Idaho Economic Forecast

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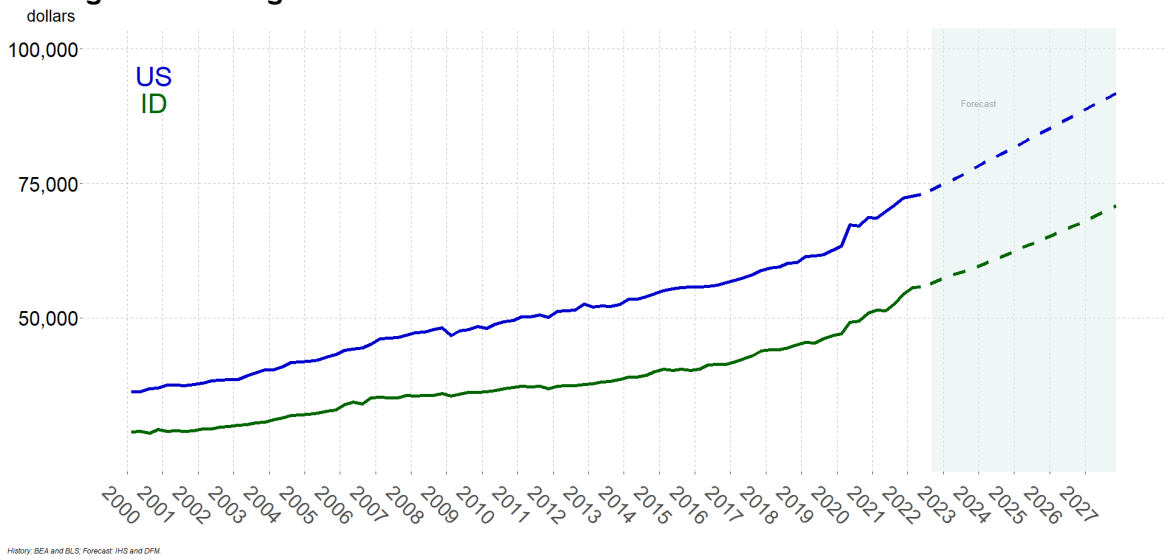
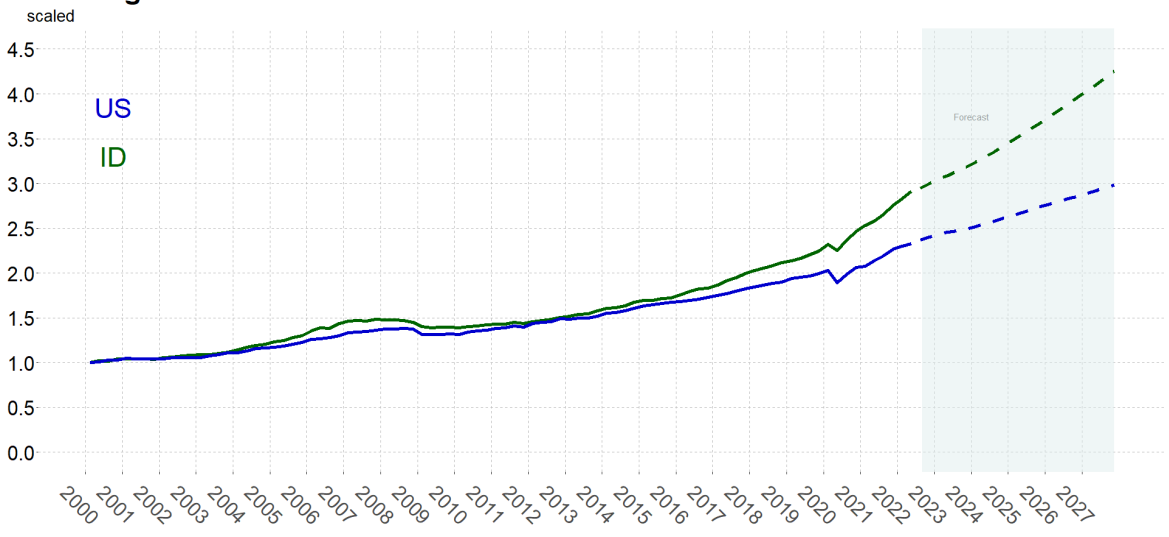
- **Forecast begins the third quarter of 2022**
- **Alternative forecasts**

Average annual wage forecast



History: BEA and BLS; Forecast: IHS and DFM.

Total wages



History: BEA; Forecast: IHS and DFM.

Idaho Economic Forecast 2022–2027

State of Idaho
BRAD LITTLE
Governor

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Introduction

This document summarizes Idaho's economic forecast for 2022 through 2027. The primary national forecast in this report is the December 2022 IHS Markit baseline forecast. IHS is now part of S&P Global. The Idaho economic model takes this national forecast as an input.

Alternative assumptions concerning future movements of key economic variables can lead to major variations in national and/or regional outlooks. IHS examines the effects of different economic scenarios, including the potential impacts of global economic conditions, higher inflation, and future Federal Reserve Open Market Committee decisions. Alternative Idaho economic forecasts are developed under different policy and growth scenarios at the national level. Three of these forecasts are included in this report.

The Idaho Department of Labor provides monthly historical employment data that are then seasonally adjusted and converted to quarterly frequencies by DFM. For this report, historical employment data is complete through the second quarter of 2022 while personal income data is complete through the third quarter at the national level and second quarter at the state level, just as it was in October. Personal income for the third quarter for the state will be released on December 23, too late for computational incorporation into this report.

The Idaho economic forecast has historically included an article from one of the Federal Reserve Banks. In this edition we continue to suggest that as an educational resource to readers. The relevant link is https://www.frbsf.org/economic-research/publications/economic-letter/ for the Federal Reserve Bank of San Francisco. The bank provided its view of the economic outlook on (December 2), but other publications in the short-note format include the interaction between news and actual inflation (November 14), and the federal funds rate and broader monetary policy (November 7), among other interesting topics. These are among the many resources this publication references via pdf link.

Historical and forecast data for Idaho are available. These are now provided via this link within this pdf document.

Cover. January traditionally places a forecast for personal income on the cover of this publication. This time we include a view of wages per nonfarm job, for the US as well as for Idaho as well as relative growth in total wages for both the US and Idaho. Tying these together is how important job growth within Idaho is for total wage growth. As wages make about 2/5ths of total personal income, job growth is also very important for total personal income growth.

Readers with any questions should contact Greg Piepmeyer or Matthew Hurt at (208) 334-3900 or via email using greg.piepmeyer@dfm.idaho.gov or matthew.hurt@dfm.idaho.gov.

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Summary

The October forecast raised the question of whether the economy is headed for a recession or if a recession had already begun. The last three quarters 2022q1–q3 of economic data have been positive and consistently better than forecasters expectations. When the October forecast was released, IHS *was* predicting a shallow recession starting fourth quarter 2022 and ending in second quarter 2023. After months of better than expected data, IHS is *now* forecasting economic growth in fourth quarter 2022 and an even shallower downturn in the first half of 2023 than before. While the risks of recession in the first half of 2023 are still present, the magnitude of risks seems less now than it did in October.

In light of these new data and changing risk environment, we maintain that the state will continue to perform well relative to the national average. Our forecast of the next five years looks considerably like the strong economy we had before the onset of the pandemic.

Our Economic Outlook section shows that Idaho jobs, population, wages, and income are all set to grow, and grow faster than the rest of the nation. We believe Idaho jobs grew 3.6 percent in 2022 and will continue to grow 2.6 to 3 percent over the next five years. Our inflation adjusted predictions for wage and personal income growth are above 4 percent for 2024 and beyond, with inflation adjusted personal income growth of 3 percent in 2023.

Idaho is expected to pass the two million person threshold sometime in 2024 to early 2026. After leading the nation in population growth in 2020 and 2021 by healthy margins, Idaho was the second quickest this past year. Idaho's population is estimated to include 1.94 million people. Net migration to the state was around 30 thousand. This report includes a discussion of migration for the state. We expect net migration to remain in the 25–30 thousand range for the next few years as Idaho's economic fundamentals continue to attract new migrants.

Even the pessimistic forecast still sees job growth in Idaho over the next five years. Wage growth is also expected to be strong in the pessimistic case and not substantially worse than in the baseline. Annual wage growth is always expected to be above 5 percent, and near 7 percent by 2025. The pessimistic model has more predicted housing starts since the pessimistic scenario from IHS assumes tougher economic conditions which push the Federal Reserve to bring interest rates down earlier and further. The optimistic scenario is expecting about 3 more jobs in Idaho than the baseline forecast by the close of 2023, with that roughly persisting through 2027. With nonfarm jobs expected to cross above 900 thousand by 2025, the optimistic case is again quite similar to the baseline case for Idaho. This has been the situation for several years.

Expected Idaho growth since 2022q2

		2022Q3	2022Q4	2023Q1	2023Q2	2023Q3	2023Q4	2024Q1	2024Q2
Pop	base	8,500	15,900	23,100	29,600	35,900	42,500	49,400	56,600
	opt.	8,500	16,000	23,400	30,200	36,900	43,800	50,800	58,100
	pes.	8,500	15,800	22,800	28,800	34,300	39,800	45,400	51,600
Nonfarm	base	3,200	9,400	14,200	19,000	24,100	29,500	34,800	40,900
	opt.	3,200	9,700	15,300	21,300	27,200	32,700	38,200	44,600
	pes.	3,200	9,000	12,700	15,700	18,100	20,800	23,500	28,000

Current economic conditions

The summary measure of the US economy is real GDP. Real GDP is preferred to nominal GDP when performing economic analysis because it removes inflation from the analysis. Inflation remains elevated. The table lists historic and expected real GDP growth rates. The boundary between history and forecast of course differs per line.[1]

Real US GDP	2019	2020	2021	2022	2023	2024	2025	2026	2027
Current	2.29	-2.77	5.95	1.91	0.27	1.84	1.99	1.81	1.64
October '22	2.29	-2.77	5.95	1.71	-0.47	1.29	2.04	2.00	1.74
January '22	2.29	-3.40	5.48	4.31	2.85	2.71	2.59	2.56	2.32
January '21	2.16	-3.55	3.09	2.54	2.47	2.92	2.99	2.72	2.62

The table shows that the most recent forecast avoids negative real GDP growth in any future year. Growth is now higher for 2022–2024 than seen in October. The new numbers do expect a slowdown in 2025 and beyond. Some of this is likely a mechanical result of the IHS model. A way to think about that is: a milder recession makes inflation less likely to come down, and it makes the Federal Reserve less likely to quickly lower interest rates. Higher rates can be a drag on GDP growth, and simultaneously, higher inflation requires higher nominal GDP growth to attain the same real GDP growth.

IHS releases updates to its GDP outlook, similar to how Federal Reserve banks track the economy. These "nowcasts" take in the latest data. The December 28 nowcast by IHS, for the fourth quarter 2022 is 2.3 percent on an annualized basis. The earliest 2022q4 IHS nowcast, made back in July, was for 1.7 percent. This illustrates that there are many estimates of GDP, both across time and across estimating outfit. IHS judges its own efforts on GDP forecasting with regard to a set of professional forecasts made by other large financial institutions and professional forecasting services, which are then aggregated into the "panel forecast". Initially IHS was more optimistic than the panel forecast of zero percent before becoming significantly more negative in October. These nowcasts do inform the values placed in the IHS forecasts for US GDP released each month.

IHS has continued to steadily increase its forecast for 2022q4 since its October edition. The December baseline forecast is 0.7 percent real GDP growth, released December 5. IHS still sees slowdowns in investment and construction. IHS has consistently remarked about how consumption levels remain above their estimates the firm and speculates that families are choosing to use savings to maintain consumption rather than scale back. IHS has also revised up its third quarter real GDP estimate from 2.9 to 3.2 percent to match the third estimate by the US Bureau of Economic Analysis (BEA).

One example of why consumption can remain strong while new construction and investment weakens can be illustrated by the automobile market. Supply chain constraints caused the prices

[1] Since fourth quarter 2022 real GDP numbers are pending at this time the growth for 2022 should be treated as forecast.

of new and used automobiles to increase substantially, and demand has still not been met. Most recessions are particularly painful for the automobile market, but IHS expects automobile sales to remain strong as supply chain issues ease. Rental fleets need to upgrade, and consumers who delayed purchases over the last few years might be able to take advantage of lower prices. Used car prices have started to fall at the wholesale level.

The IHS December forecast assumes continuing payments already allocated under the various pandemic relief measures. IHS expects these relief payments to approach zero in 2023 due to the structure of that federal legislation. The forecast assumes student loan forbearance through August, but it does not include debt forgiveness. The expectation is for the Federal Reserve to raise its short-term interest rate to 5 percent by March 2023. IHS expects tariffs between the US and China enacted in 2017 to remain in effect. They expect the price of oil to ease to $84 per barrel by late 2023 despite production cuts and sanctions on Russian exports.

Migration. Outlining the four subsections on this topic, we will present summary information on state-level population and housing; then summary information on net migration to the state back through 1991; next, we study the net migration relationship between Idaho and California; lastly, we present findings for five Idaho counties: Fremont, Gooding, Elmore, Shoshone, and Franklin.

However, first we give some context: in 1990 the state of Idaho had a population of just over one million people. With the state's most recent population estimate for 2022 of 1.94 million, we are set to cross the two million person threshold some time this decade. Data from the US Census and Internal Revenue Service (IRS) allow us to understand these changes.[2] The main driver of this growth has been migration from other states. The Census estimates for July 1 of 2022[3] are that population increased through natural means by 3,700 (births minus deaths) while net migration increased the state's population by 30,500. Total migration into the state is estimated by the Census Bureau at over 91 thousand since April 1, 2020. Migration into the state has not always been this large, but has often played a significant role in driving Idaho's growth. Migration into Idaho is forecast for a bit under 27 thousand in each of 2023 and 2024.

Idaho housing and population. According to the Census Bureau's Population Estimates Program Vintage 2021 data, Idaho grew faster than any other state in 2021 (2.9 percent) and 2020 (3.4 percent). In 2021 Idaho added 4,400 new people through natural increases and more than 49,000 due to net migration. Migration into Idaho in 2022 was already slower than the breakneck pace of migration in 2020 and 2021, even with the hot housing market of the first half of the year. The Boise area housing market received national attention as the most overvalued housing market in the country.

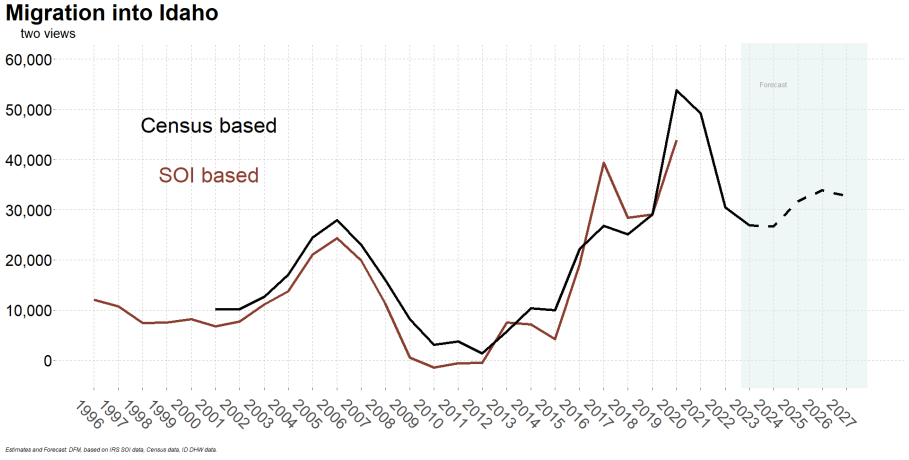
[2] The Census Bureau has access to the same IRS data in addition to many other data sources. Thus the Census's view is the most complete with regard to demography. However, the IRS data does provide some other insights, and seeing how the IRS data lines up against the more complete Census data can indicate the confidence we may draw on these other insights.

[3] Note that Census estimates correspond with the starts of Idaho fiscal years. Thus year changes in the Census estimate represent fiscal year changes.

Our forecast for net migration into Idaho for the full calendar year 2022 has recently been as high as 44,000. It now appears likely that migration will be found to be below expectations. The housing market in Idaho is cooling down. Statewide 1,500 homes were sold in November, down 41 percent year over year. Newly listed homes are also down 36 percent year over year. Home sale prices are mostly flat across the state, but mask significant variation across metropolitan areas. Reports indicate Twin Falls and Lewiston are still having price increases while Boise and Coeur d'Alene are seeing home prices come down. The Wall Street Journal reported that "the median sales price in Idaho's Ada County, which includes Boise, fell 2.5 percent in November from a year earlier, according to Boise Regional Realtors."

We still continue to expect sizable levels of net migration into Idaho over the next five years. Each year between 2023 and 2027 we expect more than 25 thousand net migrants. Given the changing demand structure for housing, higher prices, and a higher interest rate environment, our model expects the total housing stock to increase to meet the needs of a growing population, but at a slower rate. Between 2018–2020 the Idaho housing stock increased more than 2 percent each year. Even with significant migration in 2021 the stock only increased 1.8 percent. We expect that in 2022 and beyond the housing stock will increase around 1.4 percent.

Net Migration By Year. One measure of net migration into the state uses data from the IRS Statistics of Income (SOI) which provide county-to-county counts of all outflows and inflows measured by the total number of filers, total number of exemptions claimed, and from 1993 onward the total Adjusted Gross Income (AGI).[4] This allows us to get a sense of the changes in income created by migration. For now, we work with state level summary data provided by SIO to determine net migration into the state.



While many Idahoans file taxes and many claim dependents, relying on data from the IRS will lead to an under-count of actual migration. To remedy this we use county level population data from the Census to scale the SOI's net migration based on the share of claimed exemptions compared to Census population estimates. The result is the first figure in this section which displays net migration into the state from 1996 through 2021 from Census population estimates

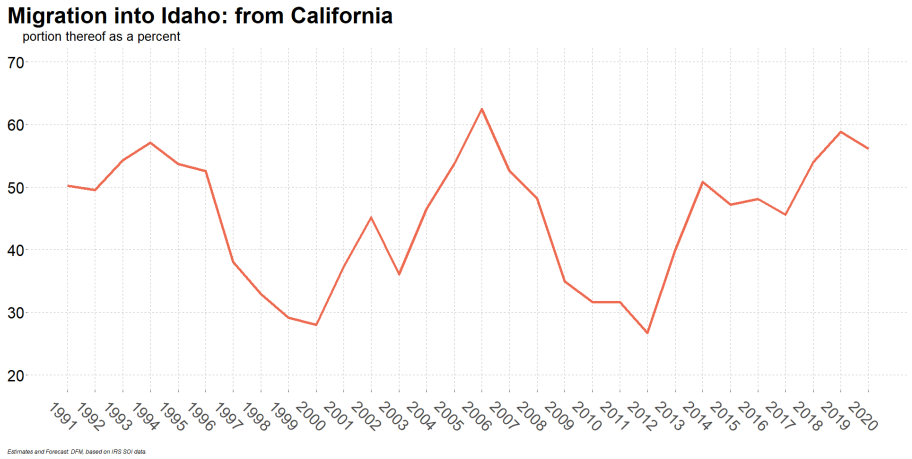
[4] To help preserve anonymity SOI does not report county to county moves with less than twenty filers. AGI information is not reported by the Census Bureau's Population Estimates Program, so this is additional information available within the SOI data.

along with our scaled values constructed using SIO data. The Census data we have go back through 2001. Also, Census data is released sooner than SOI data is released to the public. Thus the line in the graph based upon Census data extends further to the right before the DFM forecast is shown by the dashed line within the shaded forecast region.

The SOI based series shows a slight decrease in net migration into the state from 1996 to 2001. Both lines within the figure then show an increase in migration peaking right before the Great Recession in 2006. After the housing market crash, net migration fell off quickly, bottoming out around 2010 or 2012 depending on which series you follow. The estimates using tax data show not only a decline, but net migration being outbound between 2010 and 2012.

Both series agree that net migration into the state increased substantially after 2015. Net migration estimated using tax data increased from less than five thousand in 2015 to almost fifty thousand for 2021. The Census estimates disagree with the tax data on 2017 and 2020. Census data shows substantially fewer people moved to Idaho in 2017 while an additional ten thousand came to the state in 2020. Levels of net migration around fifty thousand are likely to be difficult to sustain. One of the primary draws of Idaho has been its lower cost of living. Higher prices are an adjustment to the rapid migration influx by Idaho's housing market. Higher prices, and higher interest rates set by the Federal Reserve to mitigate inflation, could lead to less net migration into the state in the future.

Even so, there are many attractive qualities about the state beyond housing affordability. One is an unemployment rate one percentage point lower than most of our neighboring states, including the three continental Pacific states. If net migration settles around twenty-five thousand for 2022 and beyond, the state would still expect to cross the two million threshold by 2025. Net migration would have to regress to 2015 levels, or the state would have to experience another significant mortality shock, to keep from crossing the two million population threshold by the end of the decade.



California's Role in Net Migration. [5] California is the largest state by population. It is also relatively near Idaho. Unsurprisingly, it has dominated net migration into Idaho since at least

[5] In SOI data, if not offset by other individual movers, we could see a single person as moving from Idaho to California one year, and then a moving back from California to Idaho the next. In SOI data, the first move is an Idahoan moving to California, and though it is the same individual, the second move would be a Californian moving to Idaho. In this report we will use common terms like Idahoan or Californian to denote where someone was in the previous year.

the early 1990s. Using tax data, the figure shows that people moving from California always made up at least twenty-five percent of all net migration into the state and upon occasion, at most a bit over sixty percent. In thirteen of the thirty years, people moving from California made up half or more of all movers. What is not shown in the figure is that even when Californians did not make up half or more of all net movers they always made up the plurality, that is, the largest chunk, of net movers. It may be that fluctuations in California's net migration into Idaho causes changes in the overall level of net migration into Idaho.

Average adjusted gross income per filer moving to/from Idaho

	California			All States		
Years	from ID	to ID	ID gain	from ID	to ID	ID gain
1993–1995	$20,605	$30,498	$9,894	$23,272	$26,776	$3,504
1996–2000	$31,048	$38,348	$7,300	$29,257	$33,864	$4,607
2001–2005	$34,892	$47,178	$12,285	$34,014	$39,375	$5,361
2006–2010	$39,184	$50,050	$10,866	$39,440	$43,240	$3,799
2011–2015	$49,823	$70,277	$20,454	$44,107	$50,535	$6,428
2016–2020	$53,105	$93,001	$39,896	$51,256	$71,247	$19,991

Looking at differences in adjusted gross income per filer, the AGI per filer was larger for incoming Californians than it was for outbound Idahoans heading to California in all but two years. These gaps were often substantial, with the last five years seeing gaps of more than $30 thousand and a gap in 2020 of $50 thousand. This validates the idea that economically fortunate Californians have made up a disproportionately large share of migrants into the state, but this story is broadly consistent with the trends seen by all other states into Idaho. The table highlights that migration in the last five years reflects a continuing trend of migrants into the state having increasing means compared to Idahoans leaving the state.

Case Studies. There is a temptation when discussing migration and Idaho to focus on the fastest growing counties (Teton) or counties with the largest flows of migrants (Ada, Canyon, or Kootenai). In future reports these counties will receive an appropriate amount of attention. For now we want to use this last section to explore the migration patterns of five counties based on another selection criteria: medians. Shoshone and Franklin were the median counties based on 2021 population. Fremont and Gooding were the median counties based on 1990 population. Gooding and Elmore were the median counties based on population growth between 1990 and 2021, growing around 1.1 percent each year.

Shoshone County is a northern Idaho county with estimated 2021 population of 13,612. Its nearest major urban area is Coeur d'Alene, and it shares a border with Montana. It is one of two counties that have population decline between 1990 and 2021. In 2020 net migration within Idaho[6] resulted in 90 additional exemptions and $184 thousand in AGI being added to the county. Net migration with other states resulted in 200 tax filers and $6.27 million being added in AGI. This means that the Idahoans moving into and out of Shoshone county had fairly similar income

[6] migration within Idaho means moving from one county of Idaho to another county of Idaho

levels (the average of the net differences is $2 thousand per filer) while the migrants from out of state into Shoshone County were significantly wealthier than the people moving from Shoshone to other states (the average of the net differences is instead $31 thousand).

The two counties Shoshone shares the most in- and out-migration with are Kootenai and Spokane counties. This is inline with general economic theory of migration, which rests upon the gravity model. The gravity model predicts that migration flows will be greater between two regions when there are fewer migration frictions (often fewer frictions means less physical distance) as well as when the two regions are larger. Shoshone county "trades" people with Kootenai County because it is close and large. It trades with Spokane County because Spokane is especially large and not too far away. Shoshone does not trade in significant volumes with its other neighboring counties due to their small populations.

In the southwest corner of the state, Franklin County has added almost 5,500 people since 1990 and has grown quickly, around 1.8 percent annually since then. The county borders the state of Utah and four Idaho counties. In 2020, Franklin's migration with other Idaho counties resulted in almost no change in net returns, but did add $516 thousand in AGI to the county. Migration with other states resulted in around 300 net exemptions being added to the county along with $8.6 million in AGI.

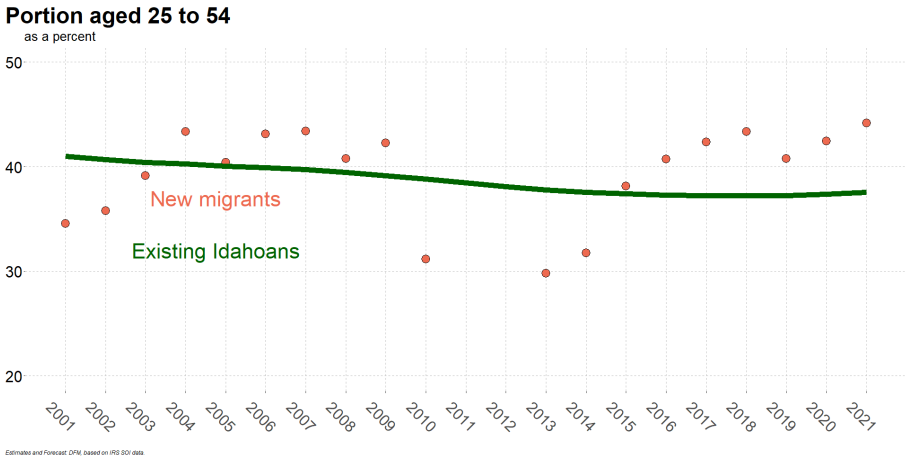
The largest source of migration into Franklin County has consistently come from the neighboring Utah county of Cache, though in some years, Bannock County has sent more than the twenty filers necessary for the IRS to list the migration activity and still preserve anonymity of those filers. When residents of Franklin County leave, Cache County is their primary destination. The AGI per filer of people moving from Cache County into Franklin County is around $6 thousand more than the AGI per filer of people moving from Franklin County to Cache County.

Fremont County is in the eastern part of the state, bordering Montana and Wyoming. Its growth has been slower than average growth since 1990, which is consistent with being the median population county in 1990, but below median in population in 2021. Net migration in 2020 did not add much to Fremont's population. The county lost migrants to other Idaho counties, but was a net receiver of out-of-state migrants. In both cases migration resulted in an increase in net AGI for the county, meaning that the Idahoans leaving Fremont County for other parts of the state tended to have less AGI than the Idahoans moving in. In 2020 the largest sources of migration into and out of Fremont came from nearby Madison, Bonneville, and Jefferson counties.

The south-central county of Gooding is the first on our list not to share a border with another state. Growing at 1.1 percent annually since 1990, the county represents both the median level of growth, but was also a median county in 1990. Adding 4 thousand people since then, it is now one notch above median in 2021 population totals. Net migration in 2020 resulted in an additional 250 exemptions moving to the county. These people came both from other counties in the state and other states. Twin Falls County and Jerome County are by far the largest sources of migration into Gooding County, but Ada and Lincoln also contribute. Twin Falls and Jerome counties are also the largest destinations for Idahoans leaving Gooding County.

Elmore County in southwest Idaho highlights the limitations of relying on tax data to study migration. According to the Census, the county has grown 1.12 percent annually since 1990, adding more than 7,500 people. However, according to the tax data, migration for Elmore County has usually resulted in declines in returns, filers, and AGI. In 2020 it led to a net decline in AGI of $1.5 million. In 2018 it led to a decline of more than $6 million. The Mountain Home Air Force Base is within the county, and differences in the methodology the Census and IRS for military personnel, probably explains why the Census shows growth while the IRS data show regular declines due to migration.

Labor markets. A reoccurring question has been if all the new arrivals are already retired. Migration into the state covers the entire age spectrum, with plenty of people of traditional working age and their children becoming Idahoans each year. While it is true that many come to Idaho to retire, and Idaho's average age increases every year, in many years net migrants into the state have a higher share of prime working-age individuals than Idaho does. The figure shows that the share of Idaho's population between age 25 to 55 has been falling regularly since 2001. Other than the early 2000s, and the down migration years from 2010–2014, net migrants have included a larger share of prime working-age individuals than the corresponding share in Idaho. In other words, the contraction in Idaho of prime-age workers would be worse without migration. Further, there is evidence that many of the new arrivals are obtaining jobs in Idaho. With Idaho Department of Labor data indicating an expanding labor force[7] in excess of the natural increase due to teenage Idahoans crossing the 16 year-old threshold, not many of these working-age new arrivals can be early retirees. With the low unemployment rate currently, these new Idahoans are either coming with a job in hand or else finding one in short order within the state.



Labor markets in Idaho remain tight. The unemployment rate is up from its May 2022 low of 2.5 percent crossing 2.9 percent in October and 3 percent in November. The natural unemployment rate is often estimated to be about 4.5 percent for the US. For perspective, the national rate is currently 3.7 percent but has hovered around 3.6 percent since March 2022. Thus the US labor market is currently tight, and Idaho's labor market is even tighter by that

[7] to be in the labor force, a person either needs to be employed or actively looking for employment: year to date, 37 thousand jobs have been added in Idaho, while about 29 thousand people of 15 years age into the workforce, and an expected 18 thousand new Idahoans entered in the 25–54 prime working years.

measure. A tight labor market coupled with sizable expected migration in the future mean that our model predicts employment growth across nearly all sectors of our economy and growth well above the national rate.

US Growth	2019	2020	2021	2022	2023	2024	2025	2026	2027
Nonfarm jobs	1.34	-5.80	2.78	4.07	0.59	-0.35	0.52	0.38	0.30
Idaho Growth	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Nonfarm jobs	2.95	-0.06	5.03	3.61	2.72	2.65	2.91	3.07	2.92
Construction	7.27	5.64	7.52	6.73	2.15	2.9	3.16	3.47	2.94
Food Manufacturing	1.14	0.55	2.59	2.63	2.07	-0.56	1.12	0.77	1.08
Semiconductor	-6.92	-5.24	-4.82	1.85	-4.27	-1.81	0.48	1.93	1.53
Manufacturing	0.01	0.60	3.40	2.83	2.41	1.08	1.89	1.84	1.77
Hospitality/Leisure	3.82	-6.87	10.38	9.28	2.95	4.27	3.98	4.71	3.58
Health	4.08	0.44	3.52	5.30	3.38	3.85	4.11	3.99	3.77

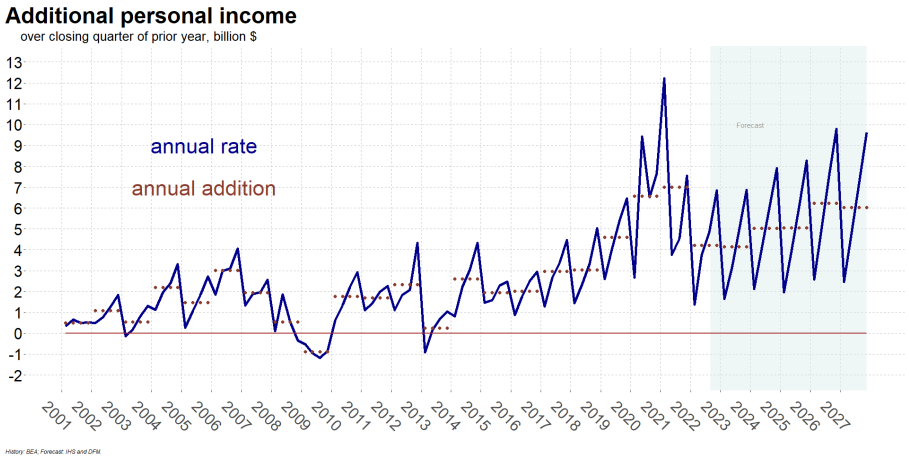
The table lists our estimates and forecast of employment growth in Idaho through 2027, along with IHS's view for the US economy as a whole. Compare the nonfarm jobs rows. Idaho is adding jobs at a faster rate than the nation overall. Even in 2023, when IHS expects a national recession, Idaho employment is still expected to increase 2.6 percent. We predict a deceleration in construction employment. Manufacturing is expected to grow more slowly than Idaho overall. Hospitality and Health, two sectors directly impacted by the pandemic, are expected to grow significantly. Employment in food manufacturing and semiconductor manufacturing, important sectors of the Idaho economy, are predicted to grow more slowly over the next five years.[8]

Growth	2019	2020	2021	2022	2023	2024	2025	2026	2027
Idaho PI	8.63	10.14	8.86	4.77	6.50	6.97	6.69	7.44	7.04
Idaho Wages	5.73	7.41	11.96	11.05	6.63	6.80	7.60	7.60	7.47
US PI	5.11	6.70	7.37	2.15	4.52	4.62	4.78	4.53	4.55
US Wages	4.77	1.42	8.81	8.49	4.81	4.19	4.90	4.60	4.32

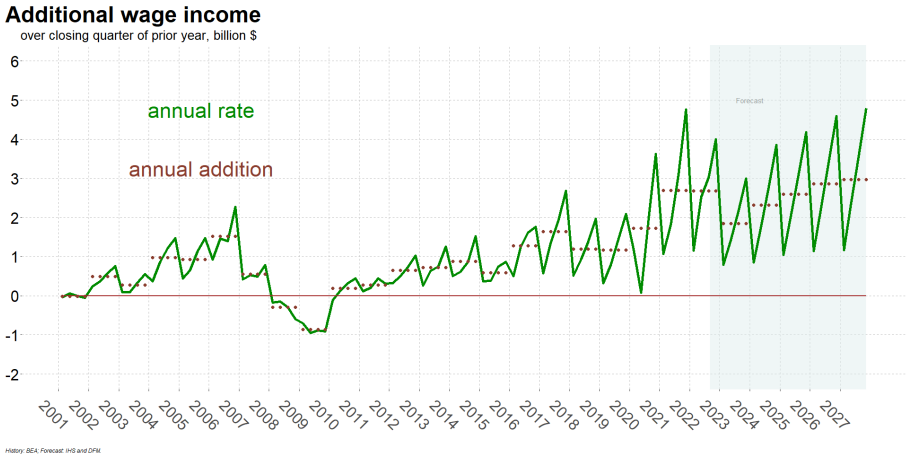
Personal income. We focus on Idaho's growth and contrast it with growth in the US. We expect growth in Idaho to exceed the national average, for both wages and personal income. Personal income and wage growth largely reflects expanding population and expanding jobs, not necessarily catch-up with the US in either front.

[8] For semi-conductors, the recent announcement by Micron for future plant expansion is not hardwired into the forecast, nor are the also recently announced reductions in staff, largely because those reductions have not been specified to location. Micron operates in many states, not just Idaho. Looking at the table, the decline in semi-conductors reflects production indices due to IHS, which are taylored to the US as a whole. As hiring for an expansion draws nearer or even begins, we may hardwire in additional jobs into our expectations, and once some data becomes available for that expansion, the model will predict higher levels and/or growth.

We graphically show cumulative growth in personal income and wage rates across each calendar year, doing so for both recent history and the forecast. Significant, extra transfer payments occurred in 2020 and particularly in 2021 due to the federal response to the pandemic, and they are



the reason for the unusual shape of the cumulative growth in personal income (blue). Generally transfer payments have been about 18 percent of personal income since the recovery from the "Great Recession" of 2008–2009 took hold in Idaho around 2012. The graph also shows how these annual rates translate into annual additions. Those additions are relative to the prior fourth-quarter. They are averages and they are shown in brown dots. Thus, for instance, 2021 saw $7 billion in additional personal income above what would have occurred had 2020q4 personal income prevailed across all four quarters of 2021. The year 2019 showed over $4.5 billion dollars in additional personal income over what would have occurred has 2018q4 personal income prevailed across all four quarters of 2019. With a similar interpretation, both 2022 and 2023 are expected to show just over $4 billion dollars additionally.



The view for wages is similar, but there is greater stability in the zig-zag pattern.[9] Here both 2020 and 2021 saw northward of $2.5 billion in extra accumulated wage payments over what would have prevailed had the prior year's fourth quarter wage distributions persisted across each of those years. This means that 2019q4 paychecks, had they continued with no raises and no extra hiring or firing across all four quarters of 2020, would have resulted in $2.5 billion less in wage payments than was actually observed in 2020. A similar statement holds for 2021 with regard to 2020q4 actual paychecks.

[9] These zig-zag patterns are an inherent feature of looking at growth across four calendar quarters relative to the prior fourth quarter.

Recession Risk. Recession risks to the state of Idaho come from international, national, and local sources. The risks discussed at the national and state level include discussions of the most recent inflation data.

International. The chief international recession risk remains Russia's invasion of Ukraine. The war has seriously disrupted both country's economies as well as international supply chains. Until the Russians choose to end the war, Idahoans and people across the country and world will pay higher prices and face a weaker global economy.

IHS and others expect little change on the battlefield during the winter. Russia is likely to continue targeting civilian infrastructure to put pressure on Ukraine to surrender territory, or acknowledge some or all of Russia's annexations. Ukraine seems committed to reclaiming all of its territory. The war is expected to persist for months, if not years.

Before the war, Ukraine was a major exporter of staple food products and fertilizers. The devastation of the war has caused prices to increase for both goods. The immediate negative impact on consumers has been higher food prices. Farmers have faced higher input costs which negate some of the profits they might otherwise realize when food prices are high.

Estimates from the Russian central bank show the Russian economy contracted by more than four percent on an annualized basis in each of the second and third quarters of 2022. The fourth quarter may be worse as Russia's mobilization in September continues to take workers out of the Russian economy. The war also carries fiscal costs for Russia, which must provision its soldiers during the winter.

The invasion has diminished Europe's appetite for Russian natural gas and petroleum products. The G7 and European Union have begun imposing a price cap on Russian oil. Fuel prices are expected to continue to be impacted as long as the war persists. Diesel prices have remained elevated. Any escalation in the war by Russia will further strain markets.

There are other international recession risks. As China rolls back its zero-covid policies, potential instability there presents another risk. Given Chinese vaccination and booster rates, it is unclear how prepared the country is for higher rates of covid infections, especially during flu season, with some expectations being bleak. There have been outbreaks in Beijing and other cities in December. An upside risk is that if China adapts quickly it could ease supply chain issues significantly.

Two other sources of risk are a Chinese conflict over Taiwan or elevated instability in Iran. A bad reaction to removing zero covid policies or weak economic data could encourage the Chinese government to use a conflict with Taiwan to mollify the Chinese people. Significant and escalating instability in Iran would lead to higher oil prices and potentially threaten trade in the Persian Gulf. Given the potential impact of either scenario, prudent forecasters, like IHS, will continue to monitor these situations for any signs of escalation.

The last major international risk we consider in this report has to do with the behavior of other central banks. The US Federal Reserve has responded firmly to inflation data in order to contain inflation by raising interest rates. Many measures of inflation across many countries have recently been high. If inflation is persistently high across the globe, it could further encourage

central banks around the world to significantly raise rates. This would result in less demand for all goods. Trade could slow under lower demand for imports. That could cause a sharper global slowdown, possibly even a contraction. It could make economic conditions worse in every country.

National. Inflation, and the strength of the response by the Federal Reserve's Open Market Committee (FOMC), remain the chief recession risk in the United States. Since March of 2022, the Federal Reserve has increased the federal funds rate from around 0.2 percent to above 4.25 percent.[10] The federal funds rate is one of the primary tools the Federal Reserve can use to influence the economy. The Federal Reserve raises interest rates to slow the economy. Currently, the goal is to slow the economy to bring inflation back to its 2 percent target. The most recent data for November show that there is still ground to cover before that target is met, but some optimism may be warranted.

We first review definitions. Inflation is typically defined as the percent increase between two consumer price index (CPI) numbers. After two months of effectively flat CPI in July and August, inflation has returned, but it has been below expectation over the following three months. Seasonally adjusted inflation in September and October on a monthly basis was 0.4 percent.[11] Seasonally adjusted inflation in November was lower at 0.1 percent. These lower values have brought the inflation rate over the last twelve months down from 8.2 percent in September to 7.8 percent in October and now 7.1 in November.[12] The year over year measure of core inflation, which excludes food and energy, is also down to 6 percent from an earlier high of 6.6 percent in September.

IHS expects headline CPI inflation to decline to below three percent during 2024, approaching a level consistent with the FOMC target for its preferred measure of inflation. If inflation stays high, the Federal Reserve may need to keep its federal funds rates higher for longer, which would likely delay recovery in the most affected industries, such as home-building and real estate. Alternatively, the FOMC may choose to raise interest rates higher, which could cause any economic contraction to be sharper. There is upside risk if inflation comes down quickly, since that will enable the Federal Reserve to halt rate hikes sooner. The Fed has been communicating that this is becoming the pertinent question by emphasizing its terminal rate, meaning the highest rate it has to sustain to re-obtain its 2 percent inflation objective.

The other major national recession risk regards labor markets and savings. Labor markets are still tight with a national unemployment rate at 3.7 percent. However the labor force participation rate is still a full percentage point lower than before the onset of the pandemic. This is evidence that workers have voluntarily left the labor market and are either relying on savings or a partners' income. Forecasters have been expecting workers to re-enter the labor market without success.

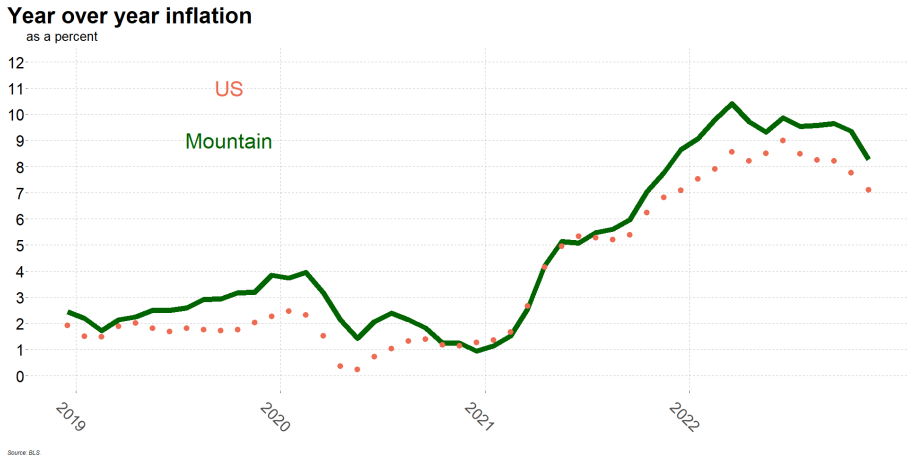
[10] The FOMC has adopted a 0.25 percent range for its target, and the FOMC has been moving that range upwards.

[11] This is the month-to-month change in the CPI index.

[12] These larger figures are the ones typically reported in news headlines, which focus upon the change across a year.

One concern is that if a contraction is severe enough to lead to layoffs, then it could force workers who are voluntarily out of the labor market to attempt to re-enter the labor market when job openings do not exist in sufficient quantity to absorb such an influx. This could force workers to move between sectors, seeking work where available, which could cause broader wage suppression, and possibly exacerbate a recession. Should employers find there is slack in the labor market, they may lower wages for new hires or replace high-paid workers with workers willing to accept a lower wage.

Idaho. As part of the mountain area, Idaho continues to have inflation well above the national average.[13] Using the non-seasonally adjusted estimate for the region, monthly inflation in September was 0.3 percent, 0.7 percent in October, and -0.4 percent in November. The November contraction is well below the national number and the first time in months that inflation in the Mountain area was below the nation's. The twelve-month inflation number in September was 9.6 percent, with 9.3 percent in October, and 8.3 percent in November. The last time inflation in the Mountain area was below 9 percent for a twelve month period was in November 2021.



The figure demonstrates how much more and how much longer inflation has been above the national trend here in the mountain region. The figure plots the twelve-month inflation figure for each month between December 2018 and November 2022. For most of 2019 and 2020, local inflation tracked 0.5 to 1.5 percentage points higher each month than its national counterpart, then it tracked the national trend until October 2021, but has subsequently diverged and remained above its national companion.

The largest recession risk Idaho faces comes from inflation via housing and migration, specifically if migration drops off significantly. Migration has played a significant role in Idaho's population, labor force, and income growth. Since recessions are measured based on real GDP, not real GDP per capita, the state can partly escape a national slowdown simply by adding enough new people. However, migrants need places to live, and Idaho has experienced substantial increases in housing prices and rents.

Higher prices and higher mortgage rates, the latter following from higher rates set by the Federal Reserve, make it increasingly difficult for migrants or Idahoans to purchase new homes.

[13] More technically for the Bureau of Labor Statistics, which compiles CPI data, Idaho is part of the Mountain Census Division.

There have been news reports that sales prices, homes sold, and listings are all down year-over-year in November while days on market have almost doubled. A slowdown in migration well beyond what we expect would further diminish demand for housing, which would decrease demand for new construction. Lower levels of migration could also slow down the growth in statewide employment and earnings. These twin possibilities show how Idaho's economy is sensitive to migration.

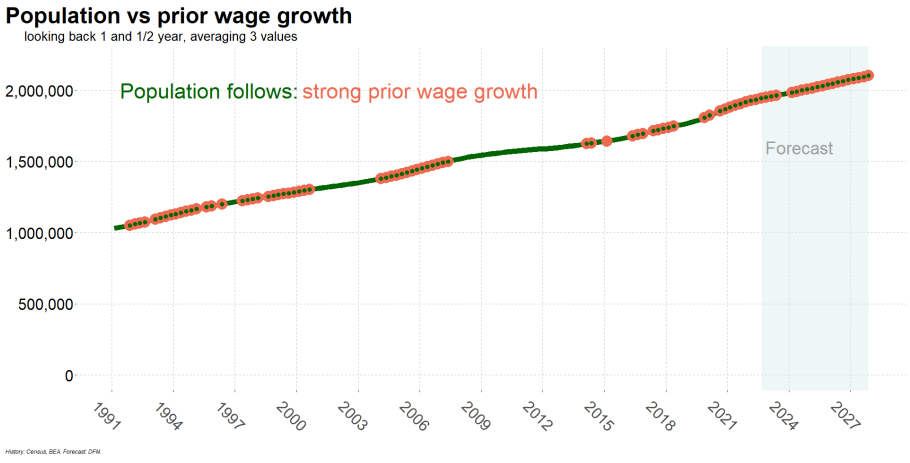
Economic outlook

We have emphasized in both the prior report as well as this edition that Idaho's jobs forecast relies upon population growth, which is largely driven by migration from other states into Idaho. The opening tables illustrate the degree to which this is true. Just compare and contrast the trajectory for Idaho with that of the US. International migration into the US is considerably more involved than domestic migration among the states. That is, of course, but one aspect of the differing outlooks for population for Idaho versus the US as a whole.

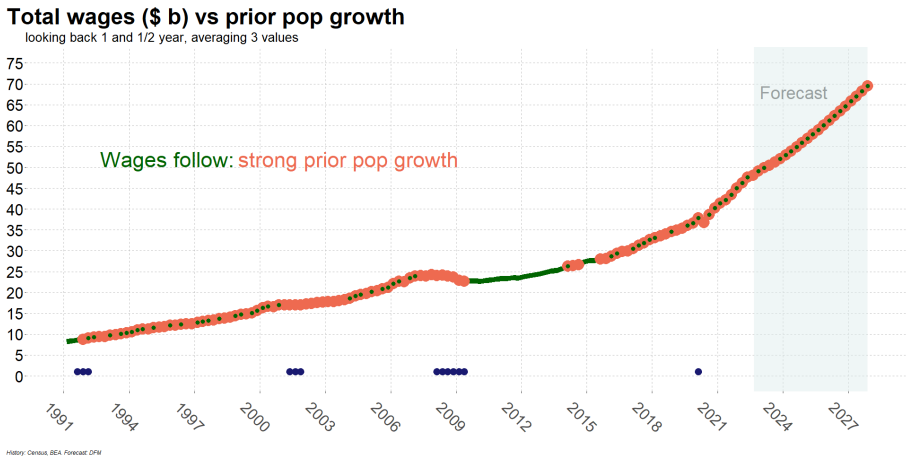
US growth rates	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
US nonfarm jobs	1.56	1.34	-5.80	2.78	4.07	0.59	-0.35	0.52	0.38	0.30
US population	0.58	0.49	0.34	0.14	0.27	0.41	0.48	0.49	0.49	0.50
Total personal income	5.01	5.11	6.70	7.37	2.15	4.52	4.62	4.78	4.53	4.55
. . . inflation adjusted . . .	2.82	3.56	5.54	3.26	-3.92	1.15	2.33	2.68	2.49	2.50
Wage & salary payments	5.02	4.77	1.42	8.81	8.49	4.81	4.19	4.90	4.60	4.32
. . . average US wage . . .	3.41	3.39	7.77	5.73	4.27	4.21	4.55	4.36	4.20	4.01

ID growth rates	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
ID nonfarm jobs	3.28	2.95	-0.06	5.03	3.61	2.72	2.65	2.91	3.07	2.92
ID population	1.88	2.11	3.28	2.88	2.10	1.49	1.41	1.59	1.63	1.50
ID personal income	6.32	8.63	10.14	8.86	4.77	6.50	6.97	6.69	7.44	7.04
. . . inflation adjusted . . .	4.10	7.03	8.95	4.70	-1.46	3.06	4.64	4.54	5.35	4.95
Wage & salary payments	7.11	5.73	7.41	11.96	11.05	6.63	6.80	7.60	7.60	7.47
. . . average wage . . .	3.85	3.40	7.03	6.74	7.18	4.09	4.23	4.61	4.45	4.53

It is possible to look at some of these other important measures in relation to population growth graphically. Using our quarterly measurements of these quantities, we can compare when two are simultaneously strong, as well as when strength in one precedes strength in the other. Being aware that there is feedback between these variables within our model, it is wise to look in both directions. For instance, we can look to when strong (total) wage growth precedes strong population growth, and we can also look for when strong population growth precedes strong (total) wage growth. What to



consider strong growth is subjective. We take a fairly conservative measure: 80 percent of the median growth rate across the 2022–2027 forecast horizon. Doing so would almost guarantee that most of the forecast period will be marked if we were to consider only one variable at a time. Doing so with two variables, either simultaneously, or with one leading the other, could provide some insight to the interactions within the Idaho economic model. In all cases, history can provide context for these interactions, whether they are frequent or infrequent. Coupled with individual memory of the economy across the recent past, we can gain insight into what the forecast portends as well as what it requires. What strikes us is that there has been a greater frequency of population growth leading wage growth, at least as seen through this exercise.



In both graphs, the underlying trajectory occurs in dark green. For each point on that trajectory, the other variable is considered 6–8 quarters earlier. For example, the population graph is the earlier one, the one which appears more linear: in that case the trajectory is population, and the other variable is total wages. If the average of that other variable at those earlier periods exceeds 80 percent of the forecast median for that other variable, then that is considered a strong growth point, and a salmon overlay is placed on the trajectory graph. If further the growth of the trajectory variable is also strong, then the salmon overlay itself gets a dark green overlay. In this case, that would mean that population growth is strong and 6–8 quarters earlier, total wage growth was strong.

The latter graph reverses the roles of population and total wages.

We emphasize that the average wage in Idaho trails that of the nation, and the gap is not closing in dollar terms. This is visible in the cover graph, where it is possible to see that the nominal difference is expected to expand. Convergence does somewhat occur in percentage terms, from around 74 percent to 77 percent. Even if the nominal difference were not to expand, the percentage would only converge up to 83 percent.

If average Idaho wages have not closed the nominal gap with average US wages, and if the percentage gap is not expected to close much before 2027, there must be some other feature driving total wage growth in Idaho when compared with total wage growth in the US. Indeed, the cover also shows that total wages have been growing more quickly in Idaho than in the nation, and they are forecast to continue to do so to a substantial degree. Based upon their values at the close of 2017, Idaho wages have grown almost 55 percent through 2022, whereas US wages have grown almost 32 percent. Much of the extra growth is visible in the 2020–2022 period. Recall

that job growth over the pre-pandemic high occurred in Idaho by the close of 2020, whereas it took until August 2022 for the US to resume net job growth over its pre-pandemic high. Growth in Idaho total wages over that 2017 figure is expected to hit 118 percent by the close of 2027. Growth in US total wages is expected by IHS to hit 65 percent. Typical job growth in Idaho is forecast at 2.8 percent. It is forecast at 0.4 percent in the US. Idaho population in the 25–54 age group is expected to average 38 percent, inline with the average percent (39 percent) in IHS's US economic model.

Housing starts and construction. The duration of time it takes to sell a house has generally lengthened. There has been some slowing in permitting, but it may take a year to know if that is a permanent feature or a blip. Construction activity persists on already permitted and started houses, of course. Construction has generally seen some of its higher counts of unemployment

		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
US	% growth	3.54	3.50	8.06	15.06	-3.16	-23.78	4.92	9.83	2.01	-0.71
	single units	871,417	888,583	1,001,917	1,131,083	1,008,676	783,059	909,784	978,093	975,610	965,500
	multi units	375,917	402,417	393,167	474,083	545,750	401,700	333,215	387,124	416,999	417,240
ID	% growth	14.78	4.76	8.68	14.16	-26.41	-11.76	11.41	-4.27	-1.05	1.78
	single units	13,030	13,020	14,574	16,406	9,192	8,666	9,730	9,907	10,228	10,682
	multi units	3,059	3,836	3,745	4,507	6,197	4,914	5,400	4,577	4,105	3,905
	% growth	1.95	2.07	2.14	2.28	1.35	1.32	1.37	1.38	1.39	1.41
	stock	739,307	754,592	770,725	788,278	798,897	809,420	820,475	831,797	843,361	855,271

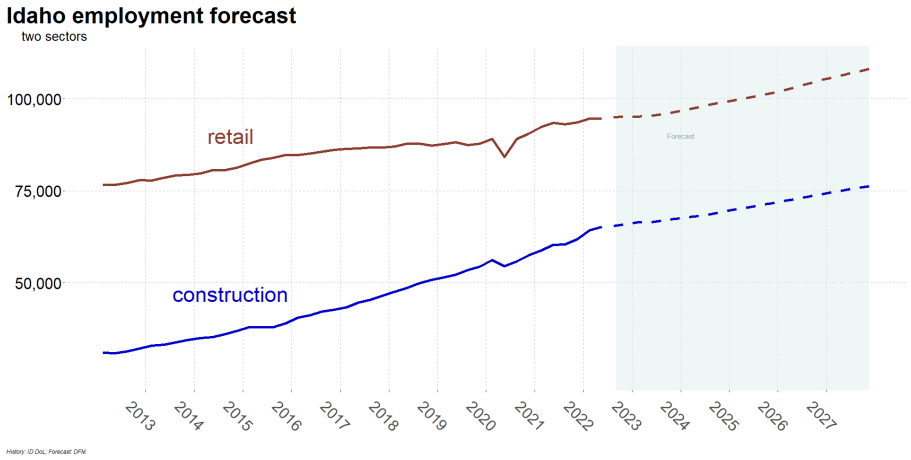
during the wintertime, and that appears to be repeating this year. Given that the construction industry has grown from 56 thousand workers near the close of 2020, through 62 thousand workers near the close of 2021, to 65 thousand workers by mid-2022, the unemployment numbers in construction (near 600, up from near 500 the prior year, but similar to the figures from 2020) suggests that in aggregate, construction work remains plentiful in Idaho.

Construction employment is expected to show year-over-year growth rates similar to total nonfarm employment across the bulk of the forecast, even though it has outshone total nonfarm jobs frequently since 2013.

Retail trade. We often pair discussion of construction with discussion of retail trade. Employment in the retail sector is a substantial portion of total nonfarm employment in the state, and the level of retail employment is also predicted by total nonfarm jobs. There is feed-back in the economic system between the two. The trajectory of total nonfarm jobs is the main influence for our population projection, and population feeds directly into the equation for construction employment as well as the equation for housing starts. At the same time, population growth generally expects some additional housing, which comes through construction. All in all, experience has shown that changes in expectations for one of these industries, whether construction or retail, quickly results in changes in expectation of the other.

The outlook for retail trade is fairly flat across the middle of 2023 before growth is expected to resume. By the close of 2023, growth is above the 2 percent annualized rate. It climbs above 3 percent at the start of 2026. Fairly broadly—meaning since 2016—retail trade has generally

grown more slowly (about 1.6 percentage points) than overall nonfarm employment in Idaho, though across a longer time-frame, the two have tended to have similar growth rates (about 0.3 percentage point advantage to total nonfarm), and the forecast horizon sees the difference being closer to the long-run discrepancy.



Forecast analysis

Forecast comparison. Financial conditions for many Idahoans are tied to the jobs situation, but beyond that, another strong tie is to the financial conditions of the housing market.

The Federal Reserve upped short-term interest rates in November and again in December. These increased this rate by 125 basis point, from just above 3 percent to just above 3.75 percent in November (75 basis points), and from there to just above 4.25 percent in December (50 basis points). Both moves by the Federal Reserve were telegraphed well in advance, and were part of the IHS forecast from October. Thirty-year mortgage rates topped 7 percent in the final October reading by Freddie Mac. Despite rising short-term interest rates, the rate for the 10-year Treasury security has generally fallen since October, and consequent to that, mortgage rates have retreated a bit. Mid-December, they are just under 6 and 1/3 percent. They began the year under 3 and 1/4 percent, and were near 5 and 1/2 percent in mid-July. The early change in 10-year treasury yields was not expected in 2022 by IHS in its October forecast. There was some anticipation for lower yields in 2023, though, so the actual developments point towards an earlier arrival of some reprieve in the housing market.

Freddie Mac, the quasi-governmental agency which compiles the average mortgage rate just discussed, issued its housing outlook in late October. It calls for a minor correction in house prices of 0.2 percent in 2023, with the change occurring via three quarters of flat values and the final quarter of 2023 recording the 0.2 percent decline. IHS follows the CoreLogic House Price Index, and the firm sees a 10 percent decline from mid-2022 to early 2024, a decline which would be considerably more consequential than that seen by Freddie Mac. IHS is assuming a narrowing in the spread between mortgage rates and the 10-year treasury. It has recently been about 280 basis points, which is where the firm pegs it across 2023, but by 2026, the firm sees that narrowing to below 180 basis points. Partly consequent to that, mortgage rates decline from 6.65 percent on average across 2022 in IHS's estimation to just under 5.0 percent in 2026. The other main contributor to that is part of the firm's view of Federal Reserve short term rates. IHS takes the Fed at its word that it "is determined to slay inflation, which could take a few years. The Fed will not begin to lower interest rates until inflation has declined substantially — to roughly 2.5 percent — and there is a high degree of confidence that it will fall [further] to 2 percent. Those conditions are met in our forecast in 2024." Numerically, these are consistent with the forecast from October, but the new explanations offer a fuller view.

Monthly housing starts, which are admittedly very volatile and which are available only with a lag, were running near 1,200 single-family units per month in the final three months available for the October forecast, those months being April–June. The forecast runs at the quarterly frequency, so batches of three consecutive months are needed. Now August–September are available for the current forecast, and single family units have decreased to nearer 1,000 per month, and the step-down seems consistent when comparing with the corresponding months in 2021. Multi-family units are even more volatile in measure, and looking only at August–September of 2021 in comparison with those same months in 2022, the state has seen starts move from the 200 per month region to above 375 per month. The peak measure has so far been

over 1,000 per month in March 2022. Generally, across the two years prior of the pandemic, multi-family housing starts were 20–30 percent of all housing starts in Idaho. They have risen to nearer 40 percent of starts in recent measurements. The forecast has this gradually unwinding towards 25 percent, falling below 30 percent after 2025.

In Idaho, the unemployment rate has increased to 3.0 percent in November, the same figure from January 2022. It was at its recent low of 2.5 percent in May and June of 2022. At the start of the year, about 27,400 Idahoans were unemployed, which means that they were actively looking for work but had not yet started a job. In November, the figure was just about 28,600. Across that time, the total employment increased from 897,000 to 934,800. In June, there were 24,000 unemployed against 924,600 total employment. Continued claims for unemployment insurance, which are those which are seeking a benefit payment for a specific week, are just above 6,300 in the third to last week of 2022. They were as low as below 3,000 for weeks 40–42, which is early to mid-October.

The local employment trajectory is little changed in this forecast, partly reflecting having scant additional data to influence the forecast. Both rest upon employment figures only through mid-2022 in Idaho. DFM uses sector-level employment in its forecasting model. Third quarter data[14] only becomes available in mid-January. IHS relies upon similar national data, which is available slightly earlier, counter-intuitive as that may be. They have a value in history, not forecast, for 2022q3. Nationally, the rebound from the shutdown is still fairly steep, but the national employment has only just crossed above its pre-pandemic peak in August 2022. Idaho reached above its pre-pandemic peak before the close of 2020 itself. Now Idaho's month-to-month, or even quarter-to-quarter employment changes are less about rebound and more about steady change.

[14] DFM uses Census of Employment and Wages (CEW) data, which is unemployment insurance based, not survey based.

July forecast		2022	2023	2024	2025	2026	2027
Personal income	$ m	103,589	109,924	117,180	124,772	132,623	140,967
Wages	$ m	48,628	52,060	55,565	59,521	63,677	68,080
Population	count	1,945,563	1,973,689	2,004,537	2,036,370	2,067,100	2,095,760
Nonfarm	jobs	827,248	847,279	869,347	892,805	915,118	936,796
October forecast		2022	2023	2024	2025	2026	2027
Personal income	$ m	104,848	111,323	119,006	126,878	136,249	145,624
Wages	$ m	48,051	51,175	54,476	58,592	63,101	67,812
Population	count	1,940,875	1,969,872	1,997,162	2,028,559	2,061,220	2,091,619
Nonfarm	jobs	829,085	849,597	871,377	895,826	922,507	948,427
January forecast		2022	2023	2024	2025	2026	2027
Personal income	$ m	104,297	111,079	118,823	126,772	136,206	145,800
Wages	$ m	47,742	50,907	54,370	58,500	62,946	67,647
Population	count	1,940,750	1,969,631	1,997,337	2,029,132	2,062,106	2,093,037
Nonfarm	jobs	826,985	849,441	871,932	897,305	924,855	951,845

IHS sets its baseline, pessimistic, and optimistic forecasts to indicate reasonably likely economic outcomes. Baseline assumes current economic and policy conditions. Pessimist takes into account some possible, negative shocks. Optimist takes into account some possible, positive shocks. IHS scenarios are not exhaustive, but rather indicative.

Idaho		2020	2021	2022	2023	2024	2025	2026	2027
Nonfarm jobs	baseline	759,942	798,189	826,985	849,441	871,932	897,305	924,855	951,845
	optimistic	759,942	798,189	827,070	851,878	875,703	901,299	928,346	954,632
	pessimistic	759,942	798,189	826,859	844,545	858,959	884,560	915,003	943,955
Wages, m $	baseline	38,400	42,992	47,742	50,907	54,370	58,500	62,946	67,647
	optimistic	38,400	42,992	47,732	51,147	54,926	59,276	63,878	68,695
	pessimistic	38,400	42,992	47,740	50,551	53,154	56,839	60,957	65,182
Housing starts	baseline	18,318	20,912	15,390	13,580	15,130	14,485	14,333	14,587
	optimistic	18,318	20,912	15,386	13,601	14,934	14,329	14,123	14,340
	pessimistic	18,318	20,912	15,401	13,606	15,469	15,170	14,974	15,438

Alternative forecasts. Overall, IHS tilts the odds to 25 percent for the pessimistic case, 20 percent for the optimistic, and the remaining 55 percent for the baseline.

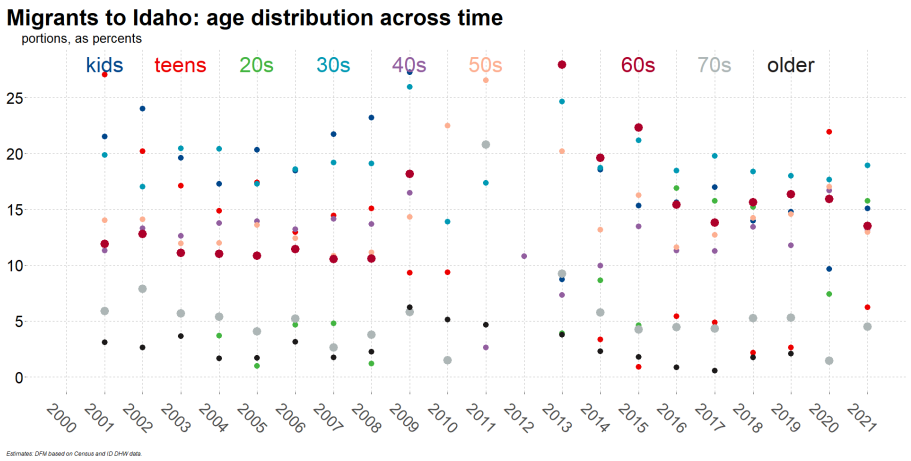
Summary statistics are presented in the above table. Two years of history are given, along with the forecast years (2022–2027). All three alternatives agree across history, but they diverge beginning in 2022. While Idaho's economy was quite dynamic in 2020–2021, the change across that history does provide some context for the changes envisioned in the three main IHS alternatives.

In our prior forecast, we wrote that "None of the three scenarios from IHS suggest, yet, that Idaho is likely to see a major disruption to economic activity." Primarily that was focused upon personal income. In this edition of the forecast, the pessimistic scenario would still show job growth across 2023, but only two-thirds of that envisioned in the baseline case. By the middle of 2024, the jobs trajectories resume being parallel, but the pessimistic scenario would leave Idaho 13,000 jobs behind the baseline scenario. This may not yet qualify as major distruption, but it is some disruption. On the personal income side, there is less disruption even though employment is lower. This partly reflects that personal income has many stabilizers. The pessimistic case would see personal income grow about $1.4 billion less by the close of 2023, with that widening to about $2.0 billion by the close of 2024. For context, the most recent reading (2022q2) of personal income available for incorporation into this forecast put the annual accural rate at $103.9 billion.[15] By the close of 2023, the expected value is above $112 billion, and by the close of 2024, the expected value is above $121 billion.

[15] Those values from the September 30 release by the BEA were $102.3495 billion for 2022q1 and $103.9901 billion for 2022q2. On December 23 BEA released personal income figures again, included its first estimate for 2022q3 at $105.8495 billion, and revised the first half of the year to $102.3594 billion and $103.9725 billion for 2022q1 and 2022q2. All of these are at annual rate.

Looking only at total wages, the difference in 2024 is expected to be $1.2 billion between the baseline and the pessimistic alternative. Some of that change is due to the fewer jobs; some of the change is due to lower wages expected for the remaining jobs. Were it only due to the fewer jobs, that change would amount to average wages of about $85 thousand per year.

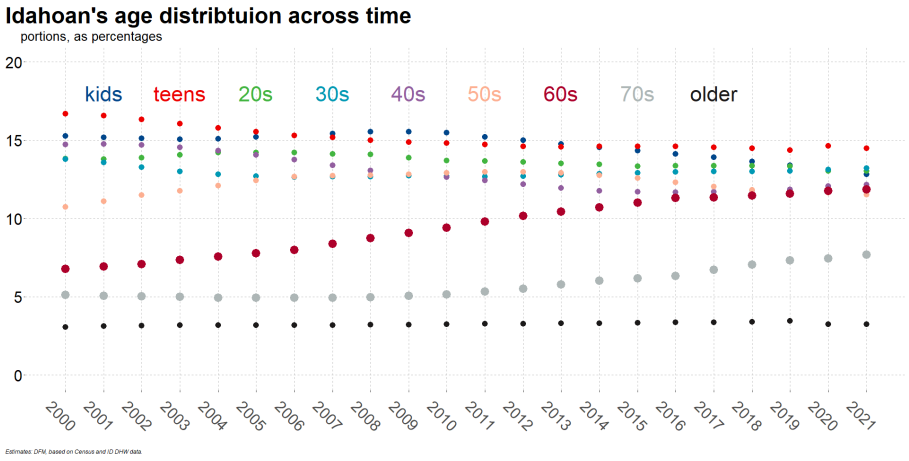
Among the many stabilizers of personal income are social security payments. IHS has built in that: "in January, the Social Security Administration will implement an 8.7 percent cost-of-living adjustment to benefits." Another stabilizer comes through federal defense and contractor employment within Idaho. IHS is also following the progress on year-end legislation, including the new National Defense Authorization Act (NDAA). That 'must-pass' legislation is in draft form, and that "authorises $858 billion of budget authority in FY23 for the Departments of Defense and Energy, $45 billion more than in the Administration's proposed budget, and includes a 4.6 percent pay raise for military and civilian employees of the DOD." As pointed out in our county discussion of migration, Mountain Home Air Force Base alters the local economy of Elmore County. Those DOD raises will do so starting as soon as they hit payrolls. Finally, it is worth pointing out that supplements to wages and salaries are also a large chunk of personal income. Supplements includes benefits, like healthcare, and they account for about 10 percent of personal income. In a tight labor market, which Idaho continues to have, more generous benefits are often used to hire.



We have pointed out that migration into the state is a hard prerequisite for the job growth forecast, and in the October edition we illustrated that with estimated migration into the state in 2019 as well as forecast migration into the state in 2023, both given by net migration into Idaho by age of the migrant. The current forecast has 26–34 thousand new Idahoans coming to the state by moving here each year. Housing starts are forecast lower in this edition than in prior editions. The typical age patterns of migrants suggest that many of them come as families.[16] Housing unit needs are therefore fewer than one unit per migrant: a family of three would need one housing unit.

[16] Years following the Great Recession saw net exoduses in enough of the age brackets and of sufficient magnitude to cause a visualization problem. Large negatives then inflate percentages in other age brackets well beyond 100 percent. That causes the scale of the graph to become such that seeing the typical pattern is difficult. To prevent this camouflage we have purposely shortened the vertical range, which prevented some of the dots from printing near 2010–2012. We find this reasonable because the slowdowns in IHS's scenarios are not severe enough to warrant the Great Recession being a strong comparison.

The dots corresponding to new arrivals in their 60s and 70s have been slightly enlarged (deep red, and gray, respectively). While migration by those in their 60s has been relatively more common in recent years, migration by those who are in their 30s (light blue) is still a larger portion, and kids (dark blue) are often right alongside those in their 60s in percentage terms.



The age distribution of existing Idahoans has very stable patterns. The most striking feature of this is the ascent of the baby-boomer generation into their 60s and 70s. As existing Idahoans are far more numerous than new arrivals, this ageing pattern is expected to be driving construction activity. That may be retrofitting existing housing to better accomodate ageing in place, perhaps with minor additions such as sturdy hand-rails, or maybe with more extensive and expensive bathroom remodels. It is also likely to drive community living options. The latter is consistent with elevated shares of multi-family housing unit construction.

Appendix

i. US Economic Model by IHS Markit

IHS Markit (IHS) Macroeconomic Model is a multiple-equation model of the US economy. Consisting of over 1,200 equations, the model is solved in an iterative manner to generate the results of different policy and forecast scenarios. The model incorporates the best insights of many theoretical schools of thought to depict the economic decision processes and interactions of households, businesses, and governments.
The IHS model is divided into the following eight major sectors:

(1) **Private domestic spending**
(2) **Production and Income**
(3) **Taxes**
(4) **International**
(5) **Financial**
(6) **Inflation**
(7) **Supply**
(8) **Expectations**

(1) **Private Domestic Spending.** Major aggregate demand components include consumption, investment, and government. Consumer purchases are divided among three categories: durable goods, nondurable goods, and services. In nearly all cases, real expenditures are influenced by real income and the relative price of consumer goods. Durable and semi-durable goods are also sensitive to household net worth, current finance costs, and consumer sentiment.

IHS divides investment into two general categories: fixed investment and inventories. The former is driven by utilization rates, capital stock, relative prices, financial market conditions, financial balance sheet conditions, and government policies. Inventory investment is heavily influenced by such factors as past and present sales levels, vendor performance, and utilization rates.

The government sector is divided into federal government and state and local government. Most of the federal expenditure side is exogenous. Federal receipts are endogenous and divided into personal taxes, corporate taxes, indirect business taxes, and contributions for social insurance. State and local sector receipts depend primarily on federal grants and various tax rates and bases. State and local government spending is driven by legal requirements (i.e., balanced budgets), the level of federal grants (due to the matching requirements of many programs), population growth, and trend increases in personal income.

(2) **Production and Income.** The industrial production sector includes 74 standard industrial classifications. Production is a function of various cyclical and trend variables

and a generated output term, i.e., the input-output (I-O) relationship between the producing industry and both intermediate industries and final demand. The cyclical and trend variables correct for changes in I-O coefficients that are implied by the changing relationship between buyers and sellers.

Pre-tax income categories include private and government wages, corporate profits, interest rate, and entrepreneurial returns. Each of these categories, except corporate profits, is determined by some combination of wages, prices, interest rates, debt levels, capacity utilization rate, and unemployment rate. Corporate profits are calculated as the residual of total national income less the nonprofit components of income mentioned above.

(3) **Taxes.** The model tracks personal, corporate, payroll, and excise taxes separately. Tax revenues are simultaneously forecast as the product of the rate and the associated pre-tax income components. The model automatically adjusts the effective average personal tax rate for variations in inflation and income per household, and the effective average corporate rate for credits earned on equipment, utility structures, and R&D. State taxes are fully endogenous, except for corporate profits and social insurance tax rates.

(4) **International.** The international sector can either add or divert strength from the central flow of domestic income and spending. Imports' ability to capture varying shares of domestic demand depends on the prices of foreign output, the US exchange rate, and competing domestic prices. Exports' portion of domestic spending depends on similar variables and the level of world gross domestic product. The exchange rate itself responds to international differences in inflation, interest rates, trade deficits, and capital flows between the US and its competitors. Investment income flows are also explicitly modeled.

(5) **Financial.** The IHS model includes a highly detailed financial sector. Several short- and long-term interest rates are covered in this model, and they are the key output of this sector. The short-term rates depend upon the balance between the demand and supply of reserves in the banking system. The supply of reserves is the primary exogenous monetary policy lever within the model, reflecting the Federal Reserve's open market purchases or sales of Treasury securities. Longer-term interest rates are driven by shorter-term rates as well as factors affecting the slope of the yield curve. These factors include inflation expectations, government borrowing requirements, and corporate finance needs.

(6) **Inflation.** Inflation is modeled as a controlled, interactive process involving wages, prices, and market conditions. The principal domestic cost influences are labor compensation, nonfarm productivity, and foreign input costs that later are driven by the exchange rate, the price of oil, and foreign wholesale price inflation. This set of cost influences drives each of the industry-specific producer price indexes, in combination with a demand pressure indicator and appropriately weighted composites of the other producer price indexes.

(7) **Supply.** In this model, aggregate supply (or potential GNP), is estimated by a Cobb-Douglas production function that combines factor input growth and improvements to

total factor productivity. Factor input equals a weighted average of labor, business fixed capital, and energy. Factor supplies are defined by estimates of the full employment labor force, the full employment capital stock net of pollution abatement equipment, the domestic production of petroleum and natural gas, and the stock of infrastructure. Total factor productivity depends upon the stock of research and development capital and trend technological change.

(8) **Expectations.** Expectations impact several expenditure categories in the model, but the principal nuance relates to the entire spectrum of interest rates. Shifts in price expectations or the expected government capital needs influences are captured directly in this model through price expectations and budget deficit terms. The former impacts all interest rates and the latter impacts intermediate- and long-term rates. On the expenditure side, inflationary expectations impact consumption via consumer sentiment, while growth expectations affect business investment.

ii. 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, which are estimated using quarterly data. The primary exogenous variables are obtained from the IHS Markit US Macroeconomic Model. Endogenous variables are forecast at the statewide level of aggregation.

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 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 23 North American Industry Classification System employment categories. 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 demand variables. Average annual wages are estimated for several broad 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. Each equation is functionally related to economic and population variables.

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.

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 the IHS US macroeconomic model.

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

iii. Exogenous And Endogenous Variables

Exogenous variables:

CPI	Consumer price index, all-urban, $1982 - 84 = 1.00$
CRCATCVS	Cash receipts, US cattle and calves
CRCROP	Cash receipts, US crops
CRDAIRY	Cash receipts, US dairy
CSVOR	Real Consumer Spending – Other services, billion 2012 dollars
CENSUS	Value 1 when Census operations are in place, 0 otherwise.
ECON	Employment in construction
EDRIPS	Economic depreciation rate software
EEA	National Nonfarm Payrolls
ELHS	Employment in leisure and hospitality
EMD321	Employment in wood products
EMN311	Employment in food manufacturing
EMN323	Employment in printing and related support activities
ENRM21	Employment in mining
EPBS56	Employment–Administrative, Support, Waste Management, Remediation, millions
EXPUS$	Non-agricultural production expenses
GDPR	Real gross domestic product, billions of chained 2012 dollars, annual rate
GF	Federal purchases of goods and services
GFGIIPRDR	Real federal investment in research and development, billions of chained 2012 dollars, annual rate
GFML	Federal defense purchases of goods and services
GFMLCWSS	Federal government defense personnel outlays
GFOCWSS	Federal government nondefense personnel outlays
HHAF	Household financial assets
HHAO	Household holdings of real estate and other nonfinancial assets
ID0IP2122_2123	Industrial production index, metal& nonmetal ore mining, 2012=100
IPSG311	Industrial production index, food, 2012=100
IPSG321	Industrial production index, wood products, 2012=100
IPSG322	Industrial production index, paper, 2012=100
IPSG323	Industrial production index, printing, 2012=100
IPSG3253	Industrial production index, agricultural chemicals, 2012=100
IPSG332	Industrial production index, fabricated metal products, 2012=100

IPSG3332	Industrial production index, industrial machinery, 2012 = 100
IPSG334	Industrial production index, computer & electronic products, 2012 = 100
IPSG3342	Industrial production communications equipment,2012 = 100
IPSG335	Industrial production index, electrical equipment, appliances, and components, 2012 = 100
IPSG339	Industrial production index, miscellaneous manufacturers, 2012 = 100
IPSG51111	Industrial production index, newspaper publishing, 2012 = 100
IPSN32732T9	Industrial production index, concrete and cement products, 2012 = 100
JECIWSP	Employment cost index—private sector wages and salaries, December 2012 = 100
JEXCHBROAD	Broad U.S. trade-wtd. value of the dollar, index, 2012 = 100
JEXCHMTPREAL	Real US trade-weighted exchange rate with major currency trading partners, 2012 = 100
JEXCHOITPREAL	Real US trade-weighted exchange rate with other important trading partners, 2012 = 100
JPC	Implicit price deflator, personal consumption, 2012 = 100, chain weighted
N	Population, US
N16A	Population, US, aged 16 and older
RMFF	Effective rate on federal funds
RMMTG30CON	Commitment rate on conventional 30-year mortgage
RUC	Civilian unemployment rate, percent
TRF$US	Government payments to US farms
TXSIDOM	Domestic social security tax receipts
WPI01	Producer price index, farm products, 1982 = 1.0
WPI02	Producer price index, processed foods and feeds, 1982 = 1.0
WPI08	Producer price index, lumber and wood products, 1982 = 1.0
WPI10	Producer price index, metals and metal products, 1982 = 1.0
YP	Personal income
YPAINT	Personal interest income
YPCOMPSUPPAI	Other labor income, US
YPCOMPWSD	Wage and salary disbursements

YPPROPADJF	Farm proprietors' income (with inventory valuation and capital consumption adjustments)
YPPROPADJNF	Nonfarm proprietors' income (with inventory valuation and capital consumption adjustments)
YPRENTADJ	Rental income of persons with capital consumption adjustment
YPTRFGF	Federal transfer payments to individuals
YPTRFGFSIHI	Federal medicare payments on behalf of individuals
YPTRFGSL	State and local transfer payments to individuals
YPTRFGSLPAM	State and local medical payments on behalf of individuals
ZADIV	Dividend payments, billons of dollars, annual rate

Endogenous Variables:

EEA_ID	Employment on nonagricultural payrolls, total
EEA_ID_2100	Employment in mining
EEA_ID_2300	Employment in construction
EEA_ID_3110	Employment in food processing
EEA_ID_3230	Employment in printing
EEA_ID_3250	Employment in chemicals
EEA_ID_3320	Employment in fabricated metal products
EEA_ID_3330	Employment in machinery
EEA_ID_3340	Employment in computers and electronic products
EEA_ID_4200	Employment in wholesale trade
EEA_ID 44_45	Employment in retail trade
EEA_ID_48_49_22	Employment transportation, warehousing, and utilities
EEA_ID_5100	Employment in information
EEA_ID_52	Employment in finance and insurance
EEA_ID_53	Employment in real estate and leasing
EEA_ID_54_55	Employment in professional, scientific, technical, and management
EEA_ID_56	Employment in Administrative and Suppor and Waste Management
EEA_ID_61	Employment in private education
EEA_ID_61	Employment in health care and social assistance
EEA_ID_71_72	Employment in leisure and hospitality
EEA_ID_DMANU	Employment in durable goods manufacturing
EEA_ID_GOODS	Employment in goods producing
EEA_ID_GV	Employment in government
EEA_ID_GVF	Employment in federal government
EEA_ID_GVSL	Employment in state and local government
EEA_ID_GVSLAD	Employment in state and local government, administration
EEA_ID_GVSLED	Employment in state and local government, education
EEA_ID_MANU	Employment in manufacturing
EEA_ID_MFDNEC	Employment in other durable manufacturing
EEA_ID_MFNNEC	Employment in other nondurable manufacturing
EEA_ID_NMANU	Employment in nondurable manufacturing
EEA_ID_NONGOODS	Employment in nongoods producing
EEA_ID_SV	Employment in services
EEA_ID_WOOD	Employment in wood products and logging
ID0CRCROP	Cash receipts, crops
ID0CRLVSTK	Cash receipts, livestock
ID0EXFP	Farm production expenses

ID0HSPR	Housing starts, total
ID0HSPRS1_A	Housing starts, single units
ID0HSPRS2A_A	Housing starts, multiple units
ID_HOUSE_SF	Idaho housing stock
ID0NB	Number of births
ID0ND	Number of deaths
ID0NMG	Net in-migration of persons
ID0NPT	Resident population
ID0WBB$	Wage and salary disbursements
ID0WBBCC$	Wage and salary disbursements, construction
ID0WBBF$	Wage and salary disbursements, farm
ID0WBBMF$	Wage and salary disbursements, manufacturing
ID0WBBMIL$	Wage and salary disbursements, military
ID0WBBOTH$	Wage and salary disbursements, except farm, manufacturing, military, and construction
ID0WRWCC$	Average annual wage, construction
ID0WRWMF$	Average annual wage, manufacturing
ID0WRWOTH$	Average annual wage, except farm, manufacturing, military, and construction
ID0YDIR$	Dividend, interest, and rent income
ID0YFC$	Corporate farm income
ID0YINV_R$	Farm inventory value changes, imputed rent, and income
ID0YP	Total real personal income, 2005 dollars
ID0YP$	Total personal income
ID0YP$PC	Per capita personal income
ID0YPNF	Nonfarm personal income, 2005 dollars
ID0YPNF$	Nonfarm personal income
ID0YPNFPC	Per capita nonfarm income, 2005 dollars
ID0YPPC	Real per capita personal income, 2005 dollars
ID0YPRF$	Net farm proprietors' income
ID0YPRNF$	Nonfarm proprietors' income
ID0YPTXB	Tax base, 2005 dollars
ID0YRA$	Residence adjustment, personal income
ID0YSI$	Contributions for social insurance
ID0YSUP$	Other labor income
ID0YTR$	Transfer payments to individuals
ID0YTRF$	Government payments to Idaho farmers
IDWAGE	Idaho average annual wage
YPADJ_ID	Adjusted total personal income