Idaho Economic Forecast

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Division of Financial Management
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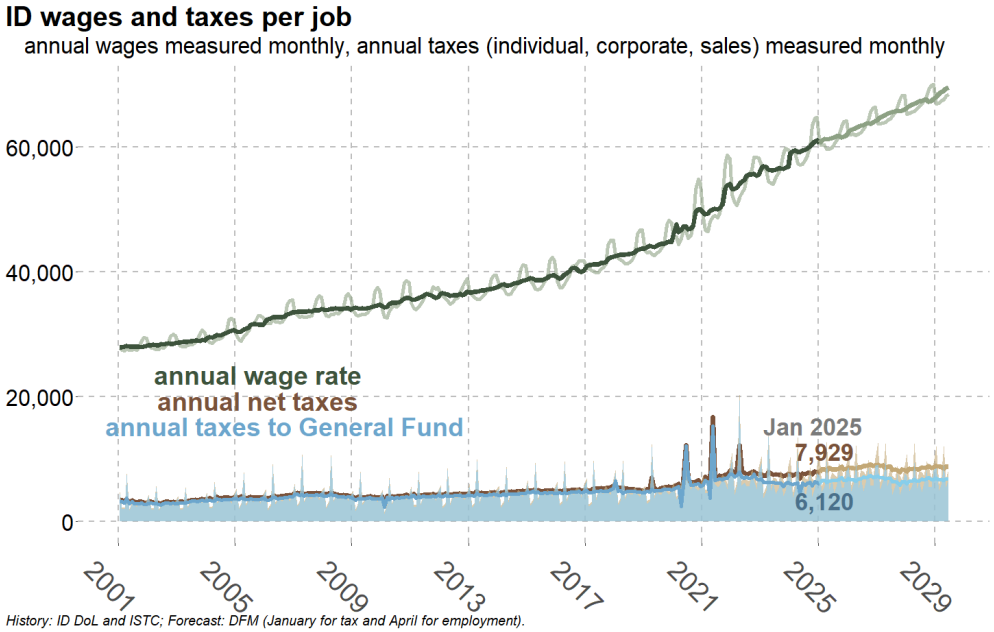

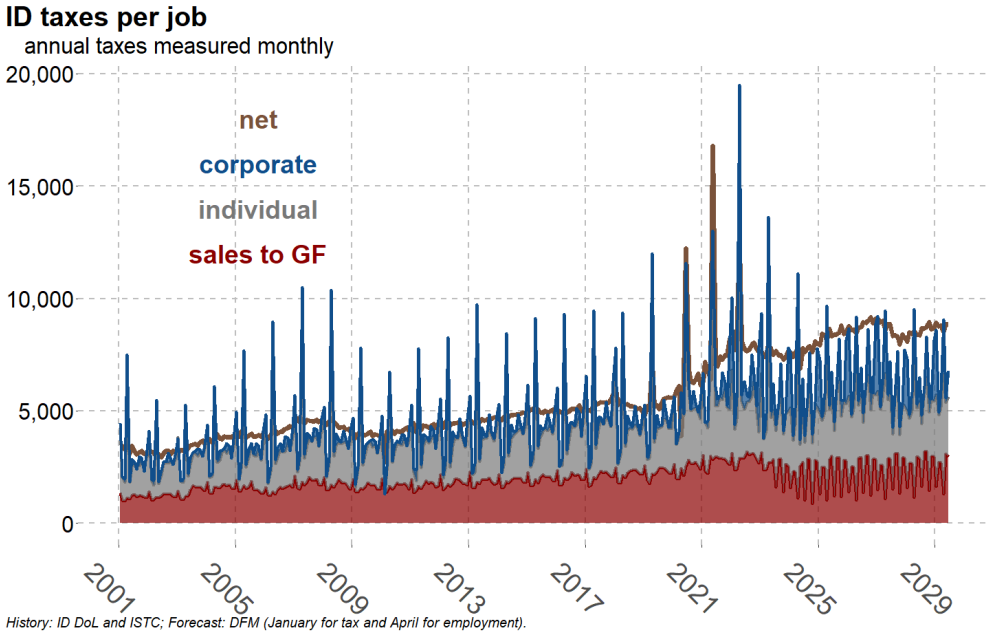

Idaho Economic Forecast 2025–2029

State of Idaho
BRAD LITTLE
Governor

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Introduction

This document summarizes Idaho's economic forecast for 2025 through 2029. The primary national forecast in this report is the April baseline forecast for the US economy by Moody's Analytics. The Idaho economic model takes the national forecast as an input.

Idaho's Department of Labor provides monthly historical employment data. Employment data is now used at the monthly frequency, and seasonal adjustment is not performed perfunctorily. Data is complete through 2024m12. Wage data is also supplied by the Idaho Department of Labor. This data is only collected at the quarterly frequency. This is adjusted by DFM to monthly data consistent at the quarterly level.

Historical and forecast data for Idaho are available via THIS LINK. The linked file includes data for broad sectors and narrower sectors of the Idaho economy at the monthly frequency.

Cover. For the cover, we have included two graphs. One shows the average nonfarm job's annual wage. The other shows the average tax collections per nonfarm job through the three main taxes for the state's General Fund: individual income taxes, corporate income taxes, and the sales and use tax. The graph shows history through 2024, and it includes the projections presented to the legislature in January 2025.

April, which is traditionally the largest filing deadline for individual income tax payers, is an opportune time to illustrate the connections between employment, wages, and revenue to the state. The next *IEF* will be the basis for the August revision to the revenue forecast. That August forecast is what state agencies use to build their budgets.

The Federal Reserve Bank of San Francisco, the regional federal reserve bank covering Idaho, publishes general economic interest articles through its *Economic Letters*. Recent articles discuss the neutral rate of interest in the US economy and price disparities across states.

The FRBSF provides many publications, and other research letters can be found at their publications website. Overall views of the economy are also published by the FRBSF. Those are published in their *Fed Views* series, and one was just published on April 24.

Readers with any questions should contact Greg Piepmeyer or Erin Phipps at (208) 334-3900 or via email using `greg.piepmeyer@dfm.idaho.gov` or `erin.phipps@dfm.idaho.gov`.

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Overview

US summary. We find that the following data tables quickly describe a lot about the national and state economies.

The first tables record variables key to the national economy. All of the forecast data in the national table is due to Moody's; historical data in the table that is reported by US statistical agencies such as the US Census Bureau, Bureau of Labor Statistics, or Bureau of Economic Analysis.

US	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
inflation, CPI measure	1.3	4.7	8	4.1	3	3.3	2.9	1.8	1.9	1.9
Federal Funds rate	2.2	0.4	0.1	1.7	5	5.1	4.1	3.2	3	3
mortgage rates	3.9	3.1	3	5.3	6.8	6.7	6.5	6.3	6.3	6.2

US	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
real GDP growth	-2.2	6	2.5	2.9	2.8	1.3	1.4	2.3	2.4	2.4
employment growth	-5.8	2.9	4.3	2.2	1.3	0.9	0	0.2	0.5	0.7

On April 30, the US Bureau of Economic Analysis released its first reading of 2025q1 GDP. The US economy contracted 0.3% according to that reading, after expanding (at every quarterly measurement) since 2020q3 (the reopening after the Covid shut-down). The most recent annual average readings of real GDP growth have been above 2.5%. The first quarter values have had a tendency to be weaker than the remaining quarters in recent years. Last year, the opening quarter of 2024 saw real GDP growth of 1.6% (with the three readings that the BEA produces [for each quarter, with those] of 2024q1 being within 1.3% to 1.6%).

DFM has a newly published dashboard that shows how the Moody's forecast for key economic indicators, published HERE.[1] On the dashboard, you can filter through the following indicators at the national level:

- Consumer Price Index
- Disposable Personal Income
- Federal Funds Rate
- Gross Domestic Product
- Headline Unemployment Rate
- Total Employment
- Total Housing Starts

There are four forecast lines shown on the dashboard, each representing a different forecast published monthly by Moody's. The main take aways from these indicators are:

- CPI is slightly higher in 2025 and 2026 compared to forecasts published earlier this year.
- Disposable personal income is expected to be lower than previously forecasted.

[1] the url is https://dfm.idaho.gov/about-dfm/about-the-economic-analysis-bureau/key-indicators-dashboard/

- The federal funds rate is expected to be lower in 2025 and 2026, with Moody's indicating that a slowing economy may result in rate cuts from the Federal Reserve starting later this year.
- Much like personal income, GDP has a slightly lower forecast than what was published at the start of this year.
- The headline unemployment rate (also referred to as the U-3 rate) is expected to be higher. Total employment saw a dip for the next three years based on Moody's most recent expectations.
- Total housing starts are expected to be lower at the national level when compared to early 2025 expectations.

Idaho housing. Housing output for Idaho is summarized in our next table. The data is recording "thousands of units" per year, and the measure records activity from July of the prior year until July of the named year; that is the way the US Census Bureau studies housing.

ID housing units	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
permits	5.5	7.5	9.1	9.2	10.5	11.8	14.6	14.5	16.7
starts	4.7	6.8	8.5	8.6	9.6	11.0	13.6	14.0	15.5
completions	4.4	6.0	7.5	8.2	9.5	10.7	12.3	14.1	14.3
Census: stock change	3.9	6.2	8.5	8.5	9.7	11.8	13.9	15.6	5.1
IEM: stock change	3.9	4.4	6.7	8.4	8.7	10.1	12.2	14.5	12.8

ID housing units	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
permits	19.0	21.2	15.3	18.6	18.6	20.4	21.4	22.2	22.6
starts	17.3	19.3	15.7	17.3	17.8	18.9	19.8	20.5	21.0
completions	17.3	17.7	17.2	17.5	18.9	18.4	18.6	19.2	19.8
Census: stock change	18.8	21.6	18.6						
IEM: stock change	8.6	19.4	20.8	18.7	18.3	19.2	19.7	20.3	20.9

The change in the stock of Idaho housing can be an impediment to economic expansion. Families have a difficult time relocating to Idaho for work if there are few relocation options available. The outlook for housing stock expansion is fairly robust, whether looked at through the "completions" lens or through the stock lens. Completions are the only input into the regression equation for stock, but all regression equations are imperfect fits, so we see some numeric discrepancy between the completions and the stock's expansion. However, both are likely to be comfortably above 15-thousand units across the forecast horizon, which by Idaho's history, marks robust expansion.

Modeling. The *IEF* reports on the jobs, wages, and personal income forecasts for Idaho. These (henceforth economic) outputs become the primary inputs into the revenue model for the state's General Fund forecast. The economic outputs are modeled at least four times per year. Revenue is modeled at least twice per year, traditionally in August (to assist state agencies in building their budget requests) and in late November; the revenue estimates are published just after the *State of the State* speech in early January by the Governor, so that the Governor and the Legislature may allocate funding.

The primary revenue streams for the state are the sales and use tax, the individual income tax, and the corporate income tax. Almost everyone in Idaho contributes to the General Fund via sales tax. Most everyone with income from a job contributes to the General Fund through individual income taxes; the standard deduction and Idaho's zero tax-rate bracket are the primary means by which lower-income individuals find that they do not owe income tax to the state. Many companies contribute to the General Fund through the corporate income tax; notable exceptions are non-profit corporations (hospitals and churches are examples) and government itself (including city, county, state and federal government).

As the cover of this publication indicates, wages have seasonal patterns to them. That pattern reflects employment in certain sectors being seasonal. Wage rates also fluctuate seasonally, partly due to that employment pattern, partly due to bonuses. Hours actually worked also contribute to the pattern.

Tax revenue also has seasonal patterns; April revenue collections are the most obvious spikes. During the first two years of the pandemic, filing deadlines were extended. Hence the spikes in 2020 and 2021 occur not exactly in April. That is the reason that the seasonally adjusted data (the smoother tax curves in the upper graph on the cover) remain spiky within the early years of the pandemic experience; seasonal adjustment finds that the expected pattern is not adhered to then, and so the spikes remain.

The lower graph on the cover indicates the composition of tax revenue to the General Fund. Since about 2022, there has been a noticable pull away from net collections in the portion that is directed to the General Fund. The Legislature and the Governor have decided to fund ongoing state government functions through diversions from the sales tax stream. These include long established programs, such as the "circuit-breaker" that assists Idahoans in need with property taxes, to newer features like the Transportation Expansion and Congestion Mitigation fund, which is used to expand roadways that have become bottlenecks to economic progress. The largest change, visible in the pattern of sales tax, is the diversion of funds towards education; this was brought about via HB1 from the 2022 Extraordinary Legislative Session.

The shaded areas within the lower graph give an indication of the relative importance of the tax types for the General Fund. Sales and individual income taxes show the greatest shaded areas. They are the greatest contributors to the General Fund.

Sources. Moody's Analytics provides the Division of Financial Management with forecast data, primarily at the national level. These forecasts are produced monthly by the firm.[2]

The **Federal Open Market Committee (FOMC)**, as defined on their website "consists of twelve members — the seven members of the Board of Governors of the Federal Reserve System; the president of the Federal Reserve Bank of New York; and four of the remaining eleven Reserve Bank presidents, who serve one-year terms on a rotating basis." The FMOC meets eight scheduled times per year. Part of their charge is to make projections for major economic indicators including: real GDP, the headline[3] unemployment rate, core personal consumption expenditures (core CPE), and the federal funds rate. The federal funds rate is the rate that the FOMC influences through its decisions. March saw the first release of their projections during 2025. The prior projection was released in December 2024.

As described on their website: "The **Bureau of Labor Statistics (BLS)** is an agency of the United States Department of Labor. It is the principal fact-finding agency in the broad field of labor economics and statistics and serves as part of the US Federal Statistical System. BLS collects, calculates, analyzes, and publishes data essential to the public, employers, researchers, and government organizations." Among the statistics the BLS publishes are the monthly consumer price index (CPI) report, the monthly jobs openings and labor turnover-survey (JOLTS), the unemployment rate (U-3); the agency also works with state departments of labor to produce quarterly census of employment and wages (CEW) data. CEW data for Idaho is the backbone of the historical data used to produce this *IEF* publication.

The **Bureau of Economic Analysis** produces statistics including gross domestic product and personal income. They also produce personal consumptions expenditures (PCE) inflation measures.

The **Organization for Economic Co-Operation and Development (OECD)**, with the US as a member, released their Economic Outlook publication in March 2025. They indicate that business and individual activities, along with economic policy uncertainty, are pointing towards a global softening of the economy. The OECD is looking at trade policies as causing significant changes to the economy by affecting growth and rising inflation. In the upside, adoption of artificial intelligence is expected to increase productivity.

The **International Monetary Fund (IMF)** is another economic coordination group of which the US is a member. In fact, the IMF is a broad organization encompassing most countries of the world. As explained on their website: "The International Monetary Fund, or IMF, works to achieve sustainable growth and prosperity for all of its 191 member countries. It does so by

[2] They are forecast at a quarterly frequency, meaning that a data point forecast pertains to, say 2025q3, i.e., the third quarter of 2025. Smooth interpolations of those quarterly frequency forecasts are then projected down to the monthly forecast frequency by Moody's, and that is employed by DFM. Some state level forecasts are also integrated with the forecast produced interally at DFM. Blending of the two allows for additional input from Moody's, while preserving the variation inherent in non-smoothed data gathered from other sources either at the national level (e.g., the consumer price index also known as the CPI) or the state level (monthly housing starts, both in terms of units for individual household occupation as well as the monetary values associated with those permits).

[3] The headline unemployment rate is the U-3 rate released monthly by the Bureau of Labor Statistics from its monthly jobs surveys.

supporting economic policies that promote financial stability and monetary cooperation, which are essential to increase productivity, job creation, and economic well-being."

Current economic conditions and outlook

Global conditions. The tone of the OECD's most recent publication has shifted from words like "resilient" in December 2024 to "uncertain" in March 2025. The OECD projects the US GDP growth to slow between 2025 and 2026 to 1.6%, compared to 2.2% in December 2024. They include some risks to be considered as they look to the future of the world's economy:

- Business and consumer sentiment have weakened in some countries, signaling a possible softening of global growth.
- A lingering of inflationary pressures.
- Significant changes, and possible future changes, in global trade policies.

Central bank policy rates vary across the world. Since the last *IEF* publication in January, the following are:

(1) Countries or regions whose central bank cut rates recently:
   - Canada
   - England
   - South Korea
   - Eurozone
   - Switzerland

(2) Countries or regions whose central bank did not cut rates recently:
   - Australia
   - Japan
   - Indonesia
   - Taiwan
   - United States

Behind these decisions, either to cut rates or to stand pat with rates as they were, are varying inflationary pressures across the globe, as well as varying labor and initial monetary policy positions and business conditions. Europe has seen greater deflationary pressures than the US has. Some of its inflationary (shock) pressures were linked to the outset of the war in Ukraine, and those shock pressures have partly subsided. Some of its deflationary pressures are linked to its demography. South Korea has seen three successive presidents in a short period of time following a short-lived martial law declaration; business uncertainty has increased. Canada has faced tariff pressures from the US, particularly within the automotive sector.

US and Idaho conditions and outlook.

Inflation. Moody's forecast is revised monthly. The narrative for the first three months of this year focused on the word "uncertain." Moody's cited the unknown of how the new federal administration's policies would affect the economy. As the first four months of the year progressed, the projection for the 2025 CPI, which is used to measure inflation, has consistently increased over the four months since the last *IEF* publication.

The FOMC did not change the federal funds rate in March. In the press conference they made no mention of plans to adjust rates soon. The FOMC Chairman, Jerome Powell, cited uncertainty

around the effect of tariffs on inflation as being a reason for holding rates at the current level. He also discussed that the inflationary reaction to the tariffs could be transitory, but it was too soon to say.

The PCE inflation projection was moved down for 2025 from the last meeting with a majority of projections between 1.9% and 2.4%. 2026 PCE inflation was also revised down slightly. Core PCE was similarly revised.

Moody's also referenced tariffs as a key risk to the downside of their April forecast, especially as it relates to inflation. This means that they are currently predicting that tariff policy will have a negative effect on the economy. One of the major projected impacts from the tariff policy is on inflation rates, which is why the 2025 rate was shifted up consistently between the January and April forecasts.

Inflation Projection for 2025 by Month of Moody's Forecast

	2025			
	January	**February**	**March**	**April**
Inflation	2.4%	2.7%	3.1%	3.3%
Change (units)	0.050	0.336	0.428	0.196

Federal Funds Rate, Mortgage Rates, and Housing. The FOMC has three main conduits for official communication. The most highly anticipated of these is its summary of economic projections (SEP) — a pdf document published four times per year[4] and commonly referred to as the "dot-plot", due to the most influential graph within it being a dot plot of each of the member's projections for yearly average federal funds rates.

March saw the release of an SEP publication and an accompanying dot-plot. The 2025 federal funds rate (FFR) projection remained effectively unchanged, with most projections in the 3.88% to 4.12% range for 2025. The 2026 projection became more dispersed, with less consensus to any value. The long run was steady, at 3.0% to 3.5%.

Meanwhile, the Moody's April forecast for the FFR was increased, after being held steady from January to March. Moody's cited that they expect tariffs to slow the economy enough that the Federal Reserve Bank will need to lower the FFR to combat the weakening of the economy. Moody's believes the need for lower rates due to a weakened economy will overshadow the concerns of rising inflation.

Federal Funds Rate Projection for 2025 by Month of Moody's Forecast

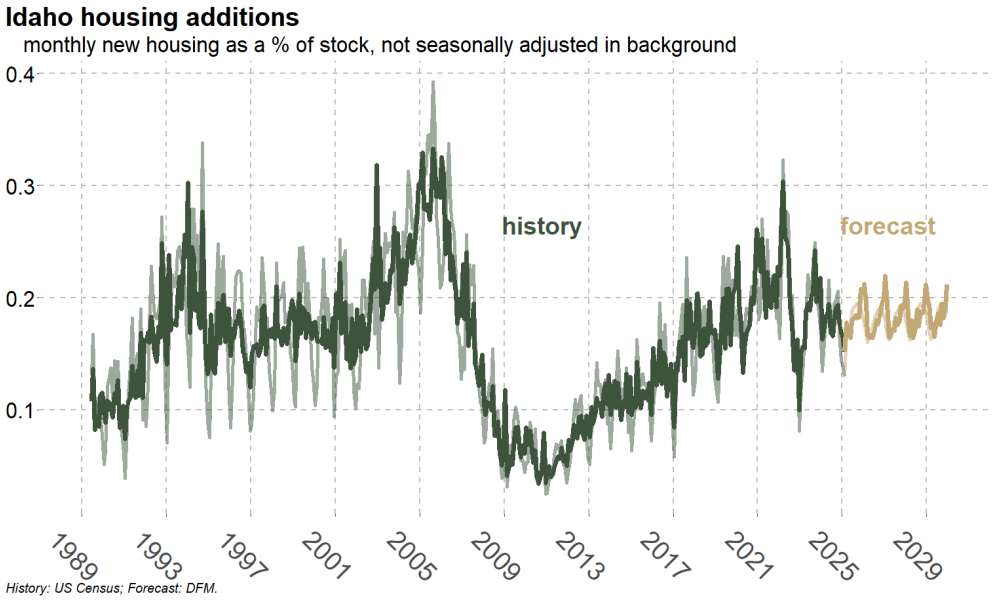
	2025			
	January	**February**	**March**	**April**
FF Rate	4.24%	4.24%	4.24%	4.14%
Change	0.182	0.000	0.000	-0.105

[4] that is, every other scheduled FOMC meeting

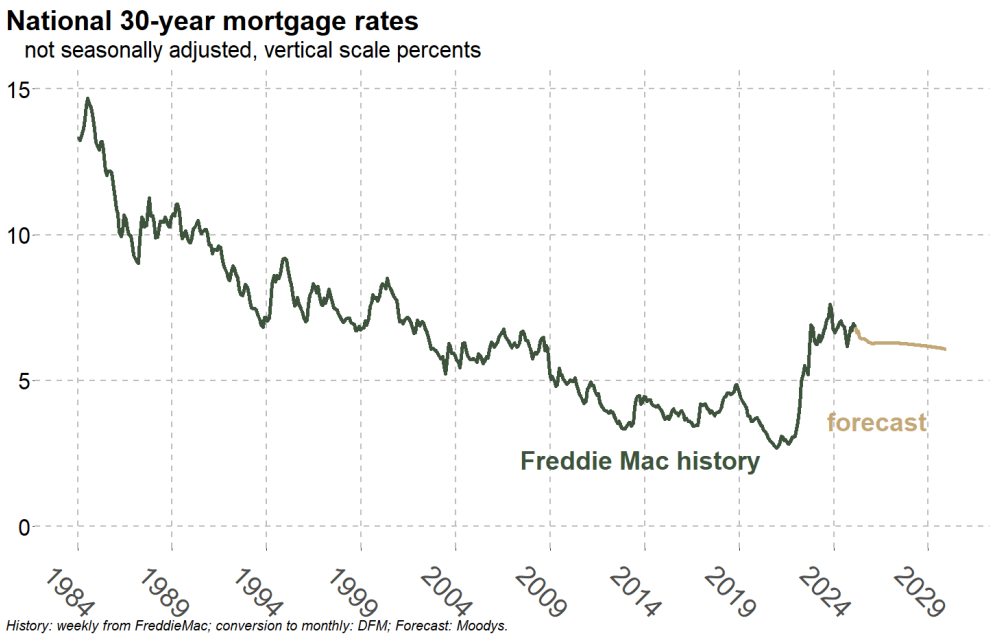
US home purchases are down compared to 2024. The Wall Street Journal is reporting that more homes are being pulled from the market; there is the possibility that this reflects that people with low interest rates on current mortgages are opting to forego selling.

Towards the commercial side of construction, net domestic investment from private businesses declined in Q4 of 2024 by almost 14% when compared to Q3 of the same year. When comparing Q4 2024 to Q4 2023, there was a 7.6% decline in investment from the year prior for Q4.

The "Idaho housing additions" chart shows the percent of new house additions out of the total housing stock. What is quite remarkable, is that the percentage was consistently growing from 2011 to the end of the history years. This is remarkable because as new homes are completed, they are counted in the total housing stock. This means that the new housing additions coming on the market must be increasing at a greater rate than the existing housing stock to show a positive trend. In January, DFM projected this ratio to continue a positive but low growth in the out years. The April forecast is now looking like more stagnant growth.



Bond markets, reflecting the uncertainty in expected inflation and consequently in the FFR, have lifted the 30-year mortgage rates higher in the near-term compared to the DFM January forecast. Moody's expects the FFR to decrease in 2025 due to a slowing economy responding to the tariffs. As long-term bond rates have greater influence on 30-year mortgage rates than the FFR does, the expected path for mortgage rates has been raised. With the steady mortgage rates in the long term, Moody's expects more shortage of housing supply at the national level. Current homeowners are likely to stay at their current homes where they enjoy lower rates than they would get in the mortgage market.

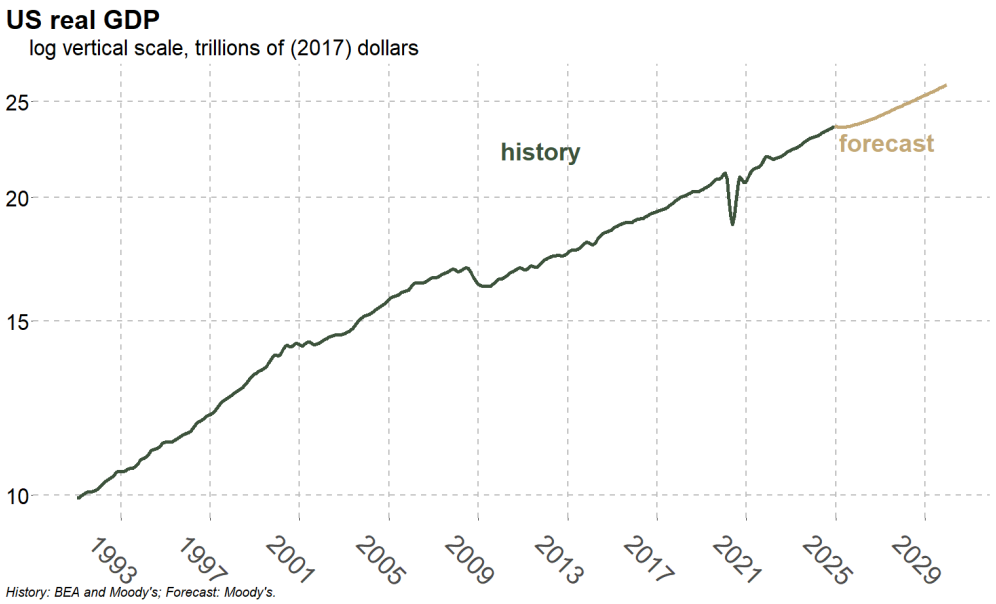


Personal Income and Real GDP. Deviating slightly from the January depiction of personal income, the next table shows personal income per capita. Per capita gives the average personal income for each person in the region (US or Idaho). A portion of personal income comes from transfers, which can be seen in the percent increase in 2021 from stimulus and Covid relief payments. Growth in personal income is expected to remain in the 4% area seen in recent years. As Moody's is expecting lower population growth than seen in the 2000s thus far, the base of this measure (population) in the forecast is projecting slower growth than in the January publication.

As we discuss in the forecast analysis section, the population forecast from DFM is likely to see a revision downward in the next edition of the *IEF*. A consequence of that would be to raise the growth rates in per capita personal income for Idaho. DFM did not manually adjust the population forecast coming out of the numeric equations relating births, deaths, and existing population this month. We are likely to do so if the excess population growth persists in the next edition of the economic modeling.

Per capita Personal Income (PI) in the US and Idaho with Forecast

US	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Per capita PI	$60,802	63,777	66,205	69,399	72,452	75,423	78,631	81,827	84,877
vs. Prior Year	*13.6%*	*4.9%*	*3.8%*	*4.8%*	*4.4%*	*4.1%*	*4.3%*	*4.1%*	*3.7%*
Idaho									
Per capita PI	$55,467	56,985	59,193	61,836	64,429	66,986	69,246	71,509	73,968
vs. Prior Year	*11.8%*	*2.7%*	*3.9%*	*4.5%*	*4.2%*	*4.0%*	*3.4%*	*3.3%*	*3.4%*

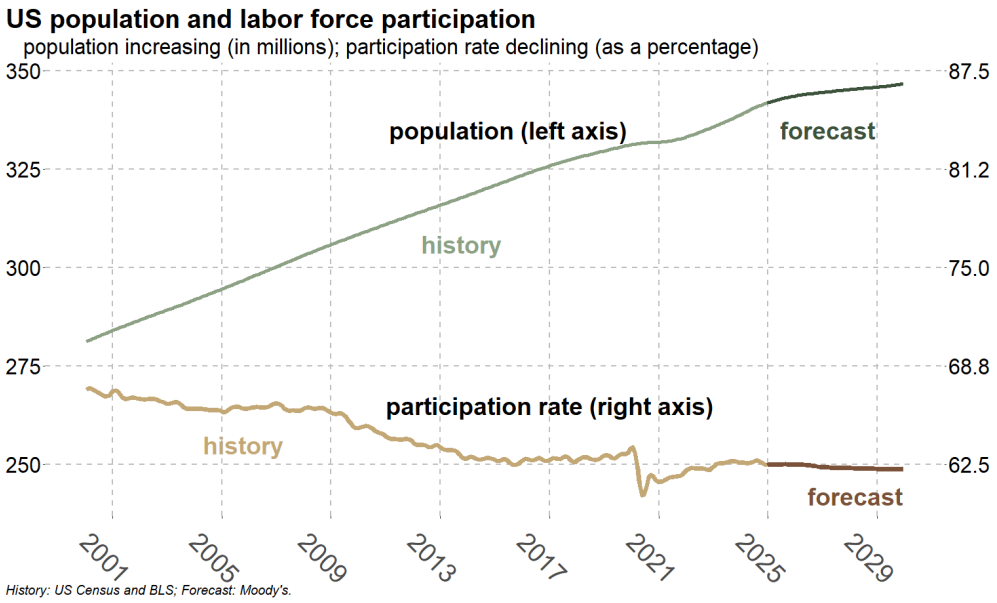


The real GDP outlook shows slow growth in this year and the next in the US. The average annual real GDP growth rate is about 3.1% since the late 1940's. Moody's is projecting growth to come in around 1.3% for 2025 and 1.4% for 2026. Then Moody's forecasts that GDP growth will slowly pick up until reaching a more baseline growth at about 2.5% in the longer run. In IMF's April 2025 World Economic Outlook, tariffs are cited multiple times as a negative shock to growth on a worldwide scale. They go on to say that the uncertainty around how other countries will react to the tariffs is a main contributor in the general uncertainty surrounding forecasting currently.

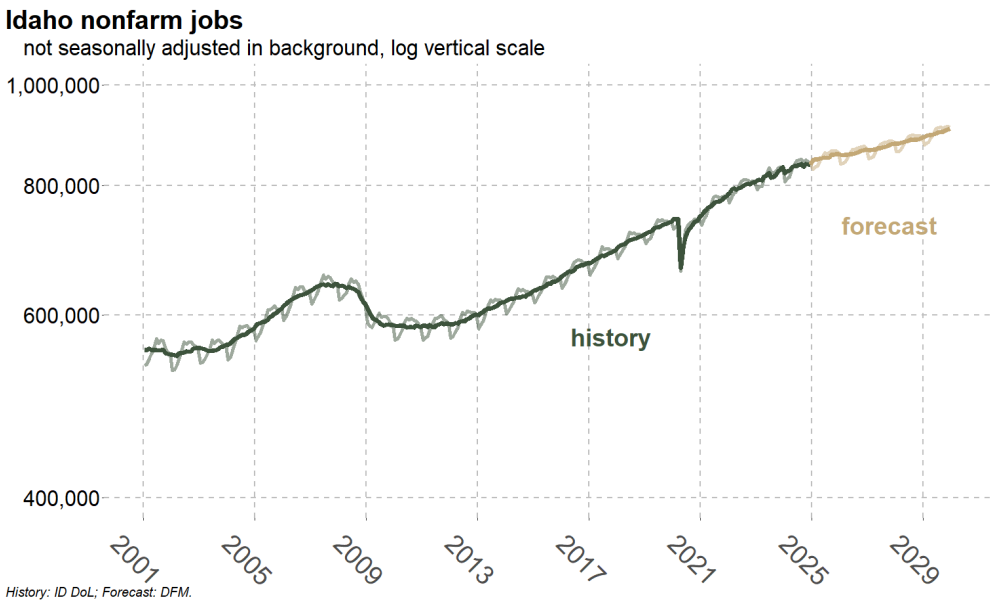
Labor Market and Population. There is uncertainty around population growth in the US, and subsequently Idaho. Since much of Idaho's population increases have come from people moving from other states into Idaho, the US population increase, partly from immigration, will be a factor in population growth for Idaho. With the federal administration's enforcement of immigration policy, including an increase in deportations, Moody's is expecting net immigration into the US to decrease about 75% in 2025 and 2026 when compared to their previous immigrations forecast. In Idaho specifically, there is another factor that could impact population growth in the state. Most people coming to Idaho are people moving from other states. If there is an economic slow down, people may be less likely to relocate during those times. This could impact the rate of growth for population in Idaho. Note: the population forecast here is likely to be revised in August.

Population in the US and Idaho with Forecast

US	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Population (m)	331.6	332.3	334.4	337.2	340.5	342.8	344.1	344.9	345.5	346.2
vs. Prior Year	*0.4%*	*0.2%*	*0.6%*	*0.9%*	*1.0%*	*0.7%*	*0.4%*	*0.2%*	*0.2%*	*0.2%*
Idaho										
Population (m)	1.85	1.90	1.94	1.97	2.00	2.06	2.09	2.13	2.17	2.21
vs. Prior Year	*2.3%*	*3.0%*	*2.1%*	*1.4%*	*1.5%*	*2.8%*	*1.8%*	*1.8%*	*1.8%*	*1.9%*



In the chart labeled "US population and labor force participation" the top line shows the historical and forecast US population according to Moody's April outlook. The bottom line shows the historical and forecast labor force participation rate. The forecast does not see an increase in the labor force participation rate, with a very gradual decline between 2025 and the end of the forecast period. Forces pushing lower labor force participation include the aging structure of the US population and the relative wealth that the baby-boomer generation of Americans enjoys. Both lead toward retirements.



Despite uncertainty in other areas of the economy, in Idaho a growing number of jobs is still predicted for each year. While Idaho's growth in jobs is projected to slow compared to recent years, the forecast growth is still positive year-over-year. Comparing Idaho to the US, the nation is projected to see no growth in 2025 and slow growth in the remaining forecast years. Moody's again cites the tariffs as having a negative impact on the overall economy, and therefore jobs. They revised the April forecast for 2025 jobs down by about 300,000 jobs overall.

Nonfarm jobs in the US and Idaho with Forecast

US	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Nonfarm jobs (m)	151.6	140.3	147.5	153.3	156.3	158.3	159.5	159.5	159.9	160.8
vs. Prior Year	*1.6%*	*-7.5%*	*5.1%*	*3.9%*	*2.0%*	*1.3%*	*0.7%*	*0.0%*	*0.3%*	*0.6%*
Idaho										
Nonfarm jobs (k)	725.0	767.2	798.1	818.5	834.1	852.1	859.8	870.5	883.2	898.9
vs. Prior Year	*-0.6%*	*5.8%*	*4.0%*	*2.6%*	*1.9%*	*2.2%*	*0.9%*	*1.2%*	*1.5%*	*1.8%*

The unemployment rate reported in the next table is referred to as the U-3 rate which is the percentage of adults who are unemployed, have actively sought work in the last four weeks, and are currently able to work. Commonly, full employment is generally accepted to have an unemployment rate between 4% and 5%.

Unemployment Rate Projection for 2025 by Month of Moody's Forecast

	2025			
	January	**February**	**March**	**April**
U-3 Rate	4.09%	4.11%	4.08%	4.20%
Change	-0.014	0.024	-0.029	0.115

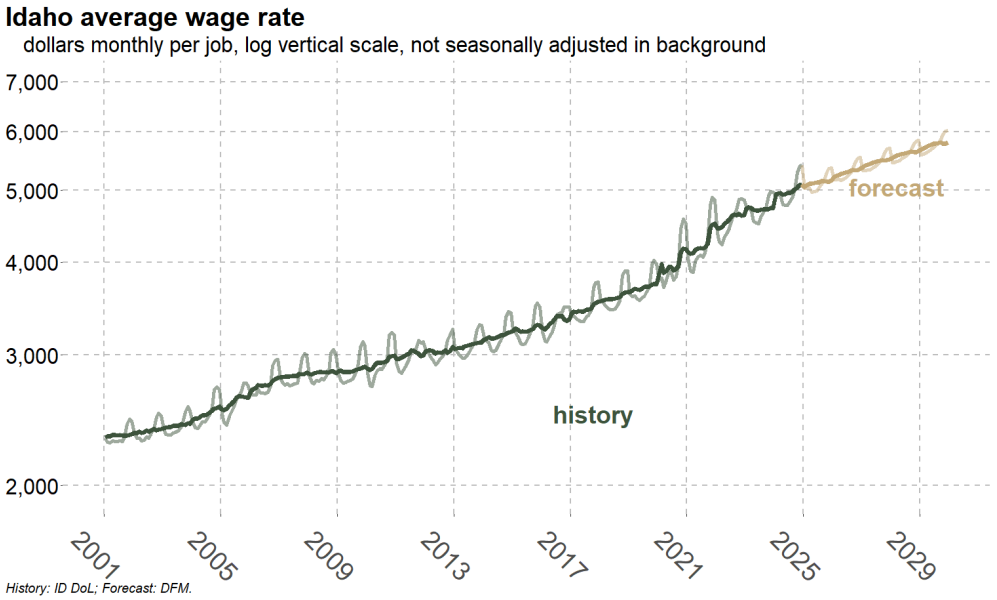
The Moody's US unemployment rate forecast for 2025 was revised up from March to April by 0.115 percentage points from 4.08% to 4.20%. Moody's listed federal job cuts and an overall weakened economy as contributing to the higher unemployment rate. They expect unemployment to continue to increase to 4.9% by the end of 2026. This would also lead to a projected weaker wage growth than has been seen recently.

Similarly to the personal income table, the next table shows annual wages and salary payments per covered job for each region (the US and Idaho). Wages and salaries in Idaho and the US are expected to continue to grow in the forecast years. Although, when looking at the history years in the table, the forecast growth rate of wages and salaries per job will be lower than recent history but still positive.

Wages & Salary (W&S) Payments per Job in the US & Idaho with Forecast

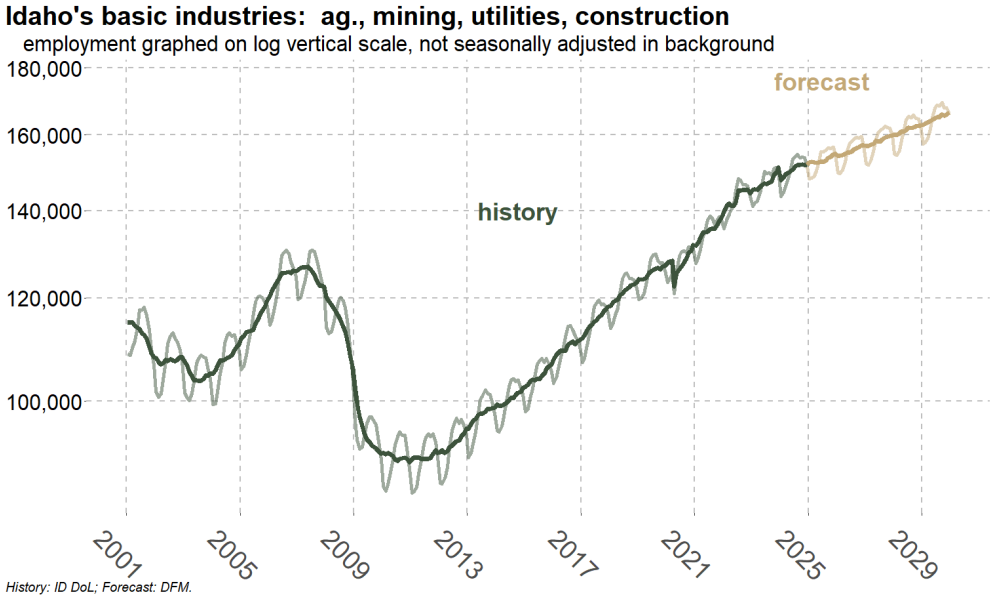
US	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
W&S per job	$73,521	75,412	76,505	79,287	81,394	83,984	86,949	89,353	92,118
vs. Prior Year	*17.8%*	*2.6%*	*1.4%*	*3.6%*	*2.7%*	*3.2%*	*3.5%*	*2.8%*	*3.1%*
Idaho									
W&S per job	$51,036	54,530	56,586	59,917	61,325	63,470	65,461	67,217	69,176
vs. Prior Year	*6.4%*	*6.8%*	*3.8%*	*5.9%*	*2.3%*	*3.5%*	*3.1%*	*2.7%*	*2.9%*

Another view of the Idaho average monthly wage rate per job is graphed next.

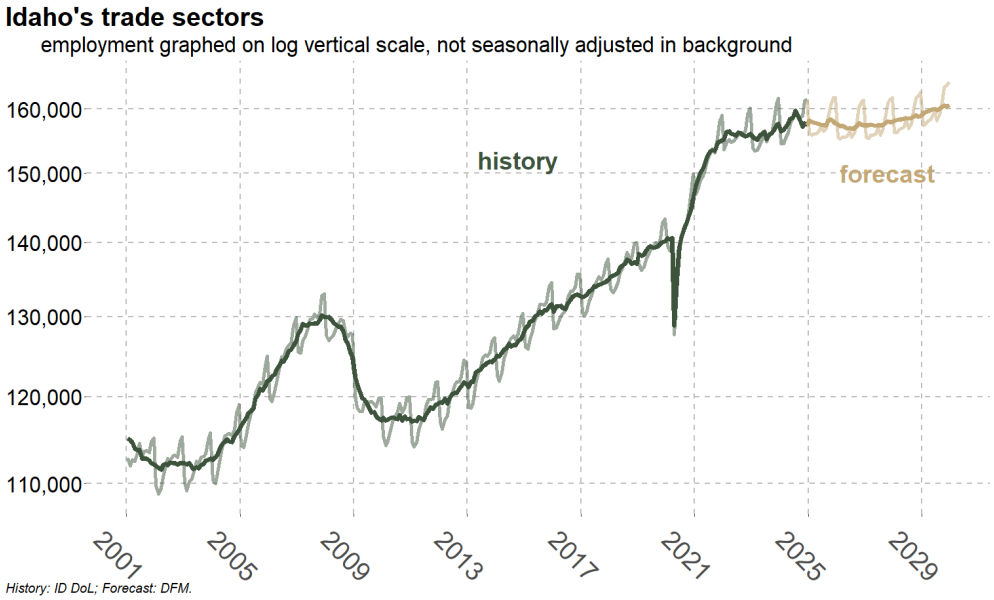


Industries. Employment in the construction industry, encompassed in the "basic industries" category that also includes agriculture, mining, and utilities, is set to see growth in the coming years, although the rate of growth is slower than the January forecast. The construction industry is greatly affected by seasonality. Seasonality is also present in the other sectors included in basic industries; for mining, the easiest place to understand this is in the gravel quarry sub-sector, which is tied to construction. The graph shows the seasonally adjusted values in the bold line, while the

seasonal data can be found in the transparent line. After the pandemic, the seasonal nature of the industry was slightly disrupted; seasonal adjustment appears more jagged than in the years prior to 2020. The forecast shows a return to a smoother seasonal and seasonally adjusted trend.



The trade sectors include retail trade, wholesale trade, and transportation. Compared to the January forecast for employment in the trade sector, this quarter's baseline forecast sees lower growth across the forecast years.



Idaho News.

Health.

- A new Idaho law will allow foreign-trained doctors to practice in Idaho after meeting certain requirements.
- St. Luke's in Nampa opened an urgent care and OB-GYN clinic to address healthcare challenges in Idaho such as clinic closures and physician shortages.

Commerce.

- Boise-based Western Aircraft surpassed $2 billion in aircraft sales. Their main brands include Pilatus and Piper.
- Albertsons had three headlines: there was a layoff of corporate level employees, the CEO resigned following the attempted acquisition of Kroger, and they reported positive earnings in November.
- Idaho Power's new Pocatello Operations Center saw employees moving in during February, housing 64 employees.
- Bank of Idaho was purchased by Montana based Glacier Bancorp. The purchase is expected to be approved during Q2 of 2025. The Bank of Idaho branches will be re-branded dependent on their location in Idaho. Glacier plans to relocate its headquarters to Coeur d'Alene.

Construction and Infrastructure.

- Nampa City Council approved a 235-home development project off Franklin Blvd.
- Diode Ventures proposed a 620-acre data center in Kuna, with the center operating off its own water and wastewater systems. Idaho Power would support utility access. There are 100 permanent jobs projected at the park, with 1,200 projected constructions jobs.
- St. Luke's is making progress on its renovation of their downtown Boise medical complex. The cost of the project is estimated at $1.17 billion and is expected to finish in 2029.
- More growth is projected in Meridian around Ten Mile Crossing, including retail, residential, and restaurants.
- A major infrastructure project on the Pocatello and Chubbuck interstate is set to finish in August 2025 after three years of work.

Grants.

- The USDA expanded a specialty crop marketing aid program by increasing the payment limit and extending application deadlines.
- ISU was awarded $4.5 million in grant funding from the US Department of Education. The grant will be used to pay tuition for eligible school psychology students with the stipulation of working in high-need Idaho school districts for three years.
- University of Idaho is offering grants to farmers to incentivize lowering carbon monoxide emissions. They plan to enroll over 200 farms in the program.
- Priest River housing project aims to develop six units, partly using a $30,000 grant for workforce housing; the grant was secured by Spokane Teachers Credit Union.

Finance.

- 43 out of 44 counties must pay a total of $13 million to Idaho Power and Avista after the Idaho Supreme Court ruled that the two companies were overcharged property taxes from 2020 to 2022.
- Idaho went through its second round of bond sales directed in HB 521 from the 2024 session. The revenues from the bond sales are distributed to public school districts for facility funding.

Education.

- INL, Boise State University, and University of Idaho signed a collaborative research agreement focused on energy and security research. Late in 2024, Idaho State University signed a similar agreement with INL focusing research on materials, sustainability, and security.
- College of Western Idaho is building a Student Success Center at their Nampa location, with the center's focus being to support student success and career readiness. The project is set to finish in fall 2026.
- College of Eastern Idaho is building a Future Tech building, with the project estimated to cost $50 million. The Future Tech building will house various technical programs.
- Colleges and universities experienced a nationwide 15% enrollment decline between 2010 and 2021 according to the National Center for Education Statistics.

Stewardship.

- The Boise Botanical Gardens and Old Penitentiary will be expanded, using $21 million of state and local contributions.

Forecast analysis

Forecast comparison. The forecast from Moody's continues to evolve. Tables give the most recent forecat summaries.

US forecasts. DFM provides an interactive opportunity to see the evolution of a few key indicators of the US forecast across recent months due to revisions in the baseline outlook of Moodys. These are available HERE.[5] The main changes are a flattening of the employment outlook for the US as well as an anticipated rise in the U-3 unemployment rate. These changes are most pronounced in the March–April transition of the baseline forecast. Moody's has indicated that these revisions are partly due to the uncertainty regarding the business environment, which is trying to adjust to the tariff changes coming from the US administration.

Here is a table summarizing changes to the forecast across 2024–2025.

Apr. '25 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
GDP	b (2017) $	22,671	23,305	23,611	23,949	24,493	25,079	25,692
P. income	b $	23,403	24,659	25,779	26,912	28,088	29,192	30,417
Population	m	337	340	343	344	345	346	346
Nonfarm	m ct.	156	158	159	159	160	161	162
Wages	b $	11,725	12,390	12,884	13,392	13,864	14,289	14,814
Dec. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
GDP	b (2017) $	22,671	23,300	23,821	24,201	24,634	25,150	25,721
P. income	b $	23,403	24,684	25,774	26,926	28,062	29,196	30,480
Population	m	339	342	345	346	347	348	348
Nonfarm	m ct.	156	159	160	161	161	162	162
Wages	b $	11,725	12,421	12,994	13,582	14,111	14,575	15,116
Oct. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
GDP	b (2017) $	22,671	23,278	23,804	24,296	24,818	25,384	25,958
P. income	b $	23,010	24,080	25,070	26,170	27,360	28,610	29,890
Population	m	335	337	338	339	341	342	343
Nonfarm	m ct.	156	157	158	158	159	160	160
Wages	b $	11,830	12,480	13,010	13,530	14,070	14,630	15,210

[5] the url is https://dfm.idaho.gov/about-dfm/about-the-economic-analysis-bureau/key-indicators-dashboard/

Jul. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
GDP	b (2017) $	22,377	22,896	23,286	23,719	24,239	24,813	25,388
P. income	b $	22,961	24,043	25,072	26,150	27,316	28,582	29,887
Population	m	335	337	338	339	340	342	343
Nonfarm	m ct.	156	159	160	160	161	161	162
Wages	b $	11,798	12,388	12,956	13,469	14,001	14,559	15,136
Apr. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
GDP	b (2017) $	22,380	22,960	23,340	23,780	24,300	24,870	25,440
P. income	b $	22,980	24,110	25,130	26,210	27,380	28,630	29,920
Population	m	335	337	338	339	340	342	343
Nonfarm	m ct.	156	158	159	160	161	161	162
Wages	b $	11,820	12,470	13,030	13,550	14,090	14,650	15,230
Jan. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
GDP	b (2017) $	22,340	22,710	23,100	23,620	24,180	24,770	25,340
P. income	b $	23,010	24,080	25,070	26,170	27,360	28,610	29,890
Population	m	335	337	338	339	341	342	343
Nonfarm	m ct.	156	157	158	158	159	160	160
Wages	b $	11,830	12,480	13,010	13,530	14,070	14,630	15,210

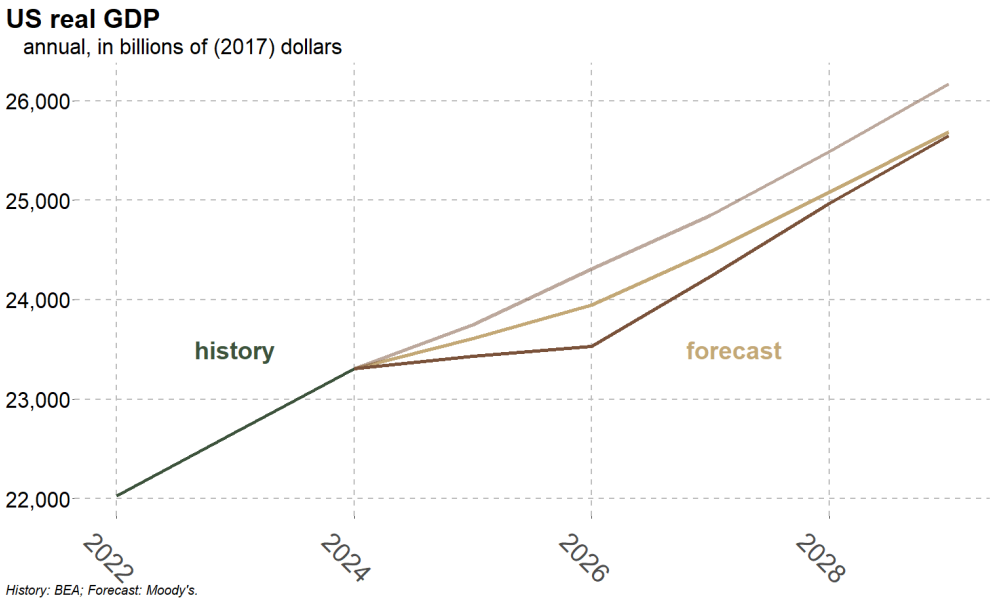
ID forecasts. Idaho's forecast is generally for slower growth. In this edition of the *IEF*, we did not manually adjust the population forecast. The output direct from the numeric model is a bit steep for 2025. Growth is slower in the out-years of the forecast. That is where there is likely to be a revision when we issue the July forecast. Nonfarm jobs are one input into the population equation; as those are revised downwards in this edition, population would be expected to follow.

The wage and personal income data available in this edition of the *IEF* is complete through calendar year 2024. In the prior edition, data was not available for the final half of that year. The new data indicates slower growth in wages and in personal income than had been anticipated.

Apr. '25 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
P. income	$ m	116,676	123,773	132,600	140,290	147,643	155,262	163,610
Wages	$ m	50,513	54,189	56,633	59,059	61,592	64,093	67,027
Population	ct	1,971,122	2,001,619	2,058,079	2,094,334	2,132,143	2,171,225	2,211,901
Nonfarm	jobs	818,518	834,077	852,134	859,793	870,505	883,215	898,938
Dec. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
P. income	$ m	116,676	124,665	134,234	142,182	150,349	159,992	170,651
Wages	$ m	50,513	54,340	58,792	62,858	67,058	71,457	76,226
Population	ct	1,971,122	2,001,619	2,034,195	2,064,203	2,094,737	2,126,478	2,159,336
Nonfarm	jobs	818,518	841,982	870,557	887,699	904,283	922,678	942,519
Oct. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
P. income	$ m	116,676	124,832	133,868	141,921	150,097	159,283	169,290
Wages	$ m	50,513	54,076	58,025	61,838	65,825	70,094	74,668
Population	ct	1,964,726	1,991,348	2,019,872	2,047,359	2,075,422	2,104,274	2,133,907
Nonfarm	jobs	818,518	840,033	867,123	886,606	905,587	924,950	944,596
Jul. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
P. income	$ m	115,750	120,575	126,639	134,344	142,160	150,626	159,616
Wages	$ m	50,843	54,349	58,040	61,309	64,526	67,761	71,207
Population	ct	1,964,726	1,991,425	2,018,403	2,044,996	2,072,399	2,100,652	2,129,620
Nonfarm	jobs	818,518	840,373	860,568	876,062	892,089	908,773	925,438
Apr. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
P. income	$ m	115,989	119,352	127,203	134,696	142,130	150,133	158,693
Wages	$ m	51,051	54,567	58,339	61,798	65,347	69,056	73,105
Population	ct	1,964,726	1,992,911	2,019,231	2,045,836	2,073,301	2,101,656	2,130,765
Nonfarm	jobs	818,458	846,999	864,081	879,665	896,095	913,435	931,017
Jan. '24 forecast		**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	
P. income	$ m	114,900	122,776	129,867	137,495	145,156	153,868	
Wages	$ m	51,170	55,026	58,604	61,994	65,546	69,379	
Population	ct	1,988,810	2,008,714	2,038,713	2,062,648	2,081,655	2,098,946	
Nonfarm	jobs	843,117	877,558	901,856	920,909	936,845	952,591	

Baseline is the median forecast for Moody's. We discuss an upside as well as a downside case.

Alternative forecasts. The baseline forecast, being the median forecast from Moody's, has a particular meaning. It represents the mid-point of the scenarios that Moody's envisions as reasonably likely paths for the economy. The alternative scenarios, particularly those that Moody's characterizes as downside cases, represent plausible paths for the economy, but they each involve timing choices to initiate their deviation from the baseline. Many of these downside scenarios are triggered "immediately."



The value of the downside scenarios is that they represent the scope of what a downside could entail. The timing issues of these scenarios beginning immediately are of much less value in the uses that DFM puts them to. In particular, the use of the economic (jobs, wages, personal income, housing, etc.) forecast is to produce revenue forecasts for the state. The baseline revenue forecast is the one presented to the Governor and the Legislature. The alternative forecasts primarily give an indication as to the scope of likely revisions should those situations arise. Those revision estimates from the alternatives inform the likely magnitudes of revenue forecast revisions to be expected when a subsequent revenue forecast is made, such as in August when the revision to the January forecast is released. Thus, the alternative forecasts provide a planning tool to state leaders.

Here, in the wake of the (first reading) of 2025q1 GDP being -0.3%, there is a reminder that contractions are possible, and they need not be extreme (such as the shut-down one in the spring of 2020). Indeed, in the alternatives presented here, 2025 and 2026 still see some overall growth, though it is tepid in the pessimistic case.

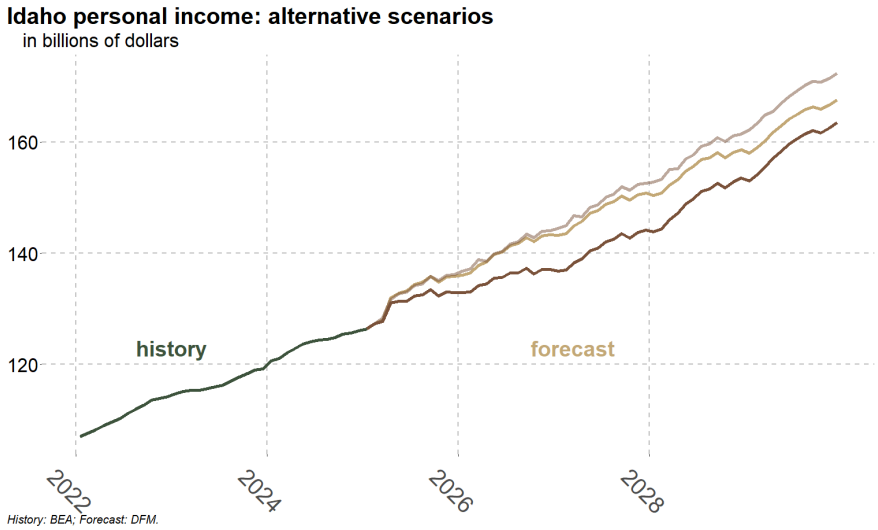
The easy summary from Moody's for the pessimistic case is

> The change in real GDP on an annual average basis is 0.5% in 2025 and 0.4% in 2026, compared with 1.3% and 1.4%, respectively, in each of those years in the baseline. Reduced business investment lowers productivity so that the level of real GDP remains below the baseline indefinitely.

US trajectories. The downside scenario presented here is the mildest one that Moody's details. It entails a two- to three-quarter mild recession beginning in the second quarter of 2025. Jobs recover to the 2024 level by late 2026, but full employment only occurs in the first quarter of 2027. Home prices (median, of existing single-family homes) decline in 2025 and only recover the nominal (not inflation adjusted) values from 2024 in early 2028. Taking account of inflation, they would still be about 6.9% lower in 2028 than the median in 2024.

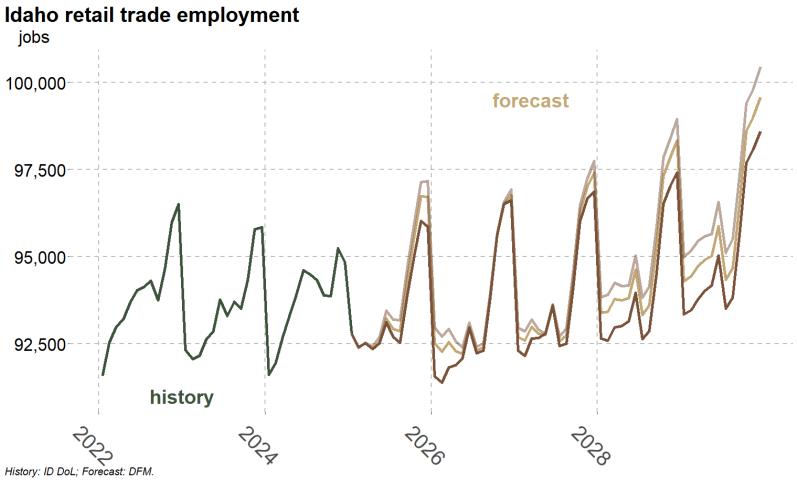
Idaho trajectories. Traditionally Idaho has had its baseline and optimistic scenario adhere closely together, with the pessimistic scenarios deviating quickly (this is a feature of the recessions envisioned for the nation beginning immediately for most of the downside scenarios from the national forecasters) and then in a few years paralleling the baseline. The outlook this time fits that tradition.

Idaho		**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Nonfarm jobs	baseline	798,120	818,520	834,080	852,130	859,790	870,500	883,220	898,940
	pessimistic	798,120	818,520	834,080	845,980	848,740	862,320	876,310	892,990
	optimistic	798,120	818,520	834,080	855,950	866,750	877,100	890,870	907,340
Wages, m $ (ID DoL)	baseline	43,521	46,317	49,975	52,257	54,571	56,984	59,367	62,185
	pessimistic	43,521	46,317	49,975	52,070	53,904	56,139	58,587	61,515
	optimistic	43,521	46,317	49,975	52,487	55,145	57,634	60,154	63,140
Housing stock	baseline	782,662	803,494	822,227	840,520	859,680	879,364	899,658	920,573
	pessimistic	782,662	803,494	822,227	840,491	859,203	878,221	898,062	918,742
	optimistic	782,662	803,494	822,227	840,520	859,685	879,509	900,152	921,641

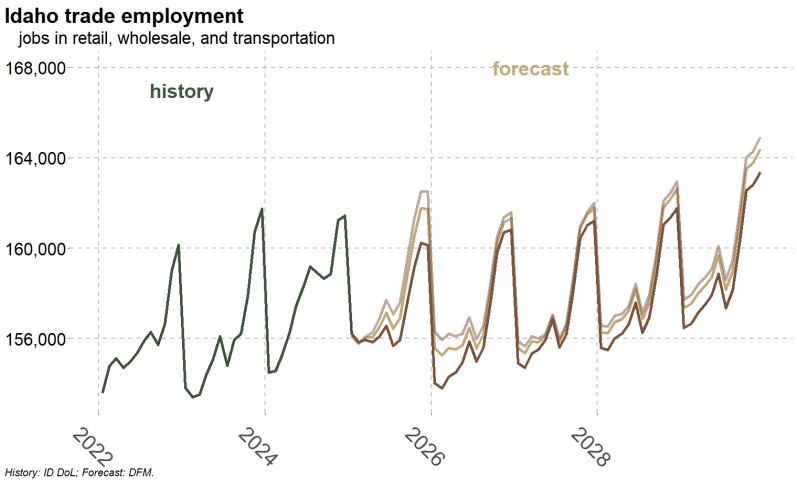


Trade. We have focused upon trade in the prior edition of the *IEF*, and continue to do so again. Tariffs have kept the sector within focus. The (first reading) of the 2025q1 GDP figure of −0.3% does as well. Contractions are often heavily felt within the retail sector. The outlook for the retail sector within Idaho is fairly tightly contained. The pessimistic case is lower in both the peak- and off-seasons in 2025 and 2026, but by 2027, the differences are more muted. In the further-out years, the traditional parallel nature of the overall assessment holds within the retail sector in this edition of the outlook. It is worth noting that the entire range of jobs counts here is largely contained within a 5,000 job band, roughly 92,500–97,5000. It is unlikely that retail will employ over 100,000 in the state before the close of the forecast.

The broader trade sector is also closely watching the tariff situation unfold. Wholesale trade is one more step removed from consumer's discretionary income. However, it is not long before changes in behavior by consumers is felt within the wholesale sector, and the transportation sector with which it often contracts business.



The variation in trade employment is typically within a 10,000 job band. The near-term outlook has this persisting, with very little chance of substantial growth before 2028. It is worth noting, though, that the trade sector overall is about 2/3 as big again as the retail sector alone.



Look ahead. We wrote in the prior edition of the *IEF*:

> At this point, Moody's has made a preliminary assessment of some of the policy changes that the new federal administration is likely to pursue. It is expected that by the April edition of this report, fuller details on those possible policy changes will be better known and modeled, and that some may have already occurred or be ~~with~~in the pipeline. In the latter case, the timing of such policy changes would be better incorporated within the national outlook, and hence within the data that goes into the Idaho economic model.

In this edition, Moody's has made some adjustments to the national outlook, primarily reflecting the tariffs announced at the beginning of April. Moody's anticipated several characteristics of the tariff developments even though it finalized its forecast before all of these have occurred:

> The baseline assumption is that ... tariffs quickly ramp up compared with the March baseline. ... [T]he assumption is that the implementation lags put the effective rate slightly under [the face value of the tariff rates]. Retaliation is assumed to be mild as nations seek to avoid the tariffs and strike deals. We maintain the assumption that the adverse market reaction will induce the ... administration to pull back. Most tariffs are removed starting in the latter half of 2025 and early 2026, except for China ...

The actual top tariff rate (averaged across imports, including exemptions) was anticipated in this April edition of the US forecast by Moody's at 17.5%. Later editions will likely have a different top tariff rate, but the stance of the firm that tariffs would likely peak early and then fade has (so far) come to fruition.

The expectation that Congress would address the expiring provisions of the 2017 Tax Cuts and Jobs Act (TCJA) still remains an expectation; Moody's has built into its baseline forecast that the TCJA is extended till 2035. This will aid the next edition of the *IEF* as it is that forecast that the next General Fund revenue forecast is produced.

Appendix

US Macroeconomic model by Moody's Analytics

Moody's model is a structural model based upon the IS-LM demand model and the Phillips curve for supply. It has about 2,300 variables forecast in their macroeconomic model, with more than 9 in 10 determined within the model (i.e., endogenously, rather than exogenously, or external to the model.) The firm also characterizes the model as a Keynesian model, with short-term fluctuations largely driven by demand. The firm indicates that substantial shocks can take up to two years to unwind back to an equilibrium path.

There are some particular variables which are central in the model. Moody's says:

> The federal funds rate's effect in the model is systemic. It affects the yield curve, which is critical to consumer spending and business investment. Therefore, it affects real GDP growth, the labor market, and inflation.

To illustrate why shocks may take time to dissipate in the model, Moody's also indicates:

> Monetary policy operates with a lag in the model. Eventually the model's inflation and unemployment rate forecasts return to equilibrium, and the federal funds rate follows.

Monetary policy includes setting and adjusting the federal funds rate, but it also includes other tools that the Federal Reserve has. A recent example of this has been both Quantitative Easing (during the acute phase of the pandemic), and its opposite, Quantitative Tightening (during 2022–present).

Moody's organizes its model into blocks: These include

(1) Consumption through consumer spending
(2) Investment
(3) International trade[6]
(4) Fiscal policy
(5) Supply (labor force potential, for example)
(6) Inflation
(7) Monetary policy and its transmittal
(8) Personal Income
(9) Corporate income
(10) Labor markets (actual employment by sector)
(11) Housing

Moody's provides a detailed look at parts of each of these blocks in their model. Doing so takes the firm 25+ pages. To not extend the length of this publication, we will take only a couple of these for further discussion. The few we do are quite parallel to the Idaho economic model.

Moody's indicates that their model is anything but static, much as the US economy.

[6] Moody's emphasises trade in their model.

> Rarely does a month go by when no changes are made to the model. Equations that are no longer performing well are re-specified, and variables are occasionally added to the model as more data become available or the dynamics of the economy change.

Their wording here also applies to the Idaho economic model.

"(5) Supply" means the long-term economic potential of the US. It is governed by innate parts of the economy, including population forecasts. As we have learned, it is difficult to find labor without having a population of workers appropriate for the labor, in location, age, skill, and desire to work. Moody's says:

> Labor force supply is a key determinant of potential GDP, which largely depends on demographics. Population is estimated based on Census Bureau birth and death rates and immigration rates that are determined by the economic performance of the U.S. relative to the rest of the world.

Here we see a couple of potential exogenous variables in the Moody's model, namely the data coming from Census Bureau estimates. We also see that each block can and does interact with other blocks in the Moody's model: here international trade interacts with the population portion of the supply block through the strength of the immigration draw that the US economy represent, or will represent in the future.

Another input in the potential labor force is an estimate of what is called the Non-Accelerating Inflation Rate of Unemployment (NAIRU). This concept is a Phillips curve one: if unemployment rates are too low, inflation is expected to not only be present, but to increase in rate. Such a situation is one that the Federal Reserve works to prevent. One of its two charges by Congress is stable prices; that is, the Fed must not allow accelerating inflation to persist. Thus the NAIRU is important for understanding potential labor force; it is not as simple as computing the 16–64 year-olds in the US. NAIRU is another example of an exogenous variable. In this case:

> We use the [Congressional Budget Office] CBO's long-term NAIRU forecast and make that variable exogenous in our model. We then specify an error correction model to predict the value of short-term NAIRU.

This also indicates that parts of Moody's model may have equations of varying types. We have already seen that Moody's employs demographic models to estimate population. These are different from the Ordinary Least Squares (OLS) equations, which dominate the Labor block 10 of Moody's model.

"(8) The Personal Income" block is illustrative of the pervasiveness of Bureau of Economic Analysis data organization across almost all economic forecasts. Principal parts are wage and salaries, supplements to wages and salaries (that is the BEA name; largely these are benefits such as health insurance), dividends, interest, and rent (modeled separately), and proprietors' income.

> Individual wage and salary categories are modeled as functions of industry employment, industry average hourly earnings, and a broad measure of hours worked.

The personal income block certainly interacts with the labor market block 10. Another interaction is present with the Inflation block 6. While industry average hourly earnings are used for each industry, behind the scenes is average hourly earnings in all private industries. Forecasting that broad measure is "the most important wage equation in the macroeconomic model," though Moody's makes this statement within their discussion of the Employment Cost Index, in order to understand CPI inflation.

Idaho economic model. The Idaho Economic Model (IEM) is an income and employment-based model of Idaho's economy. The Model consists of a simultaneous system of linear regression equations.

These have historically been estimated at the quarterly frequency as that is the frequency of data provided by IHS Markit (our prior provider of the US forecast) as well as Moody's (our current provider of the US forecast). Some of the source data is available at the monthly frequency. Examples of this include personal income for the US (source: BEA), inflation as measured by the Consumer Price Index (CPI inflation, source: BLS), and local employment (source: Idaho Department of Labor — available in quarterly batches of monthly measurement). Where source data is available at the monthly level, it is used[7] and where it is not readily available for our own collection, the monthly version from Moody's is used.

The primary exogenous variables are obtained from the national forecast provider (now Moody's). Endogenous variables are forecast at the state level.

The focal point of the IEM is Idaho personal income, which is given by the identity:

> **personal income = wage and salary payments + other labor income + farm proprietors' income + nonfarm proprietors' income + property income + transfer payments - contributions for social insurance + residence adjustment.**

Except for farm proprietors' income and wage and salary payments, each of the components of personal income is estimated stochastically by a single equation. Farm proprietors' income and wage and salary payments each comprise sub-models containing a system of stochastic equations and identities.

The farm proprietor sector is estimated using a sub-model[8][9] consisting of equations for crop marketing receipts, livestock marketing receipts, production expenses, inventory changes, imputed rent income, corporate farm income, and government payments to farmers. Farm proprietors' income includes inventory changes and imputed rent, but this component is netted out of the tax base.

At the heart of the IEM is the wage and salary sector, which includes stochastic employment equations for North American Industry Classification System employment categories (NAICS). Conceptually, the employment equations are divided into basic and domestic activities. The basic employment equations are specified primarily as functions of national demand and supply variables. Domestic employment equations are specified primarily as functions of state-specific

[7] the quarterly values recorded by the US forecast provider have always been the average values for the corresponding months

[8] As the exogenous variables for the farm model are only available at the annual frequency, the farm model is now computed at that frequency, and monthly values are interpolated from these. The source for the exogenous regressors in the farm model is the FAPRI institute of the University of Missouri, Columbia.

[9] The US Bureau of Economic Analysis has a note indicating that farm income data at the state level has been discontinued; see BEA discontinuation of SAINC45. In the coming publications, DFM will re-model this portion of the computation.

demand variables. Average wage rates are estimated for each of these employment categories and are combined with employment to arrive at aggregate wage and salary payments.

The demographic component of the model is used to forecast components of population change and housing starts. Resident population, births, and deaths are modeled stochastically. Net migration is calculated residually from the estimates for those variables. Housing starts are divided into single and multiple units. We model housing starts on permits based upon equations estimated for the Western US, and for completions upon starts in a similar manner. These are then used to forecast housing stock, which is also estimated by the US Census Bureau. In this last step, we have a check on our housing model.

The output of the IEM (i.e., the forecast values of the endogenous variables) is determined by the parameters of the equations and the values of exogenous variables over the forecast period. The values of equation parameters are determined by the historic values of both the exogenous and endogenous variables. IEM equation parameters are estimated using the technique of ordinary least squares. Model equations are occasionally re-specified in response to the dynamic nature of the Idaho and national economies. Parameter values for a particular equation (given the same specification) may change as a result of revisions in the historic data or a change in the time interval of the estimation. In general, parameter values should remain relatively constant over time, with changes reflecting changing structural relationships.

Like in Moody's US economic model, most equations are specified in log form. This is generically

$$\log(y) = c_0 + c_1 \cdot \log(x_1) + \cdots + c_n \cdot \log(x_n)$$

which means that

$$y = e^{c_0} \cdot x_1^{c_1} \cdots x_n^{c_n} .$$

These mathematical forms are sufficient to enable good fits of the data without overly complicated equations. This helps to avoid "over-fit", which can precipitate small changes of the inputs redirecting the output in unreasonable directions.

While the equation parameters are determined by structural relationships and remain relatively fixed, the forecast period exogenous variable values are more volatile determinants of the forecast values of endogenous variables. They are more often subject to change as expectations regarding future economic behavior change, and they are more likely to give rise to debate over appropriate values. As mentioned above, the forecast period values of exogenous variables are primarily obtained from Moody's US macroeconomic models.

Since the output of the IEM depends in large part upon the output of the US model, an understanding of the US model, its input assumptions, and its output is useful in evaluating the results of the IEM's forecast. The assumptions and output of the US model are discussed in the National Forecast section, and a discussion of the details of the IEM build and of the Moody's follows.

Idaho time series model. The Idaho Time Series Model (ITS)[10] is a new numeric model of Idaho's economic activity. The model consists of sequential equations solved in modules with dependencies such that downstream modules can rely on data forecasted in earlier modules. The regression equations are estimated using time series forecasting techniques covered by the R 'seasonal' package. The package uses the X-13 ARIMA-SEATS method to understand the typical monthly or quarterly trend from data before creating a forecast. The method is a joint development by the US Census Bureau, Stats Canada, and the Bank of Spain. ARIMA models are time-series models, which means they look to prior measurements of a variable in order to understand subsequent measurements of that *same* variable.[11]

The guiding principal of the time series model is to let the data speak for itself and involve exogenous regressors sparingly. Several equations in the model, such as the adult share of the population, are computed exclusively as ARIMAs with no exogenous regressors. Fewer than five equations in the model use more than two exogenous regressors. Time series models tend to produce accurate forecasts, but without the linkages of multiple regression models like the IEM. For time series forecasts it can be difficult to explain why a forecast is evolving in a particular way.

The first module estimates monthly values for Idaho births, deaths, and net migration and combines these to get a measure for monthly change in population. This contrasts with the IEM which treats migration as a residual. The only exogenous regressors used in this portion of the ITS model are mortgage rates, the US unemployment rate, a dummy for COVID-19, and Idaho housing completions, which are provided by Moody's.

The population estimate feeds into the second module, which then estimates values for the monthly adult population, labor force, and employed persons before estimating monthly levels of employment across the standard employment sectors into which the BEA divides the US economy. To do so, this second module begins by using the population number to create forecasts of the total number of adults, the size of the labor force, and then the number of employed persons.[12] These forecasts rely on Local Area Unemployment Statistics (LAUS, a BLS program) numbers.

Once the labor force is understood, the second module continues by using separate regressions for each major NAICS sector, this time using data from the quarterly Current Employment and Wages (QCEW, another BLS program). An "other" category trues these values up to the total number of employed (since LAUS and QCEW use different definitions). This portion of the

[10] The ITS was pioneered by Matthew Hurt; it has been used for the past year+ in forecasting revenue in a blended model with the IEM. Further integration with this report is the next aim.

[11] An example may be illustrative: an ARIMA forecast of housing would look at prior housing permit activity to predict future housing permit activity; a general regression analysis might look towards population trends to predict future housing permit activity. Both can have merits, and a combination of the methods is often used, though one or the other may be the dominant driver in any particular equation analysis, say the equation analysis of housing permits. The population trends in the second approach are an example of an exogenous regressor for housing starts — they are variables which can be supplied externally from the internal computations of the housing permit equation.

[12] Once the employed number and the labor force number are known, the unemployment rate is easily found: the difference between these gives the unemployed count, and dividing by the labor force number gives the unemployment rate.

second module, focusing on employment categories, uses mortgage rates, the US unemployment rate, the US labor force participation rate, the federal funds rate, and CPI as exogenous regressors. However, each individual regression relies at most on two of these exogenous regressors.

The third model estimates wage rates and wagebills for each of the NAICS categories. The IEM and ITS dis-aggregate labor markets in a similar manner, although the ITS has a finer breakdown. One example is the commonly grouped categories such as 22, 48, and 49 (utilities, and transportation sectors), which the ITS keeps fully separate. The principal data for employment and wages come from the Quarterly Census of Employment and Wages (QCEW). The total QCEW wagebill is the ultimate target, as it is a vital exogenous regressor used in the subsequent personal income and GDP modules.

To get to that total QCEW wagebill, separate wagebills for each NAICS category are computed. These wagebills come about as the product of wage rates and employment numbers. Wage rates are estimated via time-series regression for each NAICS category using the unemployment rate in Idaho and the corresponding national wagerates for each NAICS sector.

The first modules all run on monthly data. If exogenous data come from Moody's on a quarterly basis, the ITS first smooths these data to monthly values and then performs the forecast. The personal income and GDP modules rely on quarterly data. When data is imported from earlier modules in the ITS, these data are monthly, so both the personal income and the GDP modules average the monthly data to obtain quarterly data, and these two modules are run. Currently the GDP module is only for state-level real GDP and only uses the total wagebill as an exogenous regressor. The personal income module forecasts many components of personal income and uses the total wagebill in addition to some of the previously described exogenous regressors.

Variables. It is likely that the choice of variables will change slightly across the next two years. Partly, this may reflect removal of what amount to essentially duplications. Partly, this may reflect better integration of the components of the model; like Moody's US model, the Idaho economic model is structured in modules or blocks.

Endogenous variables: These are computed within the Idaho economic model.

id_pi	Idaho personal income
id_supp	Idaho supplementary income
id_dir	Idaho dividends, interest, and rent
id_nonfarm_prop	Idaho nonfarm proprietors' income
id_transfer	Idaho transfer payments
id_ra	Idaho residence adjustment
id_si	Idaho social insurance
id_e1133	Idaho employment in wood products industries
id_mwr1133	Idaho monthly wage rates in wood products industries
id_mwb1133	Idaho monthly wage bill in wood products industries
id_e21	Idaho employment in mining
id_mwr21	Idaho monthly wage rates in mining
id_mwb21	Idaho monthly wage bill in mining
id_e22	Idaho employment in utilities
id_mwr22	Idaho monthly wage rates in utilities
id_mwb22	Idaho monthly wage bill in utilities
id_e23	Idaho employment in construction
id_mwr23	Idaho monthly wage rates in construction
id_mwb23	Idaho monthly wage bill in construction
id_e31	Idaho employment in food manufacturing
id_mwr31	Idaho monthly wage rates in food manufacturing
id_mwb31	Idaho monthly wage bill in food manufacturing
id_e32	Idaho employment in other nondurable manufacturing
id_mwr32	Idaho monthly wage rates in other nondurable manufacturing
id_mwb32	Idaho monthly wage bill in other nondurable manufacturing
id_e33	Idaho employment in durable manufacturing
id_mwr33	Idaho monthly wage rates in durable manufacturing
id_mwb33	Idaho monthly wage bill in durable manufacturing
id_e42	Idaho employment in wholesale trade
id_mwr42	Idaho monthly wage rates in wholesale trade
id_mwb42	Idaho monthly wage bill in wholesale trade
id_e44	Idaho employment in retail trade
id_mwr44	Idaho monthly wage rates in retail trade
id_mwb44	Idaho monthly wage bill in retail trade

id_e45	Idaho employment in other retail trade
id_mwr45	Idaho monthly wage rates in other retail trade
id_mwb45	Idaho monthly wage bill in other retail trade
id_e48	Idaho employment in transportation
id_mwr48	Idaho monthly wage rates in transportation
id_mwb48	Idaho monthly wage bill in transportation
id_e49	Idaho employment in delivery and warehousing
id_mwr49	Idaho monthly wage rates in delivery and warehousing
id_mwb49	Idaho monthly wage bill in delivery and warehousing
id_e51	Idaho employment in information
id_mwr51	Idaho monthly wage rates in information
id_mwb51	Idaho monthly wage bill in information
id_e52	Idaho employment in finance and insurance
id_mwr52	Idaho monthly wage rates in finance and insurance
id_mwb52	Idaho monthly wage bill in finance and insurance
id_e53	Idaho employment in real-estate
id_mwr53	Idaho monthly wage rates in real-estate
id_mwb53	Idaho monthly wage bill in real-estate
id_e54	Idaho employment in professional services
id_mwr54	Idaho monthly wage rates in professional services
id_mwb54	Idaho monthly wage bill in professional services
id_e55	Idaho employment in management
id_mwr55	Idaho monthly wage rates in management
id_mwb55	Idaho monthly wage bill in management
id_e56	Idaho employment in administrative services
id_mwr56	Idaho monthly wage rates in administrative services
id_mwb56	Idaho monthly wage bill in administrative services
id_e61	Idaho employment in private education
id_mwr61	Idaho monthly wage rates in private education
id_mwb61	Idaho monthly wage bill in private education
id_e61gsed	Idaho employment in state education
id_mwr61gsed	Idaho monthly wage rates in state education
id_mwb61gsed	Idaho monthly wage bill in state education
id_e61gled	Idaho employment in local education
id_mwr61gled	Idaho monthly wage rates in local education
id_mwb61gled	Idaho monthly wage bill in local education

id_e62	Idaho employment in private healthcare
id_mwr62	Idaho monthly wage rates in private healthcare
id_mwb62	Idaho monthly wage bill in private healthcare
id_e62gshl	Idaho employment in state healthcare
id_mwr62gshl	Idaho monthly wage rates in state healthcare
id_mwb62gshl	Idaho monthly wage bill in state healthcare
id_e62glhl	Idaho employment in local healthcare
id_mwr62glhl	Idaho monthly wage rates in local healthcare
id_mwb62glhl	Idaho monthly wage bill in local healthcare
id_e62gvfhl	Idaho employment in federal healthcare
id_mwr62gvfhl	Idaho monthly wage rates in federal healthcare
id_mwb62gvfh	Idaho monthly wage bill in federal healthcare
id_e71	Idaho employment in hospitality
id_mwr71	Idaho monthly wage rates in hospitality
id_mwb71	Idaho monthly wage bill in hospitality
id_e72	Idaho employment in arts
id_mwr72	Idaho monthly wage rates in arts
id_mwb72	Idaho monthly wage bill in arts
id_e81	Idaho employment in other services
id_mwr81	Idaho monthly wage rates in other services
id_mwb81	Idaho monthly wage bill in other services
id_e92gsad	Idaho employment in state administration
id_mwr92gsad	Idaho monthly wage rates in state administration
id_mwb92gsad	Idaho monthly wage bill in state administration
id_e92glad	Idaho employment in local administration
id_mwr92glad	Idaho monthly wage rates in local administration
id_mwb92glad	Idaho monthly wage bill in local administration
id_e92gvf	Idaho employment in federal administration
id_mwr92gvf	Idaho monthly wage rates in federal administration
id_mwb92gvf	Idaho monthly wage bill in federal administration
id_etribes	Idaho tribal employment
id_mwrtribes	Idaho monthly wage rates for tribal employment
id_mwbtribes	Idaho monthly wage bill for tribal employment
idp_sf	Idaho single-family housing permits
idp_mf	Idaho multi-family housing permits
ids_sf	Idaho single-family housing starts
ids_mf	Idaho multi-family housing starts
idc_sf	Idaho single-family housing completions
idc_mf	Idaho multi-family housing completions

wp_sf	western single-family housing permits
wp_mf	western multi-family housing permits
ws_sf	western single-family housing starts
ws_mf	western multi-family housing starts
wc_sf	western single-family housing completions
wc_mf	western multi-family housing completions
m_idhstk	monthly Idaho housing stock
id0npt	Idaho population
id0nb	Idaho births
id0nd	Idaho deaths
id0nmg	Idaho net migration
id_cow	Idaho income from cattle
id_crop	Idaho income from crops
id_dairy	Idaho income from dairy
id_farm_chem	Idaho farm expenditures on chemicals
id_farm_exp	Idaho farm expenditures
id_farm_gvt	federal transfers to Idaho farms
id_farm_other	other farm income
id_farm_petro	Idaho farm expenditures on fuels
id_farm_prop	Idaho farm proprietors' income
id_farm_receipts	total Idaho farm receipts
id_feed	Idaho farm expenditures on feed
id_hay	Idaho income from hay and related feeds
id_lvstk	Idaho income from livestock
id_seed	Idaho farm expenditures on seed
id_veg	Idaho farm income from vegetables
id_wheat	Idaho farm income from wheat
id_farm_corp	corporate farm income in Idaho
id_farm_inv	Idaho farm inventory change
us_farm_corp	corporate farm income in the US
us_farm_inv	US farm inventory change
us_cow	US farm income from cattle
us_farm_exp	US farm expenditures
us_farm_other	other US farm income
us_farm_petro	US farm expenses on fuel
us_farm_prop	US farm proprietors' income
us_farm_receipts	total US farm receipts
us_hay	US farm income from hay and related feeds
us_lvstk	US farm income from livestock
us_veg	US farm income from vegetables
us_wheat	US farm income from wheat

Exogenous variables: These are imported into the Idaho economic model from outside sources.

cpi	consumer price index
dum_id_e1133_a	employment dummy for wood products
dum_id_e21	employment dummy for mining
dum_id_e23	employment dummy for construction
dum_id_e44	employment dummy for retail trade
dum_id_e45	employment dummy for other retail trade
dum_id_e48	employment dummy for transportation
dum_id_e49	employment dummy for delivery and warehousing
dum_id_e53	employment dummy for real-estate
dum_id_e56	employment dummy for administration
dum_id_e61gled	employment dummy for local education
dum_id_e61gsed	employment dummy for state education
dum_id_e62gshl	employment dummy for state healthcare
dum_id_e71	employment dummy for hospitality
dum_id_e72	employment dummy for arts
dum_id_farm_other	employment dummy for other farm income
dum_id_farm_prop	employment dummy for farm proprietors' income
dum_id_farm_receipts	employment dummy for total farm receipts
dum_id_lvstk	employment dummy for farm income from livestock
dum_id_mwr1133	employment dummy for woods products wage rates
dum_id_mwr23	employment dummy for construction wage rates
dum_id_mwr33	employment dummy for durable manufacturing wage rates
dum_id_mwr62	employment dummy for healthcare wage rates
dum_shift_id_farm_corp	employment dummy for corporate farm income
dum_shift_id_farm_inv	employment dummy for farm inventories
dum_shift_us_farm_corp	employment dummy for corporate farm income
ffr	federal funds rate
gdp_farm	GDP from the US farm sector
gdpr	real US GDP
hhaf	household financial assets
hhao	other household assets
ip321	industrial production index for wood products
ip322	industrial production index for paper manufacturing
ip334	industrial production index for semi-conductor industry
ip335	industrial production index for electrical equipment
jpc	personal consumption expenditure inflation

lfpr	US labor force participation rate
mf_farm_pi_af	Moody's farm personal income from all products
mf_farm_pi_lp	Moody's farm personal income from livestock
mf_gdp_farm	Moody's farm GDP
mf_idp_sf	Moody's Idaho single-family permits
mf_idp_mf	Moody's Idaho multi-family permits
mf_ppi_farm	Moody's producer price index for farm products
mf_ppi_metals	Moody's producer price index for metals
mf_us_mwr23	Moody's monthly wage rates in construction
mf_us_mwr42	Moody's monthly wage rates in wholesale trade
mf_us_mwr44_45	Moody's monthly wage rates in retail trade
mf_us_mwr51	Moody's monthly wage rates in information
mf_us_mwr52	Moody's monthly wage rates in finance
mf_us_mwr53	Moody's monthly wage rates in real-estate
mf_us_mwr54	Moody's monthly wage rates in professional services
mf_us_mwr55	Moody's monthly wage rates in management
mf_us_mwr56	Moody's monthly wage rates in administration
mf_us_mwr61	Moody's monthly wage rates in private education
mf_us_mwr62	Moody's monthly wage rates in healthcare
mf_us_mwr71	Moody's monthly wage rates in hospitality
mf_us_mwr72	Moody's monthly wage rates in arts
mf_us_mwr81	Moody's monthly wage rates in other services
mf_us_mwrndmf	Moody's monthly wage rates in nondurable manufacturing
mf_us_mwrtw	Moody's monthly wage rates in transportation and warehousing
mf_us_mwrgvsl	Moody's monthly wage rates in state and local government
minwage	Moody's forecast for the minimum wage
month	1–12
pmms	average 30-year mortgage rates
productivity	Moody's index for productivity
trend	an increment increasing by 1 each month
u3_nsa	the US U-3 unemployment rate, not seasonally adjusted
us_crop	US crop income
us_dairy	US dairy income
us_div_int	US dividends, interest, and rent income
us_e1133	US employment in wood products
us_e22	US utilities employment
us_e23	US construction employment
us_e42	US wholesale trade employment
us_e44_45	US retail trade employment
us_e52	US finance employment
us_e53	US real-estate employment
us_e56	US management employment

us_e61	US private education employment
us_e62	US healthcare employment
us_edmf	US durable manufacturing employment
us_egvf	US federal government employment
us_egvsl	State and local government employment across the US
us_endmf	US non-durable manufacturing employment
us_etw	US employment in transportation and warehousing
us_farm_chem	US farm expenditures on chemicals
us_farm_gvt	government transfers to US farms
us_feed	US expenditures on farm feeds
us_nonfarm_prop_mf	Moody's forecast of US nonfarm proprietors' incomes
us_pop_tot	US population
us_rent	US income from rent
us_seed	US farm expenses for seed
us_si	US social insurance
us_supp	US supplementary income
us_transfer	federal transfer payments
us_wb_tot	total wages in the US