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**Original Articles** 

# Predicting regime switches in the VIX index with macroeconomic variables

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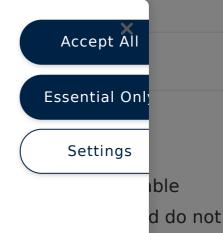
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## **Abstract**

In this article, we investigate the role of US macroeconomic variables as leading indicators of regime shifts in the VIX index using a regime-switching approach. We find that there are three distinct regimes in the VIX index during the 1990 to 2010 period: tranquil regime with low volatility, turmoil regime with high volatility and crisis regime with extremely high volatility. We also show that the regime shift from the tranquil to

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## Notes

<sup>1</sup>One closely related study is of Chen and Clements (<u>2007</u>), who investigate the impact of monetary policy announcement on the VIX index, although they do not investigate regime switches.

<sup>2</sup>The structural breaks are detected by minimizing the sum of squared errors of each partitioned period.

<sup>3</sup>Bussiere and Fratzscher (2006) suggest the usefulness of a regime-switching approach in the early warning system model because it can determine the timing and the length of different regimes endogenously.

<sup>4</sup>For a robustness check, we also estimated three-regime-switching model without this restriction. We conducted likelihood ratio test and found that the model without the restriction did not significantly outperform the model with the restriction at the 5% level.

<sup>5</sup>All the macroeconomic variables are obtained from Bloomberg.





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