An Illustration of the Potential Negative Economic Effects of Restrictive Investment Policy in Texas

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Introduction

Policies which meaningfully restrict options available for public finance and bonds or pension investments can generate significant economic effects. The financial operations of State and local governments as well as pension funds is a large and complex undertaking, and it is important that the process is as efficient as possible. It is axiomatic to basic economics that limiting the choice set yields outcomes that are less than optimal.

Texas recently enacted a policy prohibiting State entities from doing business with firms which were boycotting the energy industry. There are indications that during the period immediately following the introduction of the policy, many banks temporarily left the Texas market until they had analyzed their compliance. Bond issuances by government entities (including school districts) during the period involved higher interest rates, and the greater costs represent a deadweight loss to the state economy.

> Policies which meaningfully restrict options available for public finance and bonds or pension investments can generate significant economic effects.

Most banks have come back into the Texas market as they determined they were in compliance (or shifted their policies to become compliant). As a result, the ultimate incremental bond cost associated with the State's policy may not be notable. Nonetheless, the fact that reducing competition in the market for a period of time had an empirically measurable effect on the cost of bond issuances is indicative of the problems associated with such policies. Moreover, policies among major institutions regarding their loan portfolios may change over time in response to shifting priorities or other market phenomena.

Another potential issue associated with restrictive policies involves the state's pension funds. The large funds which would be subject to the law include the Teacher Retirement System, Employees Retirement System, Texas Municipal Retirement System, Texas County and District Retirement System, Texas Emergency Services Retirement System, and the Texas Permanent School Fund. Together these funds manage assets well over $350 billion. If binding restrictions are placed on what these funds can buy and

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sell, the result could be lower returns over time due to more limited investment options. Given the magnitude of the asset holdings of these entities, even very small variations in aggregate returns generate sizable economic harm.

The Perryman Group developed representative scenarios to illustrate the magnitude of the potential economic effects if a restrictive policy causes significant changes in the municipal bond market or pension investment options. Although it is unclear that the current policy would have effects of this magnitude at present, the scenarios are based on empirical evidence and provide a reasonable illustration of the large potential economic harms which could occur under certain circumstances.

Economic Effects

Any economic stimulus leads to dynamic responses across the economy, and any policy which introduces inefficiencies and less-than-optimal outcomes in the Texas municipal bond market or the state's pension funds will extract a deadweight loss on the economy which also brings downstream consequences. The Perryman Group has developed complex and comprehensive models over the past four decades to measure these dynamic responses in order to estimate the total economic effects (not only direct, but also indirect and induced) associated with direct sources of stimulus. (Methods used in this analysis are summarized below, with additional detail in Appendix A.)

The Perryman Group's dynamic input-output assessment system (the US Multi-Regional Impact Assessment System, which is described in further detail in the Appendices to this report) was developed by the firm about 40 years ago and has been consistently maintained and updated since that time. The model has been used in thousands of analyses for clients ranging from major corporations to government agencies and has been peer reviewed on multiple occasions. The impact system uses a variety of data (from surveys, industry information, and other sources) to describe the various goods and services (known as resources or inputs) required to produce another good/service. This process allows for estimation of the total economic impact (including multiplier effects) of the proposed development. The model used in the current analysis reflects the specific industrial composition and characteristics of the Texas economy.

Total economic effects are quantified for key measures of business activity (further explained in the Appendix). Note that these measures are alternative means of expressing the same effects; they are not additive.

- **Total expenditures** (or total spending) measure the dollars changing hands as a result of the economic stimulus.
- **Gross product** (or output) is production of goods and services that will come about in the area as a result of the activity. This measure is parallel to the gross domestic product numbers commonly reported by various media outlets and is a subset of total expenditures.
- **Personal income** is dollars that end up in the hands of people in the area; the vast majority of this aggregate derives from the earnings of

employees, but payments such as interest and rents are also included.

- **Job** effects are expressed as job-years of employment for a temporary stimulus such as construction and jobs for ongoing effects. A job-year is one person working for one year, though it could be multiple individuals working partial years.

Monetary values were quantified on a constant (2024 dollars) basis to eliminate the effects of inflation.

The Perryman Group estimates that a policy which meaningfully restricted the number of banks participating in the Texas bond market could lead to increased issuance costs in the form of higher net interest rates. This added expense is borne by the taxpayers in the relevant jurisdictions over the life of the securities, thus creating a net leakage from the local expenditure stream. The hypothetical scenario analyzed at present is based on academic evaluation of the effects that actually occurred in a period following the enactment of restrictions but may not be representative of future patterns.

> Any policy which meaningfully restricted the number of banks participating in the Texas bond market or investment options of pension funds could lead to notable economic harms.

Based on this assessment, the overall losses (including the downstream multiplier effects) are found to be **$764.6 million** in gross product and almost **8,200** job-years of employment. These adverse effects would be realized over the entire term of the bonds issued during a typical year, but, assuming similar volumes of bond issuances each year, they would be repeated annually. Impacts by major industry group are included in Appendix B.

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An Illustration of the Economic Cost of a Hypothetical Policy Significantly Restricting the Numbers of Banks Participating in the Texas Municipal Bond Market and the Related Potential for Higher Interest Rates			
Total Expenditures (Millions of 2024 Dollars)	**Gross Product** (Millions of 2024 Dollars)	**Personal Income** (Millions of 2024 Dollars)	**Employment** (Job-Years)
$1,592.5	$764.6	$472.3	8,159

Based on potential increases in interest rates for bonds under a policy which significantly reduced banks participating in the Texas bond market and The Perryman Group's estimates of related multiplier effects of removing these excess costs from the spending stream. Effects over the term of bonds issued in a typical year. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.

Source: US Multi-Regional Impact System, The Perryman Group

Restricting the firms available as investment options of the state's major public pension funds could also limit long-term returns. There is empirical evidence that restricting portfolio choices reduces returns, which was used in developing this illustrative scenario. Even if the reduction is very small (as assumed in this analysis), it nonetheless generates notable costs given the large amounts under management in the major Texas pension funds. These reductions in returns would ultimately result in lower payments to recipients or the use of public resources to offset the suppressed returns. In either case, downstream effects on the economy are initiated.

The Perryman Group estimates that, under these conditions, a policy significantly restricting investment options of Texas pension funds could lead to losses of **$821.1 million** in gross product and almost **8,800** job-years.

An Illustration of the Potential Annual Economic Cost of a Hypothetical Policy Significantly Restricting Investment Options and the Related Potential for Lower Returns for Texas Pension Funds

Total Expenditures (Millions of 2024 Dollars)	Gross Product (Millions of 2024 Dollars)	Personal Income (Millions of 2024 Dollars)	Employment (Job-Years)
-$1,710.1	-$821.1	-$507.2	-8,761

Based on studies of potential decreases in investment returns when options are restricted, the size of Texas' major pension funds, and The Perryman Group's estimates of related multiplier effects. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of terms and methods may be found elsewhere in this report and in Appendix A. For results by major industry group, see Appendix B.

Source: US Multi-Regional Impact System, The Perryman Group

These losses are annual effects on returns and, thus, are not additive to the economic costs over the terms of bonds previously described. The two scenarios represent different types of costs (bond placement and portfolio returns) and thus reflect separate and distinct potential losses associated with restrictive policies.

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Conclusion

Irrespective of their intended purpose, initiatives which meaningfully restrict options available for public finance and bonds or pension investments can generate significant economic effects. If Texas policy leads to inefficiencies and less-than-optimal outcomes in the municipal bond market or the state's pension funds it could cause significant deadweight losses to the economy as well as downstream consequences.

The scenarios in this assessment are based on empirical evidence and provide a reasonable illustration of the potential economic harms which could occur. While the current policy may not initially lead to effects of this magnitude, the potential for such economic harm is clearly present if the constraints significantly impact access to financial markets or limit investment parameters.

Appendix A: Methods Used

The US Multi-Regional Impact Assessment System (USMRIAS) measures multiplier effects of economic stimuli. The USMRIAS was developed and is maintained by The Perryman Group. This model has been used in thousands of diverse applications across the country and has an excellent reputation for accuracy and credibility; it has also been peer reviewed on multiple occasions and has been a key factor in major national and international policy simulations.

The basic modeling technique is known as dynamic input-output analysis, which essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process.

There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated. The second phase involves model simulation to determine total (not only direct, but also indirect and induced) effects. Additional detail is provided in the following sections.

Estimation of Direct Effects

The first step in estimating the direct stimulus was to determine a reasonable estimate of (1) the incremental costs for bond issuances if policies resulted in meaningful reductions in the numbers of banks participating in the Texas market and (2) the potential reduction in the earnings of major Texas pension funds if investment options were restricted sufficiently to curtail options and, thus, returns.

An empirical study of the eight-month period immediately following passage of the restrictions which included estimated incremental costs of bond issuances was utilized as partial basis in this segment of the analysis. The midpoint of the potential range of losses found in a study of the period ($297 million if bonds were called at the earliest date to $490 million if held to maturity) was used to reflect the fact that some of the issued bonds would be repaid early; results were then converted to a yearly basis. The result is an estimate of the typical losses that would occur in a year under a policy which restricted the numbers of banks in the Texas market to a significant degree. It is

impossible to predict what would actually happen in the market in such a scenario. In fact, what actually happened in the Texas market was that virtually all banks re-entered the market and competition is now generally seen as robust. (In addition, the authors of a major study recently updated it to reflect the current situation and found that given subsequent changes the effects were no longer expected to be significant.) Nonetheless, a hypothetical policy which actually did constrict market participation could lead to higher costs for bonds. If bonds cost more, the additional expense would be withdrawn from the consumer spending stream in the state over the life of the bonds because taxpayers would have to pay more over time to recover the incremental costs. Excess costs were projected assuming typical bond issuance amounts, and the losses would occur each year due to ongoing annual issuances at higher costs. This projected reduction in consumer spending was used as input to the impact assessment system.

For the reduction in performance of Texas public pension funds, a study of losses associated with restricting investment options was used in conjunction with recent estimates of the volume of money the pension funds are managing to determine potential losses. Again, the current law contains a number of exceptions and, while a very low loss of return is used in the analysis, it may not be representative of future outcomes. Under both scenarios, it is assumed that the reduced spending reflects typical consumer patterns in the state.

Model Simulation

The direct inputs were then implemented in a series of simulations of the USMRIAS to measure total (not only direct, but also indirect and induced) economic effects of the direct stimulus. The system used reflects the unique industrial structure of the Texas economy.

The USMRIAS is somewhat similar in format to the Input-Output Model of the United States which is maintained by the US Department of Commerce. The model developed by TPG, however, incorporates several important enhancements and refinements. Specifically, the expanded system includes (1) comprehensive 500-sector coverage for any county, multi-county, or urban region; (2) calculation of both total expenditures and value-added by industry and region; (3) direct estimation of expenditures for multiple basic input choices (expenditures, output, income, or employment); (4) extensive parameter localization; (5) price adjustments for real and nominal assessments by sectors and areas; (6) comprehensive measurement of the induced impacts associated with payrolls and consumer spending; (7) embedded modules to estimate multi-sectoral direct spending effects; (8) estimation of retail spending activity by consumers; and (9)

comprehensive linkage and integration capabilities with a wide variety of econometric, real estate, occupational, and fiscal impact models.

The impact assessment (input-output) process essentially estimates the amounts of all types of goods and services required to produce one unit (a dollar's worth) of a specific type of output. For purposes of illustrating the nature of the system, it is useful to think of inputs and outputs in dollar (rather than physical) terms. As an example, the construction of a new building will require specific dollar amounts of lumber, glass, concrete, hand tools, architectural services, interior design services, paint, plumbing, and numerous other elements. Each of these suppliers must, in turn, purchase additional dollar amounts of inputs. This process continues through multiple rounds of production, thus generating subsequent increments to business activity. The initial process of building the facility is known as the *direct effect*. The ensuing transactions in the output chain constitute the *indirect effect*.

Another pattern that arises in response to any direct economic activity comes from the payroll dollars received by employees at each stage of the production cycle. As workers are compensated, they use some of their income for taxes, savings, and purchases from external markets. A substantial portion, however, is spent locally on food, clothing, health care services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the Center for Community and Economic Research *Cost of Living Index*, a privately compiled inter-regional measure which has been widely used for several decades, and the *Consumer Expenditure Survey* of the US Department of Labor. These initial outlays by area residents generate further secondary activity as local providers acquire inputs to meet this consumer demand. These consumer spending impacts are known as the *induced effect*. The USMRIAS is designed to provide realistic, yet conservative, estimates of these phenomena.

Sources for information used in this process include the Bureau of the Census, the Bureau of Labor Statistics, the Regional Economic Information System of the US Department of Commerce, and other public and private sources. The pricing data are compiled from the US Department of Labor and the US Department of Commerce. The verification and testing procedures make use of extensive public and private sources.

Impacts are typically measured in constant dollars to eliminate the effects of inflation.

The USMRIAS is also integrated with a comprehensive fiscal model, which links the tax payments by industry to the specific rates and structures associated with the relevant State and local governmental authorities.

Measures of Business Activity

The USMRIAS generates estimates of total economic effects on several measures of business activity. Note that these are different ways of measuring the same impacts; they are not additive.

The most comprehensive measure of economic activity is **Total Expenditures**. This measure incorporates every dollar that changes hands in any transaction. For example, suppose a farmer sells wheat to a miller for $0.50; the miller then sells flour to a baker for $0.75; the baker, in turn, sells bread to a customer for $1.25. The Total Expenditures recorded in this instance would be $2.50, that is, $0.50 + $0.75 + $1.25. This measure is quite broad but is useful in that (1) it reflects the overall interplay of all industries in the economy, and (2) some key fiscal variables such as sales taxes are linked to aggregate spending.

A second measure of business activity is **Gross Product**. This indicator represents the regional equivalent of Gross Domestic Product, the most commonly reported statistic regarding national economic performance. In other words, the Gross Product of Texas is the amount of US output that is produced in that state; it is defined as the value of all final goods produced in a given region for a specific period of time. Stated differently, it captures the amount of value-added (gross area product) over intermediate goods and services at each stage of the production process, that is, it eliminates the double counting in the Total Expenditures concept. Using the example above, the Gross Product is $1.25 (the value of the bread) rather than $2.50. Alternatively, it may be viewed as the sum of the value-added by the farmer, $0.50; the miller, $0.25 ($0.75 - $0.50); and the baker, $0.50 ($1.25 - $0.75). The total value-added is, therefore, $1.25, which is equivalent to the final value of the bread. In many industries, the primary component of value-added is the wage and salary payments to employees.

The third gauge of economic activity used in this evaluation is **Personal Income**. As the name implies, Personal Income is simply the income received by individuals, whether in the form of wages, salaries, interest, dividends, proprietors' profits, or other sources. It may thus be viewed as the segment of overall impacts which flows directly to the citizenry.

The final aggregates used are **Jobs and Job-Years,** which reflect the full-time equivalent jobs generated by an activity. For an economic stimulus expected to endure (such as the ongoing operations of a facility), the Jobs measure is used. It should be noted that, unlike the dollar values described above, Jobs is a "stock" rather than a "flow." In other words, if an area produces $1 million in output in 2022 and $1 million in 2023, it is appropriate to say that $2 million was achieved in the 2022-23 period. If the same area has 100 people working in 2022 and 100 in 2023, it only has 100 Jobs. When a flow of

jobs is measured, such as in a construction project or a cumulative assessment over multiple years, it is appropriate to measure employment in Job-Years (a person working for a year, though it could be multiple individuals working for partial years). This concept is distinct from Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

Appendix B: Results by Industry

An Illustration of the Economic Cost of a Hypothetical Policy Significantly Restricting the Numbers of Banks Participating in the Texas Municipal Bond Market and the Related Potential for Higher Interest Rates

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs-Years
Agriculture	-$30.2 m	-$8.8 m	-$5.7 m	-74
Mining	-$25.8 m	-$6.0 m	-$3.5 m	-17
Utilities	-$114.4 m	-$25.7 m	-$11.2 m	-40
Construction	-$38.5 m	-$19.7 m	-$16.3 m	-186
Manufacturing	-$189.5 m	-$58.1 m	-$32.4 m	-424
Wholesale Trade	-$48.3 m	-$32.7 m	-$18.9 m	-175
Retail Trade*	-$429.4 m	-$324.3 m	-$188.9 m	-4,677
Transportation & Warehousing	-$45.0 m	-$31.0 m	-$20.5 m	-228
Information	-$47.0 m	-$29.0 m	-$12.4 m	-91
Financial Activities*	-$327.7 m	-$54.9 m	-$20.7 m	-177
Business Services	-$62.5 m	-$36.8 m	-$30.0 m	-298
Health Services	-$83.0 m	-$58.8 m	-$49.7 m	-670
Other Services	-$151.2 m	-$78.8 m	-$62.2 m	-1,103
Total, All Industries	**-$1,592.5 m**	**-$764.6 m**	**-$472.3 m**	**-8,159**

Source: US Multi-Regional Impact Assessment System, The Perryman Group
Notes: Monetary values given in millions of 2024 US dollars per year. A job-year is one person working for one year, though it could be multiple individuals working partial years. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

An Illustration of the Potential Annual Economic Cost of a Hypothetical Policy Significantly Restricting Investment Options and the Related Potential for Lower Returns for Texas Pension Funds
Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-$32.4 m	-$9.4 m	-$6.2 m	-79
Mining	-$27.7 m	-$6.5 m	-$3.7 m	-18
Utilities	-$122.8 m	-$27.6 m	-$12.0 m	-43
Construction	-$41.3 m	-$21.2 m	-$17.5 m	-200
Manufacturing	-$203.5 m	-$62.4 m	-$34.8 m	-455
Wholesale Trade	-$51.9 m	-$35.1 m	-$20.3 m	-188
Retail Trade*	-$461.1 m	-$348.2 m	-$202.8 m	-5,022
Transportation & Warehousing	-$48.4 m	-$33.2 m	-$22.0 m	-244
Information	-$50.4 m	-$31.2 m	-$13.3 m	-97
Financial Activities*	-$351.9 m	-$59.0 m	-$22.2 m	-190
Business Services	-$67.1 m	-$39.5 m	-$32.2 m	-320
Health Services	-$89.1 m	-$63.1 m	-$53.4 m	-719
Other Services	-$162.4 m	-$84.7 m	-$66.8 m	-1,185
Total, All Industries	**-$1,710.1 m**	**-$821.1 m**	**-$507.2 m**	**-8,761**

Source: US Multi-Regional Impact Assessment System, The Perryman Group
Notes: Monetary values given in millions of 2024 US dollars per year. A job-year is one person working for one year, though it could be multiple individuals working partial years. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate.

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