



## Budget Model

# PWBM Budget Contest: TEACHUP Early Childhood Education Grants

---

**Summary:** The TEACHUP program, proposed by Rick Miller, Ph.D. as part of the PWBM Democratizing the Budget Contest, would give grants to states in order to provide full-day preschool for four-year-old children at or below 200 percent of the poverty line. On a conventional basis, PWBM projects that TEACHUP would cost \$92.4 billion over ten years and a total of \$282.53 billion by 2050. However, on a dynamic basis that includes productivity effects and expansion of the tax base, PWBM estimates that the program would effectively pay for itself by 2050 by holding public debt nearly constant.

### Key Points

- The Early Childhood US Partnership (TEACHUP) program would give states an annual \$10,000 per four-year-old at or below 200 percent of the poverty line to provide these children with full-day preschool. In states that already provide preschool to qualifying children, the money would instead go towards preschool for younger children.
- PWBM projects that this program would cost \$92.4 billion over fiscal years 2021-2030 and \$282.53 billion over fiscal years 2021-2050.
- This program would have roughly zero effect on the macroeconomy by 2030, as no TEACHUP beneficiaries would be old enough to enter the labor market at that point.
- By 2050, however, the program effectively pays for itself—increased productivity and thus tax revenue leads public debt to fall by 0.06 percent, hourly wages to grow by 0.08 percent, and GDP to increase by 0.09 percent.

### Introduction

This brief analyzes one of three winning proposals from the [PWBM Democratizing the Budget Challenge](#). The Early Childhood US Partnership (TEACHUP) proposal—written by Rick Miller, Ph.D. and based in part on S.1380, the [Strong Start for America's Children Act of 2015](#)—would establish a program to provide full-day preschool to every four-year-old child with a family income less than 200 percent of the poverty line (a “qualifying child”).<sup>1</sup>

## The Proposal

Each year, TEACHUP would allocate each state \$10,000 per qualifying child—roughly equivalent to the average cost per child of the [Head Start program](#). We assume that, over time, this per-student spending would grow according to the Consumer Price Index for Urban Consumers. The proposal does not specify how states must use the funds other than “to provide high-quality full-day preschool for qualifying children.” In cases where a state already provides preschool to qualifying four-year-old children, the corresponding funds would instead roll over to provide preschool to younger children with family income less than 200 percent of the poverty line.

After its first five years, the program’s funding would begin to transition to a 50-50 split between the federal government and the states. We do not model this provision, as the Democratizing the Budget Process contest is focused on the federal budget, and instead assume that TEACHUP would be fully funded by the federal government in perpetuity.

Additionally, the TEACHUP proposal suggests spending \$100 million to “define ‘high quality’ education, to identify and disseminate best practices, and to monitor and assess the impact of the Partnership.” The lack of details prevents us from modelling this provision.

The proposal does not specify how states would use TEACHUP funds to provide services and so we do not directly model effects on the childcare and preschool sectors. The design of state TEACHUP plans—direct provision, vouchers, etc.—could affect the program’s take-up, effectiveness, and side effects.

## Conventional Budget Effects

Table 1 shows projected annual costs of the TEACHUP program for the standard 10-year budget window. Using the [PWBM Microsimulation Model](#), we project that spending \$10,000 per qualifying child would cost \$9.49 billion in fiscal year 2021. Accounting for increases in per-child spending and the federal poverty line as well as demographics shift, we project that TEACHUP would have a total cost of \$92.40 for fiscal years 2021-2030 and \$282.53 for 2021-2050.

Table 1. Conventional Outlays

*Billions of Dollars, Change from Current-Law Baseline*

[DOWNLOAD DATA](#)

2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total, 2021 - 2030	Total, 2021 - 2050
9.49	9.86	9.36	9.15	9.19	9.34	8.91	9.26	9.10	8.73	92.40	282.53

## Dynamic Macroeconomic Effects

A large body of research has found that, despite generally short-lived effects on test scores, early childhood education interventions like Head Start tend to improve longer-term outcomes such as likelihood of completing high school or attending college. Based on [an estimate of the long-run impacts of Head Start](#)

[preschool](#), we predict that the average effect of TEACHUP will equate to about one-third of a year of additional education for qualifying children.

Using the PWBM Microsimulation’s predictive labor and education models, we translate the additional schooling into additional degree attainment and labor productivity for qualifying children. We then aggregate these projected individual changes to productivity and use them as inputs to the [PWBM Dynamic Model](#). Table 2 shows these dynamic macroeconomic effects of TEACHUP out to 2050.

Table 2. Dynamic Macroeconomic Effects

*Percent change relative to baseline*

[DOWNLOAD DATA](#)

Year	GDP	Capital Stock	Average Hourly Wage	Hours Worked	Debt Held by the Public
2030	0.00	0.00	0.00	0.00	0.00
2040	0.01	0.01	0.00	0.01	0.00
2050	0.09	0.08	0.08	0.01	-0.06

As TEACHUP is an early childhood program, the educational benefits to qualifying children take almost two decades to begin translating into economic benefits. At the end of the 10-year budget window, 2030, the main economic effect of TEACHUP is an increase in the public debt below our standard precision (roughly 0.001 percent) with effectively zero change in any macroeconomic aggregates.

By 2040, however, the first cohorts of previously TEACHUP-qualifying children have just entered the labor market; their increased educational attainment means they tend to be more productive workers and therefore work more and earn higher labor income. Although the public debt is about 0.005 percent larger than baseline in 2040, hours worked, the capital stock, and output are each 0.01 percent greater.

The macroeconomic benefits of the program only compound as more TEACHUP-eligible cohorts grow up and enter the labor market. The increase in tax revenue from the more productive former TEACHUP beneficiaries means that, by 2050, the program effectively pays for itself—public debt is 0.06 percent lower than baseline. As a result of greater productivity and less crowding out of investment, wages and the capital stock are each 0.08 percent greater and overall economic output is 0.09 percent larger.

**Future Work is Needed**

Importantly, these macroeconomic estimates are likely a lower bound on the benefits of TEACHUP. Research has found that increased access to childcare [generally increases mothers’ labor force participation](#) and work hours, especially for [single mothers](#) and [racial minorities](#). Research has also found other potential benefits of increased early childhood education such as [reductions in crime rates](#). Our analysis does not account for these effects, and therefore likely understates both the short- and long-term economic benefits of TEACHUP.

Additionally, the PWBM Microsimulation’s predictive model does not account for heterogeneity in the benefit of an additional year of education by childhood family income. An additional year of education for a TEACHUP-qualifying child [may benefit them more](#) than an additional year of education for a child from a

higher-income family, further boosting the long-run economic benefits of the program beyond what is found in this analysis.

*This analysis was conducted by [Daniela Viana Costa](#), [Victoria Osorio](#), and [Austin Herrick](#). This brief was written by [Kody Carmody](#) and prepared for the website by [Mariko Paulson](#).*

- 
1. While the proposal originally suggests using a poverty level that varies by state, for modeling purposes and to accord with existing federal programs we use the federal poverty line. [↩](#)