

Version 7.92 IP1 (December 9th, 2023)

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[PREVIOUS VERSION](#) | [INDEX PAGE](#) | [NEXT VERSION](#)

Interface Updates

Model Updates

- Switched initialization of XDEBT over to IMF's Net Foreign Asset (XNFA) series as the primary data source (before the primary source was an accumulation across time of multiple data series that contribute to debt; only use that not to fill relatively few holes in XNFA).
- Also filling XNIIP variable with new data on Net International Investment Position.
- Added code for XNFA and XNIIP (and internal variables SXNFA and SXNIIP) . Coordinating XNFA with XDEBT, basically same with opposite sign and now using the IMF data series for NFA to initialize XDEBTRPA in the preprocessor). But now driving XNFA with trade balance, primary asset, and secondary asset terms, consistent with IMF conceptualization.
- Added code for computation of CURACTNETPRI (an interest rate term on net FDI, Portfolio, and other assets abroad, notably net position with international financial institutions) plus CURACTNETSEC (AID plus remittances). Both terms are percentage of GDPPOT. Compute new variable CURACTDATATOP as trade balance plus CURACTNETPRI and CURACTNETSEC. The inclusion of the CURACTNETPRI interest term in CURACTDATATOP allows comparison with CURACT, which has the other terms but not it. I experimented with moving the change over time of XDEBTRPA to CURACTDATATOP from CURACT, but the interest term needs more exploration before doing that. Having it would potentially also help make a step toward repetition of sovereign wealth funds. So right now XDEBTRPA is changed by CURACT, but XNIIP is computed with net changes in portfolio and FDI positions.
- Also made some change in representation of govt responsibility for debt in the XGOVTDEBBF variable, notably modifying that to include responsibility for IFI debt but not things like FDI and portfolio positions, which belong instead in the new XNIIP variable.
- Another international accounting issue addressed was the value of RemitPerWorkerOut, calculated in Remittances subroutine. There was logic that made 0.0 values possible for a very small subset of migration receiving countries; that was changed to set value to GloAvgRemitPerWorker. The same also for remittances into countries that have populations living abroad. [This change is a bit confusing to me.]
- Also in the Remittances routine, there are calculations of total remittances sent out and the total of those received. The earlier logic was setting a global value as the averaging and normalizing flows to that. Given the late century challenges around very sizable

remittance flows, that was changed to normalize to the lower of the two values.

- The revisiting above of current account logics in combination with fixing the explosion of international debt and asset levels relative to GDP bled also into looking more generally at some of the social accounting matrix stock and flow logics.
- I found an error in the representation of government to household pension transfers. The code of IFsEcoSAM prevents GOVHHPENT from going above 20 percent of GDP, but it was not normalizing GOVHTRNPEN, which represents those transfers by labor skill level, to that level after imposing the constraint. That was allowing GOVHTRNPEN for select countries to contribute far too much to HHINCDIS and providing those countries with values of C that were unreasonably high and forcing up imports to meet the consumer demand. Normalization now imposed.
- Household consumption is driven most directly by HHINCDISPERM which smooths HHINCDIS over time. The problem in the computation of HHINCDISPERM was that the smoothing function relied on igdpcor to estimate a basic pattern over time in its change (along with the gradual impact of annual values of HHINCDIS). That initial year calculation of long-term GDP growth rate does not work at all well for many countries (including the GCC countries) long-term, when growth often declines; so it was over-estimating reasonable values for HHINCDISPERM and again generating too much C, leading to imports and international debt. I changed that estimation to use GDP/SGDP, necessitating also an earlier calculation of SGDP that we had in the code. Note: My moving up of that calculation could affect calculations in dyadic routines (perhaps improve), but the impact needs to be tested. Also the Total value of HHINCDISPERM was not being calculated appropriately as the sum of the skill-level specific variables and that line as added.
- Also related to the computation of C, decline in GDPPCP in GCC countries post oil was pushing up C/GDP in those countries even as Govcon and IGCF/GDP were staying high. I altered the computation of initial C estimates from the cross-section function so that the function looks at the maximum of the GDPPCP level in the first year and the current year's value.
- Another issue around C calculation was an older logic that modified the first estimate of its value after the function's use from a relationship with total household income plus increased pension transfers to households to one only looking to total household income. The reason is that in an earlier period the value for household income in that formulation looked to earned income, but it now looks to disposable income, which already includes transfers to and from government. This change affected calculations in two places within IFsEcoSAM.
- Still another issue around C calculation was the use in formulations of GDPRPA or GDPPOTRPA rather than GDPPOT. I switched to use of GDPPOT (this issue affects calculation of C in two places within IFsEcoSAM). That switch was extremely important in preventing end-of-century debt explosions in GCC countries like Kuwait and the UAE; the pass through to GDPRPA was boosting C and imports too much. There remain issues to be addressed around (1) the calculation of GDPRPA (should it apply world prices to VADD of all sectors or only to the traded portion of sectoral production) and (2) how to think about what changing global relative prices actually should do to government revenues (higher oil prices often feed those in producing countries) and household consumption patterns (higher global energy or food prices could drive down consumption, an issue also for the

partial equilibrium models). A review of calculation and use of relative prices is needed.

- Both C and IGCF are affected by interest rates. Its computational location in IFs matters, as does the calculation of SSINTR and SIntr. The location of its calculation was changed so as to allow it to affect GOVEXP. [this explanation could use fleshing out; not clear to me right now.] I also increased the cap on the long-term interest rate to 20 percent, allowing it to have more equilibrating effect.
- [earlier wrote: The interest rate logic across time is very important to the level of household consumption and to savings and investment. I found that it was not rising over time in some countries enough to help equilibrate in the face of falling stocks (therefore pushing countries to import rather than also reduce consumption); I raised the maximum growth of interest rates over time from twice the base year rate to 4 times that rate. The code on interest rate also smooths change over time to avoid very large volatility. I moved the computation of SIntr to ifsECOSAMAllbutFirstYear, my comment says “so that could use to affect govexp before computing” - need to explore this more.
- Address a problem seen with Libya and perhaps some other countries that are subject to very large swings from gdprext in early years.
- The previous fix did not work for Micronesia, however, where an extreme surplus of govt revenues relative to expenditures in the database used by the preprocessor caused other equilibration issues including a very large run-up of govt assets - the fix for Libya exacerbated that.
- The new fix addresses both Libya and Micronesia, and I do not see it creating issues for other countries.
- Fixes to Rebase using 1995, mostly around CLPCCV and CLPCMDER.
- Fixed initialization problems in Female Leadership.

Data Updates

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