Re item 2. Editor's report regarding of 2020-21[1]

Since the last steering committee meeting in October 2020, work has been done regarding the following projects/components (primarily Gekko 3.0/3.1.x):

64-bit. Migration of Gekko 2.4 (more specifically: 2.5.2) and Gekko 3.0 (more specifically: 3.1.10 and on) to run in 64-bit mode, too. Among other things, this allows Gekko to access much more RAM. The 64-bit versions seem to run without glitches now. The 32-bit versions will be slowly phased out over the coming years.

Gekcel. An Excel add-in called "Gekcel" has been finished and released. Gekcel makes it possible to issue Gekko commands from within Excel, without opening the Gekko graphical interface at all. Among other things, Gekcel makes it possible to import data from a Gekko databank into Excel cells, and export the cells back to a Gekko databank, via VBA. Gekcel was finished in collaboration with the Quarterly National Accounts, and later on the Central Bank of Denmark has helped out testing installers etc.

Gekko User Guide. The Gekko Help System is now divided into two main parts: Gekko User Guide, and Gekko User Manual. The user guide is new and provides a comprehensive introduction to data management and modeling in Gekko, written with easy examples, and avoiding too many details. (The guid implements and augments the existing guide "The sun is always shining in Gekko" from the ADAM group).

Libraries. You can use the new LIBRARY command to handle libraries of user-defined functions and procedures. Libraries are organized as zip-files with .gcm-files inside. Caching and so-called lazy loading should make even large libraries load very fast. It is planned to release a Gekko library of convenient functions/procedures of general interest, and it is the hope that the library possibilities will make sharing of Gekko functions/procedures among users easier. Even large libraries should be possible to load at Gekko start up, without stalling the program.

Model blueprint. Ideas regarding how to augment the modeling capabilities of Gekko are described in the new Gekko model blueprint. The blueprint is more about how to define models, sub-models and equations in a more object-oriented fashion than it is about solvers per se. Comments are very welcome, and over time it is expected to implement some of these capabilities.

Higher frequencies. Quite a lot of functionality is now implemented regarding daily frequency in Gekko (the Danish Economic Councils are using this now). Weeks are next, but weekly frequency is a bit more tricky, because weeks are more incongruent regarding the other frequencies. There is a frequency blueprint available, describing some of the decisions to be made regarding frequencies, calendars, missing periods, etc. In no one protests, the recommendations from the frequency blueprint will be implemented.

---

[1] Links: Gekko main webpage: www.t-t.dk/gekko, organization: www.t-t.dk/gekko/organization. Gekko on GitHub: https://github.com/thomsen67/GekkoTimeseries.

Source code reorganization and documentation. This is not directly visible to the end users, but the C# source code has undergone a major clean-up. It is now much more organized, with a lot more comments, and a lot of dead code has been removed. Components from large C# files have been cut out and placed in their own files, and a lot of methods have been refactored and renamed. The source code documentation has been upgraded from targeting Gekko 2.0 to correspond to Gekko 3.0 (or, to be precise, Gekko 3.1.12), and besides upgrading, the documentation has also been extended a lot. See more on this page: source code documentation. There is also a new API documentation available from the same page.

In addition to these larger projects, there is the smaller convenience that Gekko now remembers commands between sessions (commands from the previous session can be reloaded when a new session starts up). This is especially handy if Gekko crashes.

Regarding the INTERPOLATE command (transforming from lower to higher frequencies), some preliminary work has been done regarding an interface to the R package tempdisagg, which implements modern methods like Denton, Chow-Lin, etc. Later on, if some of the modules in tempdisagg work well, a pure Gekko version of these parts could probably be provided (eliminating the R dependency).

Better error messages still have very high priority, but improvements have not been implemented yet. To prepare for this, all existing error and warning messages are now restructured and made part of a more general and streamlined system for writing text messages in the main Gekko window. The error messages are still bad, but the groundwork has been done for improving them!

Developing the Apache Arrow format has been a bit on hold, but it will surely pop up again soon.

To see what has happened regarding the Gekko source code, you can always consult the changelog (detailed) or GitHub (even more detailed).

In January 2021, a Gekko 3.0 databank course has been held for the Quarterly National Accounts (among other things, the course used parts of the new Gekko User Guide).