FIM Development Roadmap

Refactoring the FIM.

Goals:

1. Remove code redundancies and un-nest functions for greater interpretability and reduced risk of bugs
2. Remove hard-coded variables in favor of dynamic and explicit variables (e.g. MPC)
3. Document the code: Code currently lacks a README.md and in-line comments
4. Make the code run quickly so that it is compatible with a web interactive
   1. Implement caching (e.g. avoid re running the entire FIM: only re-run the parts that changed)
   2. Implement vectorized and matrix operations
5. Explicitly understand which data series contribute to which component
6. Separate data loading (reading in historic data) from data update (reading Haver) and from data processing (calculating FIM).
7. Remove code that is no longer useful in FIM output

FIM script currently:

* Sets up environment (should be dedicated to different script)
  + Especially important for external collaboration but useful for internal collaboration as well
* Reads in historic data, overrides, and a USNA data frame and manipulates data in the next section
* Calculates minus\_neutral (I’ve refactored somewhat)
* Calculates MPCs (I’ve refactored)

R Shiny interactive.

Spreadsheet / app that has :

* Pieces that go in – medicare, Medicaid, maybe some other pieces
* Deflators, MPC table. Type in levels or growth rates?
* Could use the 20 biggest components in the budget and then make “other”
* Multipliers: level and growth rates
  + Multiplier baseline: gdp grows with potential
  + Multiplier counterfactual: FIM estimate
  + Subtract the baseline from the counterfactual, and then apply an MPC-like calculation to this time series to yield the multliplier.

Goals:

1. Make the FIM more transparent. Allow individuals to interact with and understand the FIM by inputting their own assumptions. UI details:
   1. I envision a main webpage with FIM results. A side dashboard with a selection of all the different data series contributing to the FIM and options for editing them. Main FIM summary will always show up (on the top of the page? In the top right corner?)
2. Users will be able to:
   1. View historical data (as numeric data series, perhaps also as line graphs)
   2. View how each data series affects the FIM.
   3. Input own forecast assumptions and instantly re-calculate FIM
   4. STRETCH: input MPC assumptions
   5. STRETCH: Sensitivity analysis of FIM to different forecasts, potential GDP growth, etc. Could, for example, show a cone encompassing a range of reasonable FIM assumptions around Medicare growth, for example.
   6. STRETCH: view source code and run the model themselves (maybe not, perhaps we choose to keep some of the inner workings secret)
3. Add multipliers to the FIM (described above). Could be user-inputted value.

Lorae next steps:

* DONE: Make MPC calculations more efficient and editable parameters in one place
* IN PROGRESS: Document changes to MPC calculations
* DONE: Edit “minus neutral” calculations to be uniform across all data series
* IN PROGRESS: edit FIM code so that each step’s calculations are saved into a separate data frame, rather than one ginormous data frame