Plenary Session I:

Refresher on MAMS files' structure and runs and generation of reports

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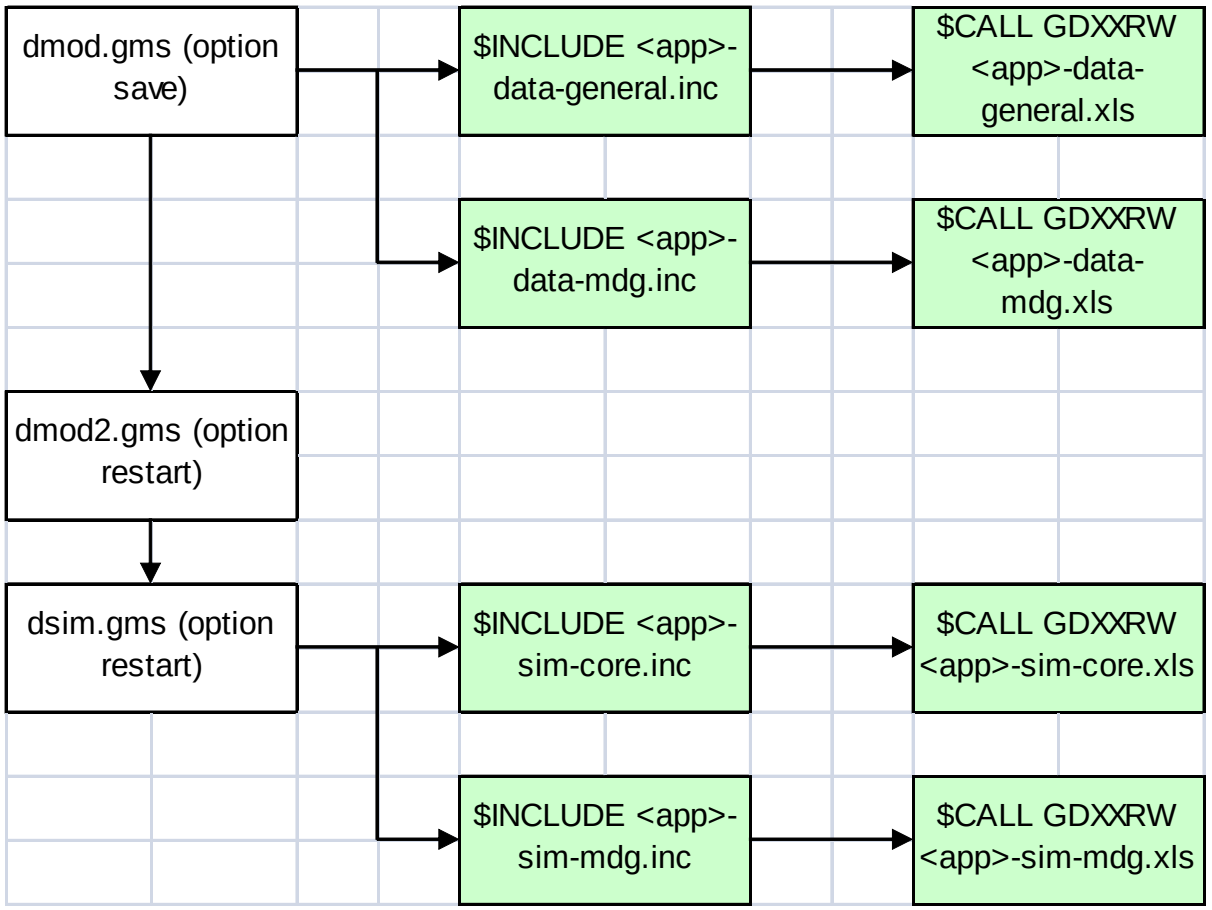
MAMS in GAMS/Excel

- Model code and database are separated
  - standard code: generic set of GAMS files that can typically be used for any country application
  - database (including simulation definitions) stored in Excel files (filled for country application)
  - anything that is not specific to a country database appears in the model code
    - errors that are not data-driven are corrected only once and for all
- Model code written to capture what is found in each database
  - flexible (dis)aggregation
  - alternatives specified for selected assumptions
    - including macro closures
    - presence/absence of unemployment
    - other features with a proven track record
  - error diagnostics -- for database and simulations
  - SAM balancing program

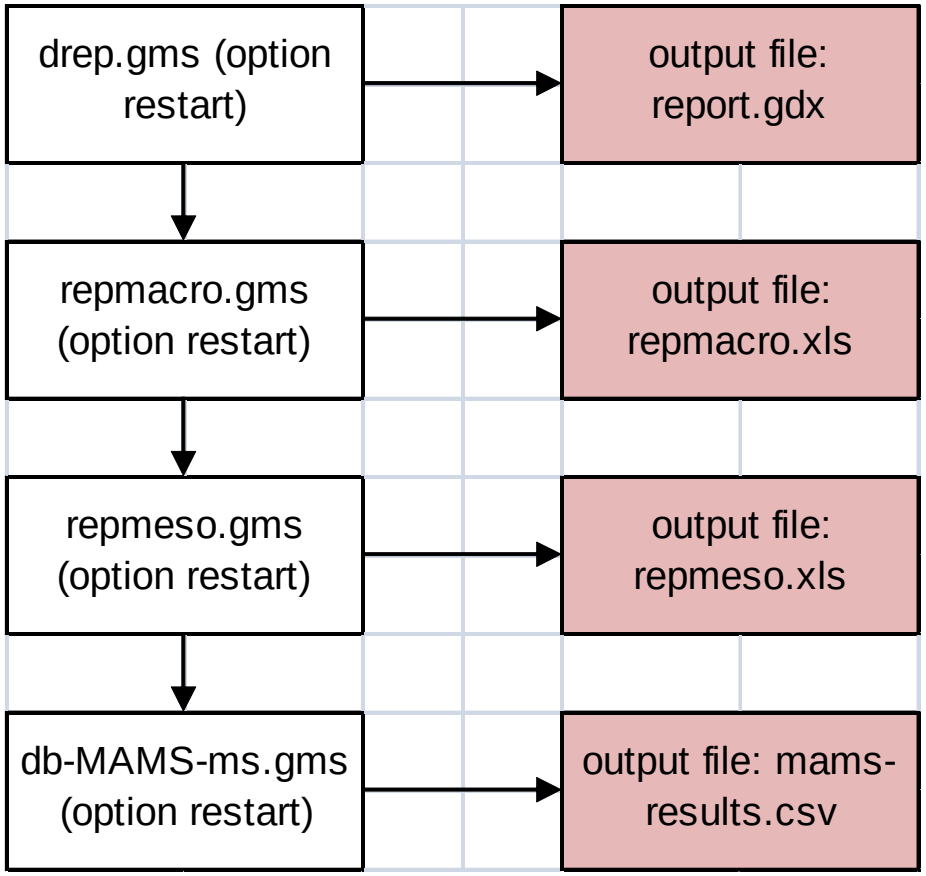
File Structure

- The major file segments are
  1. GAMS (.gms) files for base run + data
  2. GAMS file for simulations
  3. GAMS files for reports
- Files used under 1 and 2 differ depending on whether the non-MDG or the MDG versions of MAMS is used
- The main GAMS files “include” other files – .inc files some of which call upon Excel files

File Structure -- User Input (1)



File Structure -- User Input (2)



GAMS files for base run + data

- **dmod.gms** (user changes it only to include dataset!)
  - starting point of MAMS run: s=save\dmod
  - reads in country-specific dataset
  - user changes it only to include dataset!
  - key include files call:
    - **<app>-data-general.xls** – general database
    - **<app>-data-mdg.xls** – MDG database
- **dmod2.gms**
  - restarts from **dmod.gms**: r=save\dmod s=save\dmod2
  - includes model equations to generate the base run
  - no change needed whatsoever – for non-advanced users
  - key include files:
    - diagnostics-data.inc – detects errors in the database
    - diagnostics-sol.inc – checks/debugs the base solution
    - reploop.inc – collects results from the base solution for reports

GAMS file for simulations

- **dsim.gms**
  - restarts from **dmod2.gms**: r=save\d2mod s=save\dsim
  - enables running simulations beyond base run for analysis
  - user changes it only to include non-base simulation assumptions/parameters!
  - key include files call:
    - **<app>-sim-core.xls** – specifies non-base simulation assumptions/parameters (for non-MDG version)
    - **<app>-sim-mdg.xls** – specifies non-base simulation assumptions/parameters (for MDG version)
    - reploop.inc – collects results from the simulations for reports

GAMS files for reports

- **drep.gms**
  - restarts from **dsim.gms**: r=save\dsim s=save\drep
  - processes raw simulation results – generates **report.gdx**
  - key include files:
    - rep*.inc (various include files) – computes growth rates, GDP shares, defining standard tables, etc.
  - no change needed whatsoever from user
- **repmacro.gms**
  - restarts from **drep.gms**: r=save\drep s=save\repmacro
  - produces standard macro tables, automatically exported to the file **repmacro.xls**
  - no change needed from user
- **repmeso.gms**
  - restarts from **repmacro.gms**: r=save\repmacro
  - produces standard meso tables, automatically exported to the file **repmeso.xls**
  - no change needed from user

What do we do with these files?

1. Generate a baseline scenario
   - Business-as-usual (BAU) assumptions are usually used
   - GDP growth calibrated to trend from last past years
   - realistic and sustainable evolution of
     - macro aggregates (private and government consumption and investment, exports, and imports)
     - tax revenue (% of GDP)
     - domestic and foreign public debt stocks (% of GDP)
2. Shock and/or change key assumptions of baseline scenario to generate alternative (counter-factual) scenarios; for example
   - change one or more parameters (policy tools or parameters beyond government control, ex, aid, world prices, productivity)
   - fix an indicator that represents a policy target (ex, a health MDG); flex a policy tool (ex, government health services)
3. Analyze (compare baseline with alternative scenarios) and validate
   - explain results for individual scenarios and across scenarios
   - if need be, adjust data, model or simulation design

Alternative model versions: non-MDG

- Non-MDG (core) version
  - uses **<app>-data-general.xls** and **<app>-sim-core.xls**
  - excludes MDG module of MAMS and its links to the labor market; **<app>-data-mdg.xls** and **<app>-sim-mdg.xls** not used
  - minimum recommended disaggregation:
    - factors: labor, private capital, government capital
    - sectors (activities/commodities): private, government
    - institutions: household, government, row
  - good to debug MAMS for the first time and/or for non-MDG simulation analysis

Alternative model versions: MDG

- MDG version
  - uses **<app>-data-general.xls**, **<app>-data-mdg.xls**, and **<app>-sim-mdg.xls**
  - **<app>-sim-core.xls** not used
  - runs the MDG module and its links to the labor market
  - minimum recommended disaggregation
    - factors: labor (by educational level), private capital, government capital (by function – three education, health, water-sanitation, other infrastructure, other government)
    - sectors (activities/commodities): private, government (by function)
    - institutions: household, government, row

Installing and running the files (1)

- Create a working directory; with subdirectory call save.
- Extract **only** zipped files from MAMS folder into working directory.
- Make sure working directory has a created project; else create one
- Make a copy of each excel file and then renamed copied file
  - **test-data-general.xls** to **<app>-data-general.xls**
  - **test-data-mdg.xls** to **<app>-data-mdg.xls**
  - **test-sim-core.xls** to **<app>-sim-core.xls**
  - **test-sim-mdg.xls** to **<app>-sim-mdg.xls**
- Make a copy of the following include files and then renamed copied files
  - **test-data-general.inc** to **<app>-data-general.inc**
  - **test-data-general2.inc** to **<app>-data-general2.inc**
  - **test-data-mdg.inc** to **<app>-data-mdg.inc**
  - **test-data-mdg2.inc** to **<app>-data-mdg2.inc**
  - **test-sim-core.inc** to **<app>-sim-core.inc**
  - **test-sim-mdg.inc** to **<app>-sim-mdg.inc**
- Open the <app> files with the .inc extension and do a search to replace test- for <app>-

Installing and running the files (2)

- In **dmod.gms**,
  - locate first $INCLUDE statement
    - add new $INCLUDE to run <app>
    - use * to select (1) general data, or (2) general + mdg data
- In **dsim.gms**,
  - Locate first $INCLUDE statement
    - add new $INCLUDE to run <app>
    - use * to select (1) core simulations, or (2) mdg simulations

Concluding remarks

- Recommended steps in data development and model testing
  1. run and validate core (non-mdg) version using macro database
  2. run and validate core (non-mdg) version using meso database
     - full sectoral disaggregation but does not address MDG and education outcomes and system
     - the user can start from step 2 if database is fully available
  3. run and validate mdg version using general + mdg database – same as (2) but adding data related to MDG and education – logistic functions