

# TRADING SYSTEMS

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## Trading systems using technical analysis

*April 24, 2006*

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**What is a trading  
system?**

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## Types of trading systems

- **Mechanical trading systems**
- **Sets of rules that leave some room for the decision to traders**



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**Selection of an  
appropriate  
market/instrument**

- **High liquidity**
- **Strong trends**

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## The design of trading systems

- **Entry (reversal) and exit signals**
  - **Stop loss points**
  - **Risk management**

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## Entry and exit signals

- **Moving averages, oscillators, ...**
  - **Trends, chart formation, ...**
  - **Neural networks, advanced mathematics, ...**

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## Stop loss points

- **Market**
- **Equity**

*But remember:  
no risk, no reward!*



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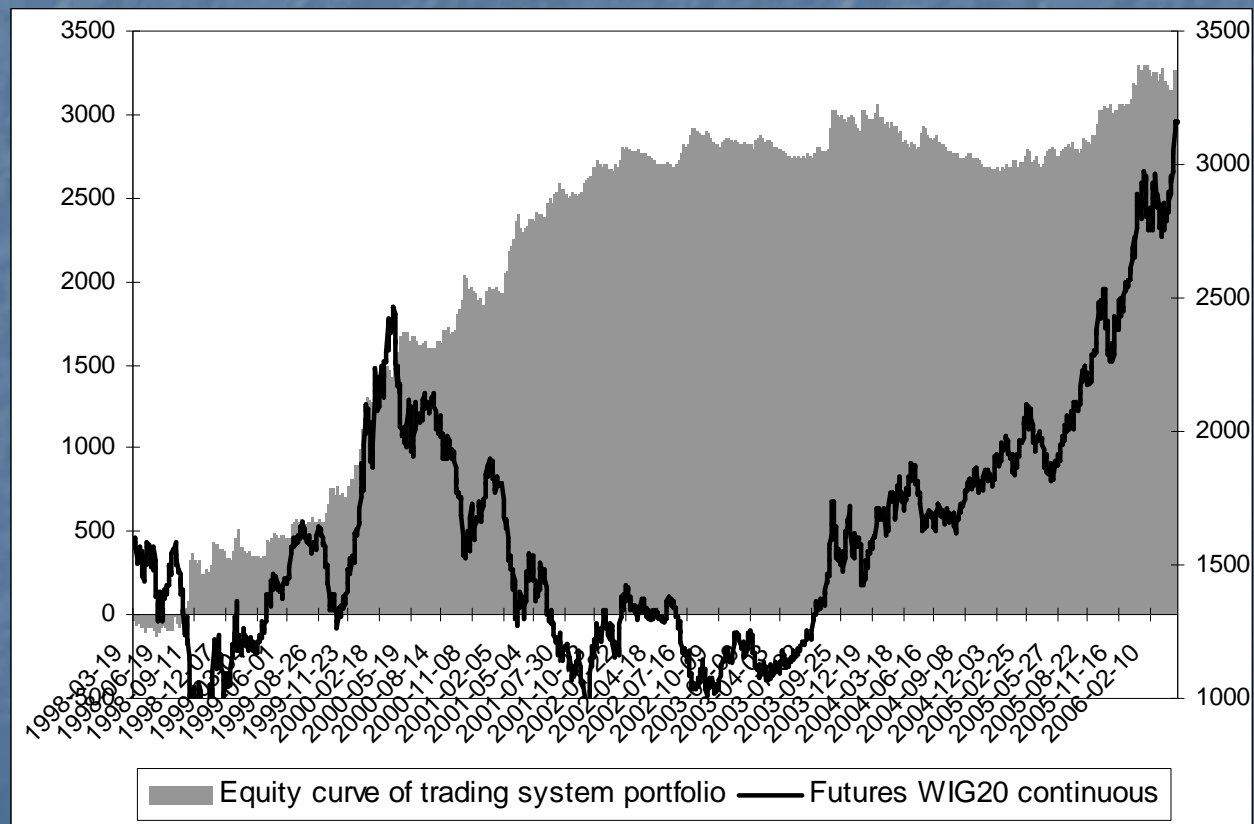
## Risk management

- **Position size, often in relation to stop loss points**
- **Diversification using a portfolio of trading systems**



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## Equity curve of trading system portfolio

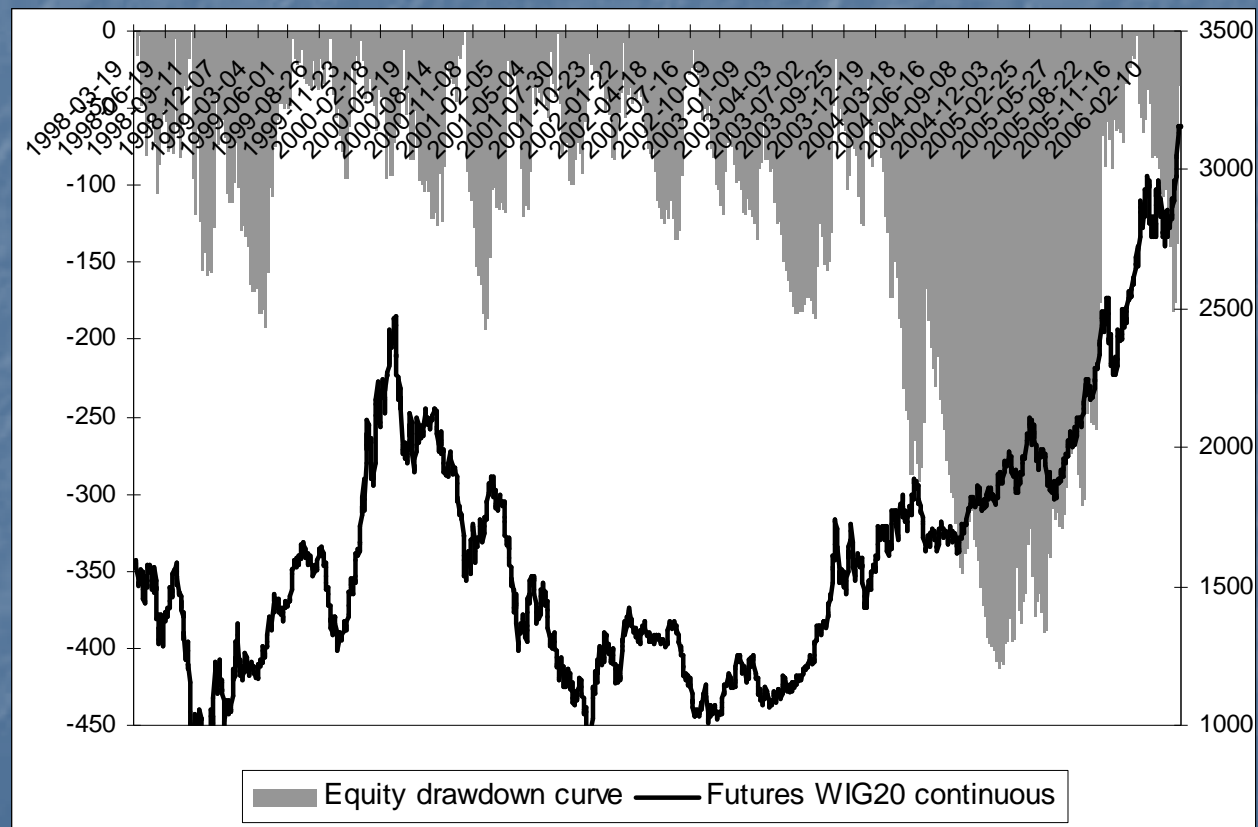


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## Equity drawdown (underwater) curve of trading system portfolio

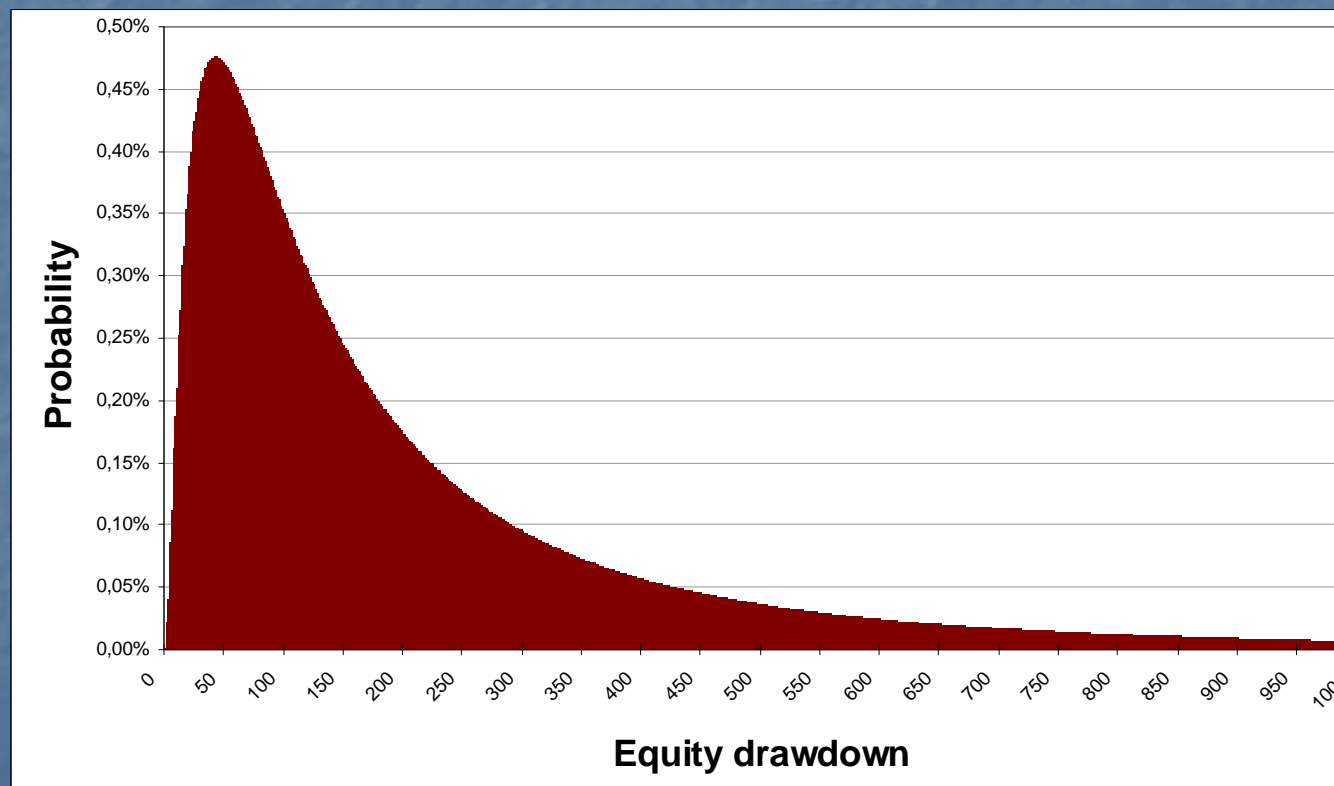


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## Probability distribution of equity drawdowns



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**Key problem concerning the design of trading systems**

**Parameter optimization and a curve - fit problem**



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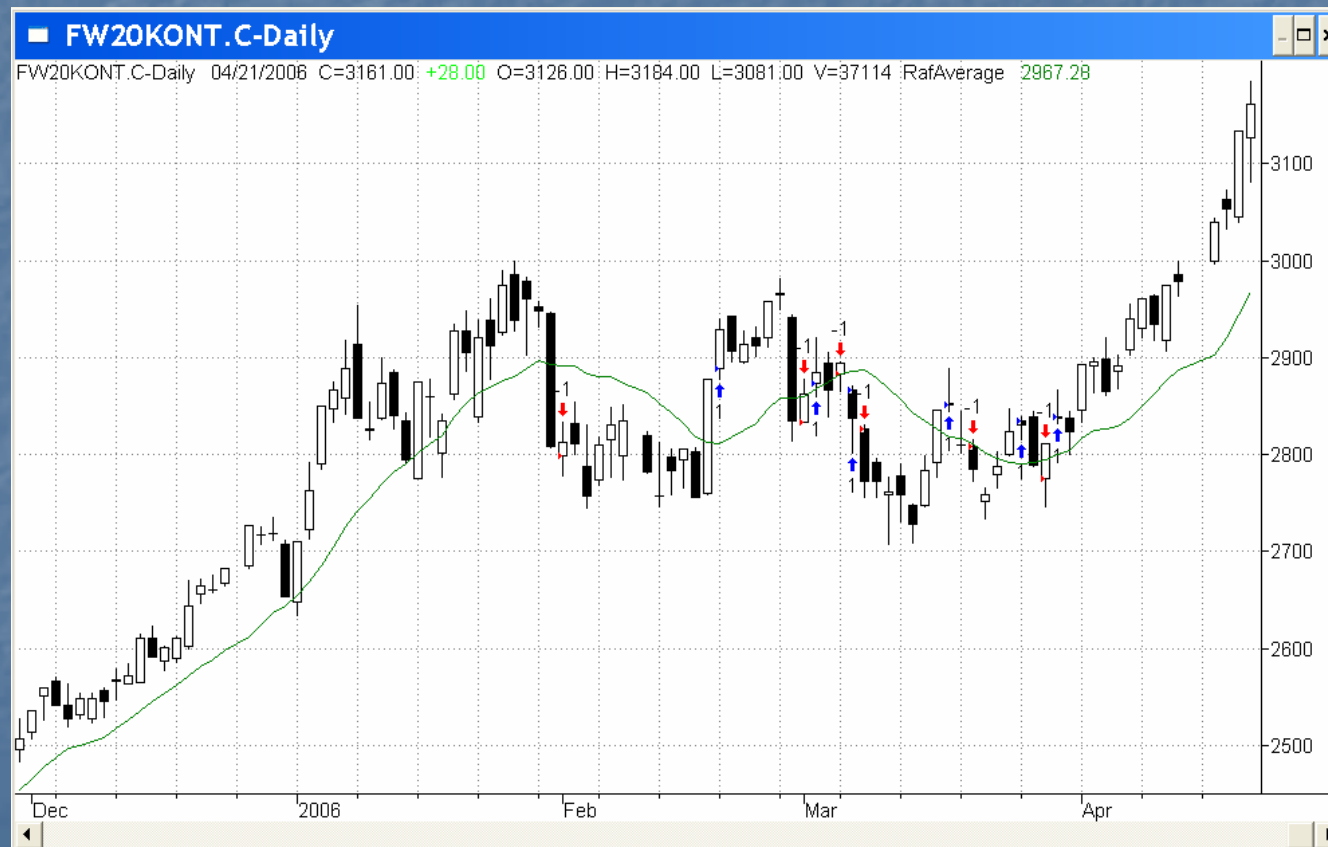
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## Selected strategies

- **Moving average cross**
- **Price channel breakout  
(turtle system)**
- **Volatility breakout**

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## Moving average cross

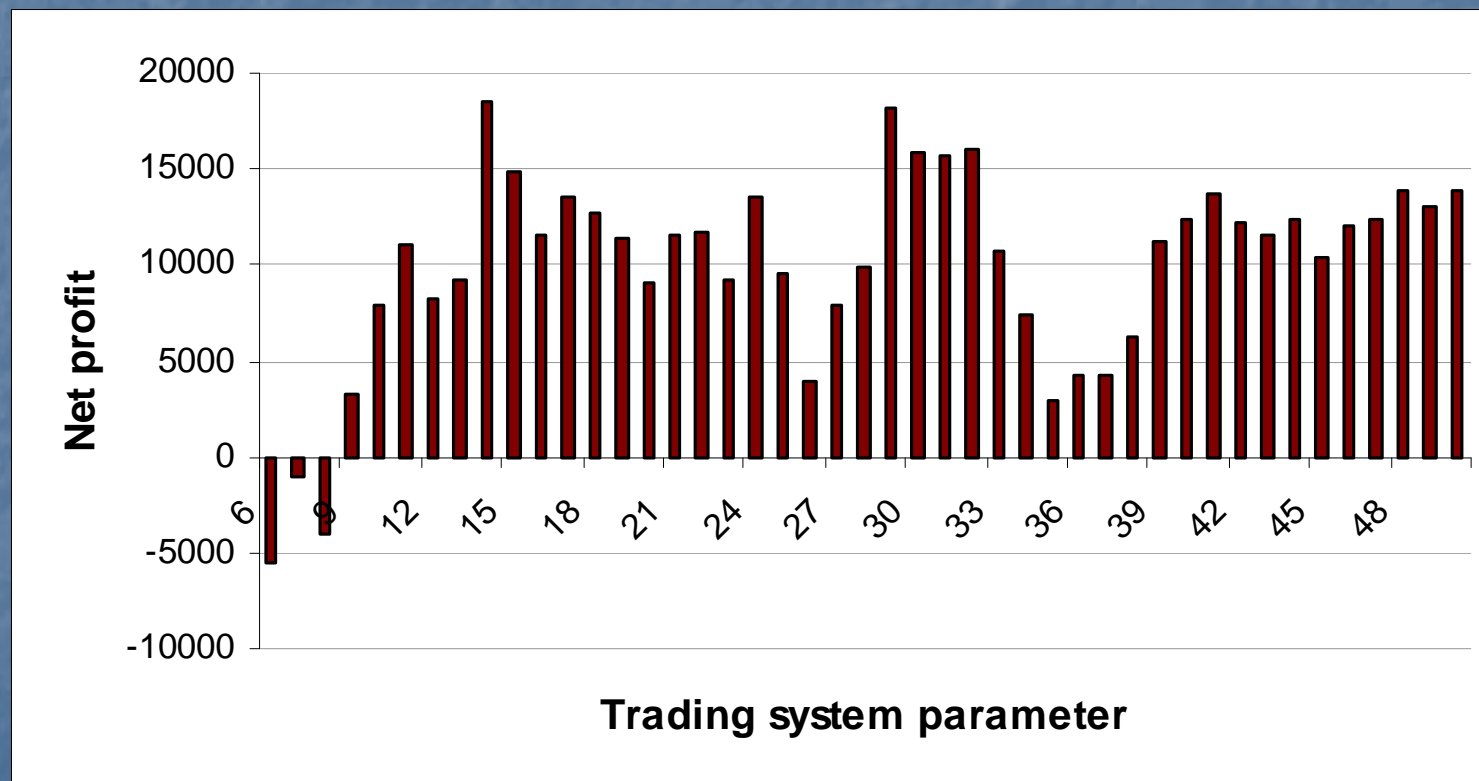


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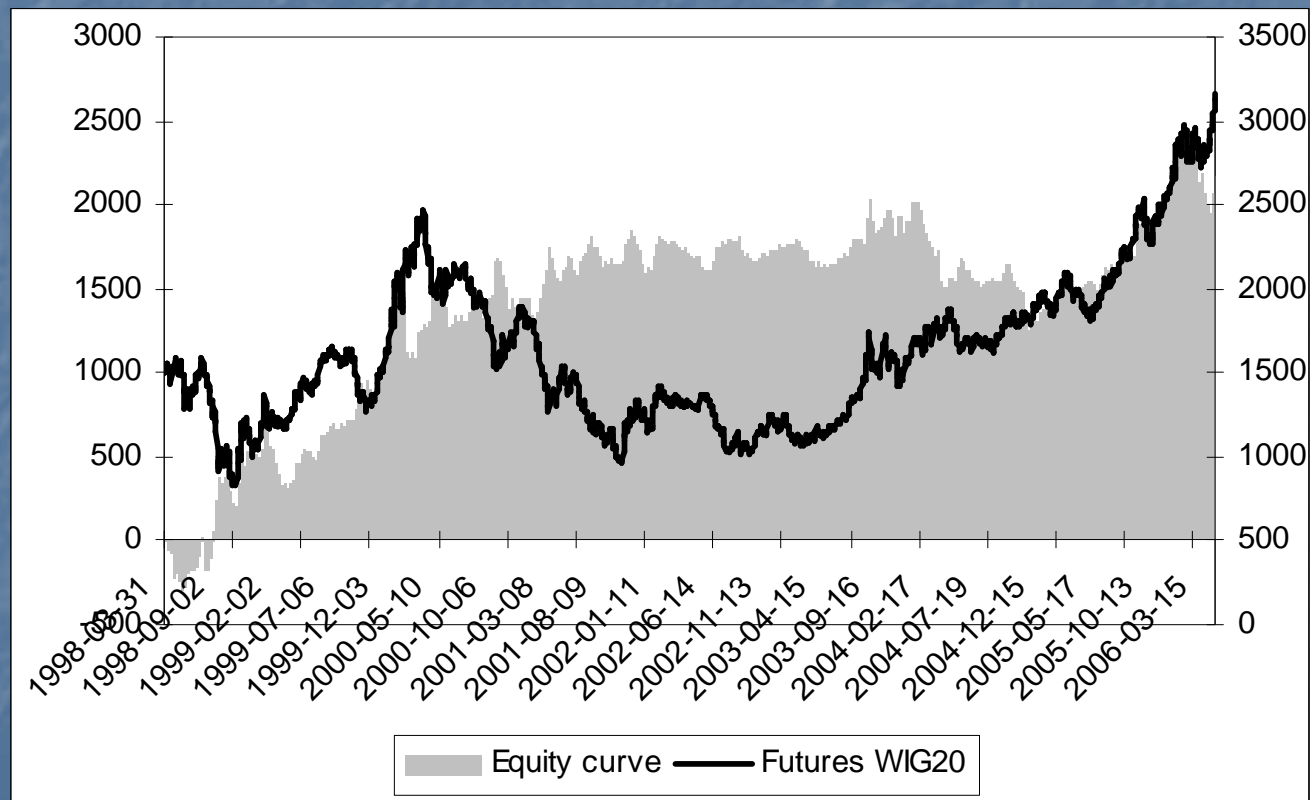
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## Moving average cross



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## Moving average cross



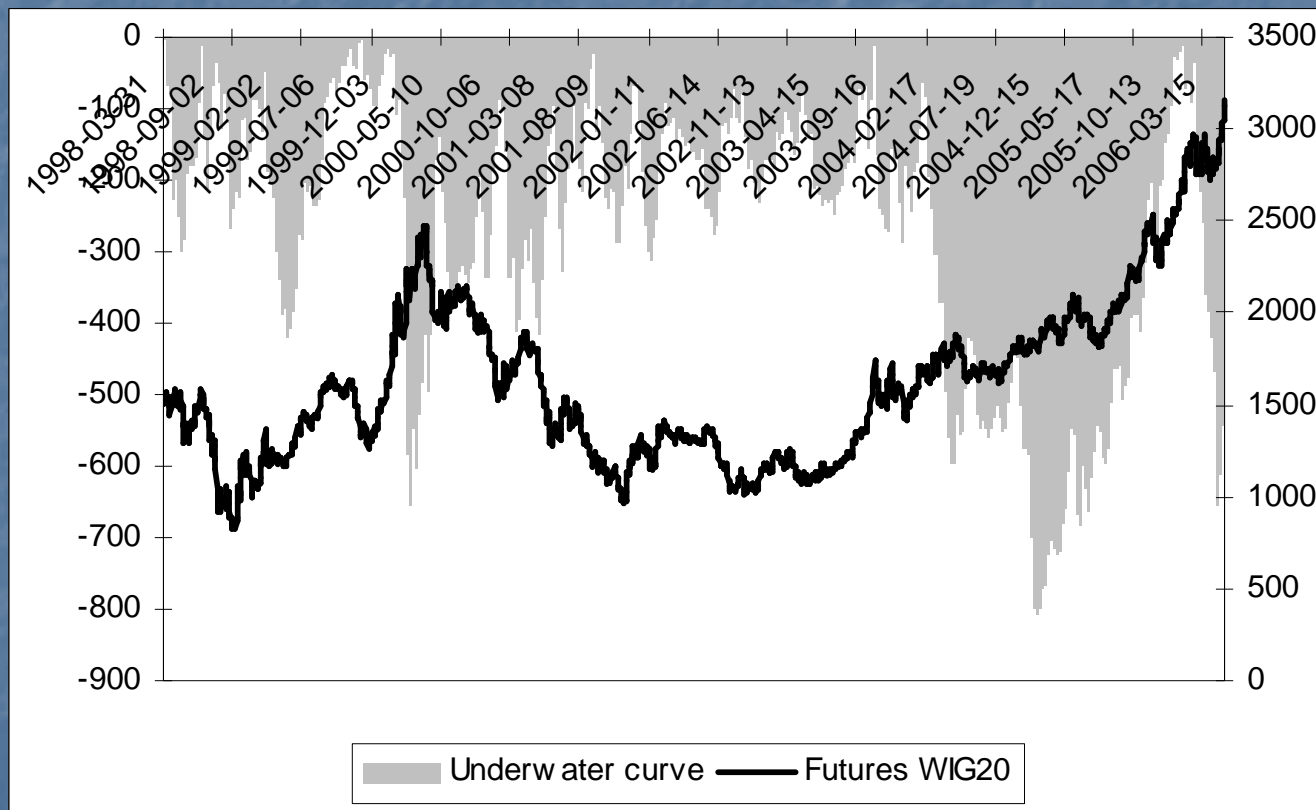
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## Moving average cross



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## Moving average cross

RafAverage FW20KONT.C-Daily 01/16/1998 - 04/21/2006

Performance Summary: All Trades

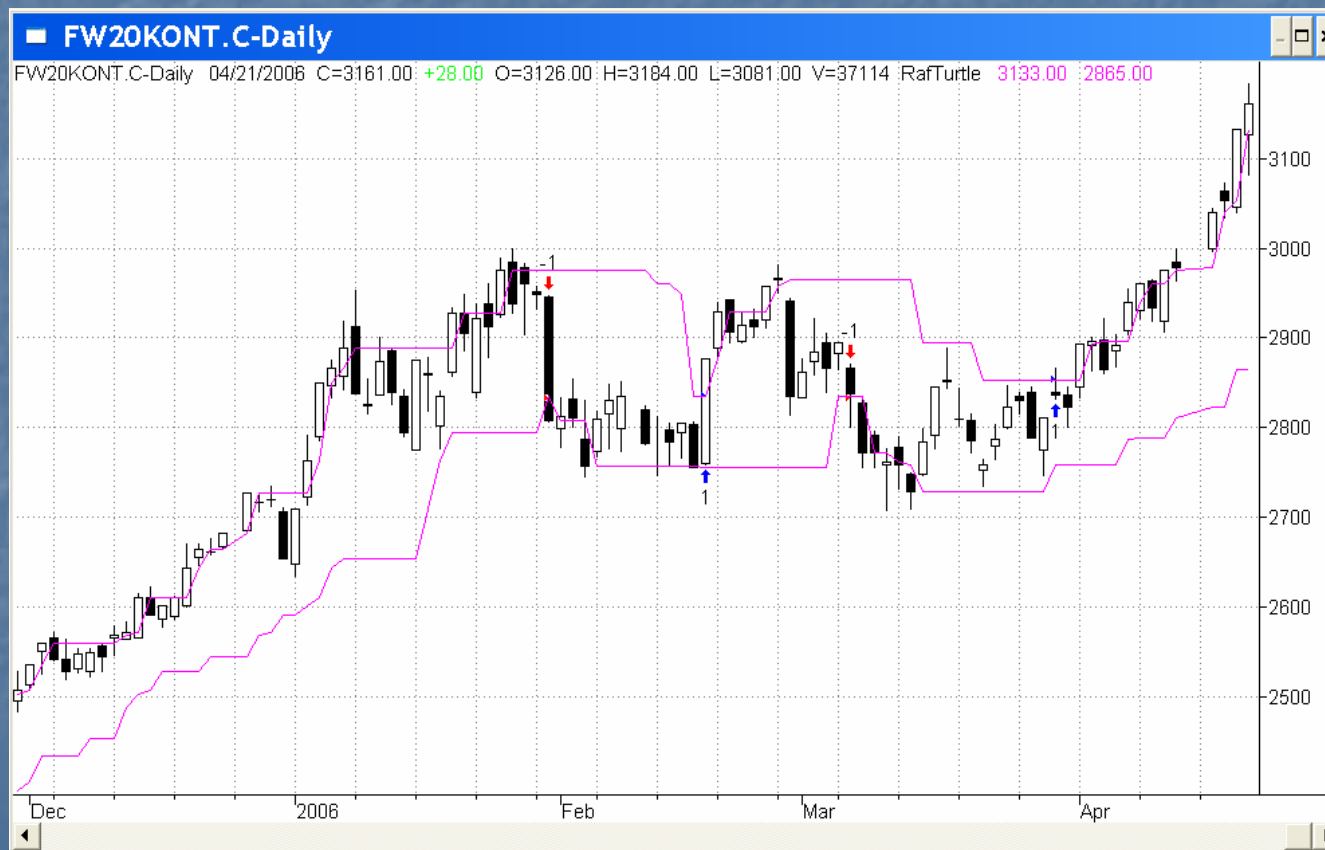
Total net profit	\$ 18530.00	Open position P/L	\$ 3220.00
Gross profit	\$ 74040.00	Gross loss	\$ -55510.00
Total # of trades	230	Percent profitable	34%
Number winning trades	79	Number losing trades	151
Largest winning trade	\$ 5610.00	Largest losing trade	\$ -3150.00
Average winning trade	\$ 937.22	Average losing trade	\$ -367.62
Ratio avg win/avg loss	2.55	Avg trade(win & loss)	\$ 80.57
Max consec. winners	4	Max consec. losers	11
Avg # bars in winners	18	Avg # bars in losers	4
Max intraday drawdown	\$ -7810.00		
Profit factor	1.33	Max # contracts held	1
Account size required	\$ 7810.00	Return on account	237%

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## Turtle system

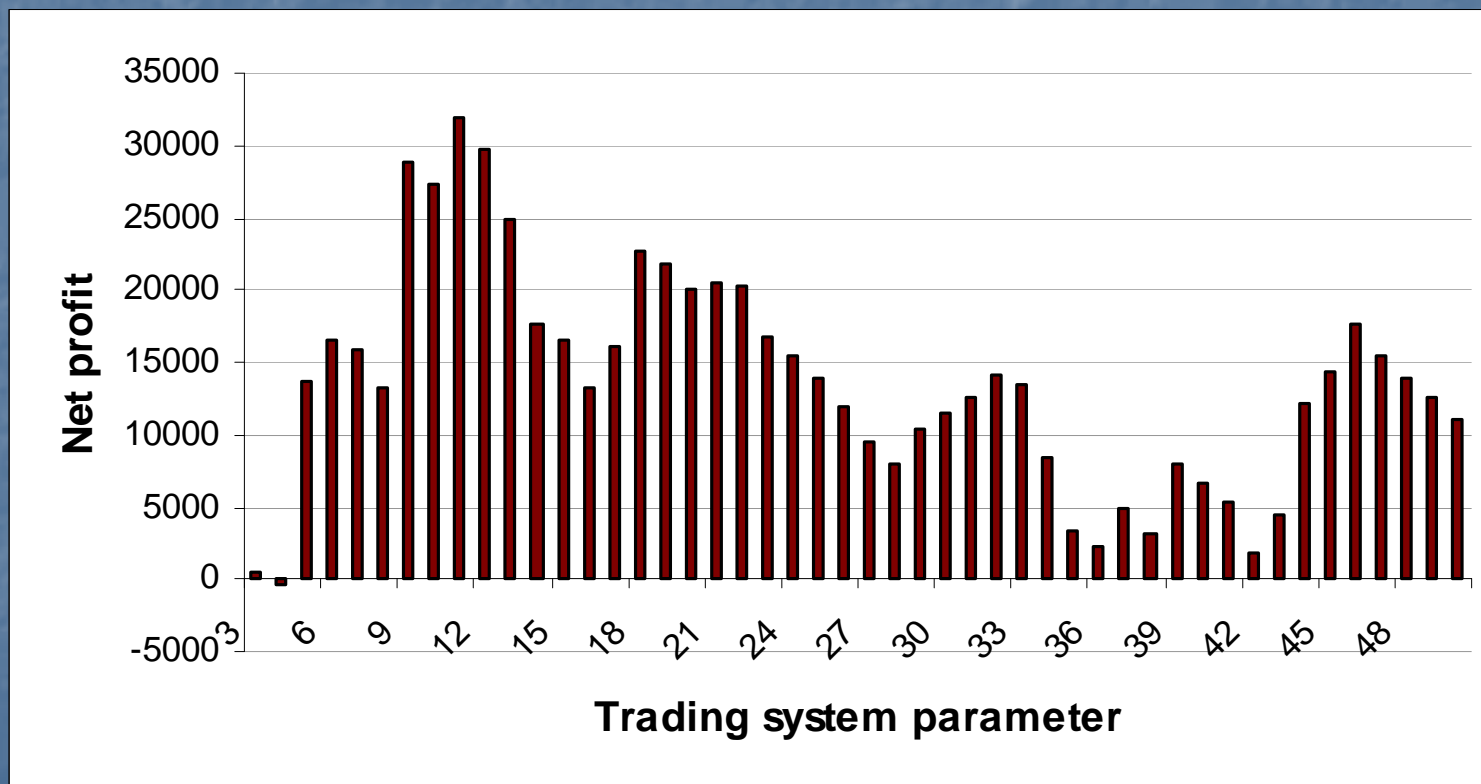


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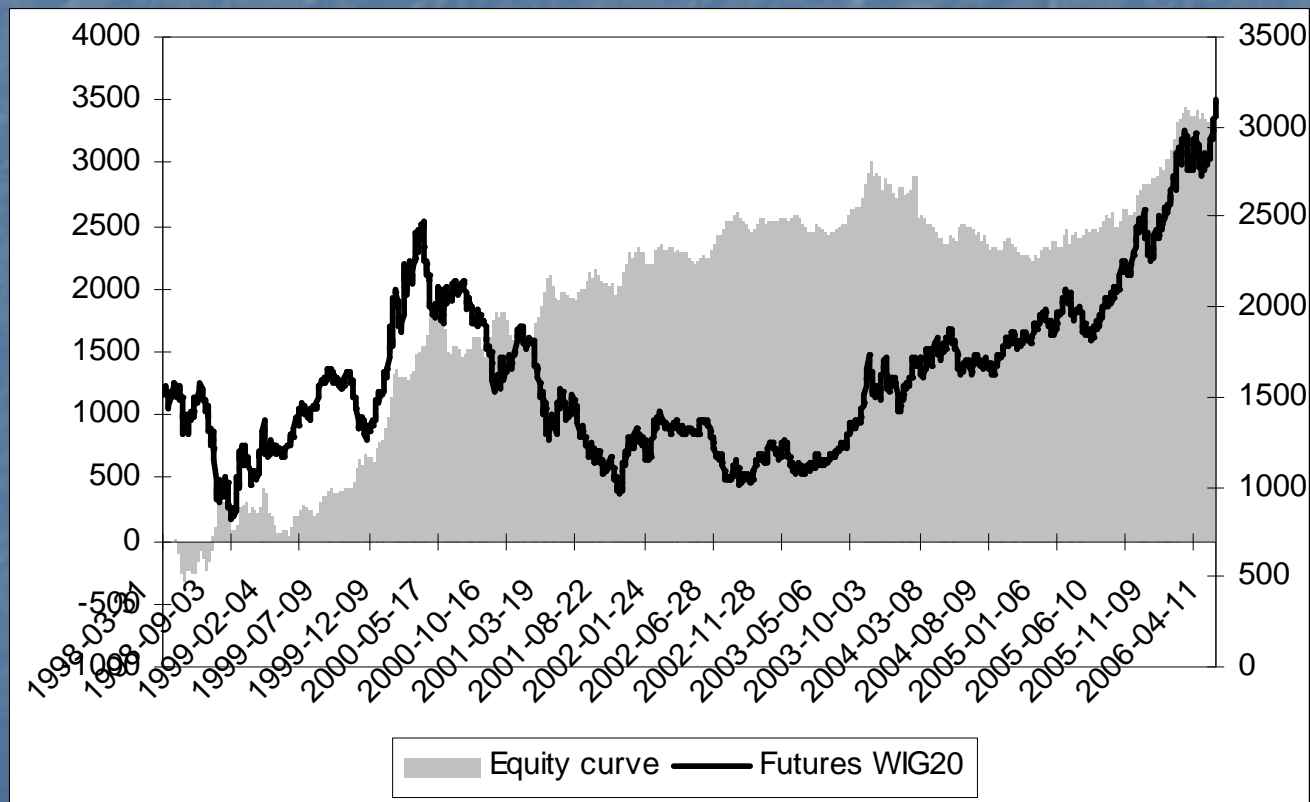
## Turtle system





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## Turtle system

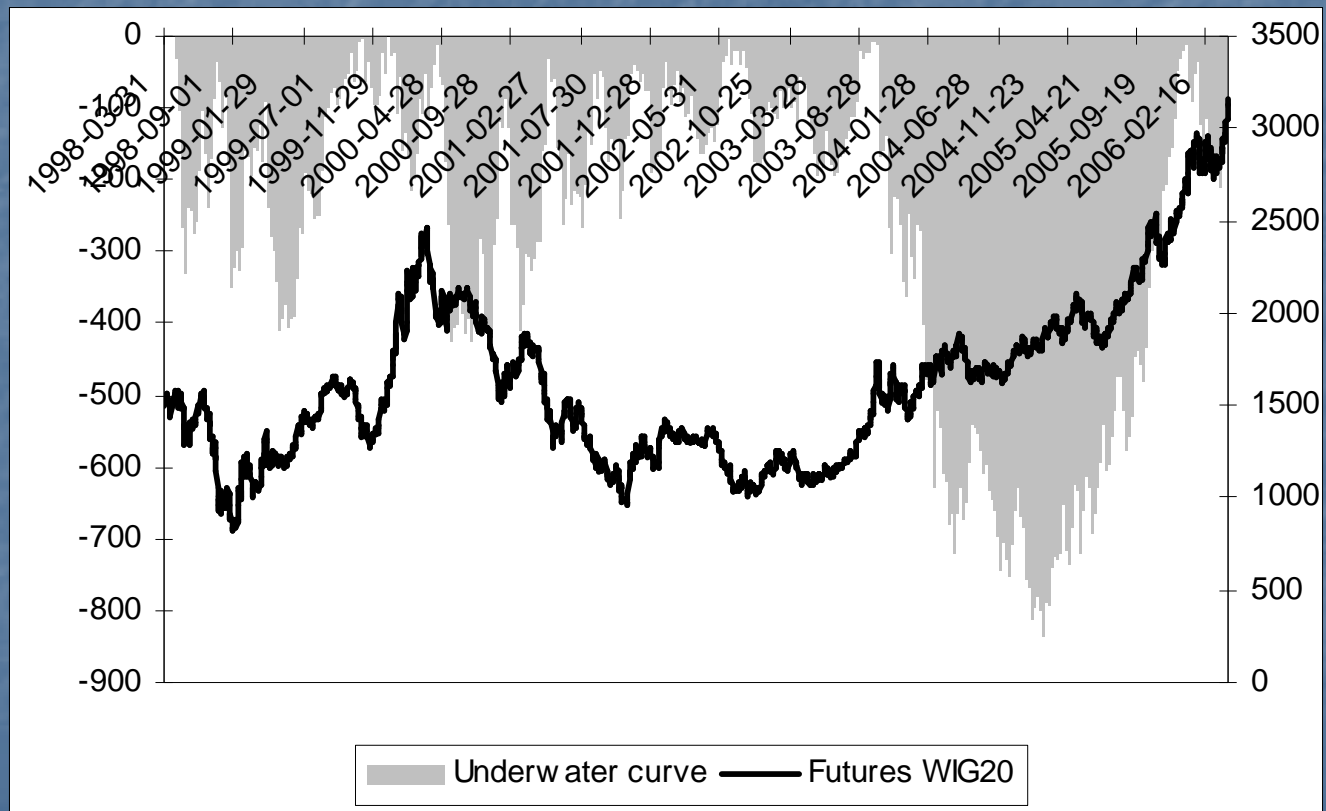


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## Turtle system



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## Turtle system

RafTurtle FW20KONT.C-Daily 01/16/1998 - 04/21/2006

Performance Summary: All Trades

Total net profit	\$ 31830.00	Open position P/L	\$ 3070.00
Gross profit	\$ 67460.00	Gross loss	\$ -35630.00
Total # of trades	121	Percent profitable	42%
Number winning trades	51	Number losing trades	70
Largest winning trade	\$ 5920.00	Largest losing trade	\$ -1750.00
Average winning trade	\$ 1322.75	Average losing trade	\$ -509.00
Ratio avg win/avg loss	2.60	Avg trade(win & loss)	\$ 263.06
Max consec. winners	5	Max consec. losers	7
Avg # bars in winners	27	Avg # bars in losers	9
Max intraday drawdown	\$ -6720.00		
Profit factor	1.89	Max # contracts held	1
Account size required	\$ 6720.00	Return on account	474%

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## Volatility breakout



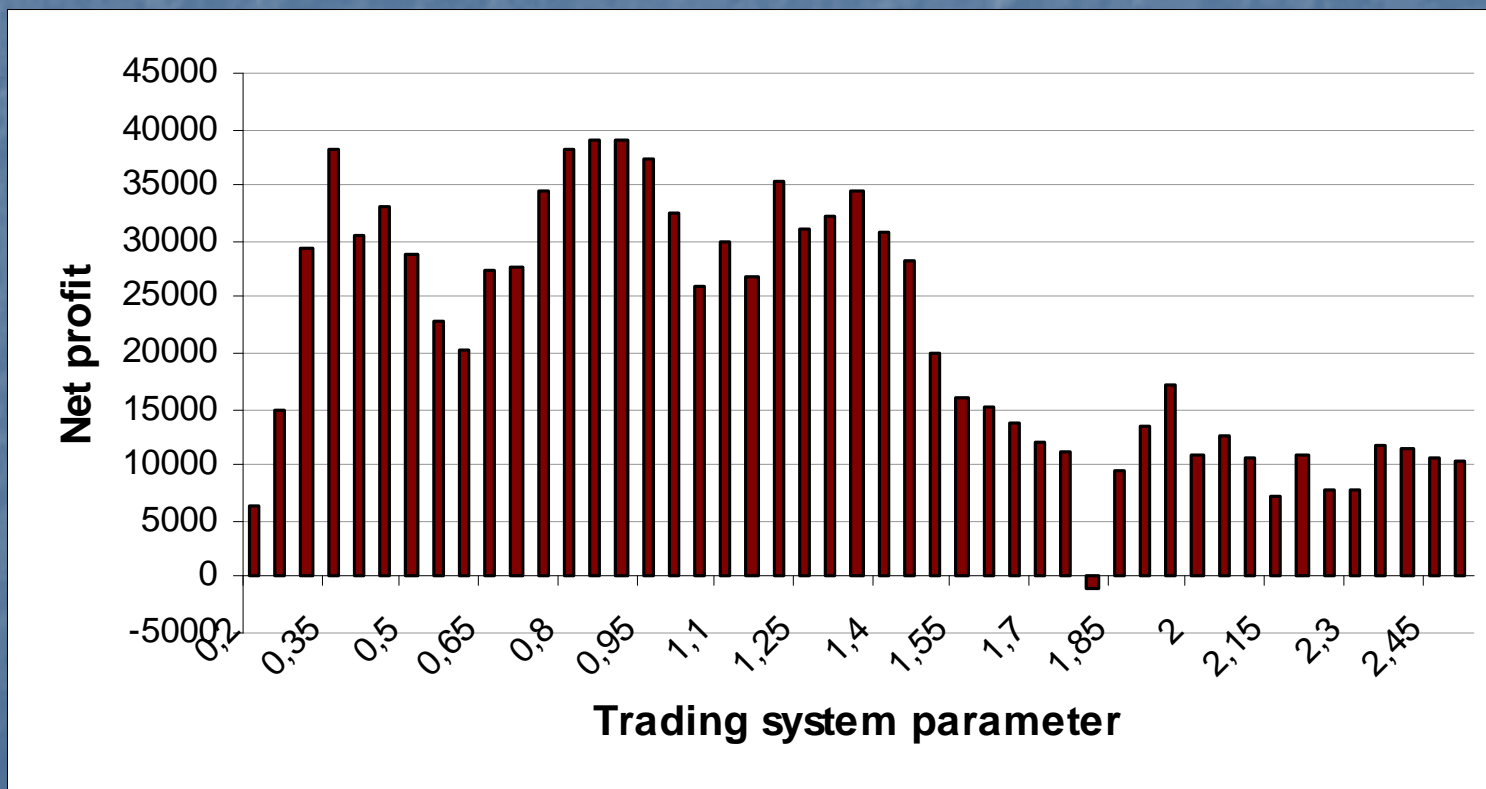
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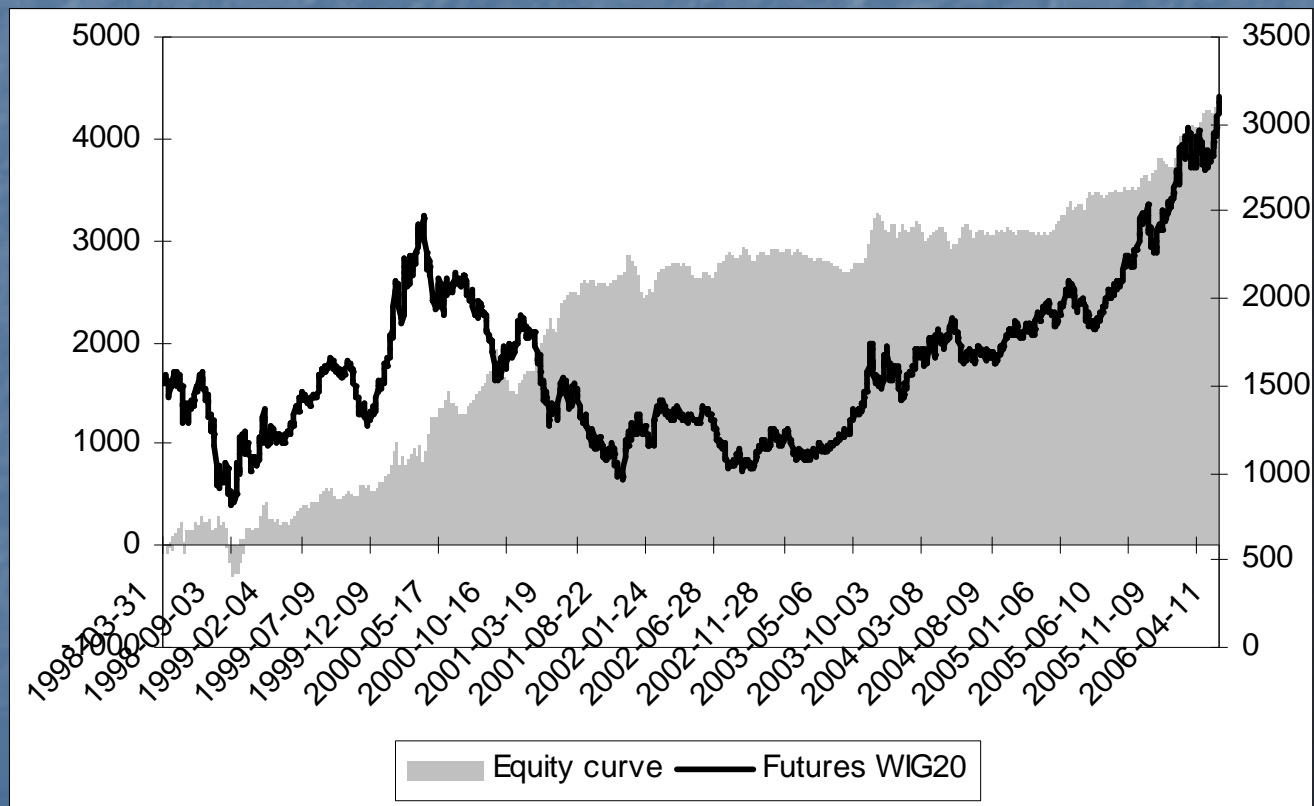
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## Volatility breakout



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## Volatility breakout

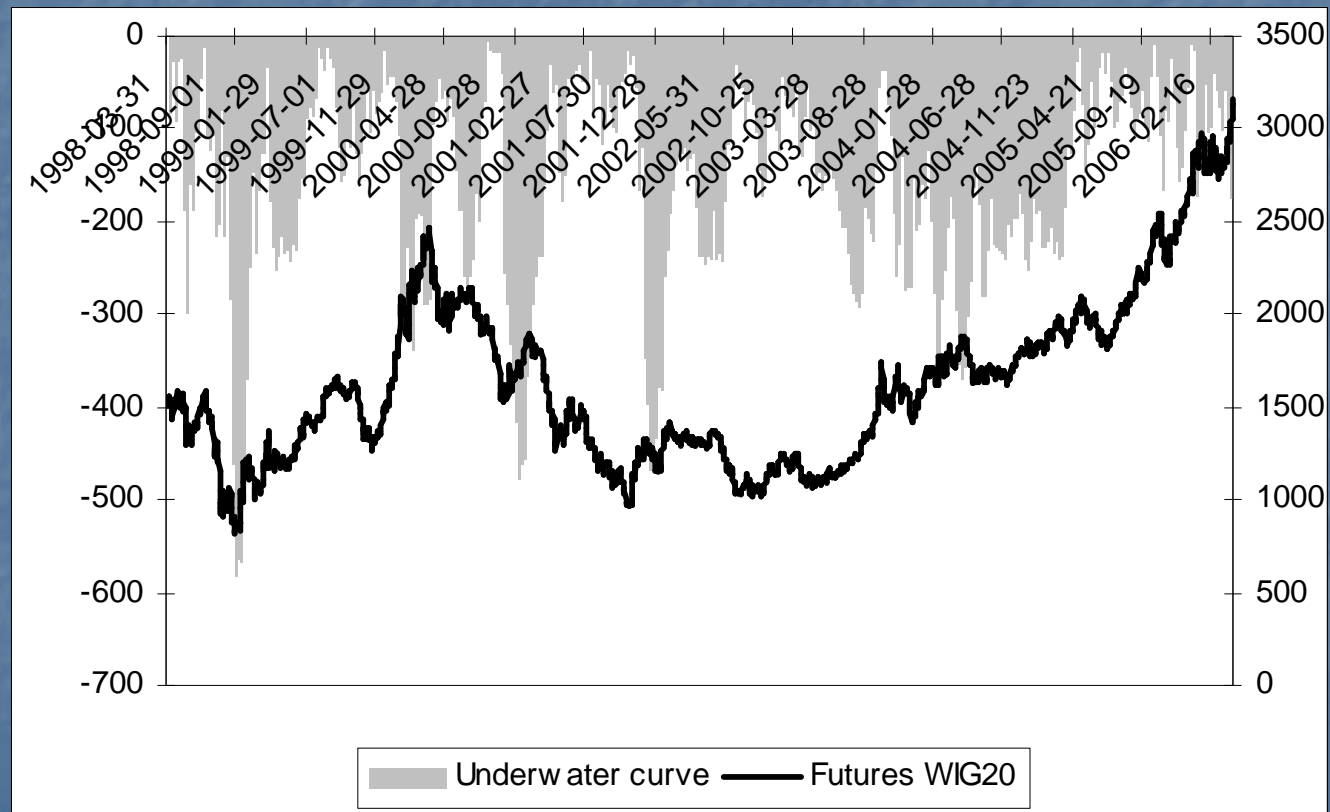


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## Volatility breakout



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## Volatility breakout

RafVolatility FW20KONT.C-Daily 01/16/1998 - 04/21/2006

Performance Summary: All Trades

Total net profit	\$ 39160.00	Open position P/L	\$ 1780.00
Gross profit	\$ 114920.00	Gross loss	\$ -75760.00
Total # of trades	403	Percent profitable	43%
Number winning trades	173	Number losing trades	230
Largest winning trade	\$ 6070.00	Largest losing trade	\$ -2110.00
Average winning trade	\$ 664.28	Average losing trade	\$ -329.39
Ratio avg win/avg loss	2.02	Avg trade(win & loss)	\$ 97.17
Max consec. winners	6	Max consec. losers	8
Avg # bars in winners	7	Avg # bars in losers	3
Max intraday drawdown	\$ -6030.00		
Profit factor	1.52	Max # contracts held	1
Account size required	\$ 6030.00	Return on account	649%

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**Advantages of trading  
systems:**

**Emotions removed,  
consequence, discipline**

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**The disadvantage of  
trading systems:**

**Equity drawdowns during  
bull market periods**

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**Popular trading system  
software:**

- **Omega SuperCharts,  
TradeStation**
- **MetaStock**

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**Trading systems:**

**Truth or fiction?**



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**Thank you for attention!**

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