

607

For completeness: largely irrelevant elaborations of unit root issues

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<http://e105.org/e607>

November 30, 2015

► Bits we have glossed over or not mentioned

► Stray bits

- As usual, I've glossed over lots of odds and ends that have not (as of today) been important in macro.
- Many of these have the form of pretty obvious elaborations of what we've done.
- Let me list some

► Complex unit roots

- We have talked a great deal about unit roots, but only dealt explicitly with real unit roots.
- Of course, complex unit roots are possible.
- Real unit roots correspond to the spectrum being infinite at frequency zero.
- Complex unit roots imply an infinite spectrum at some other frequency.
- For example, one might have a unit root corresponding to seasonal frequencies.
- Not much useful has been found in pursuing this angle.

► Cointegration elaboration

- Obviously $I(a)$ and $I(b)$ could cointegrate to form $I(c)$ where $c \leq \min(a, b)$

We seldom need to think beyond $I(0)$ and $I(1)$ in macro, so this is mainly a curiosity.

- Variables could cointegrate to lead to a series that is stationary, but long memory: called fractional cointegration.
- Some nonlinear combination of $I(1)$ variables might be $I(0)$: Nonlinear cointegration.
- None of these wrinkles is very deep and none has proven very useful.

► There now, I feel better for having covered this stuff a bit.