



## FTS Real Time Project: Sector Rotation Strategies

### Introduction

In a sector rotation strategy, you invest in sectors that are expected to perform well given the state of the economy. The idea is that different sectors perform better when the economy is growing than when it is not growing. The original strategy was proposed by Stovall (1996, 'Sector Investing'). Stovall divided the economic cycle into four phases: full recession, early recovery, late recovery, and early recession, and which sectors do well at what stage of the cycle. For example, a cyclical stock (defined as a stock that performs well when the economy is expanding and poorly when the economy is contracting) should be bought at the beginning of a recession. An example of a cyclical stock is an automobile company.

Sector rotation strategies focus on nine sectors: cyclical, technology, industrial, basic industry, energy, consumer staples, services, utilities, and finance. In a basic implementation of the strategy, you would allocate your investments by identifying the stage of the economic cycle and then selling the sectors that are expected to do poorly and buying those that are expected to do well. In a more advanced strategy, you can match the stock market cycle (market bottom, bull market, market top, and bear market), with the economic cycle, since the performance of the stocks in a sector will reflect expectations about the economic cycle and so will start reacting before the economy actually changes.

You can find a detailed description of the strategy at the web sites [stockcharts.com](http://stockcharts.com) and at [seekingalpha.com](http://seekingalpha.com) as well as a variety of other investing sites, and many of these sites also indicate what they think is the current state of the economic cycle.

The National Bureau of Economic Research (NBER) identifies the beginning and end of a recession, but this announcement is made quite some time after the event. Typically, several factors are used to identify the stage of the economic cycle. These are:

- Full recession
  - GDP has been contracting, interest rates have been falling, consumer confidence is low
  - Sectors to buy: cyclical, technology, industrials
- Early recovery
  - The growth of GDP has turned positive, consumer confidence is increasing, the yield curve has steepened

- Sectors to buy: industrials, basic materials, energy
- Late recovery
  - Growth of GDP has flattened, consumer confidence is not increasing, interest rates are rising
  - Sectors to buy: energy, consumer staples, services
- Early recession
  - GDP growth goes to zero or starts to turn negative, consumer confidence falls rapidly, the yield curve flattens
  - Sectors to buy: services, utilities, finance

## **Project**

This project is conducted using the FTS US Sector Case. In this case, you can trade a wide variety of exchange traded funds (ETF's) that represent these sectors and some others, such as health care. An ETF, for example the Consumer Staples Select Sector SPDR Fund (which trades under the ticker XLP) is a portfolio of stocks that invests in consumer staples, defined on the ETF web site as being "Designed to track food, non-durable household and personal goods, and other sectors that are less sensitive to economic cycles" (quote from State Street, <http://www.statestreetspdr.com>).

A big advantage of an ETF such as this is that it allows you to have easy access to the sector without having to buy individual stocks.

There are close to 1000 ETF's that trade; these include ETF's that track stock indexes, as well as sectors (e.g. portfolios of international bonds, international sector ETF's, bonds within a country, sectors within a country, etc.), and you can find a lists of them at many web sites.

In this case, the ETF's you can trade are shown in this picture of the FTS Real Time Client's Quote Window:

Ticker Window. Click on a Ticker to trade

User Tip File Edit Options

Note: Indicative Quotes Only. All settlement is at real-time prices at the server.

Ticker	Name	Currency	Description
XLY	SPDR CNSMR DISCR SEC ETF	US Dollar	ETF
XLP	SPDR CNSMR STPLS SEC ETF	US Dollar	ETF
XLE	SPDR ENERGY SECTOR ETF	US Dollar	ETF
XLF	SPDR FINANCIAL SECTR ETF	US Dollar	ETF
XLV	SPDR SELECT SEC HLTH ETF	US Dollar	ETF
XLI	SPDR INDSTRRL SECTOR ETF	US Dollar	ETF
XLB	SECTOR SPDR TR MTRL ETF	US Dollar	ETF
XLK	SPDR TECHNOLOGY SEC ETF	US Dollar	ETF
XLU	SPDR UTILITIES SECTR ETF	US Dollar	ETF
DBE	POWERSHARES DB ENGY IDX	US Dollar	ETF
DBA	POWERSHARES DB AGRI INDX	US Dollar	ETF
DBB	POWERSHARES DB BASE METL	US Dollar	ETF
DBS	POWERSHARES DB SILVER FD	US Dollar	ETF
DBO	POWERSHARES DB OIL INDX	US Dollar	ETF
DBP	POWERSHARES DB PRCS METL	US Dollar	ETF
DGL	POWERSHARES DB GOLD FND	US Dollar	ETF
PKOL	POWERSHARES GLB COAL ETF	US Dollar	ETF
PSTL	POWERSHARE GLB STEEL ETF	US Dollar	ETF
IYH	ISHARES DJ US HLTHCR ETF	US Dollar	ETF
IYK	ISHARES DJ US CNSMR GOOD	US Dollar	ETF
IYT	ISHARES DJ TRNSP AVG ETF	US Dollar	ETF
IDU	ISHRS DJ US UTILITES ETF	US Dollar	ETF

Some of these are duplicates on the sector; the ETF's are created by different companies, so an interesting exercise you can conduct outside of this project is to see how they compare to each other, for example by plotting the performance of the different energy ETF's. If you want a more detailed description of the ETF, you simply double click on the ticker and the FTS Real Time Client will immediately take you to web sites where you can get all sorts of information, including historical prices.

## Project Requirements

The project has three parts. In the first part, you have to determine the stage of the economic cycle. In the second part, you have to invest in the ETFs. After the investments have been made, you will simply hold your position for about one month, and then evaluate the performance of the sectors. The third part is the analysis of the strategy's performance.

### Part 1: Identifying the economic cycle

- Calculate the quarterly rate of growth of GDP over the past year
  - You can get data from many sites, including the US Bureau of Economic Analysis, [www.bea.gov](http://www.bea.gov), as well as economic data sites such as [economagic.com](http://economagic.com)
- Calculate whether interest rates have been falling or rising and whether the yield curve has been flattening or steepening
  - You can get data on US interest rates from [www.federalreserve.gov](http://www.federalreserve.gov) (click on Economic and Research Data at the top, then Statistical Releases and Historical Data on the left, then on Data Download Program, and then follow the on-screen instruction to download the data).
  - For the shape of the yield curve (steep or flat), calculate the difference between the yield on the 10 year Treasury note and the 2 year note
- Estimate whether consumer confidence is increasing or decreasing
  - Consumer confidence data is provided by the Conference Board. The University of Michigan also conducts a Consumer Sentiment survey that you can use

The requirement for part 1 is a report with an executive summary stating which phase the economy is in followed by a summary of the analysis you conducted. During this part, you should also become familiar with major economic announcements; you can find out what announcements are made by looking at e.g. [Bloomberg.com](http://Bloomberg.com)'s economic calendar.

### Part 2: Investing

- Based on the conclusion of part 1, identify the sectors that you expect to perform well. Note that at a specific stage of the economic cycle, even if some sectors are expected to perform well, some may be expected to perform better than others. So you will have to decide which sectors you think are poised for slow growth, medium growth, and rapid growth.
- Decide your sector allocation, which is the proportion of your money you will invest in each sector. For example, you may invest 25% in energy, 40% in utilities, and the remainder in technology. In doing so, think about the risks; you may not have picked the state of the cycle correctly, and also the relationship between this state and sector performance is not guaranteed. In fact, you may want to invest in sectors that are not predicted to do that well just to lower the risk.
- Make the investments, and do not short sell any stocks.

The requirement for part 2 is a one page report that identifies the sectors you decided to invest in and how you made the allocation decision.

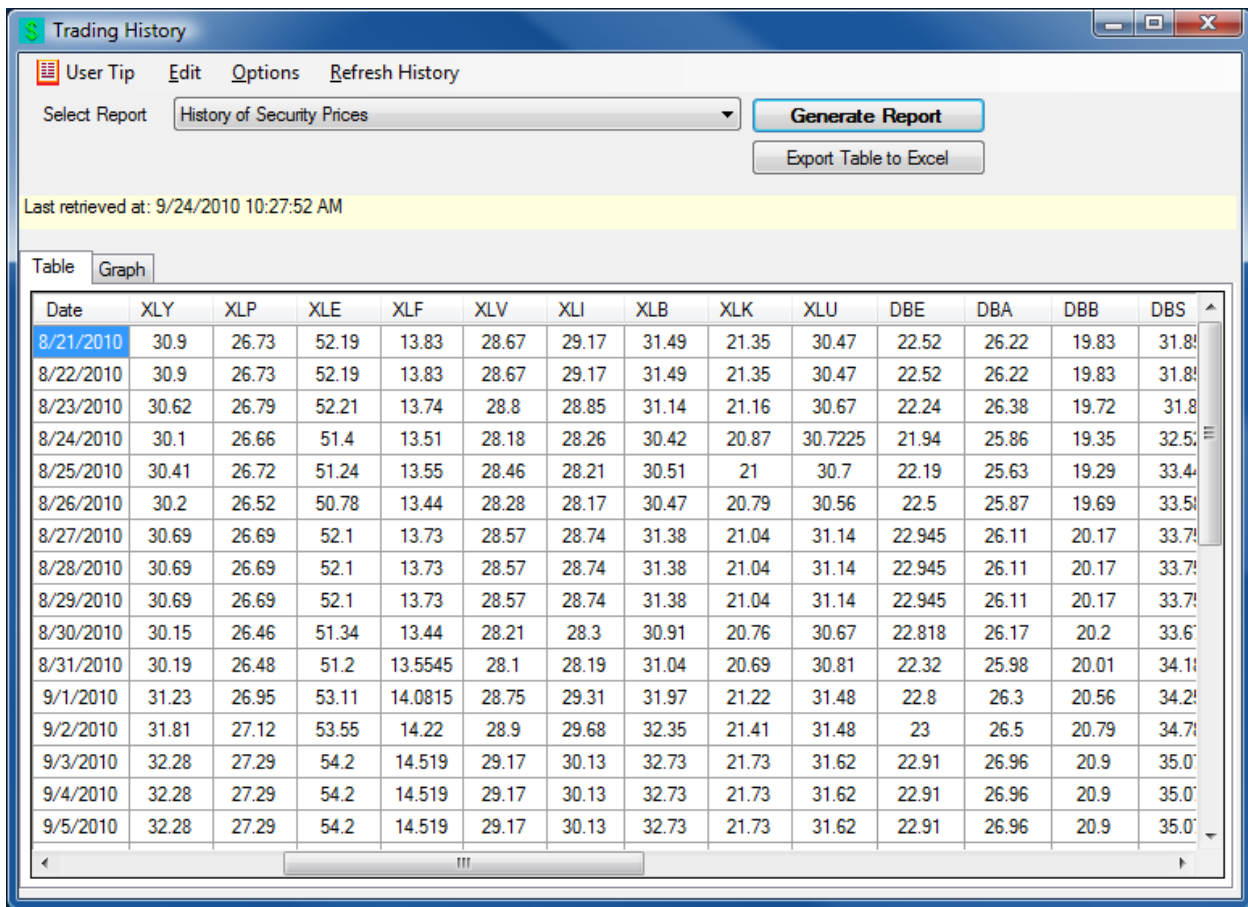
### Part 3: The Results

The requirement for part 3 has three parts:

- Compare the stage of the economic cycle at the end to that when you started
- Evaluate the performance of the sectors you chose and your portfolio
  - A description of how to do this is below
- Conclude whether you were able to identify the economic cycle correctly and whether you think it is possible to forecast economic activity, forecast how sectors respond to economic activity, and whether a sector rotation strategy is an effective trading strategy.

### Appendix: Evaluating Performance

To evaluate how the sectors and your portfolio performed, you will need to download your market value history as well the history of the prices of the ETF's you bought. These are accessed from the Reports menu. Once the history is downloaded, select "History of Security Prices" and click "Generate Report." You will see:



The screenshot shows a window titled "Trading History" with a menu bar containing "User Tip", "Edit", "Options", and "Refresh History". Below the menu bar is a "Select Report" dropdown menu set to "History of Security Prices", a "Generate Report" button, and an "Export Table to Excel" button. A status bar indicates "Last retrieved at: 9/24/2010 10:27:52 AM". The main content area has "Table" and "Graph" tabs, with "Table" selected. The table displays the following data:

Date	XLY	XLP	XLE	XLF	XLV	XLI	XLB	XLK	XLU	DBE	DBA	DBB	DBS
8/21/2010	30.9	26.73	52.19	13.83	28.67	29.17	31.49	21.35	30.47	22.52	26.22	19.83	31.81
8/22/2010	30.9	26.73	52.19	13.83	28.67	29.17	31.49	21.35	30.47	22.52	26.22	19.83	31.81
8/23/2010	30.62	26.79	52.21	13.74	28.8	28.85	31.14	21.16	30.67	22.24	26.38	19.72	31.81
8/24/2010	30.1	26.66	51.4	13.51	28.18	28.26	30.42	20.87	30.7225	21.94	25.86	19.35	32.51
8/25/2010	30.41	26.72	51.24	13.55	28.46	28.21	30.51	21	30.7	22.19	25.63	19.29	33.41
8/26/2010	30.2	26.52	50.78	13.44	28.28	28.17	30.47	20.79	30.56	22.5	25.87	19.69	33.51
8/27/2010	30.69	26.69	52.1	13.73	28.57	28.74	31.38	21.04	31.14	22.945	26.11	20.17	33.71
8/28/2010	30.69	26.69	52.1	13.73	28.57	28.74	31.38	21.04	31.14	22.945	26.11	20.17	33.71
8/29/2010	30.69	26.69	52.1	13.73	28.57	28.74	31.38	21.04	31.14	22.945	26.11	20.17	33.71
8/30/2010	30.15	26.46	51.34	13.44	28.21	28.3	30.91	20.76	30.67	22.818	26.17	20.2	33.61
8/31/2010	30.19	26.48	51.2	13.5545	28.1	28.19	31.04	20.69	30.81	22.32	25.98	20.01	34.11
9/1/2010	31.23	26.95	53.11	14.0815	28.75	29.31	31.97	21.22	31.48	22.8	26.3	20.56	34.21
9/2/2010	31.81	27.12	53.55	14.22	28.9	29.68	32.35	21.41	31.48	23	26.5	20.79	34.71
9/3/2010	32.28	27.29	54.2	14.519	29.17	30.13	32.73	21.73	31.62	22.91	26.96	20.9	35.01
9/4/2010	32.28	27.29	54.2	14.519	29.17	30.13	32.73	21.73	31.62	22.91	26.96	20.9	35.01
9/5/2010	32.28	27.29	54.2	14.519	29.17	30.13	32.73	21.73	31.62	22.91	26.96	20.9	35.01

You can now export the data to Excel and calculate the return on the ETF's you selected. Similarly, select "End of Day Market Values," click "Generate Report", and export to Excel the daily market value of your portfolio. Once you have the data in Excel, you can calculate returns, volatility, etc. Some of the reports can also be generated directly, for example your performance report:

The screenshot shows a software window titled "Trading History" with a menu bar containing "User Tip", "Edit", "Options", and "Refresh History". Below the menu is a "Select Report" dropdown menu set to "Performance Report", with "Generate Report" and "Export Table to Excel" buttons to its right. A status bar indicates "Last retrieved at: 9/24/2010 10:33:52 AM". The main content area features a table with the following data:

	Portfolio	Benchmark
Average Return	0.00018	0.00151
Volatility	0.00073	0.00887
Alpha	-0.00133	
Tracking Error	0.00823	
Sharpe Ratio	0.09803	0.15818
Beta	0.07247	1
Treynor	0.00099	0.00140
Daily VaR (%)	0.00121	0.01463

The "P&L Report of All Securities" summarizes the profits and losses from your trades.