

Comments on
The Continuous Wavelet Transform:
A Primer (Aguilar-Conraria & Soares)

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The authors state **five main goals**:

- (1) Summarize **theoretical results** on CWT
- (2) Introduce the concepts of **wavelet multiple coherency** and **wavelet partial coherency**
- (3) Introduce **a new family of wavelets** to economists that are more flexible
- (4) Describe **how** to do transforms **in practice**
- (5) Provide a **Matlab toolbox** for implementation

Comments 1/5

- Using a motivating example to wavelets is good
- Introduction to wavelets and continuous wavelet transforms is good overall and very readable
- **An error in the text/table** when the authors refer to Table 1: when $\beta = 1$ and $\gamma = \frac{1}{2}$, then Heisenberg uncertainty = 0.583, not 0.54 (in text)
- It might be a good idea to show a **real-world example** where the **generalized Morse** wavelets would be more useful than the **Morlet** wavelet

Comments 2/5

- The cross-wavelet section with the example is good but the **colors** could be more carefully chosen in the phase diagrams: **blue** and **red** are already the colors of the series **x** and **y**
- **Significance** of the results is questionable especially for the phase-difference analysis
- This is true also in the section on the higher order coherencies (more than two series)

Comments 3/5

- Three real-world applications are presented:
 - (1) **wavelet power spectrum** for the real **quarterly** GNP growth rate (USA, 1947 - 2010);
 - (2) **wavelet coherency and phase-difference** for **monthly** price index between FTSE (UK), S&P500 (USA) and DAX (GER) (???? - ???);
 - (3) **wavelet partial coherency and phase-difference** for **monthly** data, five variables, incl. S&P500 returns, oil prices (1954 – 2010)

Comments 4/5

- All three examples use **coarse** grained data
- Partly because of this, the results of these three examples are not that interesting nor informative
- **Significance** of the results is questionable, especially for the phase-difference analysis
- **Data mining** problem exists if the data are even remotely consistent with some "expected results"
- Are "hidden cycles" found by wavelet analysis something that could be used in **forecasting**?
- Usefulness of higher order analysis **not so clear**

Comments 5/5

- Advantage of the CWT over the (MO)DWT seems to be only **qualitative** and the results appear to be **consistent** with the discrete wavelet analysis
- This seems to suggest that CWT is good to run **before** the DWT and regular time series methods
- The idea of providing a toolbox for analyzing these issues is good with two caveats: (1) the provided **Matlab** toolbox uses three other Matlab toolboxes; (2) could the code be given for **R** too?
- There could be more advice on **how** in practice