Building Swing Files of Trend Change Pivots

A Swing File contains the series of pivots of one particular degree of change. A Swing File is constructed of the important trend change pivots for each market that is to be analyzed.

What is the purpose of a swing file? One of the objectives of the time and price analysis of Dynamic Trading is to project the extent of a trend in time and price and the high probability targets when and where the next trend change will be made. To do this, time and price projections are made from previous pivots of the same degree of trend. Dynamic Trader allows the user to do this in two ways. One way is to simply click off the high and low pivots on the bar chart to make the time and price projections, one at a time. While this is simple and easy enough to do when we are only making a few projections, it is cumbersome and time consuming to do when we want to do a comprehensive analysis using many past pivots. To speed up this analysis process, Dynamic Trader includes several routines and reports that instantly make all of the required time and price projections from a wide range of past pivots. Each of these routines and reports requires a swing file of past pivot reversals.

The most comprehensive Dynamic Trading analysis considers a market from three degrees or three time frames. They are the degree of change that is traded plus the next larger and smaller degree. The next larger degree determines the larger degree trend and suggests which direction we want to consider trading. The next smaller degree will help to identify the lowest risk and capital exposure trade set-up position to enter and place the protective stop.

1. A swing file filters out the "noise" between the pivot reversals and helps us to focus on the underlying trend between the pivots.

2. The swing file represents the statistical, historical information of all relationships of time and price for that particular degree of change. Before we attempt to analyze the present and potential future position of any market, we must have of a thorough understanding of past activity and conditions. We can only view the current and potential future market activity within the context of its own history.

3. All of the time and price projections are projected ratios and counts of past swings.

The Swing File pivots usually represent the extremes of price reached at the trend change pivots. In other words, the high or low made at the change in trend. If a closing price Swing File is constructed, keep aware that the time and price projections relate to closings only, which can be significantly different than projections from high or low extremes.

It is easy to develop the Swing File of trend change pivots, but it must be done properly. It is important to have a series of pivots that relate to the same degree of time and price. Below we will discuss how to initially develop the Swing File of market pivots and how to edit the file in order to have the best representation possible of trend changes of a chosen degree. Once a Swing File is constructed, Dynamic Trader will update it automatically each time it is loaded on a chart. Whenever a new market extreme meets the minimum criteria for a pivot for a particular Swing File, Dynamic Trader will add it to the Swing File database.

Swing Files Are Constructed By Percentage Change In Price

Swing Files are initially constructed by the percentage change in price of a market. A new market pivot is recorded when the market has reversed direction by a fixed amount of percentage change. Percentage change of price better reflects the degree of change in psychology of the market's participants than a fixed price amount.

Let's take a look at a comparison of identifying market swings by percentage change and by a fixed price amount. Our percentage change swing rule will be that a new swing is not recognized until a market makes a counter-trend move of at least 10% away from the last pivot. When a market declines or rallies by 10%, a new trend change pivot is recorded.

Extreme High Price To Date: 200

10% x 200 =20: If the market declines to 180 or less (200-20) without having exceeded 200, a new pivot at 200 is recorded as the market will have made a change of trend by 10% (20 points) or more.

Extreme High Price To Date: 400

10% x 400 = 40: If the market declines to 360 or less (400-40) without having exceeded 400, a new pivot at 400 is recorded as the market will have made a change of trend by 10% (40 points) or more.

From the lower price level at 200, it took a 20 point counter-trend range to record a pivot while it took a 40 point counter-trend range to record the trend change pivot from the higher price of 400. It will always take a larger price range to record a trend change pivot at a higher price level than at a lower price level as the trend change is beginning from a greater price amount. If the trend change pivot were recorded by a fixed price amount of 20 points, the trend change pivot from the 400 price level would be recorded if price declined to just 380 (400-20).

Price <u>percentage</u> change more accurately represents the degree of trend change or the degree of change in the psychology of traders than does a fixed price amount. A 20 point advance or decline from a 400 point price level is not nearly as significant as a 20 point advance or decline from a 200 point price level. A 40-point price change from the 400 level is comparable to a 20-point price change from the 200 level.

This becomes obvious on charts that have had a wide range of price activity over the years. An example would be the DJIA that traded for years at relatively low price levels compared to the price levels of today. For almost 20 years from the early 1960s through the early 1980s the DJIA traded roughly in the range of 600-1000. A 10% trend change of 60-100 points during this period usually took several weeks or even months to unfold. In the early 1990s, when the DJIA was trading in the 3000-4000 range, it had been fairly common for 60-100 point ranges to unfold in a matter of a few days. We even had many 60-100 point range <u>days</u> in that period. It is not at all accurate to say that a 100-point swing in the 1990s from a price level over 3000 is as significant as a 100-point swing from the 1960s from a price level of less than 1000.

A 100 point (10%) counter-trend from the 1000 level is of the same degree and as significant as a 300 point (10%) counter-trend from a 3000 level. Swing Files are only constructed from percentage change of price.

For our illustrations, a Swing File will be named by the minimum percentage price change required. A <u>10% Swing File</u> will be composed of swings of a <u>minimum</u> of 10% change in price from one pivot point to the next. Unless of course, a swing is eliminated or added according to one of the exceptions described below. There is no maximum price change for swings in a 10% Swing File, only a minimum.

Filtering A Percentage Change Swing File By Time

A Swing File constructed by a fixed percentage price change has two potential problems if our objective is to include a series of market pivots that are related by degree or symmetry of time and price. These two potential problems relate to volatile, short-term, panic swings and prolonged corrections in time but a minimum change in price.

Panic Price Swings: Filtering the Percentage Change by a Time Minimum

The first potential problem of constructing a swing file solely by percentage change relates to uncommon volatility. Occasionally, a market will experience a short period of extreme volatility in price, usually due to some unexpected news announcement or report that briefly inspires traders to panic. A market may experience as little as a one or two day panic counter-trend in price followed by a return to the trend prior to the panic. This panic counter-trend may meet the price percentage criteria for a new pivot in our Swing File but be far out of balance of the time range of swings in the file. Let's look at an example.
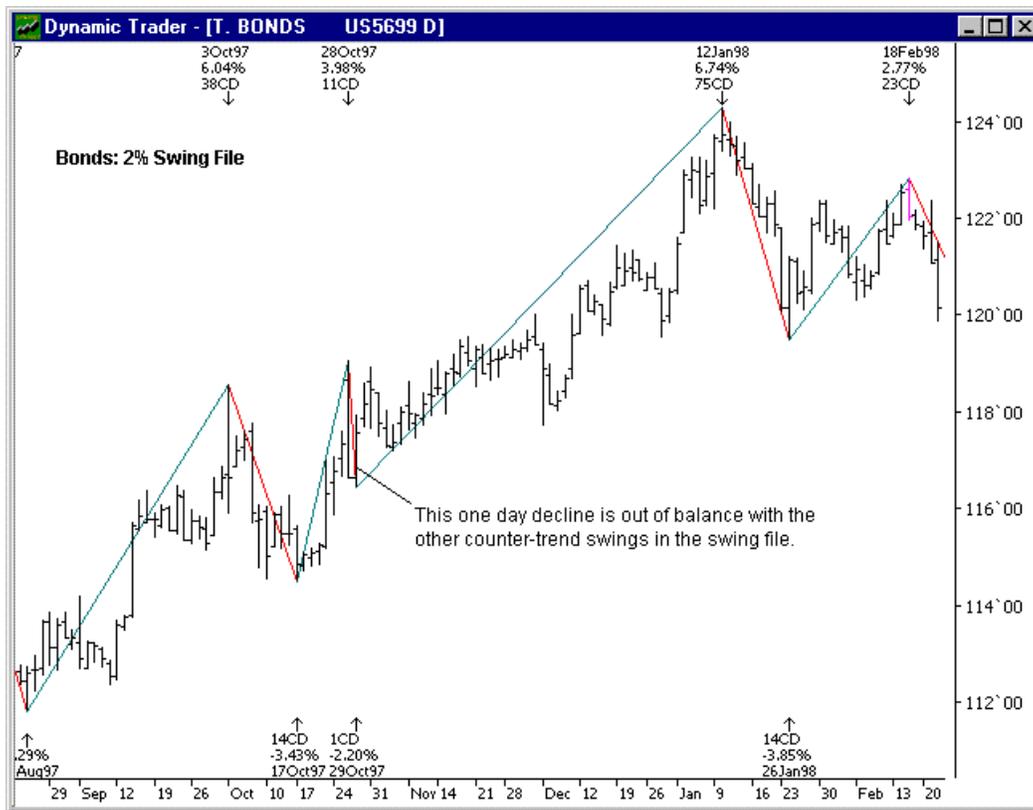
10% Swing File		
	Time	Price %
Typical Trend Swing Ranges:	30-45 Days	20%-25%
Typical Counter-trend Swing Ranges:	15-20 Days	10%-15%
Panic Counter-trend Swing:	*2 Days*	*12%*

Even though the two-day counter-trend swing related to the counter-trend swings in price, it was <u>much</u> shorter in time, just 2 days verses the prior counter-trend swings of 15-20 days. Do we leave this two-day counter-trend swing in our Swing File when all other counter-trend swings in the past have been 15 days or more? No. The swings in any one Swing File should be related by degree of time <u>and</u> price. A two day swing is not of the same degree as a 15-20 day swing.

When constructing the Swing File, the percentage change criteria is filtered by a minimum time criteria. In other words, each swing included in the Swing File must be of a minimum amount of time before it is included. The time chosen for the minimum amount of time for a swing to be included is determined by the trader. While this is a subjective decision by the trader, just use common sense. Filter out those swings that are dramatically shorter in time than the vast majority of swings.

The objective of the minimum time filter is to initially filter out the obvious short-term, panic price swings that do not belong in the Swing File. The Swing File will never be a perfect representation of time and price symmetry because markets do not unfold in perfect symmetry. But the swing file should be as accurate a representation as we can make with common sense of the particular degree of change we are interested in for the market.

The chart below is four months of daily continuos bonds. A 2% swing file was made. Counter-trend swings typically lasted 2-3 weeks or more. On Oct. 28, bonds made a big gap opening up followed by a collapse of price back to the previous trading area. This one day wide-range day caused a swing of greater than 2%. All other 2% or greater counter-trend swings lasted 2-3 weeks or more. This one-day price panic is out of balance with the vast majority of 2% or greater swings and should be edited out of the swing file.

Narrow Trading Ranges - Accounting for Prolonged Corrections That Do Not Meet the Price Percentage Change Criteria for a New Swing

The second potential problem with constructing our Swing File of trend change pivots has to do with prolonged trading ranges. Often a market will make a minor counter-trend in price but a relatively prolonged trading range in time. While these counter-trend periods may not qualify for the Swing File from a price percentage change perspective, they are usually relevant to the degree of market activity that we are interested in recording for the Swing File. Let's take a look at an example.
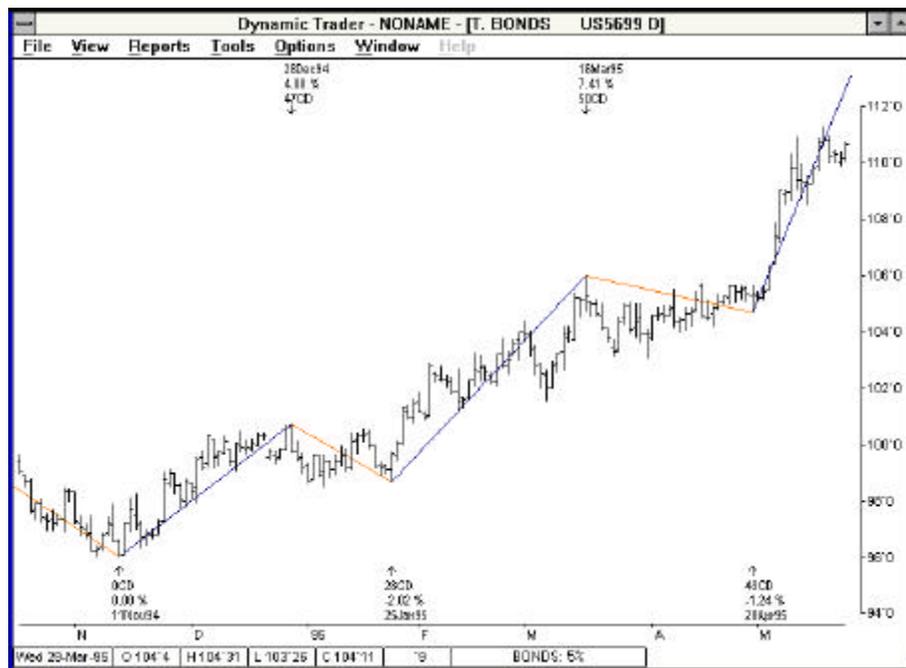

10% Swing File

	Time	Price %
Typical Trend Swing Ranges:	30-45 Days	20%-25%
Typical Counter-trend Swing Ranges:	15-25 Days	10%-15%
Trading Range Correction:	*20 Days*	*5%*

If we are constructing a Swing File of 10% or greater price swings, it would not record a 5% counter-trend. Yet, if a market trend stopped and consolidated in a trading range for 20 days or more, wouldn't it be considered as important as other counter-trends of 15-25 days even though the price change was less than 10%? In most cases it would be as important. Remember that we are recording the change in the psychology of traders. We are going to use these past points of change to project potential future points of trend change. A 20 day halt in the trend with only a 5% counter-trend in price may be just as important to a trader as a 15 day, 10% counter-trend. Time of change is as important as change in price.

We must also include a time filter for a minimum length of time to include a swing whether the percentage price change met the minimum percentage criteria or not. In this case, let's say we include as a swing any counter-trend of 15 days or longer regardless of the percentage change. Dynamic Trader does not include a filter when a swing file is built to include swings that are prolonged in time but narrow in price. The user may easily add those swings with the swing edit routine.
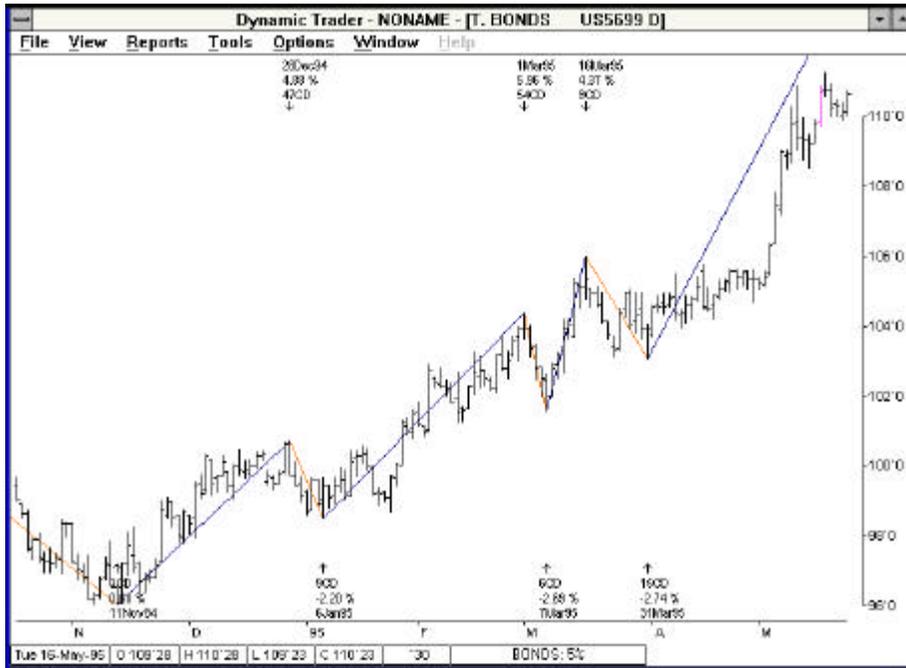
For time analysis, the lowest or highest price is not always the important pivot. The price low of the correction begun from the Dec. 28 high fell on Jan. 6. However, Jan. 25 was only a tick or so higher but appears to be the obvious beginning of the new cycle. The same applies to the "running correction" from the March 16 high. The correction ended April 28, not March 31.

Doesn't this better represent the minor swings during this phase of the bond rally?

We now have three simple criteria to initially construct a Swing File of important trend change pivots:

1. Minimum price percentage change.
2. Minimum time period to filter the price swing.
3. Minimum time period to include a swing regardless of price change.

Using these three simple filters to initially construct a Swing File, we will have recorded swings that are closely related in degree of time and price. While this may not be the perfect series of swings for our Swing File, it will have eliminated most of the obvious out-of-balance swings that would be included if we used percentage change as the only filter.

Over the years, many users of Dynamic Trader have gotten hung-up on swing file construction. Because the swing files are used for several time and price projection routines and reports, they may become obsessed with constructing what they believe must be the "perfect" swing file. It is part of the "paralysis of analysis" syndrome. A syndrome that has been overcome by all successful traders. Relax. Take a common sense approach to swing file construction. Once a swing file is initially constructed, view it on the bar chart. Do the swings all seem to relate to each other in the context of the general form and trend of the market? If not, made the necessary edits. There are usually only a few edits that are made with any swing file. When complete and the swing file is overlaid on the bar chart, it should be obvious to the user that the swing file is "in balance" with the bar chart.

I could include a more complex filtering process to create the swing files in Dynamic Trader that would avoid some or maybe all of this editing process. The most important reason I have not done this is it removes the trader from the experience of viewing and considering all of the past market activity. By examining the initial swing file over the bar chart, the trader becomes more familiar with the unusual periods from the past for that market. It is part of the trader's learning process. While certain judgments are made which unusual pivots to include or exclude, these judgements are usually obvious and take into consideration the objectives of the trader. No trader will become successful until he or she accepts that analysis and trading strategy judgements must be made. That is the nature of all successful business.

There are a few other circumstances where we may want to edit our Swing File to end up with the most representative series of pivots for a particular degree of change.

Double Tops or Bottoms

What if a market makes an exact double top without an intervening swing that meets the pivot criteria? Our Swing File would only record the first high and ignore the second high. Which high is more important and should be included in the Swing File? In most cases, the second high is more important.

The first top represents the point where the rally stopped or the up cycle ended. The second high represents the point where the decline or the down cycle began. What if the second high was just a few ticks lower than the first high? Do we only consider the first high because it was the price extreme? The point where the decline began more closely represents the psychological change of traders and is usually the more important pivot. This is particularly the case if the second high closed higher than the first high even if the first top made a higher extreme price intraday. In most cases, you will edit the swing file at the double top or bottom to include the second high or low as the pivot.

Bonds made a double top in Sept./Oct. 1993. The Oct. top was only 4 ticks below the Sept. top. While the price extreme was made in Sept., the up cycle did not complete and begin the bear trend until Oct. In most cases, the swing file should be edited to include the Oct. high as the more important pivot.

The 4% swing file registered March 31 as a high. March 31 was a wide range panic day. Price made a secondary high on April 19. All of the price activity from March 31 to April 19 was below the April 19 high and the closing high occurred April 18. The swing should be edited to include the April 19 high rather than the March 31 high.

The April 19 high better reflects the end of the bull swing and the beginning of the bear swing.

Chart Distortions Caused By Continuous Contract Roll-Overs

For every method of analysis of futures markets there is the question of what series of data is the most suitable. From the data chosen, a <u>continuous contract</u> is developed that joins together a long series of futures contracts to form a continuous series of data over a long period of time. The two main variables of constructing a continuous data series are the date of roll over to the next contract and whether there is any sort of price adjustment to "smooth" the data. Our objective is to choose the series of continuous data that is the most suitable for developing our Swing Files.

There is no need to go into a discussion of all of the various methods of constructing a continuous series of data. All traders should be familiar with the various methods. Each method has its weakness, but only one method is appropriate for time and price analysis. In the case of time and price analysis, the best series of data to use is to roll over contracts on the last trading day of the expiration month to the next most active contract with no price adjustments. While some distortions of data may occur using this method, we can easily adjust our Swing Files to develop the most accurate series of pivots for our work. The drawbacks of all other methods of constructing continuous contracts far outweigh any potential advantages.

The type of continuous contract that should be used to construct the swing files is called "nearest futures", "first month futures" or "spot futures." I use the term spot futures contract. Many data services call this the "5699" contract. It is the continuous daily data that rolls over on the last trading day to the next <u>most active</u> contract with no price adjustment.

A spot futures data series of rolling over on last trading day with no price adjustments is the closest representation of the cash price of any of the methods of constructing a continuous contract. So, you may ask, why not just use the cash price for analysis and projections? For two reasons. One, most traders do not trade the cash markets, they trade the futures markets. Two, many data services do not carry long term cash prices for many markets. Since we are trading on the futures markets and have long-term, futures market data easily and cheaply available, we use the spot futures data series, as it will most closely represent the current position of traders.

The two potential problems with using spot futures data to develop the Swing Files for time and price analysis have to do with potential distortions of the time of trend change pivots that occur near contract rollover and price distortions of gaps that occur at roll over. Both of these problems can be easily corrected.

**Roll-Over Time Distortions On Continuous Contracts**

Distortions of the time of trend reversals may occur in markets where the further out contracts trade at a discount to the nearby contracts and a change in trend occurs near the time of roll over or contract expiration. If the roll over at contract expiration occurs soon after a trend reversal, the new contract price may be at a lower level than the older contract price was at the trend change. If this is the case, the spot futures chart may show a lower low at a later date than when the trend change actually occurred. This may occur in the bond and currency markets as the further out contracts in these markets trade at a discount to the nearby contract. How do we correct this problem?

Each of the financial markets such as bonds and currencies have contract roll over every three months in the second half of March, June, Sept. and Dec. Once a swing file is created, examine it to see if there appears to be a trend change in any of these months. Then look at the monthly contract near that period to validate the price activity near the time of the change and when the trend change actually occurred. Let's take a look at an example of one of these roll-over distortions.

Once we determine the proper date of the trend change pivot, we simply edit that date in our Swing File.

This is the 5699 contract data for the DM, which rolls over on last trading day. Dec. 9 is the price low. If rollovers occur near trend changes, the swing file may have to be edited to accurately represent the trend change date. We will want to look at the March contract, which traded throughout this bottoming process and through the roll over period.
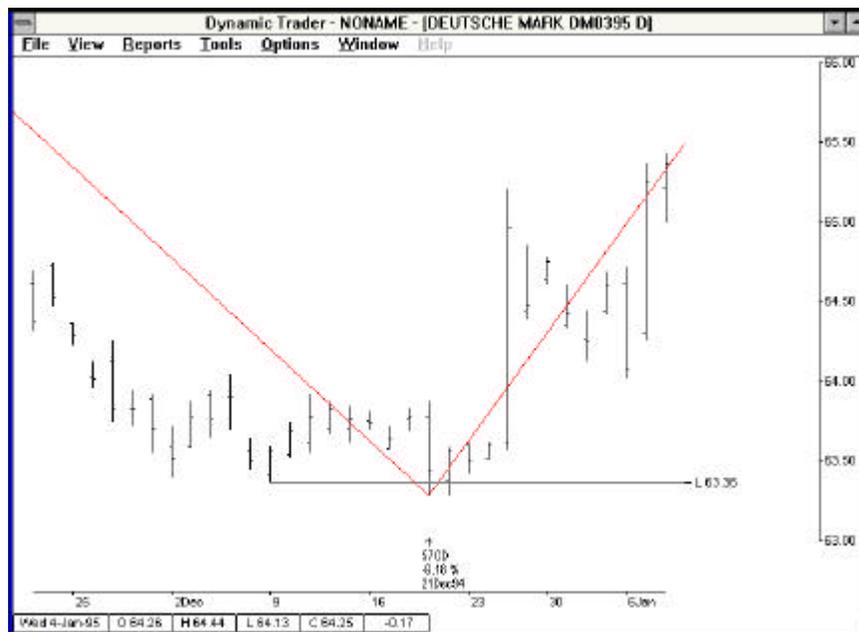
A look at the March contract for the same period clearly shows the low was made on Dec. 21, not Dec. 9. The March contract was not distorted by the roll over that occurred between Dec. 9 and Dec. 21 on the continuous data.

Dynamic Trader - [T. BONDS   US5699 D]

File   Indicators   Reports   Statistics   Swings   Studies   Tools

15Oct93
122`06

9Dec93
117`30

28Jan94
117`28

Spot Futures Bond Contract

The Jan. 4 low was made shortly after the expiration of the Dec. contract and the roll-over to the March contract.

Did bonds really make a lower low in Jan.?

114`09
23Nov93

113`11
4Jan94

122`00
120`00
118`00
116`00
114`00
112`00
110`00
108`00

24   Oct 8   15   22   29   Nov 12   19   26   Dec 10   17   23   31   Jan 14   21   28   Feb 11   18   25   Mar 11

Wed 2-Mar-94   O 111`00   H 111`14   L 110`02   C 111`05   0`06   2%

Dynamic Trader - [T. BONDS   US0394 D]

File   Indicators   Reports   Statistics   Swings   Studies   Tools

15Oct93
120`31

9Dec93
116`23

28Jan94
117`28

March 1994 Bond Contract

The Jan. 4 low actually traded higher than the Nov. low on the March contract. The March contract shows the true price pattern for the Nov. through Jan. period. The price pattern is not distorted by a roll over as the continous contract was.

113`00
23Nov93

113`11
4Jan94

121`00
120`00
119`00
118`00
117`00
116`00
115`00
114`00
113`00
112`00
111`00
110`00
109`00
108`00

Aug   Sep   Oct   Nov   Dec   94   Feb   Mar   Apr

Wed 2-Feb-94   O 116`02   H 116`15   L 115`31   C 116`14   0`08

14

What do we do about the <u>price</u> distortions at the pivots near roll-over that require us to correct the date of roll over? If we edit the date of trend change from the original spot data date to the monthly contract date, do we also change the price to the price on the monthly contract? No. Does that mean that the Swing File will not be an accurate representation of the price swings? Yes. We must simply accept that there is no perfect method of recording both time and price pivots in the same Swing File. Fortunately, having slight distortions of <u>price</u> swings in the Swing File is not critical.

The relatively minor price distortions that may occur at roll-over, trend changes are usually not important in our analysis and statistical studies. The price analysis and statistical studies computed from Swing File information provides us with the general parameters of past and potential future price activity. The smaller degree price analysis will focus in on the price zones from where the trading decision is made. The smaller degree price analysis is usually made from the contract that is traded and the smaller degree swing file on this contract will not have the roll over problem.

Roll Over Price Distortions On Continuous Contracts

With agricultural markets particularly, there can be a large price gap at the roll over of spot futures data from one contract to the next. Many "adjusted" or "normalized" continuous contracts have been developed to "smooth" the data. The drawbacks to these adjusted continuous contracts outweigh any potential advantages. We accept the price gaps of the long-term, spot futures continuous data contracts knowing that they will provide the broad price zones of support and resistance which will be updated and refined by the analysis of the contract month that will be traded.

Agricultural market traders should also do the long-term analysis on a single month continuous contract, otherwise known as a Gann style contract. Gann contracts are constructed by using only the data from one monthly contract from each year. When that monthly contract expires, the next data to append to the contract is for the same contract month of the following year. A comprehensive data service will either provide Gann contracts as part of their historical data and updating service or provide data management software that will allow the user to construct Gann continuous contracts.

Let's take soybeans as an example. We would construct a July soybean continuous contract by appending July soybean prices only, year after year. Once the July 1993 contract expires, we begin adding the July 1994 prices to our data file the day after the July 1993 contract expired. We construct this data series for

each monthly contract that we may want to trade. We than have an accurate representation of price movement for each individual contract month. In constructing our Swing Files from Gann continuous contracts, we have no need to adjust the time of reversals, as we are only dealing with the information from a single contract month.

All comprehensive data suppliers the data or the provide software to construct continuous data in the manner described above.

Degrees of Swing Files

A trader should maintain three Swing Files for each market, one for each degree of change. The normal time and price ranges of each degree may be different for each market. A weekly chart will reveal the obvious intermediate and major trend changes. Intermediate degree trends usually last approximately 30-90 days and may run as long as six months. Don't make it difficult. Simply examine a weekly chart for the obvious swings. The major highs and lows will also be obvious. The daily chart will reveal the minor swings.

To determine the percentage change to initially construct the Swing File, simply measure the percentage change of the smallest swing you want to include in the Swing File. Then build the Swing File by that percentage change including the time filters. When that is complete, do any editing of pivot points that is necessary and you have the completed Swing File. Once the Swing File is complete, it takes very little time each month to keep it updated and edited. Each market is automatically updated by Dynamic Trader by the chosen percentage change and time filters that usually should be the same as the same filter the file was initially constructed. All the trader must do is be aware of contract roll overs each month and validate any new swings that may occur near a roll over period.

Swing File Construction Is Easier That It Seems

We have looked at how to initially construct a swing file and how and why we may have to edit some of the swings so the swing file accurately represents the trend changes as best as possible within the limitations of any set of continuous data. While there are several conditions we must be aware of to consider edits, they are infrequent and will be obvious once the initial swing file is overlaid on the bar chart. Once a swing file is constructed and the edits are made, very little time is needed to keep the swing file up-to-date.

The routines and reports in Dynamic Trader that require swing files help the user to quickly do a thorough analysis of the time and price position of a market.

These routines provide the trader with the information that is necessary to make an informed trading decision.
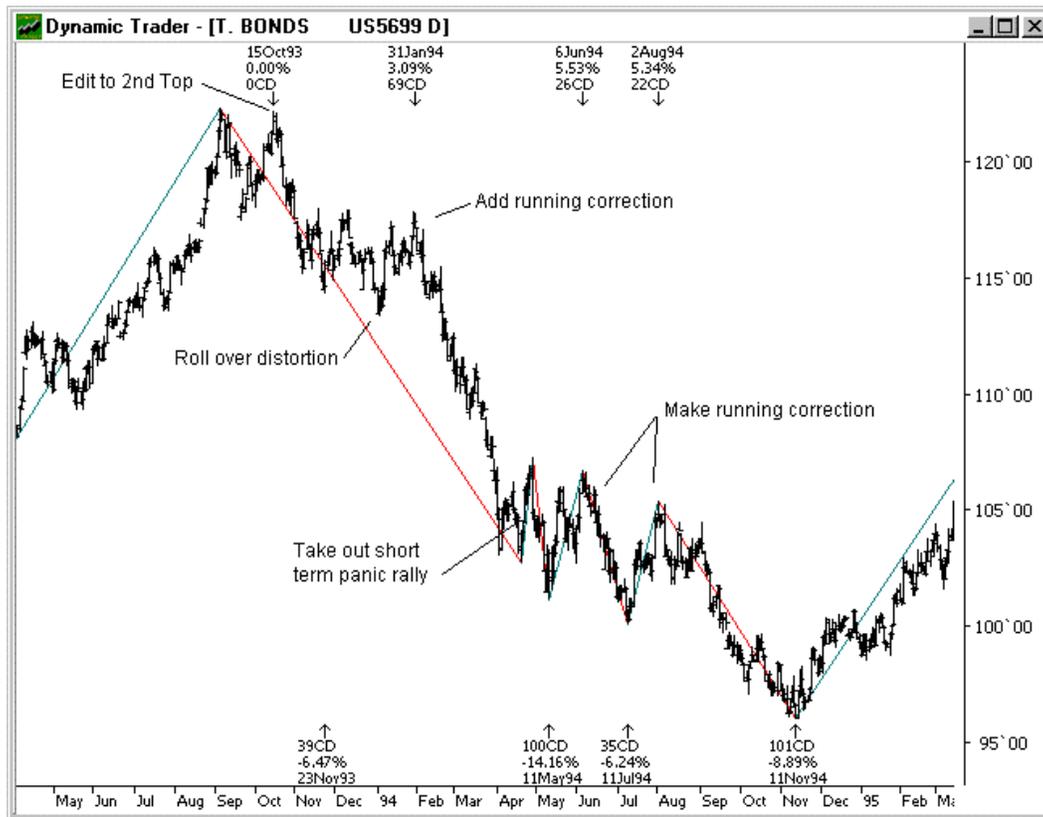
Let's build a swing file and see how it may be edited.

Bonds: 4% Swing File

The bond chart below shows an unedited 4% swing file over the bar chart. Except for the Sept. 1993-Nov. 1994 bear market, the swings appear to represent the time rhythm for this period. We may want to edit the swing file for the conditions that are noted on the chart.
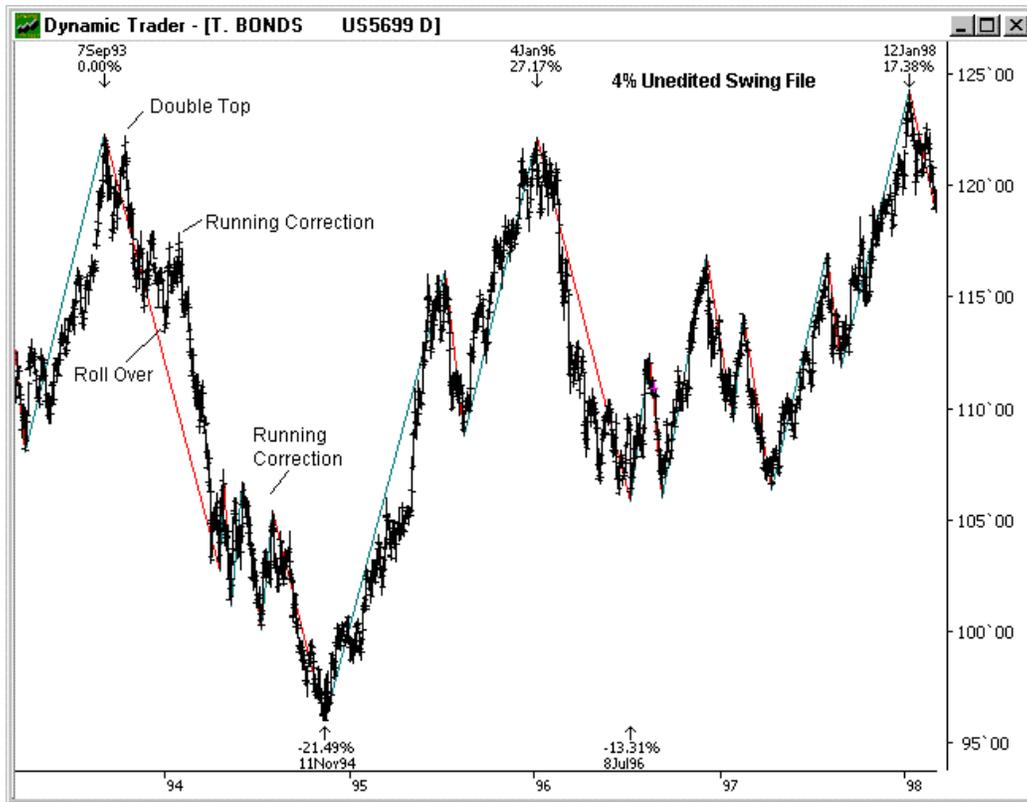
The <u>double top</u> is the first obvious edit. The <u>running correction</u> from the Nov. 23, 1993 low to Jan. 31, 1994 high is the next candidate. Earlier in this chapter, we saw how the lower low between these two dates was caused by the roll-over from the Dec. to March contract. While this running correction did not make a 4% price change in trend, it lasted 69 calendar days (CDs), longer than most of the 4% or greater corrections. It should be included in the swing file in order to make the file an accurate representation of the time rhythm for this period.

In March, bonds made a very <u>short-term panic</u> price advance of just 9 CDs (April 19-April 28). There was probably a news event that caused this panic, but bonds quickly returned to the bull trend. This very short term correction should be eliminated from the swing file.

From March 11, 1994 to Aug. 2, 1994, bonds made what we may consider an ABC <u>irregular correction</u> (type of running correction). Each of the component swings was greater than 5%. Should we consider this entire period one swing from a time perspective? This is one case where it is a real judgement call. If the purpose of this swing file is primarily for intermediate term time analysis, I would make it one swing. I would keep the swings as shown and save a second swing file that may be used for price analysis. This brings up an important point. Always consider

what is the objective of the analysis the swing file will be used for. I often have different swing files for the same degree and same period of time. One for time analysis and one for price analysis. There are usually only a few differences in each file.

Below is the edited 4% swing file which more accurately represents the time rhythm for this period.

The spot futures continuous data showed the Sept. 1993 high a few ticks above the Oct. 1993 high. Between these two dates, the Sept. contract expired and the data rolled over to the Dec. contract. Let's look at the Dec. contract data that traded throughout this period for a more accurate representation of the price pattern for that period.
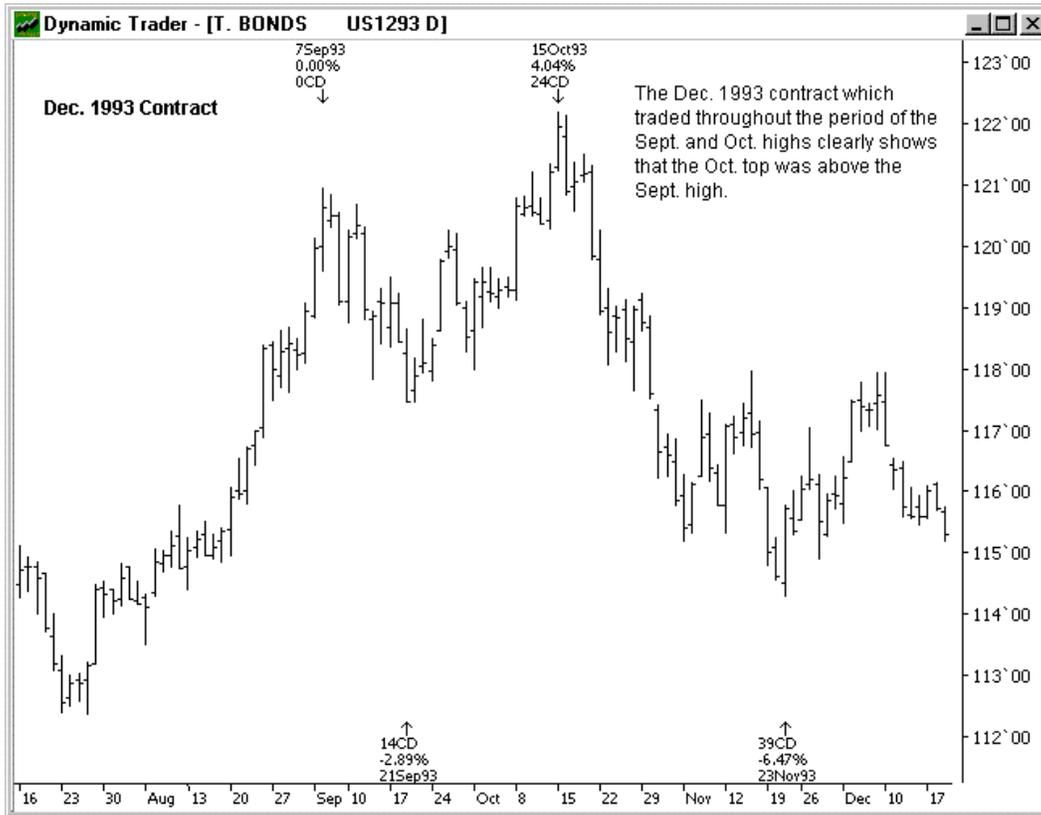
There really wasn't a double top in this period. The Oct. high was clearly higher. The contract roll over in the continuous data for this period distorted the price pattern.

Let's take another look at the Nov.-Jan. 1994 running correction on the March 1993 contract that traded throughout this period.

The March 1994 contract which traded through the period of the Nov. 23 low to Jan. 28 high not only shows that the intervening low was not lower, but the corrective rally was actually greater than 4%!

We saw earlier that the lower low between the Nov. 23 low ad Jan. 28 high on the continuous chart was caused by the contract roll over in late Dec. from the Dec. to March contract. The continuous data showed only a 3.09% price change for this correction. The price change was also distorted by the contract roll over. The further out contracts in bonds trade at a discount to the nearby contracts.

The March 1994 contract chart above shows that the actual price advance from the Nov. low to Jan. high was 4.31%, a swing that fits into the 4%+ swing file.

The first chart with the unedited 4% swing file that was shown in this section was for a five year period: 1993-1998. We made just four edits for this five year period. The balance of the swings for this period appears to be justified. After a quick view of the swing file on the bar chart, we noted where we may need to edit the file. It took very little time to view the individual contracts for the questionable periods to see if the continuous data may have distorted the price pattern for those periods. The file was edited and now we have a permanent record of the intermediate term swings we can quickly bring up on a bar chart for further analysis. The necessary edits were simple and logical.
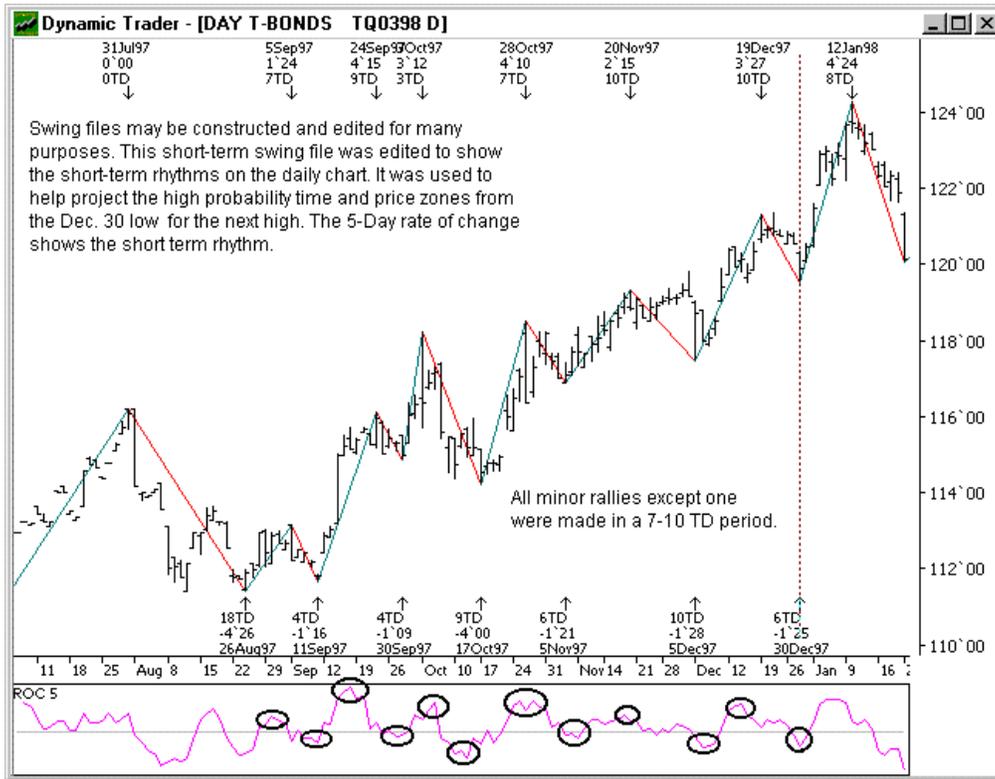
How much time does it take to maintain the swing file? New 4% swings are only made every few weeks or months. Dynamic Trader will automatically update the file each time it is loaded on a chart. All the user has to do is view the chart with swing file periodically and consider if any edits are necessary.

The Many Uses Of Swing Files

It is fast and easy to construct and edit swing files with Dynamic Trader. Always consider what is the purpose of the swing file when it is made. The purpose of the swing file determines how it may be edited. Are you primarily interested in time or price projections? Are you looking to project a high or low in time or price? What degree of change is being projected?

Below are a few chart examples of how swing files may be quickly edited for a particular purpose. Keep in mind, swing files and all of the time and price analysis routines that use swing files may be done on intraday as well as daily charts. It is so easy to quickly construct and edit swing files that I usually don't save most of the short-term swing files I construct for a special purpose. Once I've made the projections, the results may be saved on the notepad with any scenario.

Swing files may be constructed and edited for many purposes. This short-term swing file was edited to show the short-term rhythms on the daily chart. It was used to help project the high probability time and price zones from the Dec. 30 low for the next high. The 5-Day rate of change shows the short term rhythm.

All minor rallies except one were made in a 7-10 TD period.

Dec. 1997 Bonds

10 Bars Per Day
Edited 1/2% swing file.

Any swing file may be quickly constructed and edited. This swing file was edited to emphasize the low-low cycle and may be used with the Time Rhythm Zone routine and other time projection routines to project subsequent minor lows.

Note the regular time rhythm of the low-low cycle: 17-25 bars.

23

Dynamic Trader - [US_97Z.GT (5 bpd)]

Dec. 1997 Bonds
5 Bars Per Day

This intraday swing file was edited to represent the potential five wave structure of the rally from the Aug. 26 low.

Dynamic Trader's Wave-5 price projection template was used to project from the Wave-4 low the high probability Wave-5 price target. With the swing file on the chart, only one click on the Wave-4 low was needed to make all price projections. Wave-5 was made just a few ticks above the high probability projected price zone.

117.10: W.5 = 162% W.4
117.15: W.5 = 100% W.1
118.07: W.5 = 61.8% W.1-3

These have been just a few examples of the unique uses of swing files in Dynamic Trader. It is well worth your time to explore the many uses of swing files. They are required for many of the time and price routines and reports that are unique to Dynamic Trader which automate the time and price analysis. Take advantage of the unique power of Dynamic Trader. No other technical analysis software program even comes close to the ability of Dynamic Trader to do unique and comprehensive time and price analysis. Dynamic Trader gives you the edge other traders don't have. Put it to good use by mastering swing file construction and their use with the time and price analysis available in Dynamic Trader.