



IQS Research Brief

Does the VIX Forecast the Direction of the S&P 500?

November 5, 2009

In this IQS Research Brief, we try to determine if the short-term movements of the VIX give us any indication of the subsequent short-term movements in the S&P 500.

The general belief in the marketplace is that downward trending VIX portends increasing S&P 500 while upward trending VIX indicates decreasing S&P 500. Is this true for the short-term? Does the magnitude of the change affect the subsequent returns?

Analysis

For the trend in VIX, we calculated the % change in the daily closing VIX compared with the 20 day moving average of the VIX. Typically, this value is less than 10% upwards or downwards. For example, if the moving average VIX is 30, then the VIX needs to have moved above 33 or below 27 to account for a 10% movement. We then calculate the subsequent 20 day S&P 500 return.

Time Period

As you know, volatility and S&P 500 have behaved quite differently during the 1980's, 1990's and 2000's and more recently. To look at this effect, we segmented the analysis into the following time periods:

- 1986-2009
- 1990-1999
- 2000-2009
- 2007-2009

In appendices A-H are the graphs for the returns to the S&P 500 for the upward and downward trending VIX over the 4 time periods shown above. Appendix I includes the number of observations for each period.

Observations

The return to the S&P 500 decreases more and more as the VIX trends upwards. When there is an upward spike in the VIX, the S&P 500 is most likely to decrease. Over all time periods, the S&P 500 moves slightly upwards when the VIX trends just a little upwards.

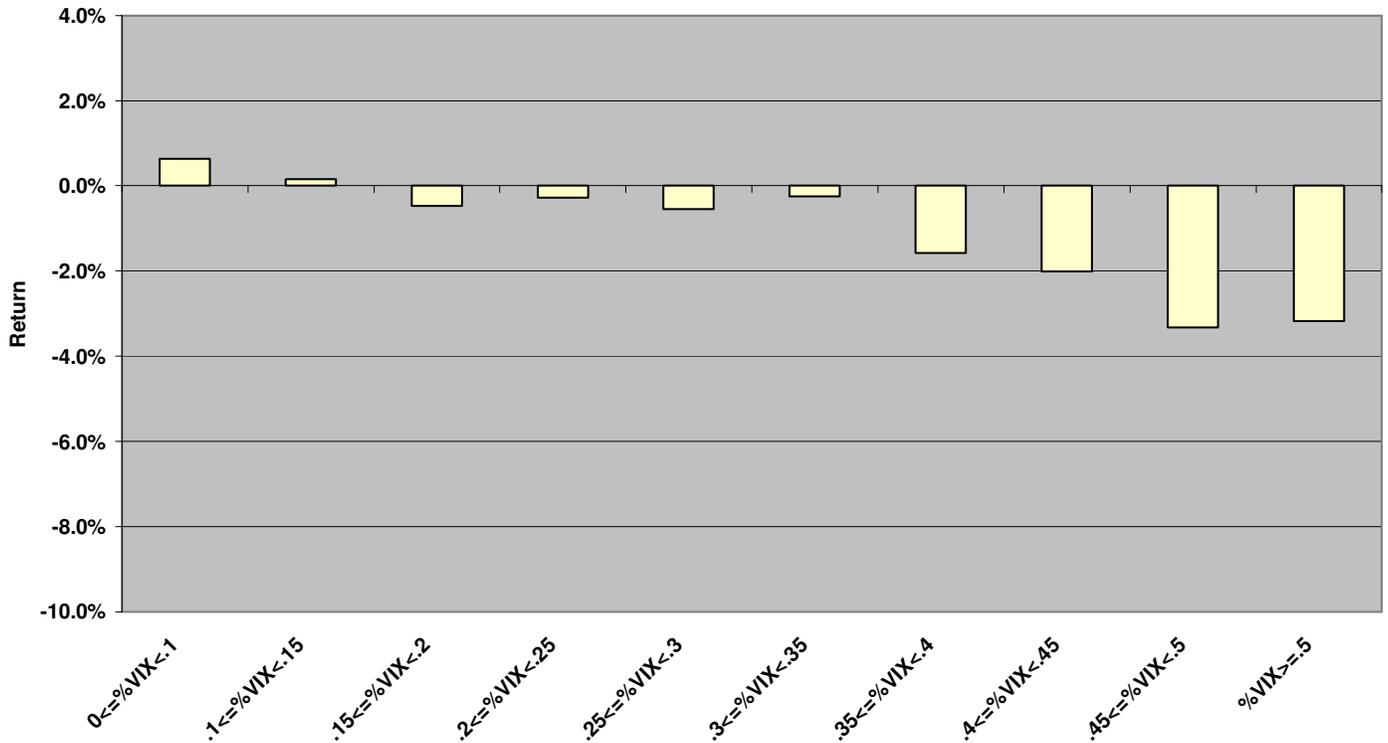
When the VIX trends downwards just a bit, the return to the S&P 500 is slightly upwards. However, the more steeply the VIX trends downwards, the more likely the S&P 500 to have negative returns.

Large movements in the VIX either upwards or downwards seem to indicate negative S&P 500 short-term returns to follow.

IQS Brief – How does the S&P 500 respond to changes in the VIX?

Appendix A:

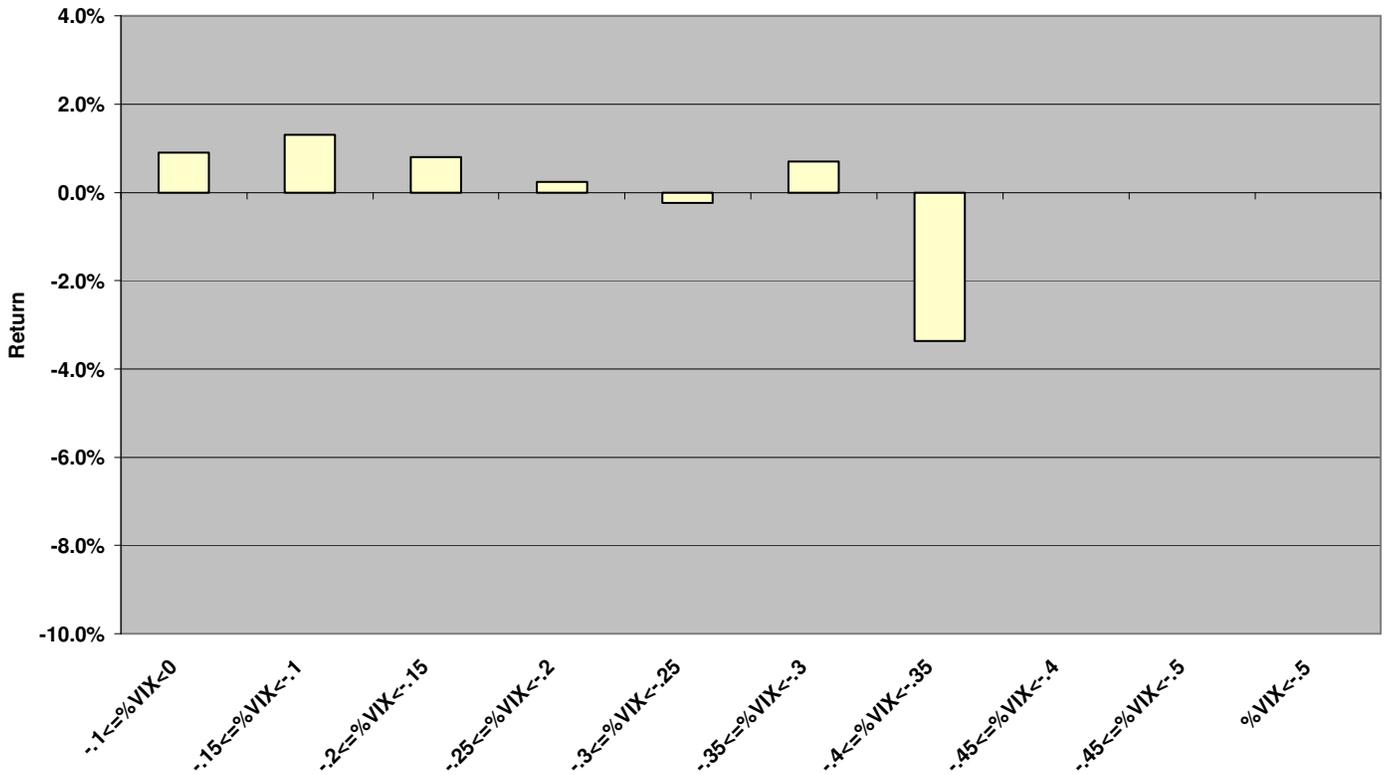
**VIX over 20 Day Moving Average, Upward Trend
Return for S&P500 Subsequent 20 Days
Jan 1986 - Oct 2009**



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Appendix B:

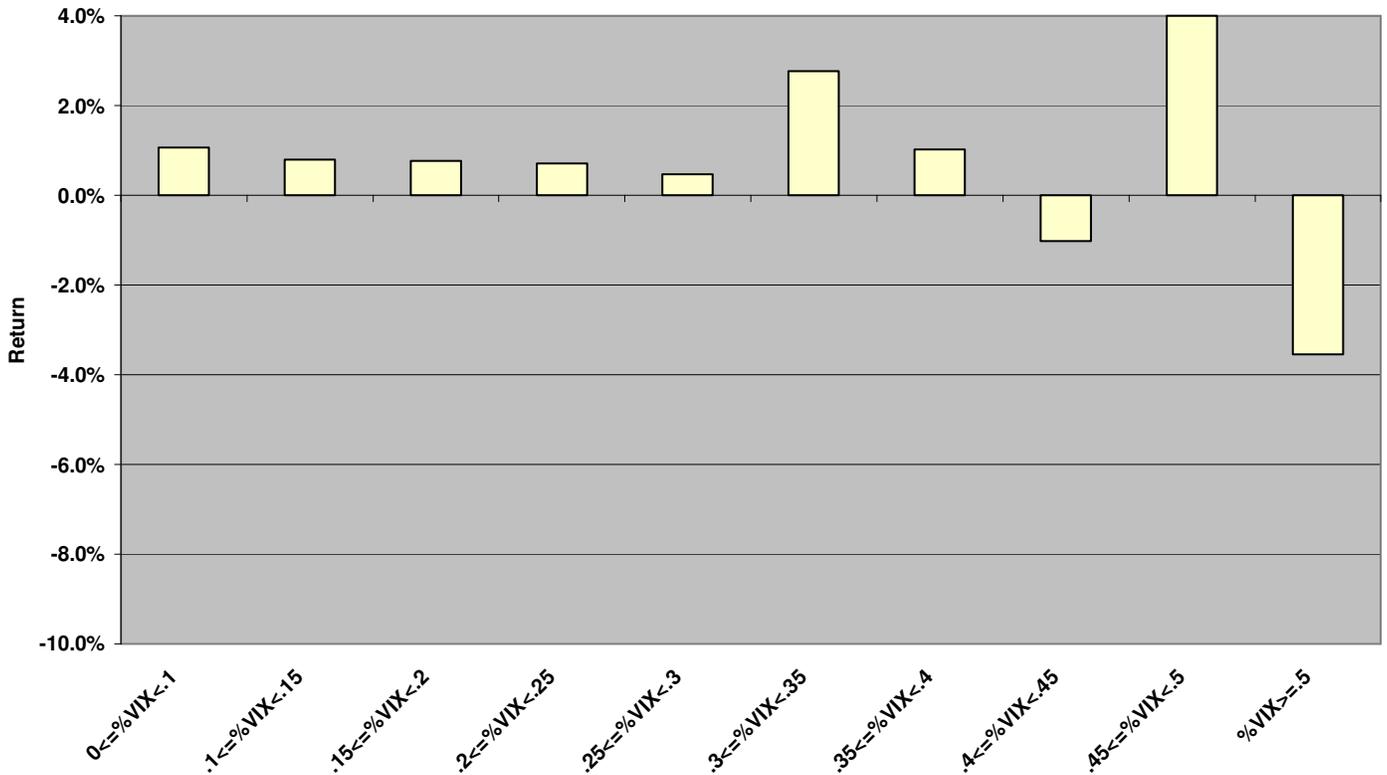
**VIX over 20 Day Moving Average, Downward Trend
Return for S&P500 Subsequent 20 Days
Jan 1986 - Oct 2009**



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Appendix C:

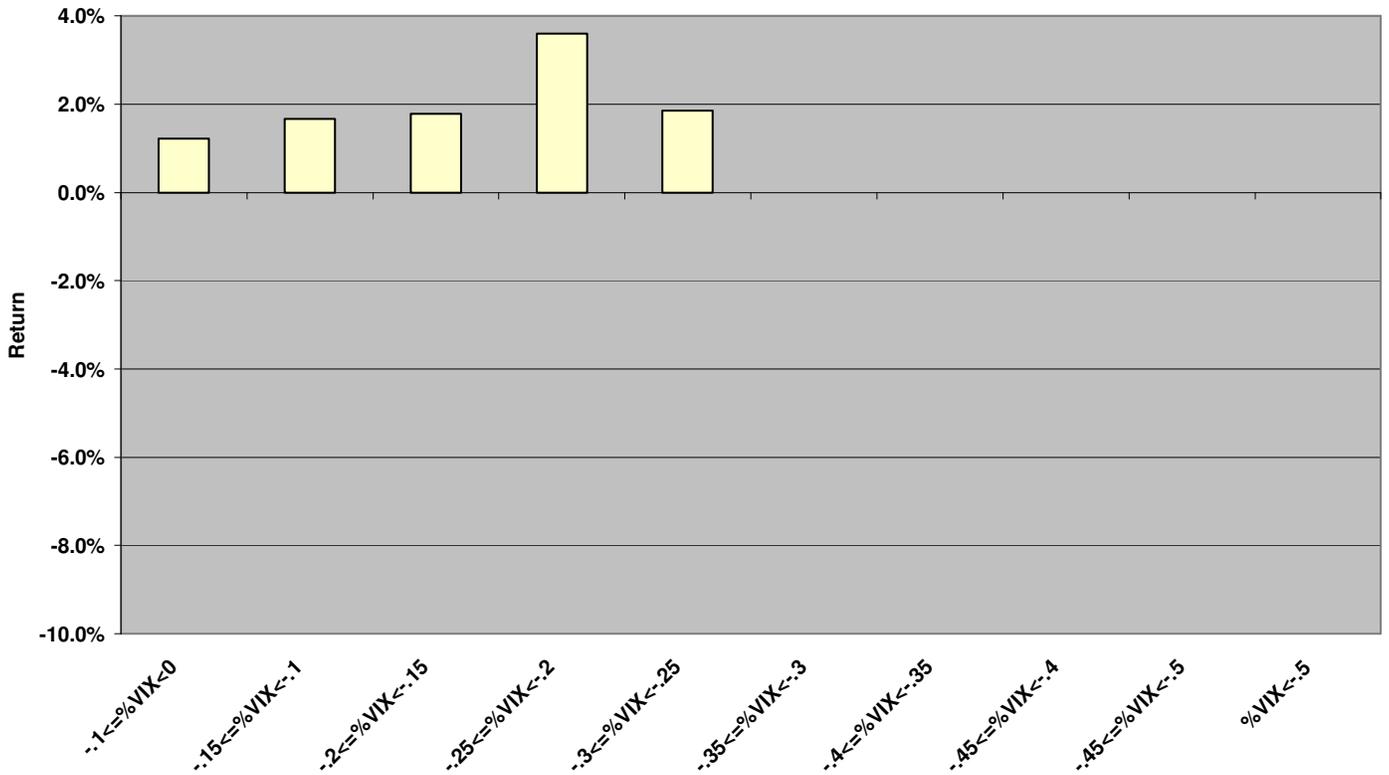
**VIX over 20 Day Moving Average, Upward Trend
Return for S&P500 Subsequent 20 Days
Jan 1990- Dec 1999**



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Appendix D:

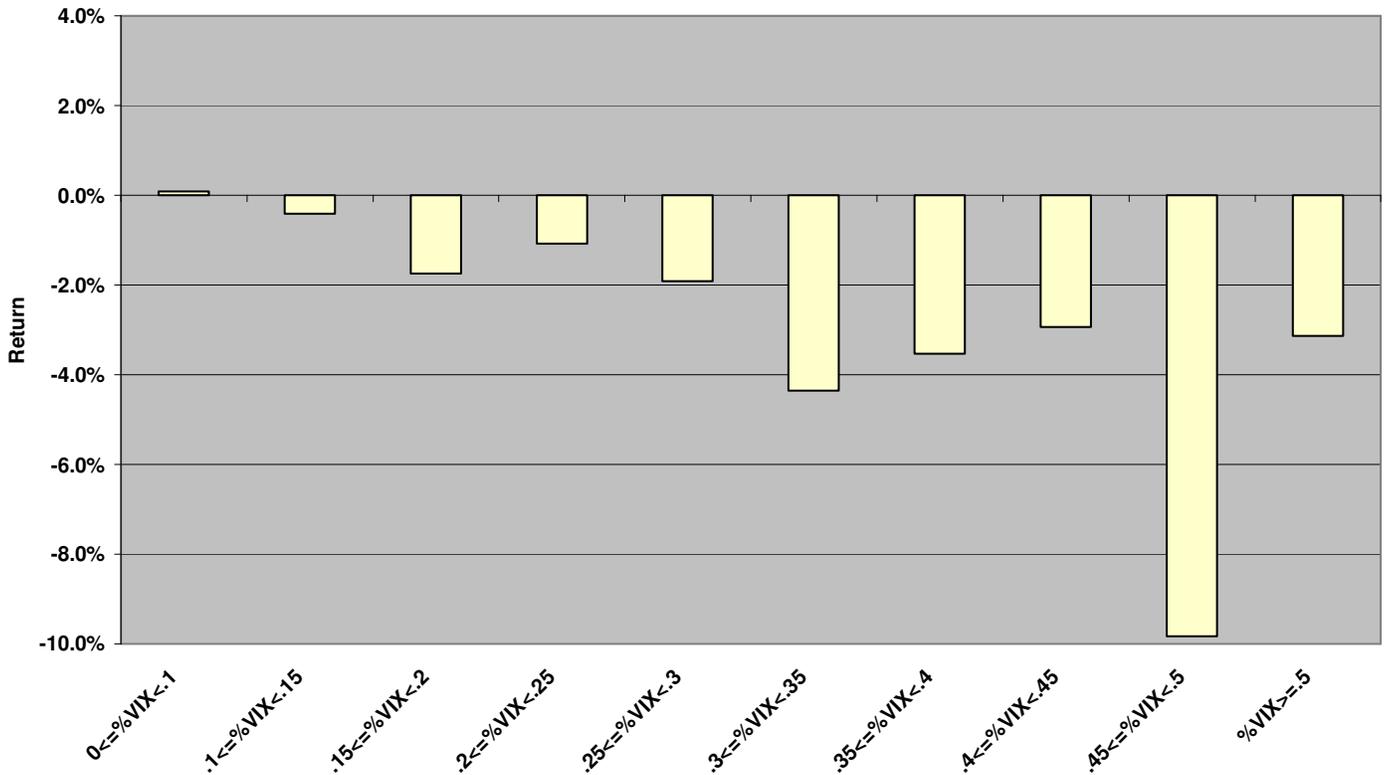
**VIX over 20 Day Moving Average, Downward Trend
Return for S&P500 Subsequent 20 Days
Jan 1990- Dec 1999**



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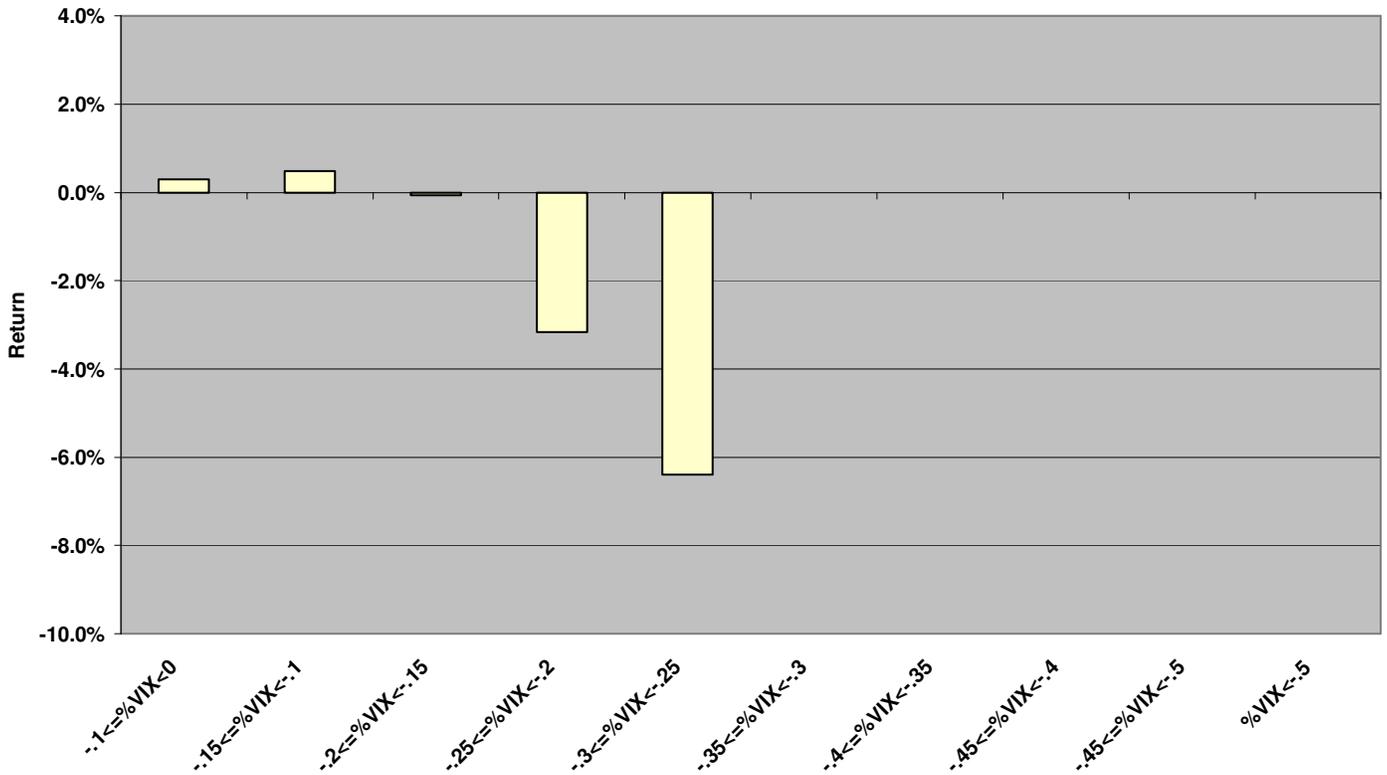
Appendix E:

**VIX over 20 Day Moving Average, Upward Trend
Return for S&P500 Subsequent 20 Days
Jan 2000 - Oct 2009**



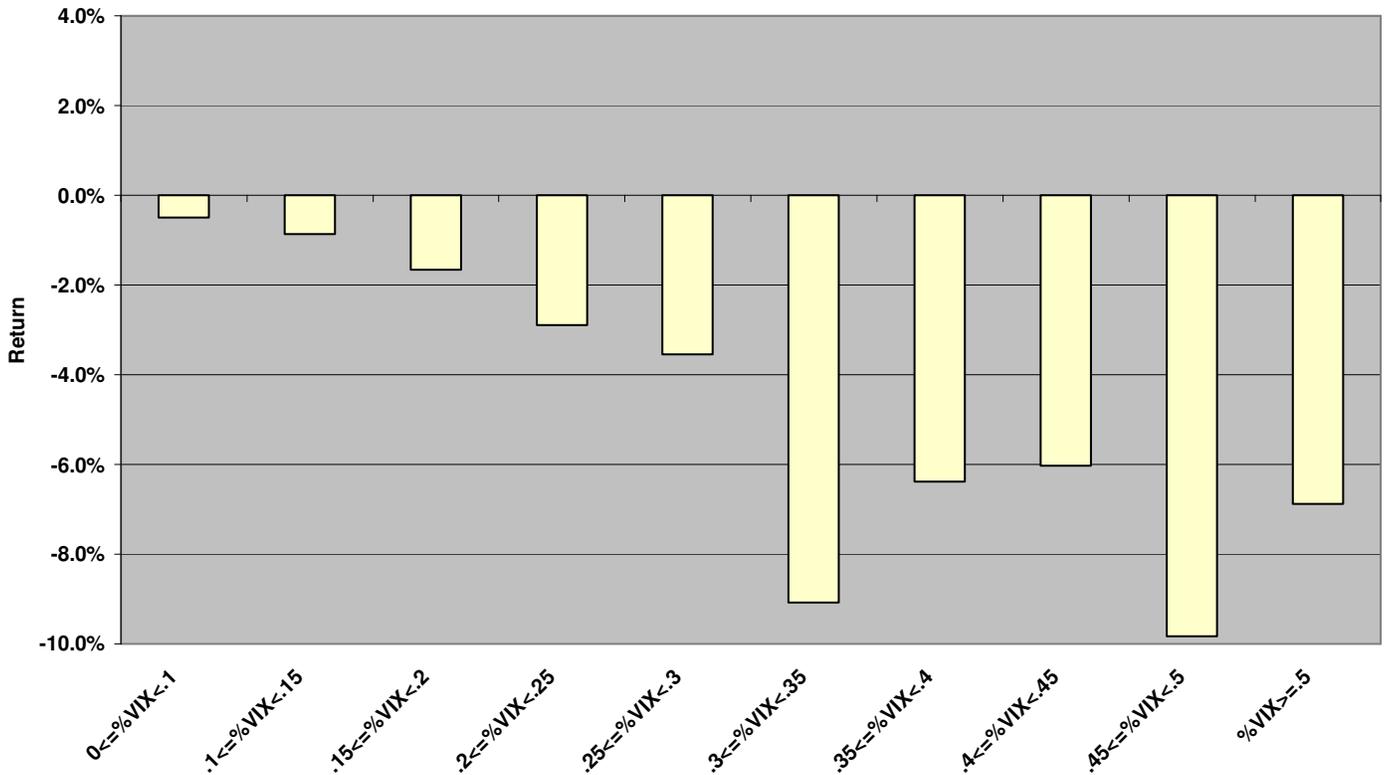
Appendix F:

VIX over 20 Day Moving Average, Downward Trend
Return for S&P500 Subsequent 20 Days
Jan 2000 - Oct 2009



Appendix G:

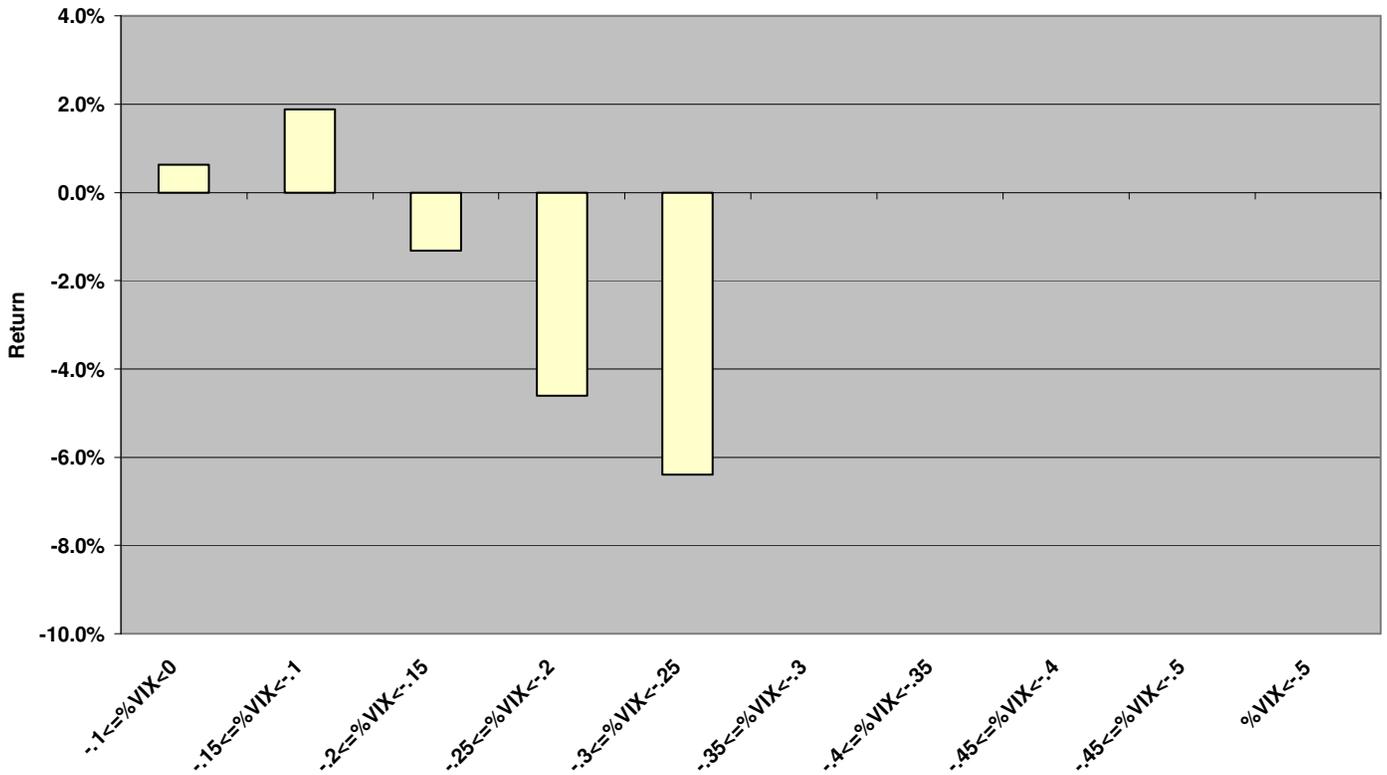
VIX over 20 Day Moving Average, Upward Trend
Return for S&P500 Subsequent 20 Days
Jan 2007 - Oct 2009



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Appendix H:

**VIX over 20 Day Moving Average, Downward Trend
Return for S&P500 Subsequent 20 Days
Jan 2007 - Oct 2009**



Appendix I:

Observations - Upward Trending VIX

	<u>1986-2009</u>	<u>1990-1999</u>	<u>2000-2009</u>	<u>2007-2009</u>
0<=%VIX<.1	1739	779	649	175
.1<=%VIX<.15	373	159	160	33
.15<=%VIX<.2	217	94	101	27
.2<=%VIX<.25	111	50	47	15
.25<=%VIX<.3	72	34	31	19
.3<=%VIX<.35	38	21	16	8
.35<=%VIX<.4	35	12	20	12
.4<=%VIX<.45	18	6	10	8
.45<=%VIX<.5	8	2	4	4
%VIX>=.5	32	7	16	11

Observations - Downward Trending VIX

	<u>1986-2009</u>	<u>1990-1999</u>	<u>2000-2009</u>	<u>2007-2009</u>
-.1<=%VIX<0	2463	997	1028	266
-.15<=%VIX<-.1	626	240	274	83
-.2<=%VIX<-.15	182	87	80	30
-.25<=%VIX<-.2	77	35	33	18
-.3<=%VIX<-.25	11	5	2	2
-.35<=%VIX<-.3	3			
-.4<=%VIX<-.35	2			
-.45<=%VIX<-.4				
-.45<=%VIX<-.5				
%VIX<-.5				