



#### ANALYSIS 29 SEPTEMBER, 2021

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## Macroeconomic and Revenue Effects of Federal Stimulus During the COVID-19 Pandemic

Prepared for The Arkansas Bureau of Legislative Research

#### INTRODUCTION

This paper attempts to quantify the economic and revenue impacts of the pandemic and subsequent federal fiscal stimulus on the State of Arkansas, as well as look ahead to see what the effects of these events will be on future budget conditions. The COVID-19 pandemic and resulting recession had major impacts on Arkansas's economy and state tax revenues. That recession would have been much larger but for the unprecedented amount of federal fiscal stimulus that has flowed into the state. Additionally, the pandemic and the subsequent federal fiscal response carry meaningful forward-looking impacts on the Arkansas economic outlook and, by extension, the outlook for state tax revenues.

# Macroeconomic and Revenue Effects of Federal Stimulus During the COVID-19 Pandemic

PREPARED FOR THE ARKANSAS BUREAU OF LEGISLATIVE RESEARCH BY DAN WHITE AND EMILY MANDEL

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Looking back over the past six quarters since the pandemic began, we estimate that the state would have collected more than \$100 million in additional sales and use and individual income tax revenues had the COVID-19 pandemic not taken place. But for the federal fiscal response to the pandemic, we estimate that revenues for the state's two largest tax categories could have been nearly \$1.1 billion lower than what was actually collected over that time (see Table 1).

Looking forward over the next 10 years, the pace of growth in Arkansas's economy is expected to be faster than if there had been no pandemic thanks to the influx of federal funding and the release of pent-up demand. We estimate that this faster pace of economic growth will result in about \$2.2 billion in additional tax revenue relative to if the economy had continued growing at its pre-pandemic pace.

#### The pandemic economy

Prior to the recession, Arkansas's economy was on a stable growth path. The state had fully recovered its pre-Great Recession job count by 2015, but its pace of growth had since lagged the national average. While slow growth in the labor force was a concern, steady job gains,

Table 1: Post-Pandemic Sales and Personal Income Tax Revenues Mil

	Actual collections	No-pandemic scenario	No-stimulus scenario
2020Q1	\$1,296.81	\$1,366.24	\$1,296.81
2020Q2	\$1,378.56	\$1,677.23	\$1,264.90
2020Q3	\$1,643.55	\$1,533.90	\$1,523.61
2020Q4	\$1,419.96	\$1,474.66	\$1,246.08
2021Q1	\$1,460.68	\$1,409.80	\$1,181.42
2021Q2	\$1,883.62	\$1,729.73	\$1,477.82
Total	\$9,083.18	\$9,191.56	\$7,990.64
Difference from actua	al	\$108.38	\$(1,092.53)

Sources: DFA, Moody's Analytics

particularly in construction and leisure/hospitality, had dropped Arkansas's unemployment rate to a multidecade-low 3.5%.

This progress was rapidly undone when the pandemic struck in March 2020. As residents cut down on time spent in public and businesses laid off workers, the unemployment rate climbed to 10%. Although the recession lasted just two months, nearly a tenth of the state's jobs disappeared between January and April 2020.

While severe, this hit to payrolls was milder than in all but a handful of states (see Chart 1). Since then, Arkansas's recovery has outperformed for a variety of reasons including a larger-than-average influx of federal funding. Total employment is now less than 2% shy of its pre-pandemic level and the unemployment rate has dropped back to near 4% (see Chart 2).

#### The federal response

The impact of federal assistance funds during and after the pandemic was unprecedented, not just in Arkansas but nationally. In total, the federal government appropriated more than \$5 trillion in an attempt to limit

#### Chart 1: Milder Pandemic Downturn

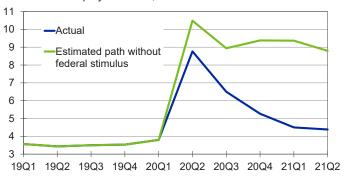
Payroll employment, Jan 2020=100

Sources: BLS, Moody's Analytics



#### Chart 2: Stimulus Accelerated Recovery

Arkansas unemployment rate, %



Sources: BLS, Moody's Analytics

fallout from the pandemic, and more than \$3.8 trillion of those funds have already been spent, according to data compiled by the Committee for a Responsible Federal Budget.¹ Arkansas's share of the funds already disbursed adds up to nearly \$28 billion. This is equivalent to more than one-fifth of the state's overall economy, versus about 18% for the U.S. as a whole (see Table 2).

Although Arkansas received an above-average amount of funding compared with the size of its economy, on a per capita basis, distributions were relatively low. In total, Arkansas has received funding equivalent to slightly more than \$9,200 per resident, below the median across states of \$11,600. While Arkansans received slightly more money in economic impact payments, they received less money in other categories such as business loans and expanded unemployment benefits.

The single largest source of pandemic relief to date has been Economic Impact Payments, commonly known as stimulus checks (see Chart 3). Over three rounds, the IRS disbursed nearly \$8 billion in Economic Impact Payments to Arkansas households. The first round of payments began to hit residents' bank accounts in late March 2020, immediately turbocharging spending, particularly among low-income earners.

Arkansas residents received more money in Economic Impact Payments per capita than the national average, totaling a little more than \$2,600 per resident compared with slightly more than \$2,400 nationally.

Table 2: Comparative Federal Stimulus Fund Distributions

	Arkansas	Sum of states
Stimulus \$ as % of GSP	21.4%	18.1%
Stimulus \$ per capita	\$9,236.03	\$11,754.79

Sources: BEA, Census Bureau, CRFB, Moody's Analytics

Paycheck Protection Program loans were second to Economic Impact Payments in terms of total dollar amount deployed in Arkansas. These loans are forgivable provided specific conditions are met. The Small Business Administration reports that Arkansas businesses received more than 105,000 PPP loans, worth a total of \$5.1 billion by the time the final round of the program closed at the end of May. This is equivalent to just less than 4% of Arkansas's annual gross state product, which is in line with the national average, but slightly lower than the support received by most of Arkansas's neighboring states.

After Economic Impact Payments and PPP loans, temporary federal enhancements to reg-

ular state unemployment insurance and fiscal aid to the state and local governments accounted for more than \$5 billion in additional spending.

Finally, federal legislation included a broad array of nonlocation-based measures designed to protect taxpayers from the pandemic's financial blow, such as the eviction mora-

torium and pause on student loan payments. These measures are not included in the state funding totals referenced above.

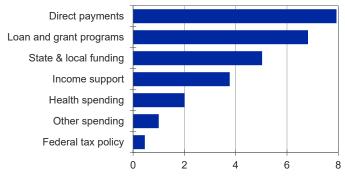
Taken together, these measures boosted consumers' disposable income, directed funding toward vulnerable businesses, and provided governments with both a cushion against revenue losses and the capital to make long-term investments in their economies. Deconstructing those effects can help to provide a clearer picture of exactly how impactful federal aid was on state tax revenues.

#### **Looking back**

Revenue collections for sales and use and individual income taxes fell sharply at the start of the pandemic before experiencing an

#### Chart 3: Federal Funds Are Flowing

COVID-19 response funds committed/disbursed to Arkansas, \$ bil

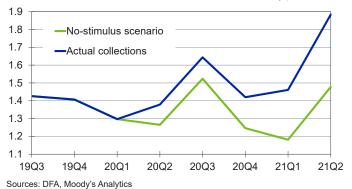


Sources: Committee for a Responsible Federal Budget, Moody's Analytics

<sup>1</sup> COVID Money Tracker. Committee for a Responsible Federal Budget. Accessed September 15, 2021. https://www.covidmoneytracker.org/

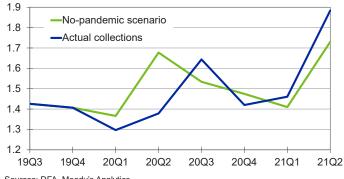
#### Chart 4: Imagining No Stimulus

Combined sales and individual income tax collections. \$ bil



#### **Chart 5: Imagining No Pandemic**

Combined sales and individual income tax collections, \$ bil



Sources: DFA, Moody's Analytics

exceptional recovery as federal stimulus began to work its way through the economy. To focus in on exactly how impactful those federal funds were on state revenues, we have estimated two alternative paths, or scenarios, to compare against the actual collections received from January 2020 to June 2021.

A no-stimulus scenario allows us to quantify the degree to which the economy, and by extension, revenue collections, were boosted by federal aid. Additionally, a no-pandemic scenario enables us to quantify the degree to which collections have been impacted by the pandemic, and perhaps more instructively, the degree to which they may be impacted going forward.

No-stimulus scenario: This scenario estimates what the Arkansas economy would have looked like between January 2020 and June 2021 had no federal pandemic stimulus monies been appropriated.

Under such a scenario, Arkansas would have suffered a much deeper recession than it actually did. We estimate that the unemployment rate would have climbed past 10% on a quarterly basis while income from wages and salaries would have slid nearly 15% as a result of the weaker labor market.

Without the historic influx of federal monies, we estimate that collections for the state's two largest tax categories, sales and use and individual income, would have been about \$1.1 billion lower than they were during the six quarters immediately following the pandemic (see Chart 4).

No-pandemic scenario: This scenario shows what Arkansas's economy would have looked like had no pandemic occurred and growth continued at pre-pandemic rates

from January of 2020 to June 2021. These growth rates are based on the average pace of growth in calendar-years 2018 and 2019. Because this scenario does not include the pandemic, it assumes that the 2020 tax filing deadline was not temporarily shifted forward into the next fiscal year.

Under such a scenario, collections for the state's two largest tax categories would have come in about \$108 million higher than they did during the six quarters immediately following the pandemic (see Chart 5).

Differing 2020 filing dates cause some timing issues, which muddy direct comparisons in individual quarters, but comparisons across the entire period are instructive. Drag from the pandemic was much more apparent at the beginning of the period than at the end when federal funds and the release of pent-up demand began to accelerate the pace of growth. Higher levels of inflation over the last few quarters of the comparison window also lead to stronger nominal

growth compared with a no-pandemic scenario. These factors become even more important when looking ahead to the effects of federal stimulus in the coming years.

#### Looking ahead

The pandemic and subsequent federal fiscal response carry meaningful impacts forward

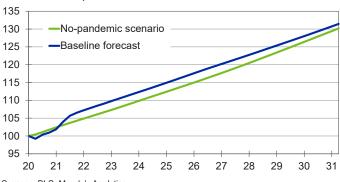
into the Arkansas economic outlook and, by extension, the outlook for state tax revenues. Over the next 10 years, the pace of growth in Arkansas's economy is expected to actually be faster than if there had been no pandemic.

There are several reasons for the post-pandemic optimism with regard to tax revenues. The first is thanks to the massive federal fiscal response to the pandemic. Altogether, the U.S. government will spend more than \$5 trillion trying to limit the economic fallout from COVID-19, and data show that as much as \$31 billion of those funds will eventually find their way to Arkansas. This is an injection of money equivalent to roughly a quarter of the state economy over a period of just a few years.

Second, inflation has been exceptionally strong coming out of the recession, and price gains are expected to be much higher over the next several years than was the case pre-pandemic (see Chart 6). This is

#### Chart 6: Inflation Expectations Raised

U.S. consumer prices, 2020Q1=100



Sources: BLS, Moody's Analytics

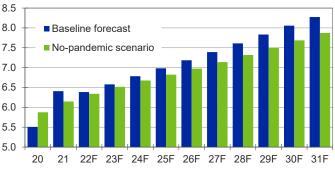
due in part to the massive influx of federal funds coming into the economy, but also because of pandemic-related supply constraints throughout the global marketplace. Prices play a key role in the determination of tax revenues because taxes, especially ad valorem taxes such as sales and individual income, are collected as a percentage of a nominal good or service. Therefore, inflation can drive tax revenues higher even if no additional economic activity occurs.

Accounting for the joint impacts of additional economic activity stimulated

by federal funds and higher prices, we estimate that Arkansas will take in about \$2.2 billion in additional sales and use and individual income tax revenue relative to if the economy had continued growing at its pre-pandemic pace (see Chart 7).

#### Chart 7: A Higher Trajectory

Combined sales & individual income tax collections by fiscal yr, \$ bil



Sources: DFA, Moody's Analytics

#### **About the Authors**

Dan White is the director of government consulting and public finance research at Moody's Analytics. In this role he oversees economic research with an emphasis on fiscal policy and municipal market impacts. He regularly presents to clients and conferences, and has been featured in a number of print, radio and televised media outlets, ranging from Bloomberg Television to The Wall Street Journal. Dan also works closely with a number of governments and policymakers in an advisory role, and teaches as an adjunct professor of economics at Villanova University.

Before joining Moody's Analytics, Dan worked as a financial economist for the State of New Mexico, where he forecast revenues and analyzed a wide range of policy issues concentrated around economic development, public investment and debt management. Dan holds an MA in economics as well as undergraduate degrees in finance and international business from New Mexico State University.

Emily Mandel is an economist at Moody's Analytics. She specializes in public finance research involving state and local governments and the municipal bond market. She also works closely with a number of governments in a consulting role, forecasting tax revenues and providing economic analysis. Her most recent research has focused on modeling the revenue impacts states face as a result of the COVID-19 pandemic.

In addition, Emily is responsible for covering the economies of Florida and the U.S. Virgin Islands. In this role she regularly produces regional macroeconomic forecasts and written analysis. Emily received a master's degree in international and development economics from Yale University and holds a bachelor's degree in economics and international studies from Dickinson College.

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## Macroeconomic Effects of Proposed Changes to Arkansas's Individual Income Tax

Prepared for The Arkansas Bureau of Legislative Research

#### **INTRODUCTION**

The purpose of this document is to estimate the macroeconomic effects of proposed changes to Arkansas's individual income tax. The proposed changes examined as part of this analysis include a reduction of the top marginal tax rate to 5.5% as well as a consolidation of the low- and middle-income tax tables. Moody's Analytics estimates that an enactment of these changes would reduce the amount of individual income tax collected over the next 10 years by approximately \$2.6 billion versus a current-law baseline. All else equal, it is estimated that this would add nearly \$947 million to the Arkansas economy over the same time period.

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#### Tax change assumptions

The proposal examined in this document makes two substantive changes to the Arkansas individual tax code. First, it would lower the top marginal tax rate for individuals from the current 5.9% to 5.5% (see Table 2). This change is assumed to go into effect for calendar 2022. This would partially impact revenue collections in fiscal 2022 and fully impact revenue collections beginning in fiscal 2023, remaining in effect permanently thereafter.

Second, the proposal would consolidate the two lowest income tax tables currently in effect into one tax table applicable to all individuals earning \$82,000 or less per year. This more significant administrative change is also assumed to go into effect for calendar 2022, impacting revenue collections beginning with the current fiscal year.

On a more minor note, the proposal also makes marginal changes to the current methodology for smoothing the tax cliff between the middle- and high-income tax tables. This measure has a limited impact on the overall amount of revenue collected while allowing for a more gradual smoothing of tax burdens between the two tax tables.1

#### Revenue effects

Moody's Analytics estimates that full implementation of the proposed changes would reduce Arkansas's individual income tax collections over the next 10 years by approximately \$2.6 billion compared with a current-law baseline forecast. This equates to reductions of more than \$250 million annually by fiscal 2023 on a static scoring basis. By incorporating the macroeconomic effects of lower tax burdens into these estimates, scoring on a dynamic basis, the 10-year costs fall by approximately \$46 million over the course of the decade (see Table 3).

The revenue impacts in Table 3 are consistent with a consolidated low- and middle-income tax table as well as a top marginal tax rate of 5.5%. If additional reductions in the top marginal rate were made below 5.5%, the actual cost of this proposal would be higher than what is estimated here. Based on the most up-to-date Arkansas state tax filing data from 2019, each 10-basis point reduction in the top marginal rate should reduce overall individual income tax collections by about \$34 million annually.

A majority of the tax relief from these proposed changes would be concentrated

Table 1: Summary Impacts Relative to Current-Law Baseline

Mil				
	FY2022	FY2023	FY2024	10-yr total
Revenues	\$(125.6)	\$(257.1)	\$(262.3)	\$(2,633.2)
Revenues net of macroeconomic effects	\$(123.3)	\$(252.5)	\$(257.6)	\$(2,587.1)
Gross state product	\$45.2	\$92.4	\$94.3	\$946.7

Source: Moody's Analytics

<sup>1</sup> The proposed cliff adjustment methodology would adjust tax liabilities by \$15 for every \$100 of taxable income for those earning \$82,000 to \$87,900 annually based on current-year tax tables. Those income amounts would adjust in future years based on cost of living.

Table 2: Proposed Bracket and Rate Changes to Individual Income Tax Law

Current law for individuals with incomes...

	<\$22,900		\$22,900 to \$82,000		2,000	>\$82,000		)
Min	Max	Marginal rate	Min	Max	Marginal rate	Min	Max	Marginal rate
\$-	\$4,699	0.00%	\$-	\$4,699	0.75%	\$-	\$4,200	2.00%
\$4,700	\$9,199	2.00%	\$4,700	\$9,199	2.50%	\$4,201	\$8,300	4.00%
\$9,200	\$13,899	3.00%	\$9,200	\$13,899	3.50%	\$8,301	+	5.90%
\$13,900	\$22,899	3.40%	\$13,900	\$22,899	4.50%			
			\$22,900	\$38,499	5.00%			
			\$38,500	\$82,000	5.90%			

Proposed law for individuals with incomes...

•	<\$82,000			>\$82,000	
Min	Max	Marginal rate	Min	Max	Marginal rate
\$-	\$4,999	0.00%	\$-	\$4,200	2.00%
\$5,000	\$9,999	2.00%	\$4,201	\$8,300	4.00%
\$10,000	\$13,999	3.00%	\$8,301	+	5.50%
\$14,000	\$22,999	3.40%			
\$23,000	\$38,999	5.00%			
\$39,000	\$81,999	5.50%			

Sources: DFA, BLR, Moody's Analytics

in the middle of the income distribution, with those individuals earning \$20,000 to \$80,000 per year seeing the largest benefits (see Chart 1). This owes in large part to the consolidation of the existing low- and middle-income tax tables into one table. Taxpayers with incomes above \$82,000 would also see significant levels of relief owing to the lower top marginal rate.

Individual taxpayers making less than \$20,000 per year would see lower taxes as a result of these proposals, though to a lesser degree. However, after the most recent increase to the Arkansas minimum wage, fewer taxpayers will actually fall below this threshold than in past filing years. Per the new \$11 per hour minimum, even the lowest-paid full-time workers will earn nearly \$23,000 annually beginning this year.

#### **Macroeconomic effects**

The across-the-board tax reductions achieved in the proposal would result in additional economic activity throughout Arkansas. Reducing household tax burdens across the income distribution results in greater after-tax incomes and higher levels of consumer spending and investment. Moody's Analytics estimates that the reductions associated with this proposal would boost Arkansas aggregate demand, and therefore overall gross state product by approximately \$947 million over the next decade (see Table 4).

The proposal would have similar impacts on both total personal income and employment. Greater demand from rising consumption and investment incentivizes more employers to hire and raise wages. The proposal's distributional characteristics enhance these effects. Much of the proposed relief is concentrated among middle-income taxpayers who tend to spend a much larger share of their after-tax income than individuals at higher income levels. This higher marginal propensity to consume among low- and middle-income taxpayers results in larger economic impacts than tax relief geared exclusively toward higher earners.

Moody's Analytics estimates that the proposed tax relief would add an additional \$792

million to Arkansas personal incomes over the next decade.

#### Key assumptions and risks

As with all macroeconomic estimates, this analysis is built off of several important assumptions that should be outlined and understood. First, this analysis makes no explicit assumptions on the flow of

long-term residents into or out of Arkansas as a result of it having a lower income tax burden. Lowering the individual income tax rate makes Arkansas more competitive relative to its neighbors. This should, on the margins, help it to attract more workers and businesses over time. However, given the size of these reductions in the context of neighbors such as Tennessee and Texas, which have no income tax at all, no additional assumptions were made outside the model around net in-migration as part of this analysis. Should Arkansas experience a more meaningful uptick in net migration as a result of lowering individual income tax burdens, the economic gains from the tax proposal could be larger than what has been estimated in this analysis.

#### Chart 1: Distributional Impacts

Avg annual tax cut as % of taxable income for individuals making...

-0.6

-0.5

-0.4

-0.3

-0.2

-0.1

0.0

-\$10k to \$20k to \$30k to \$40k to \$50k to \$60k to \$70k to \$80k to \$90k to \$100k

-\$20k \$30k \$40k \$50k \$60k \$70k \$80k \$90k \$100k

Source: Moody's Analytics

A final material risk to this analysis is the assumption that the proposed tax reductions are financed via surplus state revenues or reserves. The macroeconomic effects described in this analysis are con-

sistent with the tax reductions taking place without accompanying reductions to state government spending. Should surpluses and reserves not prove sufficient to finance the proposed tax cuts, then spending reductions

or tax increases elsewhere will need to be implemented to balance the state budget. Such actions could considerably reduce or offset the economic benefits described in this analysis.

Table 3: Revenue Effect of Proposed Changes Compared With Current-Law Baseline

#### Mil

	FY2022	FY2023	FY2024	10-yr total
Lower table	\$(65.9)	\$(134.8)	\$(137.6)	\$(1,381.6)
Higher table	\$(59.7)	\$(122.2)	\$(124.7)	\$(1,251.6)
Total	\$(125.6)	\$(257.0)	\$(262.3)	\$(2,633.2)
Total net of macroeconomic effects				\$(2,587.1)

Sources: DFA, BLR, Moody's Analytics

### Table 4: Macroeconomic Effects of Proposed Changes Compared With Current-Law Baseline

#### Mil

	FY2022	FY2023	FY2024	10-yr total
Gross state product	\$45.2	\$92.4	\$94.3	\$946.6
Personal income	\$37.8	\$77.3	\$78.9	\$792.5
Sources: BEA, BLS, Moody's Analytics				

#### **About the Authors**

Dan White is the director of government consulting and public finance research at Moody's Analytics. In this role he oversees economic research with an emphasis on fiscal policy and municipal market impacts. He regularly presents to clients and conferences, and has been featured in a number of print, radio and televised media outlets, ranging from Bloomberg Television to The Wall Street Journal. Dan also works closely with a number of governments and policymakers in an advisory role, and teaches as an adjunct professor of economics at Villanova University.

Before joining Moody's Analytics, Dan worked as a financial economist for the State of New Mexico, where he forecast revenues and analyzed a wide range of policy issues concentrated around economic development, public investment and debt management. Dan holds an MA in economics as well as undergraduate degrees in finance and international business from New Mexico State University.

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In addition, Emily is responsible for covering the economies of Florida and the U.S. Virgin Islands. In this role she regularly produces regional macroeconomic forecasts and written analysis. Emily received a master's degree in international and development economics from Yale University and holds a bachelor's degree in economics and international studies from Dickinson College.

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#### **10-year Revenue Forecasts**

	Sales & Use Taxes	Personal Income Taxes
	\$ mil	\$ mil
	Forecast begins: 2021Q3	Forecast begins: 2021Q3
2017Q3	\$609.3	\$700.8
2017Q4	\$610.5	\$681.4
2018Q1	\$607.1	\$652.6
2018Q2	\$632.1	\$834.4
2018Q3	\$640.1	\$738.0
2018Q4	\$631.2	\$697.1
2019Q1	\$605.8	\$702.5
2019Q2	\$631.5	\$961.4
2019Q3	\$649.7	\$775.9
2019Q4	\$663.4	\$743.3
2020Q1	\$637.6	\$659.2
2020Q2	\$636.3	\$742.3
2020Q3	\$714.6	\$929.0
2020Q4	\$698.9	\$721.1
2021Q1	\$683.6	\$777.1
2021Q2	\$833.4	\$1,050.2
2021Q3	\$761.9	\$843.1
2021Q4	\$745.3	\$782.8
2022Q1	\$752.8	\$707.7
2022Q2	\$771.1	\$1,020.7
2022Q3	\$794.6	\$848.6
2022Q4	\$768.6	\$810.3
2023Q1	\$772.5	\$736.2
2023Q2	\$788.1	\$1,059.7
2023Q3	\$810.5	\$882.3
2023Q4	\$784.1	\$843.4
2024Q1	\$787.7	\$768.1
2024Q2	\$802.7	\$1,105.8
2024Q3	\$824.6	\$919.5
2024Q4	\$797.0	\$878.1
2025Q1	\$799.9	\$798.8
2025Q2	\$815.1	\$1,150.2
2025Q3	\$837.5	\$957.0
2025Q4	\$809.6	\$913.6
2026Q1	\$813.1	\$830.6
2026Q2	\$828.9	\$1,195.3
2026Q3	\$851.7	\$993.9
2026Q4	\$823.3	\$948.5
2027Q1	\$826.4	\$862.9
2027Q2	\$842.0	\$1,242.7
2027Q3	\$864.9	\$1,034.3
2027Q4	\$836.0	\$987.7

2028Q1	\$839.2	\$898.9
2028Q2	\$855.2	\$1,294.3
2028Q3	\$878.5	\$1,076.7
2028Q4	\$848.8	\$1,028.1
2029Q1	\$851.9	\$935.3
2029Q2	\$867.9	\$1,346.7
2029Q3	\$891.3	\$1,120.3
2029Q4	\$861.0	\$1,069.6
2030Q1	\$863.8	\$972.3
2030Q2	\$879.8	\$1,398.8
2030Q3	\$903.1	\$1,162.8
2030Q4	\$872.3	\$1,109.7
2031Q1	\$875.3	\$1,008.6
2031Q2	\$891.5	\$1,451.0

Sources: DFA, Moody's Analytics