Comments on Dynamic Analysis from Regional Economic Models, Inc. (REMI)

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August 6, 2018

Senator Hendren, Representative Jean, and members of the Arkansas Tax Reform and Relief Legislative Task Force:

My name is Nicole Kaeding, and I am the director of special projects at the Tax Foundation. I apologize for my inability to provide my comments in person and thank the task force for accepting written commentary on the various dynamic scoring results before the task force today.

Software from Regional Economic Models, Inc. (REMI) was used to analyze a number of tax proposals for the Arkansas Tax Reform and Relief Legislative Task Force. The Tax Foundation was asked to provide analysis and comments on the results.

REMI reviewed four discrete tax proposals:

- Reduction in the Top Individual Income Tax Rate
- Individual Income Tax Brackets Option A
- Individual Income Tax Brackets Option B with an EITC
- Tax Foundation Suggested Tax Reform Package

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I. The Relationship between Taxes and Economic Growth

Reviewing and estimating the dynamic impact of tax changes is an important consideration for the task force, but should be viewed with caution. A multitude of economic studies document the relationship between taxes and economic growth. In 2012, Tax Foundation economist Will McBride conducted a literature review of 26 studies published since 1983. According to McBride, "all but three of those studies, and every study in the last fifteen years, find a negative effect of taxes on growth."[1]

The Organisation for Economic Co-operation and Development (OECD) released a series of working papers trying to refine the literature to document which taxes are more impactful to economic growth than others. In a seminal paper by Jens Arnold et al,[2] it was determined that corporate income taxes are the most harmful to growth, followed by individual income taxes, consumption taxes (sales taxes and value added taxes), and then property taxes.

Additionally, studies have focused particularly on the relationship between taxes and growth at the state level. A study by Timothy Bartik found that a 10 percent decline in state and local taxes increased economic growth by 1 to 6 percent, with 3 percent being the average.[3] Michael Wasylenko built upon this work, and in general, "the two studies suggest that a 10 percent tax change would stimulate between 1 and 3 percent change in long-term economic growth measure."[4] Numerous other studies have established such a relationship between taxes and economic growth.[5]

II. Comments on REMI's Analysis

Therefore, it is not surprising that dynamic analysis from REMI would find that many of these proposed tax changes would increase economic growth in Arkansas. For instance, REMI's blended approach analysis for Option A predicts an increase in economic output by $321.9 million over the next five years, coupled with an annual increase of 2,528 jobs. The blended approach also predicts that static revenue losses would be reduced by 5.5 percent, reducing the cost of the tax change.[6] The other individual income tax options have similar results.

There are several concerns, however, with REMI's analysis in the aggregate.[7] REMI's economic model is a composite of an input-output model and a computable general equilibrium model.[8] REMI's model allows the task force to understand the economic "shock" created by passing a tax change. In general, an input-output model can be understood as such: providing more economic inputs,

1 Will McBridge, "What is the Evidence on Taxes and Growth," Tax Foundation Special Report No. 207, December 18, 2012, https://taxfoundation.org/what-evidence-taxes-and-growth.

2 Jens Arnold, Bert Brys, Christopher Heady, Åsa Johansson, Cyrille Schwellnus, & Laura Vartia, *Tax Policy For Economic Recovery and Growth*, 121 Economic Journal F59-F80 (2011).

3 Peter Bluestone and Carolyn Bourdeaux, "Dynamic Revenue Analysis: Experience of the States," The Center for State and Local Finance, April 21, 2015, https://cslf.gsu.edu/files/2015/04/Dynamic-Revenue-Analysis_April2015.pdf.

4 Ibid.

5 For more reading on this relationship, the Tax Foundation *State Business Tax Climate Index* includes a long literature review as it relates to state and local taxes. https://files.taxfoundation.org/20171016171625/SBTCI_2018.pdf

6 Peter Evangelakis, "Arkansas Tax Reform and Relief Legislative Task Force Legislative Impact Statement, Income Tax Proposal-Option A," Regional Economic Models, Inc., August 3, 2018.

7 The author was not provided with REMI's fully methodology, so comments are based upon publicly available information.

8 Alberta H. Charney and Marshall J. Vest, "Modeling Practices and Their Ability to Assess Tax/Expenditure Economic Impacts," The University of Arizona, October 2003, https://ebr.eller.arizona.edu/sites/ebr/files/docs/research-studies/modeling-tax-expenditure-economic-impacts-2003.pdf.

such as consumption, government spending, or investment, can lead to more economic growth. But it doesn't necessarily distinguish among those economic factors, suggesting that increasing consumption or increasing government spending have the same economic effect. Increasing demand leads to economic growth. This type of model has traditionally been used to estimate the impact of government spending programs, not tax provisions.[9] Researchers at the U.S. Bureau of Economic Analysis described this type of model well, noting that "regional I-O multipliers share similarities with what are commonly termed macroeconomic (Keynesian) multipliers."[10] In short, REMI's model is driven by the demand-side of the economy. As governments or individuals spend more money, the economy grows. This has been described as "the folk theory" of tax reform.[11]

This differs from the majority of other dynamic scoring models. These models instead follow a more neoclassical economic model; their results are driven instead by the costs of labor or capital. These models instead first try to calculate changes in after-tax income through a microsimulation method. Those results are then fed into a production function to predict changes in economic input based on marginal tax rates.[12] These models are driven instead by the supply-side of the economy. Here, these models predict growth based upon business expansion and increased saving and investment.

Demand side responses make sense in the short run, but neoclassical economics instead argues that it is "the amount of labor, capital, and technology" that determines the size of the economy.

REMI's model also attempts to capture the balanced budget requirement of states, so the model assumes that any tax cut would be balanced with a decrease in state spending. Because government spending is part of the accounting identity used to calculate a state's gross domestic product,[13] the growth impact of any tax cut would be limited. This is has been an issue with dynamic scores produced by REMI in other states. Staff in New Mexico "speculated that the dynamic effects were so small because the model required some form of expenditure cuts to offset the revenue loss."[14] As the task force has discussed on numerous occasions, by phasing in tax cuts or using tax triggers, this impact can be mitigated.[15]

Because of the structure of REMI's model, changes that lead to increases in disposable income, such as individual income tax cuts, are viewed as being more pro-growth than a reduction in taxes on capital, in conflict with the economic literature.

Cutting the corporate income tax, for example, would only have a 3.8 percent dynamic revenue reflow. This result does not seem to match the broader economic literature's consensus that corporate income taxes are more harmful to growth. Nor does it seem to match results from other

9 Rebecca Bess and Zoe O. Ambargis, "Input-Output Models for Impact Analysis: Suggestions for Practicioners Using RIMS II Multipliers," U.S. Bureau of Economic Analysis, March 2011, https://www.bea.gov/papers/pdf/wp_iomia_rimsii_020612.pdf.

10 Rebecca Bess and Zoe O. Ambargis, "Input-Output Models for Impact Analysis: Suggestions for Practicioners Using RIMS II Multipliers," U.S. Bureau of Economic Analysis, March 2011, https://www.bea.gov/papers/pdf/wp_iomia_rimsii_020612.pdf.

11 Scott Greenberg, "A Unified Theory of Some of the Misconceptions in the Tax Reform Debate," Tax Foundation, August 21, 2017, https://taxfoundation.org/unified-theory-misconceptions-tax-reform-debate/.

12 One such model is the Tax Foundation Taxes & Growth Model. A full methodology of the Tax Foundation approach is available online. https://taxfoundation.org/overview-tax-foundations-taxes-growth-model/

13 GDP=C+I+G+NX

14 Bluestone and Bourdeaux, 23.

15 Nicole Kaeding, "Testimony: Tax Burdens and Tax Triggers in Arkansas," Tax Foundation, July 27, 2018, https://taxfoundation.org/testimony-tax-burdens-tax-triggers-arkansas/.

state-level dynamic models. For instance, Oregon's OTIM model estimated the impacts of three $100 million tax cuts, cutting the individual income tax, cutting the corporate income tax, and cutting the business property tax. Cutting the state's corporate income tax would have been the most pro-growth tax reform. Cutting the corporate income tax in Oregon would have had a dynamic reflow of 15.84 percent, compared to 9.65 percent for the individual income tax.[16] While the Oregon results have reflow greater than many of the aforementioned econometric studies, the directionality matches the consensus.

REMI's analysis goes even further arguing that the dynamic revenue loss of cutting the franchise tax would actually be larger than the static revenue loss. Cutting a tax on the literal accumulation of capital in Arkansas should be expected to be pro-growth.

III. Additional Considerations on State Dynamic Scoring

The economic modeling community has tended to recommend that states not model small tax changes.[17] Estimating the economic impact, for example, of a $26 million tax change in a $125 billion annual economy is difficult. REMI's result on the franchise tax, for example, should be viewed cautiously.

Additionally, changes that reduce the cost of capital, such as cutting the corporate income tax rate, take several years to materialize. Economic theory predicts that lower costs of capital encourage firms to invest more. The increased capital stock, such as more machinery, makes its workforce more productive, leading to an increase in wages. Since these supply-side changes take time to emerge, it is not surprising that individual income tax cuts would be more dynamic in the short-run.

In 2005, the federal Joint Committee on Taxation described this effect, writing:

> …the corporate tax rate reduction has the greatest effect on long-term growth, as the stock of productive capital accumulates and leads eventually to higher labor productivity. Reductions in individual income tax rates change both after-tax income and the after-tax return to labor, immediately affecting the willingness of people to supply labor to the economy. The resulting increase in both consumption demand and available labor hours has the greatest effect on short-term growth.[18]

Finally, the Tax Foundation plan was viewed as a comprehensive tax plan. Modeling the changes independently makes the estimating the impacts difficult. Tax changes work in tandem, but adding the results is inappropriate. Lowering the cost of capital through three targeted changes, repealing the franchise tax, repealing the inventory tax, and lowering the corporate income tax rate, would have a different effect than modeling each result independently.

16 Bluestone and Bourdeaux, 20.

17 Bluestone and Bourdeaux, 15.

18 Joint Committee on Taxation, Macroeconomic Analysi of Various Proposals to Provide $500 Billion in Tax Relief," JCX-4-05, March 1, 2005, http://www.jct.gov/x-4-05.pdf.

The package as modeled also did not include the Tax Foundation recommendations of expanding Arkansas's treatment of net operating losses or repealing several tax exemptions. Given the design of REMI's model, repealing tax exemption would likely have increased growth projections. The state would need less in spending cuts to maintain its balanced budget, which REMI models as decreasing economic output.

IV. Conclusion

The Arkansas Tax Reform and Relief Legislative Task Force should be applauded for consulting REMI to secure a dynamic analysis of its various tax proposals. In general, these results show that tax reform can be pro-growth. By lowering taxes, Arkansas can encourage greater economic growth. While tax cuts do not generally pay for themselves, it is accepted within the economic literature that reforms can be pro-growth.

However, due to the constraints of REMI's model, the detailed results produced should be viewed skeptically. In multiple cases, their results do not match the general consensus or expected directionality of the tax modeling community.

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