

A Response to the White House's Critique of PWBM's Infrastructure Analysis

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Last Thursday, Transportation Secretary Elaine Chao was asked in Senate testimony to respond to [PWBM's recent analysis](#) of President Trump's FY 2019 infrastructure plan. On Friday, the White House issued a [formal response](#) critical of PWBM's analysis.

To quickly recap, the [President's infrastructure plan](#) proposes that the federal government spend \$200 billion in incentives to produce \$1.5 trillion in total additional infrastructure spending across state and local governments, including private sector partnerships. PWBM analysis of the President's plan estimates that total infrastructure spending, across all layers of government, would increase between \$20 billion to \$230 billion, *including* the \$200 billion federal investment. We also estimate that this spending would have little impact on GDP.

In its response to our analysis, the White House raises three main objections. First, the White House contends that the PWBM model lacks transparency. Second, the White House claims that PWBM makes unrealistic parameter assumptions, including modeling the U.S. economy as "closed" to foreign capital flows. Third, the White House claims that PWBM fails to model the actual details of the infrastructure plan, which tries to focus on "new" investment.

The third claim requires the most discussion, as so we will start with the first two objections.

First, in terms of transparency, PWBM is the only entity---governmental or non-governmental---which conducts dynamic analysis of the federal budget and shows all of its major [model equations and methods online](#). Our recent infrastructure [options brief](#) even explained, including mathematically, how we modified our core dynamic model to analyze the President's infrastructure plan.

PWBM harnesses modern advances in theoretical modeling, data sciences and cloud computing, making it substantially richer than existing tools. As such, we constantly seek input from leading experts and value comments and criticisms; as an academic institution, transparency is part of our culture. So, we are absolutely happy to discuss our model and methods with Administration officials.

Second, the White House claims that PWBM's analysis assumes a "closed" economy as well as a low return to public capital. As discussed more below, both of these claims are incorrect. Importantly, our range estimate (between \$20 billion to \$230 billion) of the net impact of the President's plan on total spending across all levels of government does not rely on whether the economy is assumed to be open or closed; nor does this range rely on other parameters from our dynamic model, including the assumed elasticity of public capital to output. Dynamic model parameters only impact our reported GDP estimates from additional infrastructure. Instead, as discussed below, our estimated range of total government spending comes from detailed [estimates from a large empirical literature](#).

In making our GDP estimates, PWBM does *not* assume a closed economy: we assume that 40 percent of all new debt is financed by foreign inflows, a fact that is indicated multiple times in our reports. That number is consistent with the best [empirical evidence](#) of the foreign marginal average uptake of U.S. government debt since 2000. This estimate is, in fact, likely optimistic for two reasons. First, while U.S. debt is ubiquitous

worldwide as a safe reserve; the foreign uptake of U.S. equities (which we also hold at 40% to avoid arbitrage) is much lower, which also matters. Second, President Trump recently announced potentially new trade barriers. If enacted, reducing trade deficits also requires reducing capital flow surpluses. The trade and financial accounts in the international “balance of payments” net to zero, as we pay for our trading deficits by selling capital to foreign entities.

The assumed openness of the economy is relatively more important for the case when the federal government’s \$200 billion is financed with deficits. But, PWBM’s analysis also reports the case in which the entire \$200 billion is financed using a very efficient “lump sum” tax, consistent with user fees and perfectly inelastic demand (e.g., a gas tax or a highway toll tax in the very short run). A lump-sum tax is the most favorable assumption possible for stimulating growth. Nonetheless, the impact on GDP is still very small. Our [options brief](#) also reports additional sensitivity analysis for other parameters, including the elasticity of output to public capital as well as the speed at which public capital is installed. These parameters, while relatively more important for \$1.5 trillion in hypothetical new spending, are less important for the range that we estimate for the FY 2019 plan, which we project stimulates very little growth.

The White House also claims that PWBM’s model parameters assume a “marginal return to public capital well below 8 percent and lower than the literature suggests.” In fact, PWBM’s calibration produces a marginal product of public capital above 10 percent, approximately 33 percent higher than the value that was estimated by leading experts at the Congressional Budget Office in their [recent 2016 study](#).

Third, the White House claims that PWBM did not properly capture the President’s plan’s intent to focus on *new* infrastructure investment. In fact, PWBM’s analysis of the plan is very detailed, especially since the President only released a broad outline. PWBM categorizes the \$200 billion in proposed new federal spending into five specific types of federal incentive *spending* elements (see [Table 1](#)) and into three types of *non-spending* elements. Based on an extensive literature review, PWBM then differentially maps each of the five federal *spending* elements to its respective estimated impact on spending. For the three *non-spending* elements, two of the elements (“Real Property Reforms” and “Reduce Deferred Maintenance on Public Lands”) are very small. The third non-spending element (“Streamline Permits”) is more substantive, which we model by accelerating the installment of the new infrastructure. In fact, we assume that public infrastructure projects are built at twice the rate previously estimated by the [Congressional Budget Office](#).

For the five federal spending elements noted above, the past literature indicates that the types of incentive grants being considered by the Trump Administration will have only a modest impact on total infrastructure spending. The Administration, though, contends that a large part of their proposed spending is designed to only be spent on “new” infrastructure spending. However, previous administrations have also tried to isolate “new” spending with targeted incentive grants. The previous literature then examines whether targeted grants have indeed been successful in stimulating additional spending, finding only modest results.

The President’s plan assumes that state and local governments will multiply the federal government’s \$200 billion in new spending by 750% to produce \$1.5 trillion in total spending. In their response to our analysis, the White House claims that Department of Transportation evidence, in fact, suggests that the multiplier could be as much as 4000% for some types of federal credit programs.¹ Despite our broad search of over two dozen published studies, we are not aware of any paper published in a leading peer-reviewed economics journal that supports the large financing multipliers suggested by the White House. The largest multiplier in a peer-reviewed journal paper stands at 106%, estimated in 1974. A recent 2016 study, using substantially more infrastructure data and enhanced econometric methods, finds a multiplier of 13%. Our analysis cites these studies and many more.

In contrast, the White House did not provide any references to published papers supporting their claims of multipliers equal to 750% or 4000%. Nor did the White House provide any link to any model analyzing the impact of infrastructure spending on GDP. In their concluding sentence of their response to our analysis, the White House also quotes a single line from our transparent literature survey---pertaining to uncertainty in past estimates related to a specific type of federal credit program---without acknowledging that we dealt with that uncertainty using a range of values. We very much agree with the White House on the need for transparency of models and methods. We hope that they join us.

In fact, the idea that targeted federal grants might have very little impact on actual total spending is now established conventional wisdom in the public economics profession. The actual mystery explored by numerous previous studies---including in a well-cited [1995 paper](#) written by the 2017 Nobel Prize winner, Richard Thaler---is why targeted federal incentive grants should have *any* impact at increasing total targeted spending.² Since states typically already spend more than the grant awards on targeted activities, grant money is *fungible* and should behave similarly to a non-designated transfer of income from the federal government to states. For example, suppose that you are planning on spending \$10 at McDonalds for lunch. Now, suppose that you receive a voucher that gives you up to \$5 if you spend \$10 at McDonalds (i.e., a targeted, matching grant with a cap). It is likely that you will take the \$5 voucher and still spend something close to \$10, freeing up \$5 of your own money to spent on other things. In other words, giving you a targeted matching grant with a cap of \$5 is no different than simply giving you \$5 in cash, if you are already planning on spending that much on the targeted activity.

At an average spend of just \$20 billion per year over the next decade, President Trump's proposed spending is a very small fraction of the existing \$425 billion in transportation and water infrastructure spending each year, most of which is at the state level. The President's plan is even a small fraction of ongoing "new" infrastructure spending programs. Over 40 percent of the existing infrastructure spending is for capital projects, much of which is "new." For example, a total bridge replacement is generally considered a new capital investment for grant purposes rather than "operations and maintenance." In 2016 alone, states and cities passed over [\\$200 billion in additional funding](#) capital commitments. In sum, states could easily qualify for the federal grants targeting "new" spending within their ongoing spending plans. As a result, most of the federal grant money will behave like a fungible, non-designated transfer, being spent elsewhere---which is what the past empirical evidence indicates.

To be sure, it might seem that the federal government could simply *force* states to increase their infrastructure capital spending by requiring them to increase their capital spending by more than in previous years, if they want to take part in any of the \$200 billion in federal grants. However, trying to force states to increase their infrastructure spending would encourage obvious gaming, where states immediately *reduce* their infrastructure spending to qualify for future grants over the subsequent 10-year budget window.³ Indeed, the President's plan suggests that Congress devote a modest amount of spending to fund a "look back" period, which might be intended to reduce this type of gaming.

Numerous previous studies overwhelmingly indicate that no previous administration has figured out how to use small targeted infrastructure grants to substantially stimulate increases in total spending. There are no elements in President Trump's \$200 billion infrastructure plan that indicate anything different from past experience. The evidence suggests that federal targeted grants produce the largest increase in total spending if the federal spending is used to lower the cost of investing an additional dollar in infrastructure using more-costly "open-ended" grants, or if the federal dollars target infrastructure resources directly controlled by the federal government (e.g., air traffic control systems or AMTRAK).

1. Although the White House did not provide a reference for this claim, we assume that they are referring to a [2016 DOT report](#) to Congress. That report, however, simply indicates that the federal government spends about \$1 in credit extensions under the TIFIA program for every \$40 spent on related projects. The report does not claim to estimate the impact of federal government spending on new investment, the main focus of academic studies. ↩
2. The leading theory for why a federal grant, however, might have any sort of positive total spending impact on the targeted activity is the so-called “flypaper effect.” This theory suggests that some federal money might “stick where it lands.” This “sticky money” might be due to federal grants reorienting the political priorities of state legislators, potentially driven by the media attention of receiving a grant or due to local lobby groups. Nonetheless, even most papers that find evidence of the “flypaper effect” also find that total spending increases by less than \$1 for every \$1 in federal aid, *including* the \$1 in federal aid. ↩
3. Trying to force states to increase capital spending can lead to other problems as well. For example, states could recategorize previous “capital” commitments, such as [the \\$200 billion in additional funding passed by states and cities in 2016](#) (the most recent year with data available), as “operations and maintenance,” since the categorization itself is fairly fungible. Such recategorization can make it appear that states spent less on capital projects in the past, thereby meeting the qualifications for an increase in capital spending. ↩