

# Value Trap Indicator v7.0 – Backtesting Results –

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## Executive Summary

Ever since the first version of the Value Trap Indicator was released in April 2015, the tool has consistently proved its ability to identify companies likely to go bankrupt, through simple inputs from financial statements.

After 6 iterative versions of the Value Trap Indicator, mostly to improve user experience and interface, the formula has finally evolved to a v7.0. This latest update maintains the same bankruptcy predictive power of previous versions, but makes fundamental changes to the underlying formula—with the help of powerful computing and broad swathes of data sets.

## VTI v7.0 Backtest: 2003-2018

Expanding the scope past previous bankruptcies and into a large dataset of stocks and their key financials, the new formula (v7.0) shows a **predictive** power in avoiding the Value Trap type stocks that are more likely, on average, to underperform a universe of stocks (4,000+) both in frequency and by average total return.

- The 1y, 2y, 3y, and 5y CAGR is calculated after each VTI signal.
- An average of total median performance per year compared to the universe returns a difference of -0.7% CAGR over this examined time period.

## The Evolution from v6.0 to v7.0

Not only have the formulas to calculate the VTI score changed, but the application of the score has transformed from a strictly **static** Strong Buy / Strong Sell signal, to an indicator **monitoring adverse developments** in the business (as a “No Buy” / Strong Sell).

- A lack of a dividend payment no longer disqualifies a company automatically.
- More of an emphasis on changes in financials rather than absolute values.
- An average of 18%-25% of companies as a Strong Sell vs 43%-57% in v6.0.
- Much improved signaling of low return stocks with the VTI v7.0 Strong Sell vs v6.0.

# The 30 Biggest Bankruptcies – VTI v7.0

Company Name	Date Failed	VTI Signals
THQ	2012	2011
Borders Group	2011	2007
AMR Corp	2011	2008
MF Global	2011	2010
Hollywood Video (Movie Gallery)	2010	2005
Blockbuster	2010	2009, 2008
Spanion	2009	2008
Spectrum Brands	2009	2006
Silicon Graphics	2009	2008
Nortel	2009	2007, 2005
Monaco Coach Corp	2009	2005
Hartmarx Corp	2009	2007
Gottschalks	2009	2008
CIT Group Inc	2009	<b>none</b>
Resolute Forest	2009	<b>n/a</b>
Washington Mutual	2008	2007
Tribune Company	2008	2006
Pilgrim's Corp	2009	2007, 2006
Lehman Brothers	2008	2007
Countrywide Financial	2008	2007
Circuit City	2008	2004
Acclaim Entertainment	2004	2003, 1999
Loral Space & Comm.	2003	2002, 2000
The 3DO Company	2003	2002, 2001
Worldcom	2002	<b>none</b>
WCOM Tracking Stock	2002	2001
Global Crossing	2002	2000
Adelphia Comm.	2002	2000
HomeBase	2001	2001
Enron	2001	2000

# Summary: Biggest Bankruptcies

For Value Trap Indicator v1.0 – v6.0, the formula was successful in avoiding 29 out of 30 (97%) of the biggest bankruptcies of the 21<sup>st</sup> century. In other words, in only 1 stock out of 30 would the investor have been guided to a Strong Buy in a stock that quickly went bankrupt.

With the latest conversion to v7.0, the Value Trap Indicator would've maintained a similar track record. Of the 30 stocks, 27 of 29 (93%) would've flashed a VTI Strong Sell within one of the previous 5 years prior to bankruptcy.

One of the stocks, Resolute Forest, would not qualify in this test due to only 1 year of publicly available stock price data in the company's 10-k. With the new VTI v7.0, at least 2 years of financials are required to be inputted, since the new indicator now looks at the change in VTI values rather than an absolute value independent of context.

## Backtest Results – VTI v7.0 vs All Stocks

This first table shows the **median** in 1y and 2y CAGR return on a stock with a VTI v7.0 Strong Sell vs all of the stocks in the universe (4,000+) over the same time period. The final row in the 1y and 2y NET column shows the average of this set of **median** values per year.

The -0.6% average for 1y\_NET medians and -0.8% average for 2y\_NET medians shows that a VTI v7.0 Strong Sell was most likely to underperform all stocks over the selected time period. Good signal.

MEDIAN	1y_ALL	1y_VTI	1y_NET	2y_ALL	2y_VTI	2y_NET
2003	22.8%	23.9%	1.1%	16.4%	19.0%	2.6%
2004	9.3%	9.4%	0.1%	12.4%	12.9%	0.5%
2005	14.6%	14.8%	0.2%	8.5%	8.3%	-0.2%
2006	2.6%	-5.9%	-8.5%	-15.2%	-25.0%	-9.8%
2007	-32.8%	-44.8%	-12.0%	-12.2%	-11.7%	0.5%
2008	16.6%	35.4%	18.8%	19.0%	27.0%	8.0%
2009	22.7%	18.9%	-3.8%	12.2%	6.9%	-5.3%
2010	0.3%	0.2%	-0.1%	4.9%	5.2%	0.3%
2011	9.9%	9.0%	-0.9%	19.8%	20.5%	0.7%
2012	30.9%	33.3%	2.4%	19.7%	18.9%	-0.8%
2013	7.3%	4.7%	-2.6%	3.0%	-0.8%	-3.8%
2014	-2.4%	-2.7%	-0.3%	3.7%	2.8%	-0.9%
2015	11.3%	10.5%	-0.8%	14.0%	13.8%	-0.2%
2016	15.5%	15.6%	0.1%	3.7%	2.8%	-0.9%
2017	15.4%	11.4%	-4.0%	3.7%	1.6%	-2.1%
2018	15.4%	16.5%	1.1%			
AVG	10.0%	9.4%	-0.6%	7.6%	6.8%	-0.8%

This second table shows the **median** in 3y and 5y CAGR return on a stock with a VTI v7.0 Strong Sell vs all of the stocks in the universe (4,000+) over the same time period. The final row in the 3y and 5y NET column shows the average of this set of **median** values per year.

The -1.4% average for 3y\_NET medians and -0.1% average for 5y\_NET medians shows that a VTI v7.0 Strong Sell was most likely to underperform all stocks over the selected time period. Good signal.

MEDIAN	3y_ALL	3y_VTI	3y_NET	5y_ALL	5y_VTI	5y_NET
2003	16.2%	18.0%	1.8%	4.7%	5.3%	0.6%
2004	8.6%	8.7%	0.1%	2.4%	3.4%	1.0%
2005	-6.5%	-12.0%	-5.5%	2.6%	3.3%	0.7%
2006	-3.9%	-11.9%	-8.0%	-0.7%	-2.7%	-2.0%
2007	-1.7%	-0.5%	1.2%	0.8%	1.3%	0.5%
2008	12.2%	14.8%	2.6%	15.2%	18.4%	3.2%
2009	11.5%	9.2%	-2.3%	14.6%	14.4%	-0.2%
2010	12.9%	13.0%	0.1%	8.9%	8.3%	-0.6%
2011	16.2%	15.7%	-0.5%	11.6%	11.4%	-0.2%
2012	11.7%	9.9%	-1.8%	4.5%	1.8%	-2.7%
2013	5.6%	1.9%	-3.7%	4.3%	2.4%	-1.9%
2014	7.0%	5.9%	-1.1%			
2015	6.8%	6.2%	-0.6%			
2016	5.5%	3.6%	-1.9%			
2017						
2018						
AVG	7.3%	5.9%	-1.4%	6.3%	6.1%	-0.1%

## Backtest – The 4,000+ Stocks Universe

This backtest took a list of all of the stocks in the NYSE and all of the stocks in the NASDAQ, and calculated VTI v7.0 scores and 1y, 2y, 3y, and 5y CAGR returns for each year examined.

For example, a 1y CAGR return calculation for 2010 took the market capitalization of the stock in 2011 and 2010 and calculated a 1y CAGR return, as well as recorded the VTI v7.0 score for 2010. The 2y CAGR calculation was also recorded by taking the market capitalization of the stock in 2012 and 2010 and calculating that return, with the same approach for 3y and 5y CAGR returns.

Only stocks with enough data for a VTI v7.0 calculation were included, and market capitalization data for each 1y, 2y, 3y, and 5y CAGR return was needed to record that stock for that data point.

In the case that this data was not relatively available from the dataset examined, the stock was excluded from the backtest for the year affected. This resulted in a range of 2,873 - 4,173 stocks as part of the ALL stocks universe in any given year.





SILC SILK SIMO SINA SINO SINT SIRI SITM SIVB SKYS SKYW SLAB SLCT SLGG SLGL SLGN SLM SLNO SLP SLRC SLRX SMBC SMBK SMCI SMED SMIT SMMF SMMT SMPL SMRT SMSI SMTC SMTX SNBR SNCR SND SNDL SNDX SNES SNFCA SNGX SNOA SNPS SNSS SNOY SOHO SOHU SOLO SONA SONM SONO SORL SP SPAR SPCB SPEX SPFI SPHS SPI SPKE SPLK SPNE SPNS SPOK SPPI SPRO SPRT SPSC SPT SPTN SPWH SPWR SQBG SRAX SRCE SRCL SRDX SREV SRNE SRPT SRRK SRTS SSB SSSI SSKN SSNC SSNT SSP SSRM SSSS SSTI SSYS STAA STAF STAY STBA STCN STFC STIM STKL STKS STLD STML STMP STND STNE STRA STRL STRM STRO STRS STRT STX STXB SUMR SUNS SUNW SUPN SURF SVBI SVC SVMK SVRA SVVC SWAV SWIR SWKH SWKS SXTX SY SYBT SYBX SYKE SYNA SYNC SYNH SYNL SYPR SYRS TA TACO TACT TAIT TANH TAOP TAST TATT TAYD TBBK TBIO TBK TBLT TBNK TBPH TC TCBI TCBK TCCO TCF TCFC TCMD TCOM TCON TCPC TCRD TCX TEAM TECD TECH TEDU TELA TELL TENB TENX TER TERP TESS TEUM TFSL TGA TGEN TGLS TGTX THFF THMO THRM TIGO TIGR TILE TIPT TITN TIVO TLC TLF TLGT TLND TLRV TLSA TLT TMDX TMSR TMUS TNAV TNDM TOCA TOPS TOUR TOWN TPCO TPIC TRCH TREE TRHC TRIB TRIL TRIP TRMB TRMD TRMK TRMT TRNS TRNX TROV TROW TRS TRST TRUE TRUP TRVG TRVN TSBK TSC TSCAP TSCO TSEM TSG TSLA TSRI TTD TTEC TTEK TTGT TTM TTNP TTOO TTPH TTWO TUES TURN TUSK TVTY TW TWIN TWMC TWNK TWOU TWST TXG TXMD TXN TXRH TYHT TZOO UAL UBCP UBFO UBOH UBSI UBX UCBI UCTT UEIC UEPS UFCS UFPI UFPT UG UHAL UIHC ULBI ULH ULTA UMBF UMPQ UMRX UNAM UNB UNIT UNTY UONE UONEK UPLD UPWK URBN URGN USAK USAP USAU USCR USEG USIO USLM USWS UTHR UTMD UTSI UVSP UXIN VALU VBFC VBIV VBLT VBTX VC VCEL VCNX VCTR VCYT VECO VEON VERB VERI VERU VFF VG VIAV VICR VIE VIOT VIR VIRC VIRT VISL VIVE VIVO VLGEA VLY VMD VMDA VNET VNOM VOD VOXX VRA VRAY VREX VRML VRNS VRNT VRRM VRSK VRSN VRTS VRTU VRTX VSAT VSEC VSTM VTC VTGN VTNR VTSI VTVT VUZI VVPR VVUS VXRT VYGR WABC WAFD WASH WATT WB WBA WDAY WDC WDFC WEBK WEN WERN WETF WEYS WHF WHLM WHLR WIFI WILC WINA WING WINS WIRE WISA WIX WKHS WLDN WLFAC WLTW WMMI WNEB WORX WPRT WRLL WRTC WSBC WSBF WSC WSFS WSTG WSTL WTBA WTER WTEC WTRH WVE WVFC WVVI WW WWD WWR WYNN XAIR XBIO XCUR XEL XELA XELB XENE XENT XERS XFOR XGN XLNX XLRN XNCR XNET XOG XOMA XONE XPEL XPER XRAY XSPA XTLB YGYI YI YIN YJ YNDX YORW YRCW YTEN YTRA YVR YY Z ZAGG ZBRA ZEAL ZEUS ZG ZGNX ZION ZIOP ZIXI ZKIN ZLAB ZM ZNGA ZS ZSAN ZUMZ ZVO ZYNE ZYXI

## VTI v7.0 – Backtest Limitations

As data availability inside the examined dataset affected the results of the backtest, so too does other factors commonly known to affect backtest results, such as survivorship bias. Survivorship bias describes the situation where a list of stocks doesn't fully represent historical reality, as the stocks that eventually went bankrupt or were acquired are usually excluded from such lists.

In the case of this dataset with the universe of 4,000+ stocks, no reasonable method of including formerly bankrupt or acquired stocks was able to be absorbed into the universe that was analyzed.

The distortive effects of survivorship bias was mostly mitigated by including a list of as many publicly traded U.S. stocks as possible, regardless of financial size or any other requirements.

Additionally, a portfolio was not built and compared to a benchmark as a result of the backtest. Rather, the backtest attempted to measure the likely movements of a stock price following a VTI v7.0 Strong Sell signal—nothing more, nothing less.

### Important Distinction Between Average and Median Return

The tables presented in this report contain 1y, 2y, 3y, and 5y CAGR returns with both **averages** and **medians** of various data points. The final conclusion from the results is explained with each, and depends on what conclusion is attempted to be measured.

**In general**, an average is better at displaying the extent of a portfolio's gains, while a median is better at displaying the probability of a return percentage.

However, there's a **major flaw** with using averages instead of medians, and that is the skewing effect of a large number to the overall average. For example, just one return average at 200% could skew an average of a group of stocks with 10% gains by factors of 2x-6x, misrepresenting the rest of the group.

The inherent strengths and weaknesses of both averages and medians was considered with each final conclusion on the results presented, and thus influenced the final figures highlighted in each table.

# Backtest Results – VTI v6.0 vs All Stocks

This first table shows the **median** in 1y and 2y CAGR return on a stock with a VTI v6.0 Strong Sell vs all of the stocks in the universe (4,000+) over the same time period. The final row in the 1y and 2y NET column shows the average of this set of **median** values per year.

The 0.3% average for 1y\_NET medians and 0.0% average for 2y\_NET medians shows that a VTI v6.0 Strong Sell was actually most likely to outperform all stocks over the selected time period. Not ideal.

MEDIAN	1y_ALL	1y_VTI	1y_NET	2y_ALL	2y_VTI	2y_NET
2010	1.7%	-0.8%	-2.5%	5.2%	5.7%	0.5%
2011	8.6%	9.1%	0.5%	18.4%	19.7%	1.3%
2012	29.5%	34.5%	5.0%	19.5%	22.0%	2.5%
2013	8.9%	9.0%	0.1%	4.3%	5.4%	1.1%
2014	-1.4%	-0.3%	1.1%	3.4%	1.7%	-1.7%
2015	9.5%	8.8%	-0.7%	13.2%	8.9%	-4.3%
2016	15.4%	17.2%	1.8%	4.7%	5.8%	1.1%
2017	-6.0%	-5.6%	0.4%	0.8%	0.3%	-0.5%
2018	9.0%	6.4%	-2.6%			
AVG	8.4%	8.7%	0.3%	8.7%	8.7%	0.0%

This second table shows the **median** in 3y and 5y CAGR return on a stock with a VTI v6.0 Strong Sell vs all of the stocks in the universe (4,000+) over the same time period. The final row in the 3y and 5y NET column shows the average of this set of **median** values per year.

The 0.5% average for 3y\_NET medians and 0.8% average for 5y\_NET medians shows that a VTI v6.0 Strong Sell was actually most likely to outperform all stocks over the selected time period. Not ideal.

MEDIAN	3y_ALL	3y_VTI	3y_NET	5y_ALL	5y_VTI	5y_NET
2010	12.8%	13.8%	1.0%	9.4%	11.8%	2.4%
2011	15.7%	17.1%	1.4%	11.1%	12.2%	1.1%
2012	12.0%	14.9%	2.9%	12.2%	13.1%	0.9%
2013	5.8%	5.4%	-0.4%	4.8%	4.7%	-0.1%
2014	6.9%	5.1%	-1.8%	3.4%	3.3%	-0.1%
2015	6.5%	6.1%	-0.4%			
2016	5.5%	6.0%	0.5%			
2017						
2018						
AVG	9.3%	9.8%	0.5%	8.2%	9.0%	0.8%

An average of the 4 values for CAGR returns (1y, 2y, 3y, 5y) calculates to 0.4%, suggesting that a stock with a VTI v6.0 Strong Sell had a greater probability of a positive gain relative to ALL stocks.



Note: The universe of ALL stocks for the VTI v6.0 Strong Sell backtest varied slightly from the VTI v7.0 Strong Sell backtest due to the greater number of financial data inputs required, disqualifying some stocks from inclusion in the ALL stocks universe in certain years.

Additionally, there was a 2 month gap between these backtests, slightly influencing return figures for the ALL stock universe, though the 1y, 2y, 3y, and 5y Net CAGR returns are all compared “apples to apples” (VTI vs ALL).

## Investor Takeaway – VTI v6.0 to v7.0

The significant **outperformance** of the average of median returns per year of VTI v6.0 Strong Sell stocks compared to the ALL stock universe, combined with the significant **underperformance** of the average of median returns per year of VTI v7.0 Strong Sell stocks, suggests that the VTI v7.0 formula is **much** better at signaling stocks likely to decrease in stock price.

VTI v6.0, rather, seems to solely signal troubled stocks about to go bankrupt while at the same time disqualifying a group of stocks that are on average likely to perform better than the ALL stock universe.

The increased universe of stocks available for purchase in the VTI v7.0 formula leading to better overall price appreciation opportunities vs the VTI v6.0 could be due to any of the following factors:

- Growth stocks with negative earnings
  - Might not signal financial trouble unless liabilities greatly increase
- Stocks with negative shareholder’s equity (SE)
  - Might be a feature of the business rather than a sign of distress
  - Healthy stocks with negative SE might have low SE due to intangible assets
- Stocks that don’t pay a dividend
  - Not paying a dividend isn’t necessarily indicative of distress
- Stocks with high price-based valuations
  - Sometimes many of these stocks contribute greatly to market returns
  - Automatic disqualification based on any one of these metrics priced highly could exclude a lot of fantastic businesses with great growth and financial strength

Investors need to remember the following **key** points when using the VTI v7.0 formula:

- This tool works best as a signal to avoid value traps, not as a signal to buy stocks.
- There is no magical metric to do the work of stock picking for you. Including the VTI.
- Consider this tool as another part of your toolkit—to feel confident that you are protecting your downside risk as best as you can, while still understanding it won’t completely eliminate risk.
- Review the datasets and results and observe the fluctuation of returns from year to year. This is a feature, not a bug, of investing. It’s also the reality when applying any strategy to stocks.
- Invest with a margin of safety, **emphasis** on the safety!