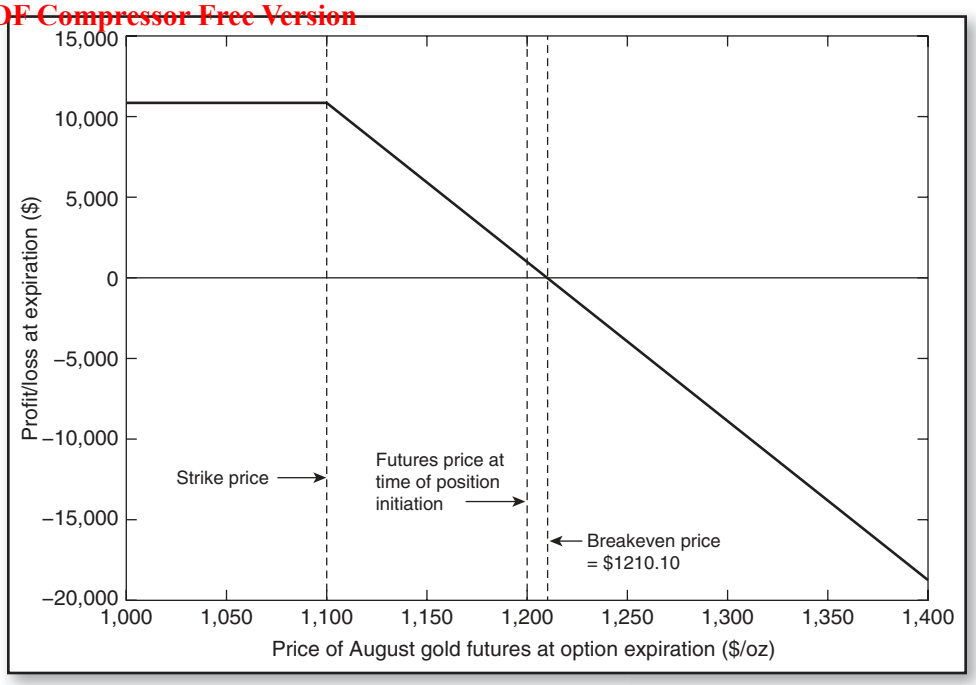

FIGURE 35.4c Profit/Loss Profile: Short Call (In-the-Money)
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Comment. For most of the probable price range, the profit/loss characteristics of the short in-the-money call are fairly similar to those of the outright short futures position. There are three basic differences between these two positions:

1. The short in-the-money call will lose modestly less than the short futures position in an advancing market because the loss will be partially offset by the premium received for the call.
2. The short in-the-money call will gain modestly more than the short futures position in a moderately declining market.
3. In a very sharply declining market, the profit potential on a short futures position is open-ended, whereas the maximum gain in the short in-the-money call position is limited to the total premium received for the call.

In effect, the seller of an in-the-money call chooses to lock in modestly better results for the probable price range in exchange for surrendering the opportunity for windfall profits in the event of a price collapse. Generally speaking, a trader should only choose a short in-the-money call over a short futures position if he believes that the probability of a sharp price decline is extremely small.

Table 35.4d summarizes the profit/loss results for various short call positions for a range of price assumptions. As can be seen, as calls move more deeply in-the-money, they begin to resemble

a short futures position more closely. (Sellers of deep in-the-money calls should be aware that longs may choose to exercise such options well before expiration. Early exercise can occur if the potential interest income on the premium is greater than the theoretical time value of the option for a zero interest rate assumption.) Short positions in deep out-of-the-money calls will prove profitable for the vast range of prices, but the maximum gain is small and the theoretical maximum loss is unlimited.

Figure 35.4d compares each type of short call to a short futures position. The short at-the-money call position will be the most profitable strategy under stable market conditions and the middle-of-the-road strategy (relative to the other two types of calls) in rising and declining markets. The short out-of-the-money call will lose the least in a rising market, but it will also be the least profitable strategy if prices decline. The short in-the-money call is the type of call that has the greatest potential and risk and, as mentioned above, there is a strong resemblance between this strategy and an outright short position in futures.

It should be emphasized that the comparisons in Figure 35.4d are based upon single-unit positions. However, as previously explained, these alternative strategies do not represent equivalent position sizes. Comparisons based on positions weighted equally in terms of some risk measure (e.g., equal delta values) would yield different empirical conclusions.

TABLE 35.4d Profit/Loss Matrix for Short Calls with Different Strike Prices

		Dollar Amount of Premium Received						
		$1,050 Call $15,520	$1,100 Call $11,010	$1,150 Call $7,010	$1,200 Call $3,880	$1,250 Call $1,920	$1,300 Call $910	$1,350 Call $450
		Position Profit/Loss at Expiration						
Futures Price at Expiration ($/oz)	Short Futures at $1,200	In-the-Money			At-the-Money	Out-of-the Money		
		$1,050 Call	$1,100 Call[a]	$1,150 Call	$1,200 Call[a]	$1,250 Call	$1,300 Call[a]	$500 Call
1,000	$20,000	$15,520	$11,010	$7,010	$3,880	$1,920	$910	$450
1,050	$15,000	$15,520	$11,010	$7,010	$3,880	$1,920	$910	$450
1,100	$10,000	$10,520	$11,010	$7,010	$3,880	$1,920	$910	$450
1,150	$5,000	$5,520	$6,010	$7,010	$3,880	$1,920	$910	$450
1,200	$0	$520	$1,010	$2,010	$3,880	$1,920	$910	$450
1,250	–$5,000	–$4,480	–$3,990	–$2,990	–$1,120	$1,920	$910	$450
1,300	–$10,000	–$9,480	–$8,990	–$7,990	–$6,120	–$3,080	$910	$450
1,350	–$15,000	–$14,480	–$13,990	–$12,990	–$11,120	–$8,080	–$4,090	$450
1,400	–$20,000	–$19,480	–$18,990	–$17,990	–$16,120	–$13,080	–$9,090	–$4,550

[a]These calls are compared in Figure 35.4d.

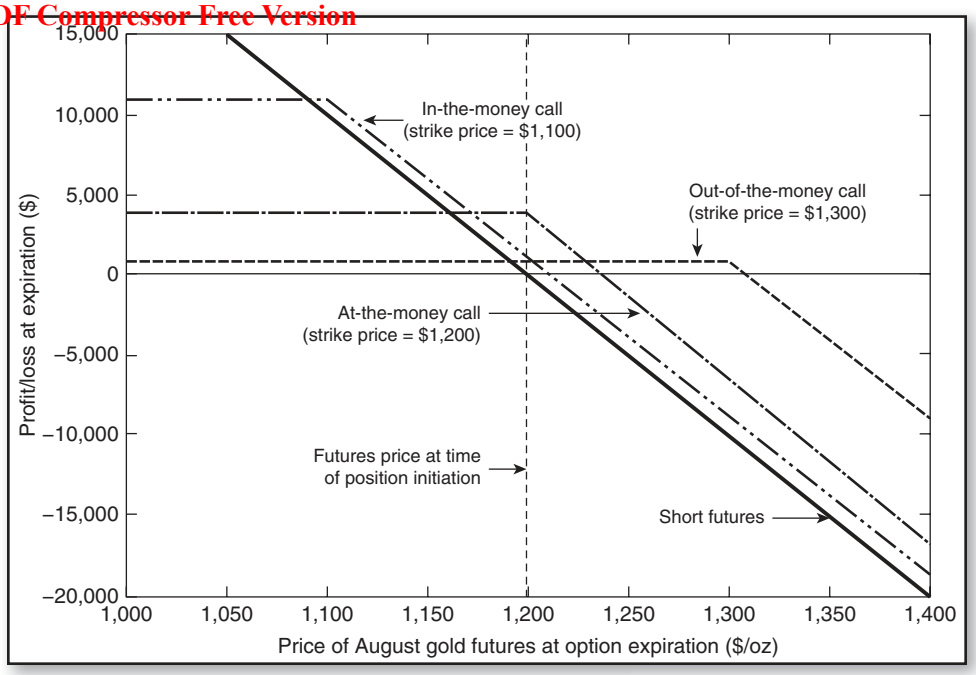

FIGURE 35.4d Profit/Loss Profile: Short Futures and Short Call Comparisons (In-the-Money, At-the-Money, and Out-of-the-Money)

Strategy 5a: Long Put (At-the-Money)

EXAMPLE. Buy August $1,200 gold futures put at a premium of $38.70/oz ($3,870), with August gold futures trading at $1,200/oz. (See Table 35.5a and Figure 35.5a.)

TABLE 35.5a Profit/Loss Calculations: Long Put (At-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Put at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Put Value at Expiration	(5) Profit/Loss on Position [(4) – (3)]
1,000	38.7	$3,870	$20,000	$16,130
1,050	38.7	$3,870	$15,000	$11,130
1,100	38.7	$3,870	$10,000	$6,130
1,150	38.7	$3,870	$5,000	$1,130
1,200	38.7	$3,870	$0	–$3,870
1,250	38.7	$3,870	$0	–$3,870
1,300	38.7	$3,870	$0	–$3,870
1,350	38.7	$3,870	$0	–$3,870
1,400	38.7	$3,870	$0	–$3,870

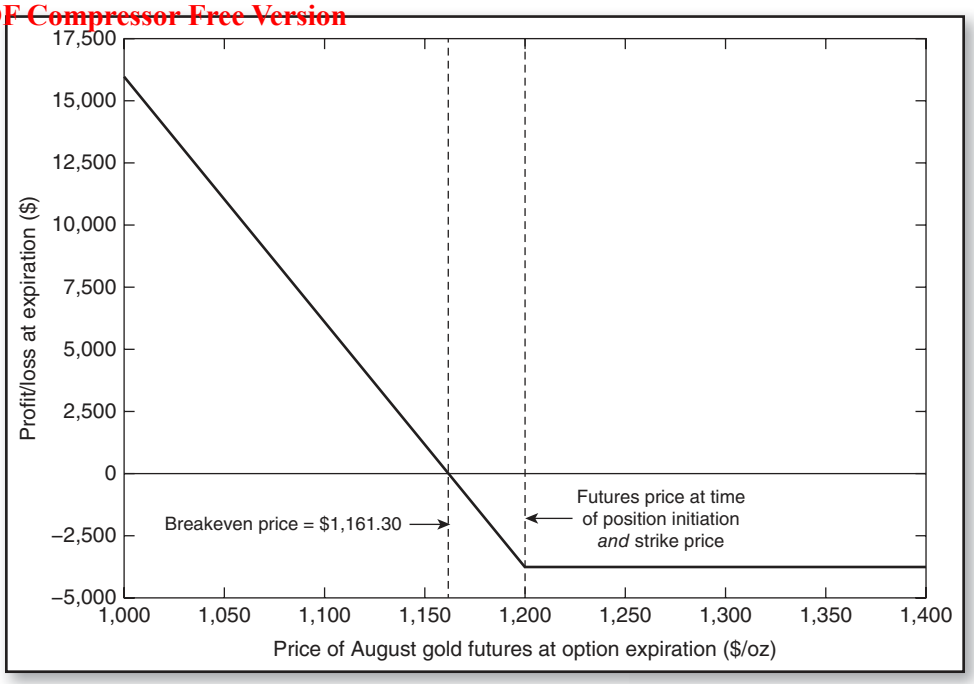

FIGURE 35.5a Profit/Loss Profile: Long Put (At-the-Money)

Comment. The long put is a bearish strategy in which maximum risk is limited to the premium paid for the option, while maximum gain is theoretically unlimited. However, the probability of a loss is greater than the probability of a gain, since the futures price must decline by an amount exceeding the option premium (as of the option expiration) in order for the put buyer to realize a profit. Two specific characteristics of the at-the-money option are:

1. The maximum loss will be realized only if futures are trading at or above their current level at the time of the option expiration.
2. For small price changes, each $1 change in the futures price will result in approximately a $0.50 change in the option price (except for options near expiration). Thus, for small price changes, a net short futures position is equivalent to approximately 2 put options in terms of risk.

Strategy 5b: Long Put (Out-of-the-Money)

Example. Buy August $1,100 gold futures put at a premium of $10.10/oz ($1,010). (The current price of August gold futures is $1,200/oz.) (See Table 35.5b and Figure 35.5b.)

Comment. The buyer of an out-of-the-money put reduces his maximum risk in exchange for accepting a smaller probability that the trade will realize a profit. By definition, the strike price of an out-of-the-money put is below the current level of futures. In order for the out-of-the-money put position

TABLE 35.5b Profit/Loss Calculations: Long Put (Out-of-the-Money)

(1) Futures Price At Expiration ($/oz)	(2) Premium of August $1,100 Put at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Value of Put at Expiration	(5) Profit/Loss on Position [(4) – (3)]
1,000	10.1	$1,010	$10,000	$8,990
1,050	10.1	$1,010	$5,000	$3,990
1,100	10.1	$1,010	$0	–$1,010
1,150	10.1	$1,010	$0	–$1,010
1,200	10.1	$1,010	$0	–$1,010
1,250	10.1	$1,010	$0	–$1,010
1,300	10.1	$1,010	$0	–$1,010
1,350	10.1	$1,010	$0	–$1,010
1,400	10.1	$1,010	$0	–$1,010

to realize a profit, the futures price (as of the time of the option expiration) must penetrate the strike price by an amount greater than the premium ($10.10/oz in the above example). Note that in the out-of-the-money put position, price decreases that leave futures above the option strike price will still result in a maximum loss on the option. The long out-of-the-money put might be a particularly appropriate position for the trader expecting a large price decline, but also concerned about the possibility of a large price rise.

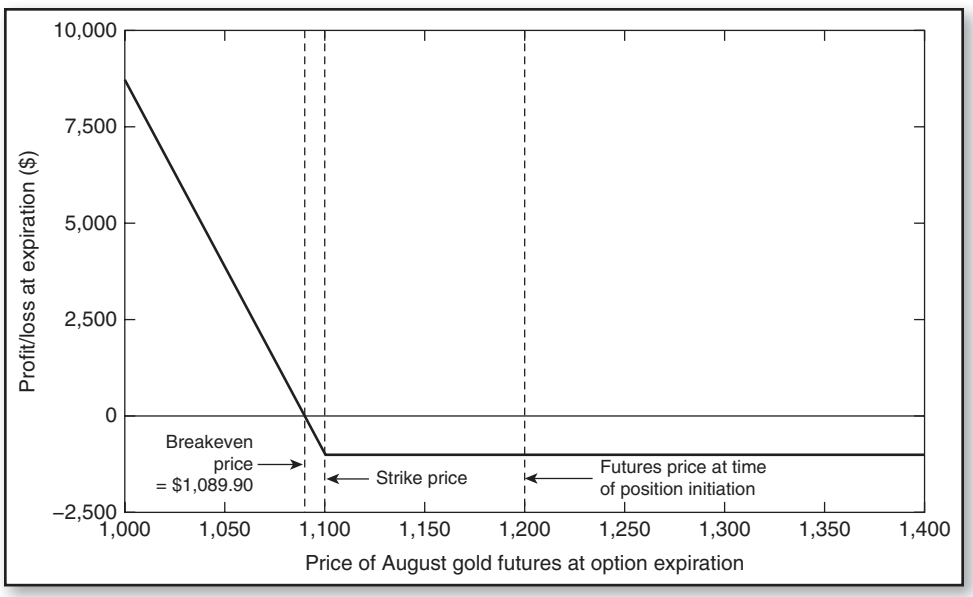

FIGURE 35.5b Profit/Loss Profile: Long Put (Out-of-the-Money)

It should be emphasized that the futures price need not necessarily reach the strike price in order for the out-of-the-money put to be profitable. If the market declines quickly, the put will increase in value, and hence can be resold at a profit. (However, this behavior will not necessarily hold for slow price declines, since the depressant effect of the passage of time on the option premium could well more than offset the supportive effect of the decreased price level of futures.)

For small price changes, the out-of-the-money put will change by less than a factor of one-half for each dollar change in the futures price. Thus, for small price changes, each short futures position will be equivalent to several short out-of-the-money puts in terms of risk.

Strategy 5c: Long Put (In-the-Money)

EXAMPLE. Buy August $1,300 gold futures put at a premium of $108.70/oz ($10,870), with August gold futures trading at $1,200/oz. (See Table 35.5c and Figure 35.5c.)

Comment. In many respects, a long in-the-money put option is very similar to a short futures position. The three main differences between these two trading strategies are:

1. The short futures position will gain slightly more in the event of a price decline—an amount equal to the time value portion of the premium paid for the option ($870 in this example).
2. For moderate price advances, the short futures position will lose slightly less. (Once again, the difference will be equal to the time value portion of the premium paid for the option.)
3. In the event of a large price advance, the loss on the in-the-money long put position would be limited to the total option premium paid, while the loss on the short futures position would be unlimited.

TABLE 35.5c Profit/Loss Calculations: Long Put (In-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,300 Put at Initiation ($/oz)	(3) Dollar Amount of Premium Paid	(4) Value of Put at Expiration	(5) Profit/Loss on Position [(3) – (4)]
1,000	108.7	$10,870	$30,000	$19,130
1,050	108.7	$10,870	$25,000	$14,130
1,100	108.7	$10,870	$20,000	$9,130
1,150	108.7	$10,870	$15,000	$4,130
1,200	108.7	$10,870	$10,000	–$870
1,250	108.7	$10,870	$5,000	–$5,870
1,300	108.7	$10,870	$0	–$10,870
1,350	108.7	$10,870	$0	–$10,870
1,400	108.7	$10,870	$0	–$10,870

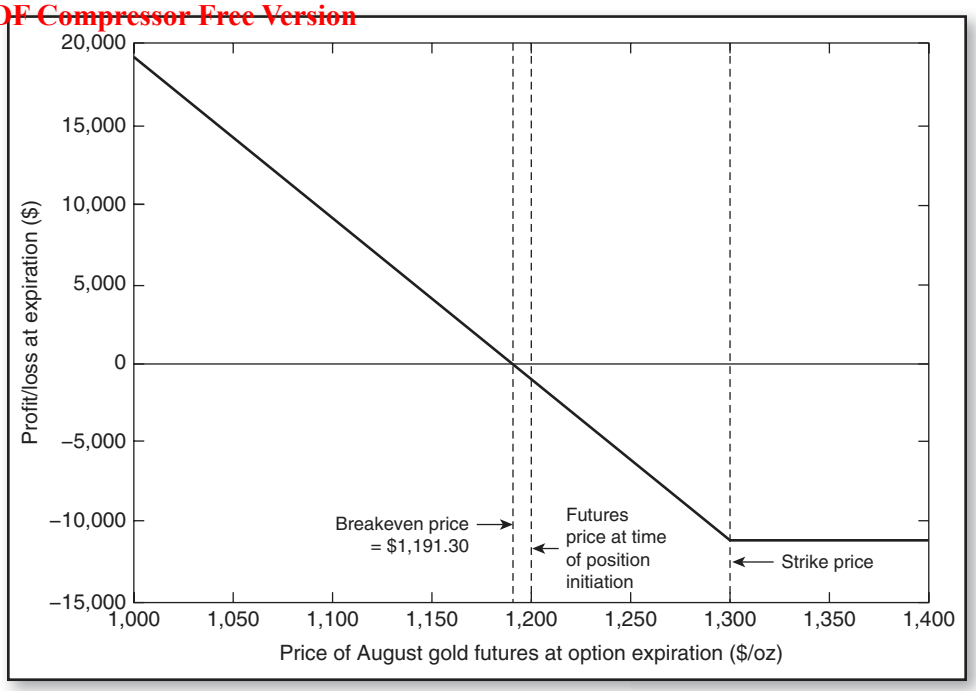

FIGURE 35.5c Profit/Loss Profile: Long Put (In-the-Money)

In a sense, the long in-the-money put position can be thought of as a short futures position with a built-in stop. This characteristic is an especially important consideration for speculators who typically employ protective stop loss orders on their positions—a prudent trading approach. A trader using a protective buy stop on a short position faces the frustrating possibility of the market advancing sufficiently to activate his stop and subsequently breaking. The long in-the-money put position offers the speculator an alternative method of limiting risk that does not present this danger. Of course, this benefit does not come without a cost: as mentioned earlier, the buyer of an in-the-money put will gain slightly less than the outright short futures trader if the market declines and lose slightly more if the market advances *moderately*. However, if the trader is anticipating volatile market conditions, he might very well prefer a long in-the-money put position to a short futures position combined with a protective buy stop order. In any case, the key point is that the trader who routinely compares the strategies of buying an in-the-money put versus going short futures with a protective buy stop should enjoy an advantage over those traders who never consider the option-based alternative.

Table 35.5d summarizes the profit/loss implications of various long put positions for a range of price assumptions. Note that as puts move deeper in-the-money, their profit and loss characteristics increasingly resemble a short futures position.

TABLE 35.5d Profit/Loss Matrix for Long Puts with Different Strike Prices

	Dollar Amount of Premium Paid						
	$1,350 Put	$1,300 Put	$1,250 Put	$1,200 Put	$1,150 Put	$1,100 Put	$1,050 Put
	$15,410	$10,870	$6,870	$3,870	$1,990	$1,010	$510
	Position Profit/Loss at Expiration						
		In-the-Money		At-the-Money	Out-of-the-Money		
Futures Price at Expiration ($/oz)	Short Futures at $1,200	$1,350 Put	$1,300 Put[a]	$1,250 Put	$1,200 Put[a]	$1,150 Put	$1,100 Put[a]	$1,050 Put
1,000	$20,000	$19,590	$19,130	$18,130	$16,130	$13,010	$8,990	$4,490
1,050	$15,000	$14,590	$14,130	$13,130	$11,130	$8,010	$3,990	–$510
1,100	$10,000	$9,590	$9,130	$8,130	$6,130	$3,010	–$1,010	–$510
1,150	$5,000	$4,590	$4,130	$3,130	$1,130	–$1,990	–$1,010	–$510
1,200	$0	–$410	–$870	–$1,870	–$3,870	–$1,990	–$1,010	–$510
1,250	–$5,000	–$5,410	–$5,870	–$6,870	–$3,870	–$1,990	–$1,010	–$510
1,300	–$10,000	–$10,410	–$10,870	–$6,870	–$3,870	–$1,990	–$1,010	–$510
1,350	–$15,000	–$15,410	–$10,870	–$6,870	–$3,870	–$1,990	–$1,010	–$510
1,400	–$20,000	–$15,410	–$10,870	–$6,870	–$3,870	–$1,990	–$1,010	–$510

[a]These puts are compared in Figure 35.5d.

Figure 35.5d compares the three types of long put positions to a short futures position. It should be noted that in terms of absolute price changes, the short futures position represents the largest position size, while the out-of-the-money put represents the smallest position size. Figure 35.5d suggests the following important observations:

1. As previously mentioned, the in-the-money put is very similar to an outright short futures position.
2. The out-of-the-money put will lose the least in a rising market, but will also gain the least in a declining market.
3. The at-the-money put will lose the most in a steady market and will be the middle-of-the-road performer (relative to the other two types of puts) in declining and advancing markets.

Again, it should be emphasized that these comparisons are based on single-unit positions that may differ substantially in terms of their implied position size (as suggested by their respective delta values). A comparison that involved equivalent position size levels for each strategy (i.e., equal delta values for each position) would yield different observations.

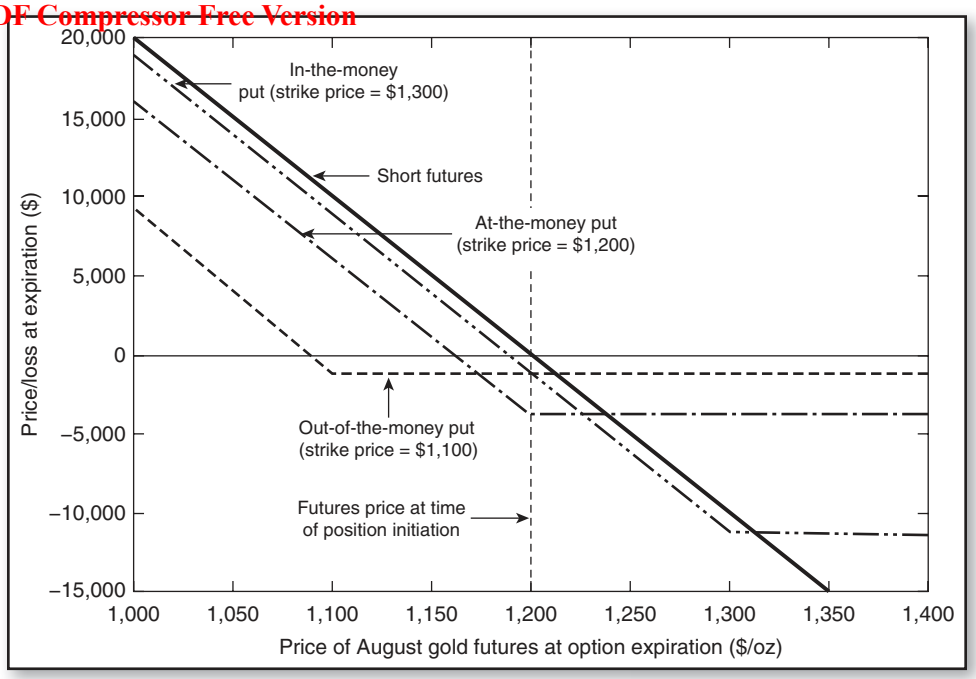

FIGURE 35.5d Profit/Loss Profile: Short Futures and Long Put Comparisons (In-the-Money, At-the-Money, and Out-of-the-Money)

EXAMPLE. Sell August $1,200 gold futures put at a premium of $38.70/oz ($3,870), with August gold futures trading at $1,200/oz. (See Table 35.6a and Figure 35.6a.)

TABLE 35.6a Profit/Loss Calculations: Short Put (At-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Put at Initiation ($/oz)	(3) $ Amount of Premium Received	(4) Put Value at Expiration	(5) Profit/Loss on Position [(3) – (4)]
1,000	38.7	$3,870	$20,000	–$16,130
1,050	38.7	$3,870	$15,000	–$11,130
1,100	38.7	$3,870	$10,000	–$6,130
1,150	38.7	$3,870	$5,000	–$1,130
1,200	38.7	$3,870	$0	$3,870
1,250	38.7	$3,870	$0	$3,870
1,300	38.7	$3,870	$0	$3,870
1,350	38.7	$3,870	$0	$3,870
1,400	38.7	$3,870	$0	$3,870

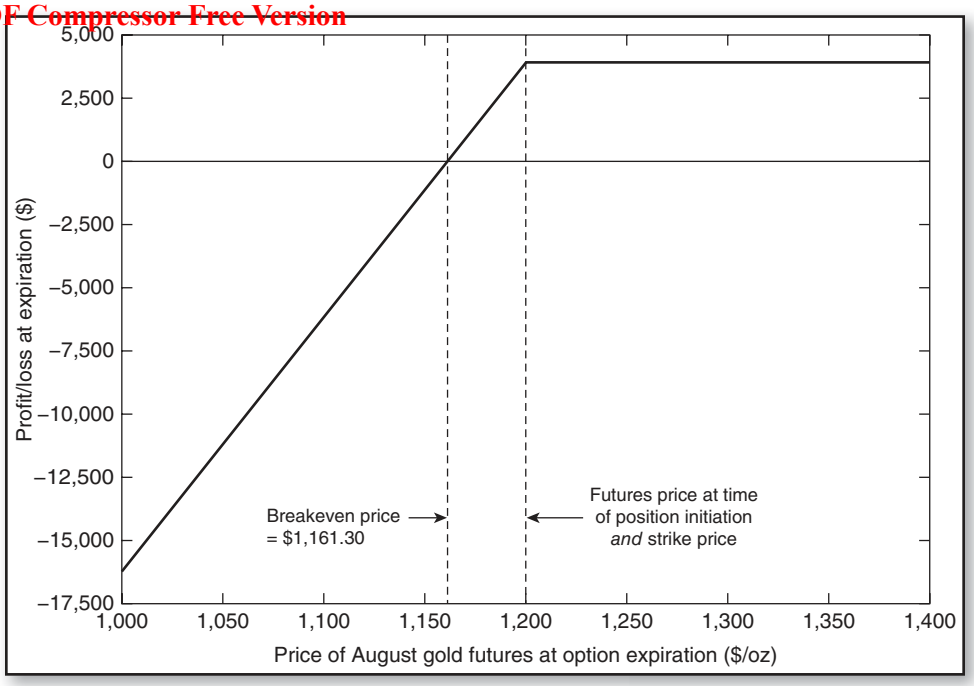

FIGURE 35.6a Profit/Loss Profile: Short Put (At-the-Money)

Comment. The short put is a bullish position with a maximum potential gain equal to the premium received for selling the put and unlimited risk. However, in return for assuming this unattractive maximum reward/maximum risk relationship, the seller of a put enjoys a greater probability of realizing a profit than a loss. Note that the short at-the-money put position will result in a gain as long as the futures price at the time of the option expiration is not below the futures price at the time of the option initiation by an amount greater than the premium level ($38.70/oz in our example). However, the maximum possible profit (i.e., the premium received on the option) will only be realized if the futures price at the time of the option expiration is above the prevailing market price at the time the option was sold (i.e., the strike price). The short put position is appropriate if the trader is *modestly* bullish and views the probability of a large price decline as being very low. If, however, the trader anticipated a large price advance, he would probably be better off buying a call or going long futures.

Strategy 6b: Short Put (Out-of-the-Money)

Example. Sell August $1,100 gold futures put at a premium of $10.10/oz ($1,010), with August gold futures trading at $1,200/oz. (See Table 35.6b and Figure 35.6b.)

Comment. The seller of an out-of-the-money put is willing to accept a smaller maximum gain (i.e., premium) in exchange for increasing the probability of gain on the trade. The seller of an out-of-the-money put will retain the full premium received as long as the futures price does not decline by an

TABLE 35.6b Profit/Loss Calculations: Short Put (Out-of-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,100 Put at Initiation ($/oz)	(3) Dollar Amount of Premium Received	(4) Value of Put at Expiration	(5) Profit/Loss on Position [(3) – (4)]
1,000	10.1	$1,010	$10,000	–$8,990
1,050	10.1	$1,010	$5,000	–$3,990
1,100	10.1	$1,010	$0	$1,010
1,150	10.1	$1,010	$0	$1,010
1,200	10.1	$1,010	$0	$1,010
1,250	10.1	$1,010	$0	$1,010
1,300	10.1	$1,010	$0	$1,010
1,350	10.1	$1,010	$0	$1,010
1,400	10.1	$1,010	$0	$1,010

amount greater than the difference between the futures price at the time of the option sale and the strike price. The trade will be profitable as long as the futures price at the time of the option expiration is not below the strike price by more than the option premium ($10.10/oz in this example). The short out-of-the-money put represents a less bullish posture than the short at-the-money put

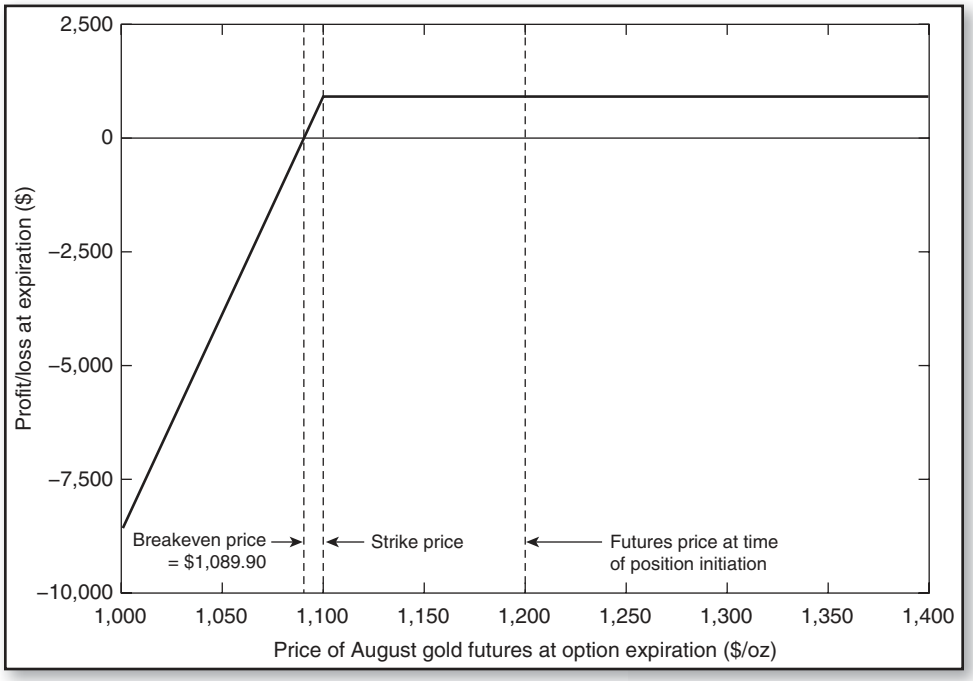

FIGURE 35.6b Profit/Loss Profile: Short Put (Out-of-the-Money)

position. Whereas the short at-the-money put position reflects an expectation that prices will either rise or decline only slightly, the short out-of-the-money put merely reflects an expectation that prices will not decline sharply.

Strategy 6c: Short Put (In-the-Money)

Example. Sell August $1,300 gold futures put at a premium of $108.70/oz ($10,870), with August gold futures trading at $1,200/oz. (See Table 35.6c and Figure 35.6c.)

Comment. For most of the probable price range, the profit/loss characteristics of the short in-the-money put are fairly similar to those of the outright long futures position. There are three basic differences between these two positions:

1. The short in-the-money put will lose modestly less than the long futures position in a declining market because the loss will be partially offset by the premium received for the put.
2. The short in-the-money put will gain modestly more than the long futures position in a moderately advancing market.
3. In a very sharply advancing market, the profit potential on a long futures position is open-ended, whereas the maximum gain in the short in-the-money put position is limited to the total premium received for the put.

In effect, the seller of an in-the-money put chooses to lock in modestly better results for the probable price range in exchange for surrendering the opportunity for windfall profits in the event of a price explosion. Generally speaking, a trader should only choose a short in-the-money put over a long futures position if he believes that the probability of a sharp price advance is extremely small.

TABLE 35.6c Profit/Loss Calculations: Short Put (In-the-Money)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,300 Put at Initiation ($/oz)	(3) Dollar Amount of Premium Received	(4) Put Value at Expiration	(5) Profit/Loss on Position [(3) – (4)]
1,000	108.7	$10,870	$30,000	–$19,130
1,050	108.7	$10,870	$25,000	–$14,130
1,100	108.7	$10,870	$20,000	–$9,130
1,150	108.7	$10,870	$15,000	–$4,130
1,200	108.7	$10,870	$10,000	$870
1,250	108.7	$10,870	$5,000	$5,870
1,300	108.7	$10,870	$0	$10,870
1,350	108.7	$10,870	$0	$10,870
1,400	108.7	$10,870	$0	$10,870

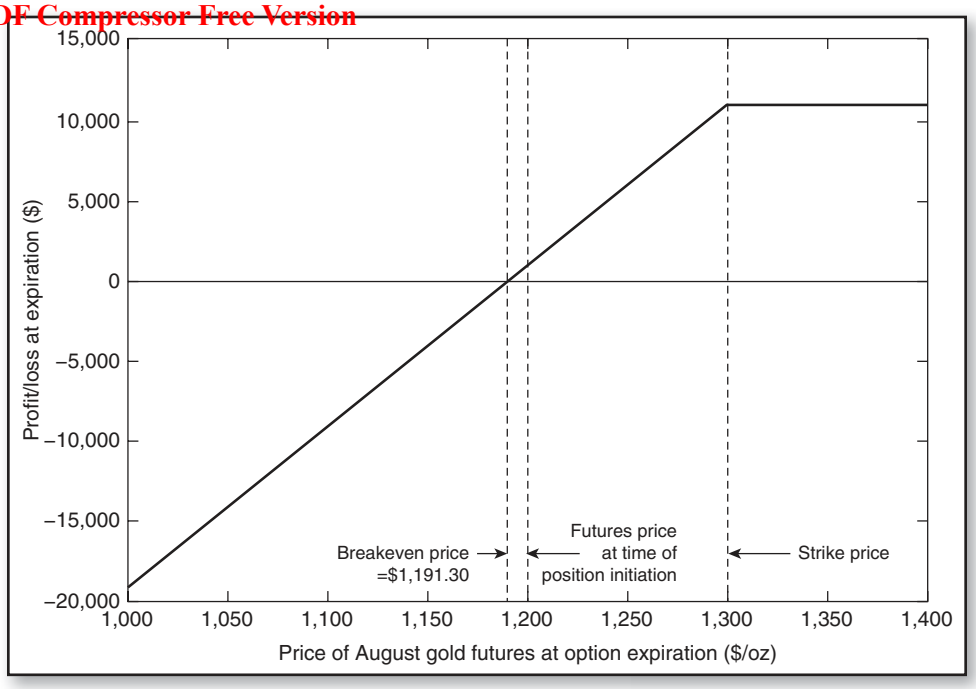

FIGURE 35.6c Profit/Loss Profile: Short Put (In-the-Money)

Table 35.6d summarizes the profit/loss results for various short put positions for a range of price assumptions. As can be seen, as puts move more deeply in the money, they begin to more closely resemble a long futures position. (As previously explained in the case of calls, sellers of deep in-the-money options should be cognizant of the real possibility of early exercise.) Short positions in deep out-of-the-money puts will prove profitable for the vast range of prices, but the maximum gain is small and the theoretical maximum loss is unlimited.

Figure 35.6d compares each type of short put to a long futures position. The short at-the-money put position will be the most profitable strategy under stable market conditions and the middle-of-the-road strategy (relative to the other two types of puts) in declining and rising markets. The short out-of-the-money put will lose the least in a declining market, but it will also be the least profitable strategy if prices advance. The short in-the-money put is the type of put that has the greatest potential and risk and, as mentioned above, there is a strong resemblance between this strategy and an outright long position in futures.

It should be emphasized that the comparisons in Figure 35.6d are based upon single-unit positions. However, as previously explained, these alternative strategies do not represent equivalent position sizes. Comparisons based on positions weighted equally in terms of some risk measure (e.g., equal delta values) would yield different empirical conclusions.

TABLE 35.6d Profit/Loss Matrix for Short Puts with Different Strike Prices

	Dollar Amount of Premium Received						
	$1,350 Put	$1,300 Put	$1,250 Put	$1,200 Put	$1,150 Put	$1,100 Put	$1,050 Put
	$15,410	$10,870	$6,870	$3,870	$1,990	$1,010	$510
	Position Profit/Loss at Expiration						
		In-the-Money		At-the-Money	Out-of-the-Money		
Futures Price at Expiration ($/oz)	Long Futures at $1,200	$1,350 Put	$1,300 Put[a]	$1,250 Put	$1,200 Put[a]	$1,150 Put	$1,100 Put[a]	$1,050 Put
1,000	–$20,000	–$19,590	–$19,130	–$18,130	–$16,130	–$13,010	–$8,990	–$4,490
1,050	–$15,000	–$14,590	–$14,130	–$13,130	–$11,130	–$8,010	–$3,990	$510
1,100	–$10,000	–$9,590	–$9,130	–$8,130	–$6,130	–$3,010	$1,010	$510
1,150	–$5,000	–$4,590	–$4,130	–$3,130	–$1,130	$1,990	$1,010	$510
1,200	$0	$410	$870	$1,870	$3,870	$1,990	$1,010	$510
1,250	$5,000	$5,410	$5,870	$6,870	$3,870	$1,990	$1,010	$510
1,300	$10,000	$10,410	$10,870	$6,870	$3,870	$1,990	$1,010	$510
1,350	$15,000	$15,410	$10,870	$6,870	$3,870	$1,990	$1,010	$510
1,400	$20,000	$15,410	$10,870	$6,870	$3,870	$1,990	$1,010	$510

[a]These puts are compared in Figure 35.6d.

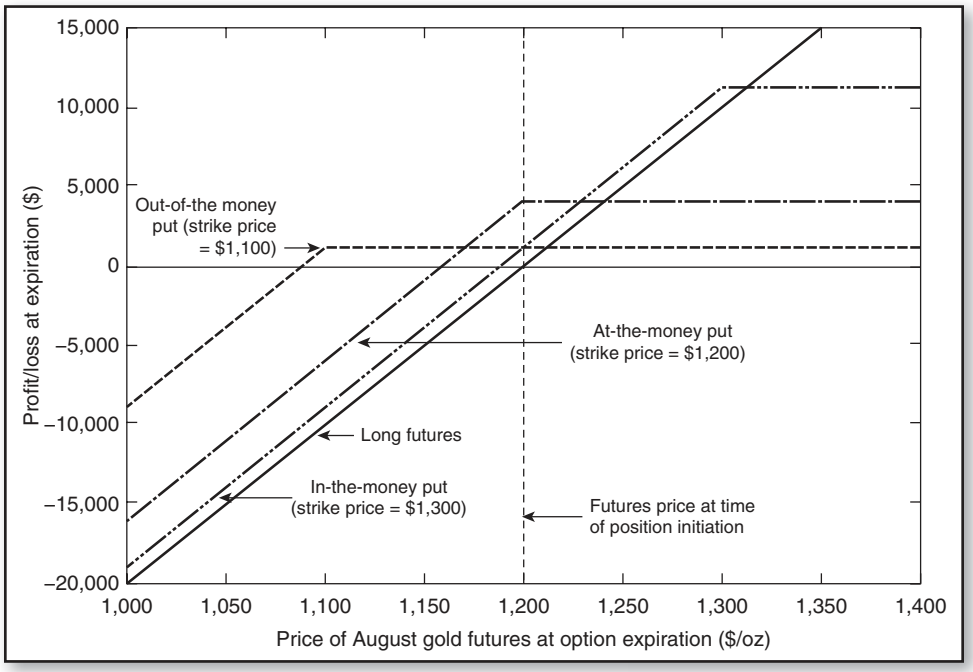

FIGURE 35.6d Profit/Loss Profile: Long Futures and Short Put Comparisons (In-the-Money, At-the-Money, and Out-of-the-Money)

Strategy 7: Long Straddle (Long Call + Long Put)

EXAMPLE. Buy August $1,200 gold futures call at a premium of $38.80/oz ($3,880) and simultaneously buy an August $1,200 gold futures put at a premium of $38.70/oz ($3,870). (See Table 35.7 and Figure 35.7.)

Comment. The long straddle position is a volatility bet. The buyer of a straddle does not have any opinion regarding the probable price direction; he merely believes that option premiums are underpriced relative to the potential market volatility. Andrew Tobias once offered a somewhat more cynical perspective of this type of trade[1]: "Indeed, if you haven't any idea of which way the [market] is headed but feel it is headed someplace, you can buy both a put and a call on it. That's called a straddle and involves enough commissions to keep your broker smiling all week."

As can be seen in Figure 35.7, the long straddle position will be unprofitable for a wide price range centered at the current price. Since this region represents the range of the most probable price outcomes, the long straddle position has a large probability of loss. In return for accepting a large probability of loss, the buyer of a straddle enjoys unlimited profit potential in the event of either a large price rise or a large price decline. The maximum loss on a long straddle position is equal to the total premium paid for both the long call and long put and will only be experienced if the expiration price is equal to the futures price at the time the options were purchased. (Implicit assumption: both the call and put are at-the-money options.)

TABLE 35.7 Profit/Loss Calculations: Long Straddle (Long Call + Long Put)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) Premium of August $1,200 Put at Initiation ($/oz)	(4) $ Amount of Total Premium Paid	(5) Call Value at Expiration	(6) Put Value at Expiration	(7) Profit/Loss on Position [(5) + (6) – (4)]
1,000	38.8	38.7	$7,750	$0	$20,000	$12,250
1,050	38.8	38.7	$7,750	$0	$15,000	$7,250
1,100	38.8	38.7	$7,750	$0	$10,000	$2,250
1,150	38.8	38.7	$7,750	$0	$5,000	–$2,750
1,200	38.8	38.7	$7,750	$0	$0	–$7,750
1,250	38.8	38.7	$7,750	$5,000	$0	–$2,750
1,300	38.8	38.7	$7,750	$10,000	$0	$2,250
1,350	38.8	38.7	$7,750	$15,000	$0	$7,250
1,400	38.8	38.7	$7,750	$20,000	$0	$12,250

[1] Andrew Tobias, *Getting By on $100,000 a Year (and Other Sad Tales)* (New York, NY: Simon & Schuster, 1980).

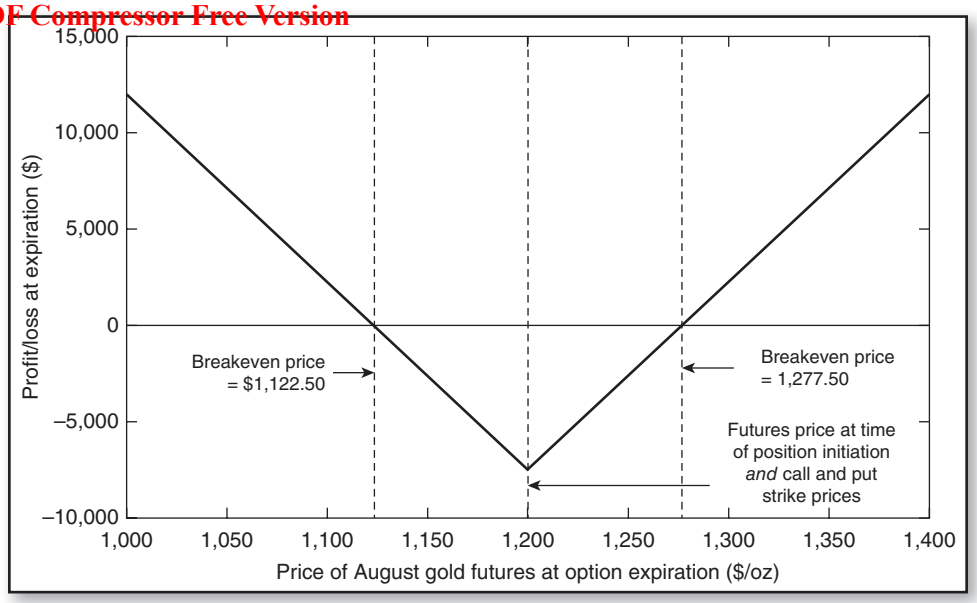

FIGURE 35.7 Profit/Loss Profile: Long Straddle (Long Call + Long Put)

Strategy 8: Short Straddle (Short Call + Short Put)

Example. Sell August $1,200 gold futures call at a premium of $38.80/oz ($3,880) and simultaneously sell an August $1,200 put at a premium of $38.70/oz ($3,870). (See Table 35.8 and Figure 35.8.)

TABLE 35.8 Profit/Loss Calculations: Short Straddle (Short Call + Short Put)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) Premium of August $1,200 Put at Initiation ($/oz)	(4) $ Amount of Total Premium Received	(5) Call Value at Expiration	(6) Put Value at Expiration	(7) Profit/Loss on Position [(4) – (5) – (6)]
1,000	38.8	38.7	$7,750	$0	$20,000	–$12,250
1,050	38.8	38.7	$7,750	$0	$15,000	–$7,250
1,100	38.8	38.7	$7,750	$0	$10,000	–$2,250
1,150	38.8	38.7	$7,750	$0	$5,000	$2,750
1,200	38.8	38.7	$7,750	$0	$0	$7,750
1,250	38.8	38.7	$7,750	$5,000	$0	$2,750
1,300	38.8	38.7	$7,750	$10,000	$0	–$2,250
1,350	38.8	38.7	$7,750	$15,000	$0	–$7,250
1,400	38.8	38.7	$7,750	$20,000	$0	–$12,250

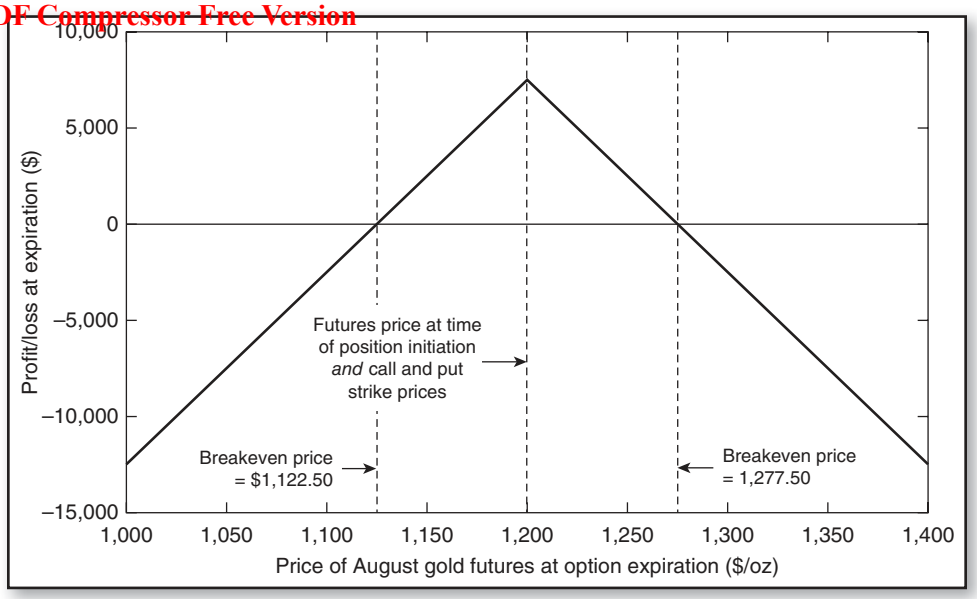

FIGURE 35.8 Profit/Loss Profile: Short Straddle (Short Call + Short Put)

Comment. The short straddle position will be profitable over a wide range of prices. The best outcome for a seller of a straddle is a totally unchanged market. In this circumstance, the seller will realize his maximum profit, which is equal to the total premium received for the sale of the call and put. The short straddle position will remain profitable as long as prices do not rise or decline by more than the combined total premium of the two options. The seller of the straddle enjoys a large probability of a profitable trade, in exchange for accepting unlimited risk in the event of either a very sharp price advance or decline.

This strategy is appropriate if the speculator expects prices to trade within a moderate range, but has no opinion regarding the probable market direction. A trader anticipating nonvolatile market conditions, but also having a price-directional bias, would be better off selling either calls or puts rather than a straddle. For example, a trader expecting low volatility and modestly declining prices should sell 2 calls instead of selling a straddle.

Strategy 9: Bullish "Texas Option Hedge" (Long Futures + Long Call)[2]

EXAMPLE. Buy August gold futures at $1,200 and simultaneously buy an August $1,200 gold futures call at a premium of $38.80/oz ($3,880). (See Table 35.9 and Figure 35.9.)

[2] By definition, a hedge implies a futures position opposite to an existing or anticipated actual position. In commodity trading, *Texas hedge* is a facetious reference to so-called "hedgers" who implement a futures position in the same direction as their cash position. The classic example of a Texas hedge would be a cattle feeder who goes long cattle futures. Whereas normal hedging reduces risk, the Texas hedge increases risk. There are many option strategies that combine offsetting positions in options and futures. This strategy is unusual in that it combines reinforcing positions in futures and options. Consequently, the term Texas option hedge seems to provide an appropriate label.

TABLE 35.9 Profit/Loss Calculations: Bullish "Texas Option Hedge" (Long Futures + Long Call)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Profit/Loss on Long Futures Position	(5) Call Value at Expiration	(6) Profit/Loss on Position [(4)+(5)–(3)]
1,000	38.8	$3,880	–$20,000	$0	–$23,880
1,050	38.8	$3,880	–$15,000	$0	–$18,880
1,100	38.8	$3,880	–$10,000	$0	–$13,880
1,150	38.8	$3,880	–$5,000	$0	–$8,880
1,200	38.8	$3,880	$0	$0	–$3,880
1,250	38.8	$3,880	$5,000	$5,000	$6,120
1,300	38.8	$3,880	$10,000	$10,000	$16,120
1,350	38.8	$3,880	$15,000	$15,000	$26,120
1,400	38.8	$3,880	$20,000	$20,000	$36,120

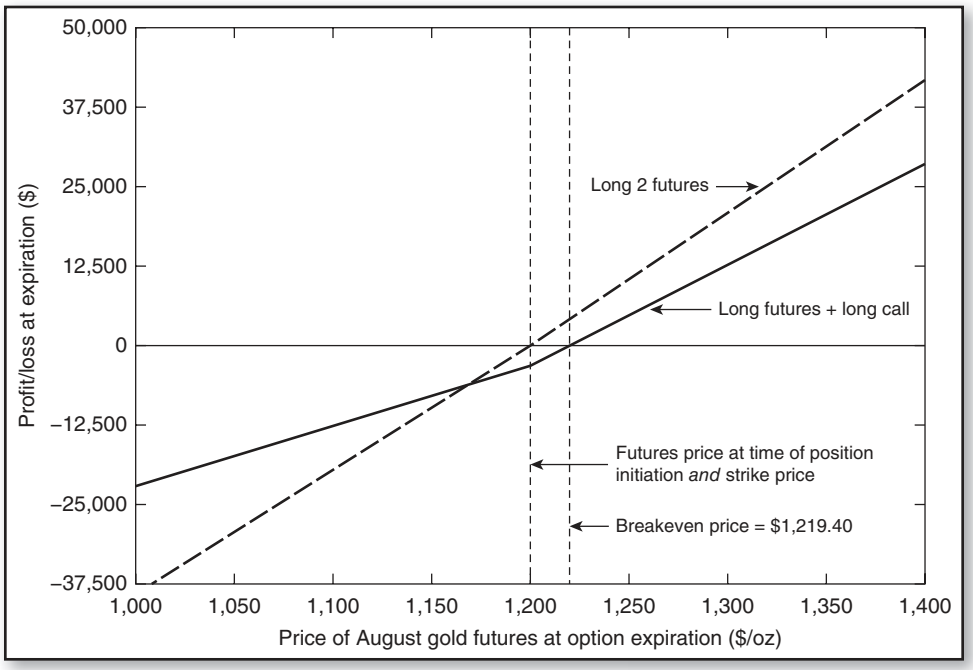

FIGURE 35.9 Profit/Loss Profile: Bullish "Texas Option Hedge" (Long Futures + Long Call)

Comment. This strategy provides an interesting alternative method of pyramiding—that is, increasing the size of a winning position. For example, a trader who is already long a futures contract at a profit and believes the market is heading higher may wish to increase his position without doubling his risk in the event of a price reaction—as would be the case if he bought a second futures contract. Such a speculator could choose instead to supplement his long position with the purchase of a call, thereby limiting the magnitude of his loss in the event of a price retracement, in exchange for realizing a moderately lower profit if prices continued to rise.

Figure 35.9 compares the alternative strategies of buying two futures versus buying a futures contract and a call. (For simplicity of exposition, the diagram assumes that both the futures contract and the call are purchased at the same time.) As can be seen, the long two futures position will always do moderately better in a rising market (by an amount equal to the premium paid for the call), but will lose more in the event of a significant price decline. The difference in losses between the two strategies will widen as larger price declines are considered.

Strategy 10: Bearish "Texas Option Hedge" (Short Futures + Long Put)

EXAMPLE. Sell August gold futures at $1,200 and simultaneously buy an August $1,200 gold put at a premium of $38.70/oz ($3,870). (See Table 35.10 and Figure 35.10.)

Comment. This strategy is perhaps most useful as an alternative means of increasing a short position. As illustrated in Figure 35.10, the combination of a short futures contract and a long put will gain moderately less than 2 short futures contracts in a declining market, but will lose a more limited amount in a rising market.

TABLE 35.10 Profit/Loss Calculations: Bearish "Texas Option Hedge" (Short Futures + Long Put)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1200 Put at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Profit/Loss on Short Futures Position	(5) Put Value at Expiration	(6) Profit/Loss on Position [(4) + (5) – (3)]
1,000	38.7	$3,870	$20,000	$20,000	$36,130
1,050	38.7	$3,870	$15,000	$15,000	$26,130
1,100	38.7	$3,870	$10,000	$10,000	$16,130
1,150	38.7	$3,870	$5,000	$5,000	$6,130
1,200	38.7	$3,870	$0	$0	–$3,870
1,250	38.7	$3,870	–$5,000	$0	–$8,870
1,300	38.7	$3,870	–$10,000	$0	–$13,870
1,350	38.7	$3,870	–$15,000	$0	–$18,870
1,400	38.7	$3,870	–$20,000	$0	–$23,870

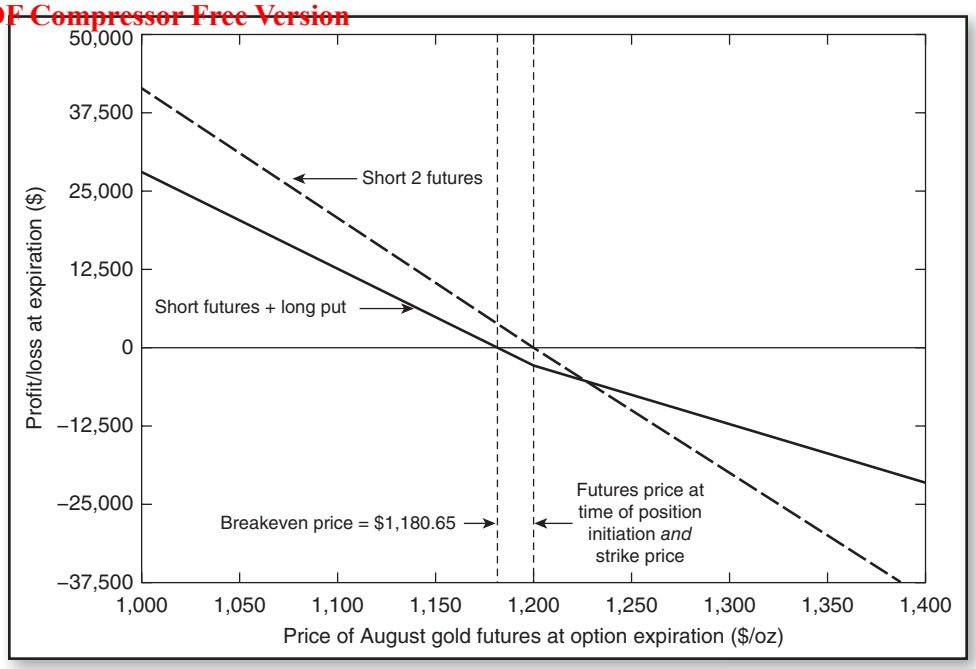

FIGURE 35.10 Profit/Loss Profile: Bearish "Texas Option Hedge" (Short Futures + Long Put)

Strategy 11a: Option-Protected Long Futures (Long Futures + Long At-the-Money Put)

EXAMPLE. Buy August gold futures at $1,200/oz and simultaneously buy an August $1200 gold put at a premium of $38.70/oz ($3,870). (See Table 35.11a and Figure 35.11a.)

Comment. A frequently recommended strategy is that the trader implementing (or holding) a long futures position can consider buying a put to protect his downside risk. The basic idea is that if the market declines, the losses in the long futures position will be offset dollar for dollar by the long put position. Although this premise is true, it should be stressed that such a combined position represents nothing more than a proxy for a long call. The reader can verify the virtually identical nature of these two alternative strategies by comparing Figure 35.11a to Figure 35.3a. If prices increase, the long futures position will gain, while the option will expire worthless. On the other hand, if prices decline, the loss in the combined position will equal the premium paid for the put. In fact, if the call and put premiums are equal, a long futures plus long put position will be precisely equivalent to a long call.

In most cases, the trader who finds the profit/loss profile of this strategy attractive would be better off buying a call, because the transaction costs are likely to be lower. However, if the trader already holds a long futures position, buying a put may be a reasonable alternative to liquidating this position and buying a call.

TABLE 35.11a Profit/Loss Calculations: Option-Protected Long Futures—Long Futures + Long At-the-Money Put (Similar to Long At-the-Money Call)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Put at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Profit/Loss on Long Futures Position	(5) Put Value at Expiration	(6) Profit/Loss on Position [(4) + (5) – (3)]
1,000	38.7	$3,870	–$20,000	$20,000	–$3,870
1,050	38.7	$3,870	–$15,000	$15,000	–$3,870
1,100	38.7	$3,870	–$10,000	$10,000	–$3,870
1,150	38.7	$3,870	–$5,000	$5,000	–$3,870
1,200	38.7	$3,870	$0	$0	–$3,870
1,250	38.7	$3,870	$5,000	$0	$1,130
1,300	38.7	$3,870	$10,000	$0	$6,130
1,350	38.7	$3,870	$15,000	$0	$11,130
1,400	38.7	$3,870	$20,000	$0	$16,130

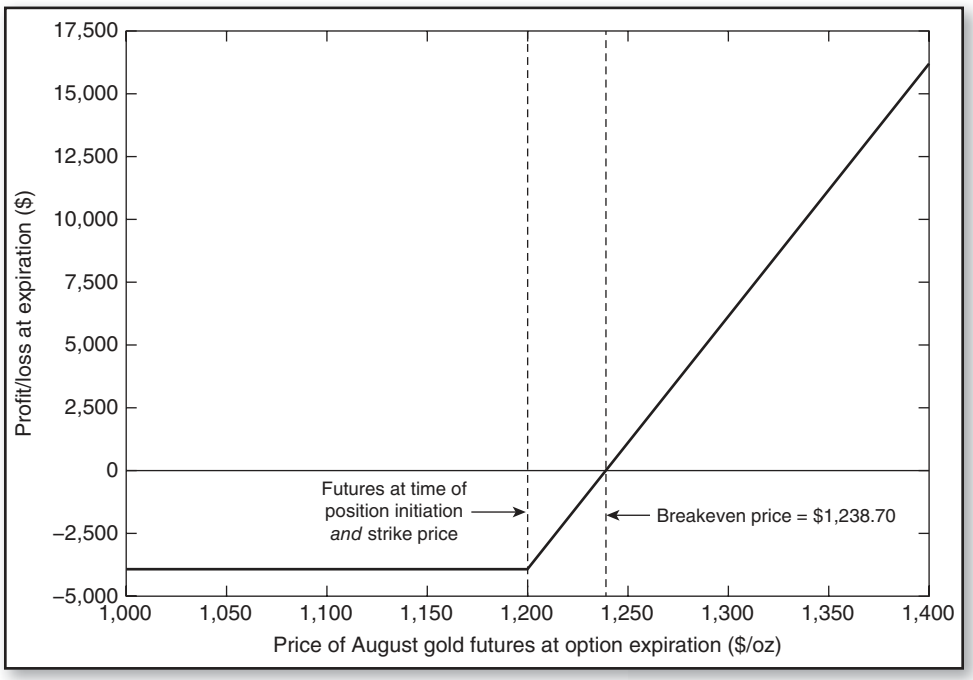

FIGURE 35.11a Profit/Loss Profile: Option-Protected Long Futures—Long Futures + Long at-the-Money Put (Similar to Long At-the-Money Call)

Strategy 11b: Option-Protected Long Futures (Long Futures + Long Out-of-the-Money Put)

Example. Buy August gold futures at $1,200/oz and simultaneously buy an August $1,100 gold futures put at a premium of $10.10/oz ($1,010). (See Table 35.11b and Figure 35.11b.)

TABLE 35.11b Profit/Loss Calculations: Option-Protected Long Futures—Long Futures + Long Out-of-the-Money Put (Similar to Long In-the-Money Call)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,100 Put at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Profit/Loss on Long Futures Position	(5) Put Value at Expiration	(6) Profit/Loss on Position [(4) + (5) – (3)]
1,000	10.1	$1,010	–$20,000	$10,000	–$11,010
1,050	10.1	$1,010	–$15,000	$5,000	–$11,010
1,100	10.1	$1,010	–$10,000	$0	–$11,010
1,150	10.1	$1,010	–$5,000	$0	–$6,010
1,200	10.1	$1,010	$0	$0	–$1,010
1,250	10.1	$1,010	$5,000	$0	$3,990
1,300	10.1	$1,010	$10,000	$0	$8,990
1,350	10.1	$1,010	$15,000	$0	$13,990
1,400	10.1	$1,010	$20,000	$0	$18,990

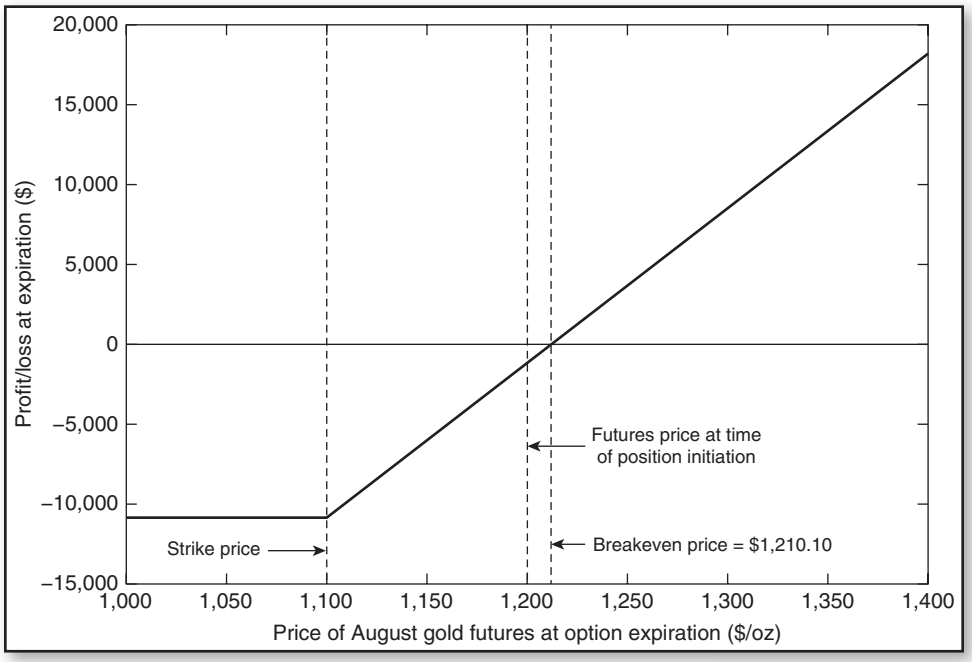

FIGURE 35.11b Profit/Loss Profile: Option-Protected Long Futures—Long Futures + Long Out-of-the-Money Put (Similar to Long In-the-Money Call)

Comment. As can be verified by comparing Figure 35.11b to Figure 35.3c, this strategy is virtually equivalent to buying an in-the-money call. Supplementing a long futures position with the purchase of an out-of-the-money put will result in slightly poorer results if the market advances, or declines moderately, but will limit the magnitude of losses in the event of a sharp price decline. Thus, much like the long in-the-money call position, this strategy can be viewed as a long position with a built-in stop.

In most cases, it will make more sense for the trader to simply buy an in-the-money call since the transaction cost will be lower. However, if a speculator is already long futures, the purchase of an out-of-the-money put might present a viable alternative to liquidating this position and buying an in-the-money call.

Strategy 12a: Option-Protected Short Futures (Short Futures + Long At-the-Money Call)

EXAMPLE. Sell August gold futures at $1,200/oz and simultaneously buy an August $1,200 gold call at a premium of $38.80/oz ($3,880). (See Table 35.12a and Figure 35.12a.)

Comment. A frequently recommended strategy is that the trader implementing (or holding) a short futures position can consider buying a call to protect his upside risk. The basic idea is that if the market advances, the losses in the short futures position will be offset dollar for dollar by the long call position. Although this premise is true, it should be stressed that such a combined position represents nothing more than a proxy for a long put. The reader can verify the virtually identical nature of these two alternative strategies by comparing Figure 35.12a to Figure 35.5a. If prices decline, the short futures position will gain, while the option will expire worthless. And if prices advance, the loss in the combined position will equal the premium paid for the call. In fact, if the put and call premiums are equal, a short futures plus long call position will be precisely equivalent to a long put.

TABLE 35.12a **Profit/Loss Calculations: Option-Protected Short Futures—Short Futures + Long At-the-Money Call (Similar to Long At-the-Money Put)**

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Profit/Loss on Short Futures Position	(5) Call Value at Expiration	(6) Profit/Loss on Position [(4)+ (5) – (3)]
1,000	38.8	$3,880	$20,000	$0	$16,120
1,050	38.8	$3,880	$15,000	$0	$11,120
1,100	38.8	$3,880	$10,000	$0	$6,120
1,150	38.8	$3,880	$5,000	$0	$1,120
1,200	38.8	$3,880	$0	$0	–$3,880
1,250	38.8	$3,880	–$5,000	$5,000	–$3,880
1,300	38.8	$3,880	–$10,000	$10,000	–$3,880
1,350	38.8	$3,880	–$15,000	$15,000	–$3,880
1,400	38.8	$3,880	–$20,000	$20,000	–$3,880

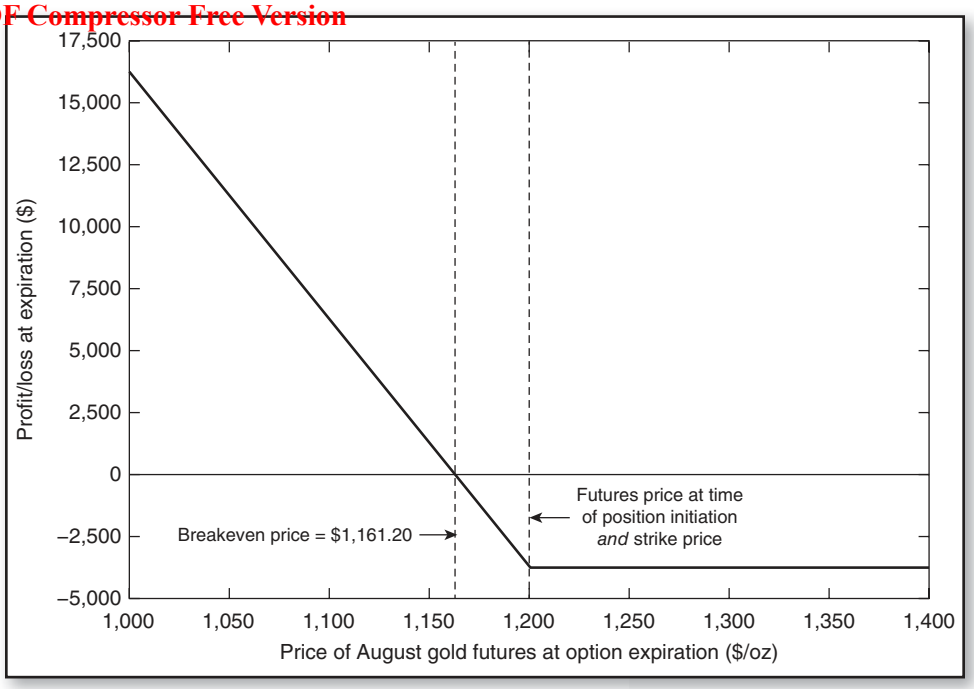

FIGURE 35.12a Profit/Loss Profile: Option-Protected Short Futures—Short Futures + Long At-the-Money Call (Similar to Long At-the-Money Put)

In most cases, the trader who finds the profit/loss profile of this strategy attractive would be better off buying a put, because the transaction costs are likely to be lower. However, if the trader already holds a short futures position, buying a call may be a reasonable alternative to liquidating this position and buying a put.

Strategy 12b: Option-Protected Short Futures (Short Futures + Long Out-of-the-Money Call)

EXAMPLE. Sell August gold futures at $1,200/oz and simultaneously buy an August $1,300 gold futures call at a premium of $9.10/oz ($910). (See Table 35.12b and Figure 35.12b.)

Comment. As can be verified by comparing Figure 35.12b to Figure 35.5c, this strategy is virtually equivalent to buying an in-the-money put. Supplementing a short futures position with the purchase of an out-of-the-money call will result in slightly poorer results if the market declines or advances moderately, but will limit the magnitude of losses in the event of a sharp price advance. Thus, much as with the long in-the-money put position, this strategy can be viewed as a short position with a built-in stop.

TABLE 35.12b Profit/Loss Calculations: Option-Protected Short Futures—Short Futures + Long Out-of-the-Money Call (Similar to Long In-the-Money Put)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,300 Call at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Profit/Loss on Short Futures Position	(5) Call Value at Expiration	(6) Profit/Loss on Position [(4) + (5) – (3)]
1,000	9.1	$910	$20,000	$0	$19,090
1,050	9.1	$910	$15,000	$0	$14,090
1,100	9.1	$910	$10,000	$0	$9,090
1,150	9.1	$910	$5,000	$0	$4,090
1,200	9.1	$910	$0	$0	–$910
1,250	9.1	$910	–$5,000	$0	–$5,910
1,300	9.1	$910	–$10,000	$0	–$10,910
1,350	9.1	$910	–$15,000	$5,000	–$10,910
1,400	9.1	$910	–$20,000	$10,000	–$10,910

In most cases, it will make more sense for the trader simply to buy an in-the-money put since the transaction costs will be lower. However, if a speculator is already short futures, the purchase of an out-of-the-money call might present a viable alternative to liquidating this position and buying an in-the-money put.

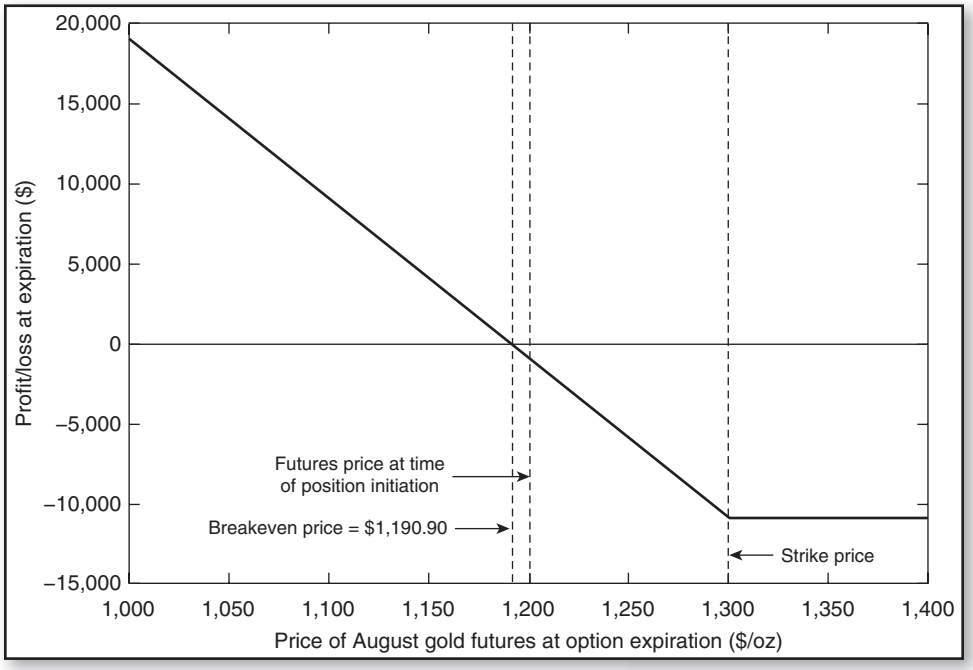

FIGURE 35.12b Profit/Loss Profile: Option-Protected Short Futures—Short Futures + Long Out-of-the-Money Call (Similar to Long In-the-Money Put)

Strategy 13: Covered Call Write (Long Futures + Short Call)

EXAMPLE. Buy August gold futures at $1,200/oz and simultaneously sell an August $1,200 gold futures call at a premium of $38.80/oz ($3,880). (See Table 35.13 and Figure 35.13.)

Comment. There has been a lot of nonsense written about covered call writing. In fact, even the term is misleading. The implication is that *covered call* writing—the sale of calls against long positions—is somehow a more conservative strategy than *naked call* writing—the sale of calls without any offsetting long futures position. This assumption is absolutely false. Although naked call writing implies unlimited risk, the same statement applies to covered call writing. As can be seen in Figure 35.13, the covered call writer merely exchanges unlimited risk in the event of a market advance (as is the case for the naked call writer) for unlimited risk in the event of a market decline. In fact, the reader can verify that this strategy is virtually equivalent to a "naked" short put position (see Strategy 35.6a).

One frequently mentioned motivation for covered call writing is that it allows the holder of a long position to realize a better sales price. For example, if the market is trading at $1,200 and the holder of a long futures contract sells an at-the-money call at a premium of $38.80/oz instead of liquidating his position, he can realize an effective sales price of $1,238.80 if prices move higher (the $1,200 strike price plus the premium received for the sale of the call). And, if prices move down by no more than $38.80/oz by option expiration, he will realize an effective sales price of at least $1,200. Presented in this light, this strategy appears to be a "heads you win, tails you win" proposition. However, there is no free lunch. The catch is that if prices decline by more than $38.80, the trader will realize a lower sales price than if he had simply liquidated the futures position. And, if prices rise substantially higher, the trader will fail to participate fully in the move as he would have if he had maintained his long position.

The essential point is that although many motivations are suggested for covered call writing, the trader should keep in mind that this strategy is entirely equivalent to selling puts.

TABLE 35.13 Profit/Loss Calculations: Covered Call Write—Long Futures + Short Call (Similar to Short Put)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) $ Amount of Premium Received	(4) Profit/Loss on Long Futures Position	(5) Call Value at Expiration	(6) Profit/Loss on Position [(3) + (4) – (5)]
1,000	38.8	$3,880	–$20,000	$0	–$16,120
1,050	38.8	$3,880	–$15,000	$0	–$11,120
1,100	38.8	$3,880	–$10,000	$0	–$6,120
1,150	38.8	$3,880	–$5,000	$0	–$1,120
1,200	38.8	$3,880	$0	$0	$3,880
1,250	38.8	$3,880	$5,000	$5,000	$3,880
1,300	38.8	$3,880	$10,000	$10,000	$3,880
1,350	38.8	$3,880	$15,000	$15,000	$3,880
1,400	38.8	$3,880	$20,000	$20,000	$3,880

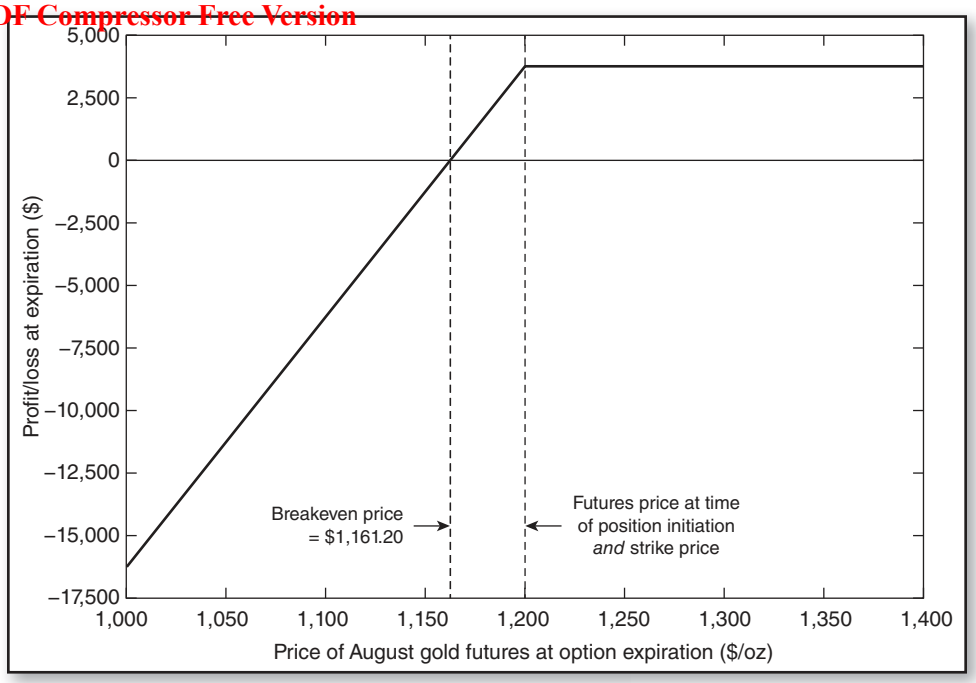

FIGURE 35.13 Profit/Loss Profile: Covered Call Write—Long Futures + Short Call (Similar to Short Put)

Strategy 14: Covered Put Write (Short Futures + Short Put)

EXAMPLE. Sell August futures at $1,200 and simultaneously sell an August $1,200 gold futures put at a premium of $38.70/oz ($3,870). (See Table 35.14 and Figure 35.14.)

TABLE 35.14 Profit/Loss Calculations: Covered Put Write—Short Futures + Short Put (Similar to Short Call)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Put at Initiation ($/oz)	(3) $ Amount of Premium Received	(4) Profit/Loss on Short Futures Position	(5) Put Value at Expiration	(6) Profit/Loss on Position [(3) + (4) – (5)]
1,000	38.7	$3,870	$20,000	$20,000	$3,870
1,050	38.7	$3,870	$15,000	$15,000	$3,870
1,100	38.7	$3,870	$10,000	$10,000	$3,870
1,150	38.7	$3,870	$5,000	$5,000	$3,870
1,200	38.7	$3,870	$0	$0	$3,870
1,250	38.7	$3,870	–$5,000	$0	–$1,130
1,300	38.7	$3,870	–$10,000	$0	–$6,130
1,350	38.7	$3,870	–$15,000	$0	–$11,130
1,400	38.7	$3,870	–$20,000	$0	–$16,130

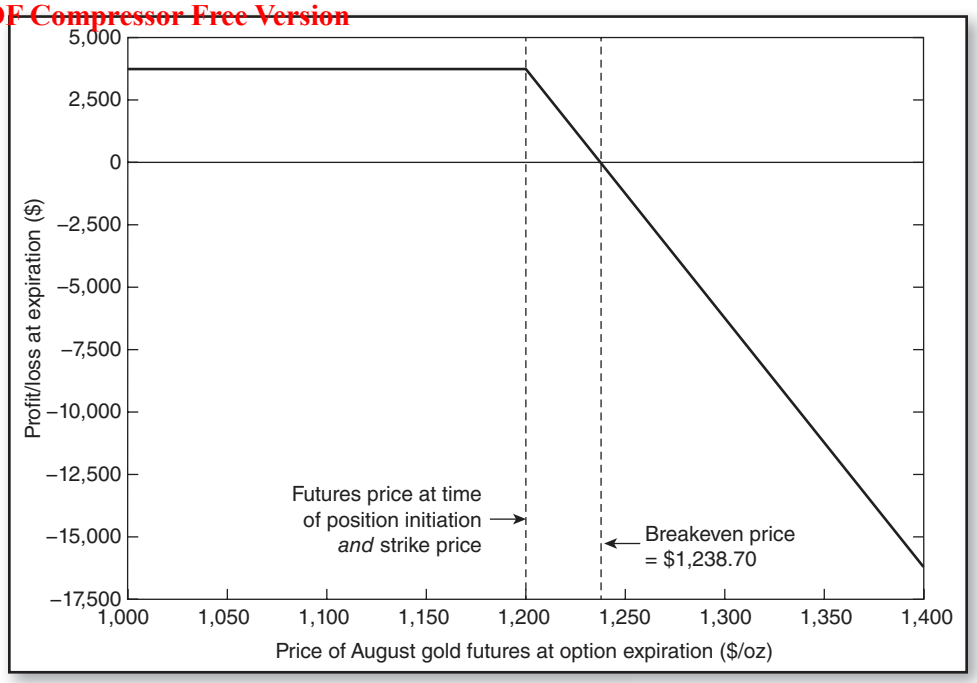

FIGURE 35.14 Profit/Loss Profile: Covered Put Write—Short Futures + Short Put (Similar to Short Call)

Comment. Comments analogous to those made for Strategy 13 would apply here. The sale of a put against a short futures position is equivalent to the sale of a call. The reader can verify this by comparing Figure 35.14 to Figure 35.4a. The two strategies would be precisely equivalent (ignoring transaction cost differences) if the put and call premiums were equal.

Strategy 15: Synthetic Long Futures (Long Call + Short Put)

EXAMPLE. Buy an August $1,150 gold futures call at a premium of $70.10/oz ($7,010) and simultaneously sell an August $1,150 gold futures put at a premium of $19.90/oz ($1,990). (See Table 35.15 and Figure 35.15.)

Comment. A synthetic long futures position can be created by combining a long call and a short put *for the same expiration date and the same strike price.* For example, as illustrated in Table 35.15 and Figure 35.15, the combined position of a long August $1,150 call and a short August $1,150 put is virtually identical to a long August futures position. The reason for this equivalence is tied to the fact that the difference between the premium paid for the call and the premium received for the put is approximately equal to the intrinsic value of the call. Each $1 increase in price will raise the intrinsic value of the call by an equivalent amount and each $1 decrease in price will reduce the intrinsic value of the

TABLE 35.15 Profit/Loss Calculations: Synthetic Long Futures (Long Call + Short Put)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,150 Call at Initiation ($/oz)	(3) $ Amount of Premium Paid	(4) Premium of August $1,150 Put at Initiation ($/oz)	(5) $ Amount of Premium Received	(6) Call Value at Expiration	(7) Put Value at Expiration	(8) Profit/Loss on Position [(5) − (3) + (6) − (7)]
1,000	70.1	$7,010	19.9	$1,990	$0	$15,000	−$20,020
1,050	70.1	$7,010	19.9	$1,990	$0	$10,000	−$15,020
1,100	70.1	$7,010	19.9	$1,990	$0	$5,000	−$10,020
1,150	70.1	$7,010	19.9	$1,990	$0	$0	−$5,020
1,200	70.1	$7,010	19.9	$1,990	$5,000	$0	−$20
1,250	70.1	$7,010	19.9	$1,990	$10,000	$0	$4,980
1,300	70.1	$7,010	19.9	$1,990	$15,000	$0	$9,980
1,350	70.1	$7,010	19.9	$1,990	$20,000	$0	$14,980
1,400	70.1	$7,010	19.9	$1,990	$25,000	$0	$19,980

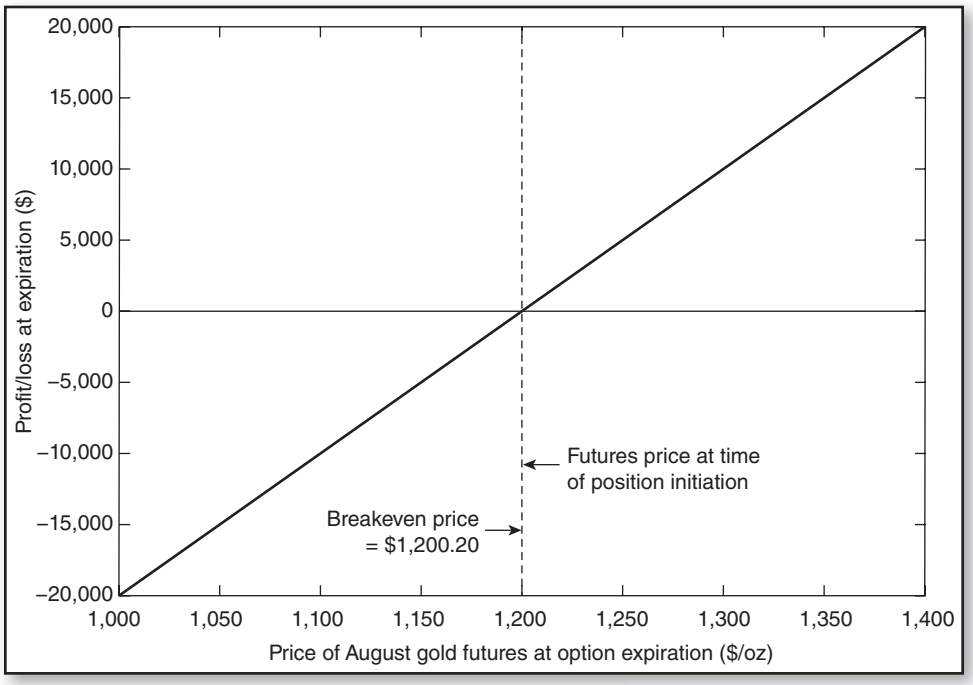

FIGURE 35.15 Profit/Loss Profile: Synthetic Long Futures (Long Call + Short Put)

call (or if prices decline below $1,150, increase the value of the put) by an equivalent amount. Thus, as long as the expiration date and strike price of the two options are identical, a long call/short put position acts just like a long futures contract.

The futures equivalent price implied by a synthetic position is given by the following formula:

$$\text{Synthetic futures position price} = \text{strike price} + \text{call premium} - \text{put premium}$$

It should be noted there will be one synthetic futures position price corresponding to each strike price for which options are traded for the given futures contract.

In this example, the synthetic long position is the same price as a long futures contract. (Synthetic futures position price = $1,150 + $70.10 − $19.90 = $1,200.20.) Thus, ignoring transaction costs and interest income effects, buying the August $1,150 call and simultaneously selling the August $1,150 put would be equivalent to buying an August futures contract. Of course, the trader considering this strategy as an alternative to an outright long futures position must incorporate transaction costs and interest income effects into the calculation. In this example, the true cost of the synthetic futures position would be raised vis-à-vis a long futures contract as a result of the following three factors:

1. Because the synthetic futures position involves two trades, in a less liquid market, it is reasonable to assume the execution costs will also be greater. In other words, the option-based strategy will require the trader to give up more points (relative to quoted levels) in order to execute the trade.
2. The synthetic futures position will involve greater commission costs.
3. The dollar premium paid for the call ($7,010) exceeds the dollar premium received for the put ($1,990). Thus, the synthetic futures position will involve an interest income loss on the difference between these two premium payments ($5,020). This factor, however, would be offset by the margin requirements on a long futures position.

Once the above differences are accounted for, the apparent relative advantage a synthetic futures position will sometimes seemingly offer will largely, if not totally, disappear. Nonetheless, insofar as some market inefficiencies may exist, the synthetic long futures position will sometimes offer a slight advantage over the direct purchase of a futures contract. In fact, the existence of such discrepancies would raise the possibility of pure arbitrage trades.[3] For example, if the price implied by the synthetic long futures position was less than the futures price, even after accounting for transaction costs and interest income effects, the arbitrageur could lock in a profit by buying the call, selling the put, and selling futures. Such a trade is called a *reverse conversion*. Alternately, if after adjusting for transaction costs and interest income effects, the implied price of the synthetic long futures position were greater than the futures price, the arbitrageur could lock in a profit by buying futures, selling the call, and buying the put. Such a trade is called a *conversion*.

[3] Pure arbitrage implies a risk-free trade in which the arbitrageur is able to lock in a small profit by exploiting temporary price distortions between two related markets.

It should be obvious that such risk-free profit opportunities will be limited in terms of both duration and magnitude. Generally speaking, conversion and reverse conversion arbitrage will normally only be feasible for professional arbitrageurs who enjoy much lower transaction costs (commissions plus execution costs) than the general public. The activity of these arbitrageurs will tend to keep synthetic futures position prices about in line with actual futures prices.

Strategy 16: Synthetic Short Futures (Long Put + Short Call)

EXAMPLE. Buy an August $1,300 gold futures put at a premium of $108.70/oz ($10,870) and simultaneously sell an August $1,300 gold futures call at a premium of $9.10/oz ($910). (See Table 35.16 and Figure 35.16.)

Comment. As follows directly from the discussion of the previous strategy, a synthetic short futures position can be created by combining a long put and a short call *with the same expiration date and the same strike price.* In this example, the synthetic futures position based upon the $1,300 strike price options is $0.40 higher priced than the underlying futures contract. (Synthetic futures position = $1,300 + $9.10 − $108.70 = $1,200.40.) However, for reasons similar to those discussed in the previous strategy, much of the advantage of an implied synthetic futures position price versus the actual futures price typically disappears once transaction costs and interest income effects are incorporated into the evaluation. An arbitrage employing the synthetic short futures position is called a *conversion* and was detailed in the previous strategy.

TABLE 35.16 Profit/Loss Calculations: Synthetic Short Futures (Long Put + Short Call)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,300 Call at Initiation ($/oz)	(3) Dollar Amount of Premium Received	(4) Premium of August $1,300 Put at Initiation ($/oz)	(5) Dollar Amount of Premium Paid	(6) Value of Call at Expiration	(7) Value of Put at Expiration	(8) Profit/Loss on Position [(3) − (5) + (7) − (6)]
1,000	9.1	$910	108.7	$10,870	$0	$30,000	$20,040
1,050	9.1	$910	108.7	$10,870	$0	$25,000	$15,040
1,100	9.1	$910	108.7	$10,870	$0	$20,000	$10,040
1,150	9.1	$910	108.7	$10,870	$0	$15,000	$5,040
1,200	9.1	$910	108.7	$10,870	$0	$10,000	$40
1,250	9.1	$910	108.7	$10,870	$0	$5,000	–$4,960
1,300	9.1	$910	108.7	$10,870	$0	$0	–$9,960
1,350	9.1	$910	108.7	$10,870	$5,000	$0	–$14,960
1,400	9.1	$910	108.7	$10,870	$10,000	$0	–$19,960

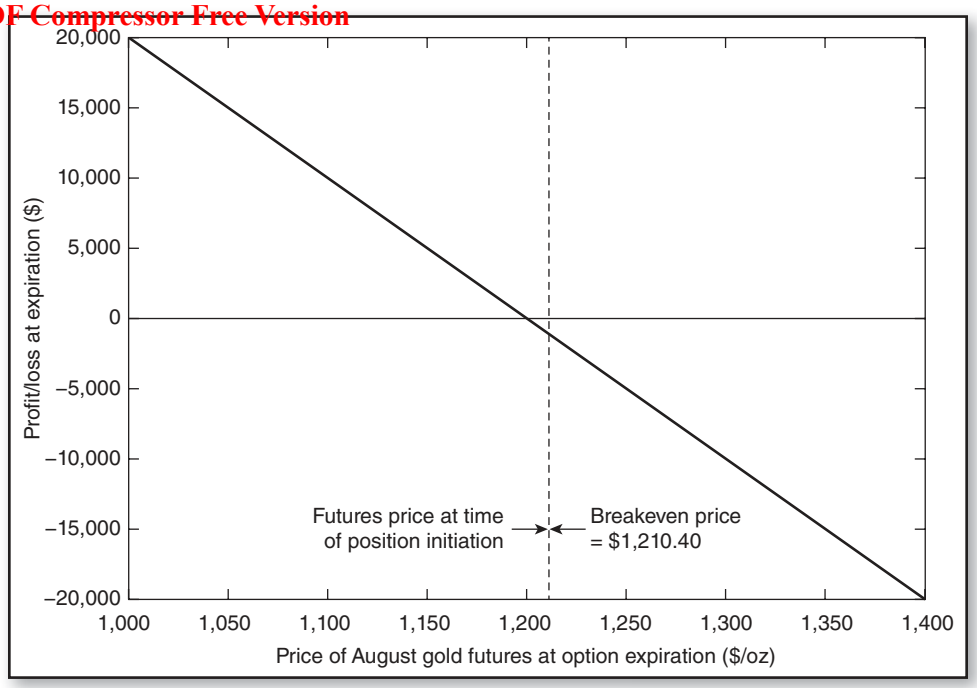

FIGURE 35.16 Profit/Loss Profile: Synthetic Short Futures (Long Put + Short Call).

Strategy 17: The Ratio Call Write (Long Futures + Short 2 Calls)

Example. Buy August gold futures at $1,200 and simultaneously sell two August $1,200 gold futures calls at a premium of $38.80/oz. ($7,760). (See Table 35.17 and Figure 35.17.)

TABLE 35.17 Profit/Loss Calculations: Ratio Call Write—Long Futures + Short 2 Calls (Similar to Short Straddle)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call at Initiation ($/oz)	(3) $ Amount of Total Premium Received	(4) Profit/Loss on Long Futures Position	(5) Value of 2 Calls at Expiration	(6) Profit/Loss on Position [(3) + (4) − (5)]
1,000	38.8	$7,760	–$20,000	$0	–$12,240
1,050	38.8	$7,760	–$15,000	$0	–$7,240
1,100	38.8	$7,760	–$10,000	$0	–$2,240
1,150	38.8	$7,760	–$5,000	$0	$2,760
1,200	38.8	$7,760	$0	$0	$7,760
1,250	38.8	$7,760	$5,000	$10,000	$2,760
1,300	38.8	$7,760	$10,000	$20,000	–$2,240
1,350	38.8	$7,760	$15,000	$30,000	–$7,240
1,400	38.8	$7,760	$20,000	$40,000	–$12,240

Comment. The combination of 1 long futures contract and 2 short at-the-money calls is a balanced position in terms of delta values. In other words, at any given point in time, the gain or loss in the long futures contract due to small price changes (i.e., price changes in the vicinity of the strike price) will be approximately offset by an opposite change in the call position. (Over time, however, a market characterized by small price changes will result in the long futures position gaining on the short call position due to the evaporation of the time value of the options.) The maximum profit in this strategy will be equal to the premium received for the 2 calls and will occur when prices are exactly unchanged. This strategy will show a net profit for a wide range of prices centered at the prevailing price level at the time the position was initiated. However, the position will imply unlimited risk in the event of very sharp price increases or declines.

The profit/loss profile for this strategy should look familiar—it is virtually identical to the short straddle position (see Strategy 35.8). The virtual equivalence of this strategy to the short straddle position follows directly from the previously discussed structure of a synthetic futures position:

Ratio call write = long futures + short 2 calls

However, from the synthetic futures position relationship, we know that:

Long futures ≈ long call + short put

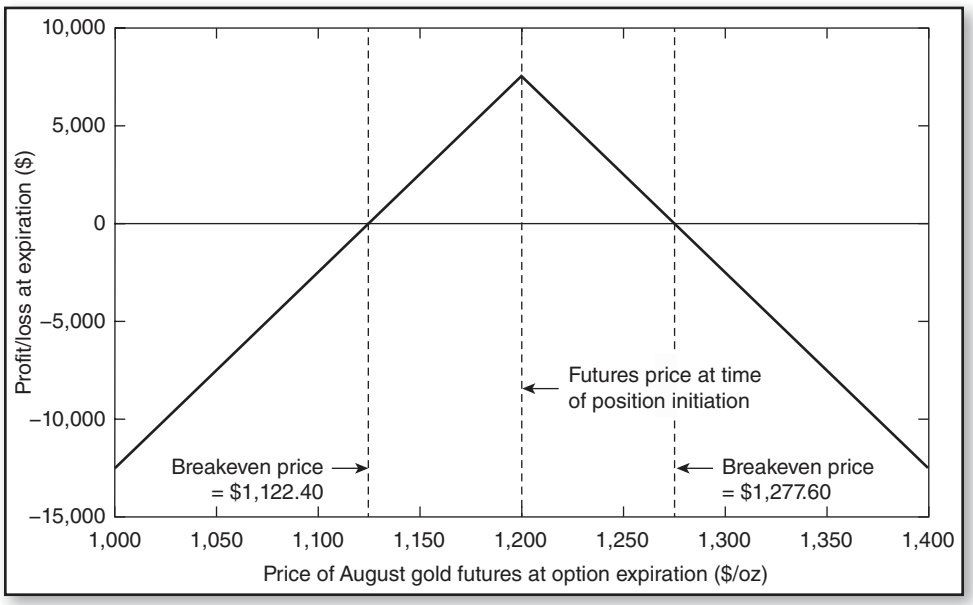

FIGURE 35.17 Profit/Loss Profile: Ratio Call Write—Long Futures + Short 2 Calls (Similar to Short Straddle)

Thus:

Ratio call write ≈ long call + short put + short 2 calls, or
Ratio call write ≈ short put + short call

The right-hand term of this last equation is, in fact, the definition of a short straddle. In similar fashion, it can be demonstrated that a short put write (short futures + short 2 puts) would also yield a profit/loss profile nearly identical to the short straddle position.

Strategy 18: Bull Call Money Spread (Long Call with Lower Strike Price/Short Call with Higher Strike Price)

EXAMPLE. Buy an August $1,250 gold futures call at a premium of $19.20/oz ($1,920) and simultaneously sell an August $1,300 call at a premium of $9.10 ($910). (See Table 35.18 and Figure 35.18.)

Comment. This type of spread position is also called a debit spread because the amount of premium paid for the long call is greater than the amount of the premium received for the short call. The maximum risk in this type of trade is equal to the difference between these two premiums. The maximum possible gain in this spread will be equal to the difference between the two strike prices minus the net difference between the two premiums. The maximum loss will occur if prices fail to rise at least beyond the lowest strike price. The maximum gain will be realized if prices rise above the higher strike price. Note that although the maximum profit exceeds the maximum risk by a factor of nearly 4 to 1, the probability of a loss is significantly greater than the probability of a gain. This condition is true since prices must rise $60.10/oz before the strategy proves profitable.

TABLE 35.18 Profit/Loss Calculations: Bull Call Money Spread (Long Call with Lower Strike Price/Short Call with Higher Strike Price)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,250 Call ($/oz)	(3) $ Amount of Premium Paid	(4) Premium of August $1,300 Call ($/oz)	(5) Dollar Amount of Premium Received	(6) $1,250 Call Value at Expiration	(7) $1,300 Call Value at Expiration	(8) Profit/Loss on Position [(5) − (3) + (6) − (7)]
1,000	19.2	$1,920	9.1	$910	$0	$0	−$1,010
1,050	19.2	$1,920	9.1	$910	$0	$0	−$1,010
1,100	19.2	$1,920	9.1	$910	$0	$0	−$1,010
1,150	19.2	$1,920	9.1	$910	$0	$0	−$1,010
1,200	19.2	$1,920	9.1	$910	$0	$0	−$1,010
1,250	19.2	$1,920	9.1	$910	$0	$0	−$1,010
1,300	19.2	$1,920	9.1	$910	$5,000	$0	$3,990
1,350	19.2	$1,920	9.1	$910	$10,000	$5,000	$3,990
1,400	19.2	$1,920	9.1	$910	$15,000	$10,000	$3,990

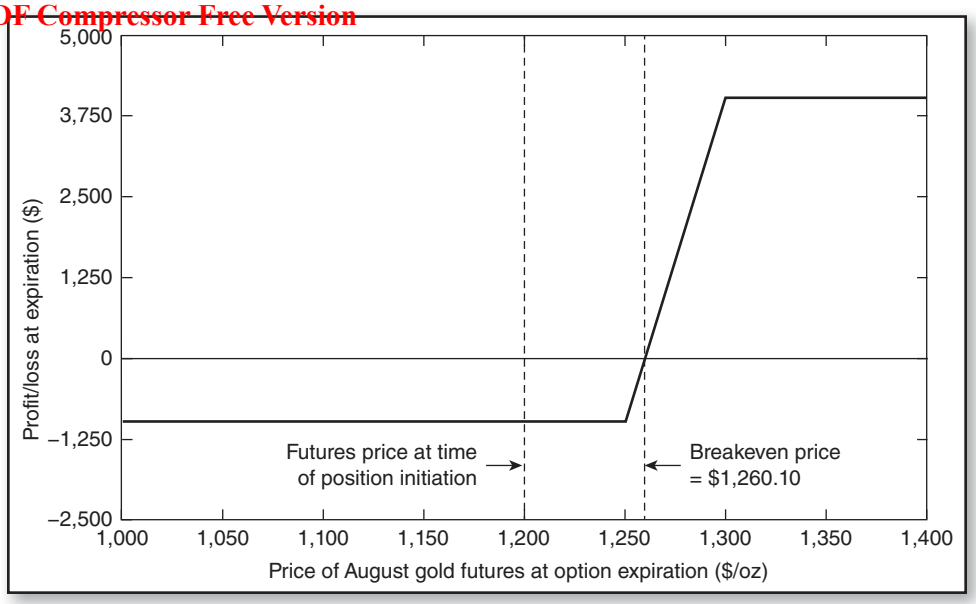

FIGURE 35.18 Profit/Loss Profile: Bull Call Money Spread (Long Call with Lower Strike Price/Short Call with Higher Strike Price)

This strategy can perhaps be best understood by comparing it to the long call position (e.g., long August $1,250 gold futures call). In effect, the spread trader reduces the premium cost for the long call position by the amount of premium received for the sale of the more deeply out-of-the-money call. This reduction in the net premium cost of the trade comes at the expense of sacrificing the possibility of unlimited gain in the event of a large price rise. As can be seen in Figure 35.18, in contrast to the outright long call position, price gains beyond the higher strike price will cease to affect the profitability of the trade.

Strategy 19a: Bear Call Money Spread (Short Call with Lower Strike Price/Long Call with Higher Strike Price)—Case 1

EXAMPLE. Buy August $1,150 gold futures call at a premium of $70.10/oz ($7,010) and simultaneously sell an August $1,100 gold futures call at a premium of $110.10/oz ($11,010), with August gold futures trading at $1,200/oz. (See Table 35.19a and Figure 35.19a.)

Comment. This type of spread is called a *credit spread,* since the amount of premium received for the short call position exceeds the premium paid for the long call position. The maximum possible gain on the trade is equal to the net difference between the two premiums. The maximum possible loss is equal to the difference between the two strike prices minus the difference between the two premiums. The maximum gain would be realized if prices declined to the lower strike price. The maximum loss would occur if prices failed to decline to at least the higher strike price. Although

TABLE 35.19a Profit/Loss Calculations: Bear Call Money Spread (Short Call with Lower Strike Price/Long Call with Higher Strike Price); Case 1—Both Calls In-the-Money

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,150 Call ($/oz)	(3) $ Amount of Premium Paid	(4) Premium of August $1,100 Call ($/oz)	(5) $ Amount of Premium Received	(6) $1,150 Call Value at Expiration	(7) $1,100 Call Value at Expiration	(8) Profit/Loss on Position [(5) − (3) + (6) − (7)]
1,000	70.1	$7,010	110.1	$11,010	$0	$0	$4,000
1,050	70.1	$7,010	110.1	$11,010	$0	$0	$4,000
1,100	70.1	$7,010	110.1	$11,010	$0	$0	$4,000
1,150	70.1	$7,010	110.1	$11,010	$0	$5,000	–$1,000
1,200	70.1	$7,010	110.1	$11,010	$5,000	$10,000	–$1,000
1,250	70.1	$7,010	110.1	$11,010	$10,000	$15,000	–$1,000
1,300	70.1	$7,010	110.1	$11,010	$15,000	$20,000	–$1,000
1,350	70.1	$7,010	110.1	$11,010	$20,000	$25,000	–$1,000
1,400	70.1	$7,010	110.1	$11,010	$25,000	$30,000	–$1,000

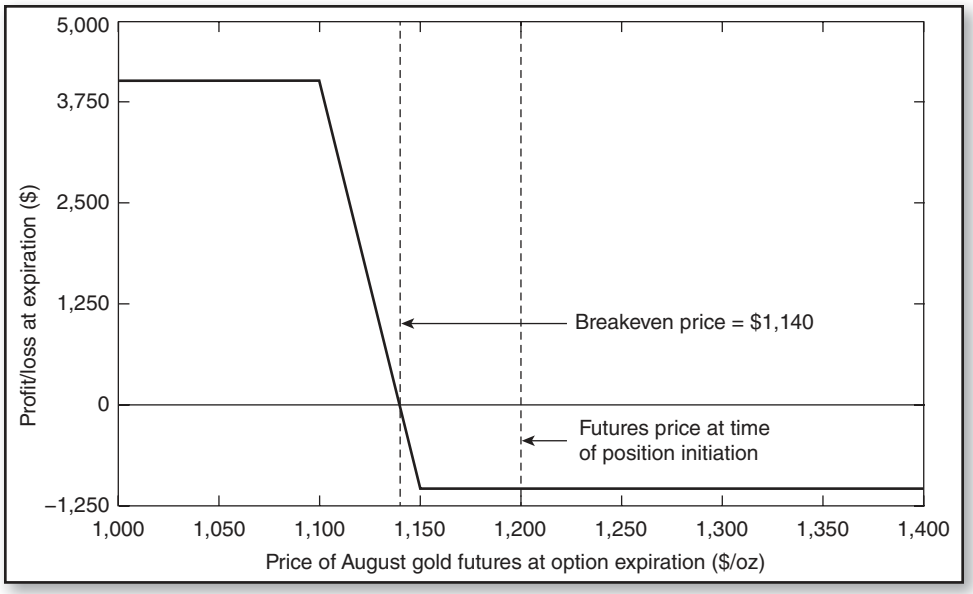

FIGURE 35.19a Profit/Loss Profile: Bear Call Money Spread (Short Call with Lower Strike Price/Long Call with Higher Strike Price); Case 1—Both Calls In-the-Money

In the above example the maximum gain exceeds the maximum risk by a factor of 4 to 1, there is a greater probability of a net loss on the trade, since prices must decline by $60/oz before a profit is realized.

In this type of spread, the trader achieves a bearish position at a fairly low premium cost at the expense of sacrificing the potential for unlimited gains in the event of a very sharp price decline. This strategy might be appropriate for the trader expecting a price decline but viewing the possibility of a very large price slide as being very low.

Strategy 19b: Bear Call Money Spread (Short Call with Lower Strike Price/Long Call with Higher Strike Price)—Case 2

EXAMPLE. Buy an August $1,300 gold futures call at a premium of $9.10/oz ($9.10) and simultaneously sell an August $1,200 gold futures call at a premium of $38.80/oz ($3,880), with August gold futures trading at $1,200/oz. (See Table 35.19b and Figure 35.19b.)

Comment. In contrast to the previous strategy, which involved two in-the-money calls, this illustration is based on a spread consisting of a short at-the-money call and a long out-of-the-money call. In a sense, this type of trade can be thought of as a short at-the-money call position with built-in stop-loss protection. (The long out-of-the-money call will serve to limit the risk in the short at-the-money call position.) This risk limitation is achieved at the expense of a reduction in the net premium received by the seller of the at-the-money call (by an amount equal to the premium paid for the out-of-the-money call). This trade-off between risk exposure and the amount of net premium received is illustrated in Figure 35.19b, which compares the outright short at-the-money call position to the above spread strategy.

TABLE 35.19b **Profit/Loss Calculations: Bear Call Money Spread (Short Call with Lower Strike Price/Long Call with Higher Strike Price); Case 2—Short At-the-Money Call/Long Out-of-the-Money Call**

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,300 Call ($/oz)	(3) $ Amount of Premium Paid	(4) Premium of August $1,200 Call ($/oz)	(5) $ Amount of Premium Received	(6) Value of $1,300 Call at Expiration	(7) Value of $1,200 Call at Expiration	(8) Profit/Loss on Position [(5) − (3) + (6) − (7)]
1,000	9.1	$910	38.8	$3,880	$0	$0	$2,970
1,050	9.1	$910	38.8	$3,880	$0	$0	$2,970
1,100	9.1	$910	38.8	$3,880	$0	$0	$2,970
1,150	9.1	$910	38.8	$3,880	$0	$0	$2,970
1,200	9.1	$910	38.8	$3,880	$0	$0	$2,970
1,250	9.1	$910	38.8	$3,880	$0	$5,000	–$2,030
1,300	9.1	$910	38.8	$3,880	$0	$10,000	–$7,030
1,350	9.1	$910	38.8	$3,880	$5,000	$15,000	–$7,030
1,400	9.1	$910	38.8	$3,880	$10,000	$20,000	–$7,030

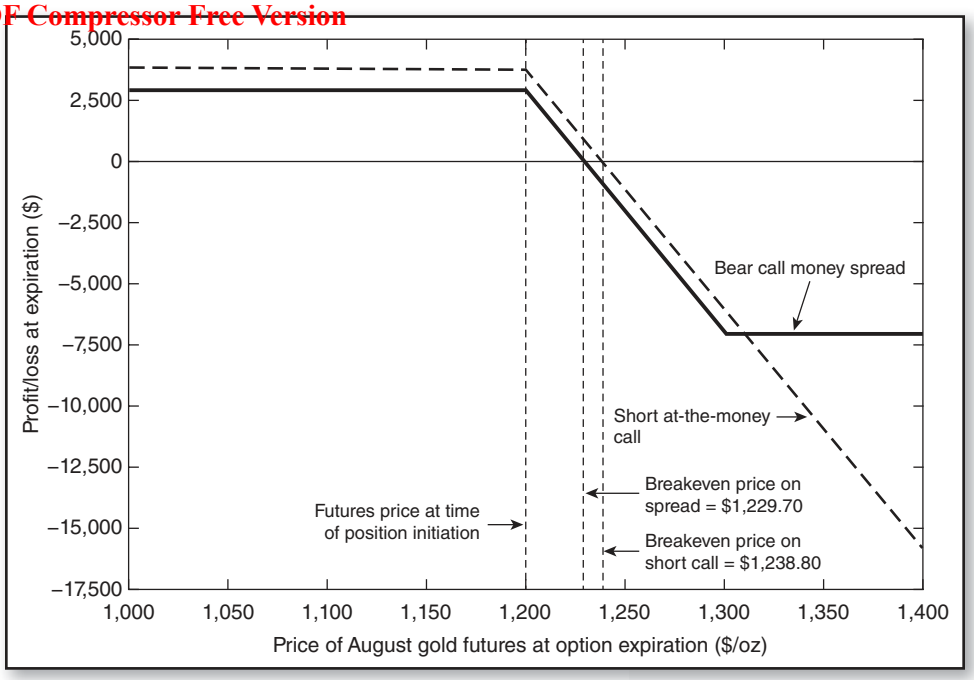

FIGURE 35.19b Profit/Loss Profile: Bear Call Money Spread (Short Call with Lower Strike Price/Long Call with Higher Strike Price); Case 2—Short At-the-Money Call/Long Out-of-the-Money Call with Comparison to Short At-the-Money Call

Strategy 20a: Bull Put Money Spread (Long Put with Lower Strike Price/Short Put with Higher Strike Price)—Case 1

EXAMPLE. Buy an August $1,250 gold futures put at a premium of $68.70/oz ($6,870) and simultaneously sell an August $1,300 put at a premium of $108.70/oz ($10,870), with August gold futures trading at $1,200/oz. (See Table 35.20a and Figure 35.20a.)

Comment. This is a net credit bull spread that uses puts instead of calls. The maximum gain in this strategy is equal to the difference between the premium received for the short put and the premium paid for the long put. The maximum loss is equal to the difference between the strike prices minus the difference between the premiums. The maximum gain will be achieved if prices rise to the higher strike price, while the maximum loss will occur if prices fail to rise at least to the lower strike price. The profit/loss profile of this trade is very similar to the profile of the net debit bull call money spread illustrated in Figure 35.18.

TABLE 35.20a Profit/Loss Calculations: Bull Put Money Spread (Long Put with Lower Strike Price/Short Put with Higher Strike Price); Case 1—Both Puts In-the-Money

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,250 Put ($/oz)	(3) $ Amount of Premium Paid	(4) Premium of August $1,300 Put ($/oz)	(5) $ Amount of Premium Received	(6) $1,250 Put Value at Expiration	(7) $1,300 Put Value at Expiration	(8) Profit/Loss on Position [(5) − (3) + (6) −(7)]
1,000	68.7	$6,870	108.7	$10,870	$25,000	$30,000	−$1,000
1,050	68.7	$6,870	108.7	$10,870	$20,000	$25,000	−$1,000
1,100	68.7	$6,870	108.7	$10,870	$15,000	$20,000	−$1,000
1,150	68.7	$6,870	108.7	$10,870	$10,000	$15,000	−$1,000
1,200	68.7	$6,870	108.7	$10,870	$5,000	$10,000	−$1,000
1,250	68.7	$6,870	108.7	$10,870	$0	$5,000	−$1,000
1,300	68.7	$6,870	108.7	$10,870	$0	$0	$4,000
1,350	68.7	$6,870	108.7	$10,870	$0	$0	$4,000
1,400	68.7	$6,870	108.7	$10,870	$0	$0	$4,000

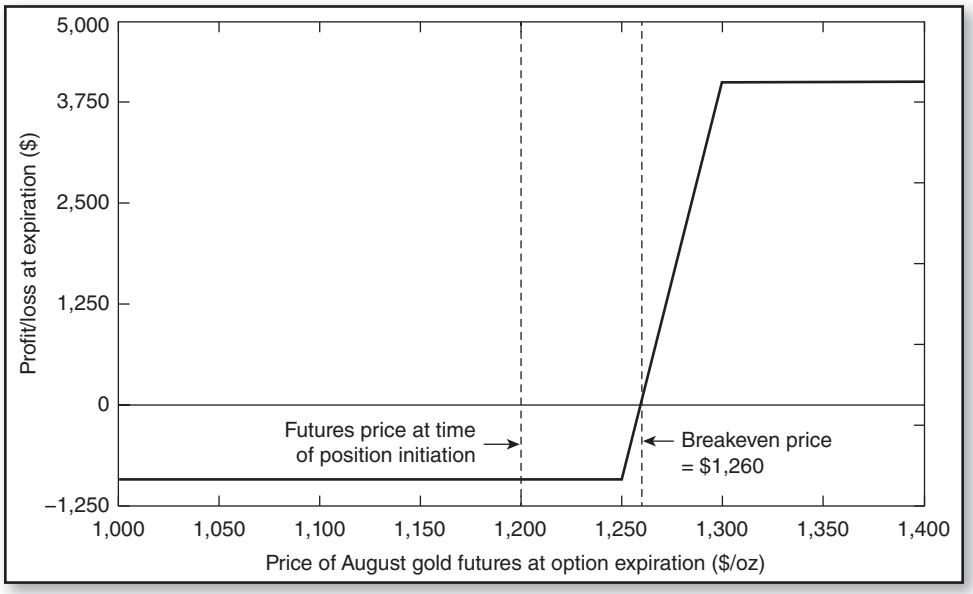

FIGURE 35.20a Profit/Loss Profile: Bull Put Money Spread (Long Put with Lower Strike Price/Short Put with Higher Strike Price); Case 1—Both Puts In-the-Money

Strategy 20b: Bull Put Money Spread (Long Put with Lower Strike Price/Short Put with Higher Strike Price)—Case 2

Example. Buy an August $1,100 gold futures put at a premium of $10.10/oz ($1,010) and simultaneously sell an August $1,200 put at a premium of $38.70/oz ($3,870), with August gold futures trading at $1,200/oz. (See Table 35.20b and Figure 35.20b.)

Comment. In contrast to Case 1, which involved two in-the-money puts, this strategy is based on a long out-of-the-money put versus a short at-the-money put spread. In a sense, this strategy can be viewed as a short at-the-money put position with a built-in stop. (The purchase of the out-of-the-money put serves to limit the maximum possible loss in the event of a large price decline.) This risk limitation is achieved at the expense of a reduction in the net premium received. This trade-off between risk exposure and the amount of premium received is illustrated in Figure 35.20b, which compares the outright short at-the-money put position to this spread strategy.

Strategy 21: Bear Put Money Spread (Short Put with Lower Strike Price/Long Put with Higher Strike Price)

Example. Sell an August $1,100 gold futures put at a premium of $10.10/oz ($1,010) and simultaneously buy an August $1,150 put at a premium of $19.90/oz ($1,990), with August gold futures trading at $1,200/oz. (See Table 35.21 and Figure 35.21.)

Comment. This is a debit bear spread using puts instead of calls. The maximum risk is equal to the difference between the premium paid for the long put and the premium received for the short put. The maximum gain equals the difference between the two strike prices minus the difference between the premiums. The maximum loss will occur if prices fail to decline to at least the higher strike price. The maximum gain will be achieved if prices decline to the lower strike price. The profit/loss profile of this spread is approximately equivalent to the profile of the bear call money spread (see Figure 35.19a).

TABLE 35.20b **Profit/Loss Calculations: Bull Put Money Spread (Long Put with Lower Strike Price/Short Put with Higher Strike Price); Case 2—Long Out-of-the-Money Put/Short At-the-Money Put**

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,100 Put ($/oz)	(3) Dollar Amount of Premium Paid	(4) Premium of August $1,200 Put ($/oz)	(5) Dollar Amount of Premium Received	(6) Value of $1,100 Put at Expiration	(7) Value of $1,200 Put at Expiration	(8) Profit/Loss on Position [(5) − (3) + (6) − (7)]
1,000	10.1	$1,010	38.7	$3,870	$10,000	$20,000	−$7,140
1,050	10.1	$1,010	38.7	$3,870	$5,000	$15,000	−$7,140
1,100	10.1	$1,010	38.7	$3,870	$0	$10,000	−$7,140
1,150	10.1	$1,010	38.7	$3,870	$0	$5,000	−$2,140
1,200	10.1	$1,010	38.7	$3,870	$0	$0	$2,860
1,250	10.1	$1,010	38.7	$3,870	$0	$0	$2,860
1,300	10.1	$1,010	38.7	$3,870	$0	$0	$2,860
1,350	10.1	$1,010	38.7	$3,870	$0	$0	$2,860
1,400	10.1	$1,010	38.7	$3,870	$0	$0	$2,860

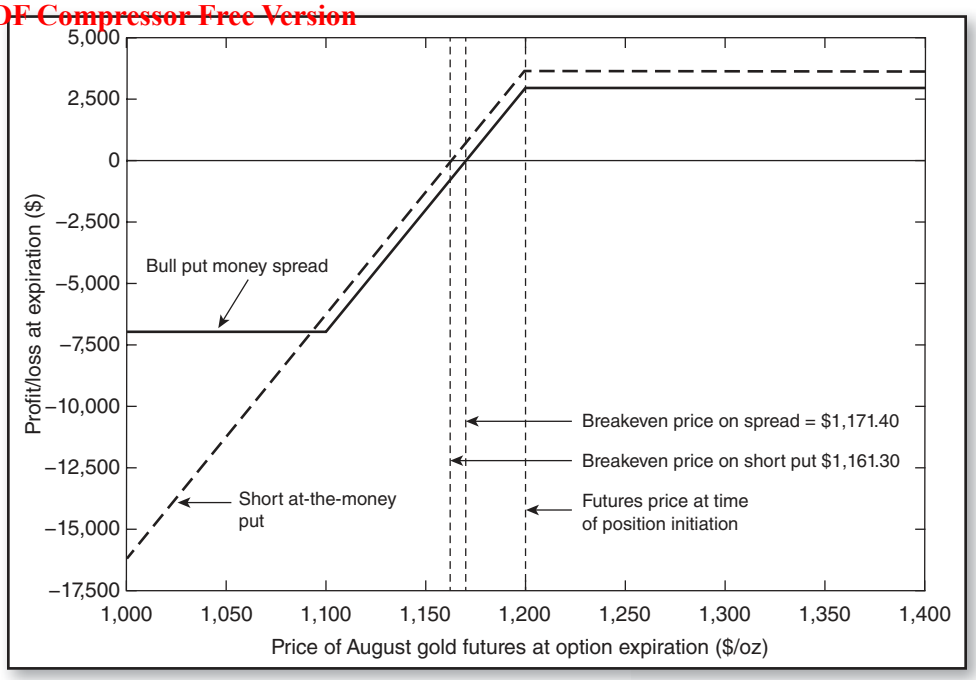

FIGURE 35.20b Profit/Loss Profile: Bull Put Money Spread (Long Put with Lower Strike Price/Short Put with Higher Strike Price); Case 2—Long Out-of-the-Money Put/Short At-the-Money Put with Comparison to Short At-the-Money Put

TABLE 35.21 Profit/Loss Calculations: Bear Put Money Spread (Short Put with Lower Strike Price/Long Put with Higher Strike Price)

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,150 Put ($/oz)	(3) $ Amount of Premium Paid	(4) Premium of August $1,100 Put ($/oz)	(5) $ Amount of Premium Received	(6) Value of $1,150 Put	(7) Value of $1,100 Put	Profit/Loss on Position [(5) − (3) + (6) − (7)]
1,000	19.9	$1,990	10.1	$1,010	$15,000	$10,000	$4,020
1,050	19.9	$1,990	10.1	$1,010	$10,000	$5,000	$4,020
1,100	19.9	$1,990	10.1	$1,010	$5,000	$0	$4,020
1,150	19.9	$1,990	10.1	$1,010	$0	$0	−$980
1,200	19.9	$1,990	10.1	$1,010	$0	$0	−$980
1,250	19.9	$1,990	10.1	$1,010	$0	$0	−$980
1,300	19.9	$1,990	10.1	$1,010	$0	$0	−$980
1,350	19.9	$1,990	10.1	$1,010	$0	$0	−$980
1,400	19.9	$1,990	10.1	$1,010	$0	$0	−$980

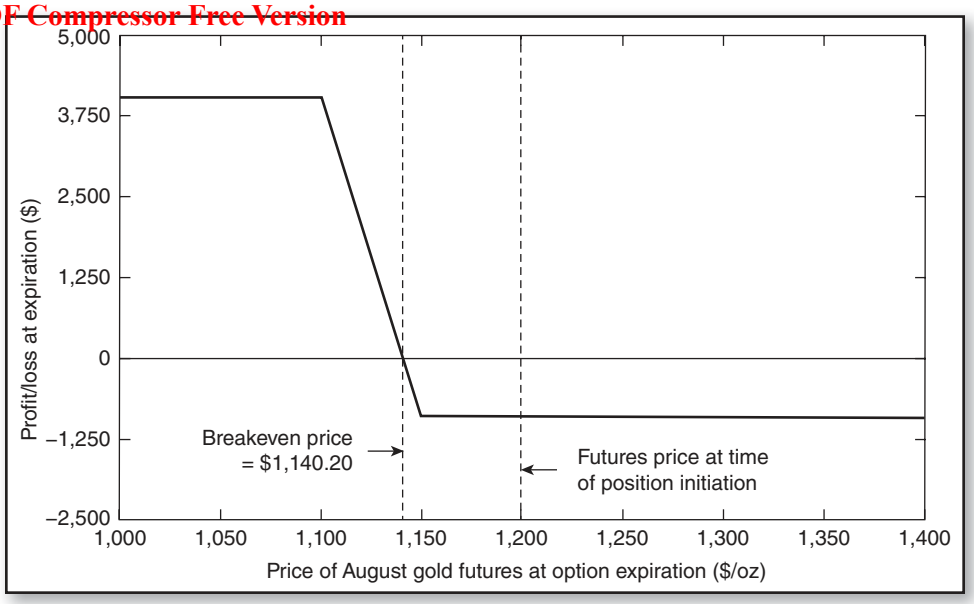

FIGURE 35.21 Profit/Loss Profile; Bear Put Money Spread (Short Put with Lower Strike Price/Long Put with Higher Strike Price)

Other Spread Strategies

Money spreads represent only one class of option spreads. A complete discussion of option spread strategies would require a substantial extension of this section—a degree of detail beyond the scope of this presentation. The following are examples of some other types of spreads.

Time spread. A time spread is a spread between two calls or two puts with the same strike price, but a different expiration date. An example of a time spread would be: long 1 August $1,300 gold futures call/short 1 December $1,300 gold futures call. Time spreads are more complex than the other strategies discussed in this section, because the profit/loss profile at the time of expiration cannot be precisely predetermined, but rather must be estimated on the basis of theoretical valuation models.

Diagonal spread. This is a spread between two calls or two puts that differ in terms of both the strike price and the expiration date. An example of a diagonal spread would be: long 1 August $1,200 gold futures call/short 1 December $1,250 gold futures call. In effect, this type of spread combines the money spread and the time spread into one trade.

Butterfly spread. This is a three-legged spread in which the options have the same expiration date but differ in strike prices. A butterfly spread using calls consists of two short calls at a given strike price, one long call at a higher strike price, and one long call at a lower strike price.

The list of types of option spreads can be significantly extended, but the above examples should be sufficient to give the reader some idea of the potential range of complexity of spread

strategies. One critical point that must be emphasized regarding option spreads is that these strategies are normally subject to a major disadvantage: the transaction costs (commissions plus cumulative bid/asked spreads) for these trades are relatively large compared to the profit potential. This consideration means that the option spread trader must be right a large percentage of the time if he is to come out ahead of the game. The importance of this point cannot be overemphasized. In short, as a generalization, other option strategies will usually offer better trading opportunities.

Multiunit Strategies

The profit/loss profile can also be used to analyze multiple-unit option strategies. In fact, multiple-unit option positions may often provide the more appropriate strategy for purposes of comparison. For example, as previously detailed, a long futures position is more volatile than a long or short call position. In fact, for small price changes, each $1 change in a futures price will only result in approximately a $0.50 change in the call price (the delta value for an at-the-money call is approximately equal to 0.5). As a result, in considering the alternatives of buying futures and buying calls, it probably makes more sense to compare the long futures position to two long calls (see Table 35.22) as opposed to one long call.

Figure 35.22 compares the strategies of long futures versus long two calls, which at the time of initiation are approximately equivalent in terms of delta values. Note this comparison indicates that the long futures position is preferable if prices change only moderately, but that the long two-call position will gain more if prices rise sharply, and lose less if prices decline sharply. In contrast, the comparison between long futures and a long one-call position would indicate that futures provide the better strategy in the event of a price advance of any magnitude (see Figure 35.3d). For most purposes, the comparison employing two long calls will be more meaningful because it comes much closer to matching the risk level implicit in the long futures position.

TABLE 35.22 Profit/Loss Calculations: Long Two At-the-Money Calls

(1) Futures Price at Expiration ($/oz)	(2) Premium of August $1,200 Call ($/oz)	(3) $ Amount of Total Premium Paid	(4) Value of 2 Calls at Expiration	(5) Profit/Loss on Position [(4) − (3)]
1,000	38.8	$7,760	$0	−$7,760
1,050	38.8	$7,760	$0	−$7,760
1,100	38.8	$7,760	$0	−$7,760
1,150	38.8	$7,760	$0	−$7,760
1,200	38.8	$7,760	$0	−$7,760
1,250	38.8	$7,760	$10,000	$2,240
1,300	38.8	$7,760	$20,000	$12,240
1,350	38.8	$7,760	$30,000	$22,240
1,400	38.8	$7,760	$40,000	$32,240

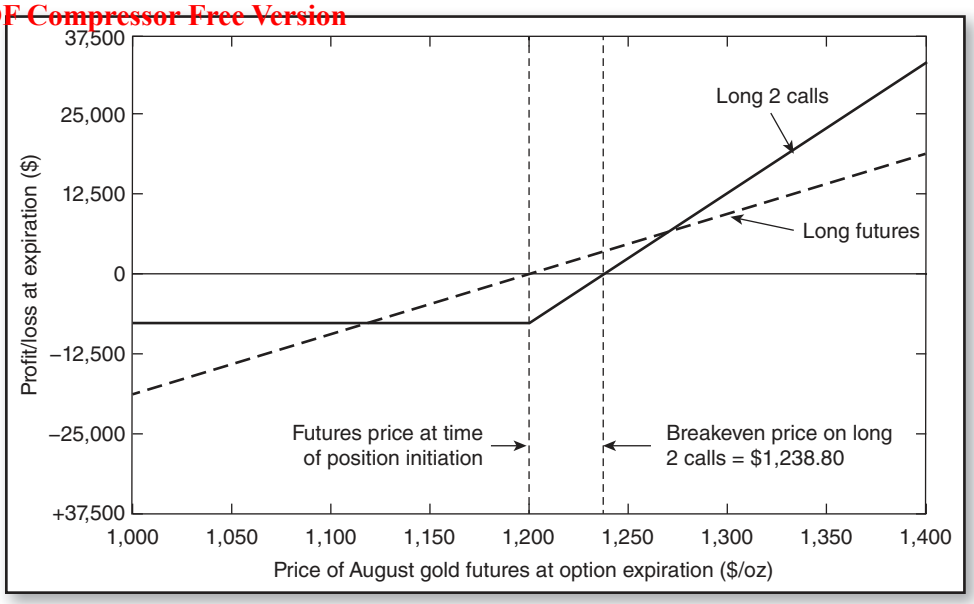

FIGURE 35.22 Profit/Loss Profile: Two Long Calls vs. Long Futures

Choosing an Optimal Strategy

It the previous sections we examined a wide range of alternative trading strategies. Now what? How does a trader decide which of these alternatives provides the best trading opportunity? This question can be answered only if probability is incorporated into the analysis. The selection of an optimal option strategy will depend entirely on the trader's price and volatility expectations. Insofar as these expectations will differ from trader to trader, the optimal option strategy will also vary, and the success of the selected option strategy will depend on the accuracy of the trader's expectations. In order to select an optimal option strategy, the trader needs to translate his price expectations into probabilities.

The basic approach requires the trader to assign estimated probability levels for the entire range of feasible price intervals. Figure 35.23 illustrates six different types of probability distributions for August gold futures. These distributions can be thought of as representing six different hypothetical expectations. (The charts in Figure 35.23 implicitly assume that the current price of August gold futures is $1,200.) Several important points should be made regarding these probability distributions:

1. The indicated probability distributions only represent approximations of traders' price expectations. In reality, any reasonable probability distribution would be represented by a smooth curve. The stair-step charts in Figure 35.23 are only intended as crude models that greatly simplify calculations. (The use of smooth probability distributions would require integral calculus in the evaluation process.)

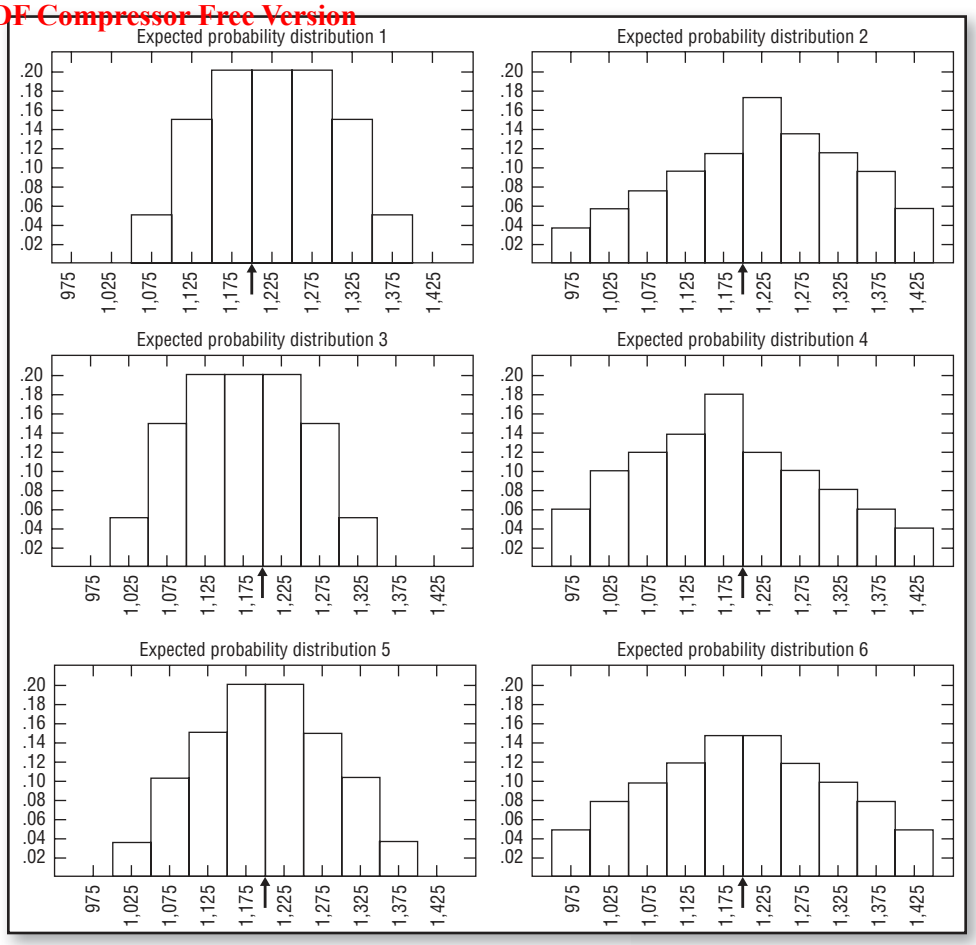

FIGURE 35.23 Probability of Futures Price within Given Range of Option Expiration for Various Expected Probability Distributions (Arrow Indicates Current Price of Futures)

2. The sum of all the probabilities is equal to 1.0.
3. The stair-step type of graph used in Figure 35.23 implicitly assumes an equal probability for each price in the interval.
4. The high and low intervals in each diagram are intended as summary descriptions for all prices beyond the internal border of that interval. For example, in Expected Probability Distribution 1, the assumption of a 5 percent probability of a price between $1,050 and $1,099.90 (with all prices in that range having an equal probability of occurrence) and a zero probability of a lower price is equivalent to the more realistic assumption of a 5 percent probability of a price below $1,100, with the probability-weighted average of such prices equal to $1,075.

5. The probability distributions in Figure 35.23 represent sample hypothetical illustrations of personal price expectations. The indicated optimal strategy in any given situation will depend upon the specific shape of the expected price distribution, *an input that will differ from trader to trader.*

The general nature of the price expectations implied by each of the distributions in Figure 35.23 can be summarized as follows:

Expected Probability Distribution 1. Higher prices and low volatility. This interpretation follows from the fact that there is a greater probability of higher prices and that the probabilities are heavily weighted toward intervals close to the current price level.

Expected Probability Distribution 2. Higher prices and high volatility. This distribution reflects the same 60/40 probability bias toward higher prices as was the case for Distribution 1, but the assumed probability of a substantially higher or lower price is much greater.

Expected Probability Distribution 3. Lower prices and low volatility. This distribution is the bearish counterpart of Distribution 1.

Expected Probability Distribution 4. Lower prices and high volatility. This distribution is the bearish counterpart of Distribution 2.

Expected Probability Distribution 5. Neutral price assumptions and low volatility. This distribution is symmetrical in terms of higher and lower prices, and probability levels are heavily weighted toward prices near the current level.

Expected Probability Distribution 6. Neutral price assumptions and high volatility. This distribution is also symmetrical in terms of high and low prices, but substantially higher and lower prices have a much greater probability of occurrence than in Distribution 5.

Figure 35.24 combines Expected Probability Distribution 1 with three alternative bullish strategies. (Since it is assumed that there is a greater probability of higher prices, there is no need to consider bearish or neutral trading strategies.) Insofar as the assumed probability distribution is very heavily weighted toward prices near the current level, the short put position appears to offer the best strategy. Figure 35.25 combines the same three alternative bullish strategies with the bullish/volatile price scenario suggested by Expected Probability Distribution 2. In this case, the long call position appears to be the optimal strategy, since it is by far the best performer for large price advances and declines—price outcomes that account for a significant portion of the overall probability distribution.

In analogous fashion, Figure 35.26 suggests the preferability of the short call position given the bearish/nonvolatile price scenario assumption, while Figure 35.27 suggests that the long put position is the optimal strategy given the bearish/volatile price scenario. Finally, two alternative neutral strategies are compared in Figures 35.28 and 35.29 for two neutral price distributions that differ in terms of assumed volatility. The short straddle appears to offer the better strategy in the low volatility distribution assumption, while the reverse conclusion is suggested in the volatile price case.

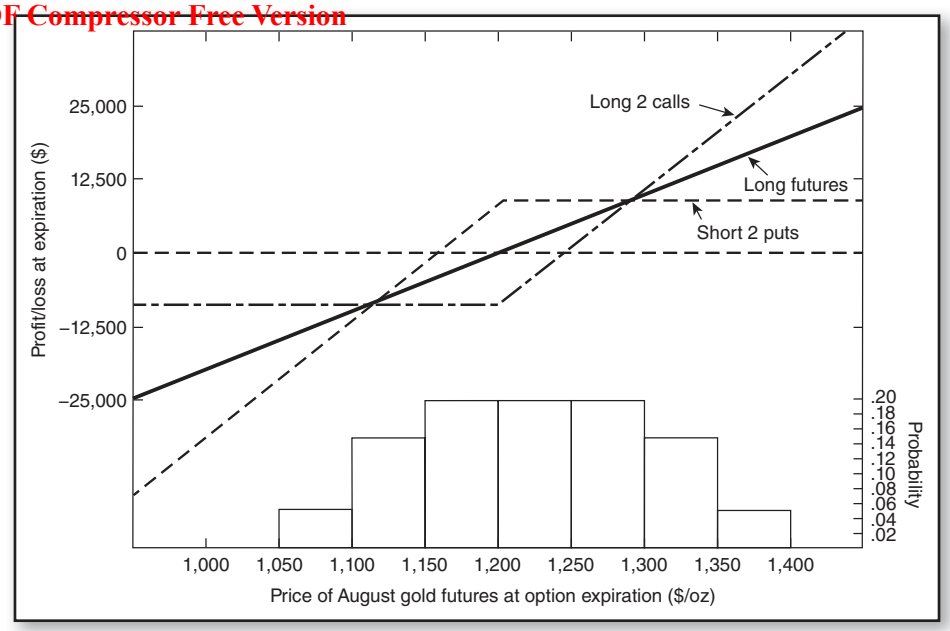

FIGURE 35.24 "Bullish/Nonvolatile" Expected Probability Distribution and Profit/Loss Profiles for Three Alternative Bullish Strategies

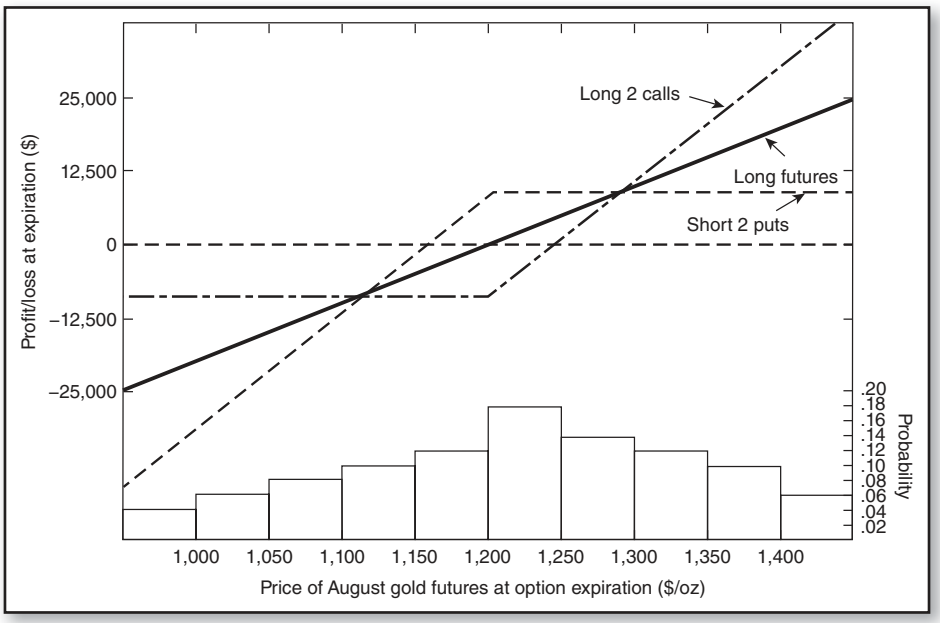

FIGURE 35.25 "Bullish/Volatile" Expected Probability Distribution and Profit/Loss Profiles for Three Alternative Bullish Strategies

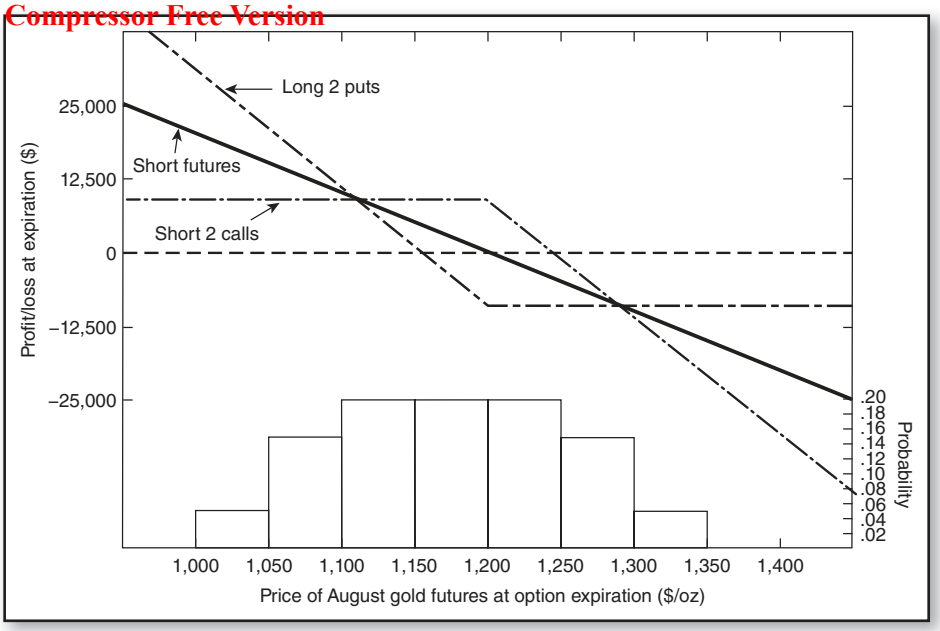

FIGURE 35.26 "Bearish/Nonvolatile" Expected Probability Distribution and Profit/Loss Profiles for Three Alternative Bearish Strategies

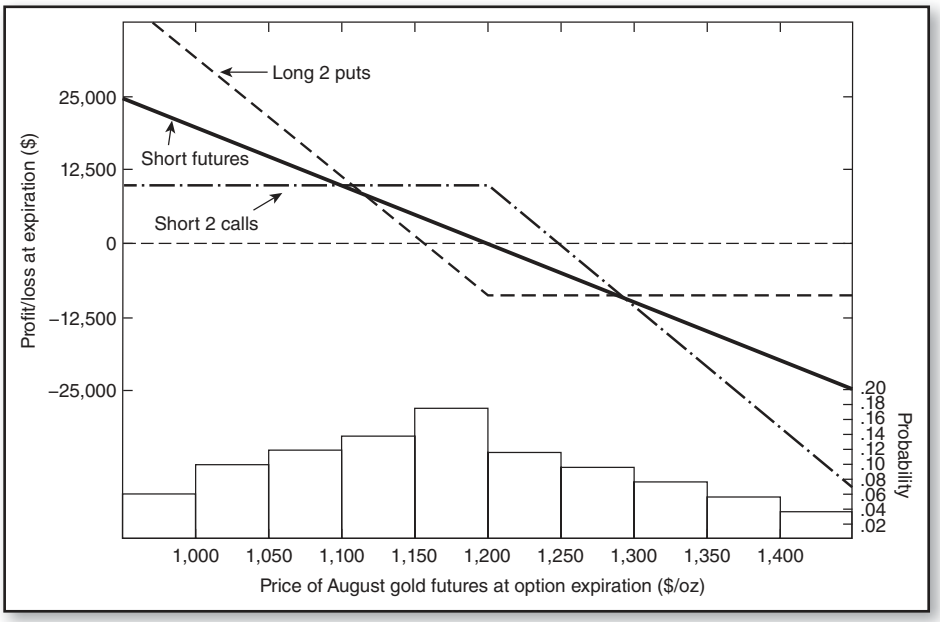

FIGURE 35.27 "Bearish/Volatile" Expected Probability Distribution and Profit/Loss Profiles for Three Alternative Bearish Strategies

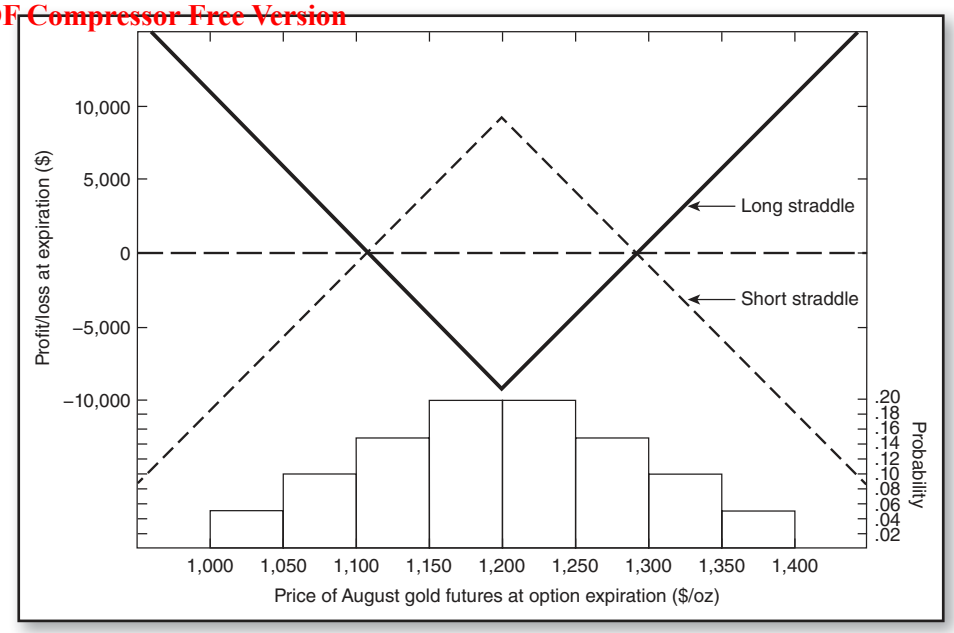

FIGURE 35.28 "Neutral/Nonvolatile" Expected Probability Distribution and Profit/Loss Profiles for Two Alternative Neutral Strategies

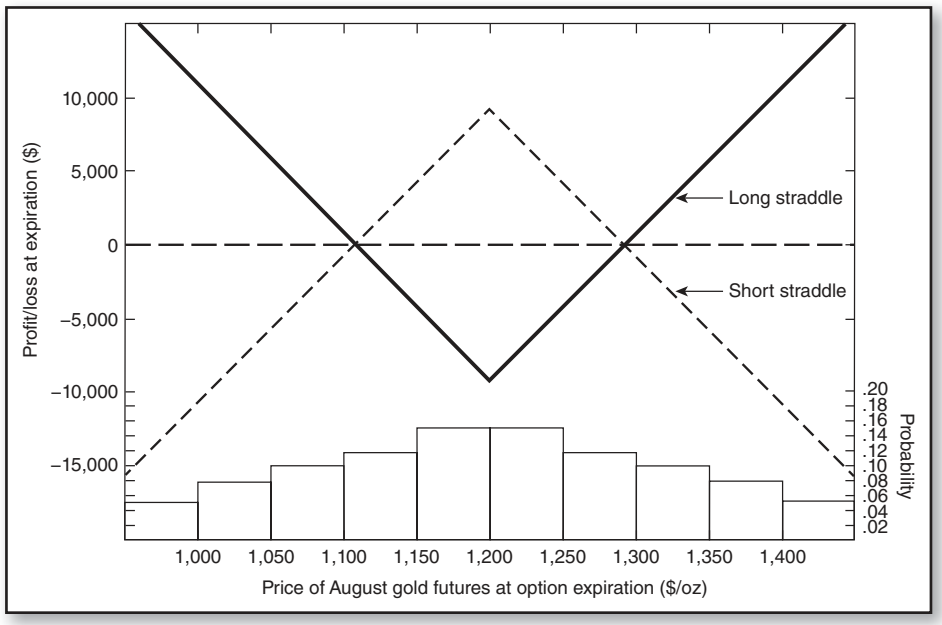

FIGURE 35.29 "Neutral/Volatile" Expected Probability Distribution and Profit/Loss Profiles for Two Alternative Neutral Strategies

One problem with the graphic approach described thus far is that it may not always be visually clear which is the best strategy for the given price distribution assumption. Obviously, a more precise method of determining the optimal trading strategy would be desirable. Intuitively, it might appear that expected gain would provide such a relative measure. Expected gain is the expected gain (or loss) on a trade and can be expressed as follows:

$$\text{Expected gain} = \sum_{i=1}^{n} (P_i)(X_i)$$

where P_i = probability of price interval i
X_t = average gain (or loss) of interval i
n = number of intervals

Unfortunately, expected gain has a major defect as a relative measure: it is dependent upon position size. The expected gain of any strategy that has a positive expected gain could always be improved by trading a multiple of the position. Thus, in comparing alternative strategies with positive expected gains, the indicated optimal strategy would vary depending on the assumed position sizes. Such arbitrariness in a relative measure is obviously unacceptable.

The use of expected gain as a relative measure can lead to some ludicrous conclusions. For example, a strategy that had a 50 percent probability of a $1,000 gain and a 50 percent probability of a $900 loss would be judged better than an alternative strategy with a 50 percent chance of a $100 gain and a 50 percent chance of a $10 loss (an expected gain of $50 vs. an expected gain of $45). Obviously, virtually any trader would prefer the second strategy, despite its lower expected gain.

The dependency of expected gain on position size actually reflects a more fundamental flaw in this measure: expected gain does not incorporate a measure of risk. A measure that included risk would not be dependent upon position size, since doubling the position would not only double the expected gain, but would also double the risk. One such possible measure is the probability-weighted profit/loss ratio (PWPLR), which can be defined as follows:

$$PWPLR = -\frac{\sum_{i=1}^{m} (P_i)(G_i)}{\sum_{j=1}^{n} (P_j)(L_j)}$$

where P_i = probability of interval i, where i represents an interval with a net gain at the average price of the interval
P_j = probability of interval j, where j represents an interval with a net loss at the average price of the interval
G_i = indicated gain at the average price of the interval
L_j = indicated loss at the average price of the interval
m = number of intervals with net gain at average price of interval
n = number of intervals with net loss at average price of interval

An implicit assumption in the formulation of the probability-weighted profit/loss ratio is that each price in a given interval has an equal probability of occurrence.[4]

Note that the PWPLR will be totally unaffected by position size. This is true because increasing the position will affect the numerator and denominator of the PWPLR equally, thereby leaving the ratio unchanged. Tables 35.23 through 35.28 evaluate the strategies graphically analyzed in Figure 35.24 through 35.29. The conclusions are equivalent, but the advantage of this method is that it yields precise, unambiguous results. To select an optimal strategy, the trader would merely define his estimate of the probability distribution for prices and then calculate the PWPLRs for each alternative trading approach.

TABLE 35.23 **Probability-Weighted Profit/Loss Ratio Comparisons for "Bullish/Nonvolatile" Expected Probability Distribution**

			Long Futures		Long Call		Short Put	
Price Range ($/oz)	Average Price ($/oz)	Assumed Probability	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)
1,050–1,099.9	1,075	0.05	–12,500	–625	–3,880	–194	–8,630	–431.5
1,100–1,149.9	1,125	0.15	–7,500	–1,125	–3,880	–582	–3,630	–544.5
1,150–1,199.9	1,175	0.2	–2,500	–500	–3,880	–776	1,370	274
1,200–1,249.9	1,225	0.2	2,500	500	–1,380	–276	3,870	774
1,250–1,299.9	1,275	0.2	7,500	1,500	3,620	724	3,870	774
1,300–1,349.9	1,325	0.15	12,500	1,875	8,620	1,293	3,870	580.5
1,350–1,399.9	1,375	0.05	17,500	875	13,620	681	3,870	193.5
Probability-weighted profit/loss ratio:			4,750/2,250 = 2.11		2,698/1,828 = 1.48		2,596/976 = 2.66	

[4] It is worth noting that the probability-weighted profit/loss ratio will yield the same ordering of strategies as the ratio of the expected gain to the expected loss on losing trades, where the expected loss on losing trades is defined as: $\sum_{j=1}^{n}(P_j)(L_j)$. This can be demonstrated as follows:

$$\text{Expected gain} = \sum_{i=1}^{m}(P_i)(G_i) - \sum_{j=1}^{n}(P_j)(L_j)$$

$$\frac{\text{Expected gain}}{\text{Expected loss on losing trades}} = \frac{\sum_{i=1}^{m}(P_i)(G_i)}{\sum_{j=1}^{n}(P_j)(L_j)} - 1$$

$$= PWPLR - 1$$

TABLE 35.24 Probability-Weighted Profit/Loss Ratio Comparisons for "Bullish/Volatile" Expected Probability Distribution

			Long Futures		Long Call		Short Put	
Price Range ($/oz)	Average Price ($/oz)	Assumed Probability	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)
950–999.9	975	0.04	–22,500	–900	–3,880	–155	–18,630	–745.2
1,000–1,049.9	1,025	0.06	–17,500	–1,050	–3,880	–233	–13,630	–817.8
1,050–1,099.9	1,075	0.08	–12,500	–1,000	–3,880	–310	–8,630	–690.4
1,100–1,149.9	1,125	0.1	–7,500	–750	–3,880	–388	–3,630	–363
1,150–1,199.9	1,175	0.12	–2,500	–300	–3,880	–466	1,370	164.4
1,200–1,249.9	1,225	0.18	2,500	450	–1,380	–248	3,870	696.6
1,250–1,299.9	1,275	0.14	7,500	1,050	3,620	507	3,870	541.8
1,300–1,349.9	1,325	0.12	12,500	1,500	8,620	1,034	3,870	464.4
1,350–1,399.9	1,375	0.1	17,500	1,750	13,620	1,362	3,870	387
1,400–1,449.9	1,425	0.06	22,500	1,350	18,620	1,117	3,870	232.2
Probability-weighted profit/loss ratio:			6,100/4,000 = 1.53		4,020/1,800 = 2.23		2,486/2,616 = 0.95	

TABLE 35.25 Probability-Weighted Profit/Loss Ratio Comparisons for "Bearish/Nonvolatile" Expected Probability Distribution

			Short Futures		Short Call		Long Put	
Price Range ($/oz)	Average Price ($/oz)	Assumed Probability	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)
1,000–1,049.9	1,025	0.05	17,500	875	3,880	194	13,630	681.5
1,050–1,099.9	1,075	0.15	12,500	1,875	3,880	582	8,630	1,294.5
1,100–1,149.9	1,125	0.2	7,500	1,500	3,880	776	3,630	726
1,150–1,199.9	1,175	0.2	2,500	500	3,880	776	–1,370	–274
1,200–1,249.9	1,225	0.2	–2,500	–500	1,380	276	–3,870	–774
1,250–1,299.9	1,275	0.15	–7,500	–1,125	–3,620	–543	–3,870	–580.5
1,300–1,349.9	1,325	0.05	–12,500	–625	–8,620	–431	–3,870	–193.5
Probability-weighted profit/loss ratio:			4,750/2,250 = 2.11		2,604/974 = 2.67		2,702/1,822 = 1.48	

TABLE 35.26 Probability-Weighted Profit/Loss Ratio Comparisons for "Bearish/Volatile" Expected Probability Distribution

			Short Futures		Short Call		Long Put	
Price Range ($/oz)	Average Price ($/oz)	Assumed Probability	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)
950–999.9	975	0.06	22,500	1,350	3,880	233	18,630	1,117.8
1,000–1,049.9	1,025	0.1	17,500	1,750	3,880	388	13,630	1,363
1,050–1,099.9	1,075	0.12	12,500	1,500	3,880	466	8,630	1,035.6
1,100–1,149.9	1,125	0.14	7,500	1,050	3,880	543	3,630	508.2
1,150–1,199.9	1,175	0.18	2,500	450	3,880	698	–1,370	–246.6
1,200–1,249.9	1,225	0.12	–2,500	–300	1,380	166	–3,870	–464.4
1,250–1,299.9	1,275	0.1	–7,500	–750	–3,620	–362	–3,870	–387
1,300–1,349.9	1,325	0.08	–12,500	–1,000	–8,620	–690	–3,870	–309.6
1,350–1,399.9	1,375	0.06	–17,500	–1,050	–13,620	–817	–3,870	–232.2
1,400–1,449.9	1,425	0.04	–22,500	–900	–18,620	–745	–3,870	–154.8
Probability-weighted profit/loss ratio:			6,100/4,000 = 1.53		2,494/2,614 = 0.95		4,025/1,795 = 2.24	

TABLE 35.27 Probability-Weighted Profit/Loss Ratio Comparisons for "Neutral/Nonvolatile" Expected Probability Distribution

			Long Straddle		Short Straddle	
Price Range ($/oz)	Average Price ($/oz)	Assumed Probability	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)
1,000–1,049.9	1,025	0.05	9750	488	–9,750	–488
1,050–1,099.9	1,075	0.1	4,750	475	–4,750	–475
1,100–1,149.9	1,125	0.15	–250	–38	250	38
1,150–1,199.9	1,175	0.2	–5,250	–1,050	5,250	1,050
1,200–1,249.9	1,225	0.2	–5,250	–1,050	5,250	1,050
1,250–1,299.9	1,275	0.15	–250	–38	250	38
1,300–1,349.9	1,325	0.1	4,750	475	–4,750	–475
1,350–1,399.9	1,375	0.05	9,750	488	–9,750	–488
Probability-weighted profit/loss ratio:			1,925/2,175 = 0.89		2,175/1,925 = 1.13	

TABLE 35.28 Probability-Weighted Profit/Loss Ratio Comparisons for "Neutral/Volatile" Expected Probability Distribution

			Long Straddle		Short Straddle	
Price Range ($/oz)	Average Price ($/oz)	Assumed Probability	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)	Gain/Loss at Average Price ($)	Probability-Weighted Gain/Loss ($)
950–999.9	975	0.05	14,750	738	–14,750	–738
1,000–1,049.9	1,025	0.08	9,750	780	–9,750	–780
1,050–1,099.9	1,075	0.1	4,750	475	–4,750	–475
1,100–1,149.9	1,125	0.12	–250	–30	250	30
1,150–1,199.9	1,175	0.15	–5,250	–788	5,250	788
1,200–1,249.9	1,225	0.15	–5,250	–788	5,250	788
1,250–1,299.9	1,275	0.12	–250	–30	250	30
1,300–1,349.9	1,325	0.1	4,750	475	–4,750	–475
1,350–1,399.9	1,375	0.08	9,750	780	–9,750	–780
1,400–1,449.9	1,425	0.05	14,750	738	–14,750	–738
Probability-weighted profit/loss ratio:			3,985/1,635 = 2.44		1,635/3,985 = 0.41	

Hedging Applications

The entire discussion in this chapter has been approached from the vantage point of the speculator. However, option-based strategies can also be employed by the hedger. To illustrate how options can be used by the hedger, we compare five basic alternative strategies for the gold jeweler who anticipates a requirement for 100 ounces of gold in August. The assumed date in this illustration is April 13, 2015, a day on which the relevant price quotes were as follows: spot gold = $1,198.90, August gold futures = $1,200, August $1,200 gold call premium = $38.80, August $1,200 gold put premium = $38.70. The five purchasing alternatives are:[5]

1. **Wait until time of requirement.** In this approach, the jeweler simply waits until August before purchasing the gold. In effect, the jeweler gambles on the interim price movement of gold. If gold prices decline, he will be better off. However, if gold prices rise, his purchase price will increase. If the jeweler has forward-contracted for his products, he may need to lock in his raw material purchase costs in order to guarantee a satisfactory profit margin. Consequently, the price risk inherent in this approach may be unacceptable.

[5]There is no intention to imply that the following list of alternative hedging strategies is all-inclusive. Many other option-based strategies are also possible. For example, the jeweler could buy a call and sell a put at the same strike price—a strategy similar to buying a futures contract (see Strategy 15).

2. **Buy spot gold.** The jeweler can buy spot gold and store it until August. In this case, he locks in a purchase price of $1,198.90/oz plus carrying costs (interest, storage, and insurance). This approach eliminates price risk, but also removes the potential of benefiting from any possible price decline.
3. **Buy gold futures.** The jeweler can purchase one contract of August gold futures, thereby locking in a price of $1,200/oz. The higher price of gold futures vis-à-vis spot gold reflects the fact that futures embed carrying costs. Insofar as the price spread between futures and spot gold will be closely related to the magnitude of carrying costs, the advantages and disadvantages of this approach will be very similar to those discussed in the above strategy.
4. **Buy an at-the-money call.** Instead of purchasing spot gold or gold futures, the jeweler could instead buy an August $1,200 gold futures call at a premium of $38.80/oz. The disadvantage of this approach is that if prices advance the jeweler locks in a higher purchase price: $1,238.80/oz. However, by purchasing the call, the jeweler retains the potential for a substantially lower purchase price in the event of a sharp interim price decline. Thus, if, for example, spot prices declined to $1,050/oz by the time of the option expiration, the jeweler's purchase price would be reduced to $1,088.80/oz (the spot gold price plus the option premium).[6] In effect, the purchase of the call can be viewed as a form of price risk insurance, with the cost of this insurance equal to the "premium."[7]
5. **Buy an out-of-the-money call.** As an example, the jeweler could purchase an August $1,300 gold futures call at a premium of $9.10/oz. In this case, the jeweler forgoes protection against moderate price advances in exchange for reducing the premium costs. Thus, the jeweler assures he will have to pay no more than $1,309.10/oz. The cost of this price protection is $910 as opposed to the $3,880 premium for the at-the-money call. In a sense, the purchase of the out-of-the-money call can be thought of as a price risk insurance policy with a "deductible." As in the case of purchasing an at-the-money call, the jeweler would retain the potential of benefiting from any interim price decline.

As should be clear from the above discussion, options meaningfully expand the range of choices open to the hedger. As was the case for speculative applications, the choice of an optimal strategy will depend on the trader's (hedger's) individual expectations and preferences. It should be stressed that this section is only intended as an introduction to the concept of using options for hedging. A comprehensive review of hedging strategies would require a far more extensive discussion.

[6] Technically speaking, since gold futures options expire before the start of the contract month, the effective purchase price would be raised by the amount of carrying costs for the remaining weeks until August.

[7] The use of futures for hedging is also often described as "insurance." However, in this context, the term is misapplied. In standard application, the term insurance implies protection against a catastrophic event for a cost that is small relative to the potential loss that is being insured. In using futures for hedging, the potential cost is equivalent to the loss protection. For example, if the jeweler buys gold futures, he will protect himself against a $10,000 increase in purchase cost if prices increase by $100/oz, but he will also realize a $10,000 loss on his hedge if prices decline by $100/oz. In this sense, the use of the call for hedging comes much closer to the standard concept of insurance: the magnitude of the potential loss being insured is much greater than the cost of the insurance.

PART VII

PRACTICAL TRADING GUIDELINES

CHAPTER 36

The Planned Trading Approach

If making money is a slow process, losing it is quickly done.

—Ihara Saikaku

If the amount of money you risk in futures trading represents a minuscule fraction of your net worth, and your major motivation for speculation is entertainment, the shoot-from-the-hip approach might be fine. However, if your major objective in futures trading is to make money, an organized trading plan is essential. This assertion is not just a platitude. Search out successful futures speculators, and you will no doubt find that they all use a well-defined, disciplined trading approach.

The following seven steps provide general guidelines for constructing an organized trading plan.

Step 1: Define a Trading Philosophy

How do you plan to make your trading decisions? If your answer is something vague like, "When my friend gets a hot tip from his broker," "When I get a trade idea from reading a blog," or "On market feel while watching the trading screen," you're not ready to begin trading. A meaningful strategy would be based on either chart analysis, technical trading systems, fundamental analysis, or some combination of these approaches. The same method will not necessarily be used in all markets. For example, in some markets a trader might use a synthesis of fundamental and chart analyses to make trading decisions, while in other markets decisions may be based on chart analysis only.

The more specific the trading strategy, the better. For example, a trader who plans to base his trades on chart analysis should be able to specify the types of patterns that would signal trades, as well as other details, such as confirmation rules. Of course, the most specific trading strategy would be one based on a mechanical trading system; however, such a fully automated approach may not appeal to all traders.

Step 2: Choose Markets to Be Traded

After deciding how to pick trades, you must choose which markets to follow. For most traders, constraints on time and available funds will significantly limit the number of markets that can be monitored and traded. Three factors might be considered in selecting markets.

Suitability to Trading Approach

Traders should choose those markets that appear to have the best potential for satisfactory performance, given their planned approach. Of course, such a determination can be made only on the basis of either past trading experience or historical testing of a specific trading strategy.

Diversification

The multiple benefits of diversification were fully discussed in Chapter 16. However, the essential point here is that diversification provides one of the most effective means of reducing risk. Diversification can be enhanced by choosing markets that are not closely related. For example, if you knew that you wanted to trade gold, then silver and platinum would be poor choices for additional markets, unless your available funds were sufficient to permit you to trade many other markets as well.

Volatility

A trader with limited funds should avoid extremely volatile markets, since the inclusion of such markets in a portfolio will severely limit the total number of markets that can be traded. (Volatility here refers to dollar volatility per contract. Consequently, high volatility could imply relatively large price swings, large-size contracts, or both.) Unless your approach is better suited to a given volatile market, you will be better off trading a wider variety of less volatile markets (diversification again).

Step 3: Specify Risk Control Plan[1]

The rigid control of losses is perhaps the most critical prerequisite for successful trading. A risk control plan should include the following elements.

Maximum Risk per Trade

Traders can substantially increase their probability of long-term success by restricting the percentage of total funds allocated to any given trade.[2] The maximum risk on any trade should be limited to

[1] Risk control is typically referred to as "money management," although I believe the former represents the more descriptive label.

[2] The implicit assumption here is that the trader's expected net profit per trade (ENPPT) is positive. If a trader's ENPPT is negative, the laws of probability will assure failure if he trades long enough. Such a situation would be analogous to the roulette player whose expected gain per bet is negative.

2 percent of total equity and, ideally, 1 percent or less. For smaller accounts, adhering to such a guideline will require restricting trading to less volatile markets, mini contracts, and spreads. Speculators who find that they must risk 3 percent or more of their equity on individual trades should seriously reconsider their financial suitability for futures trading.

The maximum risk per trade can be used to determine the number of contracts that can be initiated in any given trade. For example, if the maximum risk per trade is 1 percent of equity, and the trader's account size is $200,000, a crude oil trade that required a stop point $1/barrel below the market would imply a maximum position size of two contracts. (The crude oil contract represents 1,000 barrels, so each $1 move equates to $1,000 per contract.)

Stop-Loss Strategy

Know where you're going to get out before you get in. The importance of this rule cannot be overemphasized. Without a predetermined exit point, you can find yourself vulnerable to procrastinating in the liquidation of a losing position. At the wrong time, one such lapse of trading discipline could literally knock you out of the game.

Ideally, you should place a good-till-canceled (GTC) stop order when entering a trade. However, if you are fairly certain you can trust yourself, a mental stop point can be determined at trade entry, and thereafter adjusted only to reduce risk. For a more detailed discussion of stop-order placement strategies, see Chapter 13.

It should be noted that a system trader does not necessarily need to employ stop-loss rules in order to achieve risk control. For example, if a trading system automatically reverses the position given a sufficient trend reversal, the system will inherently perform the major function of a stop-loss rule—the prevention of catastrophic losses on individual trades—without such a rule being explicit. Of course, large cumulative losses can still occur over many trades, but the same vulnerability would also apply if stops were used.

Diversification

Because different markets will experience adverse moves at different times, trading multiple markets will reduce risk. As a very simple example, assume you have a $100,000 account and you are using a system that experiences average drawdowns of $5,000 in both gold and euro futures. If you traded two contracts of either market, the average drawdown would be equal to 10 percent ($10,000 ÷ $100,000), whereas if you traded one contract of each, the average drawdown would invariably be less (possibly even less than for *one* contract of a *single* market if the markets were inversely correlated). In fact, the average drawdown could reach 10 percent (assuming average drawdowns remain at $5,000 for each market) only if the drawdowns in the two markets proved to be exactly synchronized, which is exceedingly unlikely. Of course, the risk-reduction benefit of diversification would increase if more unrelated markets were added to the portfolio. Also, as noted in Chapter 16, the concept of diversification applies not only to trading multiple markets but also multiple systems (or approaches) and multiple system variations (i.e., parameter sets) for each market, assuming equity is sufficient to do so.

Although our focus in this section is risk control, it should be noted that diversification can also increase return by allowing the trader to increase the average exposure in each market without increasing overall risk. In fact, the addition of markets with a lower average return than other markets in an existing portfolio can actually *increase the return* of the portfolio if the risk reduction gained by diversification is greater than the decline in return and the trader adjusts exposure accordingly. Two other benefits of diversification—ensuring participation in major trends and "bad luck insurance"—were discussed in Chapter 16.

Reduce Leverage for Correlated Markets

Although adding markets to a portfolio allows a trader to increase leverage, it is important to make adjustments for highly correlated markets. For example, a currency portfolio, consisting of the eight most active currency futures contracts (euro, Japanese yen, British pound, Australian dollar, Canadian dollar, U.S. dollar index, Mexican peso, Swiss franc), would be subject to much greater risk than a more broadly diversified eight-market portfolio because of the very strong correlations between some of these markets. Consequently, the exposure level (as measured by the margin-to-equity ratio or other risk metric) of such an all-currency portfolio should be adjusted downward vis-à-vis a more diversified eight-market portfolio with equivalent individual market volatilities.

Market Volatility Adjustments

The number of contracts traded in each market for any given equity size should be adjusted to account for volatility differences. There are two aspects of this rule. First, fewer contracts would be traded in more volatile markets. Second, even for a single market, the number of contracts would vary in conjunction with fluctuations in volatility. Of course, since contracts can't be traded in fractions, traders with small accounts will be unable to make such volatility adjustments, which is one reason why small accounts will be subject to greater risk. (Other reasons include the unavoidability of the maximum risk per trade exceeding desired levels and an inability to diversify sufficiently.)

Adjusting Position Size to Equity Changes

Position size should also be adjusted in accordance with major fluctuations in equity. For example, if a trader's position size in the corn market was equal to four contracts when the account equity was at $200,000, then a $50,000 decline in the account equity should result in the corn position size being reduced to three contracts. (Of course, if equity rose instead, the position size should be increased.)

Losing Period Adjustments (Discretionary Traders Only)

When a trader's confidence is shaken because of an ongoing losing streak, it is often a good idea to temporarily cut back position size or even take a complete trading break until confidence returns. In this way, the trader can keep a losing phase from steamrolling into a disastrous retracement. This advice would not apply to a system trader, however, since for most viable systems, a losing period

enhances the potential for favorable performance in the ensuing period. Or to put it another way, confidence and frame of mind are critical to the performance of a discretionary trader but are not relevant to the performance of a system.

Step 4: Establish a Planning Time Routine

It is important to set aside some time each evening for reviewing markets and updating trading strategies. In most cases, once the trader has established a specific routine, 30–60 minutes should be sufficient (less if only a few markets are being traded). The primary tasks performed during this time would be:

1. **Update trading systems or review charts.** At least one of these should be employed as an aid in making trading decisions. In those markets in which fundamental analysis is employed, the trader will also have to reevaluate the fundamental picture periodically after the release of important new information (e.g., government crop report).
2. **Plan new trades.** Determine whether any new trades are indicated for the next day, which could be defined as either including or excluding the preceding night session. If new trades are indicated, decide on a specific entry plan. (This step applies to discretionary trading only, since any systematic approach should include a specific trade entry approach.) In some cases, a trading decision may be contingent on an evaluation of market behavior on the following day. For example, assume a trader is bearish on corn, and a modestly bullish crop report is received after the close. Such a trader might decide to go short *if* the market is trading lower on the day at any point within one hour of the close.
3. **Update exit points for existing positions.** The trader should review the stops and objectives on existing positions to see whether any revisions appear desirable in light of the current day's price action. In the case of stops, such changes should be made only to reduce trade risk.

Step 5: Maintain a Trader's Spreadsheet

The planning routine discussed in the previous section implies some systematic form of record keeping. Figure 36.1 provides one sample of a format that might be used for a trader's spreadsheet.

The first four columns simply identify the trade. Column 5 would be used to indicate the intended stop point at time of entry. Revisions of this stop would be entered in column 6. The reason for maintaining the initial stop point as a separate item is that this information may be useful in any subsequent trade analysis. For example, traders may wish to check whether their initial stops tend to be too wide or too close.

Columns 7 through 10 provide a summary of the implied risk on open positions. By adding these entries for all open positions, a trader can assess current total exposure—information critical in controlling risk and determining whether new positions can be initiated.

Trade Entry Date	(1) Long or Short	(2) Units	(3) Market	(4) Entry Price	(5) Stops Initial	(6) Stops Current	(7) Cumulative Implied Risk Initial	(8) Cumulative Implied Risk Current	(9) As Percentage of Equity Initial	(10) As Percentage of Equity Current	(11) Objective Initial	(12) Objective Current	(13) Exit Date	(14) Exit Price	(15) Net Profit or Loss	(16) Reasons for Entering Trade	(17) Comment

FIGURE 36.1 Sample Page from a Trader's Spreadsheet

The use of objectives (columns 11 and 12) is a matter of individual preference. Although in some cases the use of objectives will permit a better exit price, in other circumstances objectives will result in the premature liquidation of a trade. Consequently, some traders may prefer to forgo the use of objectives, allowing the timing of liquidation to be determined by either a trailing stop or a change of opinion.

Liquidation information is contained in columns 13 through 15. The reason for maintaining the exit date is that it can be used to calculate the duration of the trade, information that may be useful in trade analysis. Column 15 would indicate the profit or loss on the trade *after* deducting commissions.

Columns 16 and 17 provide room for capsule comments regarding the reasons for entering the trade (made at that time) and a hindsight evaluation of the trade. (Of course, entries for these two columns would require much greater space than shown in Figure 36.1.) The observations noted in these two columns can be particularly helpful in detecting any patterns in successes and failures. Furthermore, a more extensive description of the trade would be contained in a trader's diary, which is discussed in the next section.

The novice will usually benefit from a period of paper trading before plunging into actual trading. The trader's spreadsheet is ideally suited to this purpose, since it would not only provide an indication of potential trading success, but it would also get the new trader into the habit of approaching speculation in a systematic and disciplined fashion. Thus, when the transition is made to actual trading, the decision process will have become routine. Of course, the difficulty of trading decisions will increase dramatically once real money is at stake, but at least new traders who have established a routine of maintaining a trader's spreadsheet will have a decisive advantage over their typically ill-prepared counterparts.

Step 6: Maintain a Trader's Diary

The trader's diary should contain the following basic information for each trade:

1. **Reasons for trade.** It is important that the reasons for the trade are entered *at the time the trade is taken* so that this summary provides an accurate description of the original trade rationale, unbiased by hindsight and trade outcome. Over time, this information can help traders determine whether any of their trading strategies are particularly prone to success or failure.
2. **Trade exit comments.** Trade exit is as important as trade entry. Here, the trader would note both good and bad decisions made in exiting trades. For example, if a close stop was used on the trade, did it result in getting stopped out of a good trade, or did it reduce the loss on what would have been a losing trade even with a wider stop? As another example, if a trailing stop was used, did it result in premature exit or did it avoid a larger surrender of open profits? Comments in this section can help the trader determine whether the exit strategies employed are benefiting or hurting performance.
3. **Lessons.** A trader should itemize the mistakes or correct decisions made in the course of the trade. The mere act of keeping such a written record can greatly help a trader to both reinforce good trading habits and avoid repeating past mistakes—particularly if repeated errors are denoted in bold or in capital letters. The trader's diary should be reviewed periodically to help reinforce these observations. After a while, the lessons will sink in. Speaking from personal experience, this approach can be instrumental in eradicating frequently repeated mistakes.

It may also be very useful to augment the written diary with charts illustrating trade entry and exit points.

Step 7: Analyze Personal Trading

Traders must not only analyze the markets, but also their own past trades in order to isolate the strengths and weaknesses of their approach. Besides the trader's diary, two useful tools in such an analysis are analysis of segmented trades and the equity chart.

Analysis of Segmented Trades

The idea behind segmenting trades into different categories is to help identify any patterns of substantially above- or below-average performance. For example, a trader who makes decisions based on chart patterns could segment trades by the type of chart pattern that signaled the trade. This exercise could potentially reveal that some patterns provide much more reliable signals than others, allowing the trader to make appropriate strategy adjustments.

As another example, by breaking down trades into buys and sells, a trader might discover a predilection toward taking long side trades, even though past short trades have a higher average profit. Such a combined observation would obviously imply the desirability of correcting a bias toward the long side.

As a third example, after breaking down performance results by market, a trader might discover a tendency to consistently lose money in a specific market. Such evidence might suggest the trader could improve overall performance by not trading this market. Segmenting trading results by market can be an extremely important exercise, since many traders have a poor intuitive sense of their relative degree of success in various markets. The cessation of trading in poorer performing markets need not be permanent. The trader could attempt to identify the reasons for the disappointing results in these markets and then research and test possible trading adjustments.

As a fourth example, a trader who combines day trading and position trading might find it particularly instructive to compare the net results of each category. My suspicion is that if such analysis were performed by all traders to whom the exercise is relevant, the population of day traders would shrink by 50 percent overnight.

Of course, there are many other criteria that can be used to segment trades. Two other examples of relevant comparisons are fundamentally versus technically oriented trades, and trades that were in agreement with the position of a given trading system versus those that were not. In each case, the trader would be searching for patterns of success or failure. The process of analyzing segmented trades can be greatly simplified by utilizing the previously described trader's spreadsheet.

Equity Chart

The equity chart is a close-only type of chart in which the indicated value for each day represents the account equity (including the equity on open positions). The primary purpose of such a chart is to alert the trader when there is a precipitous deterioration of performance. For example, if after an extended, steady climb, the account equity experiences a sudden, steep decline, a trader might well be advised to lighten positions and take time to reassess the situation. Such an abrupt shift in performance might reflect a transformation of market conditions, a current vulnerability in the trader's approach, or a recent predilection toward poor trading decisions. A determination of the actual cause is not essential, since any of these factors could be viewed as strong cautionary signals to reduce risk exposure. In short, the equity chart can be an important tool in mitigating equity retracements.

Traders can create equity charts for their accounts, as well as access other performance charts and statistics, cost-free at fundseeder.com.[3]

[3] For the sake of full disclosure, I have a financial interest in FundSeeder.

CHAPTER 37

Seventy-Five Trading Rules and Market Observations

Live long enough and you will eventually be wrong about everything.

—Russell Baker

Few things are easier to ignore than trading advice. Many of the most critical trading rules have been so widely circulated that they have lost their ability to provoke any thought in the new trader. Thus, valid market insights are often dismissed as obvious clichés.

Consider the rule "Cut your losses short"—perhaps the single most important trading maxim. Lives there a speculator who has not heard this advice? Yet there is certainly no shortage of speculators who have ignored this rule. Not surprisingly, there is also no shortage of speculators whose accounts were virtually obliterated by one or two losing trades.

The truth is that most speculators will ignore advice until they have "rediscovered the wheel" through their own trading experience. Moreover, most traders will repeat a mistake many times before the lesson finally sinks in. Thus, I have no illusions that the advice presented in this and the next chapter will spare the reader from committing basic trading errors. However, it is hoped that several readings of these chapters (particularly following periods of negative trading results) will at least help some novice traders reduce the number of times these mistakes are repeated—hardly a trivial achievement.

The observations in this chapter are based on personal experience. Thus, the following list of rules should be viewed in their proper perspective: empirically based opinions as opposed to proven facts. Overall, there will be substantial overlap with other published expositions of trading guidelines. This is hardly surprising, since a wide range of rules (many of them mundane) are based on such sound

principles that they are almost universally accepted as trading truths. For example, I have never met a successful trader who did not believe that risk control was essential to profitable trading. However, some of the rules listed below reflect a subjective view that is contradicted by other writers (e.g., using market orders instead of limit orders). In the final analysis, traders must discover their own trading truths. It is hoped that the following list will help speed the process.

Entering Trades

1. Differentiate between major position trades and short-term trades. Focus on major position trades, since these are usually far more critical to trading success. The average risk allocated to short-term trades (as implied by number of contracts in position and stop point) should be significantly smaller. A mistake made by many traders is that they become so involved in trying to catch the minor market swings (generating lots of commissions and slippage in the process) that they miss the major price moves.
2. If you believe a major trading opportunity exists, don't be greedy in trying to get a slightly better entry price. The lost profit potential of one missed price move can offset the savings from 50 slightly better execution prices.
3. Entry into any major position should be planned and carefully thought out—never an intraday impulse.
4. Find a chart pattern that says the timing is right—*now.* Don't initiate a trade without such a confirming pattern. (Of course, this rule applies only to traders who base their trading decisions on charts.)
5. Place orders determined by daily analysis. If the market is not close to the desired entry level, either enter a good-till-canceled (GTC) order at the appropriate price or record the trade idea and review it each day until the trade is entered or the trade idea is no longer deemed attractive. Failure to adhere to this rule can result in missing good trades. One common occurrence is that a trade idea is recalled once the market has moved beyond the intended entry, and it is then difficult to do the same trade at a worse price.
6. When looking for a major reversal in a trend, it is usually wiser to wait for some pattern that suggests that the timing is right rather than fading the trend at projected objectives and support/resistance points. This rule is particularly important in the case of a market in which the trend has carried prices to long-term highs/lows (e.g., highs/lows beyond a prior 100-day range). Remember, in most cases of an extended trend, the market will not form V-type reversals. Instead prices will normally pull back to test highs and lows—often a number of times. Thus, waiting for a top or bottom to form can prevent getting chopped to pieces during the topping or bottoming process—not to mention the losses that can occur if you are highly premature in picking the top or bottom. Even if the market does form a major V top or V bottom, subsequent consolidations (e.g., flags) can allow favorable reward/risk entries.
7. If you have an immediate instinctive impression when looking at a chart (particularly, if you are not conscious about which market you are looking at), go with that feeling.

8. Don't let the fact that you missed the first major portion of a new trend keep you from trading with that trend (as long as you can define a reasonable stop-loss point).
9. Don't take positions counter to recent price failure patterns (e.g., a long position after a bull trap or a short position after a bear trap), even if there are many other reasons for the trade.
10. Don't trade counter to the first wide-ranging day (i.e., day with a range far exceeding the recent average range) of a price move. For example, if you are waiting to enter a trade on a correction, and the correction then forms on a wide-ranging day, don't enter the trade.
11. In most cases, use market orders rather than limit orders. This rule is especially important when liquidating a losing position or entering a perceived major trading opportunity—situations in which traders are apt to be greatly concerned about the market getting away from them. Although limit orders will provide slightly better fills for a large majority of trades, this benefit will usually be more than offset by the substantially poorer fills, or missed profit potential, in those cases in which the initial limit order is not filled.
12. Never double up near the original trade entry point after having been ahead. Often, the fact that the market has completely retraced is a negative sign for the trade. Even if the trade is still good, doubling up in this manner will jeopardize holding power due to overtrading.

Exiting Trades and Risk Control (Money Management)

13. Decide on a specific protective stop point *at the time of trade entry.*
14. Exit any trade as newly developing patterns or market action are contrary to trade—even if stop point has not been reached. Ask yourself, "If I had to have a position in this market, which way would it be?" If the answer is not the position you hold, get out! In fact, if contradictory indications are strong enough, reverse the position.
15. Always get out *immediately* once the original premise for a trade is violated.
16. If you are dramatically wrong the first day trade is on, abandon trade immediately.
17. In the event of a major breakout counter to the position held, either liquidate immediately or use a very close stop.
18. If a given market suddenly trades far in excess of its recent volatility in a direction opposite to the position held, liquidate your position immediately. For example, if a market that has been trading in approximate 50-point daily ranges opens 100 to 150 points higher, cover immediately if you are short.
19. If you sell into resistance or buy into support, and the market then consolidates instead of reversing, get out.
20. For analysts and market advisors: If your gut feeling is that a recent recommendation or written report is wrong, reverse your opinion.
21. If you're unable to watch markets for a period of time (e.g., when traveling), either liquidate all positions or be sure to have GTC stop orders on all open positions. (Also, in such situations, limit orders can be used to ensure getting into the market on planned buys at lower prices or planned sells at higher prices.)

22. Do not get complacent about an open position. Always know where you are getting out even if the point is far removed from the current price. Also, an evolving pattern contrary to the trade may suggest the desirability of an earlier-than-intended exit.
23. Fight the desire to immediately get back into the market following a stopped-out trade. Getting back in will usually supplement the original loss with additional losses. The only reason to get back in on a stopped out trade is if the timing seems appropriate based on evolving price patterns—that is, only if it meets all the conditions and justifications of any new trade.

Other Risk-Control (Money Management) Rules

24. When trading is going badly: (a) reduce position size (keep in mind that positions in strongly correlated markets are similar to one larger position); (b) use tight stop-loss points; (c) slow up in taking new trades.
25. When trading is going badly, reduce risk exposure by liquidating losing trades, not winning trades. This observation was memorably related by Edwin Lefèvre in *Reminiscences of a Stock Operator*: "I did precisely the wrong thing. The cotton showed me a loss and I kept it. The wheat showed me a profit and I sold it out. Of all the speculative blunders there are few greater than trying to average a losing game. Always sell what shows you a loss and keep what shows you a profit."
26. Be extremely careful not to change trading patterns after making a profit:
    a. Do not initiate any trades that would have been deemed too risky at the start of the trading program.
    b. Do not suddenly increase the number of contracts in a typical trade. (However, a gradual increase as equity grows is OK.)
27. Treat small positions with the same common sense as large positions. Never say, "It's only one or two contracts."
28. Avoid holding very large positions into major reports or the release of important government statistics.
29. Apply the same money management principles to spreads as to outright positions. It is easy to be lulled into thinking that spreads move gradually enough so that it is not necessary to worry about stop-loss protection.
30. Don't buy options without planning at what outright price the trade is to be liquidated.

Holding and Exiting Winning Trades

31. Do not take *small*, quick profits in major position trades. In particular, if you are dramatically right on a trade, never, never take profits on the first day.
32. Don't be too hasty to get out of a trade with a wide-ranging day in your direction. The wide-ranging day, however, can be used to reset stop to closer point.

33. Try to use trailing stops, supplemented by developing market action, instead of objectives as a means of getting out of profitable trades. Using objectives will often work against fully realizing the potential of major trends. Remember, you need the occasional big winners to offset losers.
34. The preceding rule notwithstanding, it is still useful to set an initial objective at the time of trade entry to allow the application of the following rule: If a very large portion of an objective is realized very quickly (e.g., 50 to 60 percent in one week or 75 to 80 percent in two or three weeks), take partial profits, with the idea of reinstating liquidated contracts on a reaction. The idea is that it is OK to take a quick, *sizable* profit. Although this rule may often result in missing the remainder of the move on the liquidated portion of the position, holding the entire position, in such a case, can frequently lead to nervous liquidation on the first market correction.
35. If an objective is reached, but you still like the trade, stay with it using a trailing stop. This rule is important in order to be able to ride a major trend. Remember, patience is not only important in waiting for the right trades, but also in staying with trades that are working. The failure to adequately profit from correct trades is a key profit-limiting factor.
36. One partial exception to the previous rule is that if you are *heavily* positioned and equity is surging straight up, consider taking scale-up profits. Corollary rule: *When things look too good to be true—watch out!* If everything is going right, it is probably a good time to begin taking scale-up (scale-down) profits and using close trailing stops on a portion of your positions.
37. If taking profits on a trade that is believed to still have long-term potential (but is presumably vulnerable to a near-term correction), have a game plan for reentering the position. If the market doesn't retrace sufficiently to allow for reentry, be cognizant of patterns that can be used for timing a reentry. Don't let the fact that the reentry point would be worse than the exit point keep you from getting back into a trade in which the perception of both the long-term trend and current timing suggest reentering. The inability to enter at a worse price can often lead to missing major portions of large trends.
38. If trading multiple contracts, avoid the emotional trap of wanting to be 100 percent right. For example, if tempted to take profits on a trade that is still acting well, try to keep at least a partial position for the duration of the move—until the market forms a convincing reversal pattern or reaches a meaningful stop-loss point.

Miscellaneous Principles and Rules

39. Always pay more attention to market action and evolving patterns than to objectives and support/resistance areas. The latter can often cause you to reverse a correct market bias very prematurely.
40. Whenever you feel action should be taken either entering or exiting a position—act, don't procrastinate.
41. Never go counter to your own opinion of the long-term trend of the market. In other words, don't try to dance between the raindrops.

42. Winning trades tend to be ahead right from the start. Along the same line of thought, Peter Brandt, a successful trader with four decades of experience advises: "Never take a losing trade home on a Friday."
43. Correct timing of entry and exit (e.g., timing entry on a reliable pattern, getting out immediately on the first sign of trade failure), can often keep a loss small even if the trade is dead wrong.
44. Intraday decisions are usually wrong. Most traders would be better off keeping their screens turned off during the day and reviewing markets once daily after the close of the main trading session.
45. Be sure to check markets before the close on Friday. Often, the situation is clearer at the end of the week. In such cases, a better entry or exit can usually be obtained on Friday near the close than on the following Monday opening. This rule is particularly important if you are holding a significant position.
46. Act on market dreams (that are recalled unambiguously). Such dreams are often right because they represent your subconscious market knowledge attempting to break through the barriers established by the conscious mind (e.g., "How can I buy here when I could have gone long $2,000 lower last week?")
47. You are never immune to bad trading habits—the best you can do is to keep them latent. As soon as you get lazy or sloppy, they will return.

Market Patterns

48. If the market sets new historical highs and holds, the odds strongly favor a move very far beyond the old highs. Selling a market at new record highs is probably one the amateur trader's worst mistakes.
49. Narrow market consolidations near the upper end of broader trading ranges are bullish patterns. Similarly, *narrow* consolidations near the low end of trading ranges are bearish.
50. Play the breakout from an extended, narrow range with a stop against the other side of the range.
51. Breakouts from trading ranges that hold 1 to 2 weeks, or longer, are among the most reliable technical indicators of impending trends.
52. A common and particularly useful form of the above rule is: Flags or pennants forming right above or below prior extended and broad trading ranges tend to be fairly reliable continuation patterns.
53. If the market breaks out to a new high or low and then pulls back to form a flag or pennant in the pre-breakout trading range, assume that a top or bottom is in place. A position can be taken using a protective stop beyond the flag or pennant consolidation.
54. A breakout from a trading range followed by a pullback deep into the range (e.g., three-quarters of the way back into the range or more) is yet another significant bull- or bear-trap formation.
55. If an apparent V bottom is followed by a nearby congestion pattern, it may represent a bottom pattern. However, if this consolidation is then broken on the downside and the V bottom

is approached, the market action can be read as a sign of an impending move to new lows. In the latter case, short positions could be implemented using protective stops near the top of the consolidation. Analogous comments would apply to V tops followed by nearby consolidations.

56. V tops and V bottoms followed by multimonth consolidations that form in close proximity to the reversal point tend to be major top or bottom formations.
57. Tight flag and pennant consolidations tend to be reliable continuation patterns and allow entry into an existing trend, with a reasonably close, yet meaningful, stop point.
58. If a tight flag or pennant consolidation leads to a breakout in the wrong direction (i.e., a reversal instead of a continuation), expect the move to continue in the direction of the breakout.
59. Curved consolidations tend to suggest an accelerated move in the direction of the curve.
60. The breaking of a short-term curved consolidation, in the direction opposite of the curve pathway, tends to be a good trend-reversal signal.
61. A wide-ranging day that closes counter to the main trend can often provide a reliable early signal of a trend change—particularly if it also triggers a reversal signal (e.g., complete penetration of prior consolidation).
62. Near-vertical, large price moves over a period of 2 to 4 days (coming off of a relative high or low) tend to be extended in the following weeks.
63. Spikes are good short-term reversal signals. The extreme of the spike can be used as a stop point.
64. In spike situations, look at chart both ways—with and without spike. For example, if a flag is evident when a spike is removed, a penetration of that flag is a meaningful signal.
65. The ability of a market to hold relatively firm when other correlated markets are under significant pressure can be viewed as a sign of intrinsic strength. Similarly, a market acting weak when correlated markets are strong can be viewed as a bearish sign.
66. If a market trades consistently higher for most of the daily trading session, anticipate a close in the same direction.
67. Two successive flags with little separation can be viewed as a probable continuation pattern.
68. View a curved bottom, followed by a shallower, same-direction curved consolidation near the top of this pattern, as a bullish formation (cup-and-handle). A similar pattern would apply to market tops.
69. A failed signal is more reliable than the original signal. Go the other way, using the high (low) before the failure signal as a stop. Some examples of such failure patterns are rule numbers 53, 54, 58, and 60.
70. The failure of a market to follow through on significant bullish or bearish news (e.g., a major U.S. Department of Agriculture report) is often a harbinger of an imminent trend reversal. Pay particular attention to such a development if you have an existing position.

Analysis and Review

71. Review charts every day—especially if you are too busy.
72. Periodically review long-term charts *(e.g., every 2 to 4 weeks).*

73. Religiously maintain a *trader's diary*, including a chart for *each* trade taken and noting the following: reasons for trade; intended stop and objective (if any); follow-up at a later point indicating how the trade turned out; observations and lessons (mistakes, things done right, or noteworthy patterns); and net profit/loss. It is important that the trade sheet be filled out when a trade is entered so that the reasons for the trade accurately reflect your actual thinking rather than a reconstruction.
74. Maintain a *patterns chart book* whenever you notice a market pattern that is interesting and you want to note how you think it will turn out, or you want to record how that pattern is eventually resolved (in the case where you don't have any bias concerning the correct interpretation). Be sure to follow each chart up at a later date to see the actual outcome. Over time, this process may improve skills in chart interpretation by providing some statistical evidence of the forecasting reliability of various chart patterns (as recognized in real time).
75. Review and update trading rules, trader's diary, and patterns chart book on a regular schedule (e.g., three-month rotation for the three items). Of course, any of these items can be reviewed more frequently, whenever it is felt such a review would be useful.

CHAPTER 38

50 Market Wizard Lessons*

There is no such thing as being right or beating the market. If you make money, it is because you understood the same thing the market did. If you lose money, it is simply because you got it wrong. There is no other way of looking at it.

—Musawer Mansoor Ijaz

The methods employed by exceptional traders are extraordinarily diverse. Some are pure fundamentalists; others employ only technical analysis; and still others combine the two methodologies. Some traders consider two days to be long term, while others consider two months to be short term. Yet despite the wide gamut of styles, I have found that certain principles hold true for a broad spectrum of successful traders. This chapter contains a list of 50 observations regarding success in trading drawn from the lessons I learned and insights I developed in the process of interviewing great traders over several decades—an endeavor chronicled in four *Market Wizards* books.

1. **First things first.** First, be sure that you really want to trade. It is common for people who think they want to trade to discover that they really don't.
2. **Examine your motives.** Think about why you really want to trade. If you want to trade for the excitement, you might be better off riding a roller coaster or taking up hang gliding. If you are drawn to trading because you think it is an easy way to make a lot of money, the markets are likely to disabuse you of that assumption.

*This chapter is adapted from the following two sources: Jack Schwager, *The New Market Wizards* (New York, NY: Harper Business, 1989), pp. 461–478; © 1989 by Harper Collins Publishers. Used with permission. Jack Schwager, *Hedge Fund Market Wizards* (New York, NY: John Wiley & Sons, 2012), pp. 489–499; © 2012 by John Wiley & Sons Publishers. Used with permission.

3. **There is no holy grail in trading.** Many traders mistakenly believe there is some single solution to defining market behavior. Not only did the methods used by highly successful traders I interviewed vary widely, they were sometimes polar opposites of each other.
4. **Match the trading method to your personality.** Trading success is not about finding the one true method but rather about finding the one method that is right for you. It is critical to choose a method that is consistent with your own personality and comfort level. If you can't stand to give back significant profits, then a long-term trend-following approach—even a very good one—will be a disaster, because you will never be able to follow it. If you don't want to watch the quote screen all day (or can't), don't try a day-trading method. If you can't stand the emotional strain of making trading decisions, then try to develop a mechanical system for trading the markets. The importance of finding an approach that fits you cannot be overemphasized. Randy McKay, who met success as both an on-the-floor and off-the-floor trader, asserted: "Virtually every successful trader I know ultimately ended up with a trading style suited to his personality."

   Incidentally, the mismatch of trading style and personality is one of the key reasons why purchased trading systems rarely make profits for those who buy them, even if the system is a good one. Why? Because every system will have periods of poor performance. And if you are trading someone else's system, particularly a "black box" system where you have no idea why signals are being generated, you will likely abandon it the first time it does poorly.
5. **It is absolutely necessary to have an edge.** You can't win without an edge, even with the world's greatest discipline and money management skills. If you could, then it would be possible to win at roulette (over the long run) using perfect discipline and risk control. Of course, that is an impossible task because of the laws of probability. If you don't have an edge, all that money management and discipline will do for you is to guarantee that you will bleed to death gradually. Incidentally, if you don't know what your edge is, you don't have one.
6. **Derive a method.** To have an edge, you must have a method. The type of method is irrelevant. Some of the supertraders are pure fundamentalists; some are pure technicians; and some are hybrids. Even within each group, there are tremendous variations. For example, within the group of technicians, there are tape readers (or their modern-day equivalent—screen watchers), chartists, mechanical system traders, Elliott Wave analysts, Gann analysts, and so on. The type of method is not important, but having one is critical—and, of course, the method must have an edge.
7. **Developing a method is hard work.** Shortcuts rarely lead to trading success. Developing your own approach requires research, observation, and thought. Expect the process to take lots of time and hard work. Expect many dead ends and multiple failures before you find a successful trading approach that is right for you. Remember that you are playing against tens of thousands of professionals. Why should you be any better? If it were that easy, there would be a lot more millionaire traders.
8. **Skill versus hard work.** Is trading success dependent on innate skills, or is hard work sufficient? There is no question in my mind that many of the supertraders have a special talent for trading. Marathon running provides an appropriate analogy. Virtually anyone can run a

marathon, given sufficient commitment and hard work. Yet, regardless of the effort and desire, only a small fraction of the population will ever be able to run a 2:12 marathon (or 2:25 for women). Similarly, anyone can learn to play a musical instrument. But again, regardless of work and dedication, only a handful of individuals possess the natural talent to become concert soloists. The general rule is that exceptional performance requires both natural talent and hard work to realize its potential. If the innate skill is lacking, hard work may provide proficiency, but not excellence.

In my opinion, the same principles apply to trading. Virtually anyone can become a net profitable trader, but only a few have the inborn talent to become supertraders. For this reason, it may be possible to teach trading success, but only up to a point. Be realistic in your goals.

9. **Good trading should be effortless.** Wait a minute. Didn't I just list hard work as an ingredient to successful trading? How can good trading require hard work and yet be effortless?

   There is no contradiction. Hard work refers to the preparatory process—the research and observation necessary to become a good trader—not to the trading itself. In this respect, hard work is associated with such qualities as vision, creativity, persistence, drive, desire, and commitment. Hard work certainly does not mean that the process of trading itself should be filled with exertion. It certainly does not imply struggling with or fighting against the markets. On the contrary, the more effortless and natural the trading process, the better the chances for success. One trader quoting *Zen and the Art of Archery* made the following analogy: "In trading, just as in archery, whenever there is effort, force, straining, struggling, or trying, it's wrong. You're out of sync; you're out of harmony with the market. The perfect trade is one that requires no effort."

   Visualize a world-class distance runner, clicking off mile after mile at a five-minute pace. Now picture an out-of-shape, 250-pound couch potato trying to run a mile at a 10-minute pace. The professional runner glides along gracefully—almost effortlessly—despite the long distance and fast pace. The out-of-shape runner, however, is likely to struggle, huffing and puffing like a Yugo going up a 1 percent grade. Who is putting in more work and effort? Who is more successful? Of course, the world-class runner puts in his hard working during training, and this prior effort and commitment are essential to his success.

10. **Trade within your comfort zone.** If a position is too large you will be prone to exit good trades on inconsequential corrections because fear will dominate the decision process.

11. **Money management and risk control.** Almost all the great traders I interviewed felt that money management was even more important than the trading method. Many potentially successful systems or trading approaches have led to disaster because the trader applying the strategy lacked a method of controlling risk. You don't have to be a mathematician or an expert in portfolio theory to manage risk. Risk control can be as easy as the following four-step approach:

    1. Never risk more than 1 to 2 percent of your capital on any trade. (Risking less than 1 percent per trade is even better if this restriction can be met while still being consistent with your methodology.)
    2. Predetermine your exit point *before* you get into a trade. Many of the traders I interviewed cited *exactly* this rule.

3. Start with a deliberately small trading stake that you can afford to lose without it causing any significant financial or emotional impact. If this equity is lost, stop trading. Once you feel confident and ready to start trading again, begin with another small stake. By rigorously limiting the worst case in this manner, you will never be knocked out of the game because of one disastrous trading experience, as happens to so many novice traders.
4. If you are in an equity drawdown and feel you are out of sync with the markets or your trading confidence is shaky, take a breather, analyze what went wrong, and wait until you feel confident and have a high-probability idea before you begin trading again. For traders with large accounts, trading very small is a reasonable alternative to a complete trading hiatus. The strategy of cutting trading size down sharply during losing streaks is one mentioned by many of the traders I interviewed.

12. **The trading plan.** Trying to win in the markets without a trading plan is like trying to build a house without blueprints—costly (and avoidable) mistakes are virtually inevitable. A trading plan simply requires combining a personal trading method with specific money management and trade entry rules. Robert Krausz, a hypnotist who made a specialty of working with traders, considered the absence of a trading plan the root of all the principal difficulties traders encounter in the markets. Richard Driehaus, a very successful mutual fund manager I interviewed, stresses that a trading plan should reflect a personal core philosophy. He explains that without a core philosophy, you are not going to be able to hold on to your positions or stick with your trading plan during really difficult times.
13. **Don't confuse the concepts of winning and losing trades with good and bad trades.** A good trade can lose money, and a bad trade can make money. Even the best trading process will lose a certain percentage of the time. There is no way of knowing *a priori* which individual trade will make money. As long as a trade adheres to a process with a positive edge, it is a good trade, regardless of whether it wins or loses, because if similar trades are repeated multiple times, they will come out ahead. Conversely, a trade that is taken as a gamble is a bad trade, regardless of whether it wins or loses, because over time such trades will lose money.
14. **Discipline.** *Discipline* was probably the most frequent word used by the exceptional traders that I interviewed. Often, it was mentioned in an almost apologetic tone: "I know you've heard this a million times before, but believe me, it's really important."

    There are two basic reasons why discipline is critical. First, it is a prerequisite for maintaining effective risk control. Second, you need discipline to apply your method without second-guessing and choosing which trades to take. I guarantee that you will almost always pick the wrong ones. Why? Because you will tend to pick the comfortable trades, and as Bill Eckhardt, a mathematician turned successful commodity trading advisor (CTA), explained, "What feels good is often the wrong thing to do."
15. **Understand that you are responsible.** Whether you win or lose, you are responsible for your own results. Even if you lost on your broker's tip, an advisory service recommendation, or a bad signal from the system you bought, you are responsible because you made the decision to listen and act. I have never met a successful trader who blamed others for his losses.

16. **The need for independence.** You need to do your own thinking. Don't get caught up in mass hysteria. Ed Seykota, a futures trader who multiplied the equity in his accounts a thousandfold over an 18-year period, pointed out that by the time a story is making the cover of national periodicals, the trend is probably near an end.

    Independence also means making your own trading decisions. Never listen to other opinions. Even if it occasionally helps on a trade or two, listening to others invariably seems to end up costing you money—not to mention confusing your own market view. As Michael Marcus, a spectacularly successful futures trader, stated in *Market Wizards,* "You need to follow your own light. If you combine two traders, you will get the worst of each."

    A related personal anecdote concerns another trader I interviewed in *Market Wizards.* Although he could trade better than I if he were blindfolded and placed in a trunk at the bottom of a pool, he still was interested in my view of the markets. One day he called and asked, "What do you think of the yen?"

    The yen was one of the few markets about which I had a strong opinion at the time. It had formed a particular chart pattern that made me very bearish. "I think the yen is going straight down, and I'm short," I replied.

    He proceeded to give me 51 reasons why the yen was oversold and due for a rally. After he hung up, I thought: "I'm leaving on a business trip tomorrow. My trading has not been going very well during the last few weeks. The short yen trade is one of the only positions in my account. Do I really want to fade one of the world's best traders given these considerations?" I decided to close out the trade.

    By the time I returned from my trip several days later, the yen had fallen 150 points. As luck would have it, that afternoon the same trader called. When the conversation rolled around to the yen, I couldn't resist asking, "By the way, are you still long the yen?"

    "Oh no," he replied, "I'm short."

    The point is not that this trader was trying to mislead me. On the contrary, he firmly believed each market opinion at the time he expressed it. However, he was a very short-term trader and his timing was good enough so that he probably made money on both sides of the trade. In contrast, I ended up with nothing, even though I had the original move pegged exactly right. The moral is that even advice from a much better trader can lead to detrimental results.

17. **Confidence.** An unwavering confidence in their ability to continue to win in the markets, was a nearly universal characteristic among the traders I interviewed. Dr. Van Tharp, a psychologist who has done a great deal of research on traders and was interviewed in *Market Wizards,* claims that one of the basic traits of winning traders is that they believe "they've won the game before they start."

    The trader who has confidence will have the courage to make the right decisions and the strength not to panic. There is a passage in Mark Twain's *Life on the Mississippi* that I find remarkably apropos, even though it has nothing to do with trading. In it, the protagonist—an apprentice steamboat river pilot—is tricked by his mentor and the crew into panicking in a stretch of

ever he *knows* to be the easiest in the entire run. The following exchange then ensues with his mentor:

> "Didn't you know there was no bottom in that crossing?"
>
> "Yes sir, I did."
>
> "Very well then, you shouldn't have allowed me or anybody else to shake your confidence in that knowledge. Try to remember that. And another thing, when you get into a dangerous place, don't turn coward. That isn't going to help matters any."

18. **Losing is part of the game.** The great traders fully realize that losing is an intrinsic element in the game of trading. This attitude seems linked to confidence. Because exceptional traders are confident that they will win over the long run, individual losing trades no longer seem horrible; they simply appear inevitable—which is what they are. As Linda Raschke, a futures trader with a high ratio of winning to losing trades, explained, "It never bothered me to lose because I always knew I would make it right back."

    There is no more certain recipe for losing than having a fear of losing. If you can't stand taking losses, you will either end up taking large losses or missing great trading opportunities—either flaw is sufficient to sink any chance for success.

19. **Lack of confidence and time-outs.** Trade only when you feel confident and optimistic. I have often heard traders say: "I just can't seem to do anything right." Or "I bet I get stopped out right near the low again." If you find yourself thinking in such negative terms, it is a sure sign that it is time to take a break from trading. Get back into trading slowly. Think of trading as a cold ocean. Test the water before plunging in.

20. **The urge to seek advice.** The urge to seek advice betrays a lack of confidence. As Linda Raschke said, "If you ever find yourself tempted to seek out someone else's opinion on a trade, that's usually a sure sign that you should get out of your position."

21. **The virtue of patience.** Waiting for the right opportunity increases the probability of success. You don't always have to be in the market. As Edwin Lefèvre put it in his classic *Reminiscences of a Stock Operator,* "There is the plain fool who does the wrong thing at all times anywhere, but there is the Wall Street fool who thinks he must trade all the time."

    One of the more colorful descriptions of patience in trading was offered by well-known investor Jim Rogers in *Market Wizards*: "I just wait until there is money lying in the corner, and all I have to do is go over there and pick it up." In other words, until he is so sure of a trade that it seems as easy as picking money off the floor, he does nothing.

    Mark Weinstein, who was interviewed in *Market Wizards,* provided the following apt analogy: "Although the cheetah is the fastest animal in the world and can catch any animal on the plains, it will wait until it is absolutely sure it can catch its prey. It may hide in the bush for a week, waiting for just the right moment. It will wait for a baby antelope, and not just any baby antelope, but preferably one that is also sick or lame. Only then, when there is no chance it can lose its prey, does it attack. That, to me, is the epitome of professional trading."

22. **The importance of sitting.** Patience is important not only in waiting for the right trades, but also in staying with trades that are working. The failure to adequately profit from correct trades is a key profit-limiting factor. Quoting again from Lefèvre in *Reminiscences,* "It never was my

thinking that made big money for me. It was always my sitting. Got that? My sitting tight!" Bill Eckhardt offered a particularly memorable comment on this subject: "One common adage . . . that is completely wrongheaded is: You can't go broke taking profits. That's precisely how many traders *do* go broke. While amateurs go broke by taking large losses, professionals go broke by taking small profits."

23. **Developing a low-risk idea.** One of the exercises Dr. Van Tharp uses in his seminars is having the participants take the time to write down their ideas on low-risk trades. The merit of a low-risk idea is that it combines two essential elements: patience (because only a small portion of ideas will qualify) and risk control (inherent in the definition). Taking the time to think through low-risk strategies is a useful exercise for all traders. The specific ideas will vary greatly from trader to trader, depending on the markets traded and methodologies used. At the seminar I attended, the participants came up with a long list of descriptions of low-risk ideas. As one example: a trade in which the market movement required to provide convincing proof that you are wrong is small. Although it had nothing to do with trading, my personal favorite of the low-risk ideas mentioned was: "Open a doughnut shop next door to a police station."
24. **The importance of varying bet size.** All traders who win consistently over the long run have an edge. However, that edge may vary significantly from trade to trade. It can be mathematically demonstrated that in any wager game with varying probabilities, winnings are maximized by adjusting the bet size in accordance with the perceived chance for a successful outcome. Optimal blackjack betting strategy provides a perfect illustration of this concept.

    If the trader has some idea as to which trades have a greater edge—say, for example, based on a higher confidence level (assuming that it is a reliable indicator)—then it makes sense to be more aggressive in these situations. As Stanley Druckenmiller, one of the most consistently profitable hedge fund managers ever, expressed it, "The way to build [superior] long-term returns is through preservation of capital and home runs. . . . When you have tremendous conviction on a trade, you have to go for the jugular. It takes courage to be a pig." For a number of Market Wizards, keen judgment as to when to really step on the accelerator and the courage to do so have been instrumental to their achieving exceptional (as opposed to merely good) returns.

    Some of the traders I interviewed mentioned that they varied their trading size in accordance with how they were doing. For example, McKay indicated that it was not uncommon for him to vary his position size by as much as a factor of one hundred to one. He finds this approach helps him reduce risk during losing periods while enhancing profits during the winning periods.
25. **Scaling in and out of trades.** You don't have to get in or out of a position all at once. Scaling in and out of positions provides the flexibility of fine-tuning trades and broadens the set of alternative choices. Most traders sacrifice this flexibility without a second thought because of the innate human desire to be completely right. (By definition, a scaling approach means that some portions of a trade will be entered or exited at worse prices than other portions.) Some traders also noted that scaling out enabled them to stay with at least a portion of long-term winning trades much longer than would otherwise have been the case.
26. **Trading around a position can be beneficial.** Most traders tend to view trading as a two-step process: a decision when to enter and a decision when to exit. It may be better to

view trading as a dynamic rather than static process between entry and exit points. The basic idea is that as a trade moves in the intended direction, the position exposure would be gradually reduced. The larger the move and the closer the market gets to a target objective, the more the position would be decreased. After reducing exposure in this manner, the position would be reinstated on a market correction. Any time the market retraced to a correction reentry point, a net profit would be generated that otherwise would not have been realized. The choppier the market, the more excess profits trading around the position will generate. Even a trade in which the market fails to move in the intended direction, on balance, could still be net profitable as a result of gains generated by lightening the total position on favorable trend moves and reinstating liquidated portions of the position on corrections. This strategy will also reduce the chances of being knocked out of a favorable position on a market correction, because if the position has already been reduced, the correction will have less impact and may even be desired to reinstate the liquidated portion of the position. The only time this strategy will have a net adverse impact is if the market keeps going in the intended direction without ever retracing to correction reentry levels. This negative outcome, however, simply means that the original trade was profitable, but the total profits are smaller than they would have been otherwise. In a nutshell, trading around a position will generate extra profits and increase the chances of staying with a good trade the at expense of sometimes giving up a portion of profits when the market moves smoothly in the intended direction.

27. **Being right is more important than being a genius.** I think one reason why so many people try to pick tops and bottoms is that they want to prove to the world how smart they are. Think about winning rather than being a hero. Forget trying to judge trading success by how close you can come to picking major tops and bottoms, but rather by how well you can pick individual trades with favorable return/risk characteristics. Go for consistency on a trade-to-trade basis, not perfect trades.

28. **Don't worry about looking stupid.** Last week, you told everyone at the office, "My analysis has just given me a great buy signal in the S&P. The market is going to a new high." Now as you examine the market action since then, something appears to be wrong. Instead of rallying, the market is breaking down. Your gut tells you that the market is vulnerable. Whether you realize it or not, your announced prognostications are going to color your objectivity. Why? Because you don't want to look stupid after telling the world that the market was going to a new high. Consequently, you are likely to view the market's action in the most favorable light possible. "The market isn't breaking down, it's just a pullback to knock out the weak longs." As a result of this type of rationalization, you end up holding a losing position far too long. There is an easy solution to this problem: Don't talk about your position.

    What if your job requires talking about your market opinions (as mine once did)? Here the rule is: Whenever you start worrying about contradicting your previous opinion, view that concern as reinforcement to reverse your market stance. As a personal example, in early 1991, I came to the conclusion that the dollar had formed a major bottom. I specifically remember one talk in which an audience member asked me about my outlook for currencies. I responded by boldly predicting that the dollar would head higher for years. Several months later, when the