



North Dakota Revenue Outlook

IHS Markit

January 7, 2018

Biennium forecast

Revenue Source	2017-19 Biennium Forecast (Original)	2017-19 Biennium Forecast	2019-21 Biennium Forecast
Sales and use tax	1,701,747,285	1,730,148,020 <i>0.7%</i>	1,671,513,400 <i>-3.4%</i>
Motor vehicle excise tax	220,003,000	244,488,538 <i>10.2%</i>	276,406,730 <i>13.1%</i>
Individual income tax	698,728,000	755,758,188 <i>13.4%</i>	833,171,851 <i>10.2%</i>
Corporate income tax	102,088,415	204,027,317 <i>22.3%</i>	171,918,370 <i>-15.7%</i>

* The percentages reflect the change from the prior biennium.

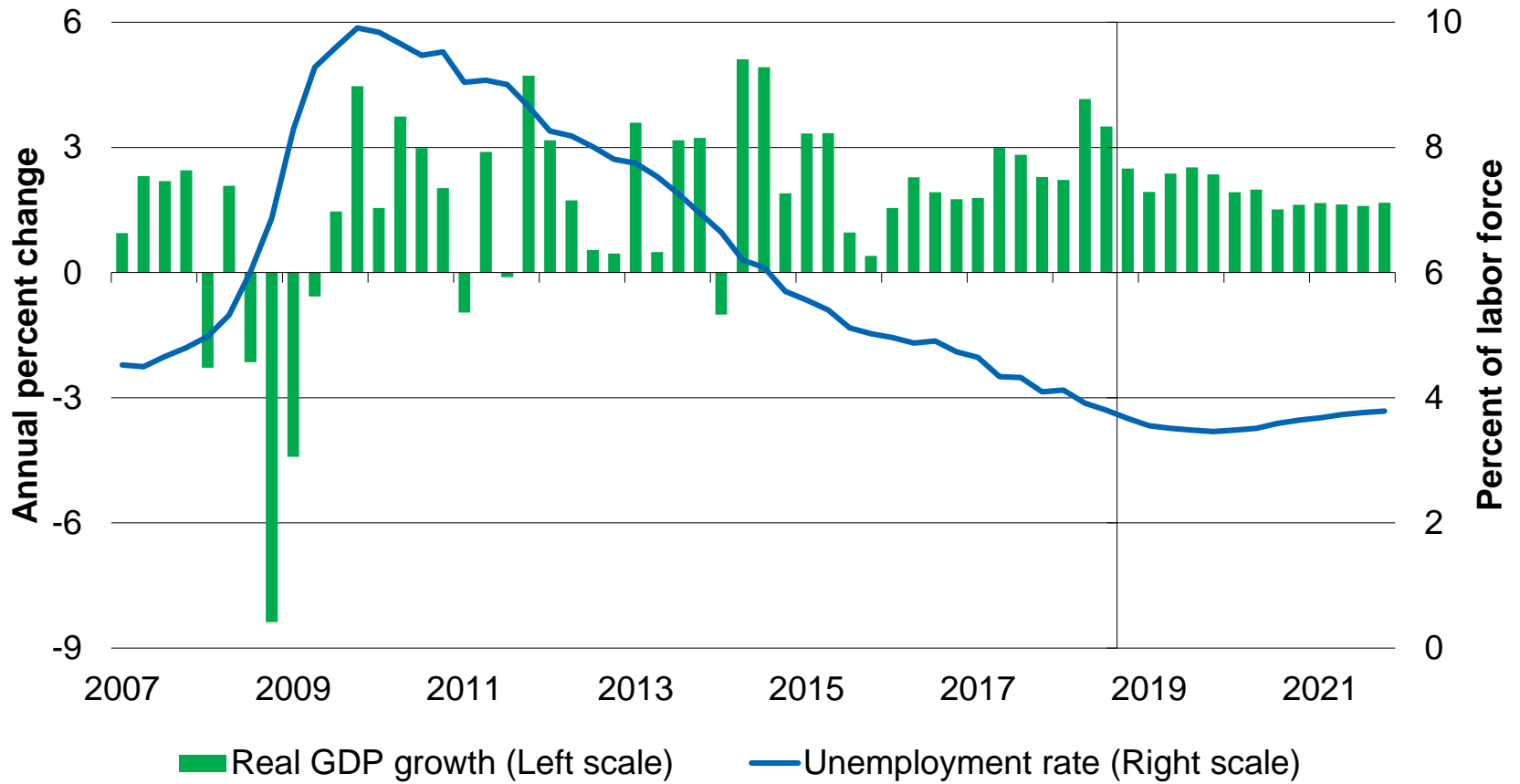
Fiscal year forecast

Revenue Source	2015-17 Biennium		2017-19 Biennium		2019-21 Biennium	
	Fiscal Year 2016 Actual	Fiscal Year 2017 Actual	Fiscal Year 2018 Actual	Fiscal Year 2019 Forecast	Fiscal Year 2020 Forecast	Fiscal Year 2021 Forecast
Sales and use tax	925,369,574 -26.9%	792,498,261 -14.4%	829,120,206 4.6%	901,027,814 8.7%	830,472,200 -7.8%	841,041,200 1.3%
Motor vehicle excise tax	106,332,785 -23.6%	115,451,670 8.6%	114,342,237 -1.0%	130,146,301 13.8%	136,638,750 5.0%	139,767,980 2.3%
Individual income tax	353,937,749 -33.9%	312,721,918 -11.6%	364,254,125 16.5%	391,504,063 7.5%	409,764,884 4.7%	423,406,968 3.3%
Corporate income tax	97,580,800 -50.2%	69,225,591 -29.1%	92,348,170 33.4%	111,679,147 20.9%	77,636,280 -30.5%	94,282,090 21.4%

US Outlook : Financial-market strains weigh on near-term growth

- The fundamentals for the US economy remain sound, suggesting continued above-trend growth for the next several quarters, averaging around 2.3% from the fourth quarter of 2018 through the end of next year.
- Trade war fears and diminishing confidence in the strength of the global expansion are driving declines in equity and commodity prices, and dollar appreciation. These forces will trim near-term US growth and inflation.
- President Trump announced a 90-day delayed an increase in tariffs, from 10% to 25%, on \$200 billion of goods imported from China previously slated to take effect January 1 and assumed in last month's forecast. The Administration later clarified that the 90-day grace period began December 1, not January 1, so the higher tariff may go into effect in March. Our forecast assumes escalation in tariffs does not go forward. When combined with lower oil prices, the effect of the tariff was to reduce core personal consumption expenditure (PCE) inflation by up to 0.25 percentage point in 2019.
- As the effect of federal stimulus wanes, rising uncertainty over a trade war is reflected in slipping business and consumer confidence. A decline in oil prices impacted by more ample supply and fears of weaker demand, trim near-term inflation.

Real GDP and unemployment



Bottom line for the US economy

- Boosted by tax cuts and additional federal spending, real GDP will expand 2.9% in 2018 and 2.5% in 2019.
- Tariffs imposed to date will have a small adverse impact on GDP.
- Consumer spending will be supported by solid growth in employment, real disposable incomes, and asset values.
- Business fixed investment will benefit from sustained growth in global markets, along with an improving tax and regulatory environment.
- The Fed will gradually raise the federal funds rate to a high near 3.50% in 2020; it later retreats to a long-run equilibrium of 2.75%.
- Real GDP growth will slow to 2.0% in 2020 and 1.5% in 2021 owing to labor-supply constraints, tightening policies, and rising interest rates.

North Dakota Outlook

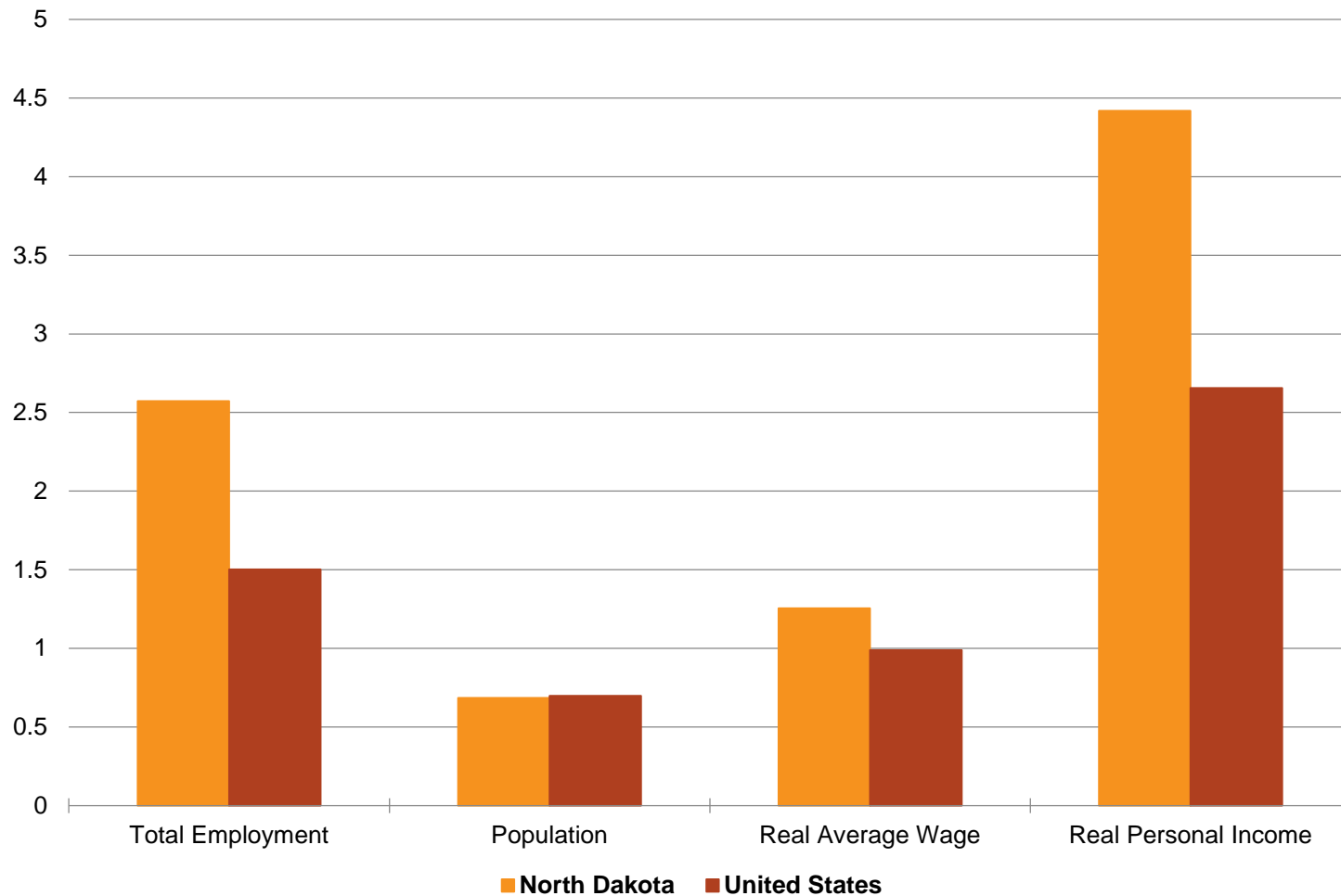
	2017	2018	2019	2020	2021
Establishment Employment (Thousands)					
Total Non-Agricultural	430.7	431.5	442.6	450.1	453.9
Pct. Ch. Ann. Rate	-0.9	0.2	2.6	1.7	0.8
Manufacturing	24.7	25.3	25.7	26.1	26.1
Pct. Ch. Ann. Rate	0.4	2.4	1.9	1.3	0.1
Non-Manufacturing	406.0	406.3	416.9	424.0	427.8
Pct. Ch. Ann. Rate	-0.9	0.1	2.6	1.7	0.9
Construction & Mining	44.9	46.6	51.4	53.6	54.7
Pct. Ch. Ann. Rate	-4.3	3.9	10.1	4.4	2.0
Resident Employment & Unemployment (Thousands)					
Total Employment	403.7	399.3	406.2	414.0	416.6
Pct. Ch. Ann. Rate	0.5	-1.1	1.7	1.9	0.6
Labor Force	414.5	410.0	416.5	424.7	428.1
Labor Force Partic Rate	69.6	68.7	69.3	70.1	70.0
Number Unemployed	10.8	10.8	10.2	10.7	11.5
Unemployment Rate	2.6	2.6	2.5	2.5	2.7

North Dakota Outlook

	2017	2018	2019	2020	2021
Total Personal Income (Billions\$)	39.5	41.3	44.0	46.8	49.3
Pct. Ch. Ann. Rate	-0.7	4.6	6.5	6.4	5.3
Med. Household Income (000s)	61.8	65.0	68.5	71.5	74.0
Avg. Annual Wage (000s)	49.5	51.5	53.2	55.3	57.5
Wages and Salaries	22.1	23.1	24.4	25.8	27.1
Property Income	9.1	9.5	10.0	10.7	11.2
Proprietor's Income	3.0	3.4	3.9	4.3	4.6
Farm Proprietor	-0.2	0.1	0.5	0.8	1.1
Business Proprietor	3.2	3.3	3.4	3.5	3.5
Real Gross State Product, NAICS Based (Billions 2012\$)					
Total GSP	50.8	51.8	53.6	55.0	56.1
Pct. Ch. Ann. Rate	-0.5	1.9	3.6	2.7	2.0
Housing					
Total Housing Starts (Ths)	3.3	3.2	3.5	3.7	3.8
Population (Thousands)					
Total Population	755.5	757.5	762.7	769.5	776.6
Pct. Ch. Ann. Rate	0.0	0.3	0.7	0.9	0.9

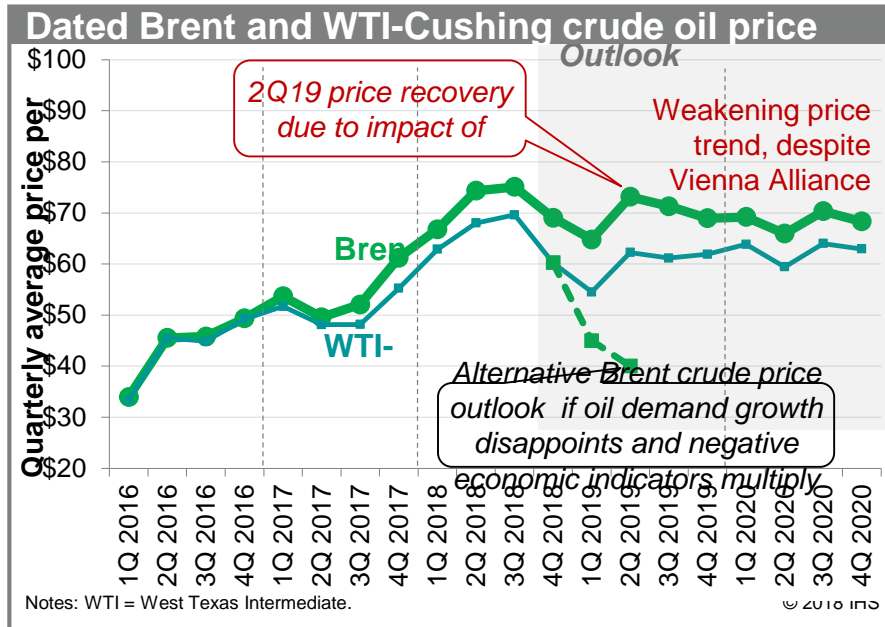
Key Performance Indicators, 2019

Percent change, year-over-year



IHS Markit Global Crude Oil Markets Short-Term Outlook

Key assumptions in 2019 Brent outlook are supply cuts, lower Iranian output, and steady demand gains. But price then weakens due to rapidly growing US output



Assumptions

- World demand.** Global liquids demand growth is at 1.4 MMb/d in 2019 and 1.5 MMb/d in 2020, led by China, the United States, and India.
- Vienna Alliance action.** We expect Saudi Arabia, the UAE, Kuwait and Algeria will actually cut output (vs. October 2018 reference levels), while other OPEC members, such as Iraq and Nigeria, will not. Among non-OPEC producers, cuts will mainly come from Russia and Oman; Mexico will also contribute through normal depletion.
- US and Canada output.** US production will grow from an annual average of 10.9 MMb/d in 2018 to 12.0 MMb/d in 2019, while Permian pipeline debottlenecking in late 2019 will unleash more US supply, averaging 13.9 MMb/d in 2020. Supported by easing of Alberta's infrastructure constraints by the end of 2019, Canada's output will grow from 4.4 MMb/d in 1Q19 to 4.7 MMb/d in 4Q19, and further to an average of 5.0 MMb/d in 2020.
- Iran and Venezuela output.** We see Iran's output falling further from 2.9 MMb/d in November 2018 to 2.4 MMb/d in December 2019, as US sanctions waivers expire in May 2019. Venezuela's production falls below 1.0 MMb/d in May 2019 and averages 850,000 b/d in 2020.

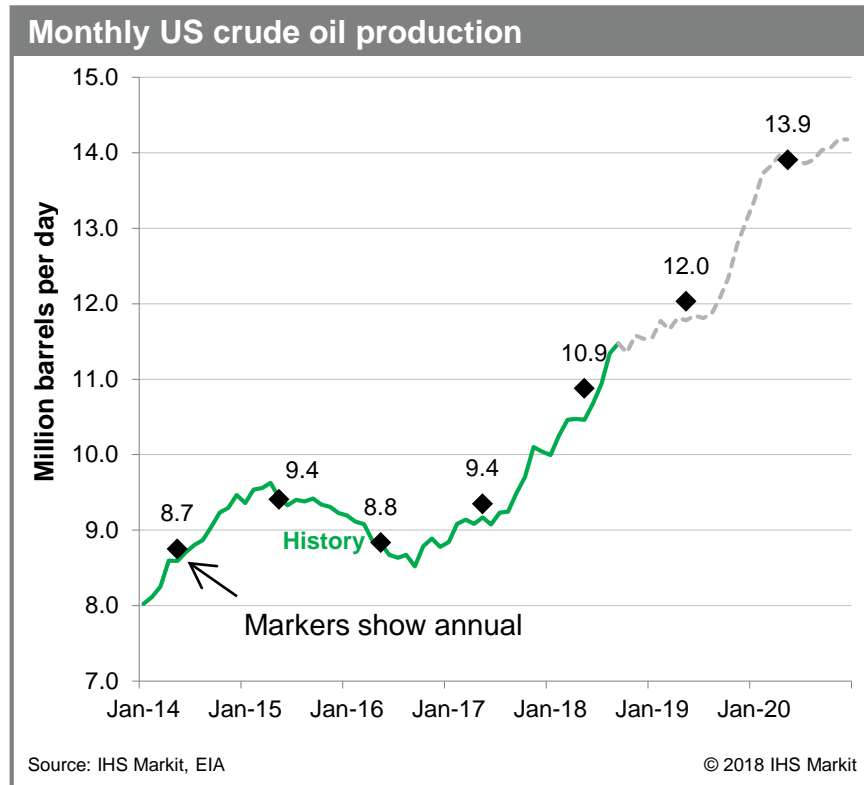
Benchmark crude price outlook (dollars per barrel)

	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	4Q 2018	1Q 2019	2Q 2019	3Q 2019	4Q 2019	1Q 2020	2Q 2020	3Q 2020	4Q 2020
Dated Brent	\$52.07	\$61.22	\$66.79	\$74.36	\$75.12	\$69.05	\$64.78	\$73.16	\$71.32	\$68.97	\$69.22	\$65.95	\$70.34	\$68.34
WTI	\$48.16	\$55.23	\$62.89	\$68.03	\$69.63	\$60.25	\$54.52	\$62.25	\$61.16	\$61.90	\$63.86	\$59.42	\$64.01	\$62.95

Source: IHS Markit, Argus Media Limited (historical)

Note: For our monthly Dated Brent and WTI price outlook, please see the accompanying "IHS Markit Outlook for Global Oil Market Fundamentals" file.

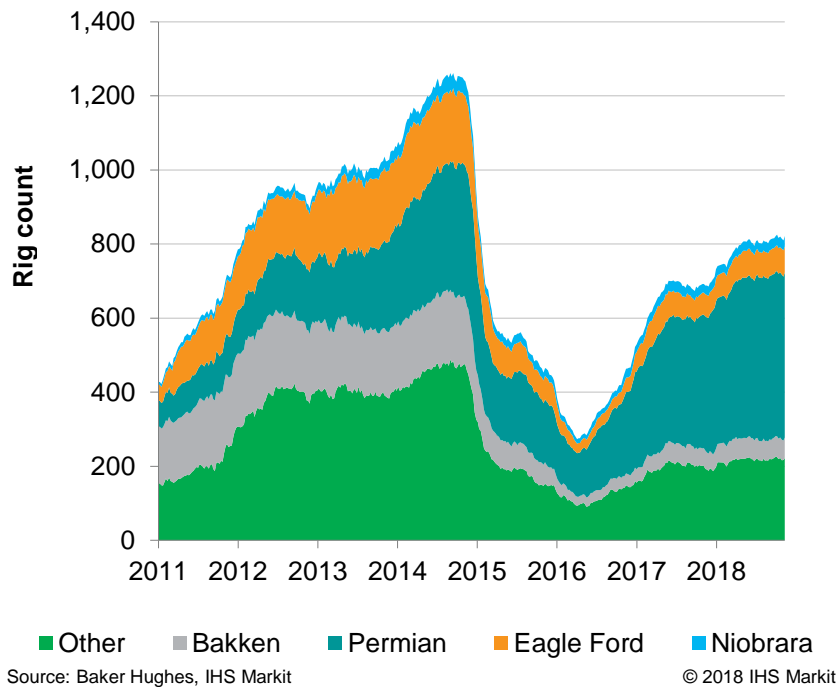
Oil price crash creates uncertainty for US production outlook



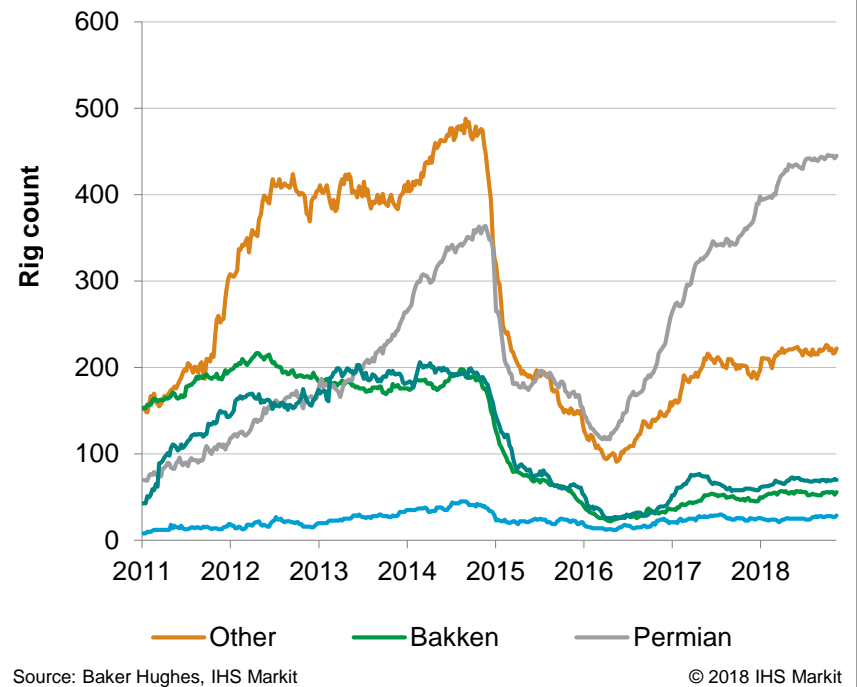
- Spending outlooks being slashed.** The dramatic fall in oil prices since October—punctuated by a 7.3% one-day decline of WTI on 18 December—could have dramatic implications for the path of US production growth. We now estimate spending growth by US E&P companies will decelerate to around 0 to 5% in 2019 compared to an 18% increase in 2018.
- US growth still largely “baked in”.** However, US production will still grow in 2019 because of the momentum of existing drilling programs. Based on our assumption of WTI averaging around \$60 per barrel, we expect US crude production in 2019 to be 1.2 MMB/d higher than in 2018.
- Even more spending cuts could emerge.** However, if WTI prices range from \$40-\$50 (or lower) throughout 2019, US production would fall short of our outlook, with the greatest downside risk in second-half 2019 and in 2020. It is a potent reminder of how US E&P’s quick reaction to price movements can dramatically alter the global supply outlook.
- Capital discipline will continue.** Large E&Ps are under intense pressure from investors to return cash to shareholders through dividends and share buybacks. However, US onshore spending could still increase despite overall corporate capital discipline. For example, the Supermajors like Chevron, ExxonMobil and BP are focusing large sums of capital on the Permian in order to grow their oil production volumes (that have not increased appreciably in a decade), and can redirect cash flows from offshore and international production.

US rig count growth continues to slow

US horizontal oil rig count by play



US horizontal oil rig count by play



Outlook for Brent-WTI price spread

Spread expected to widen modestly as Cushing inflows continue to grow

Dated Brent less WTI at Cushing

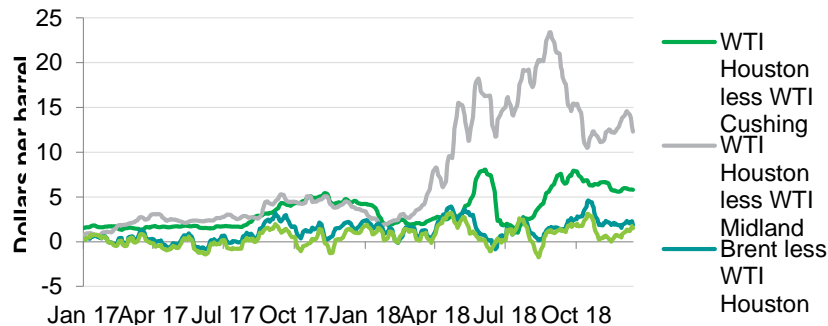


Source: IHS Markit

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- > The Brent-WTI spread has narrowed a bit further in December, averaging just under ~\$8/b. The spread has moderated as PADD 2 refineries have rapidly returned from autumn maintenance while additional capacity will soon be available on the southbound Seaway pipeline. However, we expect the spread to move back above \$10/b for the first half of 2019 as flows into Cushing grow. Arbitrage economics (Brent less Houston WTI) on the US Gulf Coast will also stay positive to support a rising trend of crude exports.
- > Seaway Crude Pipeline, LLC has announced an open season on the pipeline system, which may add up to 100,000 b/d starting in February through the use of drag-reducing agents. However, offsetting this additional southbound capacity, the recent Sunrise pipeline expansion has been confirmed by its operators to have added about 300,000 to 350,000 b/d of takeaway capacity from the Permian Basin. While not all of this capacity moves to Cushing directly, it is likely diverting crude from other pipelines into Cushing. Rocky Mountain and Oklahoma shale output is also rising, with incremental barrels likely destined to Cushing.
- > The Brent-WTI spread is likely to be sensitive to both the need to export more crude from the US and the level of congestion exiting Cushing. Signposts to watch are whether the existing southbound pipelines can be expanded further 2019, and whether overall US crude production continues to grow at its recent strong pace, or slows in reaction to the recent price declines.

West Texas Intermediate (WTI) price relationships (5 day moving average)



WTI barrels at Cushing and Houston are not interchangeable. Cushing WTI is a "domestic sweet" grade, whose quality varies as shale barrels are blended with heavier barrels (such as Western Canadian grades) to achieve the NYMEX delivery specification. WTI at Houston represent crude shipped directly from the Permian and is seen by refiners as a higher quality crude with fewer blending impurities.

- Beyond the February Seaway expansion, there is potential for additional mechanical enhancements that would further expand capacity. TransCanada is also considering expanding the Marketlink pipeline from Cushing.
- Other projects to increase the outbound capacity from Cushing are emerging, such as a potential doubling of the Diamond pipeline capacity, and proposals by Magellan/Navigator and Phillips 66 to build new pipelines from the hub to the Gulf. These would likely stream towards the end of 2020.
- > By 2020, we expect WTI to begin strengthening, compressing the Brent-WTI spread, as the Permian begins to be bottlenecked with new pipeline capacity, and as the IMO bunker specification puts a premium on light sweet crudes like WTI.

Key messages: The Vienna Alliance takes the tight oil test

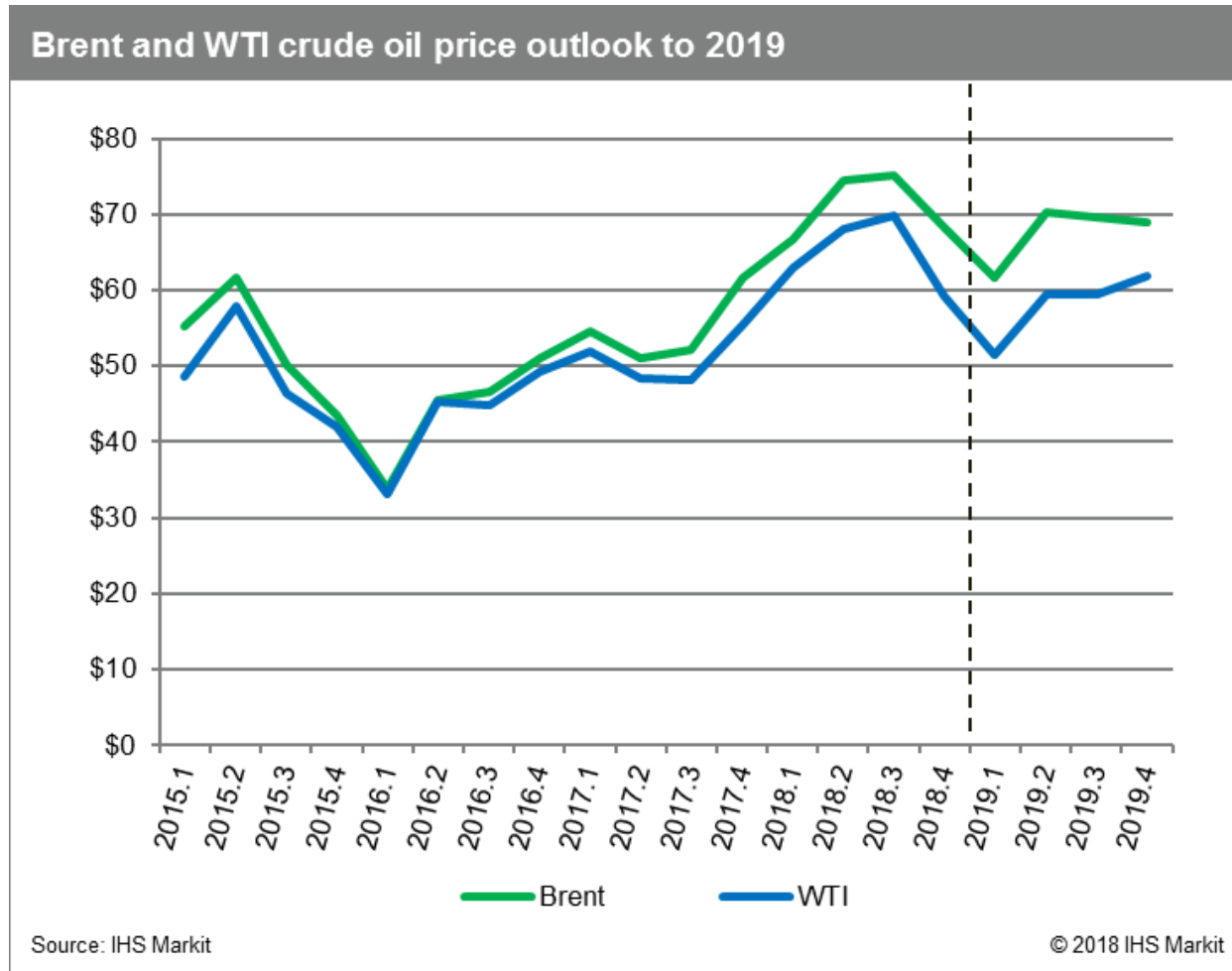
The \$30 oil price drop since October—punctuated by a 7.3% one-day decline of WTI on 18 December—means the Vienna Alliance faces a stiffer than expected test of its durability and commitment to production cuts as the calendar shifts to 2019. The Alliance—led by Saudi Arabia and Russia—aims to repeat in 2019 the winning bet it made in 2017-18—that production cuts will lead to higher revenue. But the 7 December agreement to cut production by 1.2 MMb/d as of 1 January has done nothing, so far, to halt further price weakness. Breaking the bearish momentum will not be easy absent a reversal of trends in economic indicators, equity markets, and crude oil demand and supply fundamentals. There currently appears to be little cause for a significant price uplift until late in the first quarter or the second quarter of 2019. And even then, our assumptions about world oil demand growth could prove too optimistic. A price recovery will require the Vienna Alliance—and other supportive factors such as demand growth — to successfully neutralize higher US output that is fueled by tight oil. This is the tight oil test that the Vienna Alliance takes in 2019. Also, a critically important question facing the world—the future of US-China relations—lies beyond the influence of the Vienna Alliance.

- 1. Two eerie similarities to 2014.** In 2014 Chinese economic growth slowed as the year progressed while US oil production growth exceeded world demand gains. Both have happened in 2018.
- 2. But there is an important difference with 2014—the willingness of Saudi Arabia and Russia to cut production to support prices.** The 2014 price collapse was abetted by Saudi Arabia's decision to increase production instead of cutting it. This is a key difference with the current situation. Saudi Arabia and Russia have developed a partnership that involves cutting production to support prices.

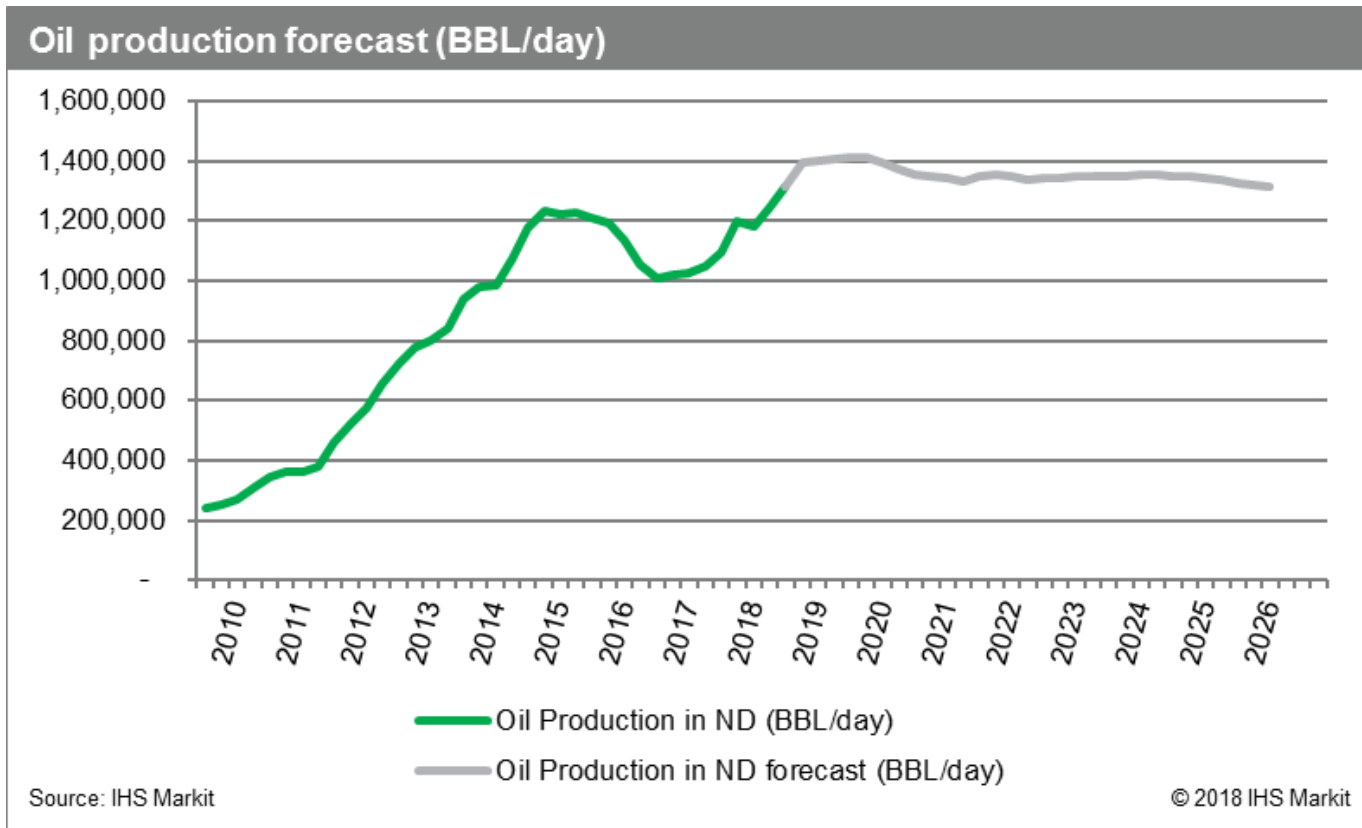
Key messages (continued)

- 3. If the Vienna Alliance succeeds, revenue will be boosted in first half 2019, but there will be a bill to pay later in the form of additional cuts in late 2019 and in 2020.** Assuming headwinds from the global economy and financial markets do not extinguish a potential price recovery. We expect the impact of production cuts—including Alberta curtailments—and lower Iranian exports to support a price recovery in late first quarter or in the second quarter. Indeed, we are projecting an interlude of higher production from Saudi Arabia in the middle of the year, before another cut later in 2019 and 2020 in the face of strong US production growth.
- 4. Watch US upstream spending.** We estimate spending growth by US E&P companies will decelerate to around 0 to 5% in 2019 compared to an 18% increase in 2018. However, US production will still grow in 2019 because of the momentum of existing drilling programs. Based on our assumption of WTI averaging around \$60 per barrel, we expect US liquids production in 2019 to be 1.6 MMb/d higher than in 2018, with crude accounting for 1.2 MMb/d and NGLs for 0.4 MMb/d. World liquids demand growth is estimated at 1.5 MMb/d in 2019. But if WTI prices range from \$40-\$50 (or lower) throughout 2019, US production would fall short of our outlook, with the greatest downside risk in second-half 2019 and in 2020.
- 5. Storm Alert.** The course of US-China relations—spanning trade, technology, and geopolitics—have the potential to turn more adversarial in 2019. The Mueller investigation will conclude at some point in 2019, and its conclusions have the potential to spark a constitutional crisis in the United States and further impact US-Russia relations. Also, there may be more fallout from the death of Jamaal Khashoggi that impacts US-Saudi relations. These factors will test the flexibility and durability of the Vienna Alliance and highlight the ongoing influence of President Trump on geopolitics and the oil market.

IHS Markit expects a prices of benchmark crude to improve again by early 2019



Barrel per day production from the Bakken is expected to peak in 2019

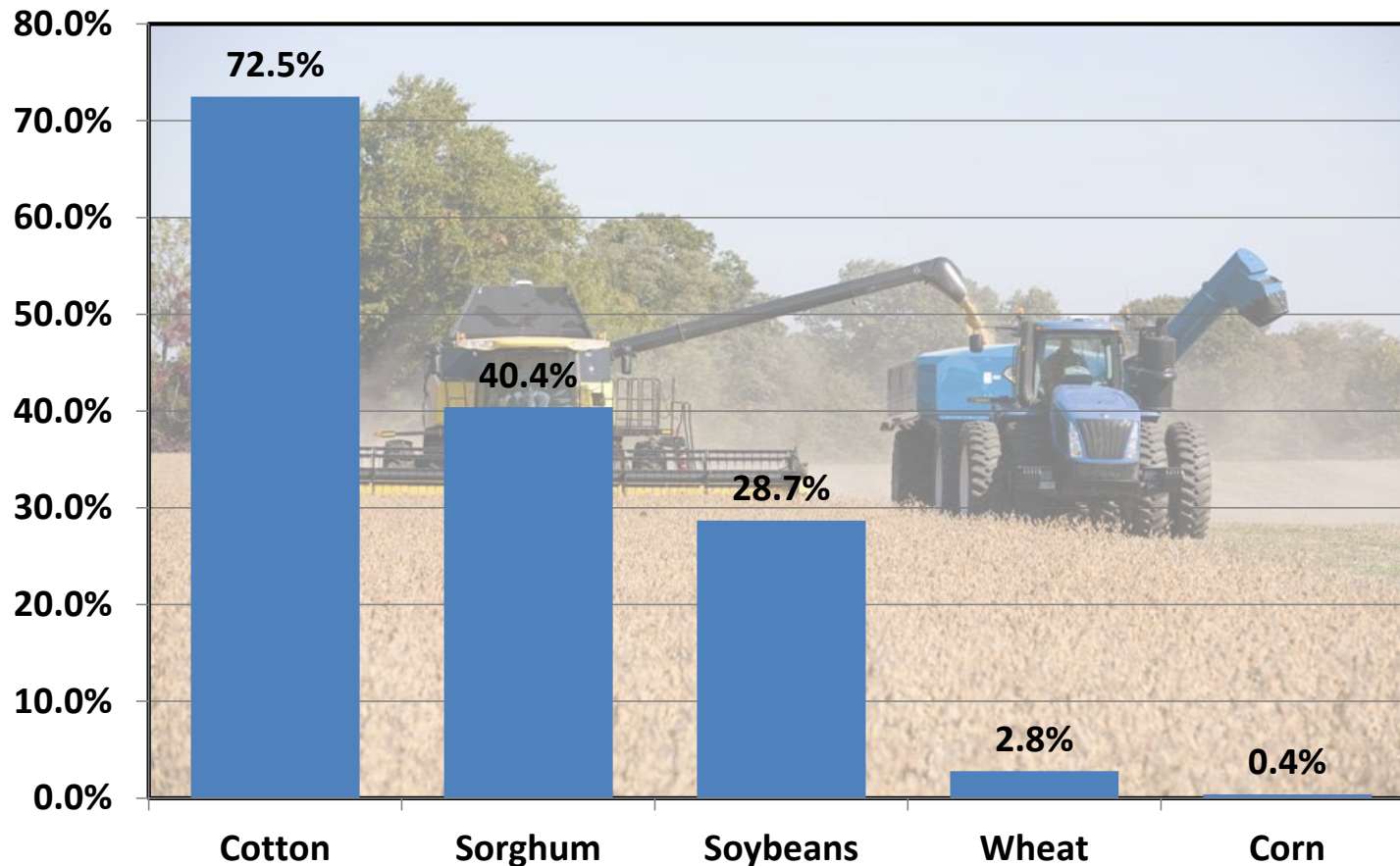


Agriculture Outlook

- Tariff war with China causes significant disruption to both commodity prices and trade volume
- US soybeans particularly hard hit
 - > Expect prices down nearly \$2 per bushel in 2019
 - > Exports down an additional 11% in 2019
- Current prospects for near record yield and record total production will add to downward pressure on prices – inventories will continue to mount.
- US grain sector farm receipts down \$13 billion in 2019-2020
 - > Net cash income down 9%
- Corn exports stable to Mexico and Canada

How Important is China?

Share of U.S. Production Exported to China - by Crop
Average of most Recent 5 Years



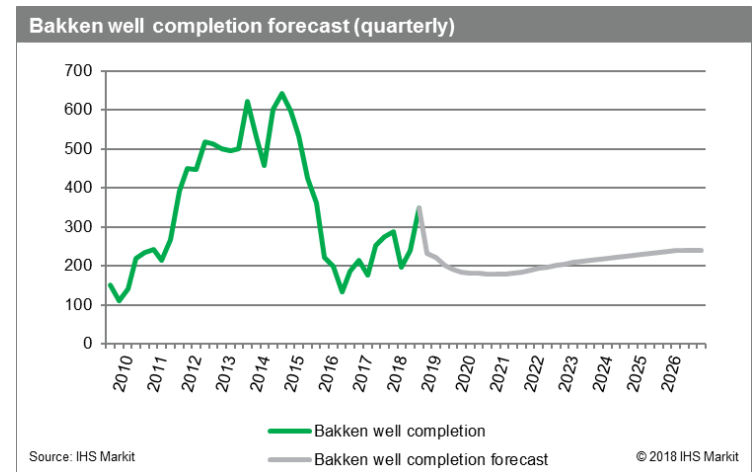
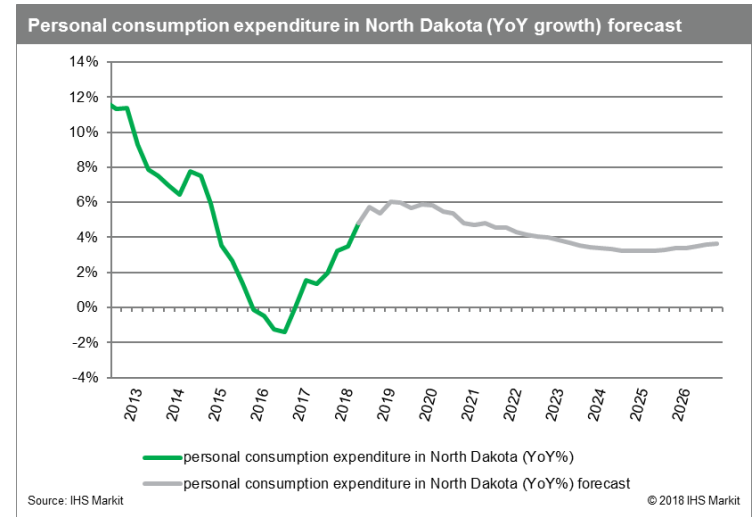
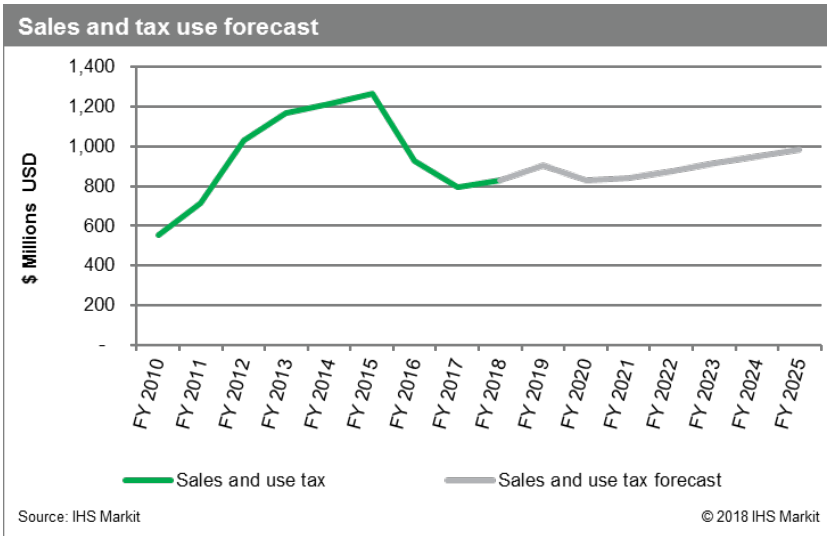
Bottom line for the US economy

- Boosted by tax cuts and additional federal spending, real GDP will expand 2.9% in 2018 and 2.6% in 2019.
- Tariffs imposed to date will have a small adverse impact on GDP.
- Consumer spending will be supported by solid growth in employment, real disposable incomes, and asset values.
- Business fixed investment will benefit from sustained growth in global markets, along with an improving tax and regulatory environment.
- The Fed will gradually raise the federal funds rate to a high near 3.50% in 2020; it later retreats to a long-run equilibrium of 2.75%.
- Real GDP growth will slow to 2.0% in 2020 and 1.6% in 2021 owing to labor-supply constraints, tightening policies, and rising interest rates.

Economic indicators used in the tax model

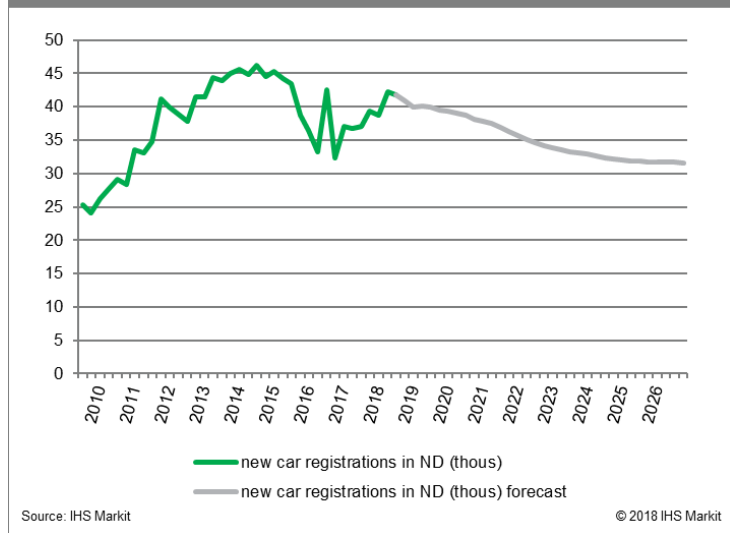
REVENUE SOURCE	ECONOMIC DRIVER	DESCRIPTION
Sales and Use tax	<ul style="list-style-type: none"> •Bakken well addition •Personal consumption expenditures (ND state) 	The sales and use tax base are best captured by Bakken well additions and consumers spending on goods and services
Motor vehicle excise tax	<ul style="list-style-type: none"> •New passenger and light truck registrations (ND state) •Employment in construction, natural resources, and mining (ND state) 	The motor vehicle excise tax base is best captured by the state's new vehicle registrations (including new passenger car and light truck). ND has a significant proportion of workforce from oil industry, therefore, employment at oil & gas related industry accounts for added impacts of oil industry on the tax base.
Individual income tax	<ul style="list-style-type: none"> •Total wage disbursements (ND state) •Personal income, dividends interest and rent (ND state) 	<p>The tax base of individual income tax submitted as <u>withholdings</u> is relatively stable and largely driven by total wage income in the state.</p> <p>The tax base of individual income tax submitted as <u>estimated payments</u>, on the other hand, is more volatile due to the nature of capital gains realization. That being said, a reasonable amount of variations in the tax base of individual income estimated payments is captured by the state's property income, i.e., rental income of persons, personal dividend income, and personal interest income.</p>
Corporate income tax	<ul style="list-style-type: none"> •Before-tax corporate profits with IVA & capital consumption adjustment (US national) •Crude price 	The tax base of corporate income tax is affected by several factors including corporate profits and apportionment rule. To untangle the compounding impacts of changing apportionment rule on tax collection, we select national before-tax corporate profits with inventory valuation adjustment and capital consumption adjustment as the main driver of corporate income tax collection. Crude oil price is another driver as it affects oil company's profits.

Sales and use tax

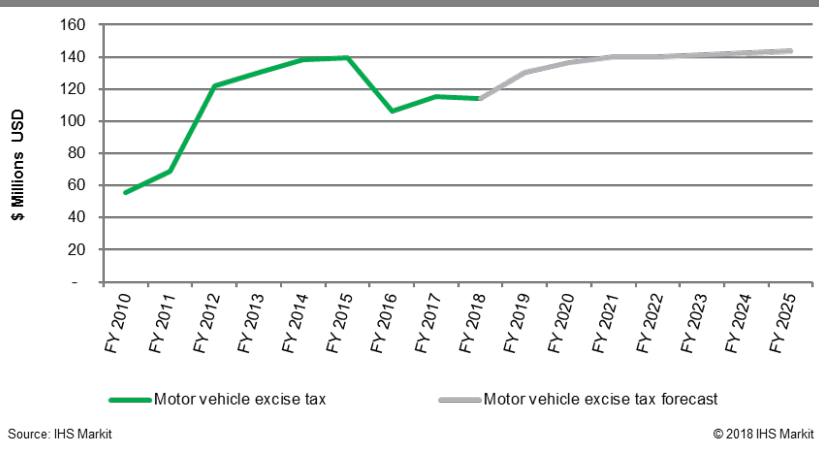


Motor vehicle excise tax

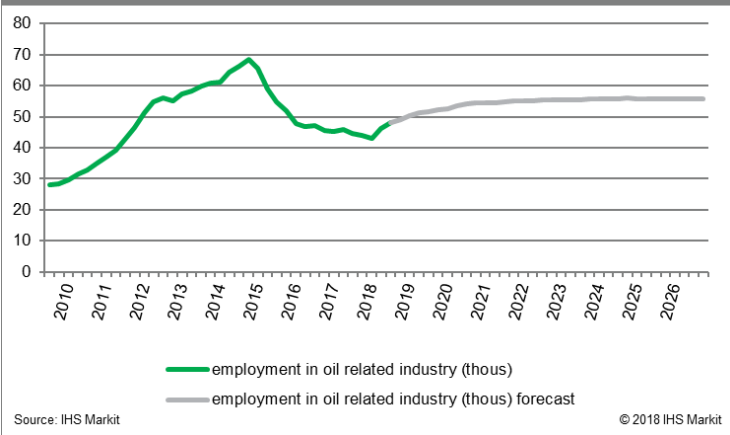
New car registrations in ND (thous) forecast



Motor vehicle excise tax forecast

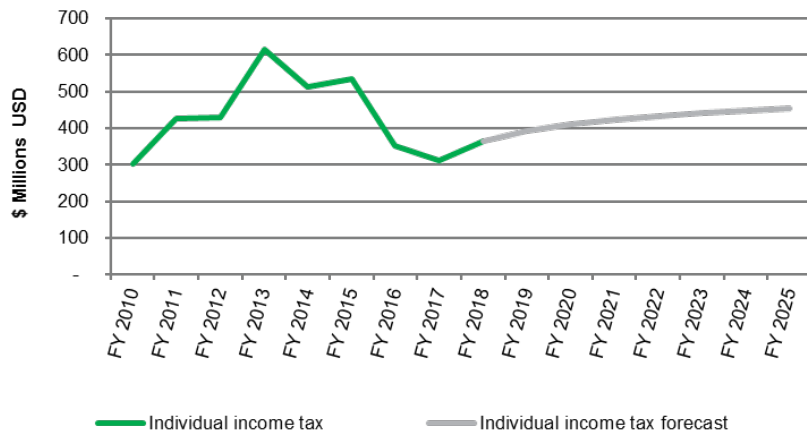


Employment in oil related industry (thous) forecast



Individual income tax

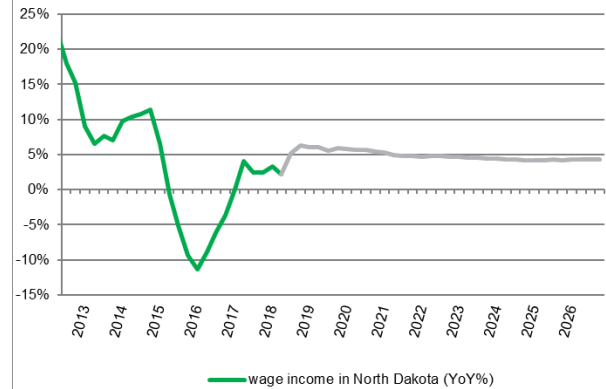
Individual income tax forecast



Source: IHS Markit

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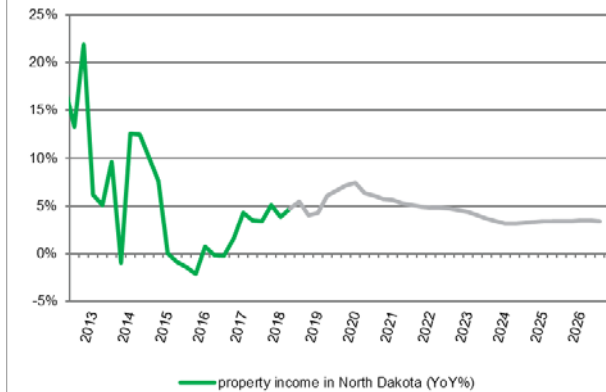
Total wage income in North Dakota (YoY growth) forecast



Source: IHS Markit

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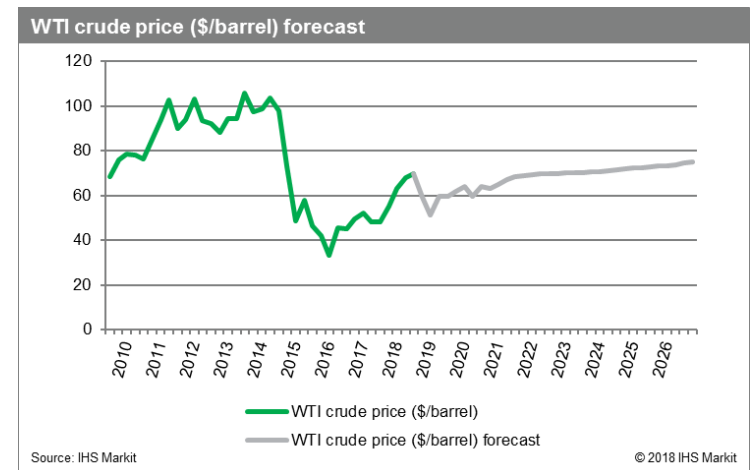
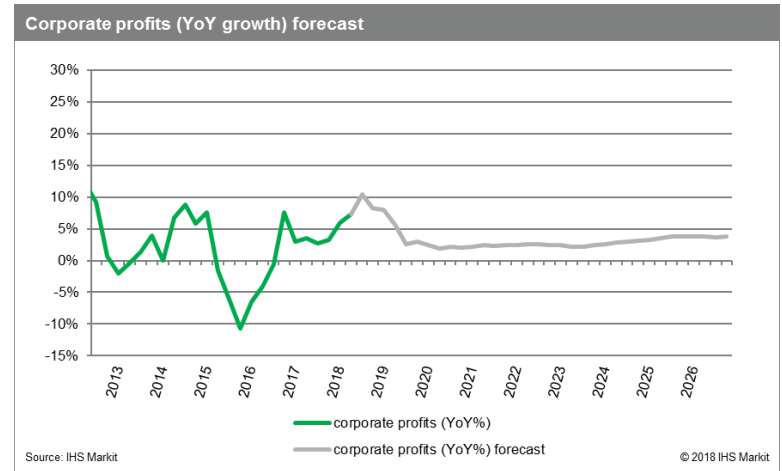
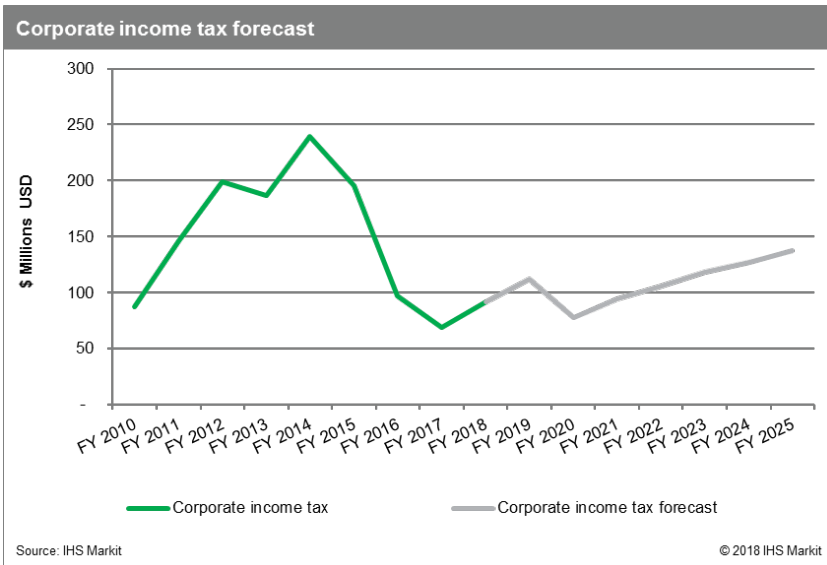
Property income in North Dakota (YoY growth) forecast



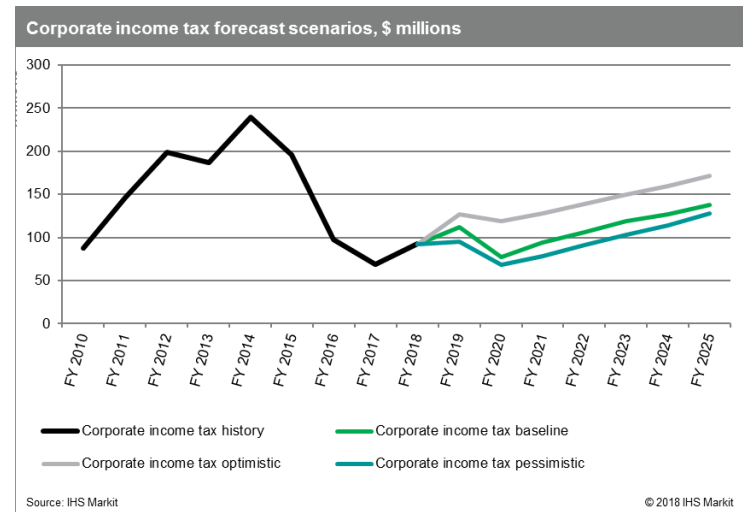
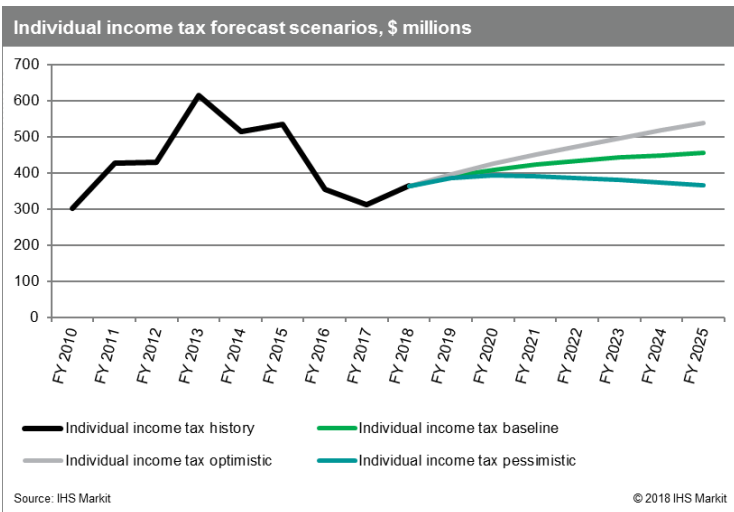
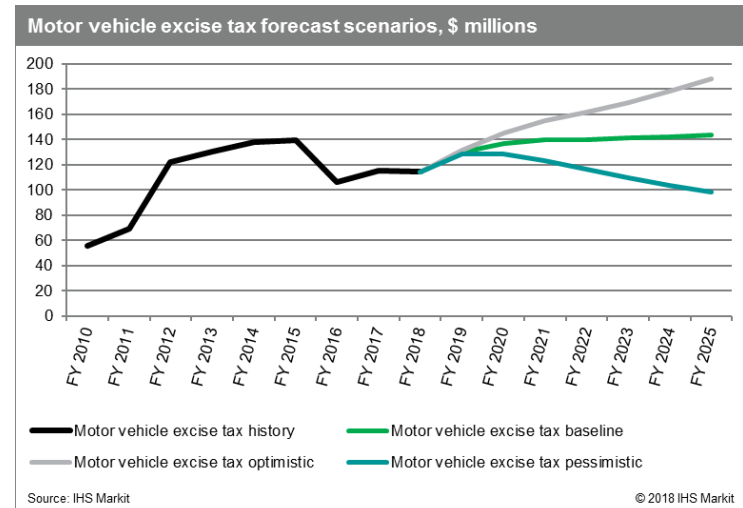
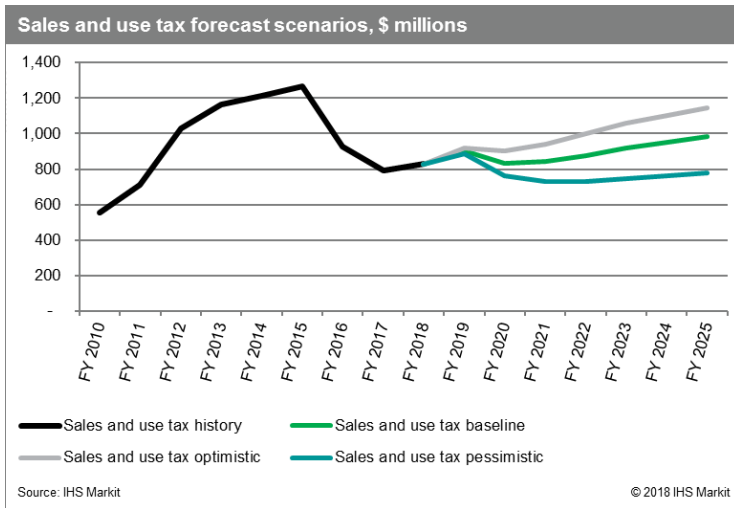
Source: IHS Markit

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Corporate income tax



Optimistic and Pessimistic Scenarios



Optimistic and Pessimistic Scenarios *

Revenue Source	2017-19 Biennium Baseline	2017-19 Biennium Optimistic	2017-19 Biennium Pessimistic
Sales and use tax	1,730,148,020 0.7%	1,745,417,720 1.6%	1,713,787,520 -0.2%
Motor vehicle excise tax	244,488,538 10.2%	246,206,878 11.0%	242,693,578 9.4%
Individual income tax	755,758,188 13.4%	760,480,555 14.1%	751,074,553 12.7%
Corporate income tax	204,027,317 22.3%	219,094,977 31.3%	186,950,817 12.1%

Revenue Source	2019-21 Biennium Baseline	2019-21 Biennium Optimistic	2019-21 Biennium Pessimistic
Sales and use tax	1,671,513,400 -3.4%	1,842,763,300 5.6%	1,491,249,000 -13.0%
Motor vehicle excise tax	276,406,730 13.1%	299,566,920 21.7%	251,706,630 3.7%
Individual income tax	833,171,851 10.2%	877,607,593 15.4%	784,154,151 4.4%
Corporate income tax	171,918,370 -15.7%	246,829,900 12.7%	146,130,150 -21.8%

* The optimistic scenario is based on oil prices that are \$10 more than the baseline; the pessimistic scenario is based on oil prices that are \$15 less than the baseline.

** The percentages reflect the change from the prior biennium.