# Corporate Income Tax - Methodology

## Overview

As authorized by Oregon Revised Statutes 192.342 through 192.349, the Office of Economic Analysis tracks and forecasts General Fund revenues for state budgetary and planning purposes. Corporate Income Taxes are the second largest source of General Fund revenues, currently comprising approximately 12 percent of total deposits. This document presents the methodology for the Corporate Income Tax forecast.  Appendix A presents the general process for producing the revenue forecast. For a prerequisite overview of the office's revenue forecast, see An Overview of State Revenue Forecasting [1].

Generally speaking, the Corporate Income Tax model can be broken down into three main components: (1) the Long-run Receipts Model, (2) Interim Estimation of Tax Years in Progress, and (3) the Translation to Monthly Receipts.



Graphic 1:

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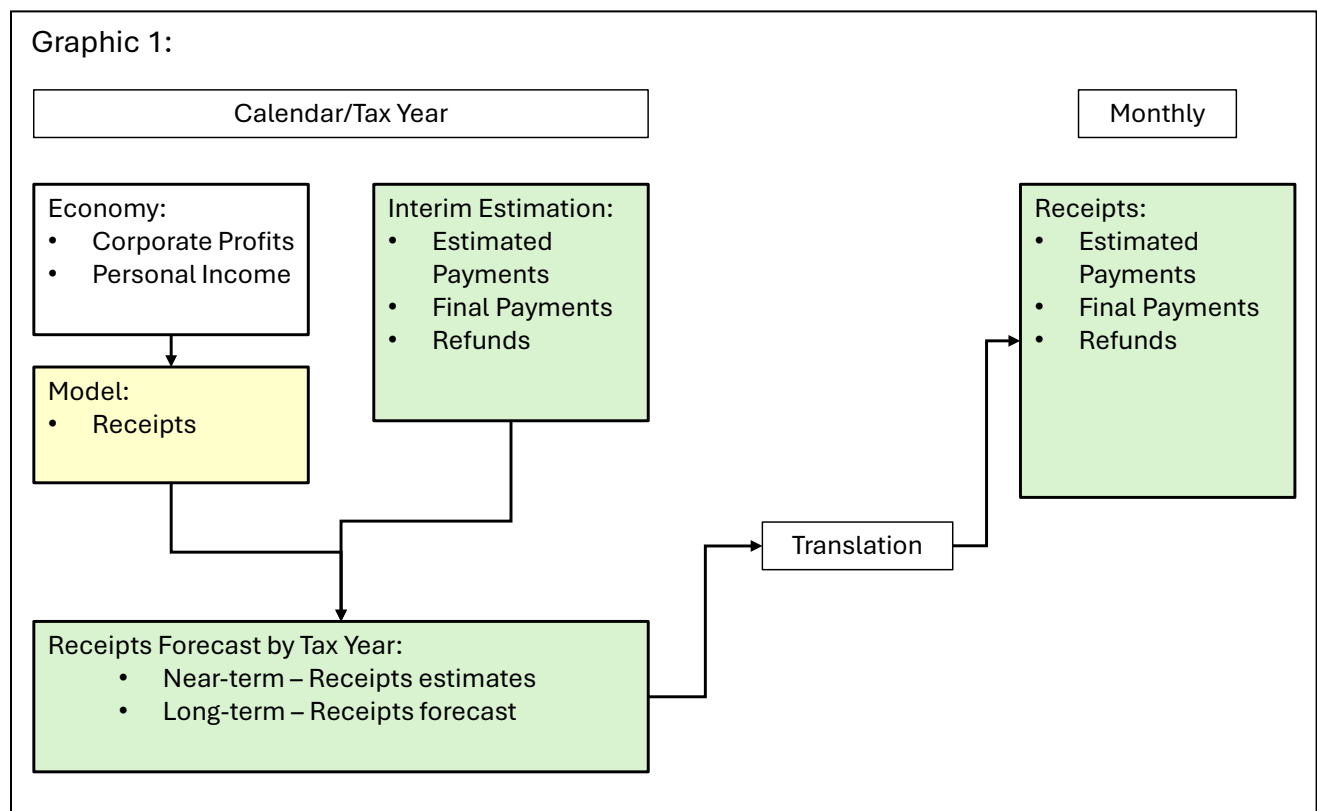
[1] For those unfamiliar with state revenues or forecasting in general, the reader is advised to review this document as context for understanding the methodology papers. Paper forthcoming.

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## Long-run Receipts Model

The purpose of the Long-run Receipts Model is to provide a direct link between tax receipts and economic activity. This link is critical for explaining changes in the forecast to general audiences (e.g., the legislature or the public). It also helps OEA to understand emerging data trends.

The system can be conceptualized as corporate taxpayers earning taxable income and consequently incurring tax liability in the process. These earnings can be seen as direct results of economic activity such as selling goods and services that result in the generation of corporate profits.

Chart 1 presents the recent history of Oregon corporate tax receipts and U.S. corporate profits[2].

Chart 1:



Corporate Receipts and U.S. Corporate Profits

Source: Department of Revenue; Office of Economic Analysis
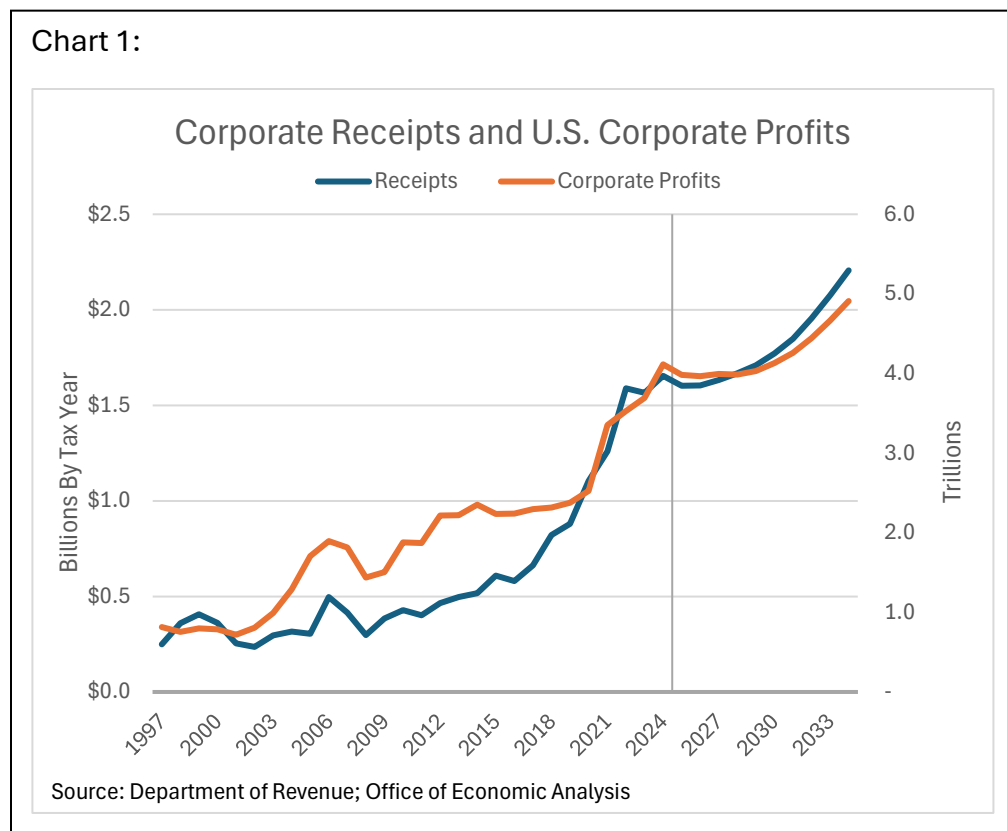
For forecasting purposes, total tax receipts by tax year are specified as a function of U.S. corporate profits. This is due to how Oregon corporate taxpayers compute their Oregon taxable income based on their federal income and then apportion it to Oregon based on sales that occur in Oregon. In the model, this apportionment is done using available

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[2] Corporate Profits are before taxes.

economic data, namely U.S. and Oregon personal income. Thus, the explicit specification equals:

$$ReceiptsTY \; = \; F(Corp\ Profits_{US}, \; PI_{US}, PI_{OR}, DMY_{Super}, \; DMY_{Single}, DMY_{TCJA})$$

Where

$PI \; = \; Personal\ Income$
$US \; = \; National\ Level$
$OR \; = \; Oregon\ Level$
$DMY \; = \; Variables\ to\ account\ for\ super\ and\ single\ sales$
$and\ Tax\ Cut\ \&\ Jobs\ Act\ factors.$

In terms of statistical fit, the descriptive variables in this model explain 95 percent of the variation in tax receipts. This is rather exceptional considering that (a) some taxpayers are on fiscal years that do not coincide perfectly with the calendar year for which corporate profits are measured, and (b) the historic volatility in tax receipts.

Chart 2:



Corporate Income Tax Collections
(By Tax Year, Percent Change)

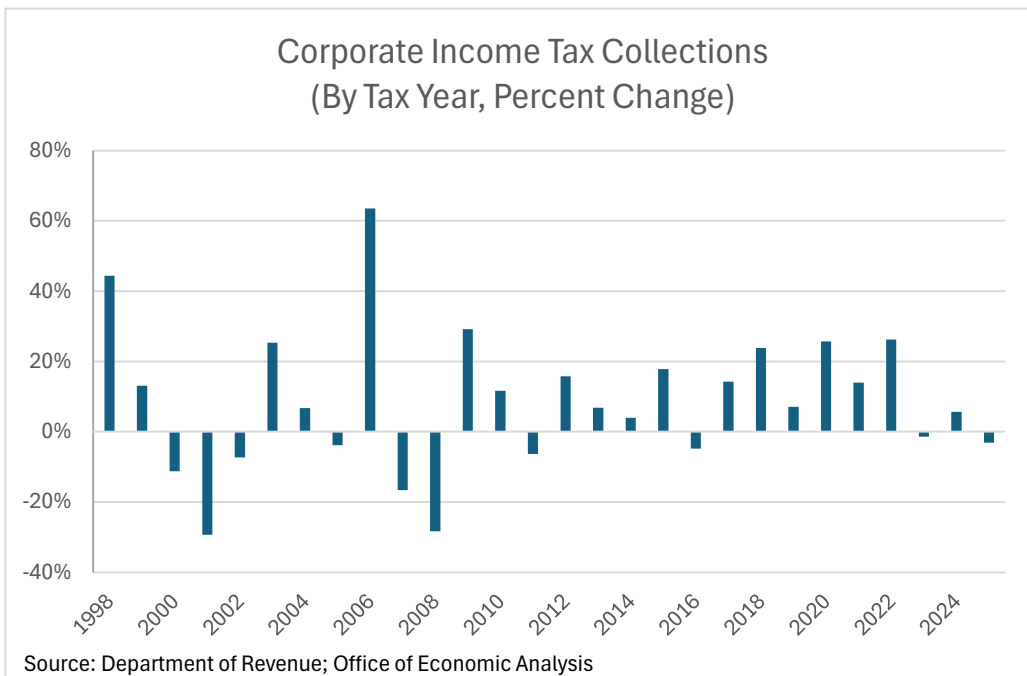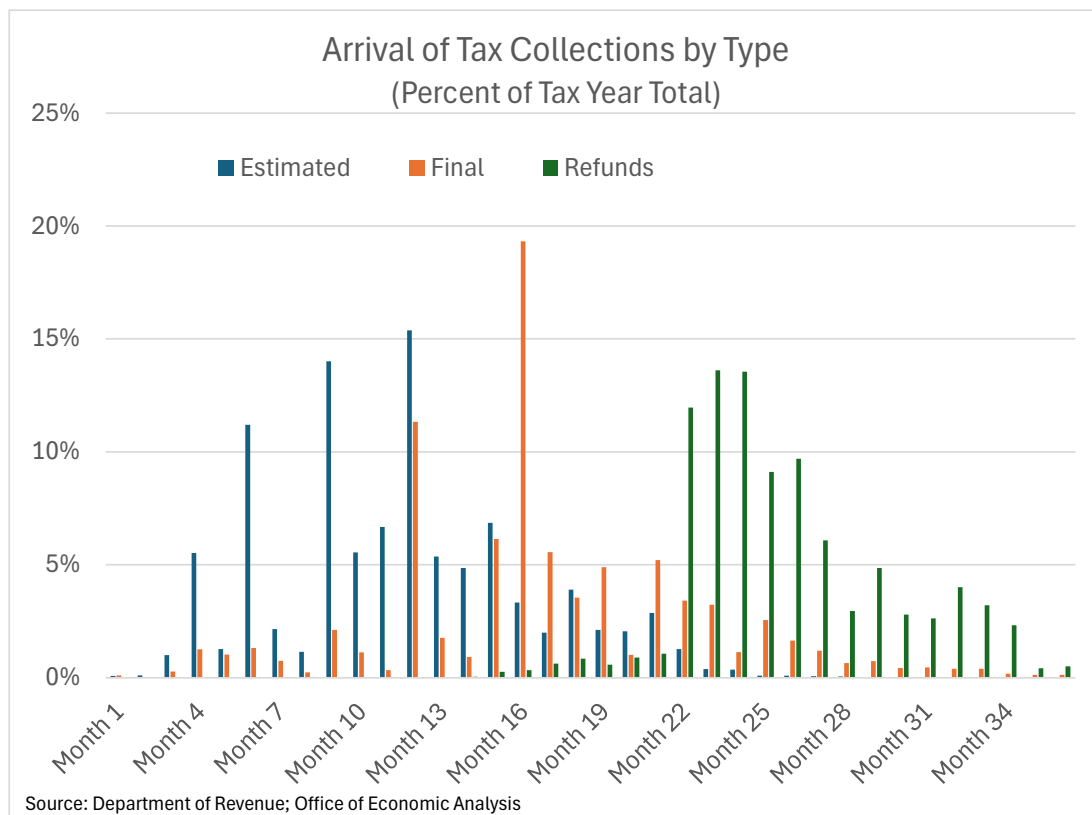Source: Department of Revenue; Office of Economic Analysis

Chart 2 depicts the change in receipts from one tax year to the next. As just noted, receipts growth has been quite variable over the years. While average growth from 1997 through 2024 was 7.1 percent, growth has ranged from negative 5.0 percent to well above 20 percent, excluding recessions.

## Interim Estimation of Tax Years in Progress

While the receipts model is invaluable for informing the forecast based on economic expectations, it has two shortcomings: (1) total receipts are not known for a given tax year until some years after the tax year is complete, and (2) economic data are subject to significant revision for years after they first become available. This introduces significant potential for error into the forecast. The issue is addressed by analyzing historical receipts patterns and estimating total receipts for tax years in progress.

Fundamentally, the Corporate Income Tax forecast is a receipts forecast.  As depicted in Graphic 1, the culmination of the first two components of the model is a forecast of receipts by tax year. Considerable receipts data are available for tax years 2021 through 2024 to estimate what receipts will ultimately look like when all is said and done. This is

Chart 3:



Arrival of Tax Collections by Type
(Percent of Tax Year Total)

Source: Department of Revenue; Office of Economic Analysis

done by looking at receipts patterns for past tax years and extrapolating each of the payment types (Estimated Payments, Final Payments and Refunds) to arrive at a receipts projection that will prove more accurate than that produced by the econometric model.

Chart 3 illustrates how each of these payment types arrives during the first three years following the start of the tax year[3]. Estimated payments occur roughly quarterly. The year following the tax year, as taxpayers file their returns, final payments and refunds occur concurrent with the respective filing deadlines. Note that refunds are more evenly distributed throughout the months relative to final payments due to the increased incentive to file.

Estimating total receipts for interim tax years based on average historical patterns provides a bridge between the latest actual data in the model and the first pure forecast year for which no receipts data are available.

## Translation to Monthly Receipts

The final component of the forecast model is converting the receipts forecast by tax year to a monthly receipts forecast.  This is essential to tabulate the number of receipts that will arrive during each biennium but is also critical for assessing how the forecast is tracking in real time. This translation is straightforward: Historical arrival patterns like those exhibited in Chart 3 are used to translate each payment type's total to a monthly series.

## Tax Law Changes

The Office of Economic Analysis produces forecasts consistent with current state law. The forecast assumes that current law will remain static regardless of the likelihood of impending actions. This includes sunsets to existing law where specific policies are scheduled to end. Additionally, modeling is based on historical relationships where specific legal regimes occur during specific time periods. As noted elsewhere, these regime changes can be handled econometrically using control factors.

For forecasting purposes, adhering to federal law would pose extreme challenges. First, the office relies on national forecast information from vendors such as Standard and Poor's. The forecasts from these vendors do not adhere strictly to current federal law but instead assume the most probable outcome. Second, federal law often entails imminent sunsets that are regularly extended. Assuming these sunsets in the forecast and then eliminating them would induce unnecessary oscillations in the forecast. As such, the OEA forecast

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[3] Note that corporate taxpayers can be on a fiscal year that differs from the calendar year.
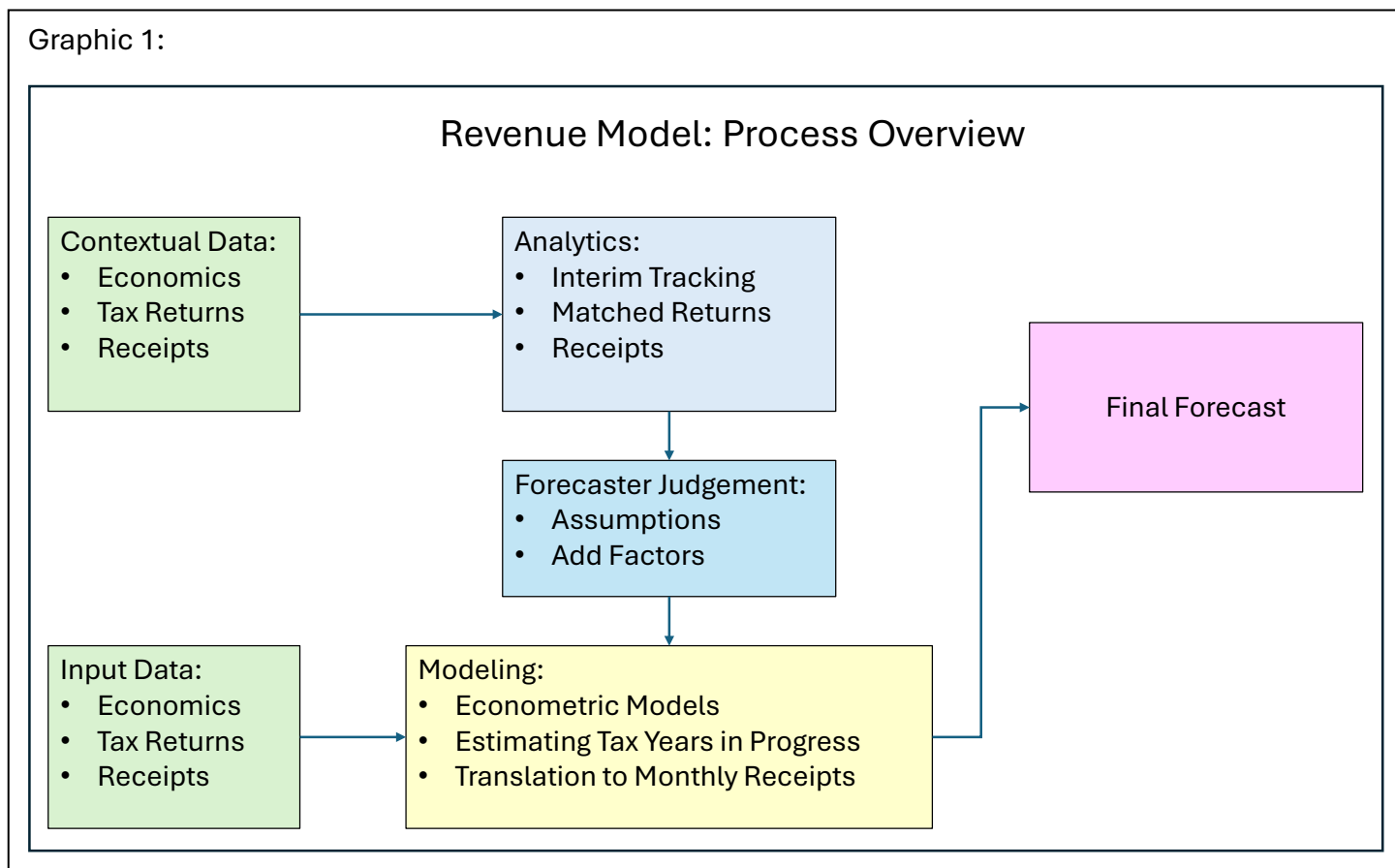
assumes the most likely outcome for federal policy and adheres strictly to current state law.

Periodically, the state legislature or U.S. Congress will enact law changes that affect the tax system. The Legislative Revenue Office is responsible for producing impact estimates for all prospective law changes. When a law is passed, these impact estimates are incorporated into the baseline forecast to make it once again consistent with existing law. As the effects of a law change are realized in the payments data, the impacts must be phased out to avoid double counting the effects.

## Appendix A: Process Overview of Revenue Forecast

The process for producing the revenue forecast for Personal and Corporate Income Tax, as well as the Corporate Activity Tax, has been standardized so that once one forecast has been assimilated, the other two are very straightforward. Graphic 1 exhibits the flow of information and activities involved in producing any of the revenue forecasts.

Graphic 1:

### Revenue Model: Process Overview

**Contextual Data:**
- Economics
- Tax Returns
- Receipts

**Analytics:**
- Interim Tracking
- Matched Returns
- Receipts

**Forecaster Judgement:**
- Assumptions
- Add Factors

**Final Forecast**

**Input Data:**
- Economics
- Tax Returns
- Receipts

**Modeling:**
- Econometric Models
- Estimating Tax Years in Progress
- Translation to Monthly Receipts

At the root of any forecasting process are the historical data that are being modeled and projected, as well as the ancillary data that inform the forecast. See the methodology document proper for more information about the modeling.

The ancillary analytics that inform the manual adjustments are as critical to producing the forecast as the formal modeling. Statistical models generally rely on historical regularities and patterns to predict future outcomes. Where systematic shifts have occurred or are occurring, these outside-the-model analytics help to produce forecasts that are reasonable and consistent with new norms.