Why Does Return Predictability Concentrate in Bad Times?

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Empirical Fact

- Disagreement and the content of news predict stock returns
  Diether, Malloy, & Scherbina (2002), Tetlock (2007)

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  Diether, Malloy, & Scherbina (2002), Tetlock (2007)
- MAIN FACT: This relation is concentrated in bad times
  Cen, Wei & Yang (2014), Garcia (2013)

Our Explanation

Main Idea: Countercyclical disagreement (Patton and Timmermann (2010)) explains observed patterns of time-series predictability

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If disagreement is countercyclical

$\Rightarrow$ Predictability strengthens as economic conditions deteriorate

WE BUILD A MODEL CONSISTENT WITH THESE FACTS

The Model

The stock is a claim to the aggregate output:

$$\frac{d\delta_t}{\delta_t} = f_t dt + \sigma_\delta dW_t$$

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f is mean-reverting:

$$df_t = \kappa(\bar{f} - f_t)dt + \sigma_f dW_t^f$$

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Agent B

f is a 2-state Markov Chain:

$$f_t = \{f^h, f^l\}$$

$$\Lambda = \begin{pmatrix} -\lambda & \lambda \\ \psi & -\psi \end{pmatrix}$$

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Estimation

Parameter	Symbol	Value
Mean-Reversion Speed f^A	κ	0.1911
Long-Term Mean f^A	$\bar{f}$	0.0630

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Parameter	Symbol	Value
Mean-Reversion Speed f^A	κ	0.1911
Long-Term Mean f^A	$\bar{f}$	0.0630
High State f^B	f^h	0.0794
Low State f^B	f^l	-0.0711
Intensity High to Low	λ	0.3022
Intensity Low to High	ψ	0.3951

Agent A

f is mean-reverting:

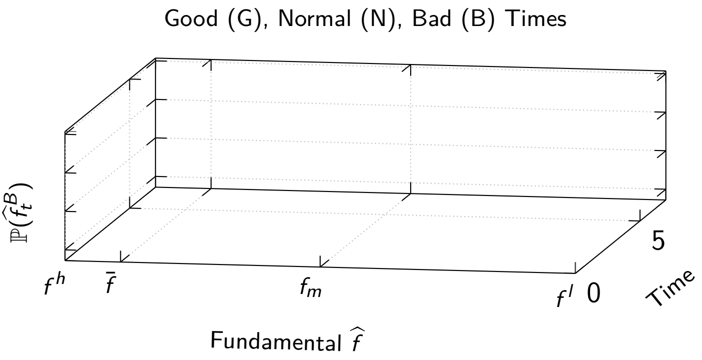
$$d\widehat{f}_t^A = \kappa(\bar{f} - \widehat{f}_t^A)dt + \frac{\gamma}{\sigma_\delta} d\widehat{W}_t^A$$

Agent B

f is a 2-state Markov Chain:

$$d\widehat{f}_t^B = (\lambda + \psi)(f_\infty - \widehat{f}_t^B)dt + \frac{1}{\sigma_\delta}(\widehat{f}_t^B - f^l)(f^h - \widehat{f}_t^B)d\widehat{W}_t^B$$

Term Structure of Disagreement



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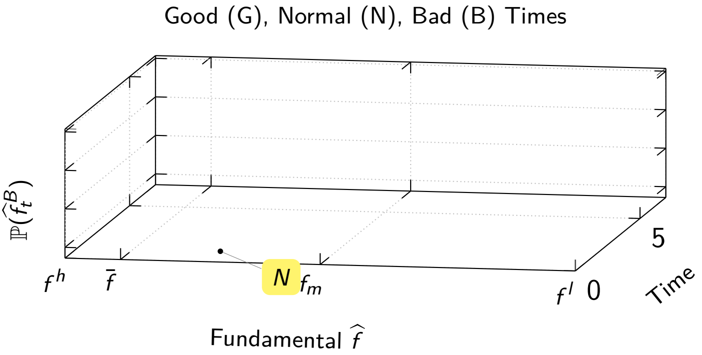

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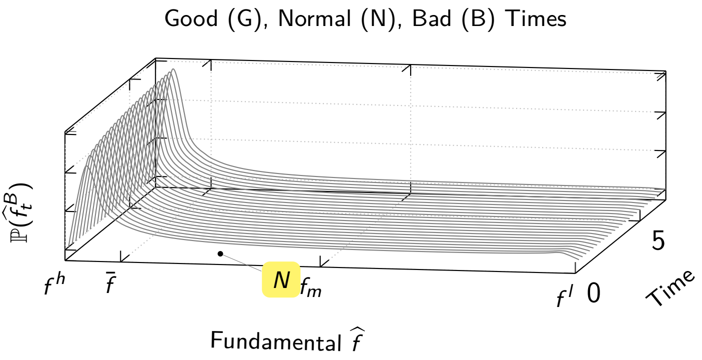

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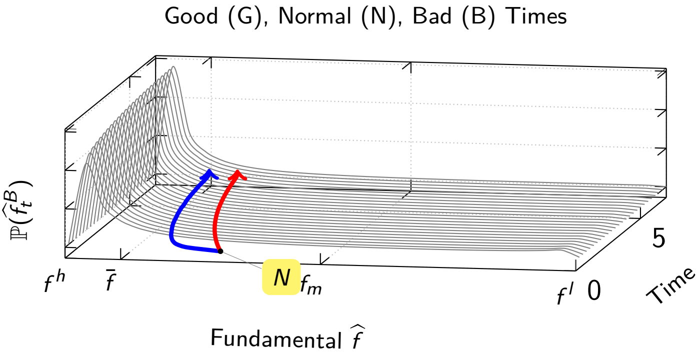

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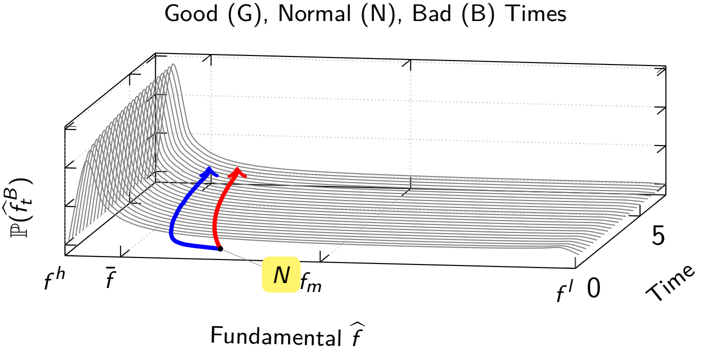
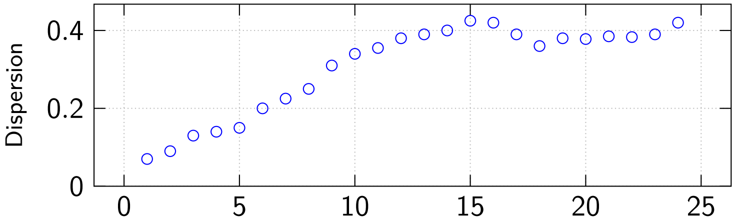


Source: Patton and Timmermann (2010)



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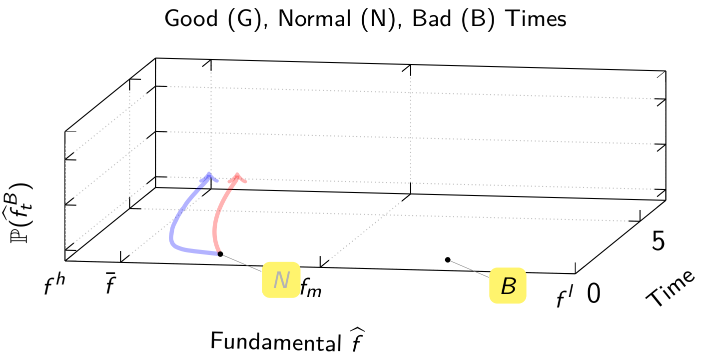

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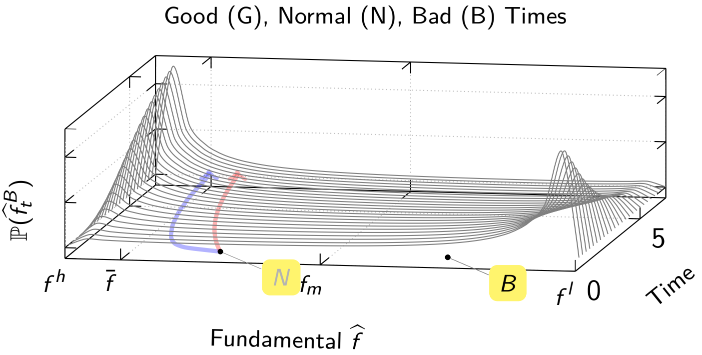

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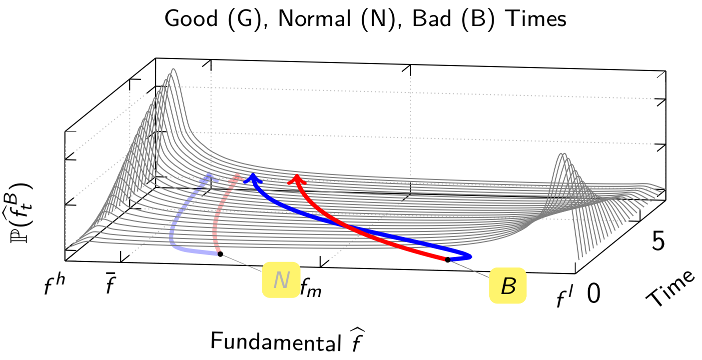

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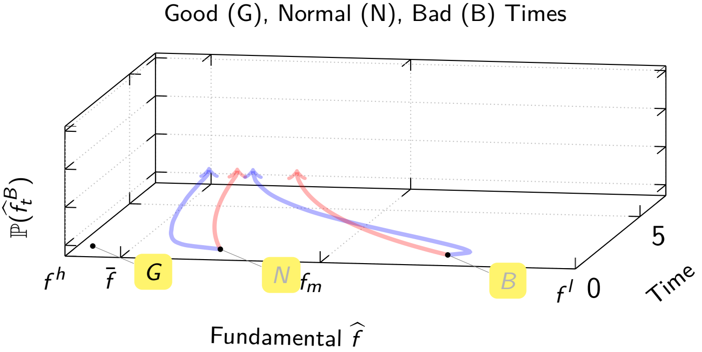

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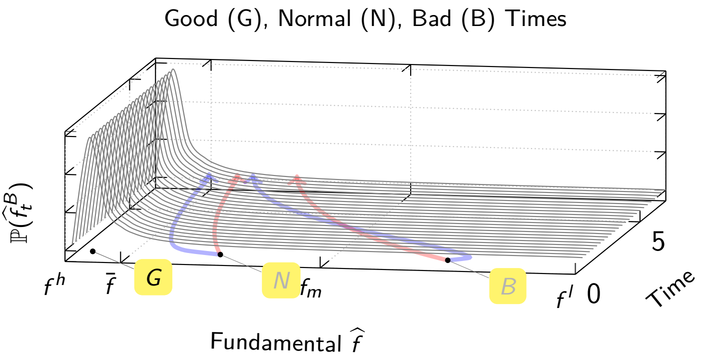

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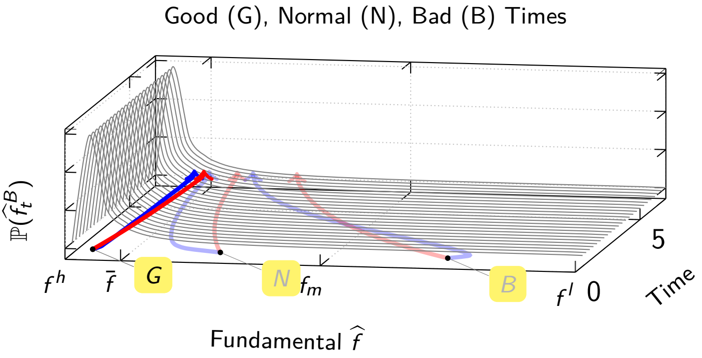

Impulse Response

We compute the expected price response to a shock $\widehat{W}$ today:

$$E_t(\mathcal{D}_t S_u)$$

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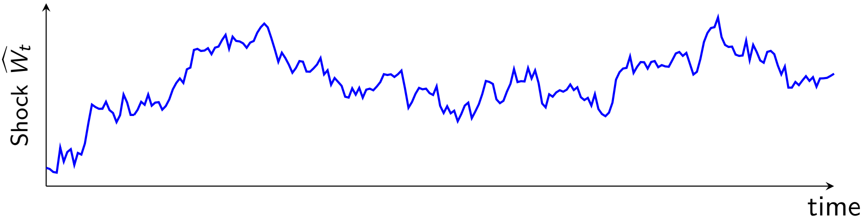

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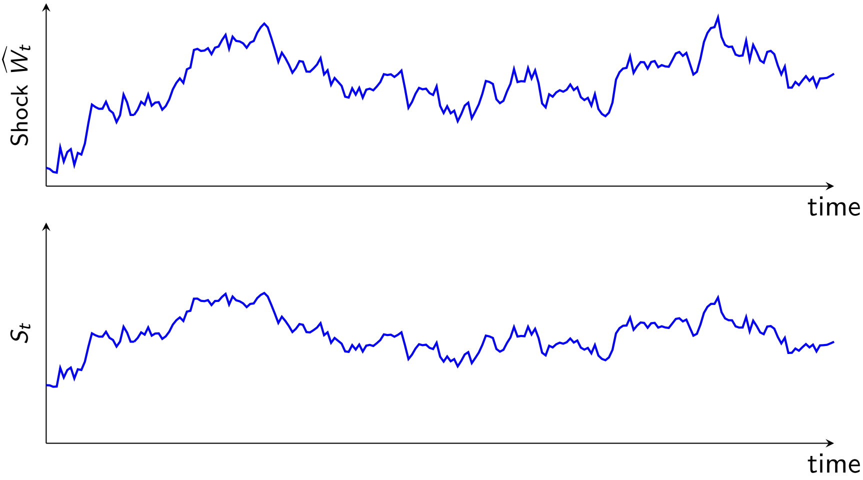

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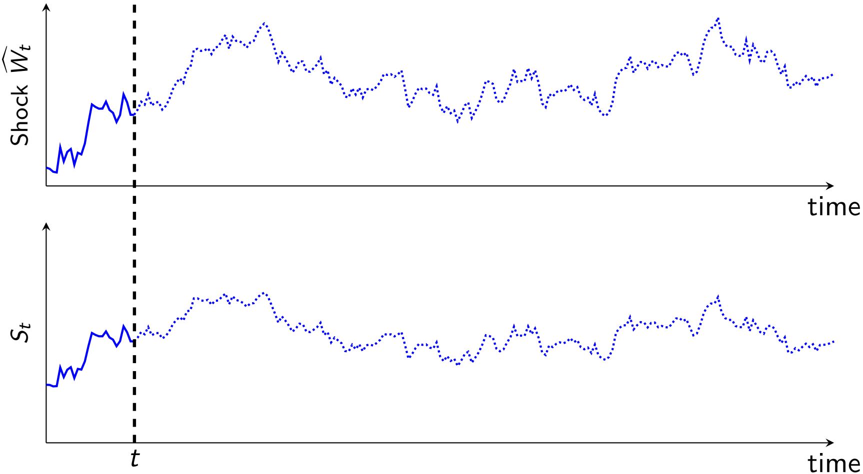

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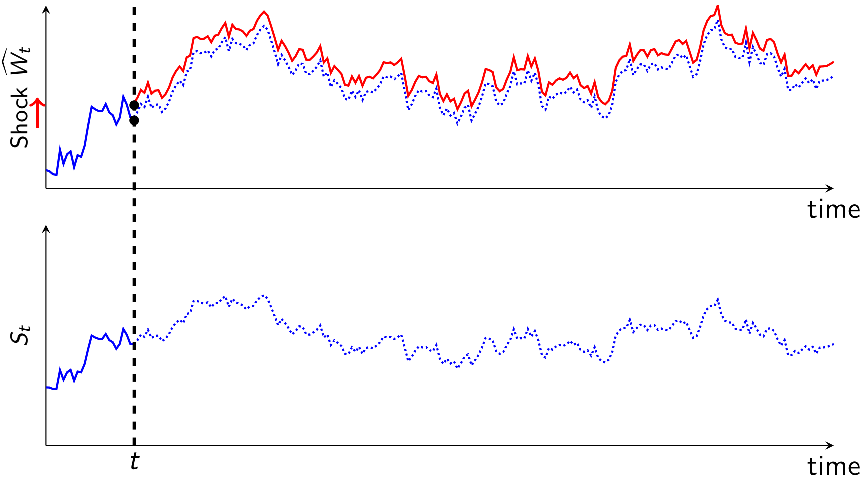

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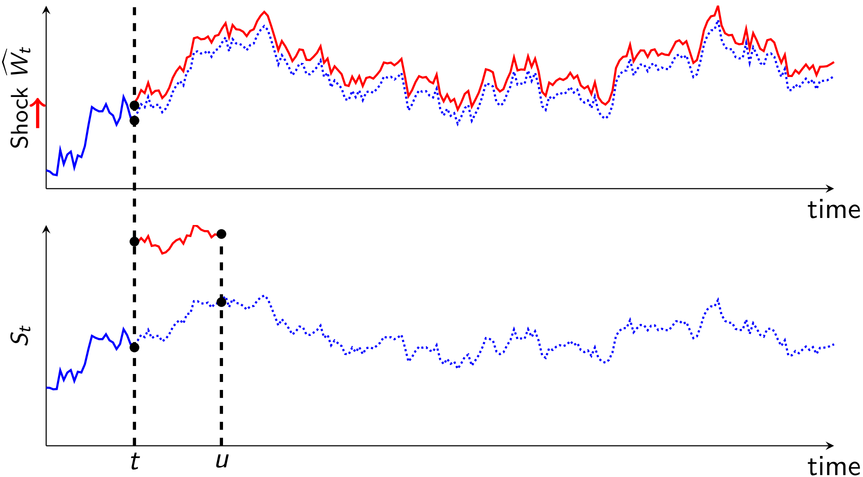

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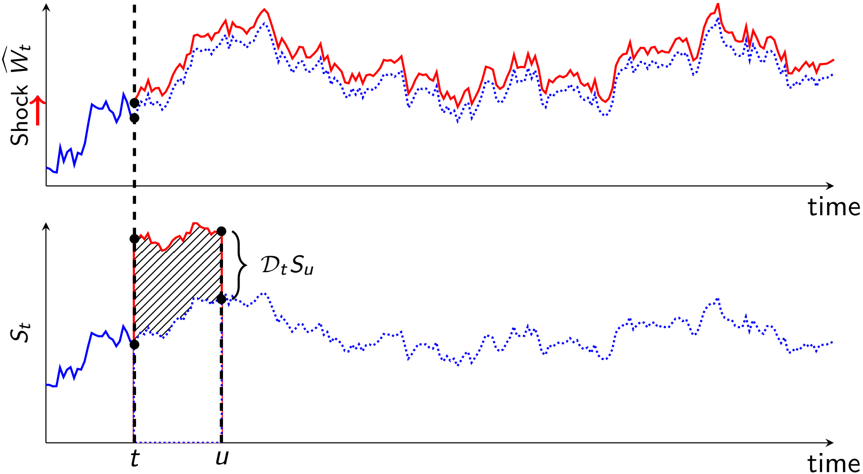

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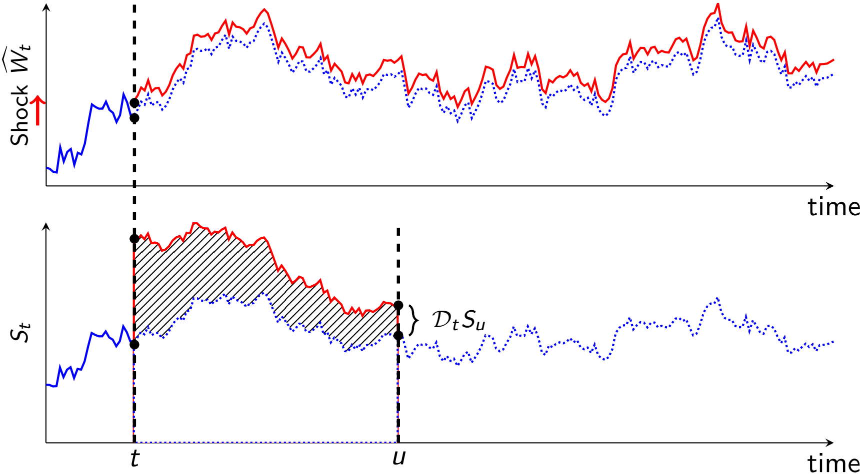

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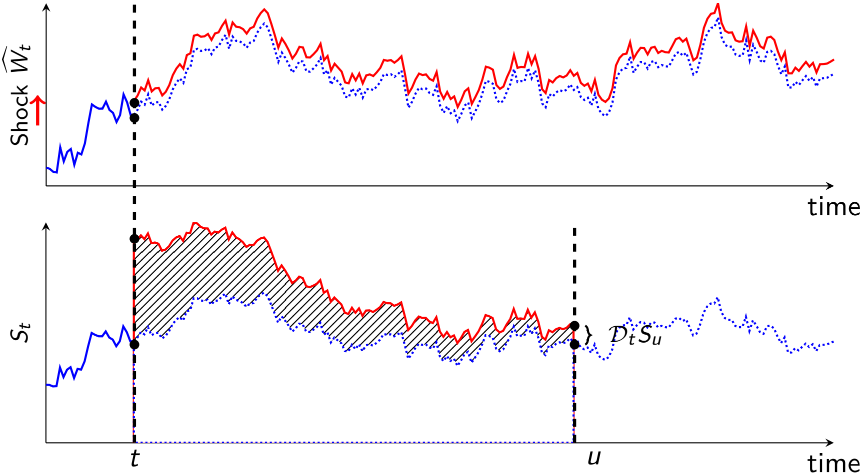

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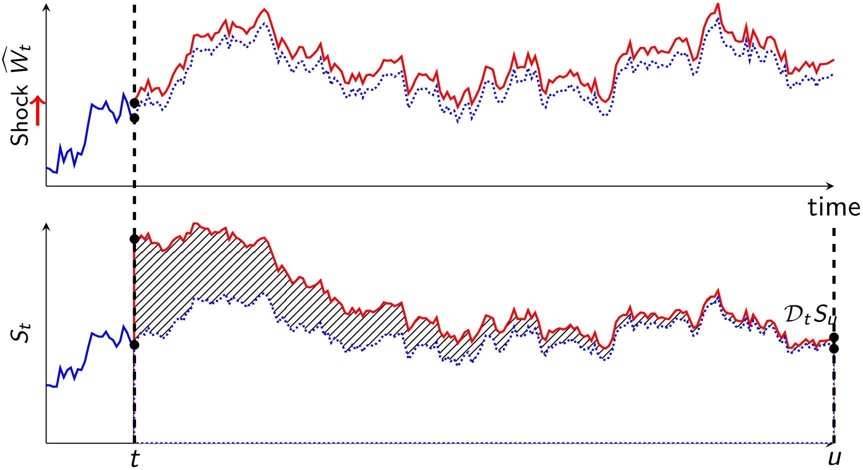

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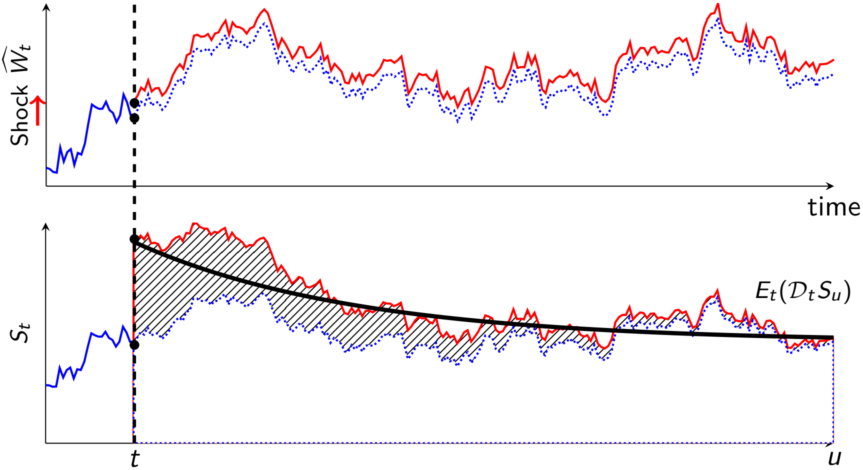
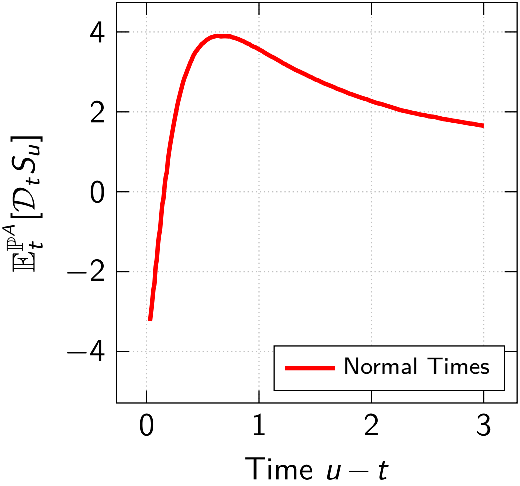


Price Impulse Response



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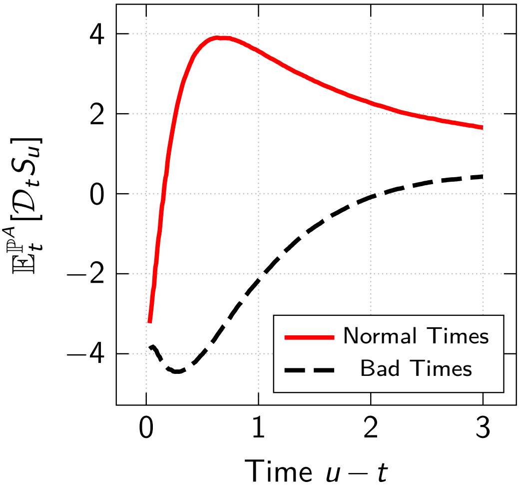

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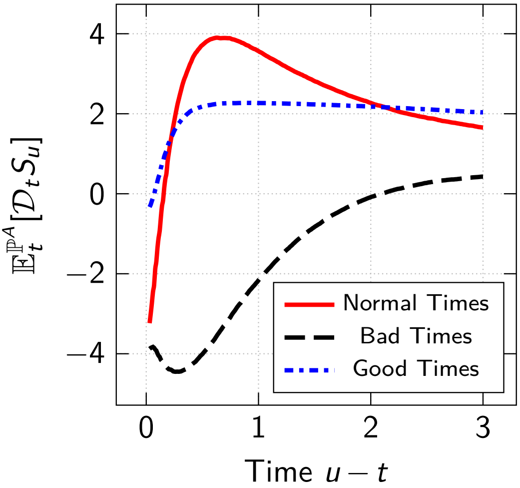
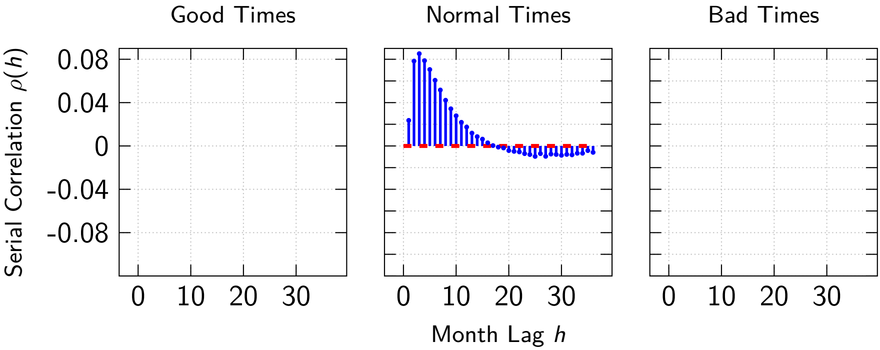


Serial Correlation



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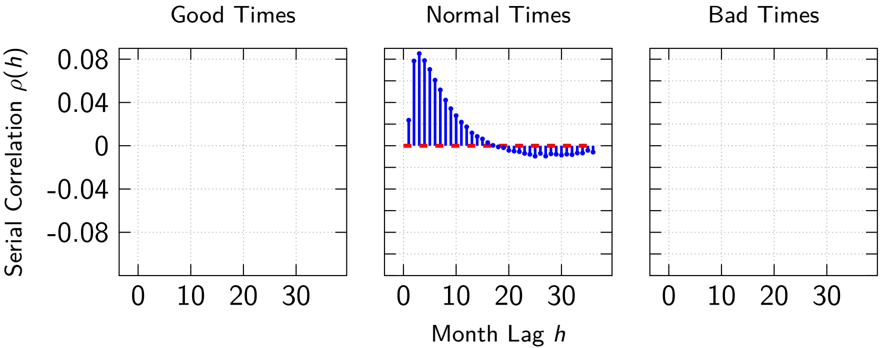
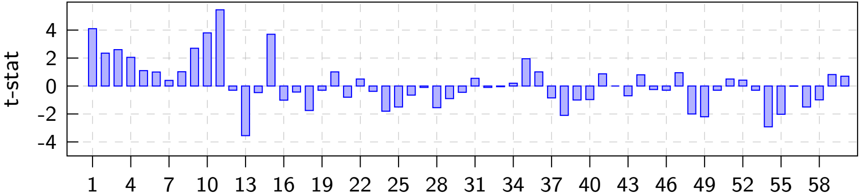


Source: Moskowitz, Ooi & Pedersen (2012)



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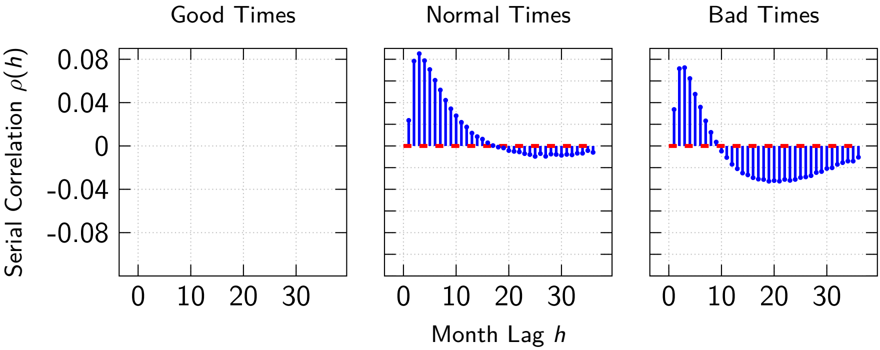

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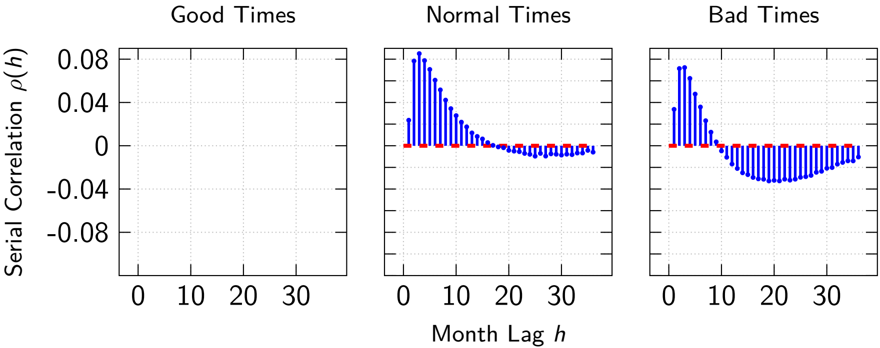
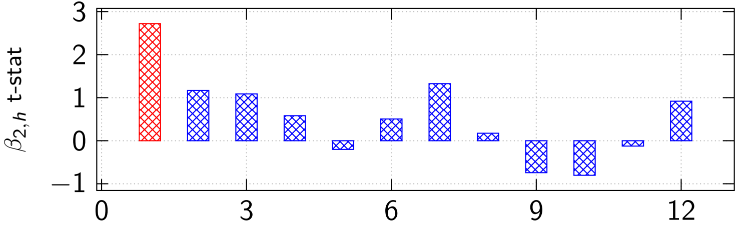


$$r_t^e/\sigma_{t-1} = \alpha + \beta_{1,h} r_{t-h}^e/\sigma_{t-h-1} + \beta_{2,h} D_{t-h} r_{t-h}^e/\sigma_{t-h-1} + \epsilon_t$$



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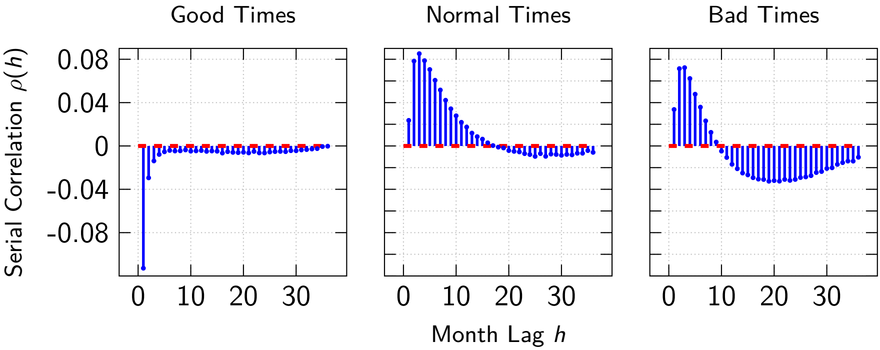

Momentum crashes

Daniel and Moskowitz (2013), Baroso and Santa-Clara (2014)