Economic Advisory Committee

February 7, 2024

EAC Responsibilities & Deliverables

Roles of the Economic Advisory Committee (EAC)

- To Report upon the economic state of the United Methodist Church, its local churches, annual conferences, and denominational agencies.

- To encourage and conduct research that aids in the understanding of the economics of the United Methodist Church

- To provide economic predictions necessary for the establishment of the quadrennial budget for the denomination

Overview

Goal

- To update our forecast of nominal local church net expenditures for 2023-2025.
  - Have actual net nominal expenditures for the years 2021 and 2022.

- To estimate apportionment base for apportionment years 2024-2028.

Issues

- Trends in nominal net expenditures.
  - Recent data on nominal net expenditures takes into account disaffiliations that occurred in 2022-2023.

- Take into account the effect of future disaffiliation on apportionment base

Updated data

- Updated net nominal expenditures data through 2022

- New information about the extent of disaffiliation
  - Data including all churches
  - Data excluding churches that left in 2022-2023
  - Updated survey of conference treasurers about expected disaffiliation

• The impact of churches that disaffiliated in 2022-2023

Growth in nominal net expenditures			
Year	Including churches that closed	Excluding churches that closed	Approximate effect of disaffiliation
2021	-2.2%	-9.7%	-7.5%
2022	-1.9%	-15.1%	-13.2%

Forecasting apportionment base

• Two components of forecast of apportionment base

- Statistical models of nominal net expenditures
- Survey of annual conferences about the likely effect of disaffiliation on nominal net expenditures
- Combine statistical models and survey information to arrive at a forecast of apportionment base 2024-2028. For apportionment years 2027-2028, “discount” statistical model forecasts by survey results.

• Statistical models used previously by EAC

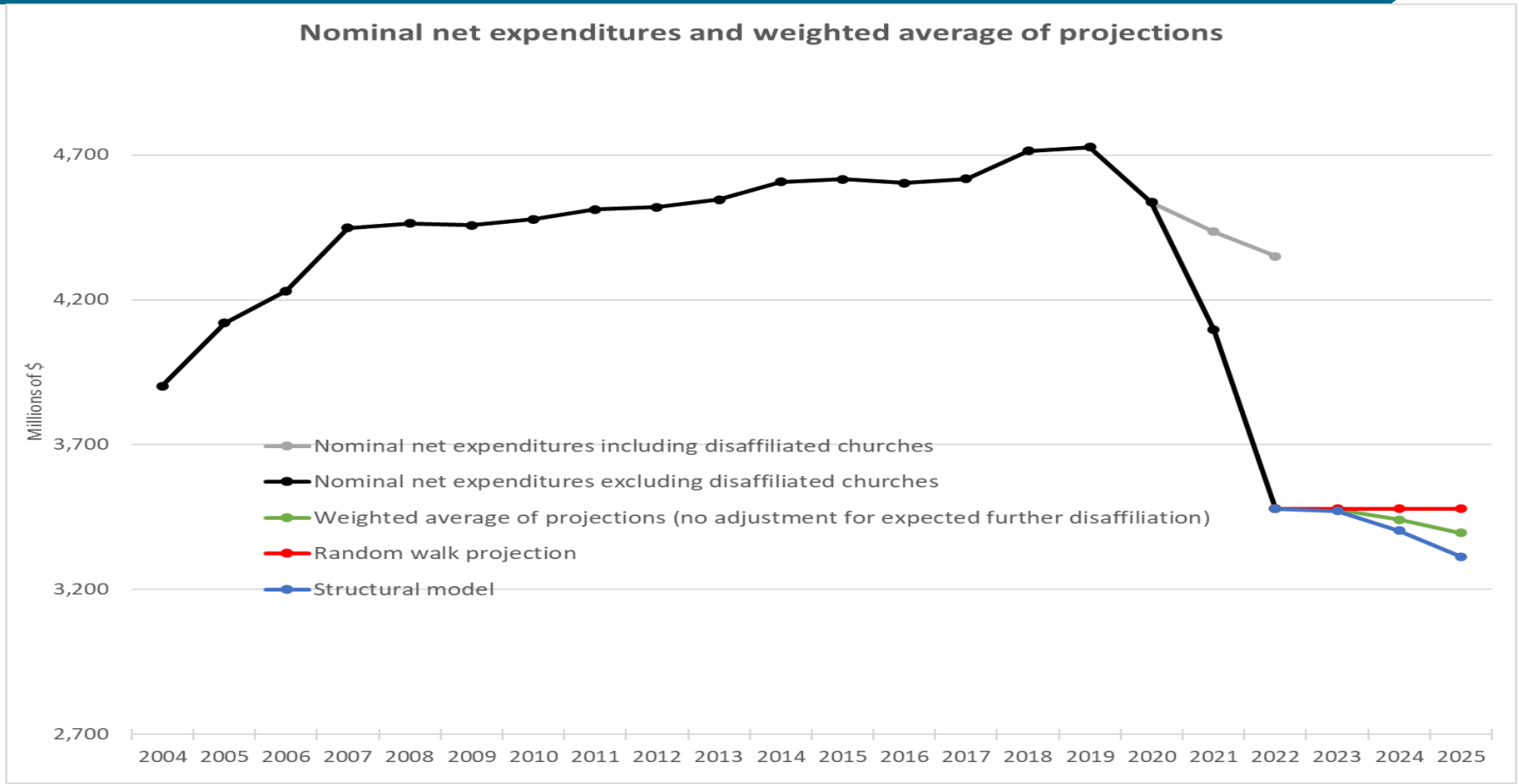
- Simple projection model (Random walk)
  - Forecast is latest available data on nominal net expenditures

- Structural model
  - Link macroeconomic variables to key factors in nominal net expenditures
  - Drop 2020-2021 observations from estimation but use most recent data to start projections

Average the two statistical models to get a combination forecast

- Combine the two statistical forecasts of nominal net expenditures to get a forecast of nominal net expenditures for 2023-2025 without consideration of future disaffiliation.

Comparison of forecasts



• Predicting the effect of future disaffiliation

- 2023 survey of Bishops and Treasurers of annual conferences

  Survey question: “What will be the impact of disaffiliation on nominal net expenditures?”

- **Survey of the expectations of future disaffiliation**

Survey of future disaffiliation		
Year	Effect of disaffiliation	Cumulative effect of disaffiliation
2024	-3.15%	-3.15%
2025	-1.57%	-4.72%

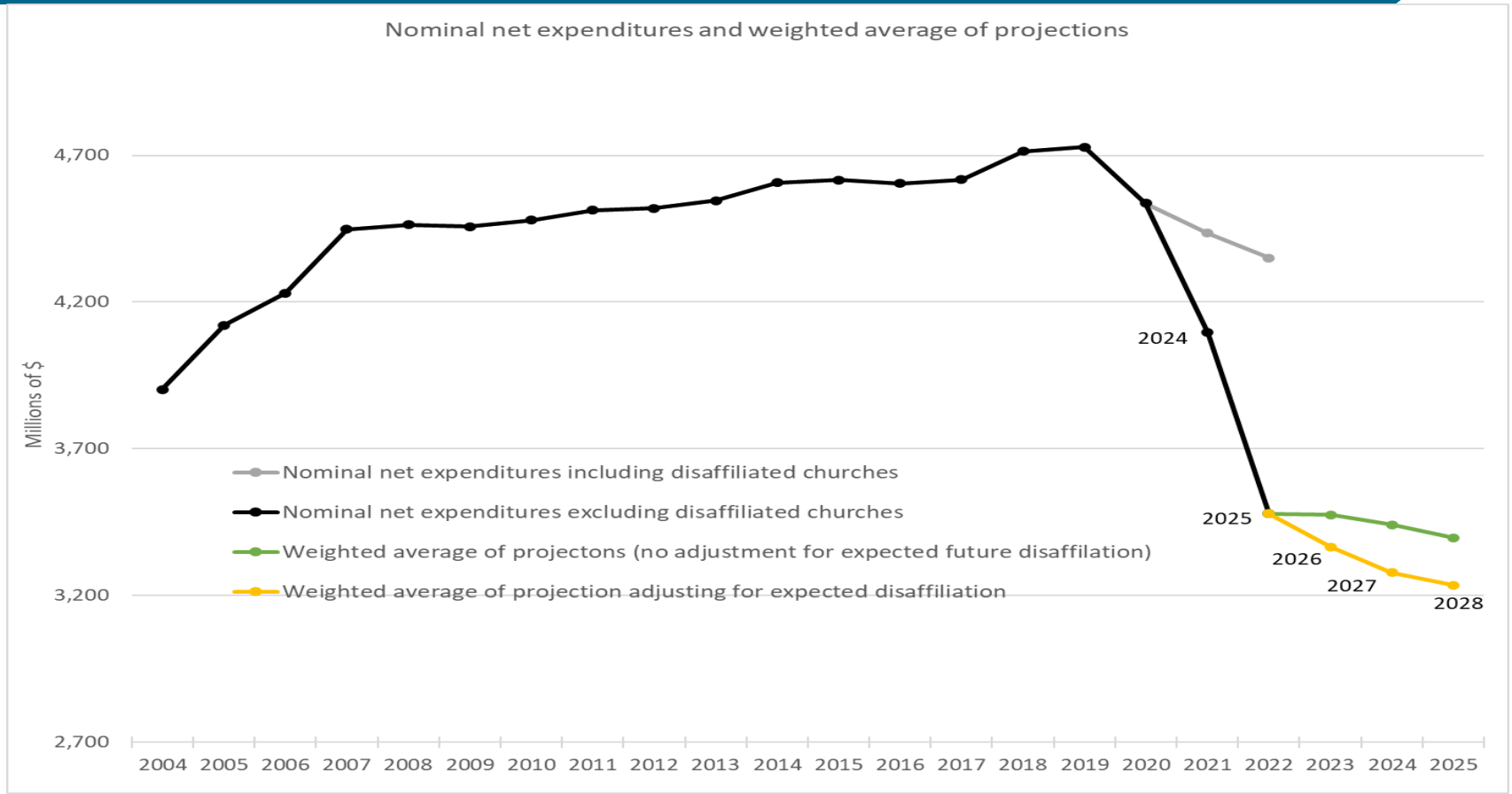
Additional adjustments to expected apportionment base

- Normally, $AB_{t+3} = NNE_t$
  - AB_{t+3}= apportionment base in year t+3
  - NNE_t = nominal net expenditures in year t

- Disaffiliating churches are expected to pay apportionments the first two years after leaving.

- Approximate the timing effect on apportionment base by:
  - $AB_{t+3} = NNE_t^{no\ dis} \times (1 - cumulative\ discount_{t+1})$

• Apportionment base 2024-2028



• Apportionment base: 2024-2028

- $AB_t = NNE_{t-3}$

Apportionment Year	NNE(t-3) taking into account disaffiliation
2024	$4,096,259,840
2025	$3,479,216,522
2026	$3,365,669,883
2027	$3,278,912,578
2028	$3,235,902,795

Thank you!

Appendix: details of statistical models

Simple Trend Projection Model for Nominal Net Expenditures

Simple projection models

- Advantages:
  - Examine directly the “momentum” in nominal net expenditures
  - Simple
    - Less added ”noise”.
    - Less likely to over fit the data.
  - Good forecast if the “trends” in the data are stable.

- Disadvantages:
  - Poor forecast if variable correlated with other observables that are predictable.
  - Understates uncertainty if trend is changing.

Random Walk Without Drift

- Before Coronavirus, EAC used a breaking trend (break in 2008) to model nominal net expenditures.

- After Coronavirus, there is a great deal of uncertainty about the trend in nominal net expenditures. The committee adopted the simple Random Walk (without drift) to model nominal net expenditures. The Random Walk model implies that the best forecast of future nominal net expenditures is the last available data on nominal net expenditures.

- Take as latest available data the data for nominal net expenditures in 2022

Structural model details

Structural model

- Advantages
  - Links key variables to broader economic environment.
  - Has a greater narrative appeal (makes sense).
  - Use information that can rule out implausible predictions.

- Disadvantages
  - Structural links can be statistically weak – adds “noise”.
  - Misspecified (i.e. wrong) model leads to greater forecast errors.

Formula for Nominal Net Expenditures (NNE)

- NNE = RPAE x Attendance x CPI x NNE/NTE ratio

- RPAE = Real per attendee expenditures
  - Statistically related to lagged real GDP growth
- Attendance = in person attendance
  - Growth in attendance modeled as linear trend starting in 2011
- CPI = consumer price index
  - used to convert real to nominal expenditures
- NNE/NTE ratio = ratio of net to total nominal expenditures
  - Statistical model related to lagged real GDP growth

The Attendance Equation

- Attendance fell in 2020 by **-25.3**% and fell by **-19.6**% in 2021. These declines are well outside historical norms. As a result, we treat 2020 and 2021 as outliers and drop them from the formal statistical analysis.
- A simple linear time trend in attendance growth is estimated over the 2011 and 2019 period and is used to project attendance in 2022-2025.
- Attendance in 2022 reflects churches that have disaffiliated in 2022-2023.

Year	Projection of Attendance Growth	Projection of Attendance*
2023	-5.69%	1,020,843
2024	-6.05%	959,082
2025	-6.41%	897,605

* Attendance in 2022 = 1,082,434

Updated structural model equations

Real per attendee expenditures (RPAE)

- RPAE(t) = RPAE(t-1)*(1+RPAE_gr(t))
  - RPAE_gr(t) = growth rate in real per attendee expenditures

Statistical model for RPAE_gr:

- RPAE_gr(t) = 0.5144 + 0.4088*RGDP_gr(t-1)
  (t=0.69) (t=1.38)

The annual growth rate in real per attendee expenditures (**RPAE_gr**) is positively related to the previous year's growth rate in real GDP. The **elasticity of giving per person** with respect to a one percent increase in the growth of the economy is **0.41%**. That is, for each one percent increase in the previous year's real GDP growth, there will be an approximately one-half of one percent increase in real church expenditure per attendee in the current year.

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Updated structural model equations

Ratio of net to total expenditures

- NNE_NTE_ratio(t) = NNE_NTE_ratio(t-1) + DRATIO(t)
  - DRATIO(t) = change in the net to total expenditures ratio

Statistical model for DRATIO(t)

:

- DRATIO(t) = 0.005848 – 0.001485*RGDP_gr(t-1)
  (t=4.02) (t=-2.57)

The change in the net expenditures to total expenditures ratio (Dratio) is negatively affected by the previous year's growth rate in real GDP. For each one percent increase in the previous year's real GDP growth, there follows an approximately 0.0015 decrease in the NNE/NTE ratio.

Forecasts of inflation and GDP growth

- Use Survey of Professional Forecasters' forecasts of annual CPI inflation for 2024 – 2025 compiled by the Philadelphia Fed 2.5%, 2.4%, respectively.

- Use median of most recent FOMC real GDP growth forecasts for 2024-2025: 1.4%, and 1.8%.

Real Per Attendee Expenditure Growth (2020-2025)

Prediction of Real Per Attendee Expenditure Growth and Real Per Attendee Expenditure using the RPAE_gr equation and Forward Forecasts of RGDP From FOMC

Year	RPAE_gr	RPAE
2023	1.25	3580.1
2024	1.52	3634.4
2025	1.04	3672.3

Prediction of Total Nominal Expenditures (2023-2025)

- Total Real Expenditures = Real per attendee expenditure x attendance
- Total Nominal Expenditures = total real expenditures x CPI forecast.

Year	Total Real Expenditures	Total Nominal Expenditures*
2023	3655	$4,702
2024	3486	$4,597
2025	3296	$4,452

* Millions of $

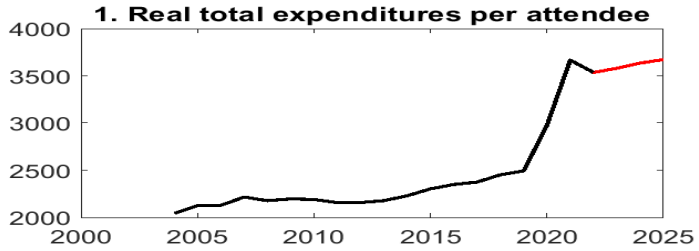
Prediction of Net Nominal Expenditures Structural Model Approach (2022-2025)

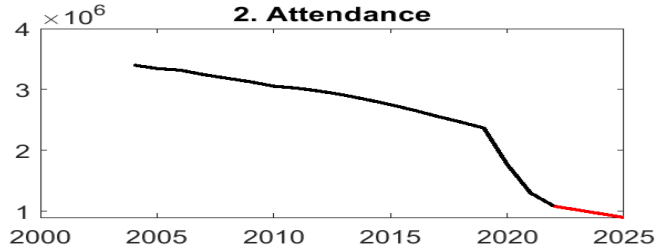
- Using the Dratio predictions from the Dratio equation to get NNE/NTE ratio (starting with NNE/NTE = 0.735 in 2022).
- Nominal Net Expenditures = NNE/NTE ratio x Total Nominal Expenditures

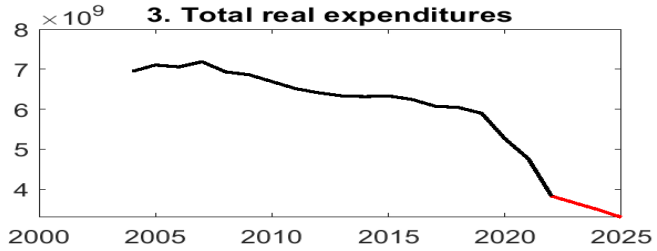
Year	NNE/NTE	Nominal Net Expenditures*
2023	0.738	$3,471
2024	0.740	$3,404
2025	0.744	$3,313

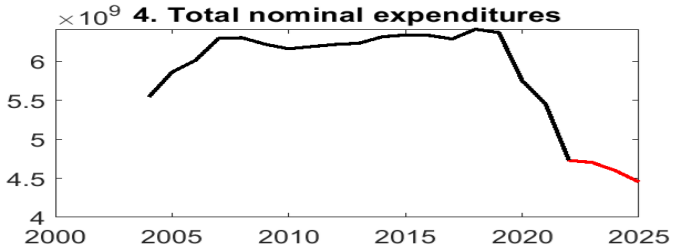
* Millions of $

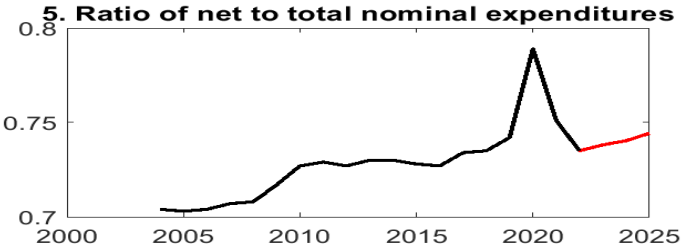
Step-by-step assembly of structural forecast

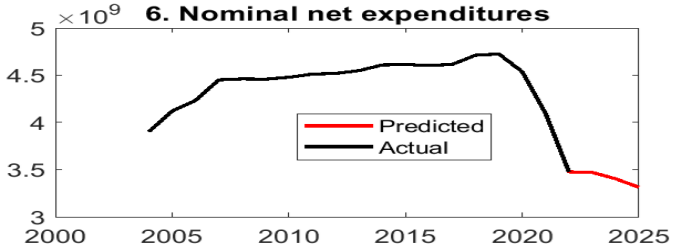












Form of Structural Equations

- In 2018, the EAC investigated econometric models of the form
  $y_t = \beta_0 + \beta_1 x_{1,t} + \beta_2 x_{1,t-1} + \beta_3 x_{2,t} + \beta_4 x_{2,t-1} + \beta_5 x_{3,t} + \beta_6 x_{3,t-1} + u_t$
  where y_t is the "stationary" form of a dependent variable and the $x_{i,t}$ and $x_{i,t-1}$ are the stationary forms of the current and lagged values of the i-th macroeconomic explanatory variable, $i = 1,2,3.$

- The two dependent variables examined here are
  ** the annual growth rate in real per attendee contributions (expenditures)
  ** the annual change in the NNE/NTE ratio

- The five explanatory variables previously examined were (both current and lagged one period) are
  ** the annual growth rate in real GDP
  ** the annual growth rate in real per capita GDP
  ** the annual growth rate in real per capita disposable income
  ** the annual change in the unemployment rate
  ** the annual growth rate in the real version of the Dow Jones Index

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