From Energy Price Volatility to Macroeconomic Volatility

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I. Energy drives GDP

\[ y = 7.0399x - 15298 \]
\[ R^2 = 0.9855 \]
Comparaison de la croissance du Produit Mondial Brut avec la croissance de la consommation d'énergie primaire au niveau mondial

\[ y = 0,6236x + 1,245 \]
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I. Energy drives GDP
II. The trilemma
III. The curse of Volatility
- Cointegration $\neq$ Correlation.
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○ Long-run output elasticity of primary energy use: 0.6 - 0.7
Long-run output elasticity of energy efficiency: 0.6

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- Long-run output elasticity of energy efficiency: 0.6

- Primary Energy use and GDP cointegrate. Univocal Granger causality in the long-run from Energy use growth to GDP growth.
II. The trilemma

- Giraud & Pottier (2012, 2013)
  
  Only 3 kinds of market equilibrium are possible. (General equilibrium with collateral constraints and money.)

  **Regime 1**: growth + inflation.
  (Incompatible with the eurozone inflation target.)
  Ex: the 30 Glorious Years.
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- **Régime 2**: Deflation.
  Ex: Japan since 1993.
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- Régime 2: Deflation.
  Ex: Japan since 1993.

- Régime 3: Speculative Bubble whose burst leads to a collapse.
  Ex: Europe since 1980... ?
Croissance, chômage et taux d'intérêts au Japon

Sources : IMF International Financial Statistics, IMF World Economic Outlook
III. The curse of Volatility

- The curse of volatility.
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figure 2

figure 3
Suppose you invest in an asset whose ROI = 4.5%. Volatility \geq 3\% \Rightarrow \text{in every trajectory, you will go bankrupt!} Although your gains follow a >0 martingale.
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Suppose your cash yields 10% return per annum. Each year you toss a coin for half of your wealth. (+ 50%, -50%). Along each path, you will end up ruined.
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