The Economic Impact of the Veterans Administration Home-Loan Guaranty Program: Quantitatively Assessing the Value on the 80th Anniversary

A report by

Joseph Haslag, PhD

June 5, 2024

Executive Summary

President Franklin D. Roosevelt signed the Servicemen's Readjustment Act on June 22, 1944. In anticipation of the end of World War II, the bill provided veterans with funds for college education, unemployment insurance, and included a housing component. Specifically, the law created a VA direct home-loan program through the Veterans Administration. In practice, the Veterans Administration backs a portion of the loan obtained from a private lender. For private lenders or servicers, the guaranty reduces default risk borne by the private lender. Now, 80 years later, it is time to quantify the impacts that the home-loan guaranty program has on the United States' economy.

The highlights are presented in the following bullet points:

- The Veterans Administration home-loan guaranty is big. Total loans have soared to nearly $450 billion during the COVID-19 pandemic.
- As a percentage of the total outstanding stock of home mortgages, the Veterans Administration (VA) home-loan program has been remarkably steady. Since the mid-1970s, the flow of new VA home loans guaranteed has consistently been between one and two percent of the total stock of outstanding mortgage loans.
- The effect of the VA home-loan program is also large. With a constant marginal product of residential capital, VA loans have added as much as $3.9 trillion worth of real GDP to the United States' economy. The value of home-purchase loans during the past 80 years has been $3.2 trillion. Over the past 80 years, therefore, it is clear that the benefit of the program exceeds the cost

The VA home-loan guaranty program has had a substantial economic impact on the United States' economy. The cost of the program is not the value of the loans, which we have reported here, but the costs of any guaranties that the VA must pay out if borrowers default on those loans. Clearly, the value loan is an upper bound on the cost of the program. Even so, the cumulative 80-year impact on the economy is 21 percent greater than the value of the loans issued. It follows that the VA home-loan guaranty program has been a huge success as indicated by our cursory cost-benefit analysis.

1. Introduction

President Franklin D. Roosevelt signed the Servicemen's Readjustment Act on June 22, 1944. In anticipation of the end of World War II, the bill provided veterans with funds for college education, unemployment insurance, and included a housing component. Specifically, the law created a VA direct home-loan program through the Veterans Administration. In practice, the Veterans Administration backs a portion of the loan obtained from a private lender. For private lenders or servicers, the guaranty reduces default risk borne by the private lender.

Now, 80 years later, it seems appropriate to assess the impact that the VA direct home-loan program has had. The purpose of this report is to describe the size of the loan program over time. The data tell us how large the loan volume has been since 1947. The size relative to the total mortgage market is also reported.

The most important contribution is to quantify the economic impact that the VA loan market has on the United States' economy. The main takeaway from this analysis is that the impact is big. Based on the quantitative analysis, the return on the investment is positive for the VA home loan guaranty program.

2. The Mortgage Market

. The VA Home Loan Guaranty program is part of a larger mortgage market. The first step is to get a sense of the size of VA home loans. Next, the broader mortgage market is described. Together, these data serve as inputs into the calculations of the economic impact.

2.1 The VA Home-Loan Market

Figure 1 plots the current dollar value of total VA home loans for fiscal years 1947 through 2023. The stacked bars differentiate between home purchase loans (blue) and refinance loans (orange). There are three main takeaways from Figure 1. First, the growth rate is substantial. In 1947, total VA loan volume was around $3.1 billion. The VA loan volume peaked in 2021 at slightly more than $447 billion. In dollar terms, the total loan volume increased at a 5.1 percent average annual rate.

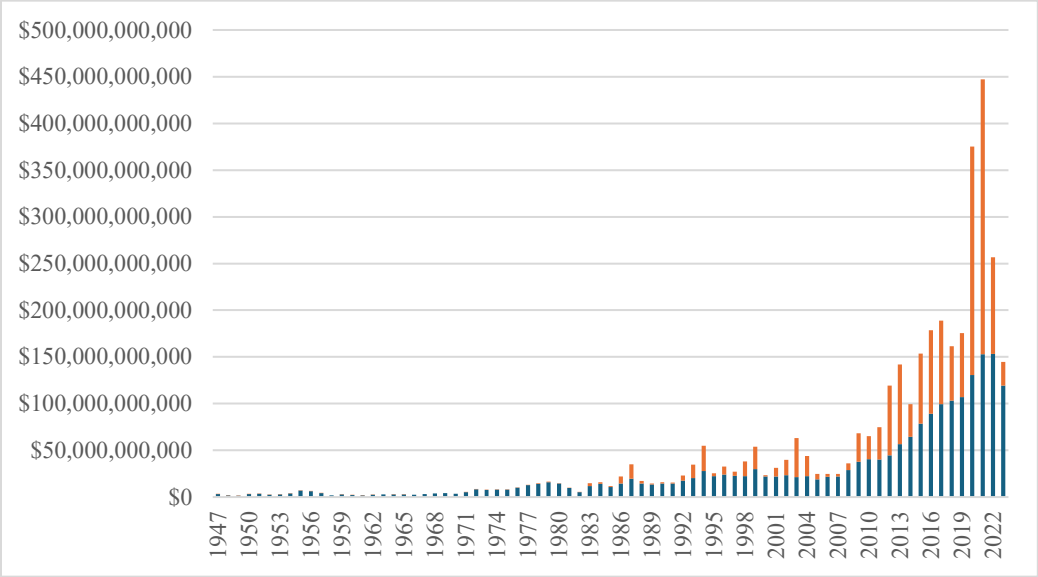
Second, the volume of refinance loans to purchase loans has changed dramatically over time. Purchase loans accounted for over 94 percent of total VA loan volume in each year between 1947 and 1982. During the COVID-19 pandemic, purchase loans accounted for 34 percent of total VA loan volume in both 2020 and 2021.

Third, there is substantial variation in the breakdown between refinance loans and purchase loans between 1983 and 2023. To see this, I compute the standard deviation in the percentage of VA loan volume applied to purchases. Between 1947 and 1982, the standard deviation is 1.5 percentage points.

Between 1983 and 2023, the standard deviation is 18.3 percentage points. Thus, variation after 1983 was more than ten times greater than the variation between the end of World War II and 1983.

Figure 1

Total VA Loan Volume, 1947-2023

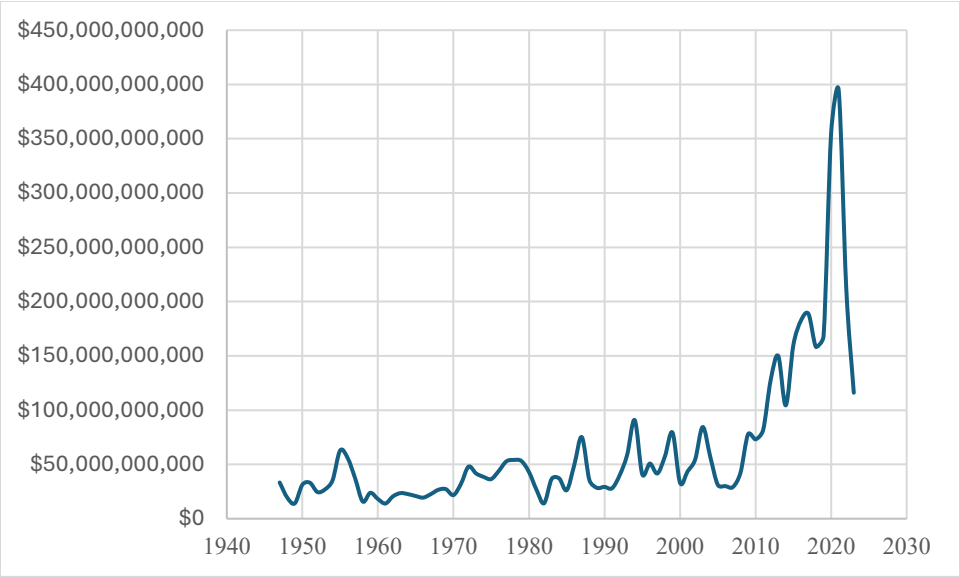


It is important to start with the raw data, but over such a long period, inflation has played a large role affecting the scale of loan volume over time. Figure 2 plots the real value of total VA loan volume over the same period. Between 1947 and 2023, real total VA loan volume increased at a 1.6 percent average annual rate. The real total VA loan volume cycles in the range between $30 billion and $90 billion for most of the period between 1947 and 2007.

Figure 2 also shows that the VA home-loan program has been quite different since 2007. There are two distinct features present in the data. For one thing, there is one large COVID-19 cycle. First, the graph is dominated by a spike in real total VA loan volume. In 2020 and 2021, real total VA loan volume recorded inflation-adjusted levels between $350 billion and $400 billion. The downturn began in 2022. With rising interest rates, real total VA loan volume decreased to $212 billion in 2022 and fell further to $116 billion in 2023. Second, there is an upward trend that emerges beginning in 2007. With the onset of the Great Recession, the United States entered a prolonged period with low interest rates. Between 2007 and 2019, real total VA loan volume increased at a 15.7 percent average annual rate. This growth is nearly 14 percentage points greater than the average annual growth rate over the entire 80-year period.

Figure 2

Real Total VA Loan Volume, 1947-2023



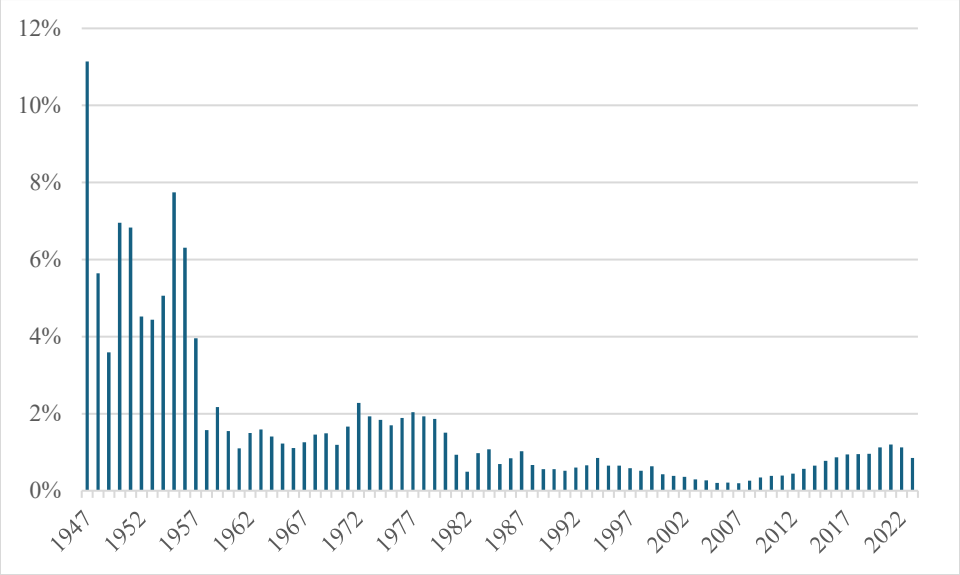
The next question is how large the VA loan volume is to the total mortgage market. The data are measuring two different aspects of the market. The aggregate mortgage market is measured as the total value of mortgages outstanding for One-to-Four-Family Residential Mortgages. The aggregate data is a snapshot of the mortgage assets held by financial institutions. The VA data is more like a movie; it captures the volume of new home loans issued by the VA as part of the home-loan guaranty program. Figure 3 plots the ratio of VA purchase loans in a year to the aggregate quantity of mortgages at the end of a calendar year.[1] The data show that VA purchase loans accounted for between four and 11 percent of new mortgages between 1947 and 1957. After 1957, the ratio is generally less than two percent. The evidence suggests that veterans used the VA home-loan program relatively heavily in the decade after World War II. Except for 1959, 1972 and 1977, the VA home loan has hovered closer to one percent of the total mortgage market.

If we include refinance loans, there is a spike evidence in the data that appears around 2011. The peak occurs in 2020 and 2021, when the total VA loan volume divided by aggregate mortgages rises above three percent.

[1] By only including purchase loans, the ratio excludes refinance loans. As the reader will see, the total VA loan volume evidence is presented numerically without presenting the graph.

Figure 3

Ratio of VA Purchase Loan Volume to Aggregate Mortgages, 1947-2023



2.2 The Mortgage Market

Here, our goal is to provide a measure of the mortgage market relative to the overall economy. What level of mortgage will households choose?

The starting point is the ratio of aggregate mortgages to Gross Domestic Product (GDP). This is the easiest way to characterize how much describe the relative size of total mortgages outstanding relative to the level of economic activity. The reason is to gauge the level of debt that households have against their home. GDP is the income scale that is used a gauge of affordability.

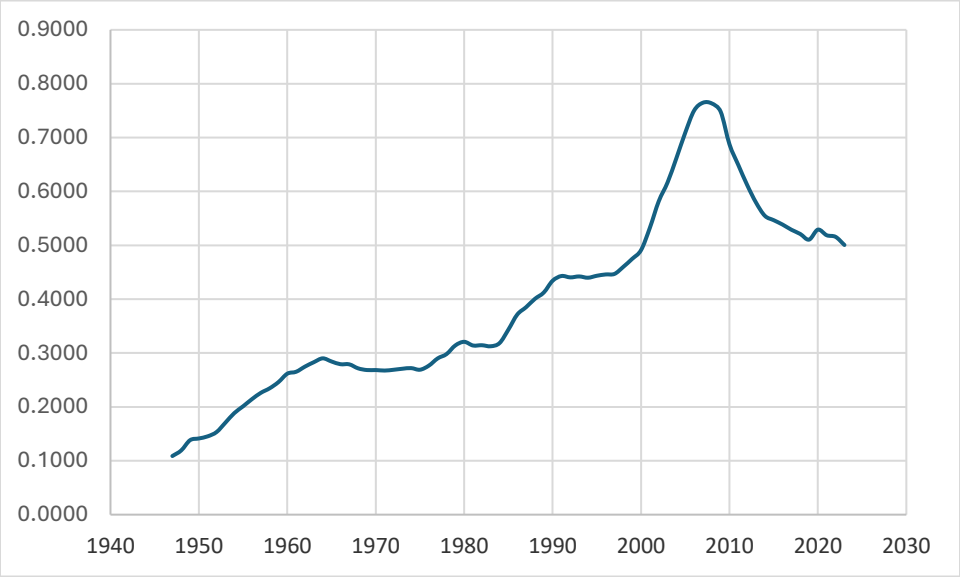
Figure 4 presents the ratio of aggregate value of total mortgages outstanding divided by GDP (mortgage-to-GDP ratio) from 1947 through 2023. The data show a clear upward trend in the mortgage-to-GDP ratio from the end of World War II to 2007. In 1947, the mortgage-to-GDP ratio was reported to be just under 11 percent. In 2007, the mortgage-to-GDP ratio peaked at just over 76 percent. The reason behind this upward trend is no doubt fascinating, but outside the scope of this report.[2] Since the start of

[2] Several possible explanations jump to mind. For example, there were federal policies aimed at increasing the home ownership rate. With declining computing costs, financial innovations occurred that increased access to the loan markets. Even the construction of the interstate highway system contributed, allowing relative inexpensive land outside urban cores to become viable living options for workers.

the Great Recession, however, we see a clear downward trend in the mortgage-to-GDP ratio. By 2023, the ratio had declined by over 25 percentage points, ending at roughly 50 percent.

Figure 4

Ratio of Aggregate Mortgages Outstanding to GDP, 1947-2023



There are three key factors that enter into our analysis of economic impact of the VA home-loan program. We know the absolute and relative size of the VA home loans, the size of the total mortgage market and the size of the economy that is impacted by the VA home-loan guaranty program. In the next section, we will ask what the economy would have looked like if the VA home-loan guaranty program had not existed for the last 80 years

3. Economic Impact Analysis

With the VA home-loan guaranty, we know how much veterans have borrowed over the years. Without access to these loans, the central question in this analysis is to quantify the impact the program has had on the United States' economy.

The intuition for calculating the economic impact is straightforward. Suppose the VA home-loan guaranty did not exist. The assumption is that maximum impact would be that the news homes purchased would not have constructed that year.[3] With the reduction in the residential capital stock, the productive capacity of the United States' economy shrinks. (The details of the economic model underlying the calculations is presented in the Technical Appendix.)

The first step is to convert the dollar amount loaned out for home purchases in each year into what that amount would be worth in 2023. This apple-to-apple comparison, therefore, uses the data presented

[3] More specifically, the resources spent on the construction would be diverted to consumption spending.

in Figure 2. If the VA home-loan program did not exist, the dollar amount in Figure 2 represents the maximum amount that would not have been loaned out to purchase a home.[4]

The annual marginal impact on real GDP is the product of the marginal product of capital and the size of the VA loan value for home purchases. For this model, the marginal product of capital is 0.245253. For each year from 1947 through 2023, I have calculated the impact of the VA loan program on GDP measured in constant dollars.

However, the impact needs one more modification. What is the value of those resources in 2023? In other words, suppose the resources spent on VA home-purchase loans impacted real GDP. Further, let the value of real GDP be saved, earning a four percent annual return compounded over time. The resulting dollar figure is the 2023 present value of the economic impact that occurred in some previous year.

Figure 5

Annual Economic Impact Given a

Reduction in VA home-purchase Loans on real GDP, 1947-2023

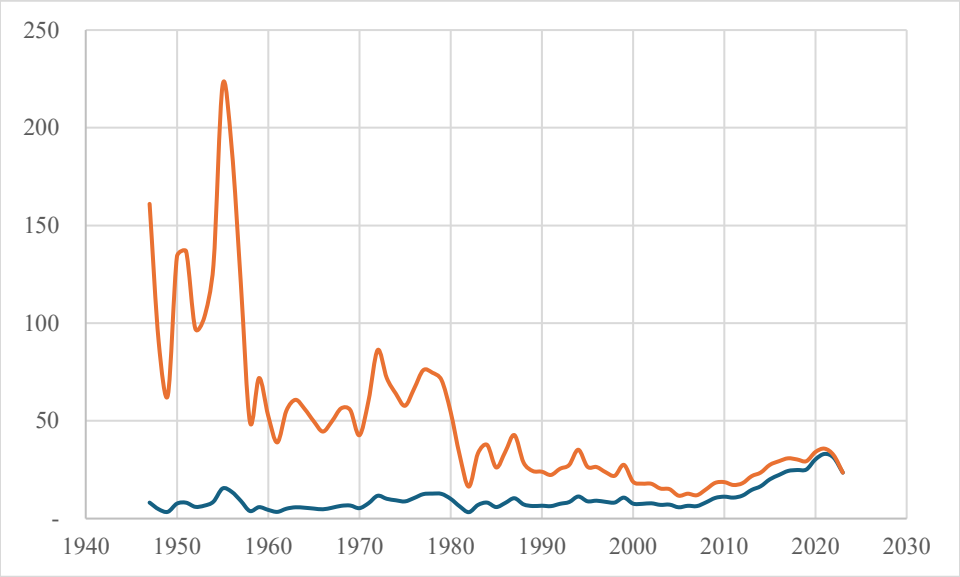


Figure 5 reports the maximum annual vale of real GDP loss for each year between 1947 and 2023 by the blue line. Because the product is a constant multiplied by the size of the loan value for home purchases, the graph exactly mimics the pattern present in Figure 2. For each annual value in Figure 5, it is multiplied by the compounded interest rate. For example, the annual real GDP loss in 1977, the annual loss of real GDP is $50.95 billion. In 2023, the $12.5 billion is

[4] Some fraction of the home-purchase loans would be spent on existing homes. So, the maximum amount does two things. One part is that all home-purchase loans offset an equal dollar amount of new construction. For example, if the sellers to a VA home loan would be purchasing new-home construction of equal value. In addition, the other part is no other home-purchase loans are available to the borrower receiving the VA home loan.

$$12.5 \times (1.04)^{46} = \$75.92. \qquad (1)$$

Equation 1 is an application of the general formula, $Y_t \times (1.04)^{2023-t}$, where Y denotes the value of real GDP loss in year $t = 1947, 1948, \ldots, 2023$. The orange line in Figure 5 plots the converted 2023 constant-dollar measure of the loss of real GDP associated with the absence of the VA home-loan guaranty program.

With all values converted to constant-dollar values measured in 2023 values, we can sum over all the annual values to get a measure of the economic impact of the VA home-loan guaranty program (the values in the orange line in Figure 5). Between 1947 and 2023, the cumulative sum of real GDP losses is equal to $3,877.58 billion. In other words, the economic impact of the VA home-loan guaranty program is nearly $3.9 trillion.

To put this into better perspective, the cumulative value of real VA home loans is $3.2 trillion between 1947 and 2023. Thus, the cumulative loss of real GDP is 21 percent greater than the cumulative value of loans provided under the VA home-loan guaranty program.[5]

4. Summary

The VA home-loan guaranty program is 80 years old. The economic impact of this program is large. I project the real GDP gains to be more than $3.9 trillion over the last 80 years.

[5] I also considered an alternative approach to measuring the economic impact. Here, the starting point is the mortgage-to-GDP ratio. Suppose the ratio of VA home-purchase loans is subtracted from the total stock of mortgage relative to GDP. Then assume that the ratio of total mortgages to GDP remains the same. The implication is captured by the following equation:

$$\Delta Y_t = C_0 \times \Delta M_t .$$

Here, Y denotes real GDP, C_0 is the ratio of mortgages to GDP, and M is the total stock of mortgages. (Note the Δ notation stands for "change in".) While this approach has some merit and is extraordinarily simple to implement, it lacks the discipline of the equilibrium-based model approach presented above. Rather it relies on the treatment of removing the VA home-loan guaranty program without resulting in any re-allocation of resources. In other words, this approach treats the dollars not loaned under the VA home-loan program as if the monies were thrown into the ocean. Because of this limitation, I did not report the results of the calculations.

Technical Appendix

In this technical appendix, the underlying economic model is presented. The key feature of the model economy is that it offers a dynamical version of the economy that is growing over time. In this way, the economic impacts over time are explicitly built into the economic model. In addition, the model is solved for a competitive equilibrium and is logically consistent. Logic consistency is important because it reflects the underlying discipline present in the model economy. Without logical consistency, the quantitative results are subject to criticism.

The economy is subject to changes. In this case, consider the value of production by VUHL. The impact on the economy is measured by subtracting the value of VUHL's production. This is a one-time incremental decline in the economy. The economic impact in 2023, for example, is the vertical difference between the treatment (red) line and the control (blue) line.[6] In that year, the difference is interpreted as the additional value of real GDP that owes to the incremental decline in total goods and services produced in the economy during that year. We take the time value of money into account and discount the additional gain observed in futured dates so that each year's value is converted to what it would be worth in 2023 dollars. In practice, the economic impact is measured as the discounted sum of all the annual differences in real GDP over a specified analysis period. We can conduct this economic impact analysis for any length of period. In addition, we can conduct the economic analysis for any region in which a summary measure of aggregate economic activity is available.

The process of constructing the control line and the treatment line is developed in the following step-by-step description.

At this point, we will provide the reader with a few equations that express how changes in the stock of accumulated education and experience, buildings, machines and new technologies can affect future output. Because economic activity, on average, increases over time, we use the "Ak" model as the basis for our model economy. The model economy is a valuable tool for helping interpret the observed history of an economy.

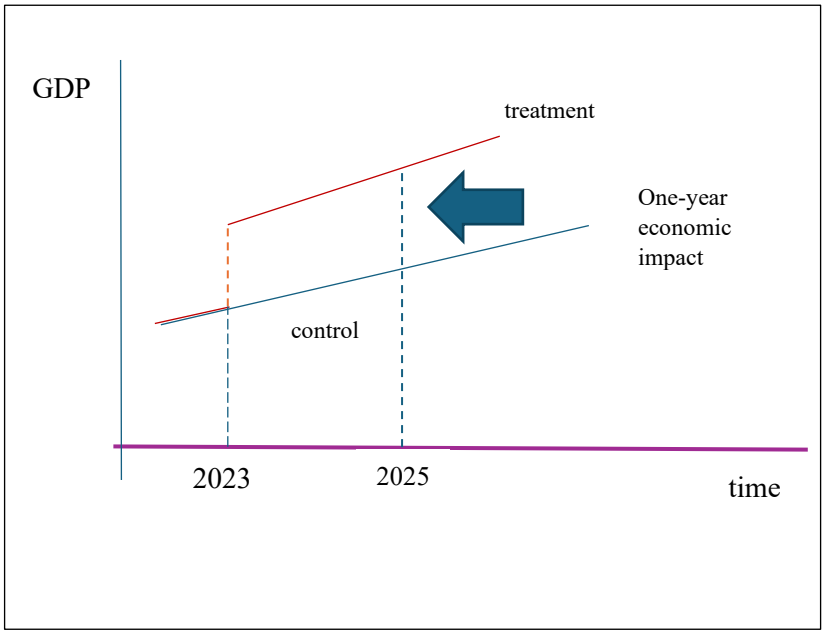
[6] It is important to note that the control line projection in Figure 2 does include "normal" investment levels since it includes investment expenditures that Ameren Missouri, and other Missouri companies would have undertaken in an economy in which PISA was not implemented. With the initial incremental PISA-induced investments, the Missouri economy expands the state's aggregate productive capacity. The economic impact recognizes how a large productive capacity can yield future indirect gains to the Missouri economy.

Figure A.1

A Diagram showing the Relationship

Between Controls and Treatments over time:

The Basis for Quantifying the Economic Impact



The key productive inputs are the combined quantities of physical and human capital. Put in more common language, people, especially their accumulated stock of knowledge, and machines and buildings are inputs into the production process. People and machines, for example, are included in the "k" present in the model's title. These tangible inputs are mixed together with the present state of technology—which is the "A" in the model's title—to generate a value of final goods and services, or GDP. The technology term represents a number that is multiplied by the market value of machines, buildings, and people's human capital to equal the value of final goods and services produced within an economy in a given

year.[7] The equation is elegant in the sense that we can consider directly how changes in buildings and people's accumulated knowledge, for example, affect the quantity of human and physical capital.[8]

A general, formal expression of the production of goods and services in Missouri is captured by equation (A.1). Let real GDP in Missouri be represented by

$$GDP_t = Ak_t. \tag{A.1}$$

Equation (A.1) says that real GDP produced in a year is equal to the product of the technology variable, denoted A, and the sum of physical and human capital, denoted k_t. The bottom line is that Equation (A.1) is the means by which we quantify the economic treatments associated with the incremental declines in production by an individual company.

Before we can begin to quantify the treatment effect, we need to calibrate the model economy to match several key features observed in an actual economy. There is one more equation that will provide a basis for this calibration part. The model economy can be solved for the (equilibrium) growth rate. We use the average annual growth rate observed for each of the nine economies that we will examine in this report. With observations taken from national data on consumer preferences, marginal income tax rates and annual depreciation rates, we can find the technology constant that is consistent with the economy's growth rate. Indeed, the key parameter that we have to infer from the historical data is the technology parameter, A. Once we have that value, we can compute how additional physical and human capital will translate into additional gains in real GDP.

Without going through the gory details, a household that maximizes lifetime utility will choose consumption growth in equilibrium that satisfies the following equation.

$$\frac{c_{t+1}}{c_t} = g = (\beta R)^{1/\sigma}. \tag{A.2}$$

Here, β is the rate at which the household discounts future consumption. The economics literature most frequently uses $\beta = 0.96$. Here, $R = (1-\tau)A + 1 - \delta$, is the gross (principal and net interest) real, after-tax return on investment. The marginal income tax rate, denoted by τ, is the sum of the marginal federal

[7] You may wonder if we take into account that the savings could go out of state. Our numerical analyses use the historical average amount of savings that are put back into the productive capacity of the Missouri economy. Whatever savings was done by the people in Missouri, there is an average amount of savings poured into adding to Missouri's productive capacity and some amount permitted to go to other states or countries. Leakages out of Missouri are accounted for in this way in our calculations.

[8] There is the potential of an additional channel—hereafter, referred to as technological progress—that affects the technology parameter, denoted by A.

income tax rate and the marginal Missouri individual income tax rate. Both physical and human capital depreciate over time, which is captured by the term δ. We use the conventional value of $\delta = 0.1$, or a ten percent annual depreciation rate, which is used in the economics literature. The variable σmeasures the elasticity of substitution between consumption today and consumption next year. The economics literature typically uses the value $\sigma = 1.5$.[9]

Lastly, we solve for the marginal product of capital. The steps are straightforward. We substitute the expression for the real, after-tax return on investment. For the United States, we find that between 1947 and 2023, real GDP increased at a 3.13 percent average annual rate. Hence, $g = 1.0313$. After some algebra, we can rewrite Equation (A.2) as

$$\left(\frac{g^{\sigma}}{\beta} - 1 + \delta\right) \div (1 - \tau) = A. \qquad \text{(A.3)}$$

So, plug in the values for the average annual growth rate, the discount rate, the depreciation rate, and the average marginal tax rate to solve for the marginal product of capital.

[9] The interested reader can find all the references that have contributed to the parameter settings presented in this report in Haslag, Joseph H., 2007. "Monetary Policy, Banking and Growth," *Economic Inquiry*, 36(3), 489-500. The citation for the Missouri average marginal income tax rate is, G. Dean Crader and Joseph H. Haslag, 2019. "Computing State Average Marginal Income Tax Rates: An Application to Missouri," *Growth and Change*, March, 50(1), 424-45.