

2019 MONTANA ECONOMIC REPORT

AN ANALYSIS AND ASSESSMENT OF MONTANA'S ECONOMIC PERFORMANCE



BUREAU OF BUSINESS AND
ECONOMIC RESEARCH
UNIVERSITY OF MONTANA

WELCOME TO THE 2019 MONTANA ECONOMIC REPORT



At the University of Montana, we understand full well the important relationship between institutions of higher education and the economic health of a region. This is why we actively partner with individuals and groups across all of Montana to build capacity and fuel economic growth for our great state. We do this in multiple ways: by working with businesses to understand their needs and to ensure that our students are well prepared to be productive members of Montana's labor force upon graduation; by conducting cutting-edge, impactful research; and by serving as a catalyst for innovation and problem-solving around some of our communities' most challenging issues, such as housing affordability. These are but a few examples. In all that we do at UM, we strive to be an institution committed to generating not only individual benefits for our students but also a public good for our communities.

The Bureau of Business and Economic Research (BBER) is an important expression of the public good provided by the University of Montana. We all have a stake in the health of Montana's economy. This BBER report analyzes the economy statewide, demonstrating that understanding our economic environment is a critical prerequisite for sound decision making. BBER provides us with this understanding, empowering all of us to make smart decisions that will fuel future economic growth.

The rebound in economic growth, especially in tax revenues, is welcome news for all of us. The University of Montana figures to be a major part of future growth. And as we move into this future, we will continue to look to BBER to help us make wise, strategic decisions.

A handwritten signature in black ink, appearing to read 'Seth Bodnar', written in a cursive style.

President Seth Bodnar
University of Montana



TABLE OF CONTENTS

THE YEAR IN REVIEW

Statewide Economic Performance: The Mystery of Poor Tax Revenues is Solved	6
Montana's Regions and Cities: Western Growth Continues to Lead the State	7
The Performance of the BBER Forecast: Hitting the Mark	9
State Revenue Report: Revenue Collections Bounce Back Strongly	10
Major Economic Events of 2018: A Year of Strong Growth	11

THE U.S. ECONOMIC OUTLOOK

The U.S. and Global Economies: Can the U.S. Economy Do It Again?	12
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THE MONTANA ECONOMY IN-DEPTH

Facing the Challenge of Affordable Housing	14
Homebuilding in Montana's Hot Markets	17
The Major Cause of Montana's Wood Products Industry Declines	20
The Contributions of Hard Rock Mining to the Montana Economy	23

ASSESSING MONTANA'S KEY INDUSTRIES

Farming and Ranching: Worries About Tariffs and International Trade	28
Forest Products: Changing Harvest Levels and Lumber Prices	29
Energy: Good News and Challenges for Montana	30
Manufacturing: Rapid Growth and Employment	33
Travel, Tourism and Recreation: A Typical Travel and Recreation Year	34
Health Care: Growth is Back	35
Transportation and Logistics: A Shortage of Qualified Drivers Causes Concern	36
Technology: Big Investments in Tech Firms Point to Steep Job Growth	37
Real Estate and Construction: Will the Recent Growth Continue?	38

ABOUT THE MONTANA ECONOMIC REPORT

The Montana Economic Report is an annual assessment of economic activity in the state of Montana produced by the Bureau of Business and Economic Research at the University of Montana. Contributors to this report include presenters in the Economic Outlook Seminar. For more information about the bureau and to access this report online visit www.bber.umt.edu.

ABOUT THE BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau of Business and Economic Research is the main research unit of the College of Business at the University of Montana. Established in 1948, its mission is to inform Montanans about the economic climate in which they live and work. In addition to conducting its Economic Outlook Seminar across the state at the beginning of each year, BBER researchers are engaged in a wide range of applied research projects that deal with different aspects of the state economy, including survey research, economic analysis, health care research, forecasting, wood product research and energy research. Contact us at (406) 243-5113 or bbermail@business.umt.edu if we can be of any help to you or your business.

2019 MONTANA ECONOMIC REPORT

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THE YEAR IN REVIEW

STATEWIDE ECONOMIC PERFORMANCE

The Mystery of Poor Tax Revenues is Solved

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana

The problem with economic mysteries – compared to the whodunits you might watch on TV – is that by the time the final scene is shown and the mystery is revealed, the audience has already gone to bed. More complete and more accurate data on the Montana economy now tells us that the reason Montana state general fund revenues were so extraordinarily weak in fiscal year 2017 was that the economy was stagnant. The good news is that stagnation has been replaced with stronger earnings growth that continues today.

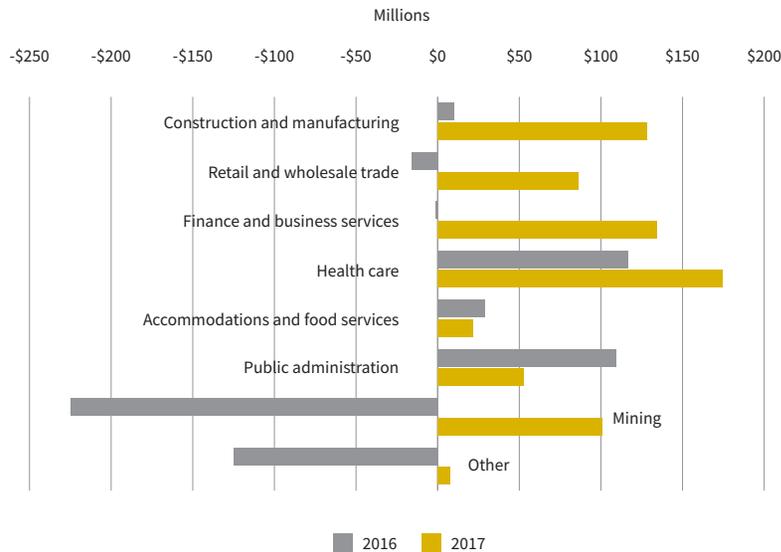
As we look ahead to what the coming years may bring, the poor state economic performance in 2016 remains relevant. It teaches us a lesson about the dangers of relying on preliminary economic reports. Our first assessment was that economic growth, as measured by the growth in inflation-corrected nonfarm earnings, would be down slightly from a strong 2015. Six months into the next year, the preliminary data showed that growth was down significantly. Now the official data show that nonfarm earnings actually shrunk in Montana in 2016 by 0.4 percent.

The story of how the overall state economy managed to shrink – in a year when Gallatin, Flathead and Missoula counties continued to record strong growth – is a story of geography, as well as the economy. In addition to agriculture, which struggled with low prices and drought, steep declines in mining earnings and in earnings relating to the transportation and distribution of physical goods contributed to the poor economic performance. And in terms of geography, the pain was concentrated in the East. Richland County saw earnings fall by more than \$100 million in 2016, a 20 percent decline.

The state and most of its regions bounced back strongly in 2017 from this poor performance. Preliminary wage data, as well as the performance of state revenue collections, show continued growth into 2018. Highlights of that growth include:

- A surge in construction across the state, but particularly in Flathead, Gallatin and Missoula counties, which accounted for 75 percent of statewide construction earnings in 2017. Commercial and multifamily residential construction were especially strong.
- An end to the steep decline in mining earnings, which included earnings from oil production, with 2016's \$224 million decline replaced with a \$101 million increase in 2017 that was concentrated in Billings.
- An accelerated expansion in the state's health care providers, most prominently in Flathead and Yellowstone counties, as the implementation of Montana's Medicaid expansion to low-income families fueled earnings growth. Measured by earnings, health care added more to the overall growth than any other industry.

Figure 1. Growth in real earnings by industry 2016 and 2017 (\$ millions), Montana. Source: U.S. Bureau of Economic Analysis.



- Improvement in worker earnings in the financial, administrative and technical services industries, which rose by \$135 million in 2017. The gains reflect booming real estate markets, tech-related growth and an underlying strength in insurance industries.
- Signs of a turnaround in the state’s retail and wholesale distribution industries.

Sitting out this good news thus far has been the agriculture industry, which continues to be stressed by low prices and now the prospect of tariff-related disruptions to market access. The uncertain global prospects for growth in 2019 and the recent turbulence in energy prices are wild cards that may challenge Montana as it seeks to continue stronger growth into the coming years.

MONTANA’S REGIONS AND CITIES

Western Growth Continues to Lead the State

By Paul E. Polzin
Bureau of Business and Economic Research at the University of Montana

Montana has slightly more than one million residents and a reputation for open spaces and vast panoramas. Yet most Montanans live in cities and towns. These communities are varied and are located from the prairies in the East to the narrow mountain valleys in the western part of the state. Each has its own character and unique economy. This section takes a closer look at the seven largest communities in Montana and summarizes their economies and recent economic trends.

The diversity of Montana’s urban areas is illustrated in the population data presented in Table 1. The largest community is Yellowstone County with a population of almost 157,000. The smallest is Silver Bow County with roughly 35,000 residents. Missoula is in second place with 117,000 persons, but Gallatin County’s rapid growth and population of 108,000 is giving Missoula a run for its money. Missoula’s position as second is solidified if one includes the 35,000 persons in the bedroom communities in Ravalli County. Four of the six major communities now have populations exceeding 100,000.

Per capita income is total personal income divided by population. Per capita income is a measure of economic well-being because it is related to the resources available to the typical resident to purchase goods and services. It does not measure the size or growth of a local economy. Per capita personal income for Montana urban communities is presented in Table 2. It takes only a quick glance at these figures to note the remarkable stability of per capita income across the state’s major urban areas. All of the cities are above the statewide average and within 15 percent of each other. The highest income was about \$52,000 per person in Gallatin County and the lowest was \$42,000 in Ravalli County, which is also the least urban.

The regional pattern of growth has shifted toward the western portion of the state. High agricultural prices and the shale oil boom in the Bakken led to rapid growth in income and employment in agricultural and resource-rich counties in eastern Montana. This ended with the drop in oil prices in 2014, and the cattle and wheat price declines slightly later. Although the oil bust was not as severe as first feared, it is now the urban and western counties that lead in terms of real wage growth and employment.

Table 1. Population of Montana's urban areas. Source: U.S. Census Bureau.

Area	Population
Great Falls area	81,654
Kalispell, Whitefish, Bigfork	100,000
Bozeman, Big Sky	107,810
Helena area	67,773
Missoula area	117,441
Hamilton area	43,463
Butte area	34,602
Billings area	158,980

Cascade County (Great Falls)

Stability accompanied by slow growth has been a distinguishing feature of the Great Falls area economy for more than a decade. Malmstrom Air Force Base dominates the local economic base and its function and staffing as a ballistic missile base has remained unchanged for at least 20 years. From 2010 to 2015, there was impressive growth in manufacturing led by expansions at companies such as Loenbro and ADF International. Great Falls continues as a trade and health care center for north-central Montana, but stability in the hinterlands has led to constrained growth for those firms serving the rural areas.

Flathead County (Kalispell-Whitefish)

Strong growth in the Kalispell area has been propelled by significant increases in health care, nonresident travel, retail trade and service industries. Record attendance at Glacier National Park has fueled the travel industry, and Flathead County now is home to retail and service providers serving regional customers. Construction activity has rebounded strongly, and the real estate and rental industries have benefited from the strengthening in the second home and recreational housing markets. The wood products industry has not been hit as hard as other industries in the state.

Gallatin County (Bozeman)

Gallatin County continues to be the growth leader statewide by a large margin. The torrid nonfarm earnings growth of more than 8 percent per year posted a few years ago

Table 2. Per capita personal income for Montana's urban areas. Source: U.S. Bureau of Economic Analysis.

Area	Income	Percent of Montana
Great Falls area	\$46,000	101.4
Kalispell, Whitefish, Bigfork	\$45,800	100.9
Bozeman, Big Sky	\$51,800	114.1
Helena area	\$47,300	104.2
Missoula area	\$46,800	103.1
Hamilton area	\$42,100	92.8
Butte area	\$47,900	105.5
Billings area	\$50,000	110.2

has now decelerated to slightly more than 4 percent per year. Other Montana communities are struggling to exceed 2 percent. The causes of growth are not hard to find. Bozeman is home to Montana State University, which has seen increasing enrollment and expanded research. There is the exciting high-tech industry concentrated in manufacturing and professional services. Bozeman also is growing as a health care center. Nonresident travel, mostly in Big Sky and West Yellowstone, is seeing more visitors throughout the year. With all these growth factors, construction is booming. Congestion and affordability have emerged as pressing issues in Gallatin County, but many other parts of the state would wish to have these problems.

Lewis and Clark County (Helena)

Being a government town has both pluses and minuses. On the plus side, stable state and federal government jobs helped Helena avoid the worst of the Great Recession. In the current political climate, government has not exactly been a booming industry, and the Lewis and Clark County economy has lagged behind most other urban areas in terms of recent growth. There have been positive developments in the private sector, though. The Boeing manufacturing plant is adding workers, and Helena continues to grow as a regional trade and service center. The county's health care industry also is expanding.

Missoula County (Missoula)

Missoula County has finally emerged from a slow-growth slump following the Great Recession and the closing of the largest manufacturing facility in the state. It is now in

the middle of the pack among Montana cities in terms of growth. The renewed growth was led by a strong construction boom beginning in 2015, particularly commercial and multifamily residential structures, followed by the addition of new professional business services and the revival of a major industrial site in Bonner. On the minus side, the enrollment declines and layoffs at the University of Montana will have a dampening effect on the economy, but the exact impacts are not yet seen in the data. A rebound is also under way in Ravalli County, where much of the economy depends on commuters from Missoula and closely follows the economic trends of its neighbor to the north.

Yellowstone County (Billings)

Billings continues as the largest trade and service center in the Upper Plains. It comes as no surprise that the export components of retail trade, wholesale trade and professional services were the greatest contributors to economic growth since the Great Recession. Manufacturing (primarily the oil refineries) has also been growing. In the last few years, increases in the health care industry have been significant. Since 2014, the Billings area economy has faced the added challenge of the slump in the Bakken due to low oil prices. Overall, the Billings area economy has performed at about the statewide average during the last five years and roughly in the middle of the pack among Montana cities.

Silver Bow County (Butte)

The Butte area economy has quietly diversified away from mining. State government, including Montana Tech, utility headquarters (Northwestern Energy) and trade center retail trade also have become important contributors to economic growth. In the most recent data, retail trade has posted the largest increases. This may be due to the fact that Butte hosts the headquarters of a large and growing chain of gas stations and convenience stores. Continuing its mining heritage, Butte is home to the Montana Resources copper mine. The miners' wages are tied to company profitability, which in turn depends on copper prices. This can lead to wide year-to-year swings in reported earnings for the copper mining industry.

Richland County (Sidney)

The worst seems to be over for the Richland County economy. The last full year of data show only a modest decline in the overall economy after several years of double-digit decreases. All but one of the nonfarm basic industries (oil field trucking being the exception) were stable or posted increases in 2017 – even the oil and gas industry was

stable. The farm and ranch sector continued to be weak. The strongest growth in non-energy sectors were in manufacturing and wholesale trade (farm implements). Looking back, the non-energy sectors of the Sidney-area economy were remarkably unaffected by the oil boom.

Custer County (Miles City)

The last three full years of data show modest declines in the Custer County economy. Mining services was the only industry to post major decreases – these include companies serving the Bakken oil fields on the Montana-North Dakota border. Miles City continues as a regional trade and government center. State and federal employees provide a stable counterweight to the volatility of the energy sector. These government facilities include the Pine Hills Correctional Facility and the regional field office for the Bureau of Land Management.

Big Sky Area

There is little data for the Big Sky economy because it is a census-designated place rather than a county or a city. The available data suggest there are about 2,300 jobs in Big Sky on an annual average basis. Big Sky accounts for about 4 to 5 percent of total employment in Gallatin County. Annual growth rates for Big Sky are volatile, perhaps influenced by the success of specific ski seasons. Big Sky does not have a diversified economy and employment is concentrated in recreation and accommodations, construction and real estate. This pattern of employment is also seen in other ski communities, such as Telluride and Keystone, Colorado.

THE PERFORMANCE OF THE BBER FORECAST

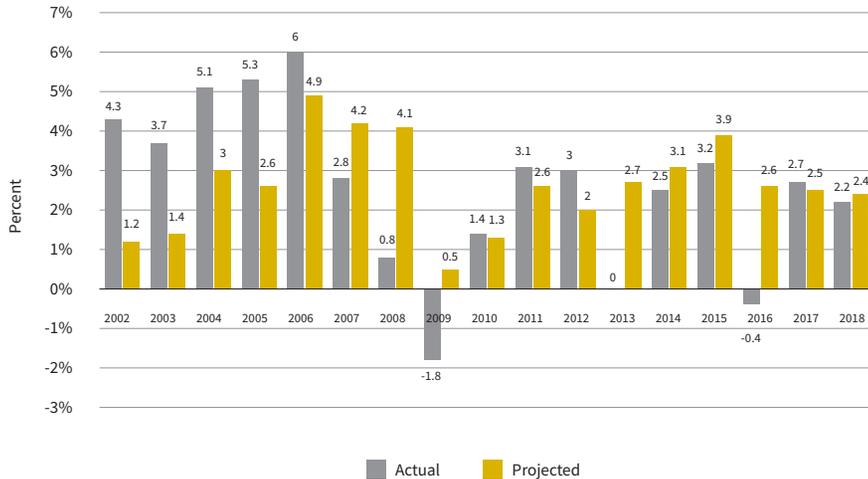
Hitting the Mark

By Brandon Bridge

Bureau of Business and Economic Research at the University of Montana

The Bureau of Business and Economic Research economic forecast continues to fare reasonably well, despite economic uncertainty and tumultuous global events. According to the most recent updated estimates, the forecast has on average fallen within 1.6 percentage points of reported economic growth since 2002.

Figure 1: Actual and projected change in real nonfarm earnings, Montana, 2002-18. Sources: Bureau of Business and Economic Research, U.S. Bureau of Economic Analysis.



The latest revision to estimates of income growth now shows that Montanans experienced a -0.4 percent decline in 2016. This reduction further widened the divide between our forecast and the reported number for that year, as we predicted 2.6 percent growth in real nonfarm income for 2016. One potential explanation for the sharp downward revision to the 2016 estimate are the political events that took place nationally at the end of that year. With Republican control of Congress and the White House, it may be reasonable to presume that individuals transferred their income to the following year in hopes of taking advantage of potential upcoming tax relief.

Other revisions to the estimates include a 0.2 percent revision to the growth in 2014 (from 2.3 to 2.5 percent), a 0.8 percent reduction to the estimates from 2015 (from 4 to 3.2 percent) and an increase from 1.5 percent in 2017 to the latest revised estimate of 2.2 percent. All in all, these revisions have reduced our average forecast error from 1.7 percent to 1.6 percent over the years between 2002 and the present day.

The historical errors between our forecasts and the official reported growth rates in Montana continue to be dominated by the higher-than-expected growth in the years leading up to the Great Recession, as well as the precipitous drop in the years following. We continue to strive for increased levels of precision in our forecasting efforts and are

encouraged by our continuous improvements at attempting to gauge the growth rates of the Montana economy.

STATE REVENUE REPORT

Revenue Collections Bounce Back Strongly

By Patrick M. Barkey
Bureau of Business and Economic Research at the University of Montana

A strong revenue growth year is exactly what the Montana state treasury needed after enduring a revenue malaise that necessitated a special session of the Legislature in November 2017 – and that’s exactly what they got. General fund revenue collections in fiscal year (FY) 2018, which ended in June of last year, were a mirror image of the disappointing FY 2017 results, with most of the major revenue categories experiencing a strong pickup in growth.

The individual income tax, the state’s largest tax, recorded growth of \$129.6 million during FY 2018 over the previous year, an 11.1 percent increase. Unlike FY 2017, taxpayers wrote bigger checks and claimed only modestly more in refunds when they settled up with the Montana Department of Revenue in the spring. Estimated payments were stronger in FY 2018 as well. Income tax withholding growth has been strong for each of the past two years.

Strong gains in revenue collections also occurred in the corporation income tax and some of the natural resource-based taxes. The latter are coming off historically low levels of revenue, primarily due to price declines and market-related volatility. But the uptick in oil prices and in some commodity prices has ended those declines.

While far from complete, data on the current fiscal year, which began in July 2018, continues to display respectable growth in most revenue categories. Despite the 13.7 percent gain in general fund revenue collections in FY 2018, the \$2.4 billion collected was 1.2 percent below projections adopted by the 2017 Legislature.

MAJOR ECONOMIC EVENTS OF 2018

A Year of Strong Growth

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana

The state of Montana turned in a strong revenue growth performance for fiscal year 2018, which ended in June of last year. The 13.7 percent increase in general fund revenues over the previous year's totals was aided by strong growth in the individual income tax, which accounts for more than half of the general fund total. There was also vigorous growth in corporate income taxes and in a wide variety of natural resource and tourism-related revenues.

The Tax Cuts and Jobs Act signed into law by President Donald Trump in December of 2017 appears to have provided a positive shock to Montana businesses and households as lower tax rates and more generous expensing rules took effect.

Finished lumber prices had a tumultuous year, rising by 35 percent over year-ago levels during the summer, before tumbling to their lowest levels in two years in the late fall. Declines occurred as conditions that boosted prices, including wildfire and tariff-related declines in Canadian imports and bottlenecks in rail transport, were resolved. Montana wood producers face a more uncertain outlook for demand in 2019.

Interest rates rose significantly in 2018 as the Federal Reserve's steady ratcheting up of its policy rates was finally reflected in markets. Of particular note was the increase in mortgage rates for 30-year conventional fixed rate notes, which crested 5 percent at the end of the year, 1.5 percentage points higher than the low in mid-2016.

The steady rise in crude oil prices into the fall of last year produced the first uptick in Montana oil production since 2014. North Dakota production, where most Bakken development is found, has risen by 25 percent since the beginning of 2017. The crash of oil prices at the end of last year, with the West Texas Intermediate benchmark plunging below \$50 per barrel, put the continuation of those gains in doubt.

Northwestern Energy has committed to joining the Western Energy Imbalance Market (EIM), a regional organization of electric utilities in 10 U.S. states and one Canadian province, by year 2021. Linking the large California market to those throughout the western portion of the country, the EIM ultimately gives member producers flexibility

in trading power within each hour to meet the challenges and opportunities presented by the greater presence of intermittent generation sources like wind and solar.

Preliminary data released in November of last year showed that Gallatin County's personal income surpassed Missoula County's to become the state's second largest economy by that measure in 2017. The announcement that the Billings Clinic would develop and expand their presence in Bozeman on a 54-acre site near the 19th Street and I-90 interchange capped off a year of expansions and new developments in the state's fastest growing urban area.

Home prices continued their rapid growth in many Montana markets, particularly in the western third of the state. Statewide prices in 2018 were 5.7 percent higher than year-ago levels and 20.4 percent higher than they were in 2015. Non-metro counties statewide, which are dominated by the very active Bozeman, Kalispell and Ravalli County markets, saw home prices rise by 7.9 percent in 2018.

Montana labor markets remained very tight with unemployment rates falling below 4 percent at the midpoint of last year. Reports of a scarcity of qualified workers continued, particularly in skilled trades and construction, with project delays or even cancellations often the result.

THE U.S. ECONOMIC OUTLOOK

THE U.S. AND GLOBAL ECONOMIES

Can the U.S. Economy Do It Again?

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana

In a global growth environment that has seen almost every economic engine around the world shifting to a lower gear, the U.S. economy managed to accelerate in 2018. When the data finally arrive, it is expected that the American economy will register a 2.9 percent growth for the full year, well above the 2.2 percent growth realized in 2017. The uptick in growth presents forecasters with the question – can the U.S. economy repeat this kind of performance in 2019?

The list of reasons why growth will fall back – at least slightly – in the U.S. economy is a long one. The Federal Reserve's policies, both in hiking short-term interest rates and in selling off assets it accumulated while implementing quantitative easing during and after the recession, will exert a drag on growth. The stimulus of the tax cut and spending increases by Congress will taper off toward the end of 2019. And the policy uncertainties for global trade are another concern.

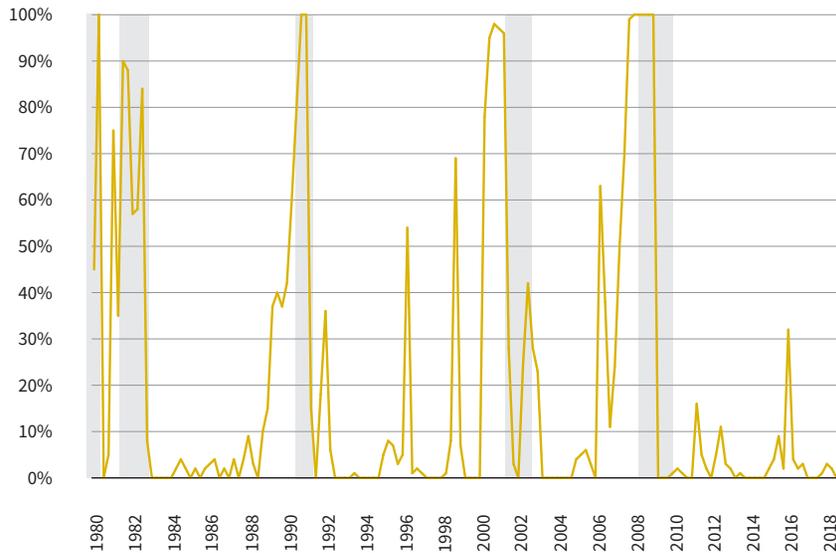
Here are the top 10 predictions for the U.S. and global economies courtesy of our friends at IHS Markit:

1. U.S. growth will remain above trend. The acceleration in 2018 was almost entirely due to a large dose of fiscal stimulus, both tax cuts and spending increases, put in place in the beginning of the year. The stimulus remains intact in 2019, but with diminishing potency as the year progresses. By 2020 the effects will be fully dissipated, and growth will return to trend. Housing and trade remain weak spots. Business investment spurred on by still relatively low interest rates is a plus.
2. Europe's expansion will slow even more. The peak in the Eurozone's growth was in the second half of 2017 and is expected to show 1.9 percent growth in 2018. The growth will slide for each of the next two years as tightening credit, a deceleration in world trade and heightened political uncertainties in Germany and France drive down business sentiment.
3. Japan's recovery will be weak. Adverse demographics, the slowdown in China's economy and increased taxes to address extremely high government debt will push growth below 1 percent by 2020.
4. China's economy will keep decelerating. The official growth rate of the Chinese economy continues to edge downward, in part due to government's attempts to rein in ultra-high debt levels throughout the economy.

Table 1. A quick look at the numbers (annual rates). Source: IHS Markit.

Annual rates	2018Q2	2018Q3	2018Q4	2019Q1	2019Q2		2017	2018	2019	2020	2021
Real GDP (% ch.)	4.2	3.5	2.5	1.9	2.4		2.2	2.9	2.6	2.0	1.6
Real consumer spending (% ch.)	3.8	3.6	2.8	1.9	2.7		2.5	2.7	2.7	2.5	2.2
Federal funds rate (%)	1.74	1.992	2.19	2.44	2.69		1.00	1.82	2.75	3.30	3.42
10-yr. T-note yield (%)	2.92	2.93	3.11	3.14	3.28		2.33	2.93	3.31	3.53	3.55
Brent crude price (\$/barrel)	74.41	75.22	71.04	70.67	72.33		54.84	71.87	73.33	72.21	73.08
CPI (year/year % ch.)	2.6	2.6	2.2	2.0	2.1		2.1	2.4	2.2	2.2	2.3
Housing starts (millions)	1.261	1.225	1.235	1.238	1.259		1.208	1.290	1.275	1.380	1.430
Unemployment rate (%)	3.9	3.8	3.7	3.6	3.5		4.4	3.9	3.5	3.6	3.7

Figure 1. Estimates of recession probability. Source: Wells Fargo.



5. Growth in the emerging world has topped out and will slide further. Average growth of emerging economies hides wide divergences between stars like India and laggards like Argentina and South Africa.

6. The volatility in commodity markets will continue with significant downside risks. The stronger dollar and gradual tightening of credit will challenge many commodity markets in 2019. Demand remains reasonably strong, however, and a collapse similar to 2015 appears unlikely.

7. Inflation will not rise much – if at all. Upward pressure from tight labor markets and downward pressures from commodity prices and slower growth will roughly offset.

8. The Federal Reserve will stay the course by raising interest rates only gradually; a few other central banks may follow, but at an even slower pace.

9. The U.S. dollar will maintain its strength against most currencies. Continued above-trend U.S. growth and more rate hikes by the Federal Reserve, compared with most other central banks, are the primary reasons for this expected strength.

10. The risks of policy shocks have risen, but probably not enough to trigger a recession in 2019. Policy mistakes remain the biggest threats to global growth in 2019 and beyond. High levels of debt and relatively low interest rates will limit the room for fiscal stimulus when the economy next goes into recession.

THE MONTANA ECONOMY IN-DEPTH

FACING THE CHALLENGE OF AFFORDABLE HOUSING

Working Toward Solutions

By Patrick M. Barkey
Bureau of Business and Economic Research at the University of Montana

Housing in general, and home ownership in particular, have always been visible, tangible evidence of economic success. Simply put, economic systems and economic leadership that cannot adequately house their populations are judged as failures.

Perhaps that is why the escalating cost of housing in recent years, both in absolute terms and relative to income, has inspired calls to action at the local, state and national level. Witness the efforts to reform Seattle's homeowner dominated neighborhood councils, the recently failed measure in California to override local building restrictions along transit corridors and the bill sponsored by Sen. Elizabeth Warren to spend \$50 billion annually to build affordable multifamily housing in urban areas.

There are plenty of policies in support of housing and home ownership in place already, and evidence of their effectiveness is unconvincing. Despite spending \$120 billion per year on tax subsidies to subsidize home ownership through the mortgage-interest

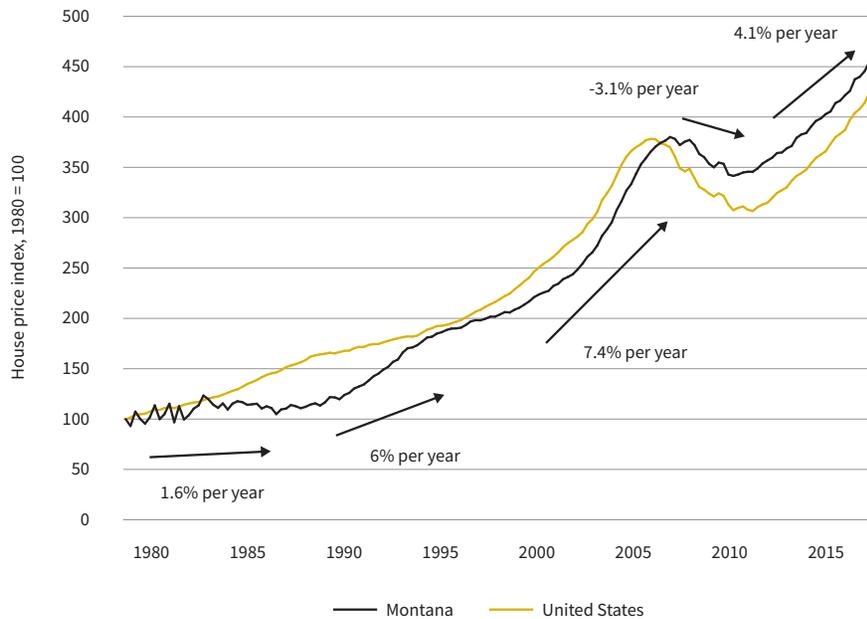
deduction and enormous interventions in mortgage markets, with government-supported enterprises like Fannie Mae and Freddie Mac, ownership rates in the United States are lower than many countries that do none of these things. When it comes to affordability, those policies arguably make the situation worse by super-fueling demand for larger and more expensive homes.

But those policies have been in place in one form or another since the 1930s. The acceleration in home prices that has led to housing cost issues today began in the 1990s and really kicked into gear during the first seven years of the previous decade, when home prices in Montana increased by 7.4 percent per year for eight consecutive years, mirroring the national trend (Figure 1). While often dismissed as a bubble – or an unsustainably high price driven by speculation and not the more fundamental forces of supply and demand – the sustained price growth that has resumed after the bust suggests otherwise.

The focus of research on housing price growth has been on policies at the local level. Housing regulations are easy to talk about, but harder to measure. The variants are endless, but commonly include (Gyourko and Malloy, 2014):

- Infrastructure requirements
- Height restrictions
- Caps on numbers of units
- Population growth limits

Figure 1. Housing price index, all transactions, Montana and U.S., 1980-2018, index 1980=100. Source: U.S. Federal Home Finance Agency.



- Urban boundaries or green zones
- Restrictions on rezoning
- Super majority, voter or multiple jurisdictional approvals
- Minimum lot size requirements
- Delays in local government decision-making

To measure the extent of regulation in any local market, much less assessing whether or not regulation is becoming more or less prevalent, is a daunting task. Yet there exists ample evidence that local regulation has a significant impact on housing costs. This is clear from a comparison of housing prices (as shown in Figure 1) to published measures of construction costs by Glaeser and Gyourko (2002) and others. The fact that since the mid-1980s prices and costs have widely diverged, with prices rising to nearly double the costs supports the argument that regulatory restrictions have had important price impacts.

Why High Housing Prices Matter

Of course, even if housing markets were efficient and prices reflected costs, those prices might be more than some households can pay. This is particularly true in areas with high in-migration and high demand and in places with geographic obstacles like water or mountains – land prices would be reflected in housing costs. In such situations, one might expect that a more intense use of land through higher density development would mitigate such outcomes, but few Montana communities have embraced this approach.

Housing is an asset, and any force that pushes asset prices up or down necessarily has equal and offsetting impacts on buyers and sellers. But from a societal point of view, there are at least three different ways in which artificially high housing prices bring about outcomes that shrink the overall economic pie. At the local level, high housing costs affect labor supply to area employers, affecting the costs or even the viability of services – even schools – that form the fabric of urban life. High housing costs push lower-income families out to the fringe or even outside urban areas altogether, increasing commutes, transportation costs and environmental impacts.

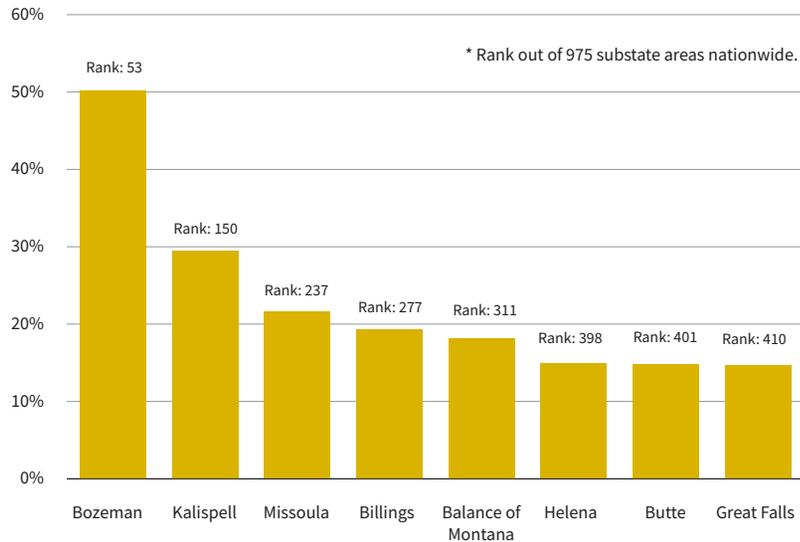
High housing costs can also have consequences for overall economic growth. This is because areas of the country that have the fastest growth tend to have the lowest rates of new home construction and thus the fastest increases in housing costs. High housing costs effectively inhibit workforce mobility, which has played an important role historically in helping households cope with economic change. Lower mobility threatens to increase income inequality and lower overall wealth.

Housing Affordability in Montana

Is there a housing affordability crisis in Montana? Certainly there are parts of the state where prices have increased rapidly. Gallatin County has seen housing prices – as measured by the Federal Housing Finance Agency’s Housing Price Index – increase by 50 percent since 2012 (Figure 2). Yet the question of affordability needs to consider those prices in relation to incomes. Median household income in Gallatin County in 2016 was \$60,439, the third highest in the state. The ratio of home prices to income, a simple measure of affordability, shows Gallatin County to be more affordable than most counties in northwest Montana, including Missoula.

The price to income ratios for the 38 Montana counties for which adequate housing price data were available reveals that affordability generally worsens as one travels west (Figure 3). Median home sale prices in Ravalli and Lake Counties, the least affordable

Figure 2. Housing price growth since 2012, with national rank. Source: U.S. Federal Home Finance Agency.



in the state, were six times as high as median household incomes there. Higher incomes and more moderate prices produced lower ratios in counties like Yellowstone and the oil-producing counties of Richland and Fallon in the east.

Affordability has always been worse in the West – at least going back to the beginning of the last decade. But in the run up of prices before the Great Recession, affordability was significantly eroded. The resumption of stronger price growth since 2012 has again outpaced income growth, with affordability lower in most parts of the state today than five years ago. Despite this deterioration, prices relative to income are lower today than they were just before the housing bust 11 years ago.

The situation is a bit more restrained in rental markets. While rents have increased markedly since 2012, in 2017 the median renter household paid about 32 percent of their pretax income for gross rent in Missoula and about 31 percent in Gallatin counties. Both figures are reasonably close to the 30 percent threshold often used to define “housing stress” in household budgets.

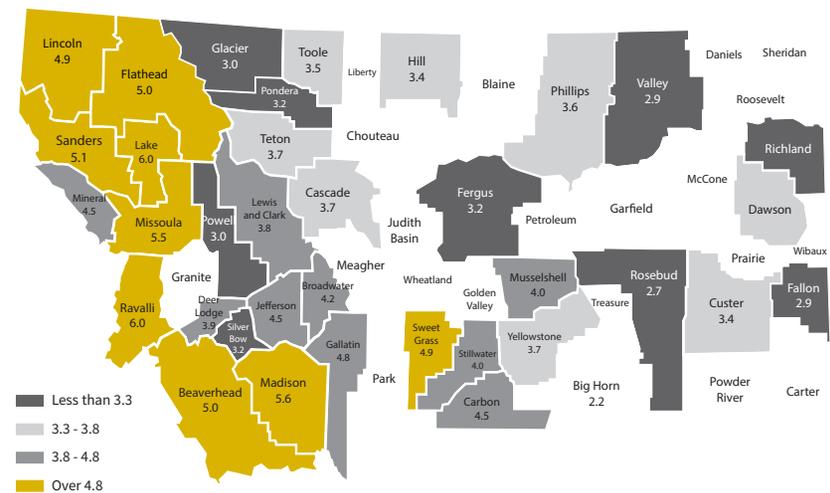
Working Toward Solutions

The solution to housing affordability depends on one’s view of the problem.

To some people’s way of thinking, there may not be a problem with housing prices at all. Certainly in many Montana housing markets the level of prices relative to income falls short of what would be considered unaffordable. But even in the faster growing areas where prices are much higher, the regulations impacting new construction represent a sort of tax on development, which forces developers to pay the costs incurred for the congestion and inconvenience of construction and density.

The fact that tighter regulations so clearly serve the financial interests of existing homeowners by limiting the new supply that might compete with their homes in the marketplace, casts some suspicion on this argument. And it would be highly unlikely that the political process would produce just the right level of taxation of new development to produce an efficient outcome. But the thrust of this argument is that prices of housing are high because they should be high, and the solution to affordability is helping those without enough income to pay for it.

Figure 3. Ratio of home price to median household income, 2016. Source: BBER calculations from National Association of Realtors and U.S. Census Bureau.



The argument that it is local housing regulation that is pushing prices up beyond costs has greater support in the data. The research we report in the accompanying article in this report shows that a change in the housing market, occurring sometime in the late 1990s, significantly reduced the price response of housing supply, especially in western Montana. The slow supply response to historically high price growth, combined with high demand from strong economic growth, has pushed prices ever higher.

Tackling regulation is not easy, technically or politically. Rules governing housing development are overlapping – the elimination of a single rule by one jurisdiction may have little effect. And those rules exist because those with political power put them there. Solutions could come about through interventions of state government, which could override the political wishes of local communities in governing development. That seems a long way off in Montana, but such moves have gained traction elsewhere.

There are other facets to the problem to consider. Consulting firm McKinsey & Company estimates that productivity in the construction industry has stagnated since the mid-1990s, growing by just 1 percent per year compared to the 2.7 percent per year gains in the overall economy. Part of that malaise is probably due to regulation-imposed activities that add cost with little quality benefit. But the technology of construction, in particular stick-built homes produced on-site, has not taken advantage of the kinds of process innovations that have boosted manufacturing productivity by 3.6 percent per year since 1995.

High housing costs – defined as prices and rents that are higher due to artificially restricted supply – are emerging as a significant public policy issue. While the issue is not as acute in Montana, it has worsened in recent years. Crafting solutions that flow from an understanding of how high costs have come about is critical if we are to go to make things better.

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HOMEBUILDING IN MONTANA’S HOT MARKETS

Assessing the Response of Builders to Higher Prices

By Brandon Bridge and Patrick M. Barkey

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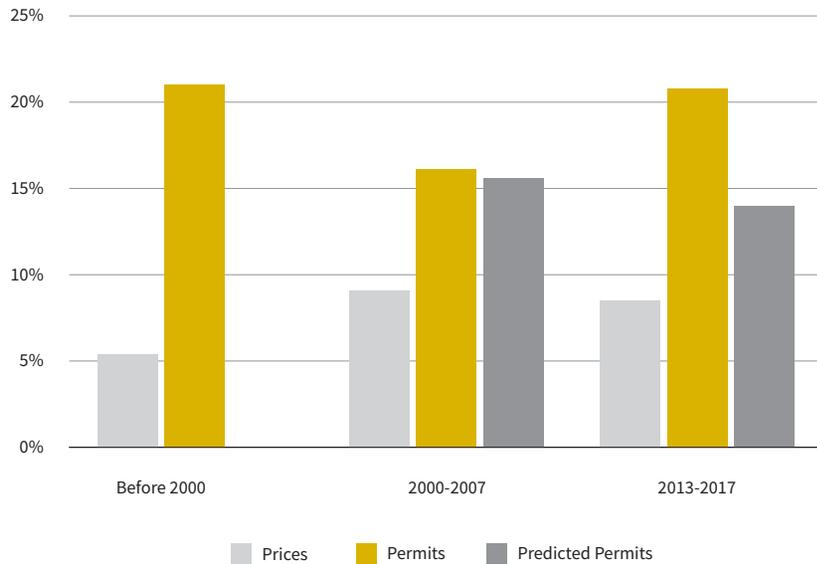
The housing price growth that has pushed the issue of housing affordability to center stage began in earnest around the year 2000. Growth in prices accelerated to an average 7.4 percent per year between 2000 and the peak of 2009, more than twice as fast as the 3.5 percent gains per year in median household income over the same period. With strong price growth resuming after the recession in 2012, the result is that housing prices have more than doubled since 2000 in five Montana counties, with 18 out of the 26 counties with available data reporting price gains of at least 70 percent through 2017.

Those price gains have caused hardship for buyers and a windfall to sellers, of course. But they have also sent a market signal to builders and developers. Have builders and developers responded to higher prices by expanding the supply of housing through new construction? Or have constraints on the marketplace – imposed, say, through local building regulations or by shortages in the construction workforce – held rates of housing construction in check?

A state-level analysis conducted by EcoNorthwest, a Portland-based consulting firm, recently investigated that question. By comparing the response of builders to fluctuations in prices before the year 2000, the firm estimated how much housing would have been built had the historical, pre-2000 relationship between new building rates and prices continued unchanged.

Their conclusion was that 23 states showed an under-production of housing in the years since 2000, amounting to a total of 7.3 million housing units. That is to say, had builders in those states responded to prices after 2000 the same way they did prior to that year, 7.3 million more housing units would have been built than actually were. The shortfall was dominated by California, which accounted for almost half the total. Montana was not included in the group of under-building states in the EcoNorthwest analysis.

Figure 1. A comparison of growth in housing prices and residential building permits, Gallatin County, average annual percent growth. Source: BBER analysis.



Housing Under-Production in Montana Markets

Housing markets are fundamentally local, and the finding that in Montana as a whole builders have responded to higher prices since 2000 in essentially the same fashion as they did prior to that year may not hold true for markets within the state. Using the same methods as the EcoNorthwest study, we examined the pre- and post-2000 relationship between rates of homebuilding and housing prices by:

- fitting a statistical model between total residential building permits, on the one hand, and housing prices and other control variables, using available pre-2000 data;
- using that model to make a prediction of new construction each year after 2000 based on the behavior of prices for the 2000-2017 period; and
- comparing the predicted level of building with what actually occurred.

We conducted this preliminary analysis for four counties in the state: Gallatin, Lewis and Clark, Missoula and Yellowstone.

The graphical display of our findings in the four figures is illuminating. In each figure we consider the relationship between price growth and home building for three separate periods: the years before 2000 (back to 1980, depending on available data), the pre-recession housing boom period 2000-07, and the post-recession period 2013-17. We present price growth, as measured by the Federal Home Finance Agency’s Housing Price Index, construction growth, as measured by Census building permits, and predicted construction growth. The latter is based upon a statistical model fitted to the pre-2000 data. Averaging growth over a number of years smooths out some of the volatility in the data and allows simpler comparisons to be made.

Let us first examine the Gallatin County results shown in Figure 1. There was robust price growth and construction growth that preceded the year 2000, exceeding 5 percent and 20 percent per year, respectively. Price growth accelerated to almost 8 percent per

Figure 2. A comparison of growth in housing prices and residential building permits, Lewis and Clark County, average annual percent growth. Source: BBER analysis.

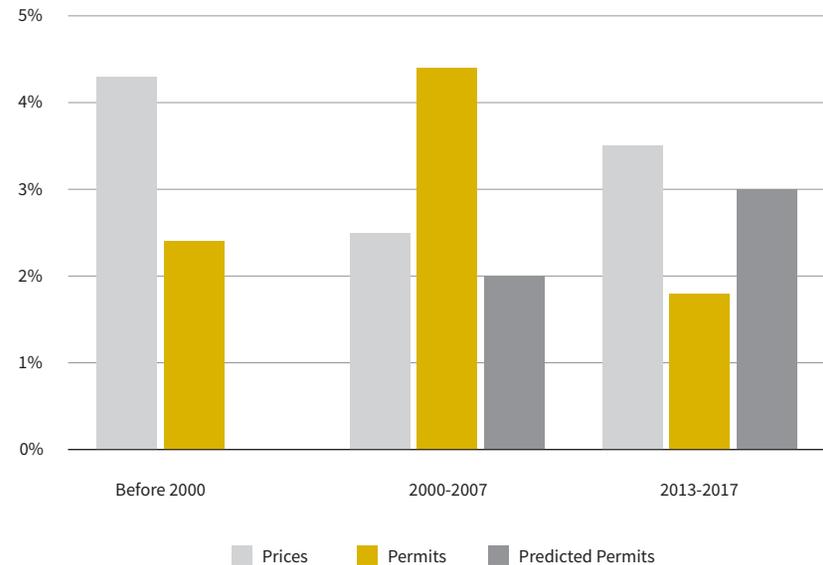
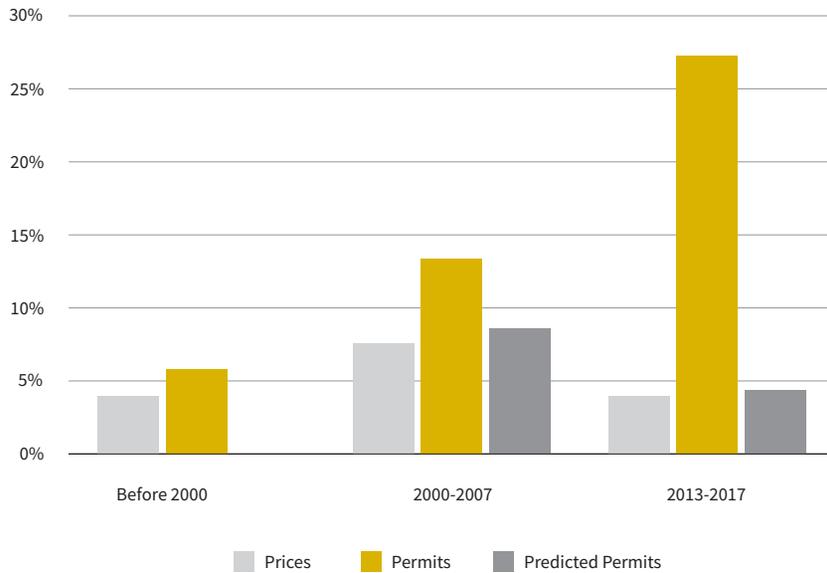


Figure 3. A comparison of growth in housing prices and residential building permits, Missoula County, average annual percent growth. Source: BBER analysis.



year during the pre-recession boom, but construction growth – while still strong – actually decelerated slightly to just over 15 percent per year, which was exactly the price response we predicted. Price growth has also been strong since 2013, with a construction response even stronger than predicted.

Lewis and Clark County construction rates (Figure 2) were higher during the pre-recession boom than during the years before 2000, despite the fact that price growth during the boom was more restrained. Home building in the Helena area was stronger than predicted in 2000-07, but less than predicted in more recent years, despite an acceleration in home prices during 2013-17.

There is no evidence of underbuilding in the Missoula market during the pre-recession period 2000-07, as shown in Figure 3. Construction has actually been stronger in recent years, averaging 25 percent per year growth in permits, even though average housing prices have grown more slowly since 2013 than they did in the housing boom of last decade.

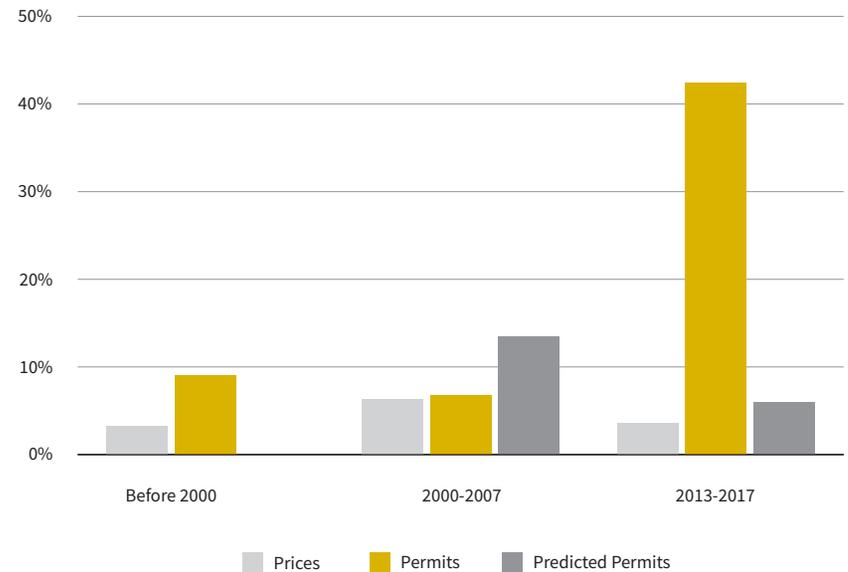
Yellowstone County’s pattern is similar to Missoula’s – higher rates of building than would be predicted based on price growth during the 2000-07 years, with a construction surge taking place in more recent years when price growth was slower than the boom.

Summary

The analysis described here was motivated by a simple idea – that higher housing prices should spur more housing construction. This is the old notion of the supply curve from your old introductory economics textbook – and that increases in supply should, all other things being equal, help to restrain price growth. If that supply response is muted, it helps prices grow faster.

Many things have changed in housing markets in Montana since the year 2000. Price growth has been faster, even accounting for the price bust of the Great Recession. Swings in building activity have been more volatile. And the relationship between housing prices and housing construction has become weaker as well, at least in the four counties analyzed here.

Figure 4. A comparison of growth in housing prices and residential building permits, Yellowstone County, average annual percent growth. Source: BBER analysis.



Montana was already considered to be a “no under-production” state by EcoNorthwest – a state where there was no evidence that the supply response to increased housing prices was inhibited by regulatory policy or anything else. Thus, the mixed conclusions on this question for the four individual counties we examined here are not completely surprising.

An examination of individual years does show some years with shortfalls in actual construction, compared to what one might expect based on prices. But these are more than offset by years when the opposite is true. Based on the evidence presented here, we have little support for the hypothesis that the regulatory or other constraints on development have had meaningful impacts on housing supply in the four Montana housing markets analyzed here.

Reference

Buchman, Marley and Michael Wilkerson, “Housing Underproduction in the U.S.,” EcoNorthwest, Portland, OR, January 2018.

THE MAJOR CAUSE OF MONTANA’S WOOD PRODUCTS INDUSTRY DECLINES

By Todd A. Morgan, Michael J. Niccolucci and Paul E. Polzin
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Forest industry employment in Montana has declined by roughly 4,600 jobs, or almost 39 percent, since the 1980s. Labor earnings in the forest industry, which includes wages, salaries and benefits paid to workers, as well as income to sole proprietors, also dropped by roughly the same amount. These declines began in the 1990s and accelerated drastically around 2007.

The reasons for this downturn have been debated in coffee shops and local newspapers. Some claim that this trend was due to increased productivity in the wood products industry. Others point to changes in the demand for wood products or policy-driven log supply declines, particularly from federally managed lands.

But the evidence shows that timber harvest and log supply have been the major cause of employment and earnings declines in Montana over the last 35 years.

Timber Harvest and Forest Industry Trends

Timber is harvested in Montana from both public and private lands, but harvests have declined significantly since peaking in the late 1980s. As shown in Figure 1, the largest declines were on U.S. Forest Service lands. In the 1990s, there was a 70 to 80 percent reduction in wood harvesting, which was followed by continued low harvest levels. Private harvests began to decline in the late 1990s, reaching a trough in 2009. Timber harvests have since stabilized at historically low levels not seen since the 1940s. The average Montana timber harvest since 2011 has been less than one-third of the average during the 1980s.

Montana’s lumber production has seen the same overall trend as its timber harvest. As pictured in Figure 2, it has declined substantially since the late 1980s. During the 1990s and early 2000s, the U.S. experienced a period of high but volatile lumber prices and record levels of new home construction and lumber consumption, but Montana lumber production continued to fall. Even at the peak of U.S. home building in 2005, with more

Figure 1. Montana timber harvest, 1980-2016. Source: Bureau of Business and Economic Research.

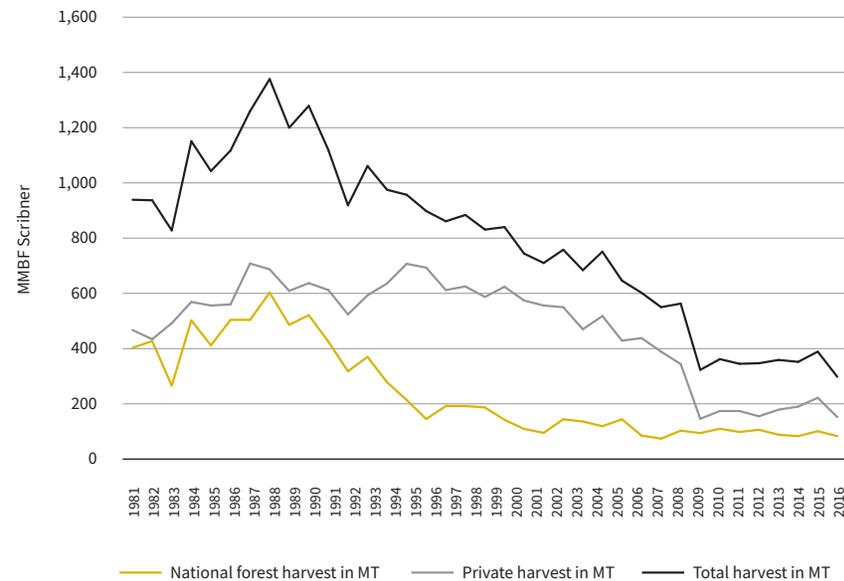
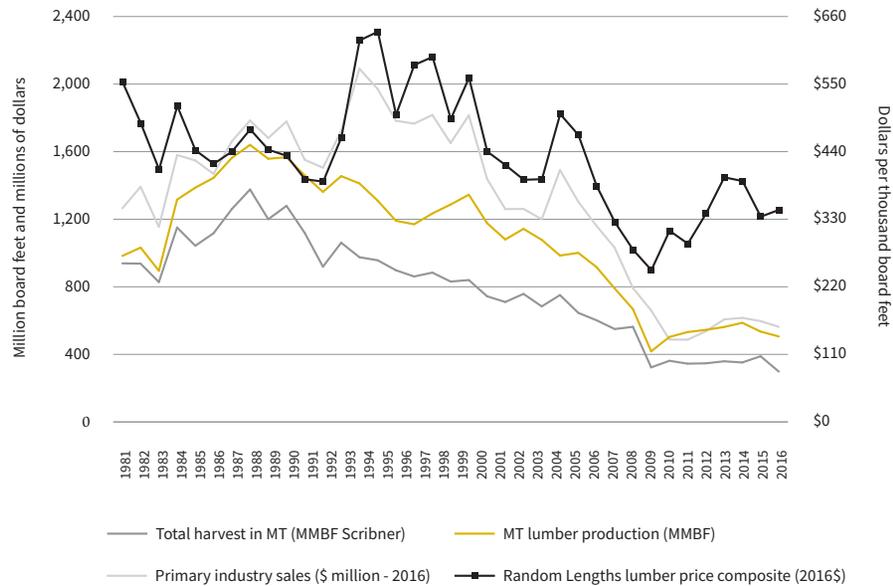


Figure 2. Montana timber harvest, lumber production, primary wood product sales and lumber prices. Sources: Bureau of Business and Economic Research, WWPA and Random Lengths.



than 2 million new home starts, Montana’s lumber production was only slightly above its 1982 recession low. Since the Great Recession of 2008-10, lumber production in Montana has remained relatively flat despite increasing lumber prices. Montana lumber production in 2016 was one-third of what it was in 1989.

Clearly there is an ongoing disconnect between Montana’s forest industry and national market trends. The underlying cause has been limited timber availability and reduced harvests. U.S. home construction has more than doubled since the recession trough in 2009 and lumber prices have risen 40 to 60 percent, while industry trends in Montana have been relatively stable since the Great Recession.

Industry Productivity

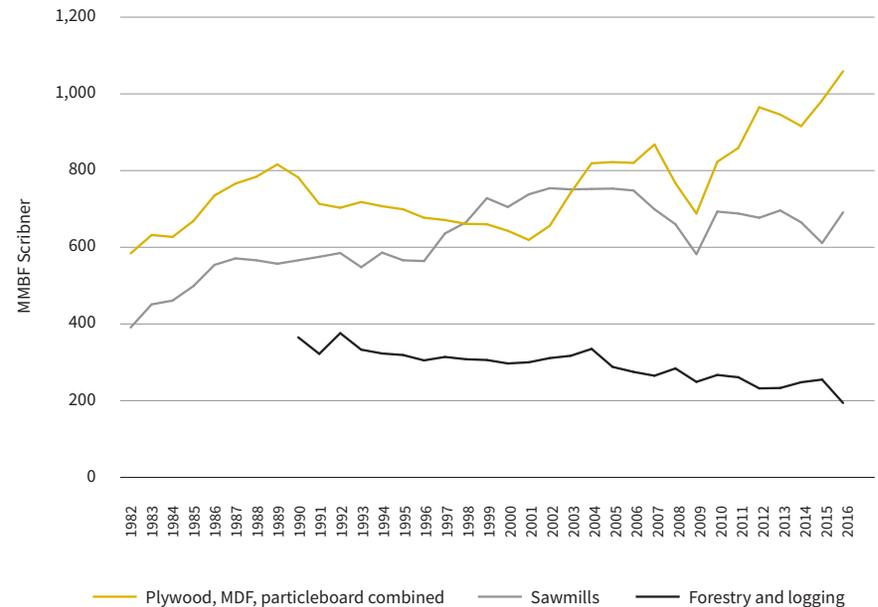
Productivity is an important economic concept but can be difficult to measure. The Bureau of Business and Economic Research (BBER) has collected unique data, which

enable a precise measurement of productivity changes in various components of Montana’s forest industry.

There are several ways to measure productivity: material productivity, which is output per unit of raw material input (for example, lumber output per log input), and labor productivity, which is output per worker. In Montana, lumber overrun and lumber recovery – two measures of material productivity – increased 25 and 6 percent, respectively, from 1981 to 2014. This means that more lumber is now being squeezed from logs going into Montana mills.

Labor productivity in three specific Montana forest industry sectors is presented in Figure 3, those being sawmills, plywood and particleboard plants, as well as forestry and logging (workers actually out in the woods). Labor productivity in Montana sawmills has generally increased over time, but there have been several flat periods and some noticeable declines, particularly during the Great Recession.

Figure 3. Montana forest industry labor productivity. Sources: Bureau of Business and Economic Research and U.S. Bureau of Economic Analysis.



The corresponding data for Montana’s plywood and particleboard plants show increases in the 1980s, decline in the 1990s and increases since 2000, with a similar drop during the Great Recession. Labor productivity for forestry and logging workers in Montana has remained relatively flat, but there has been an overall decline since 1990 when the data series began.

It may seem odd that forestry and logging labor productivity in Montana has declined when it’s increased in other parts of the country. But timber harvests in the southern U.S. and Pacific Coast can be quite different. Much of their timber comes from privately owned, even-aged tree plantations, found often on flat ground where modern harvesting equipment is most efficient. In Montana, we see more partial harvest and less clear-cutting, more public lands and more restoration work.

Through time, the way logging is done has changed in response to environmental concerns, increased public scrutiny and policy changes. For example, more smaller trees and fewer larger trees are being cut; restrictions are being put on the days forests and roads are open to logging and hauling; and other actions or restrictions are being enacted due to concerns about wildlife, recreation and wildfires, as well as weather and soil conditions. While Montana foresters and loggers may have access to the new technology and equipment that would otherwise increase productivity, there are other factors in play reducing their ability to efficiently use those tools.

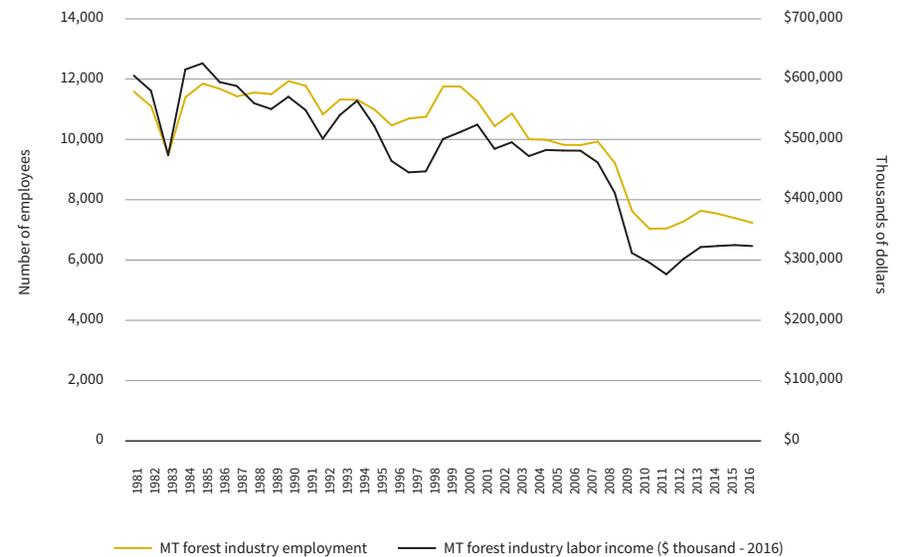
Employment and Labor Earnings

Figure 4 presents Montana wood products employment and (inflation-adjusted) labor earnings. It takes only a quick glance to see the downward trend over the last three and a half decades, mirroring the trends in timber harvest and lumber production. Employment and earnings decreases began in the 1990s. There were also numerous mill closures through the 2000s. During the Great Recession there was a pronounced drop off, with only a modest recovery since that time period.

The Great Recession had a major impact on wood products industry employment and labor earnings throughout the West. Employment, as well as production and prices, declined sharply. Montana and other states in the interior west, have had trouble responding to increases in new home construction and rising lumber prices due to limited local timber availability.

During the most recent post-recession period, Montana forest industry employment was only 2.7 percent higher than its low point in 2010. Labor earnings were 17 percent

Figure 4. Employment and labor income in Montana’s Forest Industry. Sources: Bureau of Business and Economic Research, BEA and BLS.



higher than the 2011 low. Most mills in Montana have been running only one shift for years because they’ve been unable to obtain sufficient logs to add a second shift. Thus, many Montana mills are operating at only 50 to 70 percent capacity during periods of high nationwide lumber prices.

Statistical Analysis and Findings

Statistical techniques were used to quantify the relationships among Montana’s wood products employment, labor earnings, timber harvests, mill productivity and national lumber prices. Specifically, wood products employment and labor earnings were separately related to 1) lumber output per employee, which is a measure of labor productivity; 2) a composite U.S. lumber price, which is a measure of U.S. wood products demand; and 3) Montana’s timber harvest from all ownerships, which is a measure of log supply.

These analyses were examined for violations of statistical assumptions and none were found. In addition, the possibility of simultaneity (uncertainty regarding the train of causation between factors) was investigated and rejected.

The most important factor influencing forest industry employment in Montana was found to be timber harvest. Labor productivity was also a factor but to a lesser degree. Statistical analysis estimated that the timber harvest was four times more important than labor productivity. National market conditions (demand) as measured by U.S. lumber prices were not related to Montana's forest industry employment. The analysis found no statistical relationship between forest industry labor earnings and labor productivity or U.S. lumber prices. Only Montana's timber harvest was related to forest industry labor earnings.

These findings are important because they demonstrate that the log supply situation in Montana is the most important factor causing the reduction in forest industry employment and labor earnings. Labor productivity is statistically related to forest industry employment, but not labor earnings. U.S. market trends, as measured by national lumber prices, were not found to be related to either Montana's forest industry employment or its labor earnings.

One other finding is that, given log supply and U.S. market conditions, increasing labor productivity in Montana mills increases overall forest industry employment and does not lower it. This dispels the myth that productivity gains are driving declines in forest industry employment in Montana.

Conclusion

The overall trend in Montana's timber harvests has been dropping since the late 1980s. Declining timber harvests have been the major cause of declining employment and labor earnings in Montana's forest industry. Taking increased milling productivity and lumber prices into account, timber supply is still the most important factor determining the size and economic contribution of Montana's forest industry.

With substantial increases in timber availability, as suggested by the Chief of the USDA Forest Service, as well as national forest system officials in Missoula's Region 1 office, the forest industry could grow, employ more workers and generate more labor earnings. Perhaps more importantly, with a stable or growing forest industry, Montana could increase its ability to manage its forests, help reduce wildfire risks and provide income to forest landowners and local communities.

THE CONTRIBUTIONS OF HARD ROCK MINING TO THE MONTANA ECONOMY

Montana's Future as Well as Its Past

By Patrick M. Barkey

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What would the economy of the state of Montana look like if the eight largest hard rock mines – producing copper, palladium, gold, talc, cement and other products and materials – did not exist? That was a question posed by a recently completed research report produced by the Bureau of Business and Economic Research. It addressed – both for existing and for proposed new metal mines – the contributions made by hard rock mining to jobs, income, spending, tax receipts and population in the state. The conclusion underscored the continuing importance of hard rock mining activities, not only to the economic livelihoods of the communities that are home to the mining operations, but also to the health of the state economy as a whole.

Since that study was completed in the fall of 2018, its results were essentially validated by events in the economy itself. In November of last year, revised data were released by the U.S. Bureau of Economic Analysis. That data allowed for the first time a more complete accounting of the patterns of growth in the Montana economy that produced stagnant general fund revenue collection, which in turn necessitated a special session of the Legislature to address the revenue shortfalls. And what did it show?

Although 2016 was another year in which Montana's economy had good job growth and a low unemployment rate, a contraction in mining earnings of \$225 million ultimately produced the worst revenue performance in the state since the end of the Great Recession (Figure 1). In truth, Montana's hard times in mining in 2016 pertained more to oil and gas activity setbacks in the wake of the oil price bust. These were included in the mining total. But the essential message, that events in high earnings natural resource industries have a disproportionate impact on the economy as a whole, was demonstrated dramatically.

We are happy to report that both the mining industry and the state economy enjoyed a much better year in 2017. But an understanding of how the mining industry – and in the case of this analysis, the hard rock mining industry – can exert such influence on

economic outcomes clearly is important. That is precisely what this study attempted to deliver.

Research Approach

There are at least three ways to approach the assessment of hard rock mining’s importance to the economy. Certainly the products produced by Montana’s metal and talc mines – the palladium that goes into catalytic converters, the gold that is part of high-tech devices and the copper that goes into almost every electronic device – are of high value in a modern economy. Montana’s hard rock mines are also an important employer and customer for Montana vendors in the communities in which they operate. Lastly, there is the outsized contribution of hard rock mining to state and local taxation, thanks to Montana’s reliance on natural resource industries as part of its revenue base.

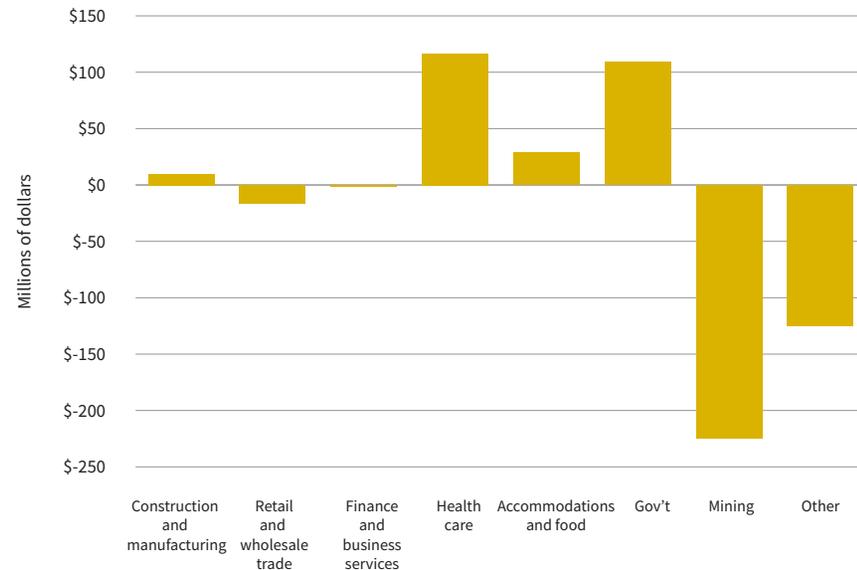
Using comprehensive information gathered from the state’s eight largest mining facilities on the breadth and scale of their operations, as well as the activities of the dozens of exploration projects currently underway throughout the state, we constructed a picture of what economic activity across the state would look like if those operations did not exist. Such a picture removes not just the mining activities themselves, but the transportation, energy, engineering and other activities that are closely linked to mining production, as well as the spending and activity in the economy as a whole that are induced by the mining companies and their employees.

This study did not consider benefits from the products of mining in assessing the economic contributions of the industry. Thus, the actual contributions of hard rock mining to the Montana economy exceeded those reported here.

In order to capture all of the interactions between hard rock mining and the rest of the economy, the study used a well-respected economic model (REMI), which was specifically calibrated for application to the Montana economy. The model provided the means to track and tally how the spending at Montana’s hard rock mines – by both workers who are employed there, as well as by the mines themselves – supports other economic activity around the state.

The research compared two states of the Montana economy. The first is the directly observable activity of the economy as it exists today, which includes all of the impacts of Montana’s hard rock mining operations. The second economy is artificial – a “no mining” economy where the spending, production and jobs at Montana hard rock mines, including the ongoing exploration activities, are removed from the economy. The model

Figure 1. Real earnings growth by industry, Montana, 2016 (\$ millions). Source: U.S. Bureau of Economic Analysis.

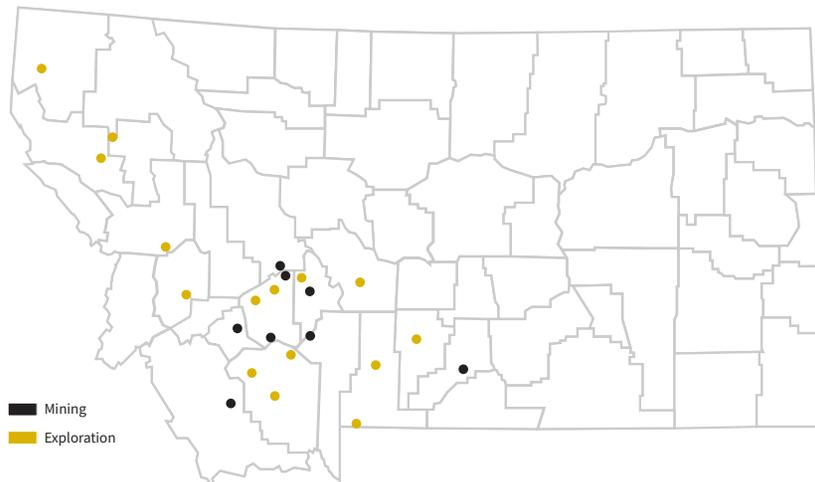


was used to create this scenario, where the state economy comes to rest at a new, lower level of activity as the absence of mining is felt across all industries and activities. The difference between these two scenarios is the economic contribution of hard rock mining.

Montana’s Hard Rock Mines

The study considered the economic activity at eight specific hard rock mining facilities located around the state (Figure 2). Those facilities mine and process a variety of metals and other products, including copper, cement, talc, platinum, palladium, molybdenum and gold. Jointly these facilities directly employ more than 3,100 workers with annual wages in excess of \$300 million. Additionally, the ongoing exploration activities that are underway across the state account for an additional \$37 million each year in economic activity. In addition to these considerable wages, the hard rock mines also make considerable purchases of equipment and services from vendors and suppliers.

Figure 2. Montana mining and exploration activities. Source: Bureau of Business and Economic Research.



Natural resource industries, especially hard rock metal mines, have special importance for state and local tax revenues. Not including the taxes levied on workers, which are the same as other employers, the hard rock facilities analyzed in the study pay:

1. Metal Mines Tax
2. Resource Indemnity and Groundwater Taxes
3. Cement and Gypsum Taxes
4. State Lands Fees
5. State Lands Royalties
6. Property Tax – Net Proceeds
7. Property Tax – Gross Proceeds
8. Property Tax – Other
9. Corporation Income Tax

With the major exception of property taxes, these taxes are remitted to state government. In fiscal year 2018, tax revenues from the taxes listed above (omitting the Corporation Income Tax) totaled \$44.8 million.

Research Results

The analysis is quite detailed, but the answers to the basic research questions are simple. The Montana hard rock mining industry is an important source of prosperity and value to Montana households, businesses and governments – not just in the mining communities, but throughout the state. The state’s eight largest hard rock mining, talc mining and cement materials facilities together, with the ongoing exploration activities, ultimately produce a state economy that:

- has 12,304 more permanent, year-round jobs with average annual earnings of \$86,030 per job;
- produces an additional \$2.7 billion each year in economic output;
- sees Montana households receive \$1.1 billion more per year in income, including \$1 billion in after-tax income available for spending in their local communities;
- helps state government realize almost \$200 million in additional tax and nontax revenue per year; and
- supports a population that is larger by 20,293 people, including 4,933 more school-aged children.

These economic contributions are well in excess of the employment, production and tax receipts produced by the industry directly, and reflect: 1) the extensive linkages that exist between Montana’s mines and the rest of the economy; 2) the high value-added nature of hard rock mining and the resultant high levels of capital expenditure and worker wages; and 3) the outsized contributions of natural resource industries in general, and the hard rock mining industry in particular, to Montana state government’s revenue mix.

The hard rock mining industry in Montana is an important source of jobs, income, sales revenue and tax revenue for Montana workers, households, businesses and governments. The eight largest producers of metals, talc, and concrete products today ultimately support more than 12,000 jobs statewide, with average annual earnings of more than \$86,030. Many of those jobs are in smaller towns and rural communities with few, if any, opportunities in other industries for those workers and their families.

Montana’s raw materials have tremendous value in the global marketplace. The process of finding, extracting and processing those materials, and ultimately turning them into the wide spectrum of products that improve our lives, is a chain of events that begins here and ends up all around the world.

Reference

“The Economic Contribution of Montana’s Hard Rock Mining Industry,” University of Montana Bureau of Business and Economic Research, September 2018.

Table 1. The economic impact of hard rock mining in Montana. Source: Bureau of Business and Economic Research.

Category	Units	Impacts
Total employment	Jobs	12,304
Personal income	\$ millions	1,154.5
Disposable personal income	\$ millions	1,005.3
Selected state revenues	\$ millions	199.4
Output	\$ millions	2,721
Population	People	20,293

ASSESSING MONTANA'S KEY INDUSTRIES

FARMING AND RANCHING

Worries About Tariffs and International Trade

By George Haynes and Kate Fuller

Montana State University Department of Agricultural Economics and Economics and MSU Extension

Montana's farmers and ranchers experienced another challenging year in 2018 with lower prices impacting many grain and pulse crop producers, adverse weather conditions severely impacting livestock producers and international trade issues concerning all producers.

Crop Production and Prices

After a drought in 2017, crop production returned to normal production levels in 2018. A favorable growing season resulted in higher production for many wheat, barley and hay producers throughout Montana. Total production of winter wheat increased by 37 percent, primarily because of record high yields, even though 5 percent fewer acres were planted in 2018. Spring wheat planted acreage was 16 percent higher and average yields were 38 percent higher than 2017, which culminated in a total production of spring wheat nearly doubling from 2017. Total production of barley increased by 17 percent because of 3 percent more acres planted and 9 percent higher average yields.

And finally, alfalfa and grass hay production was up 35 percent because of increased hay acreage and excellent growing conditions throughout the summer.

A relatively good production year was met with mixed prices for grain, pulses and hay. Winter wheat prices increased by nearly 20 percent, while spring wheat and barley prices were slightly lower than the previous year. Pulse prices trended downward, with lentil and dry pea prices declining by more than 4 percent and dry bean prices declining by nearly 25 percent. Hay prices remained stable to slightly lower than the previous year. Price forecasts for the next five years suggest steady to slightly higher prices in the wheat, barley and pulse markets and slightly lower prices in the cattle market.

Livestock Production and Prices

U.S. beef production increased by 3 percent in 2018. U.S. beef production forecasts suggest that production will increase by more than 3 percent in 2019. U.S. beef exports decreased by 4 percent from 2017 but are expected to increase by 3 percent in 2019. U.S. beef imports were unchanged from 2017 but are expected to increase by more than 1 percent in 2019. Montana ranchers are largely cow-calf producers who market about 1.5 million calves each year. Calf prices remained stable from the previous year; however, record snowfall and cold weather caused the deaths of at least 11,000 calves and other cattle. Price forecasts for the next five years suggest slightly lower prices in the cattle market.

Farm Financial Conditions, Farm Bill and Trade Issues

U.S. net farm income decreased by more than 13 percent from 2017, although the average U.S. farm balance sheet has remained healthy with a debt to equity ratio below 16 percent. Perhaps the most important challenge facing producers is liquidity, where the average U.S. farm current ratio (current assets/current liabilities) has declined from 2.87 in 2012 to 1.44 this year. These ratios suggest that U.S. agriculture is facing short-term liquidity challenges but not long-term solvency challenges.

The remaining concerns for Montana producers are the status of the Farm Bill and international trade issues. At this juncture, it's most likely that the Farm Bill will be passed by January 2019. On the international trade scene, producers are concerned about tariffs and renegotiated trade agreements. Tariffs have adversely impacted prices on agricultural commodities, especially soybeans and corn. Additional funding, through the Market Facilitation Program, is available to producers impacted by declines in commodity prices and export volume. And finally, producers are tracking the renegotiated North American Free Trade Agreement (NAFTA) as the new agreement, United States-Mexico-Canada Agreement (USMCA), works its way through the United States Senate.

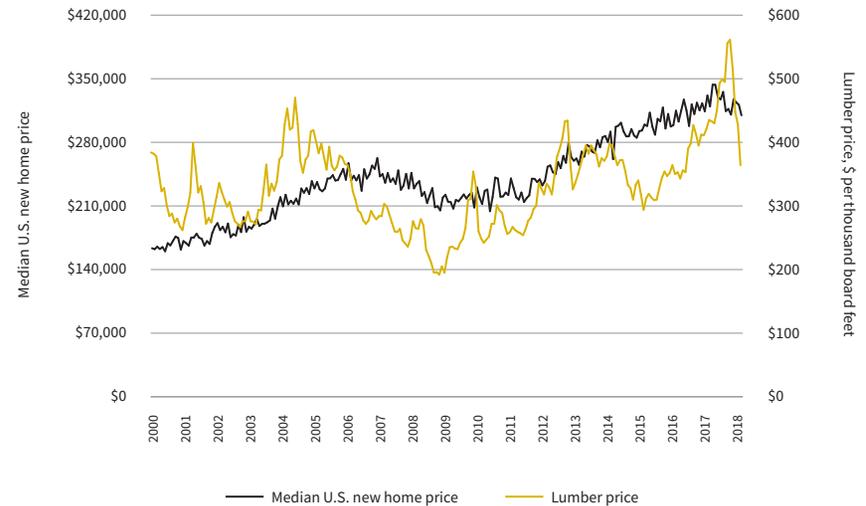
FOREST PRODUCTS

Changing Harvest Levels and Lumber Prices

By Todd A. Morgan, Kate C. Marcille and Steven W. Hayes
Bureau of Business and Economic Research at the University of Montana

A variety of factors were at play during 2018 that influenced Montana's forest industry. Fortunately, 2017's massive wildfire season was not repeated here in the Treasure State, unlike California, which was hit hard again by fires. Lumber prices in the U.S. climbed to their highest levels since the housing bust of the Great Recession, peaking in June of 2018, but falling 40 percent by year's end to levels on par with 2016. Along with higher prices, lumber production from Montana sawmills was up 11 percent January through September compared to the same period in 2017, but wood panel production in Montana was down about 4 percent from 2017 and almost 14 percent from 2016. Log prices in Montana were around 7 percent higher in 2018 than in 2017, as mills were able to pay landowners more for timber while product prices were higher.

Figure 1: Monthly median U.S. new home price and lumber price, 2000-18. Sources: U.S. Census Bureau and Random Lengths.

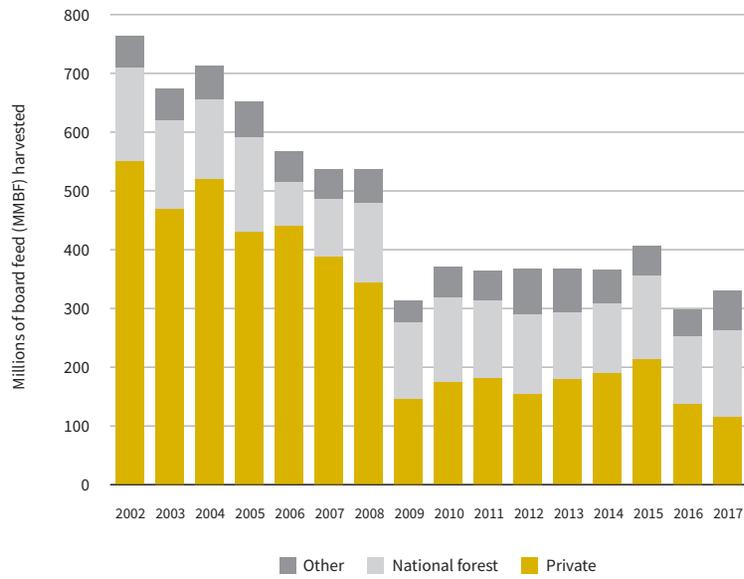


Lumber and Housing Affordability

The run-up in lumber prices was attributed to a combination of factors constraining supply, including tariffs on softwood lumber from Canada, wildfires and reduced timber harvest in British Columbia, rail car and truck shortages, as well as increased demand driven by modest increases in U.S. homebuilding through most of 2018. New home starts in the U.S. are anticipated to finish 2018 about 5 percent higher than 2017.

As lumber prices were peaking, a number of news stories focused on the Trump administration's tariffs on Canadian lumber and various goods from China. Increases in homebuilding costs were attributed to the rising cost of lumber and other materials. However, when lumber prices began to fall, there were no corresponding stories about the decrease in homebuilding costs, in large part due to the variety of other factors affecting home costs and affordability. Higher labor costs and reduced labor availability in the trades, rising interest rates, increasing regulation, increasing land values and constraints on buildable lots in many areas of the country, in conjunction with rising costs of building materials, appliances, and home systems (e.g., heating, air conditioning and plumbing) all contributed to the rising cost of new homes. Slower wage growth and

Figure 2. Montana timber harvest volume by ownership class, 2002-17. Sources: USDA Forest Service, Montana DNRC, Bureau of Business and Economic Research.



a widening disparity between median incomes and median home prices contributed to reduced affordability in many communities.

National Forests, Wildfire and Good Neighbor Authority

Total timber harvest volume in Montana during 2018 is estimated to be similar to 2017, with private land harvest relatively unchanged, slight declines from state and BLM lands and a slight increase in national forest harvest. National forests account for roughly 60 percent of the timberland available for harvest in Montana and over the past decade have provided about 30 percent of the harvested volume in Montana. During 2017, 146.8 million board feet (MMBF) Scribner were harvested from national forest lands in Montana, representing the highest volume removed from USFS land in Montana in more than a decade. The harvest level was near this volume in 2015 (143.7 MMBF) and 2010 (144.5 MMBF). Timber harvest volume from national forests in Montana increased 27 percent between 2016 and 2017. However, 2016 experienced a nearly 20 percent decline from 2015.

With only January through June 2018 data available at present, the 2018 national forest timber harvest looks to be on track to exceed 2017 harvest levels. About 3.7 MMBF more have been harvested in the first half of 2018 compared to the first half of 2017. However, the volume of timber sold from national forests in Montana so far during fiscal year (FY) 2018 was down by 50 percent from FY 2017 (Q1-Q3). This low timber sale volume could translate into less timber being harvested in Montana during 2019 and 2020.

The decline in timber sold from national forests in Montana during FY 2018 stands in contrast to our neighbor, Idaho, which saw 20 to 25 percent gains in both cut and sold volumes from national forests during the first three quarters of FY 2018. While fires affected far fewer acres in Idaho than Montana during 2017, other factors may be contributing to Idaho’s increasing national forest cut and sold volumes.

Idaho has been an aggressive adopter of the Good Neighbor Authority (GNA), which was permanently authorized by Congress in the 2014 Farm Bill. GNA enables state agencies to work cooperatively with the U.S. Forest Service to plan, analyze and implement a variety of forest, rangeland and watershed restoration activities, including timber harvests on national forest lands to help reduce fuels, improve forest health, create more jobs and stimulate economic benefits. During 2018 the Idaho Department of Lands (IDL) worked with the U.S. Forest Service on 12 of 29 proposed GNA projects. Montana Department of Natural Resources and Conservation (DNRC) is developing five to 10 projects with the U.S. Forest Service for FY 2019.

Employment and income in Montana’s forest industry have both declined since the 1990s, largely in response to falling timber harvest levels and despite periods of robust homebuilding and rising wood product prices. But there is hope that the need for affordable housing and sustainable forests will help propel Montana’s forest industry into a new era of growth and prosperity.

ENERGY

Good News and Challenges for Montana

By Bill Whitsitt

Bureau of Business and Economic Research at the University of Montana

As our nation continues to move toward energy independence, with strong energy-enabled manufacturing, lower energy intensity, progress on greenhouse gas emissions

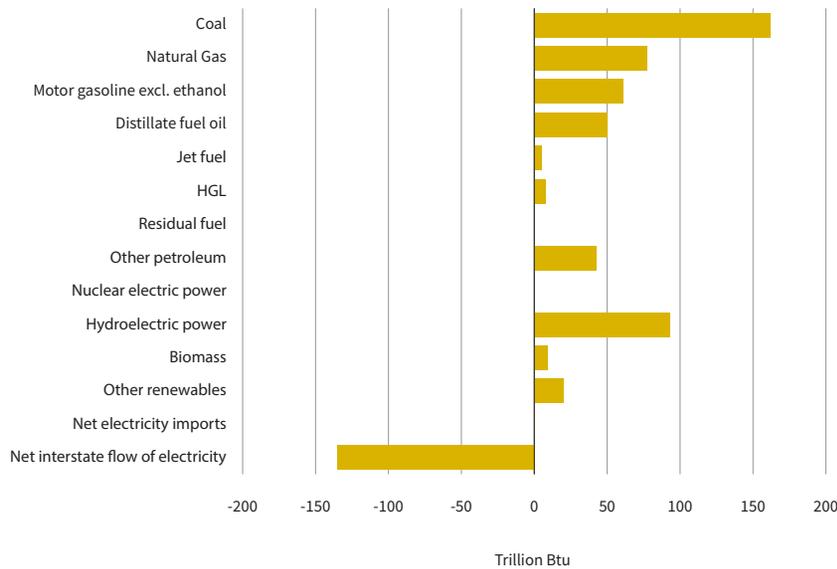
and reduced consumer costs, Montana also has good energy news – but it is tempered by a bit of reality.

The Treasure State has oil, coal, hydro and wind resources that rank high among states. Oil and coal development and production contributed nearly \$200 million to the budgets of state, county and local governments in fiscal year 2018 (Montana Department of Revenue). We have relatively low electricity prices, primarily because of our hydropower and coal-fired generation and their proximity. In fact, according to the U.S. Energy Information Administration (EIA) in August 2018, Montana’s average residential electricity cost was 35th in the nation at 11.51 cents per kilowatt-hour – Hawaii ranked 1st at 32.40 cents/kWh and California 5th at 20.56 cents/kWh.

There has been movement toward more use of renewable sources among the state’s diverse energy mix, and Montana’s energy investment climate shows signs of improvement.

Montanans, however, are still among those using more energy per capita than consumers in most other states. We also spend more per person on our energy overall. In the EIA’s latest full reporting year data for 2016, Montana ranked 15th in total energy consumption

Figure 1. Montana energy consumption estimates, 2016. Source: U.S. Energy Information Administration.



per capita and 14th in total energy expenditures per capita. Factors such as cold winters and long driving distances undoubtedly contribute to these trends. Other factors also provide reasons for caution when trying to gauge Montana’s energy future.

Stunning technology advancements underpin a new, exciting phase of the shale energy revolution that is pushing the U.S. toward energy independence and oil and gas exports unimaginable only a few years ago.

The Bakken play in North Dakota and Montana has been part of the revolution. New exploration, development and production efficiency gains are surprising even to those accomplishing them. Increased precision in drilling and hydraulic fracturing, with use of high-tech downhole sensors, fiber optic communication, continuous remote monitoring, and real-time process adjustments, are improving flow rates and lowering costs dramatically nationwide.

Even older oil producing areas of Montana are benefiting from technology application. Most striking for the future will be the injection of carbon dioxide into oil-bearing formations to sweep otherwise unrecoverable crude to producing wells.

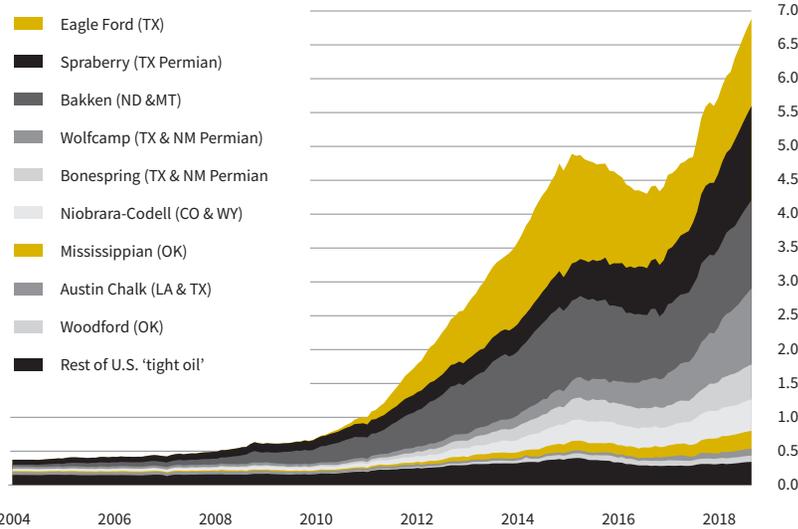
A number of significant oil and gas companies in all sectors – exploration and production, gathering and pipelines, and refining – remain strong participants in Montana’s energy economy. They and others see the state as one of the better places to do business.

We are seeing an uptick in oil and gas permitting by the Montana Board of Oil and Gas. Fifty-nine new-well permits were issued in roughly the first 11 months of 2018, compared with 35 for all of 2017. But prices still matter. In the near term, prices may remain lower and more volatile than companies need to fund all their multimillion-dollar projects in new shale-related or enhanced oil recovery projects.

Employment patterns in oil and gas will continue to change. As we’ve said for several years, the old boom and bust well-driven cycles of decades past have been replaced with resource and technology plays, such as the Bakken. Today there’s more stability once initial exploration and early development has occurred. The process has become one of replicating and tweaking – almost in a manufacturing sense.

New technology, data and communication-driven efficiencies in shale-related projects are potentially leading to the need for fewer, more skilled, workers than before. In places like Sidney in eastern Montana’s Bakken, that also support activity in North Dakota,

Figure 2. U.S. tight oil production, selected plays. Source: U.S. Energy Information Administration.



stability seems to be the new norm. Elementary school enrollment is steady, and housing and apartment prices have started to return toward levels seen before the big boom.

Perhaps the greatest uncertainty in Montana’s energy future is in the coal industry. Coal currently fuels about half of Montana’s electrical generation. But there has been a general decline in coal demand in the U.S., with plant closures tied to environmental concerns and natural gas competition.

The expected closure within the next several years of the oldest pair of units at the four-unit Colstrip Electric Generating Station, and the pending bankruptcy of Westmoreland Coal, the owner of the Rosebud Mine that supplies Colstrip, contributes to that uncertainty.

Yet, there are early indications of some changing coal dynamics. Montana coal production increased in 2018. In December, it was on pace to reach 38 million tons or 3 million tons more than in 2017. The reason could be a higher demand for coal elsewhere in the world.

The global demand for coal has been growing, with Asian nations leading the demand growth. Lacking energy diversity, coal-generating plants are still their lowest-cost option

Table 1. Montana ranks among the top 10 places to invest in the exploration and production business. Source: Global Petroleum Survey, 2018.

Rank	Place
1.	Texas
2.	Oklahoma
3.	Kansas
4.	Wyoming
5.	North Dakota
6.	Alabama
7.	Montana
8.	U.S. Offshore Gulf of Mexico
9.	United Kingdom
10.	Louisiana

for power. Even if demand plateaus, Montana’s Powder River Basin coal is best-suited for new, high-tech plants designed to run efficiently with lower CO2 emissions.

It would seem there is ample Montana mine capacity to meet an increase in export demand. Production in the state peaked at some 44.9 million tons in 2008, according to the Montana Coal Council. It could reach that level again if the demand is there. However, meeting increasing international demand for Montana’s coal will depend in large measure on export terminal capacity on the West Coast.

Several ports or port expansions have been denied by states, leaving only one such project pending – the Millennium Bulk Terminal project on the Columbia River in Longview, Washington. Its proponents are continuing to battle the State of Washington for permits to modernize and expand the site of a former aluminum smelter and existing port facility. This could lead to a Supreme Court decision on the question of how far a state may go in preventing interstate – or international - commerce. Meanwhile, Montana’s coal exports must be railed to British Columbia for shipment.

Finally, Montana has significant resources and future potential in renewable energy. Most significant perhaps are our hydropower resources and operations – Montana is 5th among states producing hydropower, and 23 dams provide almost 40 percent of Montana’s electricity generation (EIA, Montana DEQ, S&P Market Intelligence).

Wind energy capacity has been growing, and windmill generators are providing some 8 percent of the state's power generation (EIA, Montana DEQ, S&P Market Intelligence). Whether that share will grow is dependent on wind power's intermittent nature and the state's electricity export transmission capacity. The state's wind power capacity factor (the percentage of total wind generation capacity that is actually available) averages 30 to 40 percent (S&P Market Intelligence, WindAction) and can vary by season and even time of day.

This situation can cause significant challenges for integrating renewables into Montana's energy mix. Solutions like large-scale battery and pumped hydro storage are in the works. The state's utilities and cooperatives continue to seek improvements to systems and processes to ensure reliability of power and reasonable consumer costs. In addition, small "microgrids" and off-grid power will be part of Montana's energy future.

The bottom line for Montanans is that we are energy-blessed in many respects. But no source is perfect, and some challenges persist.

MANUFACTURING

Rapid Growth and Employment

By Paul E. Polzin
Bureau of Business and Economic Research at the University of Montana

Montana manufacturing employment has grown faster than the nation since the Great Recession. U.S. manufacturing wage and salary employment rose from 11.5 million workers in 2010 to 12.4 million in 2017, an increase of 8 percent. Montana manufacturing employment increased from 16,400 in 2010 to 19,900 in 2017, an increase of 21.3 percent.

The strong growth in Montana manufacturing employment occurred despite closures in several manufacturing industries, such as the Smurfit-Stone paper mill near Missoula, which permanently closed in early 2010. This facility was the largest manufacturing plant in the state. In addition, there were shutdowns and closures in the wood products industry. Employment in the wood and paper products industry decreased from about 3,100 in 2010 to roughly 2,600 in 2017, a decline of 16.1 percent. Employment in all the other components of manufacturing increased from about 13,300 in 2010 to roughly 17,300 in 2017, an increase of 30.1 percent.

The recent declines in forest industry employment are a continuation of a long-term trend. Forest industry employment in Montana decreased by roughly 4,600 jobs or almost 39 percent since the 1980s. Labor earnings in the forest industry (the amount actually paid to workers) also declined by roughly the same percentage. These declines were relatively modest in the 1980s and 1990s but have accelerated drastically since 2000. The cause of these trends have long been debated in Montana, but a recent report by the Bureau of Business and Economic Research and forest economist researchers concluded that decreases in the timber harvest were the major determinant of forest industry trends (Morgan, Niccolucci, & Polzin, 2018). Factors, such as productivity and market conditions, also played a role, but it was changes in the timber harvest that were most important.

The rapid growth of manufacturing was accompanied by numerous national and multi-national corporations making acquisitions in Montana during the past decade. Examples include GlaxoSmithKline (Hamilton), Boeing (Helena), Applied Materials (Kalispell) Newport (Bozeman) and FLIR (Bozeman). None of these facilities were started from scratch, but instead were acquired from existing Montana manufacturers.

The United States Census Bureau reported there were 1,291 manufacturing establishments with employees in Montana during 2016. The largest industries within manufacturing were fabricated metal products (220 establishments), food products (150 establishments) and miscellaneous manufacturing (149 establishments). Most manufacturers are small businesses, with about 70 percent having fewer than 20 employees.

Fabricated metal production and beverage producers were the two manufacturing sectors posting the largest employment gains. Fabricated metals added about 1,150 jobs (about 61 percent) between 2010 and 2017. Jobs in beverage production increased by 655 (about 86 percent) from 2010 to 2017. Employment in computer and electronics manufacturing rose by more than 350 (roughly 85 percent).

The alcoholic beverage industry is growing rapidly in Montana. Distilleries, wineries and breweries employed about 1,032 workers in 2017, up from 267 in 2011. Breweries were the largest component within the alcoholic beverage industry, employing 835 workers in 2017. The corresponding figures for distilleries and wineries were 138 and 59 workers, respectively. The recent growth in the alcoholic beverage industry was mostly due to new firms rather than growth in existing firms, however several current breweries and distilleries have announced plans for further expansions. The total number of alcoholic beverage producers increased from 25 in 2010 to 99 in 2017.

Fabricated metal products includes a wide variety of manufactured items. The two fastest growing subcategories were small arms manufacturing and structural metal manufacturing. Small arms manufacturing employment rose from 148 workers in 2010 to 434 in 2017. These firms are located throughout the state, but many are in the Flathead and Bitterroot valleys. Employment in structural metals manufacturing, which includes prefabricated buildings, rose from 727 in 2010 to 1,047 in 2017.

A 2018 survey of Montana manufacturers asked them to identify the important issues facing their firms. Health insurance costs were mentioned most often, followed by the availability of qualified workers and then workers' compensation rates. They also said that growing their businesses is the biggest challenge they face in the near future. Similar to nationwide trends, many Montana manufacturers (especially those owning small firms) are approaching retirement age and do not have adequate transition plans.

TRAVEL, TOURISM AND RECREATION

A Typical Travel and Recreation Year

By Norma Nickerson and Jeremy Sage, Institute for Tourism and Recreation Research at the University of Montana

By many accounts, 2018 was a typical year. If you live in the Glacier National Park area, fire closed access to Logan Pass from the West – this time for five weeks. If you're a skier, the record snows from the past two years may have you believing it will always be this good. The snow melt and runoff was extraordinary for the fishing enthusiasts. But as in most trends, there are ups and downs and the travel industry is no exception.

After nine straight years of visitation increases to Glacier National Park, preliminary numbers show 2018 was down nearly 11 percent. Yellowstone National Park was also down by 6 percent after a similar downturn in 2017. The biggest decreases in Yellowstone came during its busiest months of July and August. Perhaps the overcrowding mantra during peak summer months has been heard and visitors are changing their travel days, as evidenced by increased visitation in May, June and September of 2018.

Tourism and recreation in Montana continues to be a growing component of Montana's economy and way of life. In 2017, nonresidents visiting Montana spent \$3.36 billion, supporting 53,380 jobs. Residents traveling within the state distributed \$2.87 billion. Total travel-based spending in Montana was \$6.23 billion, with nonresidents contributing

54 percent and residents contributing 46 percent. As such, tourism and recreation contribute enormously to the entrepreneurial opportunities for residents, as seen in the outfitting and guiding sector, arts, agriculture and retail.

The 12 million nonresidents visiting the state have aided in a growing number of direct flights to more destinations from all of Montana's major airports. Bozeman Yellowstone International Airport, Montana's largest airport, now has direct flights to 16 different cities during the summer months. Compare that to 10 years ago when there were only nine destinations out of Bozeman. In that time frame, nonresident visitation has increased 22 percent. This high correlation between increased nonresident visitation and the increase in flights is not a coincidence.

In the Institute for Tourism and Recreation Research's annual outlook survey, tourism businesses largely reported an overall good year. In 2018, 50 percent of tourism business owners indicated they had an increase in customer volume over 2017 – 2 percentage points higher than the number who experienced increases in 2017. However, in the Glacier travel region and the eastern regions of the state, about one-third of businesses indicated a decrease. Southwest Montana businesses had the highest percent of owners saying they had an increase in customer volume.

Figure 1. Bozeman Yellowstone International Airport route map, 13 states, 16 destinations. Source: Bozeman Yellowstone International Airport.

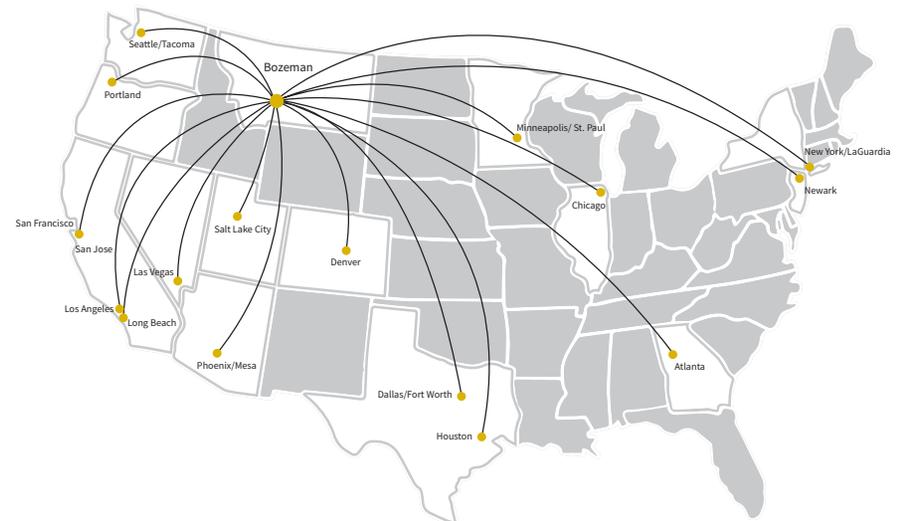
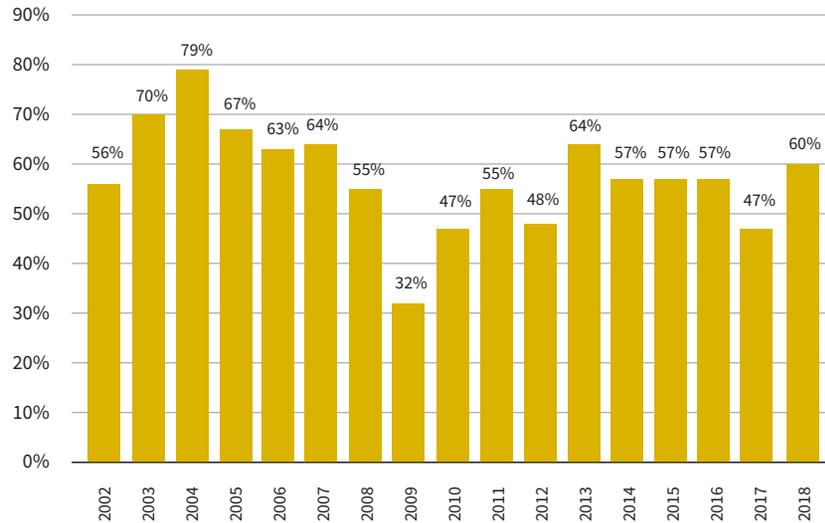


Figure 2. Percent of tourism businesses that expect an increase in the upcoming year. Source: Institute for Tourism and Recreation Research.



As we move into 2019, businesses are more confident than they have been in the past five years. Sixty percent of business owners said they expect an increase over their 2018 numbers – a 13 percent jump over this time last year. Only 5 percent thought they might have a decrease in 2019. This positive sentiment is a reflection of the national economy. The forecast for 2019 is a 2 percent increase in nonresident visitation to Montana, coinciding with similar expectations of increases to park visitation.

HEALTH CARE

Growth Is Back

By Patrick M. Barkey

Bureau of Business and Economic Research at the University of Montana.

Health care spending has grown faster than the economy since the mid-1960s. Through much of the economic boom that preceded the Great Recession, health care worker earnings in Montana grew by an average of 7.1 percent per year. That’s why the slowdown in health care spending growth in the years after the recession caught some off guard.

Was all the talk about “bending the health care cost curve” during the Obamacare debates actually coming to pass? For each of the past three years, the answer has been no.

Growth as measured by worker earnings resumed its above-average growth statewide, although patterns of growth within the state have evolved. More mature health care regional clusters such as Missoula and Great Falls grew slightly more slowly than the state average, while Bozeman and Kalispell continued to grow faster. Rural hospitals and health care providers continued to be challenged, registering very little growth.

The story of expansion in health care providers coincided with accelerated premium growth paid by individuals and employers. Health care premiums for employer provided plans have increased by 18.3 percent since 2013, slightly more than the national average of 16.6 percent. The average annual family premium paid per enrolled employee for employer-based health insurance in Montana (including both employee and employer contributions) was \$17,932 in 2017.

The Impact of Medicaid Expansion

The expansion of a slightly modified Medicaid program for adults with a household income up to 138 percent of the poverty level (and to special groups such as children and pregnant women with even higher incomes) effectively began at the start of 2016. The most important modification was a requirement for enrollees to pay modest premiums.

The impact of the expansion on insurance coverage rates has been profound. The 91,563 people covered by expanded Medicaid by January 2018 far exceeded the high range of the 45,000 to 70,000 expected to enroll. Overall, the uninsured rate for the general population fell to 7.8 percent in 2018, from rates of almost 20 percent in 2013 before Medicaid expansion took place. The bigger numbers of enrollees have pushed up costs of the program, almost all of which are borne by the federal government. There have been some savings in costs to Montana, both from reductions in uncompensated care borne by hospitals and in-state Medicaid spending, as shifts in spending between pre-expanded Medicaid and expanded Medicaid took place.

The Year Ahead

The 2019 Montana Legislature needs to reauthorize Medicaid expansion or the expansion will end in June of 2019. While renewal is likely, the political process and the possibility

of significant changes to the program inject uncertainty. Consolidation in the health care industry continues to occur, especially with individual practitioners being pulled under the umbrella of hospitals and other larger entities. Recognition of the unserved need of fast-growing communities, like Kalispell and especially Bozeman, has caused actual and announced investments in new facilities there.

TRANSPORTATION AND LOGISTICS

A Shortage of Qualified Drivers Causes Concern

By Paul E. Polzin

Bureau of Business and Economic Research at the University of Montana

The transportation industry carries goods and materials to and from the state and from one part of the nation to another. Industry trends generally follow U.S. economic trends, and the outlook is no different. Current statistics show solid and even accelerating growth, but the outlook is much murkier. Concerns for the future include the third-world debt crises, slower growth in China and the possibility of tariffs and trade wars. Regardless of the outlook, both long-distance trucking and railroads – the two most important transportation industries in Montana – are facing some important issues.

As reported in Table 1, there were 2,609 workers in long-distance trucking during 2017. These data do not include truckers employed by out-of-state companies who are simply driving through Montana.

Missoula and Yellowstone counties – located on the east-west Interstate 90 – are the two major centers of long-distance trucking in the state. Taken together, these counties account for slightly more than one-half of total statewide employment.

There were sizable gains in long-distance trucking during 2011 and 2012 as economies rebounded from the Great Recession. Then employment statewide and in Missoula and Yellowstone counties stabilized.

The major issue facing the long-distance trucking industry is a shortage of qualified drivers. Estimates vary, but shortages of 50,000 to 100,000 are often mentioned. There are many reasons for the current qualified driver shortage, but one of the largest factors is the relatively high average age of the existing workforce. The current average driver age in the long-distance trucking industry is 49 years old. In addition, working conditions,

Table 1. All employees in general freight trucking, long-distance for all establishment sizes in Montana.

Source: Bureau of Labor Statistics.

Year	Employees
2005	2,665
2006	2,488
2007	2,378
2008	2,512
2009	2,435
2010	2,421
2011	2,509
2012	2,593
2013	2,659
2014	2,652
2015	2,692
2016	2,715
2017	2,609

such as long hours and time away from family, are not appealing to certain segments. The lack of drivers may be one of the reasons long-distance trucking employment in Montana has stalled.

Two major rail systems cross Montana: the Hi-Line and the Low Line. BNSF Railway and Montana Rail Link are the two major railroads in the state, with several smaller lines serving specific areas. The major centers of railroad employment are Billings, Missoula, Havre and Whitefish.

Reliable local data for the latest trends in the rail industry are not available because federal confidentiality regulations prohibit the release of Montana data for railroad employment. Instead, reports from individual companies and national rail data are available to analyze.

National rail traffic statistics are reported by the Association of American Railroads (AAR). Over the past decade, railroads have benefited from overall global growth. In addition, technological improvements, such as unit trains and multi-modal containers,

have improved productivity and reduced costs. AAR carload shipment data show an increase of 1.9 percent during the first 43 weeks of 2018 over the corresponding period in 2017.

A major issue facing the U.S. rail industry is an oversupply of rail cars and where to put them. The boxcar and tank car fleet has high concentrations of late 1970s built rail cars that are now reaching retirement age. The nationwide fleet is shrinking – 60,000 cars retired and 41,000 new cars built – but the issue is where to place the old cars until their disposal. The use of little used rail track segments to store miles of old cars has become a political issue here in Montana and nationwide.

TECHNOLOGY

Big Investments in Tech Firms Point to Steep Job Growth

By Christina Quick Henderson
Montana High Tech Business Alliance

Montana's thriving high-tech sector continues to grow the state's economy and create high-paying jobs.

Montana's tech industry is growing nine times faster than the overall Montana economy and paying twice the median wage. The sector also generated more than \$1.7 billion in revenues in 2017, according to the annual Montana high-tech industries survey conducted by the Bureau of Business and Economic Research at the University of Montana. Surveyed companies created nearly 1,200 jobs in 2018 – an 18.5 percent increase over 2017.

Wages in the sector are also trending upward. Montana's high-tech firms raised wages by 5 percent in 2018, significantly faster than the 1.6 percent growth rate of all Montana employers. Since 2014, the median wage has risen from \$50,700 to \$63,000.

Venture capital investments have increased significantly, fueling tech growth. Montana attracted \$83 million in venture capital in 2017 – 10 times the amount available in 2015 – according to financial data company PitchBook.

In March 2018, Next Frontier Capital in Bozeman closed its second round, pooling a total of \$38 million to inject into companies. The firm opened a Missoula office in April and is looking at opportunities in Billings, Kalispell and other Montana cities.

2018 brought a succession of high-profile investments and acquisitions for Montana high-tech firms, suggesting significant growth ahead in 2019.

In February, Missoula outdoor technology company onX closed a \$20.3 million funding round led by Summit Partners in California. onX opened an office in Bozeman, hired former Amazon executive Laura Orvidas as CEO and now has nearly 70 employees, with plans to add dozens more.

In March, Blackmore Sensors and Analytics in Bozeman raised an \$18 million Series B round led by BMW iVentures. Blackmore plans to scale production of its innovative lidar sensor used in self-driving cars. The firm has 65 employees and is among several promising ventures to emerge from the photonics cluster supported by Montana State University.

In April, Livingston-based marketing technology company PFL secured a \$25 million growth equity investment from Goldman Sachs. PFL opened its second headquarters in Indianapolis in March and has teams in Bozeman and Billings. The company is building a new 55,000 square foot facility in Livingston for digital production and fulfillment. PFL has 300 employees and plans to add another 200 jobs over the next five years.

In September, global IT provider Cognizant acquired Advanced Technology Group and its 130 employees in Missoula. Tom Stergios, senior vice president of strategy and corporate development, said under Cognizant the company will continue to add jobs in Montana fed by a strong pipeline from the University of Montana.

In October, digital consulting firm Perficient acquired Elixiter, a Bozeman marketing technology company with about 40 employees. Elixiter's team will become one of more than 20 Perficient locations worldwide. Elixiter founder Andrew Hull said Perficient is dedicated to growth in Montana and the acquisition will expand opportunities for clients and employees.

While many big deals are centered in Missoula and Bozeman, the impact of Montana's high-tech sector reaches across the state. New statewide programs continue to spring up to support Montana entrepreneurs.

In March, Frontier Angels kicked off its Early Stage MT program with pitch competitions in Missoula, Bozeman and Billings. Regional winners, including Superior Traffic Services, Missoula; Sellout, Bozeman; Alosant, Bozeman; Elation, Billings; WebBuy, Billings; Elebase, Whitefish and Cardsetter, Billings, attended a weeklong hyper-accelerator

program in July to fine-tune their business models. They then competed in a final showcase in Bozeman in September. Pat LaPointe with Frontier Angels said they hope to expand the program in 2019.

In September, Montana also sent its first cohort to TechCrunch's Disrupt startup conference in Silicon Valley. Four Montana startups – WebBuy, Billings; Elebase, Whitefish; Triple Tree, Bozeman and Audience Awards, Missoula – networked with potential investors in a pavilion co-hosted by the Montana Governor's Office of Economic Development and the Montana High Tech Business Alliance.

Such programs ensure Montana tech startups have the resources they need to become the next high-growth companies in 2019 and beyond.

REAL ESTATE AND CONSTRUCTION

Will the Recent Growth Continue?

By Brandon Bridge and Patrick M. Barkey
Bureau of Business and Economic Research at the University of Montana

Residential real estate in Montana continued to exhibit strength across the state in 2017, the most recent year with complete data available. Sales volumes continued to grow, led by Gallatin County, which recorded 2,732 home sales in 2017. Yellowstone and Flathead Counties both had more than 2,000 homes sold in 2017, and three other counties recorded over 1,000 home sales each, according to data recorded by the Montana Department of Revenue.

Sales prices of the transactions that took place in 2017 showed considerable variability in both price levels and rate of price growth across Montana's major markets. Median sale prices were up by 8 percent or more from the previous year in Missoula, Gallatin and Flathead Counties. All of these markets had median sale prices of \$270,000 or more, with Gallatin's median sale price of \$321,826 in 2017 as the highest in the state.

Other urban areas, such as Great Falls, Helena, and Butte, had growth in median sales price that was much more modest in 2017, recording growth of 4.1, 4.3 and 1.2 percent, respectively. Based on partial evidence of sales transacted in the first half of 2018, these patterns held up overall into last year.

Housing price indexes, such as those produced by the Federal Housing Finance Agency (FHFA) for many Montana counties, can be a better way of assessing overall price appreciation in residential housing. This is because median sales prices from records of transactions can be influenced by which types of homes are being sold. The FHFA's statewide index shows overall price growth in Montana since the low point of 2012 to be roughly the same as the national average.

The response of builders and developers to increased prices has been restrained. There was an uptick in housing starts statewide of 6.5 percent in 2017. But as Figure 3 shows, the trend growth in new building has been slower in recent years than what took place immediately after the housing bust. The tepid response of new construction to increase overall housing supply is one reason why price growth has remained high.

Are housing markets getting riskier? As prices continue to rise faster than incomes, it raises concern that another housing price bust could precipitate another financial crisis, such as the one that occurred 10 years ago. American Enterprise Institute (AEI) estimates that almost 13 percent of mortgages today would be at risk of default should were another price bust and recession occur, such as the one in 2007-08 – that compares with 11 percent six years ago. Montana's mortgage pool, in contrast, is less at risk.

Figure 1: Montana home sales. Source: Montana Department of Revenue.

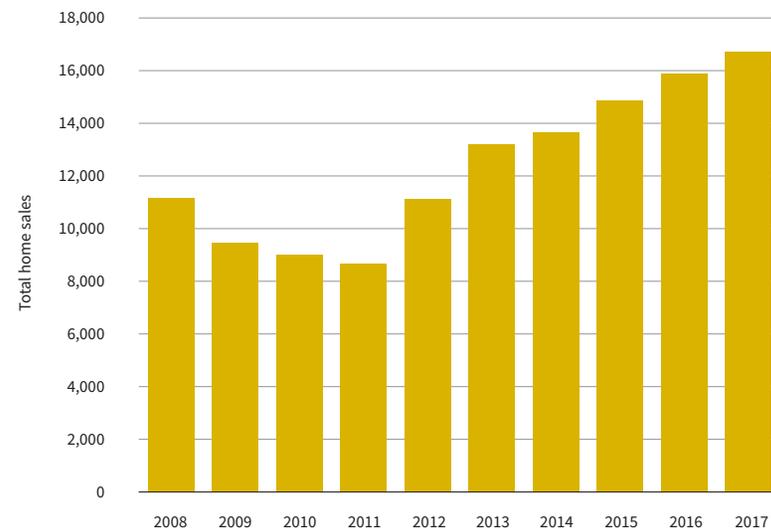


Figure 2: Housing price indices, 2000Q1-2018Q2. Source: Federal Housing Finance Agency.

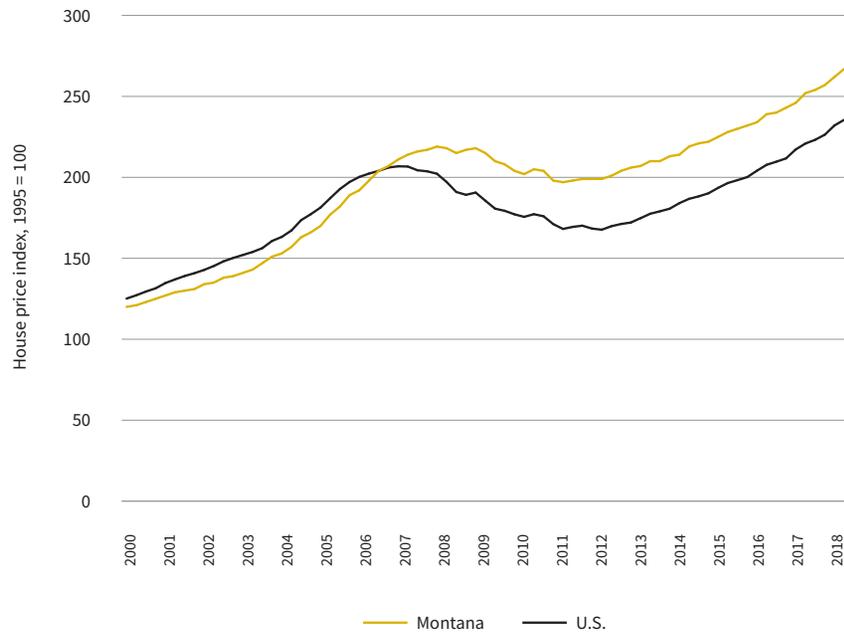


Figure 3: Montana housing starts (totals). Source: Bureau of Business and Economic Research.



Lynn M. Fisher, co-director of the Center on Housing Markets and Finance at AEI, said, “A healthy economy and growing leverage will continue to support housing demand until it doesn’t.” The price growth of today will abate, but saying when or how is difficult.

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