

Re: Find a period in multiple delayed time series

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- *From:* Russell.Martin@xxxxxxx
 - *Date:* 20 Jun 2005 06:29:02 -0700
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Martin.Camitz@xxxxxxxxxx wrote:

> Hi!
>
> I'm a beginner to time series analysis and I was wondering what
> techniques there are for analysing multiple time-series with the same
> period. In particular, if the time span of the data is shorter than the
> expected period, is there a way to retrieve the period if you have
> several time series and there is a delay (unknown or known) between
> them?
>
> Any input greatly appreciated.
>
> Martin

I don't know of any standard technique, which doesn't mean there isn't one. Do you have some specific application or is this a general interest question? How do you know these individual time series all have one dominant period? Is that an assumption? How much noise is there? What is the form of the full series expected to be (pure sine, saw tooth, ...?). How much of this analysis do you have to do? If you just have one set of low noise segments, I'd start (and maybe end) by just plotting up the segments and laying them out on a template of what you expect the total series to look like, and moving the individual segments around until they fit the underlying template, or just move plots of the individual segments around until they seem to compose a nice curve, and then find the period from that curve. Can the individual segments be allowed to overlap? It is often a good idea to start with simply looking at the data in various ways in any data analysis situation. Of course, there is no way (that I know of) to avoid ambiguities introduced by the fact that there may be an unknown number of multiple missing cycles of data between your segments, unless you know some additional information. Tree ring analysts deal with this sort of thing all the time. They have what they call (IIRC) floating series for which they have no absolute dates until they can find other series which overlap the floating ones and are tied to the present through the set of overlapping tree rings. Of course, that data has multiple periods and quite a bit of noise.
HTH.

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Cheers,
Russell

• **References:**

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