



Innovation Lab

U.S. GOVERNMENT ACCOUNTABILITY OFFICE

Schedule of Federal Debt

Automating Amortization and Interest
Calculations

Andrew Kurtzman, Assistant Director, GAO/STAA

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Background

Schedule of Federal Debt Audit

- *Debt Held by the Public*
- *Intergovernmental Debt Holdings*

Types of Debt Instruments

- *Fixed-Rate / Floating Rate*
- *Discount / Premium*
- *Zero Coupon*

Amortization Templates

Interest Calculations (IDEA)

Design

Experimentation outside of the audit process

End-to-end automation of analysis

Validation procedures to ensure replicability

- *Identical data*
- *Identical software*
- *Identical accounting rules*



Data

Identical Data

- *Agency officials interviewed to confirm no changes to data structure / content / definitions for data inputs ("Mega File")*
- *Automated checks for identical variable names and classes in new data*

Identical Software

- *Operating system (Ubuntu), statistical software (R), and all associated plugins and packages "frozen" as a Docker file.*

Identical Accounting Rules

- *Financial mathematics implemented through custom-built functions, validated against textbooks and past audit data*
- *Ongoing monitoring of Federal Accounting Standards Advisory Board to ensure accounting rules unchanged*

Impact

**Automation of
the
Federal Debt
Yearly Audit:**
\$30+ Trillion

CORRECT No human error of recreating code yearly that may lead to unnoticed errors or omissions.



REPLICABLE Use the same code each year by only changing parameters related to new FY



CONCISE Produces a small number of audit artifacts, minimizing GAGAS review steps.



EFFICIENT Saved ~216 hours by reducing the creation of 30+ code logs and hundreds of templates