Using Macro News Events in Automated FX Trading Strategy

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The Main Thesis

The arrival of macroeconomic news from the world's largest economies brings additional volatility to the market.

Overall methodology

- **Sources of data:**
  - RavenPack macro-economic news database
  - Historical trading tick data from Citi FX
- **Technology – Deltix QuantOffice/QuantServer software:**
  - TimeBase
  - QuantOffice
  - Strategy Trading Server (used for simulated real-time deployment)
- **Major steps of the research:**
  - Creation of initial setup
  - Analysis of RavenPack news database
  - Analysis of intraday distribution of macro-economic news
  - Investigation of main hypothesis that macro-economic news increases short-term volatility
  - Creation and backtesting of simple breakout strategy with opening signals triggered by news

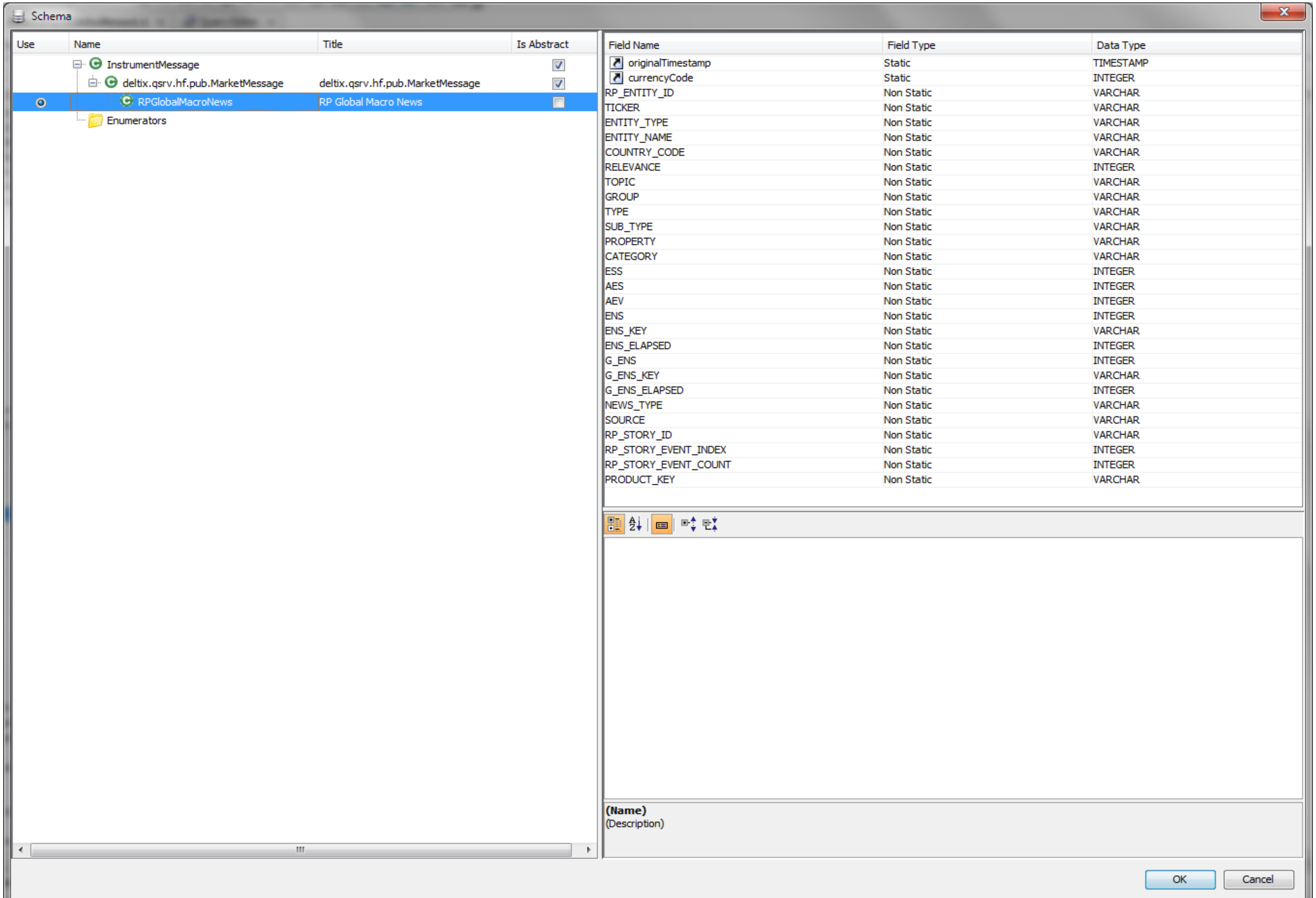
RavenPack News Analytics

- Delivers sentiment analysis and event data most likely to impact financial markets and trading around the world
- Analytics on more than 170,000 entities in over 100 countries
- Relevant news items about entities are classified and quantified according to their sentiment, relevance, topic, novelty, and market impact

- Entity Type Coverage:
  - Places: 138,000+
  - Companies: 30,000+
  - Organizations: 2,200+
  - Currencies: 190+
  - Commodities : 70+

- Equity Entity Coverage by Region:
  - Europe: 38.6%
  - Americas: 30.1%
  - Asia: 25.3%
  - Africa: 4.1%
  - Oceania: 2.0%

RavenPack News Analytics



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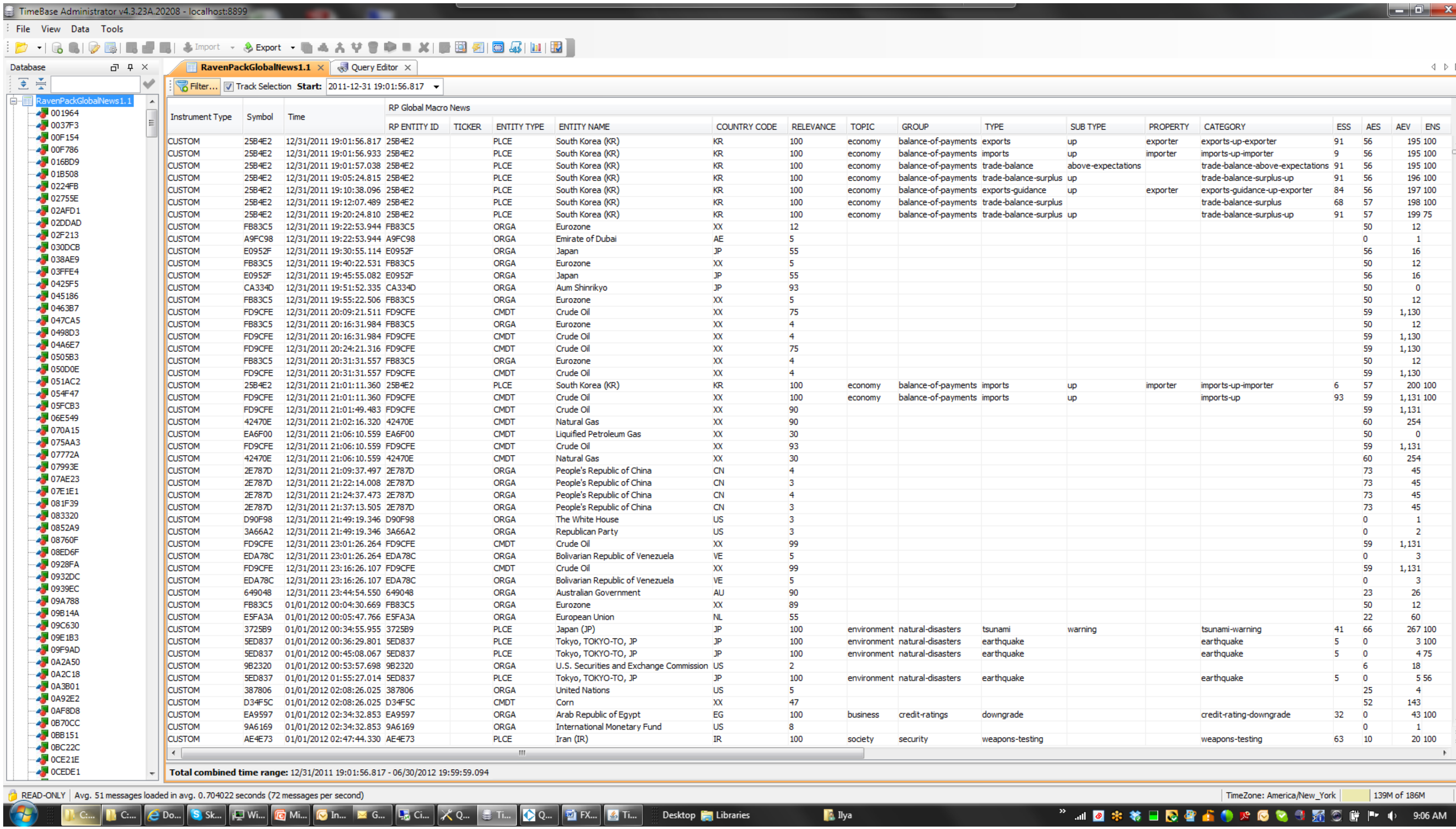
RP news data in TimeBase



Instrument Type	Symbol	Time	RP Global Macro News															
			RP ENTITY ID	TICKER	ENTITY TYPE	ENTITY NAME	COUNTRY CODE	RELEVANCE	TOPIC	GROUP	TYPE	SUB TYPE	PROPERTY	CATEGORY	ESS	AES	AEV	ENS
CUSTOM	25B4E2	12/31/2011 19:01:56.817	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	exports	up	exporter	exports-up-exporter	91	56	195	100
CUSTOM	25B4E2	12/31/2011 19:01:56.933	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	imports	up	importer	imports-up-importer	9	56	195	100
CUSTOM	25B4E2	12/31/2011 19:01:57.038	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	trade-balance	above-expectations		trade-balance-above-expectations	91	56	195	100
CUSTOM	25B4E2	12/31/2011 19:05:24.815	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	trade-balance-surplus	up		trade-balance-surplus-up	91	56	196	100
CUSTOM	25B4E2	12/31/2011 19:10:38.096	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	exports-guidance	up	exporter	exports-guidance-up-exporter	84	56	197	100
CUSTOM	25B4E2	12/31/2011 19:12:07.489	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	trade-balance-surplus			trade-balance-surplus	68	57	198	100
CUSTOM	25B4E2	12/31/2011 19:20:24.810	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	trade-balance-surplus	up		trade-balance-surplus-up	91	57	199	75
CUSTOM	FB83C5	12/31/2011 19:22:53.944	FB83C5		ORGA	Eurozone	XX	12								50	12	
CUSTOM	A9FC98	12/31/2011 19:22:53.944	A9FC98		ORGA	Emirate of Dubai	AE	5								0	1	
CUSTOM	E0952F	12/31/2011 19:30:55.114	E0952F		ORGA	Japan	JP	55								56	16	
CUSTOM	FB83C5	12/31/2011 19:40:22.531	FB83C5		ORGA	Eurozone	XX	5								50	12	
CUSTOM	E0952F	12/31/2011 19:45:55.082	E0952F		ORGA	Japan	JP	55								56	16	
CUSTOM	CA334D	12/31/2011 19:51:52.335	CA334D		ORGA	Aum Shinrikyo	JP	93								50	0	
CUSTOM	FB83C5	12/31/2011 19:55:22.506	FB83C5		ORGA	Eurozone	XX	5								50	12	
CUSTOM	FD9CFE	12/31/2011 20:09:21.511	FD9CFE		CMDT	Crude Oil	XX	75								59	1,130	
CUSTOM	FB83C5	12/31/2011 20:16:31.984	FB83C5		ORGA	Eurozone	XX	4								50	12	
CUSTOM	FD9CFE	12/31/2011 20:16:31.984	FD9CFE		CMDT	Crude Oil	XX	4								59	1,130	
CUSTOM	FD9CFE	12/31/2011 20:24:21.316	FD9CFE		CMDT	Crude Oil	XX	75								59	1,130	
CUSTOM	FB83C5	12/31/2011 20:31:31.557	FB83C5		ORGA	Eurozone	XX	4								50	12	
CUSTOM	FD9CFE	12/31/2011 20:31:31.557	FD9CFE		CMDT	Crude Oil	XX	4								59	1,130	
CUSTOM	25B4E2	12/31/2011 21:01:11.360	25B4E2		PLCE	South Korea (KR)	KR	100	economy	balance-of-payments	imports	up	importer	imports-up-importer	6	57	200	100
CUSTOM	FD9CFE	12/31/2011 21:01:11.360	FD9CFE		CMDT	Crude Oil	XX	100	economy	balance-of-payments	imports	up		imports-up	93	59	1,131	100
CUSTOM	FD9CFE	12/31/2011 21:01:49.483	FD9CFE		CMDT	Crude Oil	XX	90								59	1,131	
CUSTOM	42470E	12/31/2011 21:02:16.320	42470E		CMDT	Natural Gas	XX	90								60	254	
CUSTOM	EA6F00	12/31/2011 21:06:10.559	EA6F00		CMDT	Liquified Petroleum Gas	XX	30								50	0	
CUSTOM	FD9CFE	12/31/2011 21:06:10.559	FD9CFE		CMDT	Crude Oil	XX	93								59	1,131	
CUSTOM	42470E	12/31/2011 21:06:10.559	42470E		CMDT	Natural Gas	XX	30								60	254	
CUSTOM	2E787D	12/31/2011 21:09:37.497	2E787D		ORGA	People's Republic of China	CN	4								73	45	
CUSTOM	2E787D	12/31/2011 21:22:14.008	2E787D		ORGA	People's Republic of China	CN	3								73	45	
CUSTOM	2E787D	12/31/2011 21:24:37.473	2E787D		ORGA	People's Republic of China	CN	4								73	45	
CUSTOM	2E787D	12/31/2011 21:37:13.505	2E787D		ORGA	People's Republic of China	CN	3								73	45	
CUSTOM	D90F98	12/31/2011 21:49:19.346	D90F98		ORGA	The White House	US	3								0	1	
CUSTOM	3A66A2	12/31/2011 21:49:19.346	3A66A2		ORGA	Republican Party	US	3								0	2	
CUSTOM	FD9CFE	12/31/2011 23:01:26.264	FD9CFE		CMDT	Crude Oil	XX	99								59	1,131	
CUSTOM	EDA78C	12/31/2011 23:01:26.264	EDA78C		ORGA	Bolivarian Republic of Venezuela	VE	5								0	3	
CUSTOM	FD9CFE	12/31/2011 23:16:26.107	FD9CFE		CMDT	Crude Oil	XX	99								59	1,131	
CUSTOM	EDA78C	12/31/2011 23:16:26.107	EDA78C		ORGA	Bolivarian Republic of Venezuela	VE	5								0	3	
CUSTOM	649048	12/31/2011 23:44:54.550	649048		ORGA	Australian Government	AU	90								23	26	
CUSTOM	FB83C5	01/01/2012 00:04:30.669	FB83C5		ORGA	Eurozone	XX	89								50	12	
CUSTOM	E5FA3A	01/01/2012 00:05:47.766	E5FA3A		ORGA	European Union	NL	55								22	60	
CUSTOM	3725B9	01/01/2012 00:34:55.955	3725B9		PLCE	Japan (JP)	JP	100	environment	natural-disasters	tsunami	warning		tsunami-warning	41	66	267	100
CUSTOM	5ED837	01/01/2012 00:36:29.801	5ED837		PLCE	Tokyo, TOKYO-TO, JP	JP	100	environment	natural-disasters	earthquake			earthquake	5	0	3	100
CUSTOM	5ED837	01/01/2012 00:45:08.067	5ED837		PLCE	Tokyo, TOKYO-TO, JP	JP	100	environment	natural-disasters	earthquake			earthquake	5	0	4	75
CUSTOM	9B2320	01/01/2012 00:53:57.698	9B2320		ORGA	U.S. Securities and Exchange Commission	US	2								6	18	
CUSTOM	5ED837	01/01/2012 01:55:27.014	5ED837		PLCE	Tokyo, TOKYO-TO, JP	JP	100	environment	natural-disasters	earthquake			earthquake	5	0	5	56
CUSTOM	387806	01/01/2012 02:08:26.025	387806		ORGA	United Nations	US	5								25	4	
CUSTOM	D34F5C	01/01/2012 02:08:26.025	D34F5C		CMDT	Corn	XX	47								52	143	
CUSTOM	EA9597	01/01/2012 02:34:32.853	EA9597		ORGA	Arab Republic of Egypt	EG	100	business	credit-ratings	downgrade			credit-rating-downgrade	32	0	43	100
CUSTOM	9A6169	01/01/2012 02:34:32.853	9A6169		ORGA	International Monetary Fund	US	8								0	1	
CUSTOM	AE4E73	01/01/2012 02:47:44.330	AE4E73		PLCE	Iran (IR)	IR	100	society	security	weapons-testing			weapons-testing	63	10	20	100

RP news data in TimeBase

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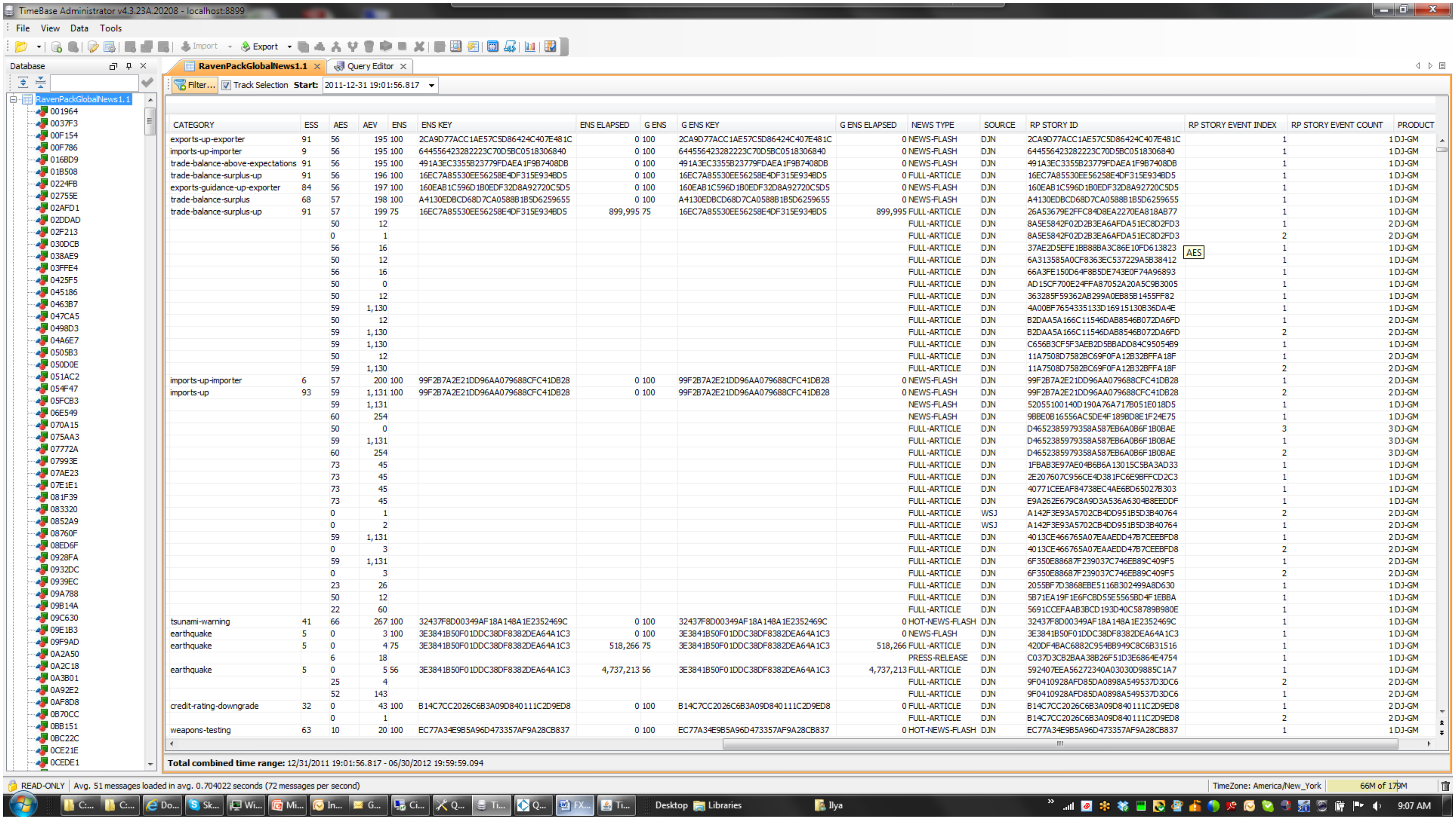


Parameters of setup

- **RP Data from 03/01/2012 till 07/01/2012:**
  - More than 1.1 million messages
  - Used subset of macro-economic news for US (287,000 records), Germany (7,800), EU (3,700) and Japan (14,400).

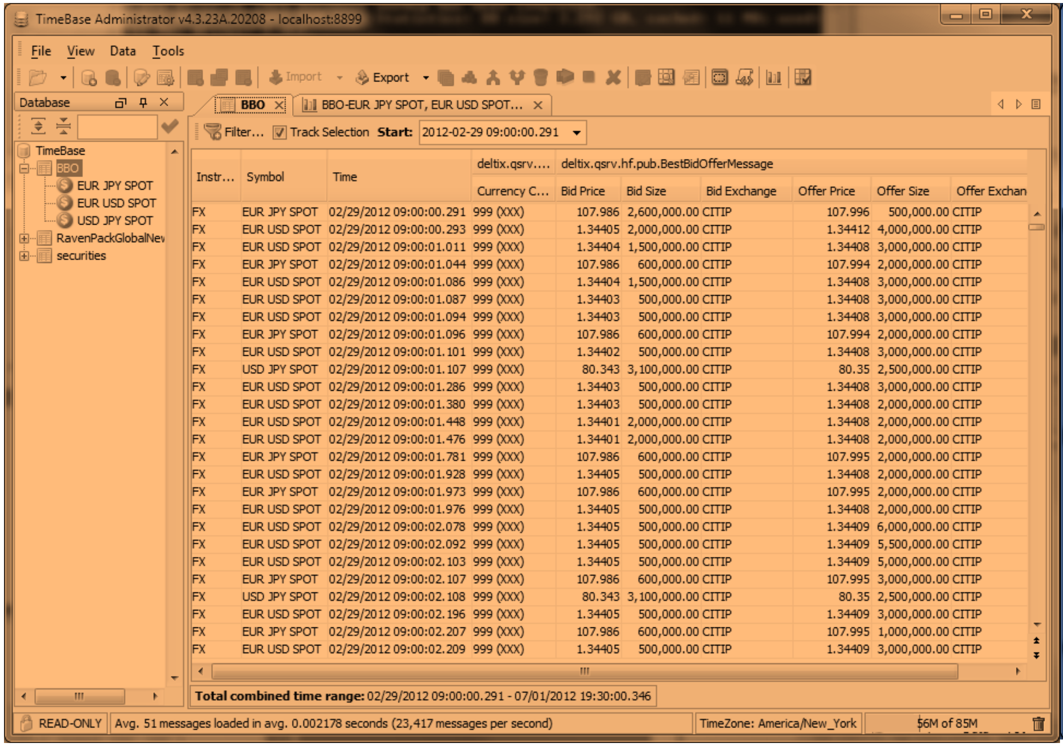
- **All data was filtered by the following news types:**
  - consumer-price-index
  - producer-price-index
  - unemployment
  - retail-sales
  - gross-domestic-product
  - durable-goods
  - interest-rate
  - consumer-confidence
  - home-sales-existing, home-sales-new
  - current-account, current-account-surplus, current-account-deficit
  - consumer-spending
  - jobless-claims
  - inflation
  - trade-balance, trade-balance-deficit, trade-balance-surplus

- **Extra filters are:**
  - news relevance: RELEVANCE = 100
  - news novelty: ENS = 100

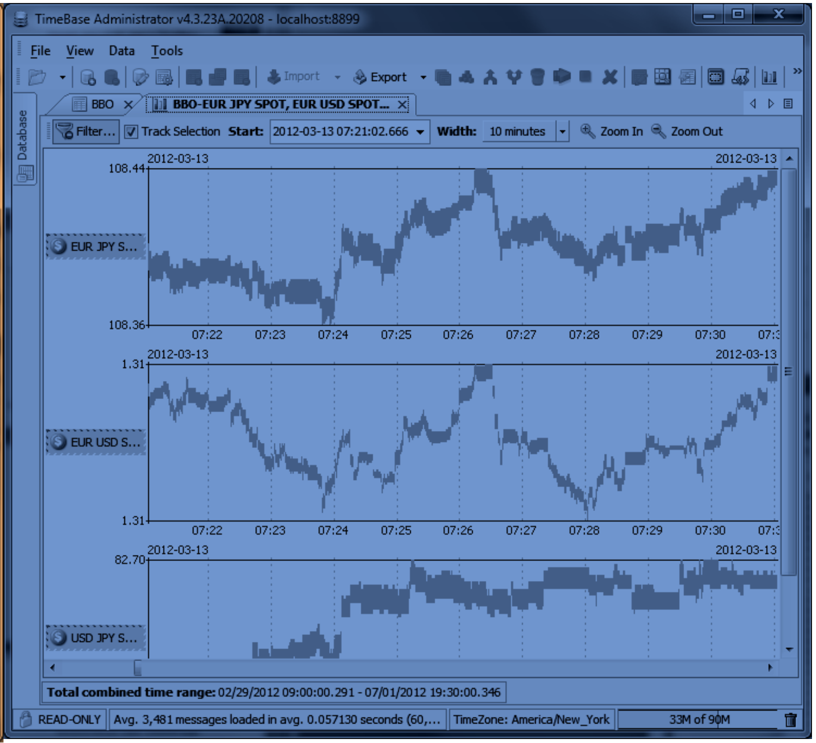
Historical Tick Data

Historical window from 1 March 2012 till 1 August 2012:

- Three currency pairs EURUSD, USDJPY, EURJPY;
- Raw ask, bid data from Citi FX data feed;
- On average the daily volume of ask and bid messages is ~1,000,000
- Total volume of data used in research is 100,000,000 messages



Instr...	Symbol	Time	deltix.qsrv.... Currency C...	deltix.qsrv.hf.pub.BestBidOfferMessage Bid Price	Bid Size	Bid Exchange	Offer Price	Offer Size	Offer Exchan
FX	EUR JPY SPOT	02/29/2012 09:00:00.291	999 (XXX)	107.986	2,600,000.00	CITIP	107.996	500,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:00.293	999 (XXX)	1.34405	2,000,000.00	CITIP	1.34412	4,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.011	999 (XXX)	1.34404	1,500,000.00	CITIP	1.34408	3,000,000.00	CITIP
FX	EUR JPY SPOT	02/29/2012 09:00:01.044	999 (XXX)	107.986	600,000.00	CITIP	107.994	2,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.086	999 (XXX)	1.34404	1,500,000.00	CITIP	1.34408	3,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.087	999 (XXX)	1.34403	500,000.00	CITIP	1.34408	3,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.094	999 (XXX)	1.34403	500,000.00	CITIP	1.34408	3,000,000.00	CITIP
FX	EUR JPY SPOT	02/29/2012 09:00:01.096	999 (XXX)	107.986	600,000.00	CITIP	107.994	2,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.101	999 (XXX)	1.34402	500,000.00	CITIP	1.34408	3,000,000.00	CITIP
FX	USD JPY SPOT	02/29/2012 09:00:01.107	999 (XXX)	80.343	3,100,000.00	CITIP	80.35	2,500,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.286	999 (XXX)	1.34403	500,000.00	CITIP	1.34408	3,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.380	999 (XXX)	1.34403	500,000.00	CITIP	1.34408	2,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.448	999 (XXX)	1.34401	2,000,000.00	CITIP	1.34408	2,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.476	999 (XXX)	1.34401	2,000,000.00	CITIP	1.34408	2,000,000.00	CITIP
FX	EUR JPY SPOT	02/29/2012 09:00:01.781	999 (XXX)	107.986	600,000.00	CITIP	107.995	2,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.928	999 (XXX)	1.34405	500,000.00	CITIP	1.34408	2,000,000.00	CITIP
FX	EUR JPY SPOT	02/29/2012 09:00:01.973	999 (XXX)	107.986	600,000.00	CITIP	107.995	2,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:01.976	999 (XXX)	1.34405	500,000.00	CITIP	1.34408	2,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:02.078	999 (XXX)	1.34405	500,000.00	CITIP	1.34409	6,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:02.092	999 (XXX)	1.34405	500,000.00	CITIP	1.34409	5,500,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:02.103	999 (XXX)	1.34405	500,000.00	CITIP	1.34409	5,000,000.00	CITIP
FX	EUR JPY SPOT	02/29/2012 09:00:02.107	999 (XXX)	107.986	600,000.00	CITIP	107.995	3,000,000.00	CITIP
FX	USD JPY SPOT	02/29/2012 09:00:02.108	999 (XXX)	80.343	3,100,000.00	CITIP	80.35	2,500,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:02.196	999 (XXX)	1.34405	500,000.00	CITIP	1.34409	3,000,000.00	CITIP
FX	EUR JPY SPOT	02/29/2012 09:00:02.207	999 (XXX)	107.986	600,000.00	CITIP	107.995	1,000,000.00	CITIP
FX	EUR USD SPOT	02/29/2012 09:00:02.209	999 (XXX)	1.34405	500,000.00	CITIP	1.34409	3,000,000.00	CITIP



Macro news intra-day distribution

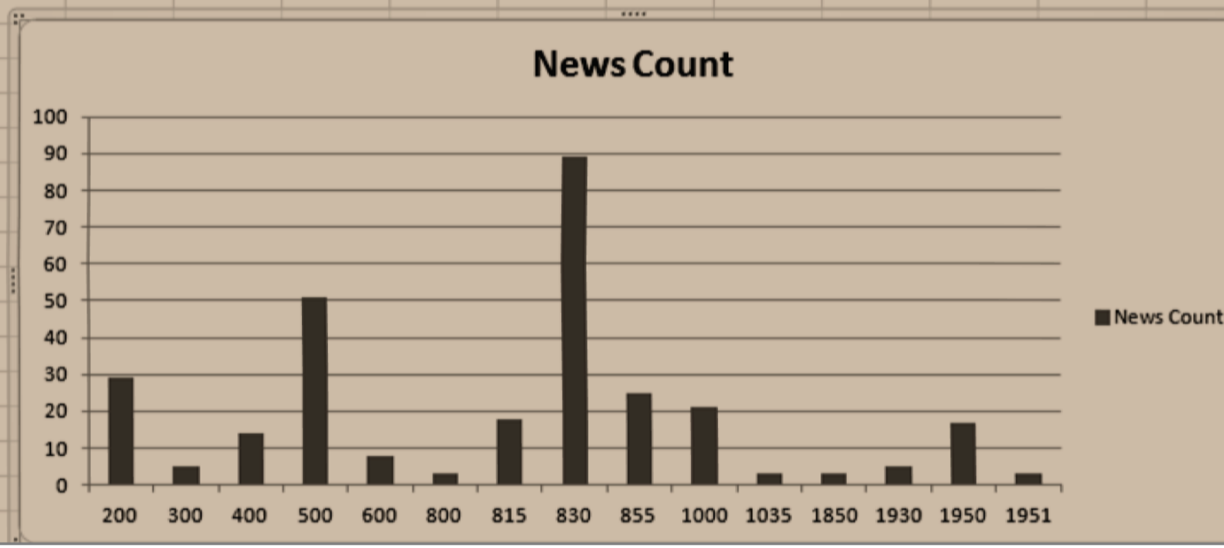
- The experiment has been performed to identify 1-minute time intervals with highest density of macro-economy news with RELEVANCE = 100 and ENS = 100.

- Applied the following filters:
  - Country Filter: **US, DE, EU, JP**
  - News Type filter - major economy news types as specified above.
  - Time interval to collect statistics: 1 March 2012 – 30 June 2012

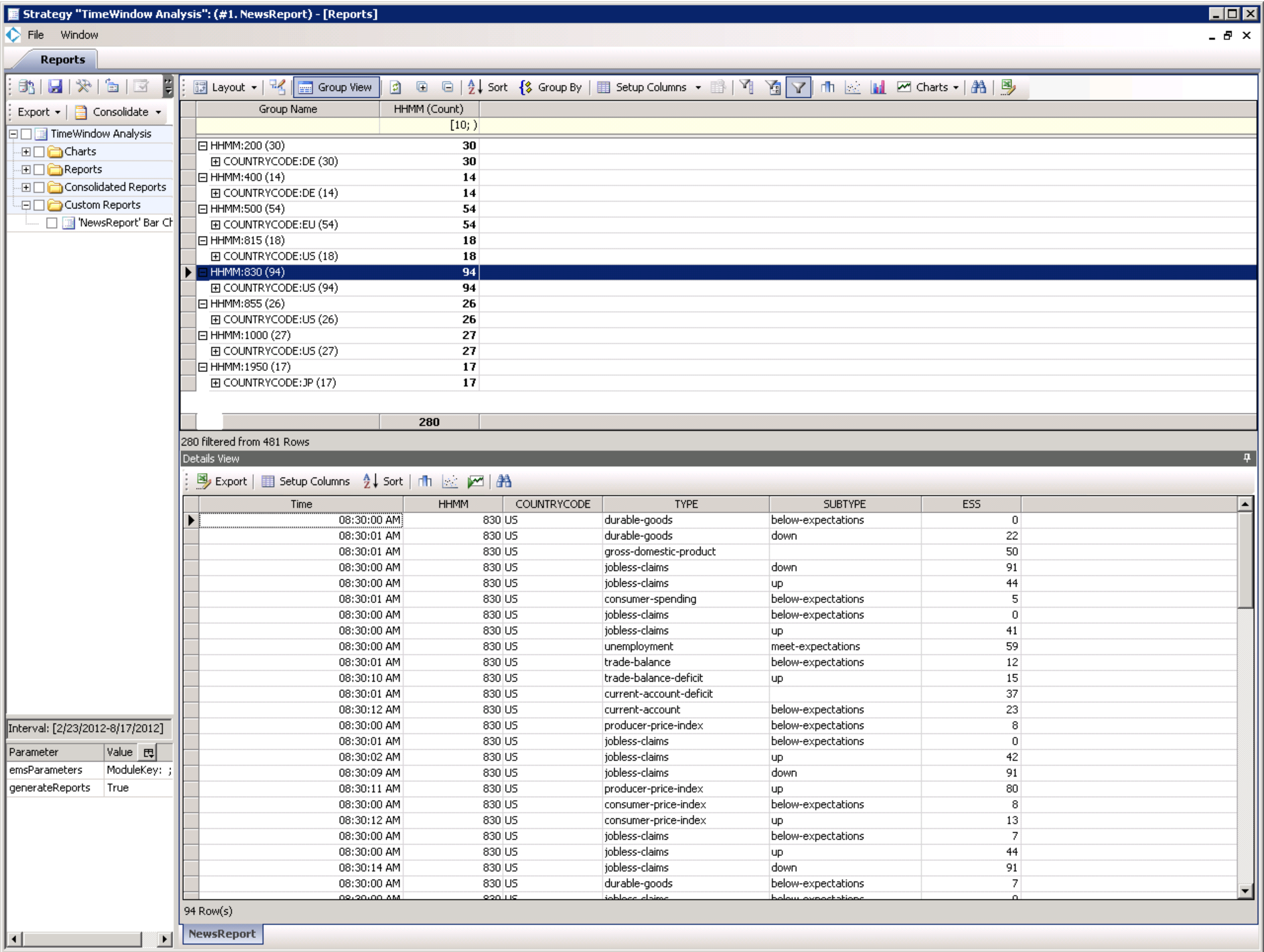
Macro news distribution

The following turn point minutes have been identified (with a number of news per minute exceeding 2):

HHMM	News Count	Source
200	29	DE
300	5	DE
400	14	DE
500	51	EU
600	8	EU
800	3	
815	18	US
830	89	US
855	25	US
1000	21	US
1035	3	
1850	3	JP
1930	5	JP
1950	17	JP
1951	3	



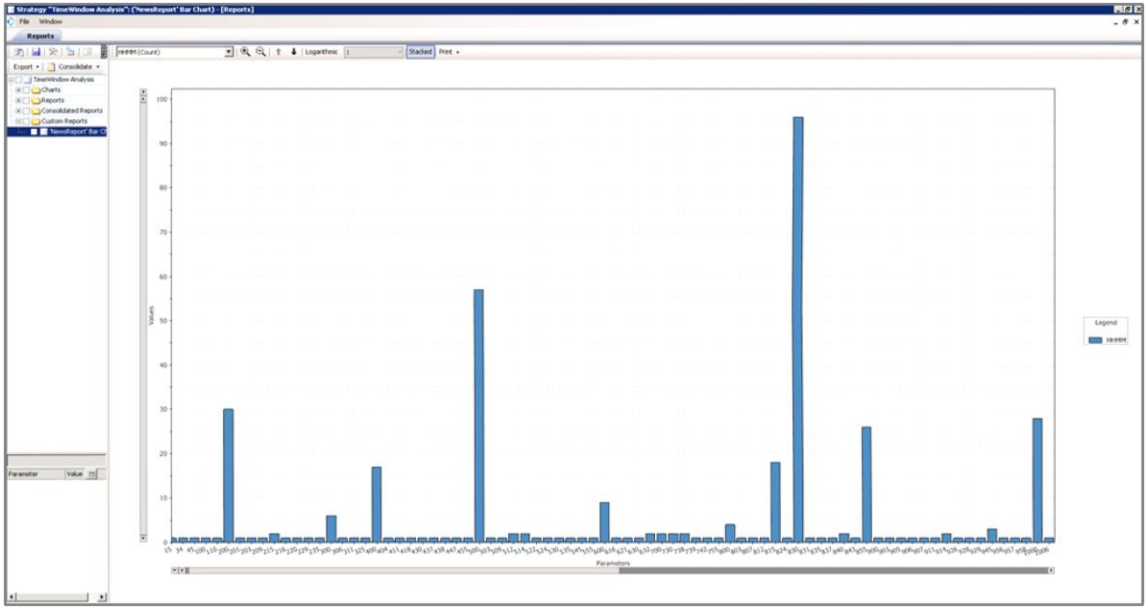
Macro news distribution

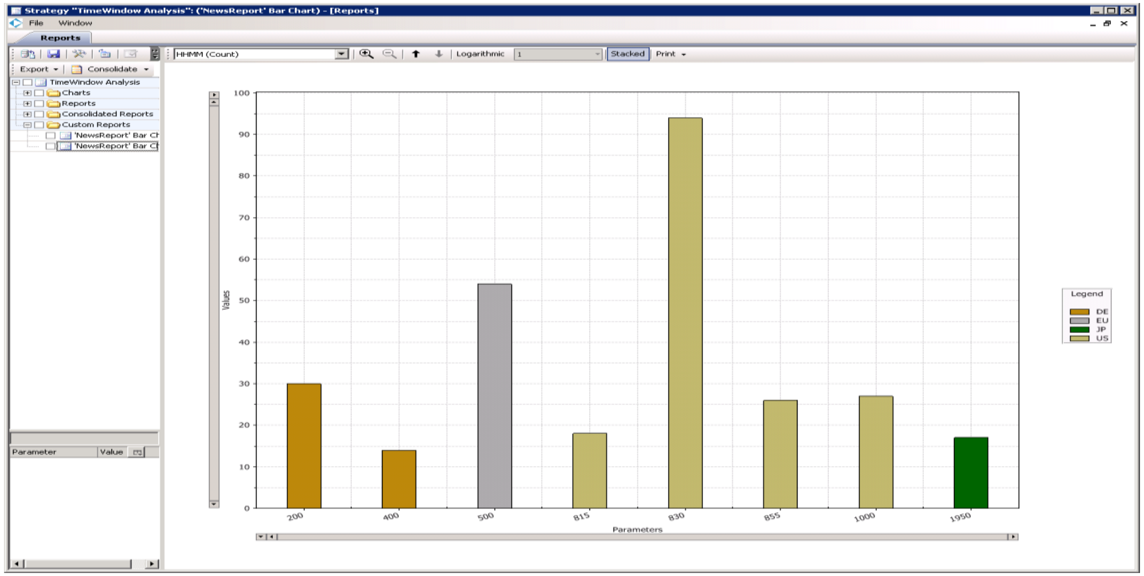


Group Name	HHMM (Count)
	[10;)
HHMM:200 (30)	30
COUNTRYCODE:DE (30)	30
HHMM:400 (14)	14
COUNTRYCODE:DE (14)	14
HHMM:500 (54)	54
COUNTRYCODE:EU (54)	54
HHMM:815 (18)	18
COUNTRYCODE:US (18)	18
HHMM:830 (94)	94
COUNTRYCODE:US (94)	94
HHMM:855 (26)	26
COUNTRYCODE:US (26)	26
HHMM:1000 (27)	27
COUNTRYCODE:US (27)	27
HHMM:1950 (17)	17
COUNTRYCODE:JP (17)	17
	280

Time	HHMM	COUNTRYCODE	TYPE	SUBTYPE	ESS
08:30:00 AM	830	US	durable-goods	below-expectations	0
08:30:01 AM	830	US	durable-goods	down	22
08:30:01 AM	830	US	gross-domestic-product		50
08:30:00 AM	830	US	jobless-claims	down	91
08:30:00 AM	830	US	jobless-claims	up	44
08:30:01 AM	830	US	consumer-spending	below-expectations	5
08:30:00 AM	830	US	jobless-claims	below-expectations	0
08:30:00 AM	830	US	jobless-claims	up	41
08:30:00 AM	830	US	unemployment	meet-expectations	59
08:30:01 AM	830	US	trade-balance	below-expectations	12
08:30:10 AM	830	US	trade-balance-deficit	up	15
08:30:01 AM	830	US	current-account-deficit		37
08:30:12 AM	830	US	current-account	below-expectations	23
08:30:00 AM	830	US	producer-price-index	below-expectations	8
08:30:01 AM	830	US	jobless-claims	below-expectations	0
08:30:02 AM	830	US	jobless-claims	up	42
08:30:09 AM	830	US	jobless-claims	down	91
08:30:11 AM	830	US	producer-price-index	up	80
08:30:00 AM	830	US	consumer-price-index	below-expectations	8
08:30:12 AM	830	US	consumer-price-index	up	13
08:30:00 AM	830	US	jobless-claims	below-expectations	7
08:30:00 AM	830	US	jobless-claims	up	44
08:30:14 AM	830	US	jobless-claims	down	91
08:30:00 AM	830	US	durable-goods	below-expectations	7

Macro news distribution





Impact of a release of new macro-economic statistics on Short-Term Volatility

- Looking at market turn points when major economy news are released for US, Germany/EU, and Japanese economy we were interested to evaluate the impact of the **news** on **short-term volatility** of FX rates.
- As a measure of volatility we used **annualized standard deviation** of log returns inside 5 min window of 10-sec bars (30 bars).
- We also calculated **variance ratio** (*):

  *VR = HILO (N) / (ATR(N) * SQRT(N))* where

  N = 30; *HILO (N) is* **high/low price range** and *ATR(N)* is **average true range** over the N bars period
- All statistics were calculated for 5 minutes before the economy news release time and for 5 minutes after the release scheduled time, for example for US events scheduled for 8:30, the time intervals were 8:25 – 8:30 and 8:30 – 8:35

(*) Variance Ratio statistics introduced by Lo and MacKinlay (1988):

❑VR close to 1 indicates that market is in a random walk regime;

❑VR > 1 indicates that market is in a trending regime (with positive autocorrelation of price returns);

❑VR < 1 indicates that market is in a mean reversion regime (with negative autocorrelation of price returns).

Impact of a release of new macro-economic statistics on Short-Term Volatility

Volatility and VR change on the days when **major US economy data** released

HHMM	Prev Volatitility	Next Volatility	Vol Change %	Prev VR	Next VR	VR Change %
8:30	***0.1456***	***0.3282***	***154.0465***	***1.3035***	***1.7461***	***45.3637***
EUR JPY SPOT	0.1753	0.3978	135.3153	1.2504	1.6487	40.1570
EUR USD SPOT	0.1104	0.2217	137.0218	1.2795	1.6748	46.9280
USD JPY SPOT	0.1510	0.3651	189.8022	1.3807	1.9148	49.0062
10:00	***0.1623***	***0.2205***	***59.5643***	***1.2290***	***1.5921***	***39.5154***
EUR JPY SPOT	0.2044	0.2764	58.5763	1.2609	1.6278	43.6316
EUR USD SPOT	0.1228	0.1782	60.1901	1.0526	1.4279	43.3808
USD JPY SPOT	0.1597	0.2068	59.9265	1.3735	1.7208	31.5339

Volatility and VR change on the days when **no US economy data** released

HHMM	Prev Volatitility	Next Volatility	Vol Change %	Prev VR	Next VR	VR Change %
8:30	***0.1152***	***0.1402***	***29.8781***	***1.3531***	***1.4180***	***16.8429***
EUR JPY SPOT	0.1403	0.1737	31.1027	1.3656	1.4124	13.5323
EUR USD SPOT	0.1079	0.1263	29.3345	1.3770	1.3554	7.0577
USD JPY SPOT	0.0975	0.1205	29.1972	1.3166	1.4861	29.9386
10:00	***0.1469***	***0.1746***	***31.3288***	***1.2794***	***1.3820***	***15.6410***
EUR JPY SPOT	0.1818	0.2191	35.5203	1.2184	1.3544	19.4199
EUR USD SPOT	0.1240	0.1515	27.8194	1.1802	1.3149	18.8981
USD JPY SPOT	0.1350	0.1533	30.6466	1.4395	1.4766	8.6050

Impact of a release of new macro-economic statistics on Short-Term Volatility

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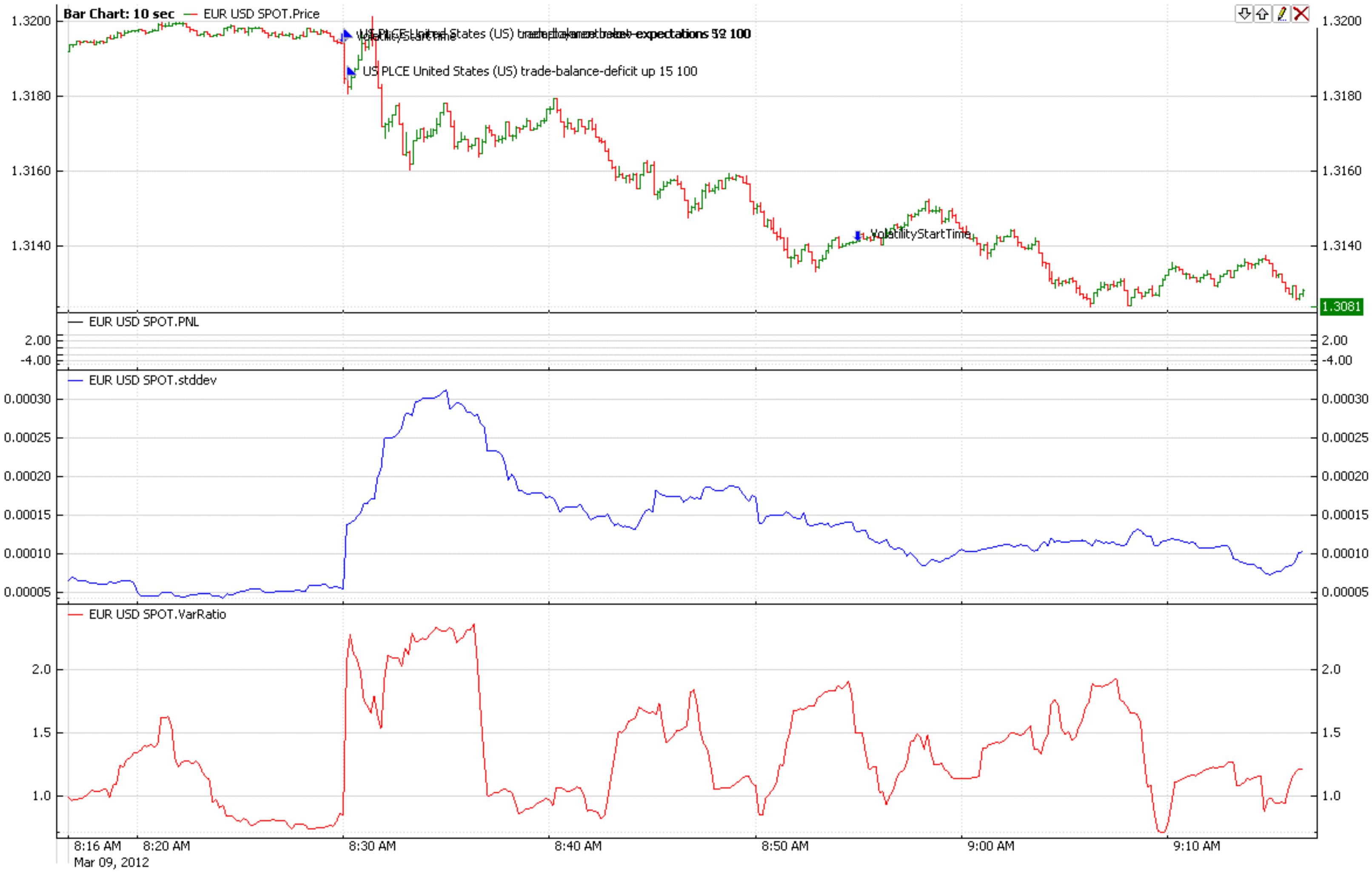
Volatility and VR change on the days when **major Japan economy data** released

HHMM	Prev Volatitility	Next Volatility	Vol Change %	Prev VR	Next VR	VR Change %
19:30	***0.0494***	***0.0943***	***99.0026***	***1.9646***	***1.9533***	***9.2445***
EUR JPY SPOT	0.0677	0.1232	**87.1012**	2.2411	1.9995	**-8.5106**
EUR USD SPOT	0.0392	0.0503	**47.2493**	1.8744	1.6090	**-7.1013**
USD JPY SPOT	0.0414	0.1096	***162.6573***	1.7783	2.2516	***43.3453***
19:50	***0.0852***	***0.1361***	***78.4769***	***1.6259***	***1.8428***	***23.7382***
EUR JPY SPOT	0.1050	0.1781	**88.6472**	1.5142	1.8133	**31.2710**
EUR USD SPOT	0.0587	0.0630	**29.7352**	1.6198	1.5132	**5.5643**
USD JPY SPOT	0.0920	0.1671	**117.0484**	1.7438	2.2020	**34.3794**

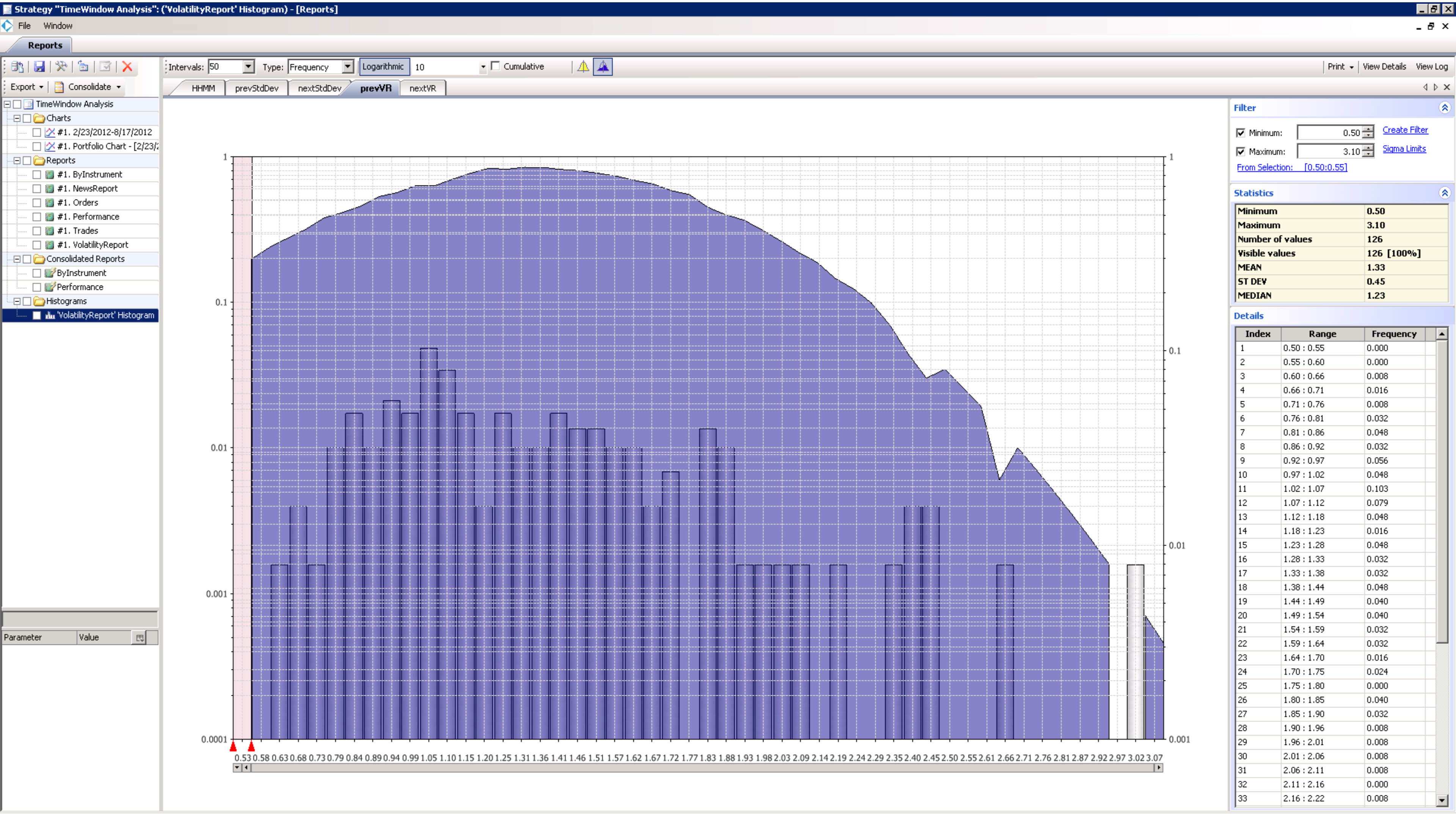
Volatility and VR change on the days when **no Japan economy data** released

HHMM	Prev Volatitility	Next Volatility	Vol Change %	Prev VR	Next VR	VR Change %
19:30	0.0528	0.0604	***36.4493***	1.7390	1.8866	***25.2754***
EUR JPY SPOT	0.0656	0.0772	32.8931	1.7214	1.8333	22.5881
EUR USD SPOT	0.0408	0.0441	30.4293	1.7248	1.7826	22.6103
USD JPY SPOT	0.0519	0.0599	46.0256	1.7707	2.0437	30.6277
19:50	0.0632	0.0720	***25.7074***	1.8076	1.8460	***15.0673***
EUR JPY SPOT	0.0795	0.0916	24.3676	1.7660	1.8303	16.9838
EUR USD SPOT	0.0452	0.0484	24.3416	1.8490	1.8561	14.1445
USD JPY SPOT	0.0647	0.0760	28.4129	1.8077	1.8517	14.0734

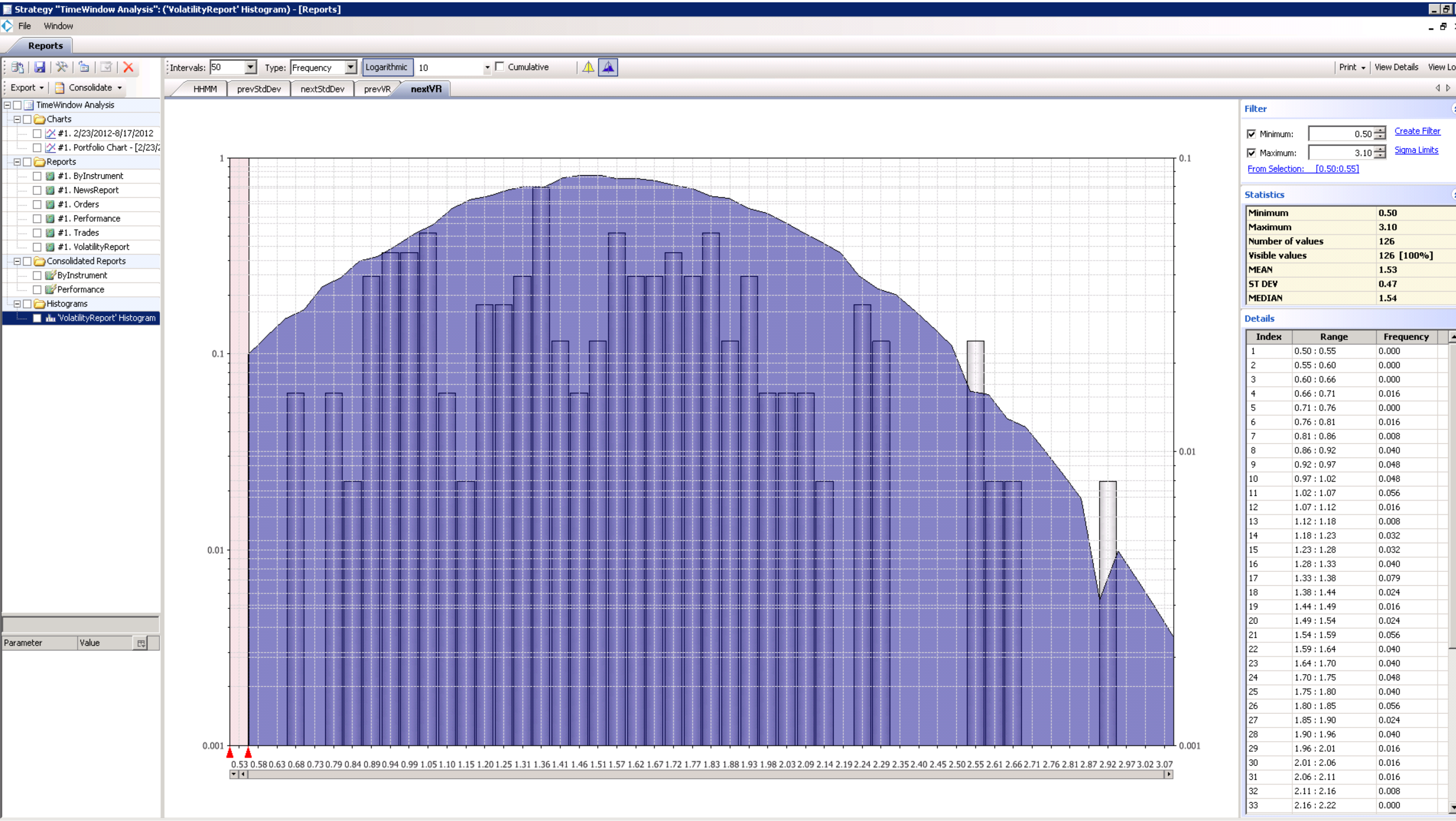
Impact of a release of new macro-economic statistics on Short-Term Volatility



Impact of a release of new macro-economic statistics on Short-Term Volatility



Impact of a release of new macro-economic statistics on Short-Term Volatility



Simple Trading Strategy:
crossing break-out levels after macro-economic news

We would like to explore the facts that volatility grows and there is a positive autocorrelation of returns at the time of major economy news release or immediately after that.

The proposed strategy is a **breakout strategy** which defines breakout buy/sell levels on **5 minutes** time interval preceding a scheduled economic event.

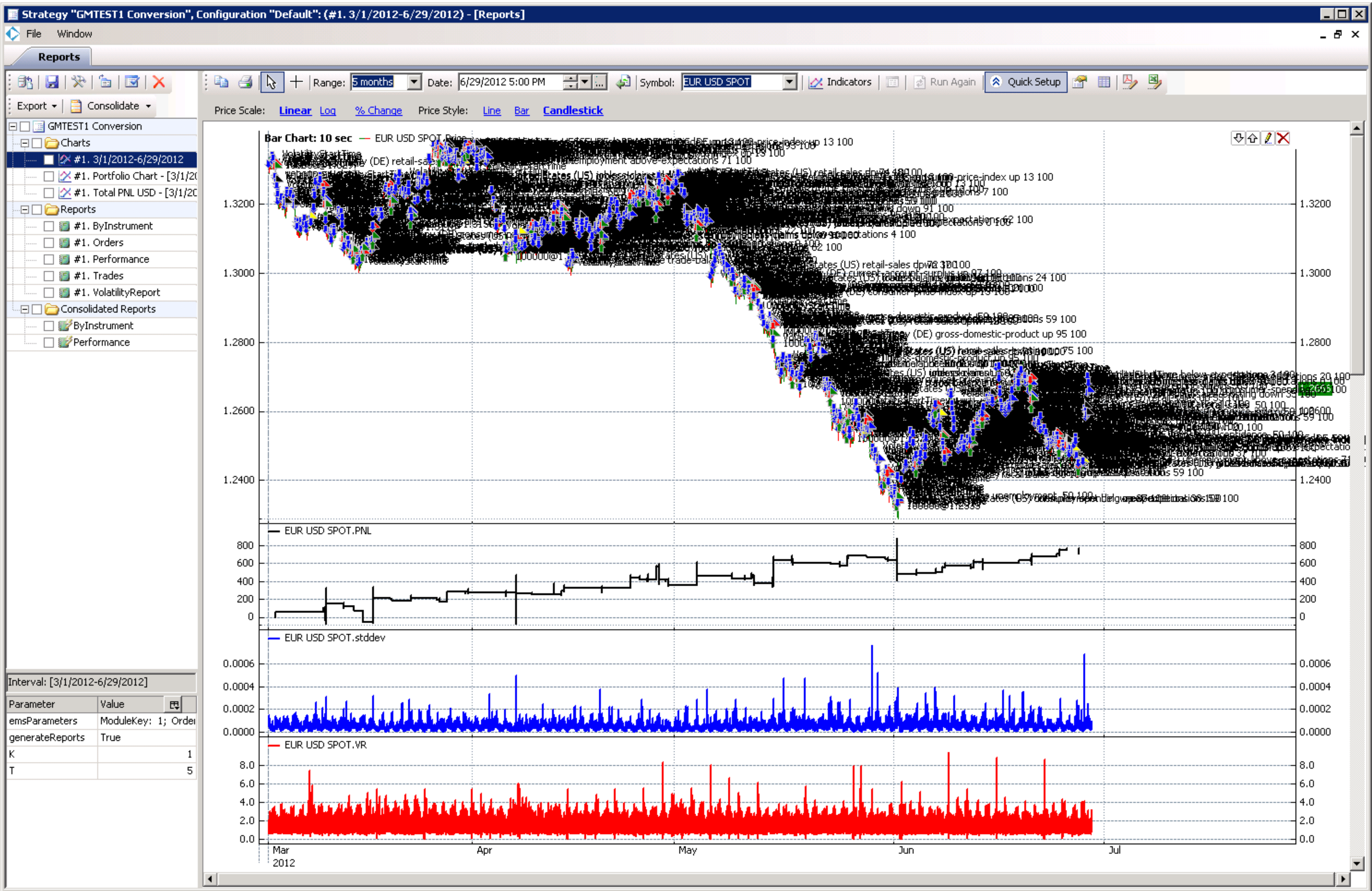
Upon receiving the **news event** we enter **long** if market price goes **above the breakout buy level** or enter **short** if the market price **goes below the sell level**.
The strategy **closes** the positions **5 minutes after** the received news event.

The order execution is done using relatively conservative BBO mode –
buy by best ask price and sell by best bid price
The lot size for all trades is 100,000 USD.

Trading Strategy

Trade on German Retail Sales data released 03/02/2012 at 2:00 AM ET

PnL Curve



Strategy "GMTEST1 Conversion", Configuration "Default": (#1. 3/1/2012-6/29/2012) - [Reports]
File
Window
Reports
Range: 5 months
Date: 6/29/2012 5:00 PM
Symbol: EUR USD SPOT
Indicators
Run Again
Quick Setup
Export
Consolidate
Price Scale: Linear Log % Change
Price Style: Line Bar Candlestick
GMTEST1 Conversion
Charts
#1. 3/1/2012-6/29/2012
#1. Portfolio Chart - [3/1/20
#1. Total PNL USD - [3/1/20
Reports
#1. ByInstrument
#1. Orders
#1. Performance
#1. Trades
#1. VolatilityReport
Consolidated Reports
ByInstrument
Performance
Interval: [3/1/2012-6/29/2012]
Parameter
Value
emsParameters
ModuleKey: 1; Order
generateReports
True
K
1
T
5
Bar Chart: 10 sec
EUR USD SPOT.Price
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1.3000
1.2800
1.2600
1.2400
EUR USD SPOT.PNL
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600
400
200
0
EUR USD SPOT.stddev
0.0006
0.0004
0.0002
0.0000
EUR USD SPOT.VR
8.0
6.0
4.0
2.0
0.0
Mar
2012
Apr
May
Jun
Jul

PnL Curve

Strategy "GMTEST1 Conversion", Configuration "Default": (#1. Total PNL USD - [3/1/2012-6/29/2012]) - [Reports]
File
Window
Reports
Export
Consolidate
GMTEST1 Conversion
Charts
#1. 3/1/2012-6/29/2012
Reports
#1. ByInstrument
#1. Orders
#1. Performance
#1. Trades
#1. VolatilityReport
Consolidated Reports
ByInstrument
Performance
Interval: [3/1/2012-6/29/2012]
Parameter
Value
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True
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1
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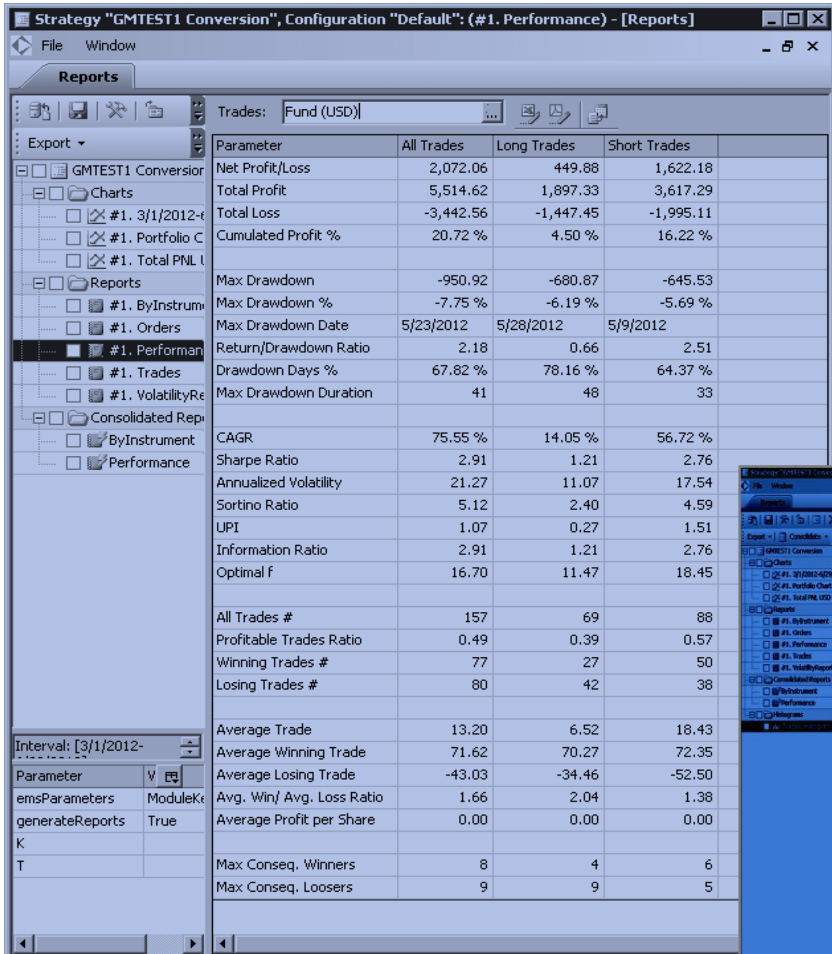
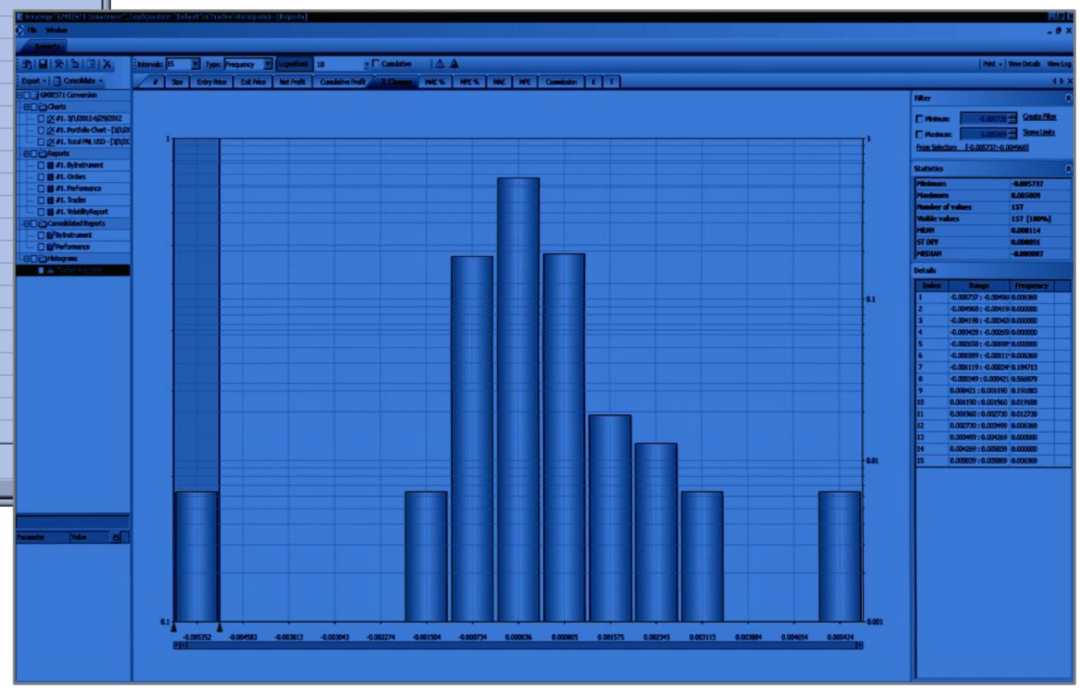
5
Range:
5 months
Date:
6/29/2012 5:00 PM
Symbol:
AllPairs
Indicators
Run Again
Quick Setup
Bar Chart: 10 sec
AllPairs.Total PNL USD
2000
1500
1000
500
0
Mar
2012
Apr
May
Jun
Jul

Summary Statistics

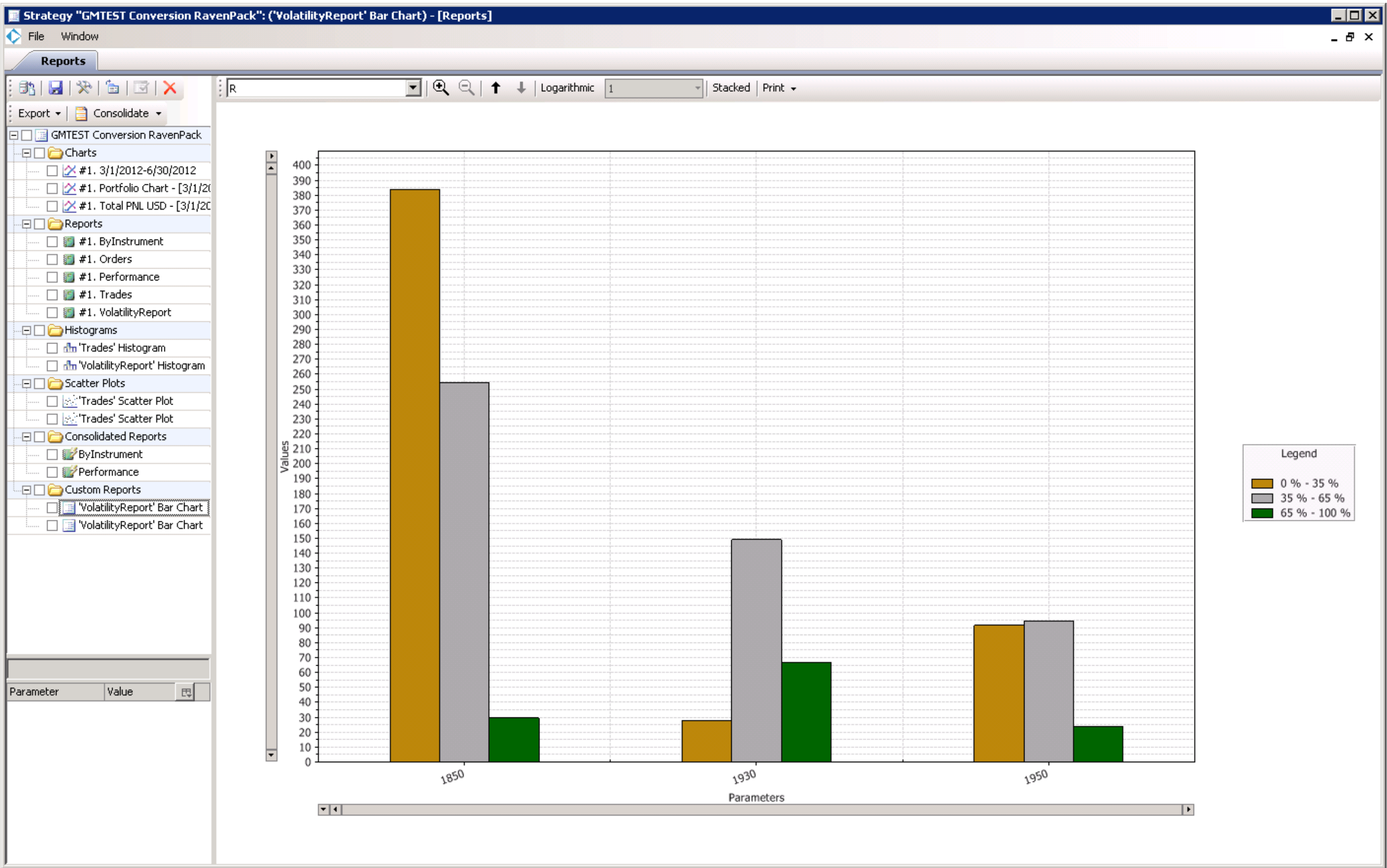


Parameter	All Trades	Long Trades	Short Trades
Net Profit/Loss	2,072.06	449.88	1,622.18
Total Profit	5,514.62	1,897.33	3,617.29
Total Loss	-3,442.56	-1,447.45	-1,995.11
Cumulated Profit %	20.72 %	4.50 %	16.22 %
Max Drawdown	-950.92	-680.87	-645.53
Max Drawdown %	-7.75 %	-6.19 %	-5.69 %
Max Drawdown Date	5/23/2012	5/28/2012	5/9/2012
Return/Drawdown Ratio	2.18	0.66	2.51
Drawdown Days %	67.82 %	78.16 %	64.37 %
Max Drawdown Duration	41	48	33
CAGR	75.55 %	14.05 %	56.72 %
Sharpe Ratio	2.91	1.21	2.76
Annualized Volatility	21.27	11.07	17.54
Sortino Ratio	5.12	2.40	4.59
UPI	1.07	0.27	1.51
Information Ratio	2.91	1.21	2.76
Optimal f	16.70	11.47	18.45
All Trades #	157	69	88
Profitable Trades Ratio	0.49	0.39	0.57
Winning Trades #	77	27	50
Losing Trades #	80	42	38
Average Trade	13.20	6.52	18.43
Average Winning Trade	71.62	70.27	72.35
Average Losing Trade	-43.03	-34.46	-52.50
Avg. Win/ Avg. Loss Ratio	1.66	2.04	1.38
Average Profit per Share	0.00	0.00	0.00
Max Conseq. Winners	8	4	6
Max Conseq. Loosers	9	9	5



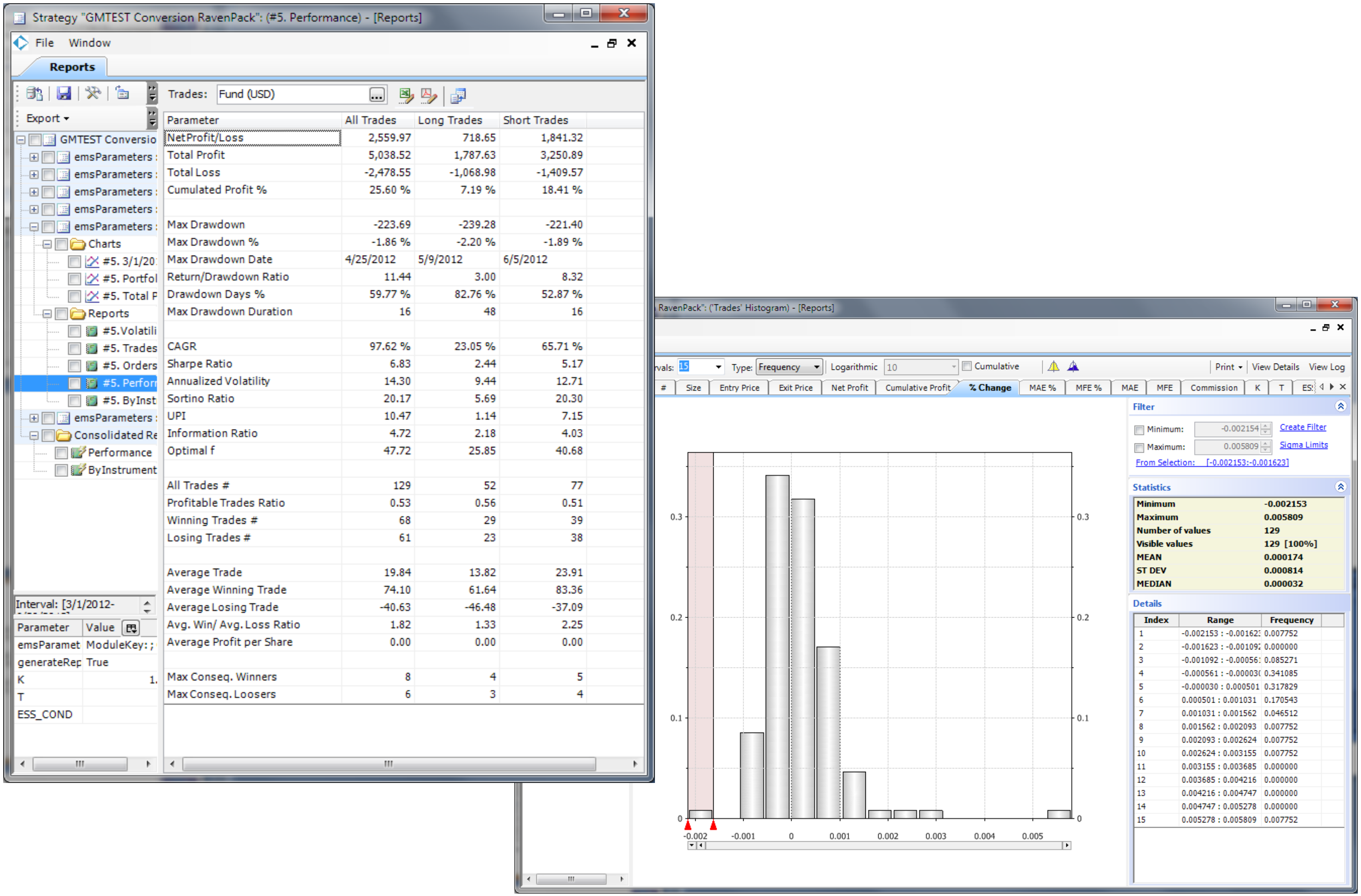
The Improvement of Trading Strategy by incorporating ESS – Event Sentiment Score

We observed that news events with **low and mid-range values of ESS trigger larger short-term volatility growth than news events with high values of ESS**.



Modified Trading Strategy – adding ESS filters

Summary Statistics of Modified Strategy



Parameter	All Trades	Long Trades	Short Trades
NetProfit/Loss	2,559.97	718.65	1,841.32
Total Profit	5,038.52	1,787.63	3,250.89
Total Loss	-2,478.55	-1,068.98	-1,409.57
Cumulated Profit %	25.60 %	7.19 %	18.41 %
Max Drawdown	-223.69	-239.28	-221.40
Max Drawdown %	-1.86 %	-2.20 %	-1.89 %
Max Drawdown Date	4/25/2012	5/9/2012	6/5/2012
Return/Drawdown Ratio	11.44	3.00	8.32
Drawdown Days %	59.77 %	82.76 %	52.87 %
Max Drawdown Duration	16	48	16
CAGR	97.62 %	23.05 %	65.71 %
Sharpe Ratio	6.83	2.44	5.17
Annualized Volatility	14.30	9.44	12.71
Sortino Ratio	20.17	5.69	20.30
UPI	10.47	1.14	7.15
Information Ratio	4.72	2.18	4.03
Optimal f	47.72	25.85	40.68
All Trades #	129	52	77
Profitable Trades Ratio	0.53	0.56	0.51
Winning Trades #	68	29	39
Losing Trades #	61	23	38
Average Trade	19.84	13.82	23.91
Average Winning Trade	74.10	61.64	83.36
Average Losing Trade	-40.63	-46.48	-37.09
Avg. Win/ Avg. Loss Ratio	1.82	1.33	2.25
Average Profit per Share	0.00	0.00	0.00
Max Conseq. Winners	8	4	5
Max Conseq. Loosers	6	3	4

Statistic	Value
Minimum	-0.002153
Maximum	0.005809
Number of values	129
Visible values	129 [100%]
MEAN	0.000174
ST DEV	0.000814
MEDIAN	0.000032

Details

Index	Range	Frequency
1	-0.002153 : -0.00162:	0.007752
2	-0.001623 : -0.00109:	0.000000
3	-0.001092 : -0.00056:	0.085271
4	-0.000561 : -0.00003(	0.341085
5	-0.000030 : 0.000501	0.317829
6	0.000501 : 0.001031	0.170543
7	0.001031 : 0.001562	0.046512
8	0.001562 : 0.002093	0.007752
9	0.002093 : 0.002624	0.007752
10	0.002624 : 0.003155	0.007752
11	0.003155 : 0.003685	0.000000
12	0.003685 : 0.004216	0.000000
13	0.004216 : 0.004747	0.000000
14	0.004747 : 0.005278	0.000000
15	0.005278 : 0.005809	0.007752

Summary

- Empirical analysis shows that the arrival of macro-economic news from world's leading economies increases short-term volatility

- A simple breakout strategy triggered by the arrival of major macro-economic news has alpha potential and is a candidate for further research.

- Adding an ESS filter helps to improve the performance of this breakout strategy