

Economic and Revenue Forecast Process

Presented to Budget Officers Forum

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Executive Director

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Olympia, Washington



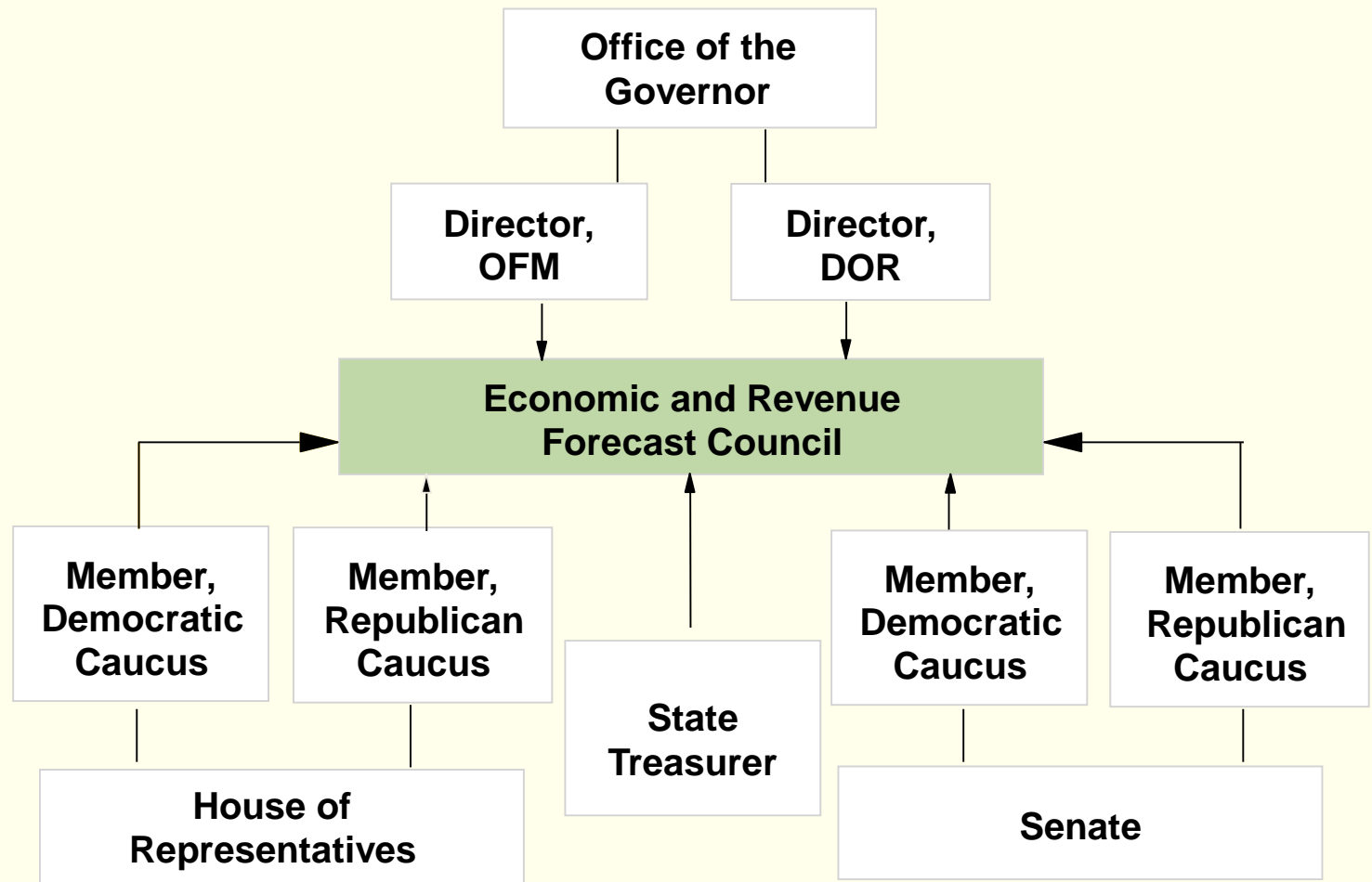
WASHINGTON STATE
ECONOMIC AND REVENUE FORECAST COUNCIL



Economic and Revenue Forecast Council Organization Chart

ERFC

- Created in 1984 as part of Dept. of Revenue
- Became separate agency in 1990



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Slide 1

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Revenue forecast based on multi-step statistical modeling

Data gathering and quality assurance checks occur prior to Steps 1, 2 & 3.

Models are updated with new data prior to each forecast.

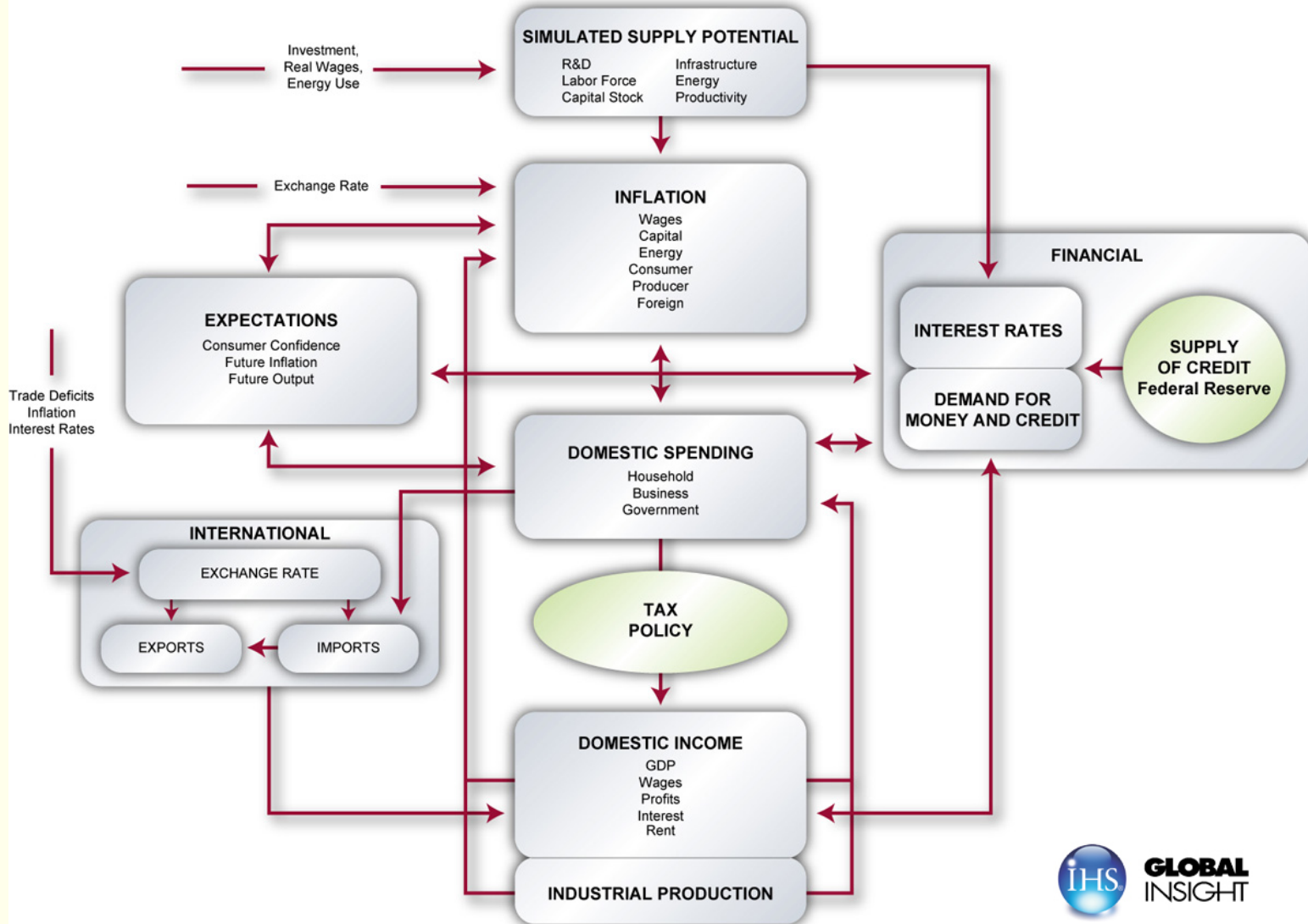
- Step 1: use modified version of IHS-Markit model of U.S. economy to produce U.S. economic forecast
- Step 2: use forecast values of U.S. economic measures as inputs into in-house WA economic model to produce WA economic forecast
- Step 3: use forecast values of WA and U.S. economic measures to forecast tax revenue



U.S. Macro Model Overview

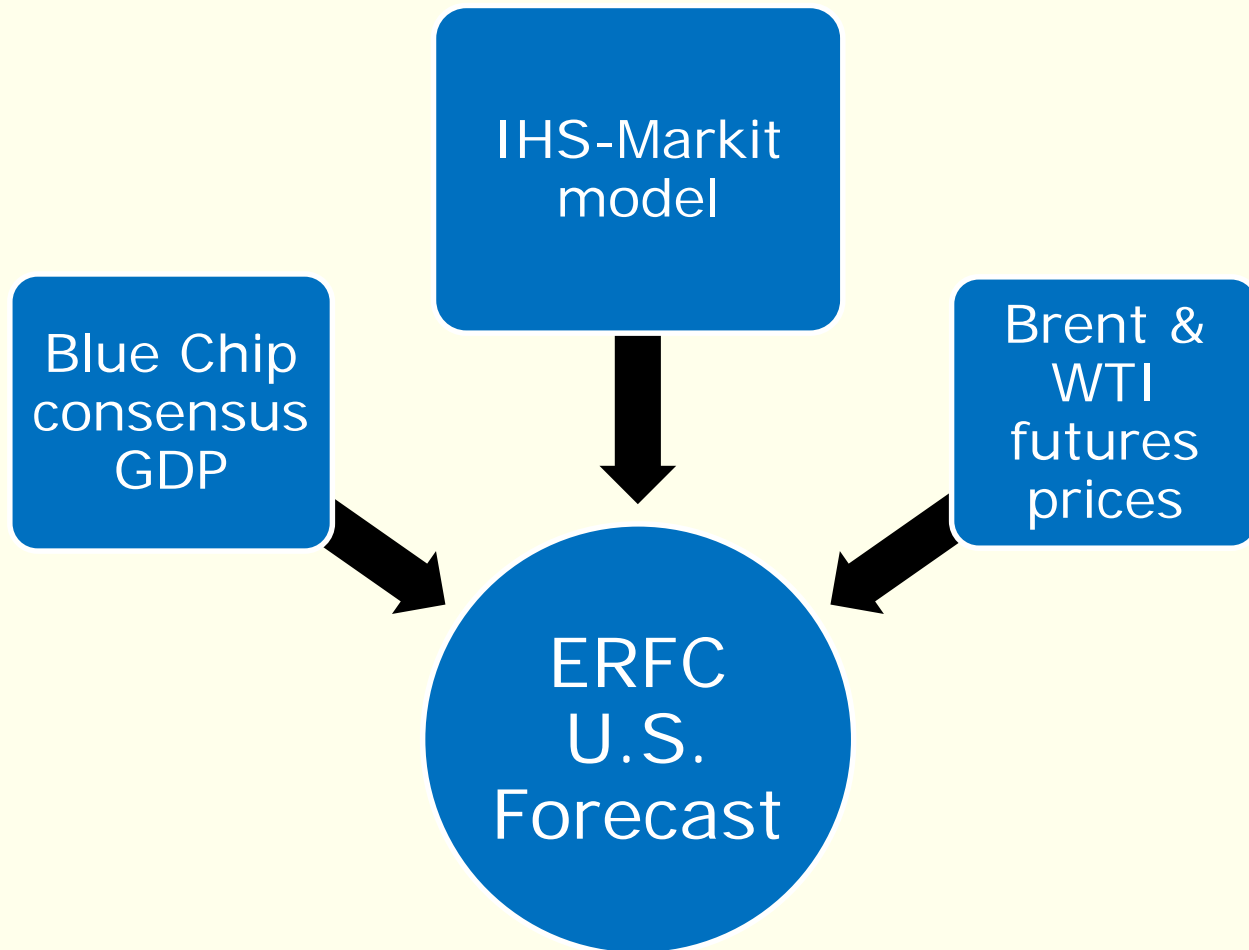
Model captures full simultaneity of U.S. economy

Output, employment, incomes, prices, interest rates, international trade, industrial detail, etc.



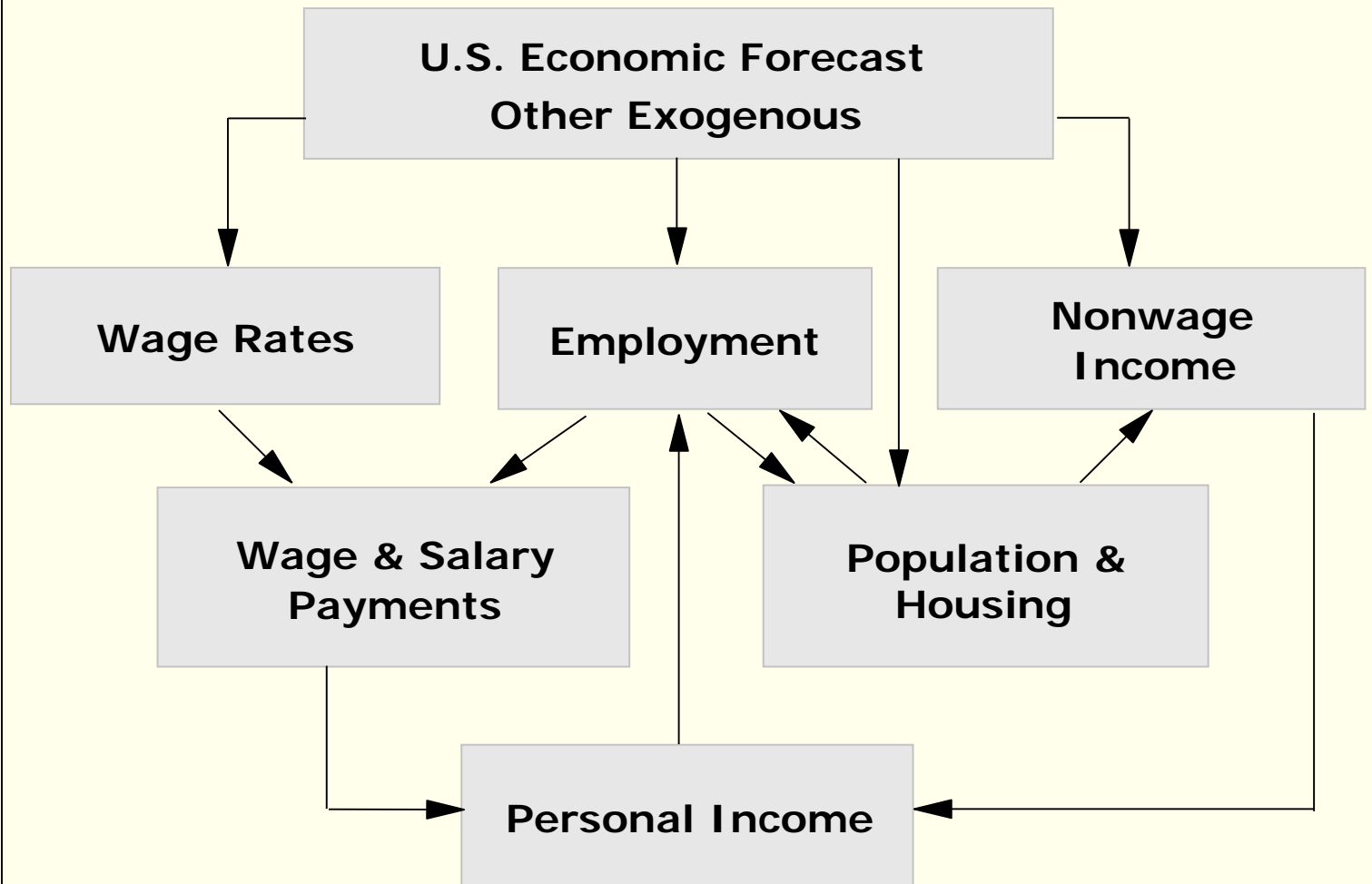


ERFC's US economic model





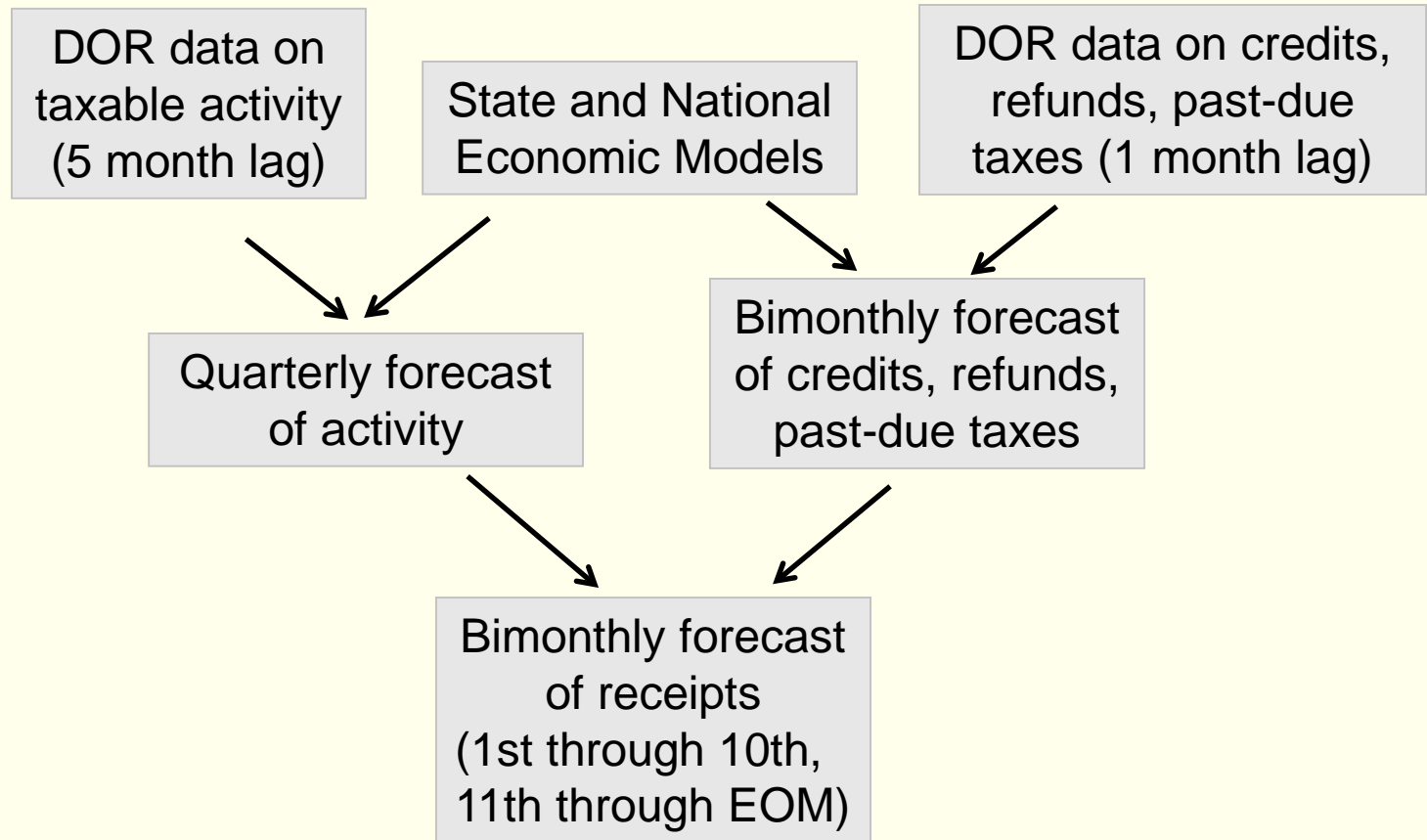
ERFC's Washington economic model





Revenue Act model overview

Major taxes are broken into multiple components to account for differences in economic activity and drivers.





ERFC Forecast Process



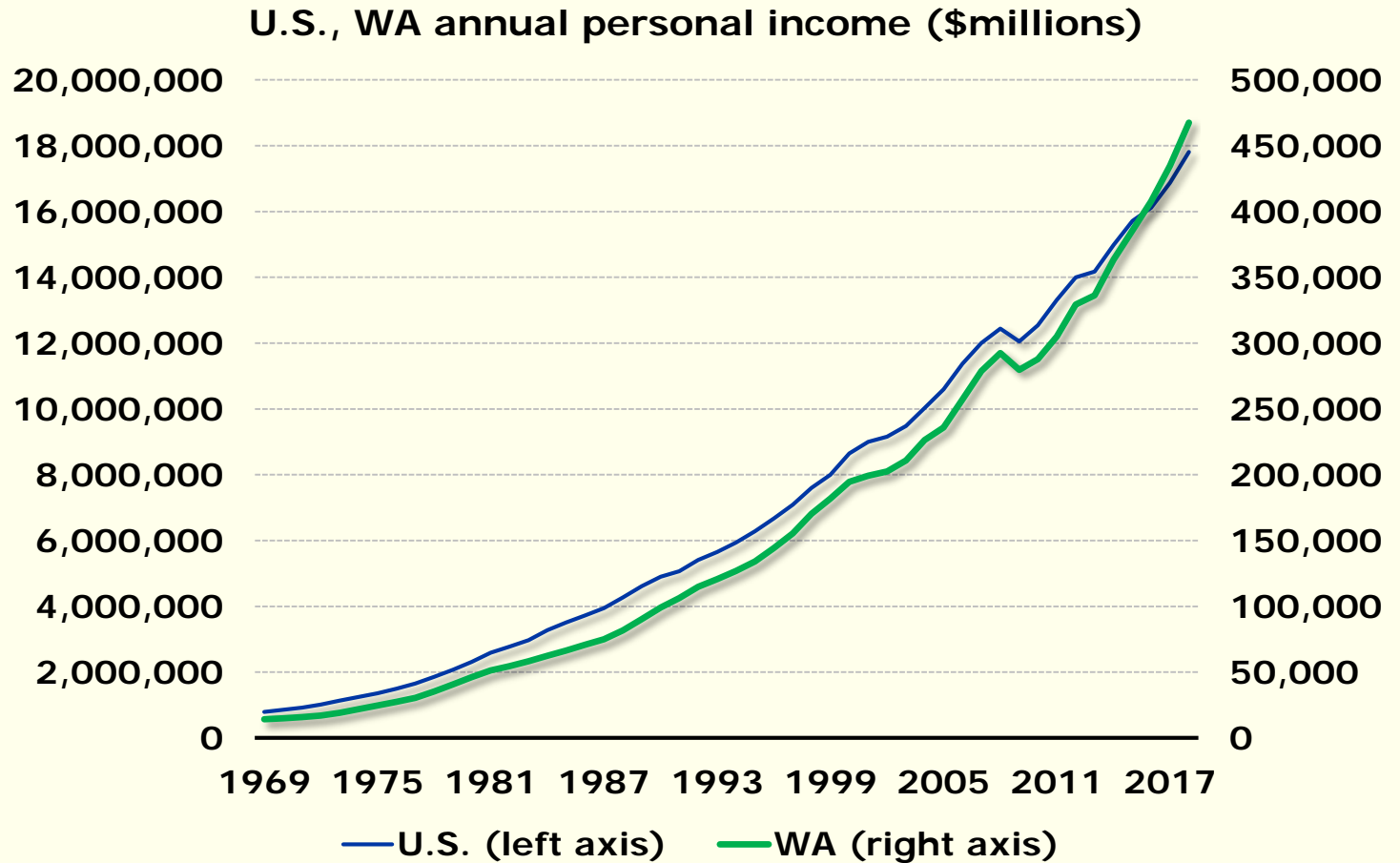


Why start with the U.S. economic forecast? U.S., WA economies are related in (mostly) predictable ways

- National economic policy (Federal taxes and spending, international trade) affects state businesses and residents
- Interest rates and commodity prices tend to be determined nationally and internationally
- National economic measures such as GDP, personal income and inflation tend to have a reasonably consistent relationship to state economic activity



U.S. and WA personal income track fairly closely

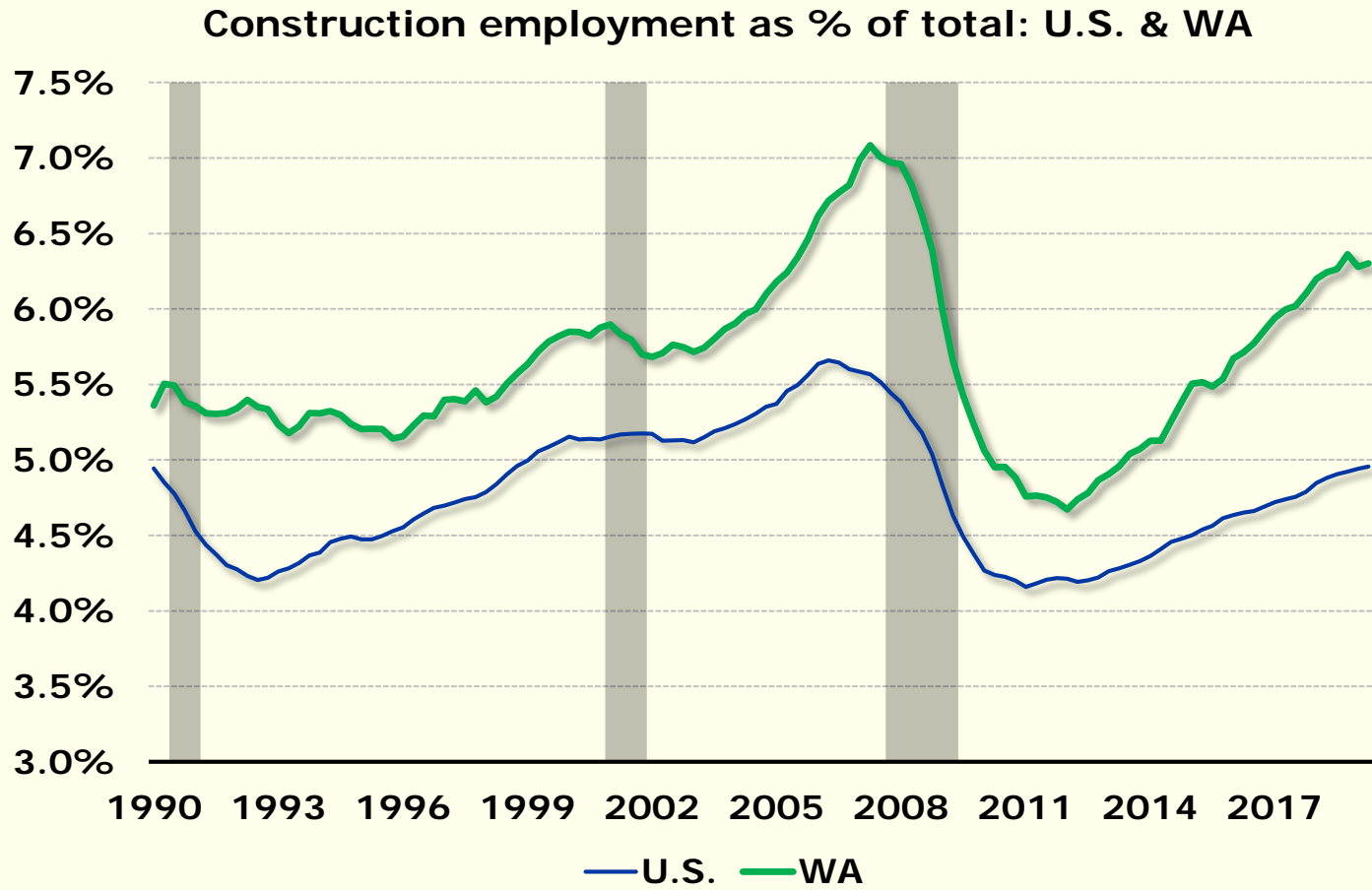


Source: U.S. Bureau of Economic Analysis, data through 2018

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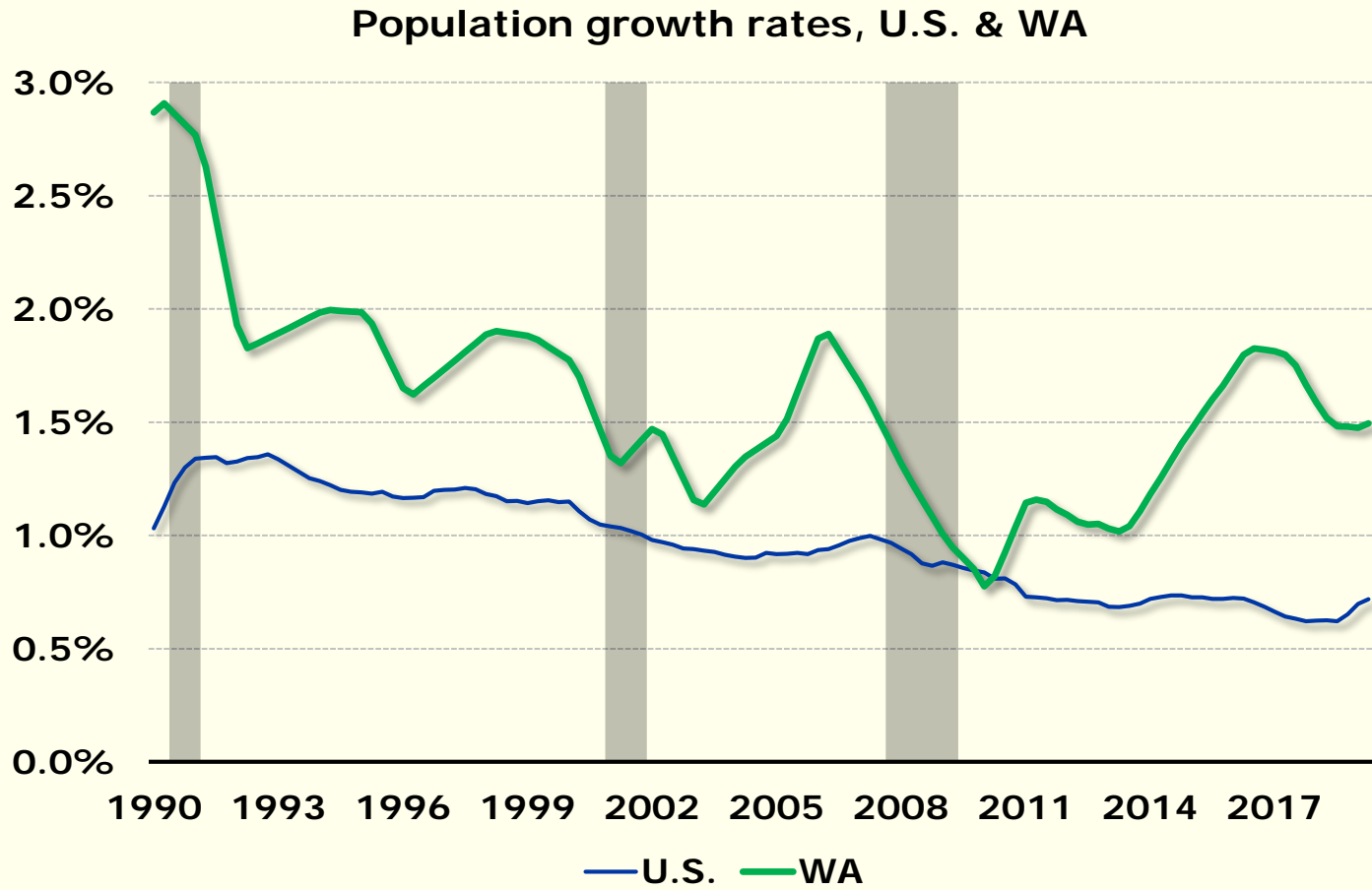
WA has a consistently higher share of employment in construction



Sources: ESD, ERFC, U.S. Bureau of Labor Statistics; data through 2019 Q2



Due to migration, WA population typically grows faster than U.S. – but recessions slow migration



Sources: OFM, U.S. Census Bureau; data through 2019 Q2



State personal income is major driver of tax collections

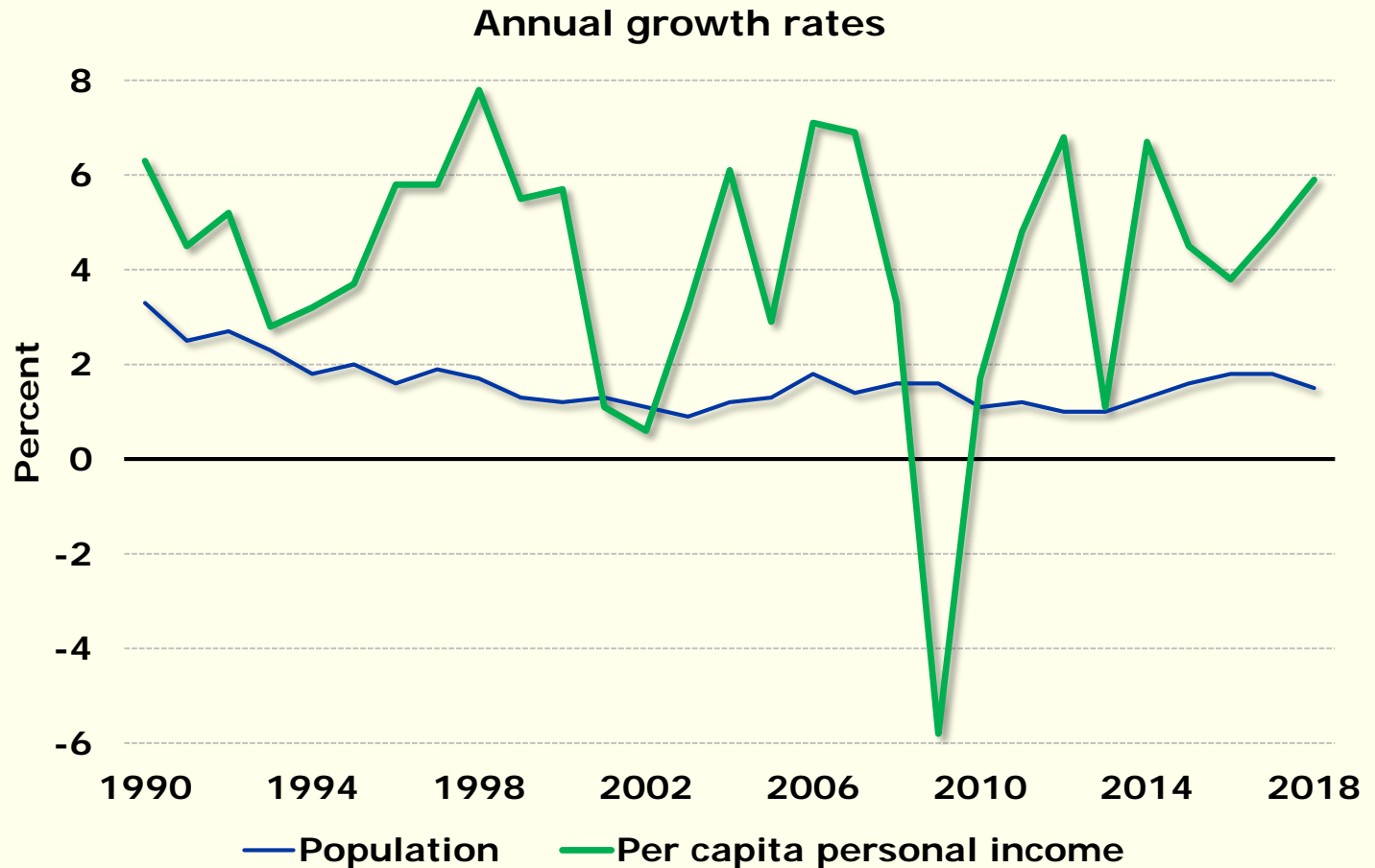
Personal income (YP) = sum of wages, salaries, self-employed income, rental income, interest income, dividends, transfer payments (Social Security, SSI, etc.)

Personal income can also be derived from population and per capita personal income:

- $YP = \text{Population} * \text{Per Capita YP}$
- State personal income grows due to population growth and growth in average wages, salaries and other YP components



Negative per capita personal income growth, slower population growth led to decline in personal income in 2009



Source: U.S. Bureau of Economic Analysis; data through 2018



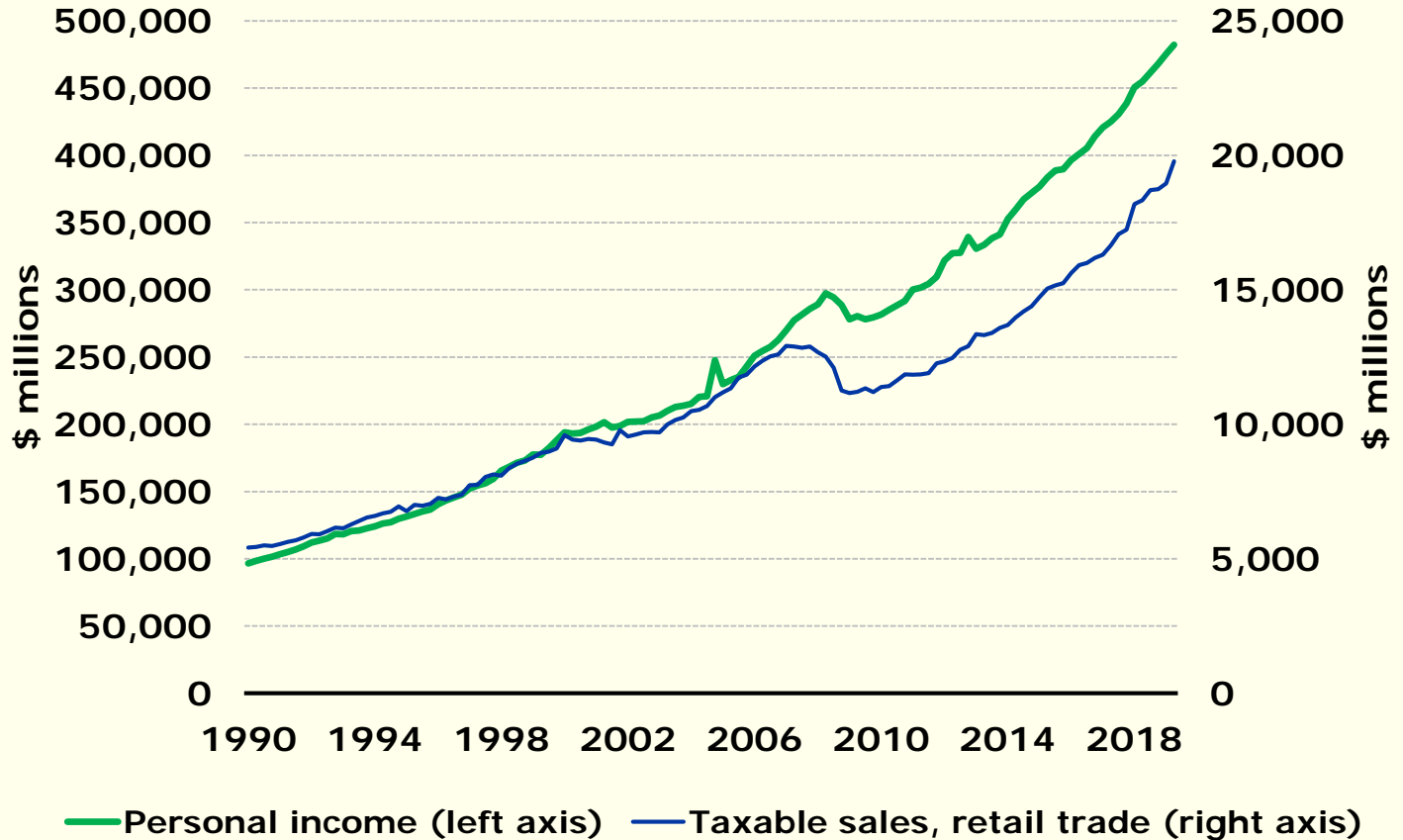
How personal income relates to major tax sources

- Retail sales tax: household purchases strongly related to income
- Business & occupations tax: based on gross business receipts (sales) which in turn are affected by household purchases and income
- Real estate excise tax: rising population increases demand for housing, resulting in more transactions and higher prices



Taxable retail trade sales and personal income: WA

Retail trade includes grocery stores, department stores, furniture stores, car dealers and online sales.



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October 23, 2019

Slide 15

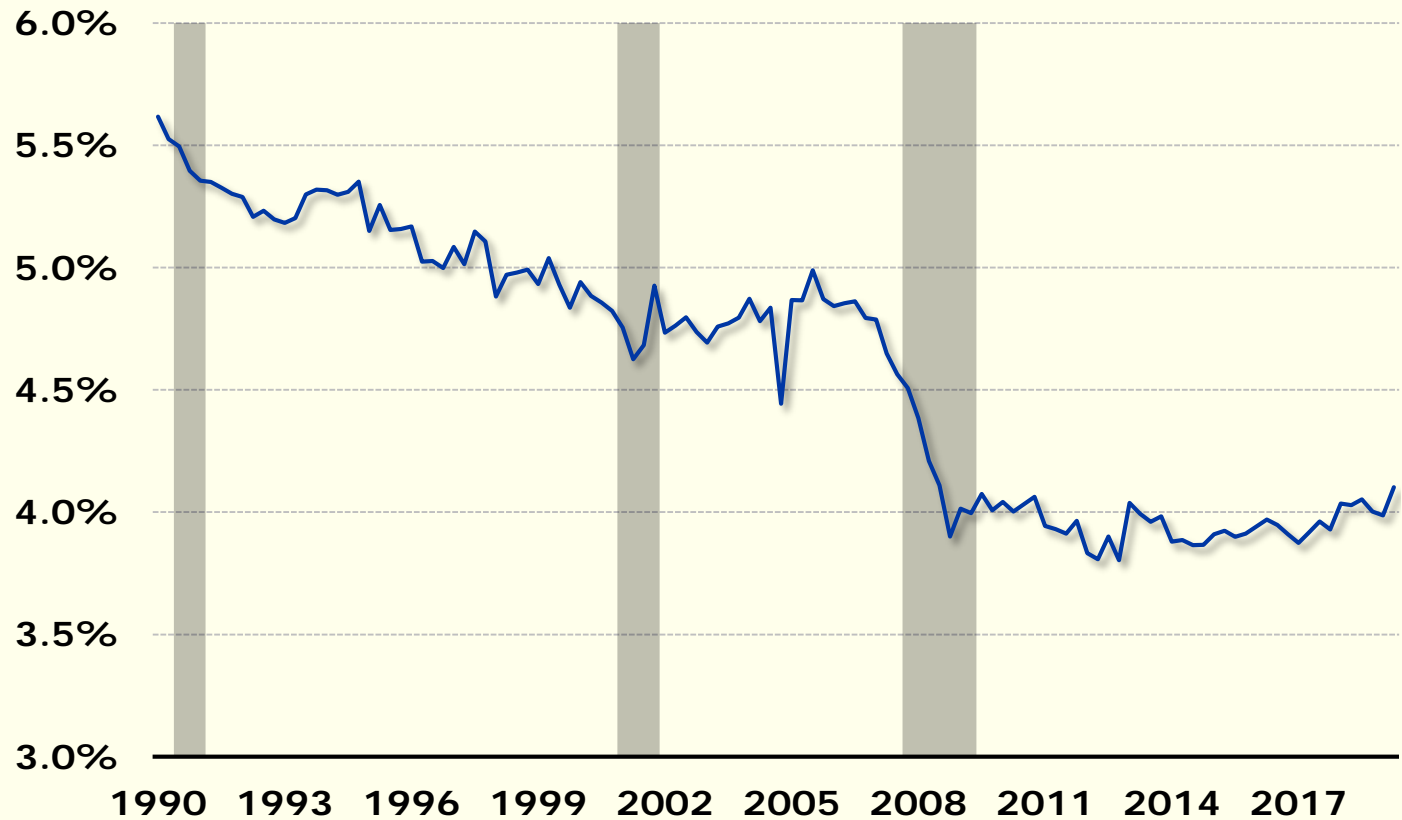
Source: DOR, ERFC, U.S. Bureau of Economic Analysis; data through 2019 Q2

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Taxable retail trade sales as percent of personal income: WA

Retail trade accounts for about 44% of all taxable sales subject to the sales tax

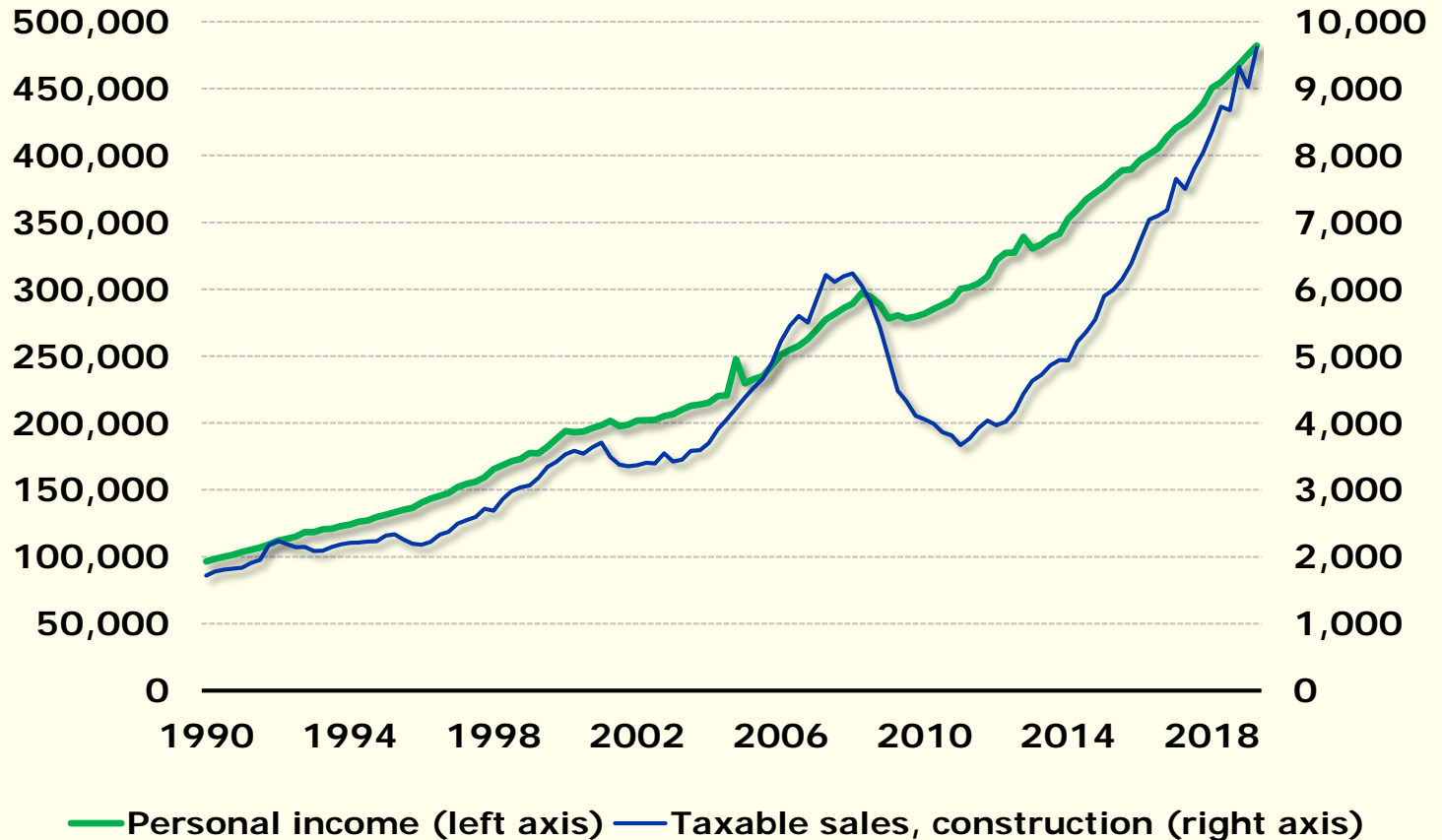


Source: DOR, ERFC, U.S. Bureau of Economic Analysis; data through 2019 Q2



Taxable construction sales and personal income: WA

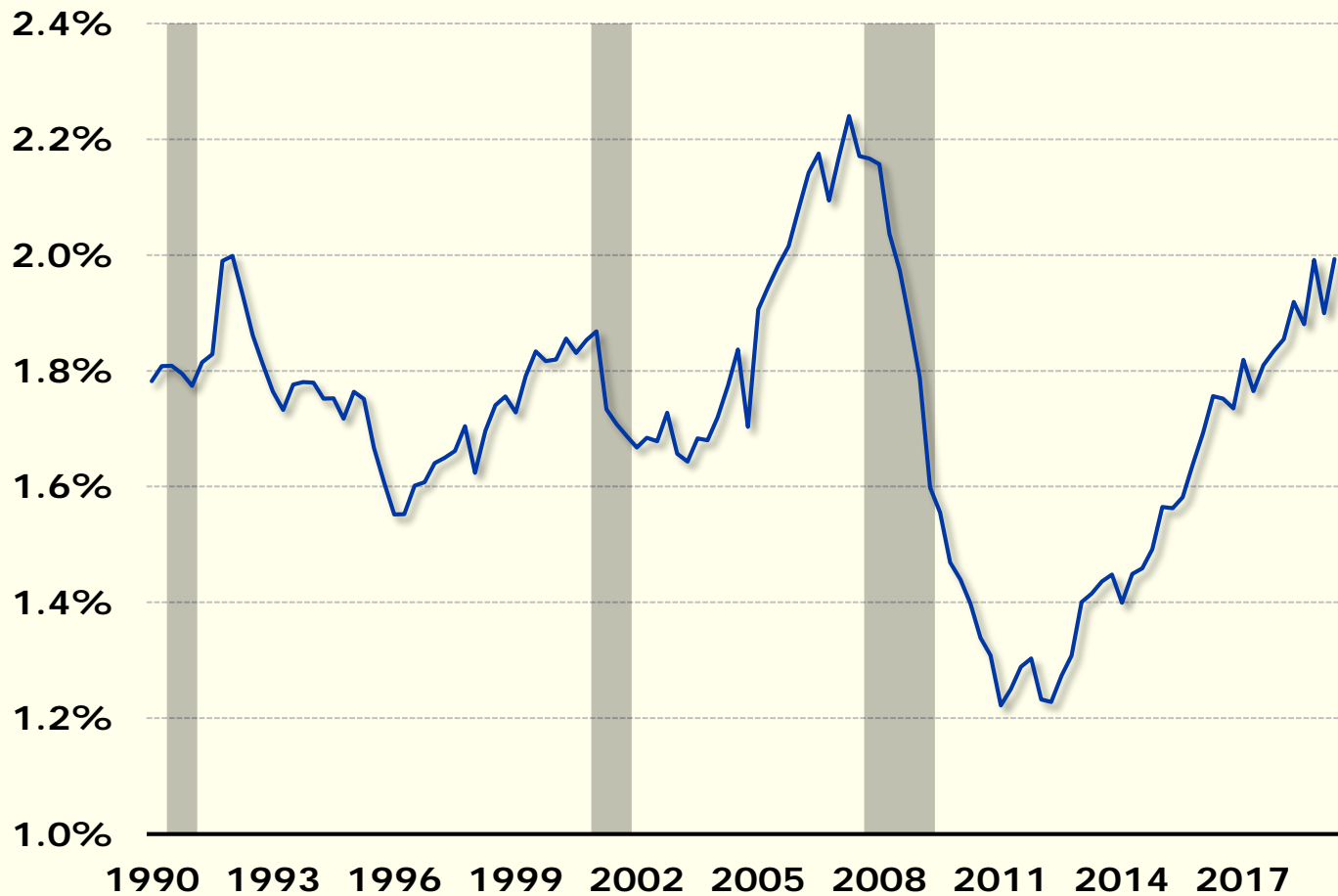
Both construction labor and materials are subject to sales tax; includes remodel and repair work as well as sales of new structures.



Source: DOR, ERFC, U.S. Bureau of Economic Analysis; data through 2019 Q2



Taxable construction sales as percent of personal income: WA





Other selected revenue forecast drivers

Employment

- Impacts level of personal income, in turn affecting many tax sources

Interest rates

- Impact cost of residential and commercial real estate and other major purchases, affecting sales tax and real estate excise tax

Oil and gasoline prices

- Impact B&O taxes paid by oil refineries, gasoline stations



Questions



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Slide 20