

The timing of variance risk premia around macroeconomic news events

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In a Nutshell: Variance/jump risk and macro announcements

- VIX futures and SPX option straddles can insure against the changes in the probability of **small** or **large** price shifts in whatever direction
- **Small**: Change in volatility — variance risk
- **Large**: Change in probability of discrete price jump — jump risk
- Realized returns to such positions are concentrated around scheduled macro news announcements
- Realized returns around non-announcement days are about zero
- We measure positive cost of insuring against variance risk **increases** around statistical announcement (employment, CPI, etc.), where risk is often heightened
- We measure positive costs of insuring against jump risk **decreases** around FOMC meetings, where risk is often reduced

Motivation and Importance

- Sharpe ratios are known to be higher around scheduled macro news days, suggesting that returns to bearing the risk of changes in the level of the market is concentrated around those days
- Market variance change is known to be a separate priced risk
- We show that the return to bearing the risk of variance changes is also concentrated around those days
- The sign of the expected return varies according to whether the news announcement type generally roils or calms risk
- Practical guidance about payoffs on futures & option strategies
- Theoretical guidance on temporal concentration of risk premia

Identification Strategy

- Long VIX Futures returns (futures sensitive to variance risk change)
 - **Negative**: Realized cost to insure against harm of an **increase** in **market variance** on a long stock market portfolio
 - **Positive**: Realized cost to insure against harm of a **decrease** in **market variance** on a long stock market portfolio
- Long SPX delta-neutral straddle returns (straddle sensitive to variance and jump risk change)
 - **Negative**: Realized cost to insure against harm of an **increase** in **market variance and/or price-jump probability** on a long stock market portfolio
 - **Positive**: Realized cost to insure against harm of a **decrease** in **market variance and/or price-jump probability** on a long stock market portfolio

Inference

The pattern of realized returns indicates presence of costs to insure against an increase versus decrease in variance risk (VR) and jump risk (JR)

		<u>Straddle return</u>		
		Positive	Zero	Negative
<u>Futures</u> <u>Return</u>	Positive	Decrease-VR ?-JR	Decrease-VR Increase-JR	Decrease-VR Increase-JR
	Zero	None-VR Decrease-JR	None-VR None-JR	None-VR Increase-JR
	Negative	Increase-VR Decrease-JR	Increase-VR Decrease-JR	Increase-VR ?-JR

Returns around statistical announcements

Percent per day

	Long positions in VIX futures	Delta-neutral SPX option straddles,
Non-announcement days	-0.0	-0.0
Non-farm Payrolls	-0.4	-2.4
Consumer Price Index	-0.1	-1.6
Industrial Production	-0.0	-1.8
ISM Index	-0.1	-1.1

Returns around statistical announcements

Percent per day

	Long positions in VIX futures	Delta-neutral SPX option straddles,
Non-announcement days	-0.0	-0.0
	↑	↑
	Zero, Insignificant	Zero, Insignificant
Non-farm Payrolls	-0.4	-2.4
Consumer Price Index	-0.1	-1.6
Industrial Production	-0.0	-1.8
ISM Index	-0.1	-1.1

Returns around statistical announcements

Percent per day

	Long positions in VIX futures	Delta-neutral SPX option straddles,
Non-announcement days	-0.0 ↑ Zero, Insignificant	-0.0 ↑ Zero, Insignificant
Non-farm Payrolls	-0.4	-2.4
Consumer Price Index	-0.1	-1.6
Industrial Production	-0.0	-1.8
ISM Index	-0.1 ↑ Zero, Insignificant	-1.1 ↑ Negative, Significant

Returns around Federal Open Market Committee Meetings

Percent per day

	Long positions in VIX futures	Delta-neutral SPX option straddles,
Non-announcement days	0.0	0.0
	↑	↑
	Zero, Insignificant	Zero, Insignificant
FOMC Meetings	-1.3	1.7
	↑	↑
	Negative, Significant	Positive, Significant

Inference

The pattern of realized returns indicates presence of costs to insure against an increase versus decrease in variance risk (VR) and jump risk (JR)

		<u>Straddle return</u>		
		Positive	Zero	Negative
<u>Futures</u> <u>Return</u>	Positive	Decrease-VR ?-JR	Decrease-VR Increase-JR	Decrease-VR Increase-JR
	Zero	None-VR Decrease-JR	None-VR None-JR	None-VR Increase-JR
	Negative	Increase-VR Decrease-JR	Increase-VR Decrease-JR	Increase-VR ?-JR

← for Statistical Announcements

↑ for FOMC Meetings

Returns from additional options positions corroborates

Percent per day

	Delta-Gamma neutral Vega-positive SPX straddle	Delta-Vega neutral Gamma-positive SPX straddle
Non-farm Payrolls	-0.2	-4.8
Consumer Price Index	-0.1	0.6
Industrial Production	0.6	-3.7
ISM Index	-0.1	-2.0
Federal Open Market Committee	0.1	3.7
Other days	0.2	-0.9

The cost of insuring against changes in market variance & jump risk is concentrated around scheduled macro news

Thank you!