How Public Funds Investment Policy Impacts the Kansas Economy: An Analysis and Adaptation of Previous Research

Emily Breit, Ph.D.

Policy Fellow

Docking Institute of Public Affairs

This report does not recommend specific policies, but provides background, data, and analysis to support policy discussions for the state.

Previous Studies

- *How Public Funds Investment Policy Impacts the Kansas Economy: An Analysis and Adaptation of Previous Research*, John D. Wong (2006)
- A study for the Missouri Bankers Association and the Missouri Independent Bankers Association, Joseph H. Haslag (2004)
- *The Investment of Surplus Funds of Local Governments in the State of Kansas*, Carl C. Nielsen (1985)
- *Surplus Funds of Kansas Local Government*, Darwin W. Daicoff (1966)

Objective

To ensure the analysis aligns with previous studies for comparative purposes while updating content to reflect current economic and regulatory conditions.

Introduction

This report seeks to analyze the impact local government investment decisions have on their local economies and the State of Kansas.

When municipal funds are transferred outside their local market, fewer funds may be available for loans to local customers, leading to reduced economic activity. This initial decline in economic activity has a multiplier effect, further diminishing economic activity beyond the initial decrease.

Trends in Local Government Investments

Over the last four decades, there has been a trend in local government investments, with more funds being allocated to out-of-state investments.

This shift has been justified by the potential for greater liquidity and higher returns offered by out-of-state investments. All else being equal, local governments are inclined to favor investments that provide a better yield and increased liquidity.

Trends in Local Government Investments

As more funds are moved out of local banks, there are fewer investment opportunities available within Kansas.

This reduction in local investment can lead to a loss of economic development capital, income, and associated tax revenues for both local governments and the state overall.

The Pooled Money Investment Board (PMIB)

The Pooled Money Investment Board (PMIB) invests the money available from the State of Kansas General Fund and other state funds deposited with the State Treasurer.

The investable state moneys are combined with Kansas Municipal Investment Pool deposits to create the Pooled Money Investment Portfolio (PMIP).

Municipal Funds

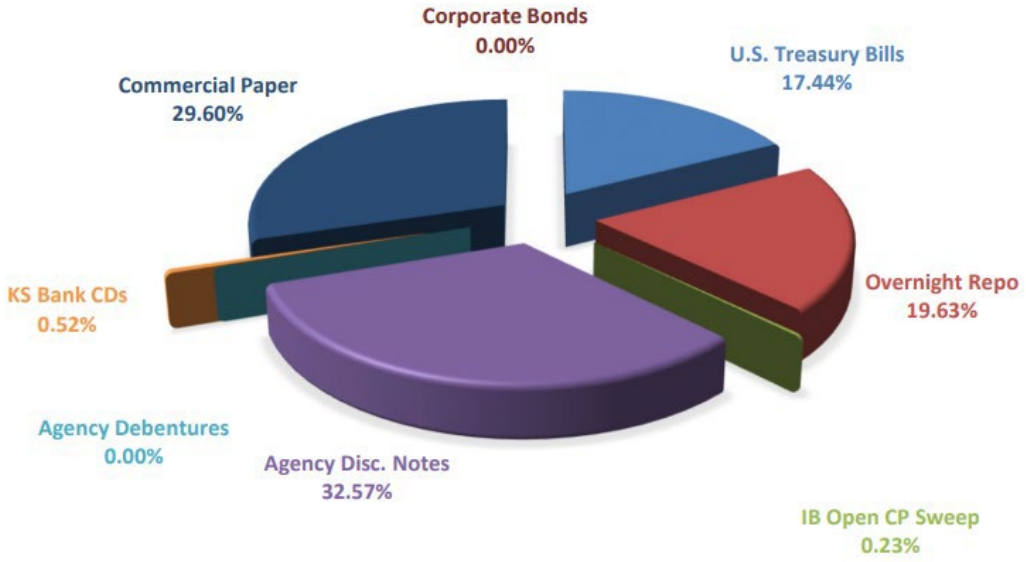
The Kansas law on municipal funds was originally designed to keep local idle funds deposited within institutions of the local government unit. The aim was to ensure that taxpayers who contributed these funds would receive at least a market yield, while also supporting the economic development of the locality (Nielsen, 1985).

However, interpretations of the current law along with the advent of the Municipal Investment Pool have contributed to these funds often leaving the counites, benefiting regions outside of the county, state, and country.

The Pooled Money Investment Portfolio (PMIP)

Currently a large portion of the PMIP is allocated to Agency Discount Notes, US Treasury Bills, Overnight Repos, and Commercial Paper (over 12.6% of which is in Canada based banks).

Less than 1% (.52%) of the funds are in Kansas Bank CDs.



Asset Allocation as of 8/31/2024

Municipal Funds Leaving the Local Economy

The reduction in municipal funds allocated to Kansas banks can impact the local economy, the state economy, and the banking industry

Bank Background

Transformation of the U.S Banking Industry: 1934-2024

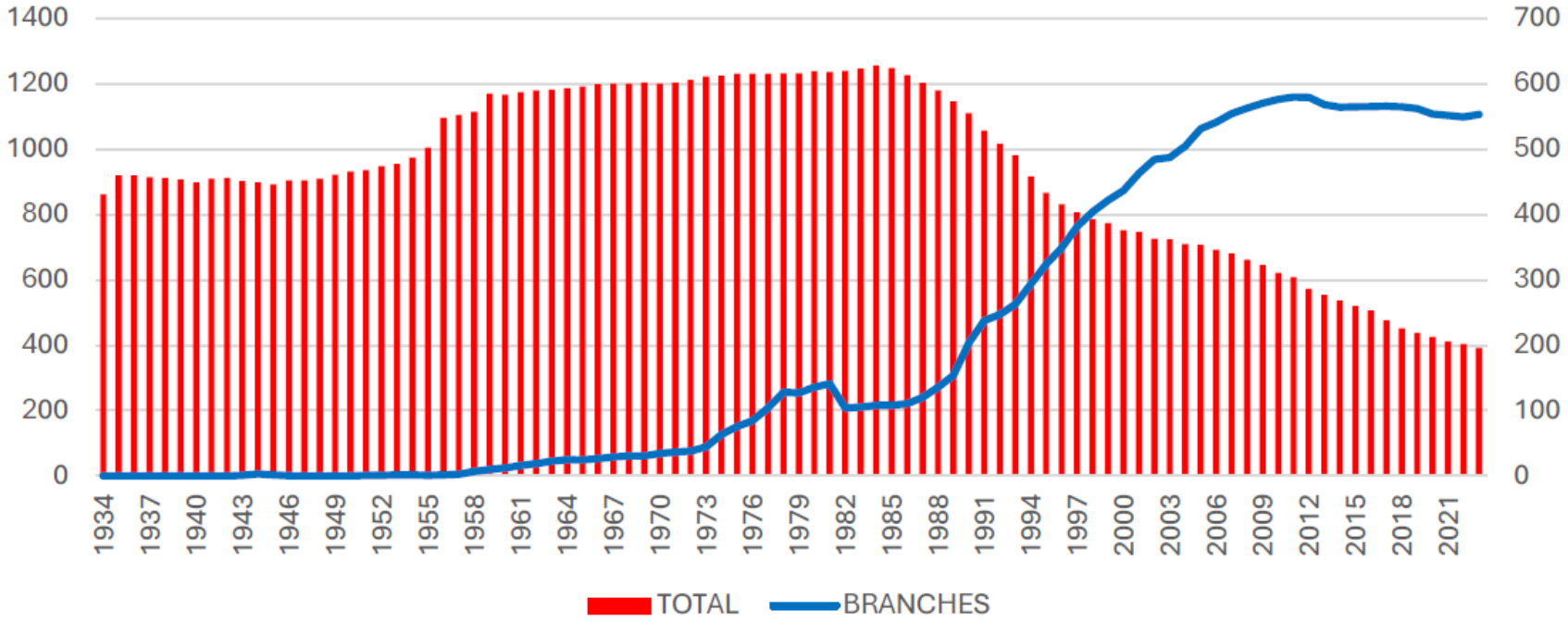
In 1934 there were 14,146 FDIC insured banks in the U.S. This number remained consistent for 50 years until changes in regulations occurred in the 1980s. From 1984-2023 the number of banks fell from 14,483 to 4,027 and the number of savings institutions fell from 3,549 to 563. This represents a decline of 72% and 84%, respectively.

Banks in Kansas

The trend in the number of banks in Kansas reflects the national pattern. In 1984, there were 690 FDIC-insured banks and thrifts in the state, but by the end of 2023, this number had dropped to 204 (70% decline).

In 1984, Kansas had 216 branch locations. This number peaked at 1,159 in 2011 before stabilizing and slightly decreasing due to the shift towards online banking. Currently, Kansas has just over 1,100 branches (more than 400% increase).

Number of FDIC Insured Banks & Thrifts and Branches in Kansas 1934-2023



Banking Changes

Community banks have encountered numerous obstacles in recent years, including shifts in the economic landscape, demographic changes, and advancements in technology. As a result of industry consolidation and market dynamics, their market share has declined (Nguyen, 2019; FDIC, 2020).

Another factor contributing to declining numbers in community banks is the absence of succession plans. These banks are often owned and operated by a single individual. Many of these owners/operators lack a succession plan (Walser and Anderlik, 2004).

Community Banking Importance

Despite declining numbers, community banks remain the most common type of bank, holding over 90% of all charters. Although, the issuance of new bank charters has decreased, leading to fewer new banks replacing those that merged or failed. (FDIC Community Bank Study, 2020).

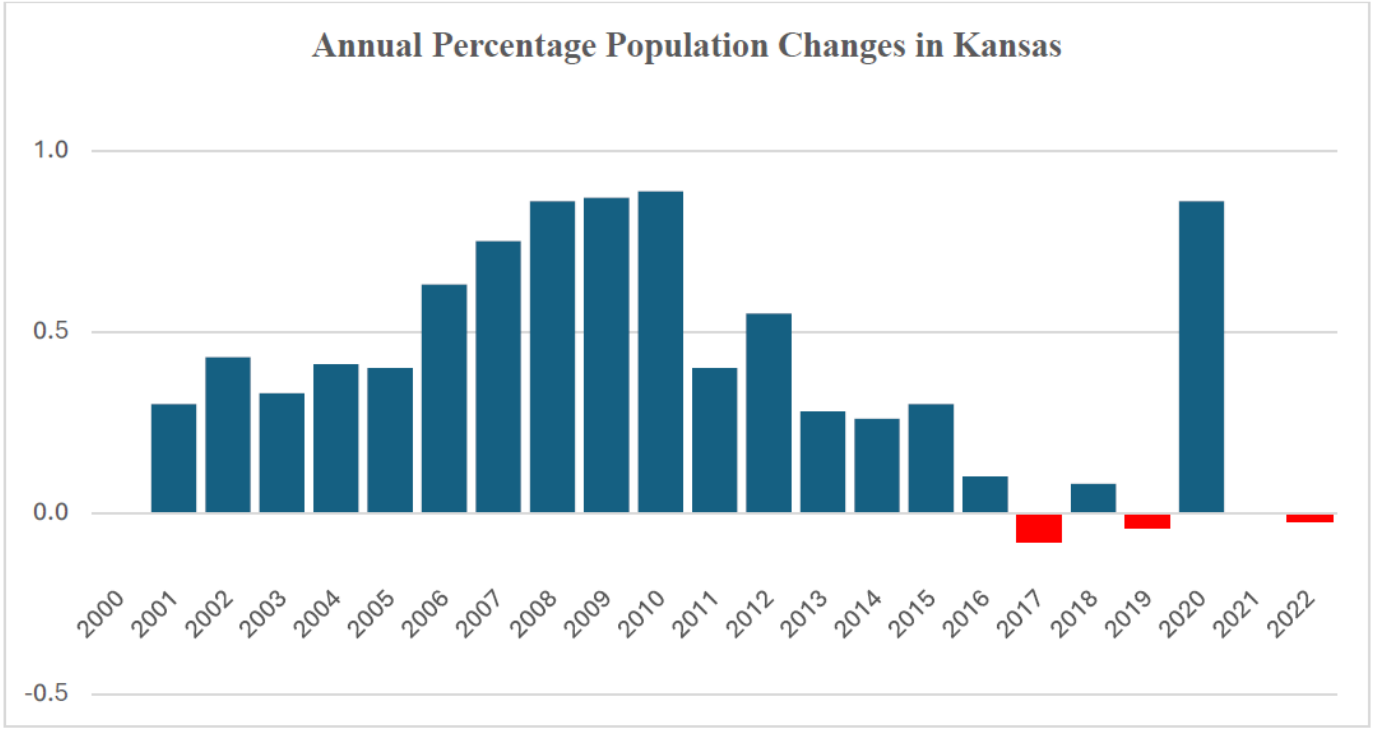
Community Banks –Relationship Lending

Community banks play a crucial role in markets, often entering areas where larger banks have not maintained a presence. This trend indicates that community banks have successfully navigated the evolving market conditions, carving out niches in both rural and suburban areas. **Their comparative advantage now appears to be increasingly focused on serving smaller, less densely populated markets where they create personal relationships with their customers.**

Kansas Demographics

Demographic Changes

Kansas's population grew by approximately 3% from 2010 to 2020, reaching nearly 3 million. This growth rate was slower than the national average of 7.4%.

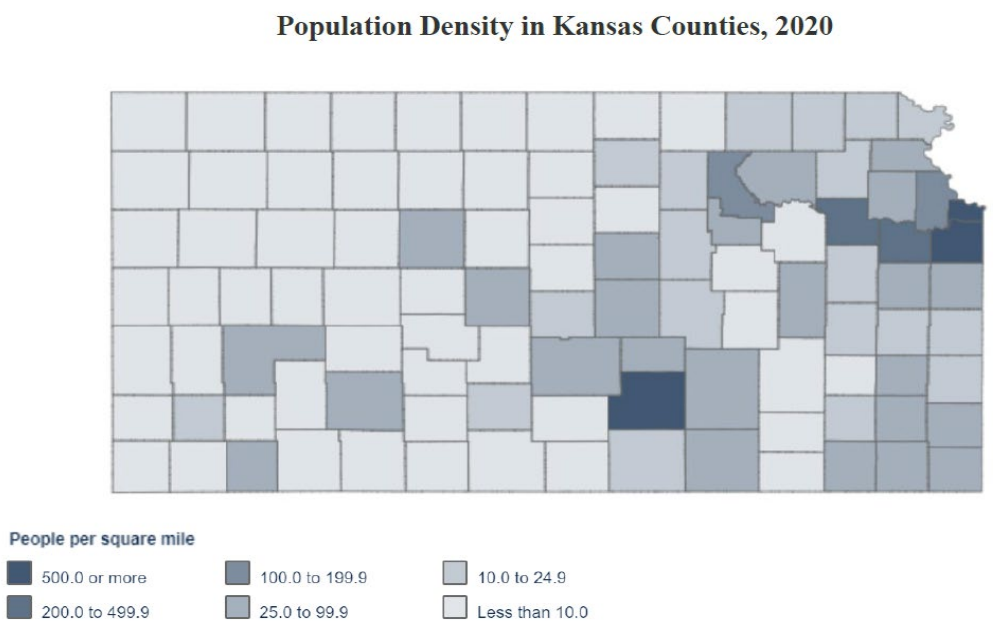


Kansas Population Trends

Despite the population growth, Kansas is experiencing an aging demographic, with adults aged 18 and over making up 75.9% of the population. Urbanization has also been on the rise. Urban counties (those with at least 150 residents per square mile) have experienced the most significant population growth. The proportion of Kansans living in urban areas increased from 54.9% in 2010 to 57.3% in 2020, with urban counties growing by 7.5%, though still below the national metropolitan growth rate of 9%.

Kansas Population Changes (2010-2020)

80 out of the 105 counties in Kansas experienced **population declines.** Semi-urban counties (40 to 149.9 residents per square mile) saw a 0.6% decrease, densely settled rural counties (20 to 39.9 residents per square mile) saw a 2.2% decrease, rural counties (6 to 19.9 residents per square mile) saw a 4.9% decrease, and counties with less than 6 residents per square mile experienced the largest decline of 6.9% (U.S. Census, 2022).



Components of the Model

Total Local Idle Funds

In 2021, local governments in Kansas had an estimated total of $20.61 billion in cash and security holdings. This represents the total amount available for investment in securities that could be redeemed annually.

Expansion of Credit, the Multiplier

The multiplier is a concept explaining the process of money creation. The deposit multiplier is the maximum amount of money that a bank can create for each unit of money it holds. This multiplier effect evaluates the results from the ratio of money banks hold to what they can lend out. The lent money is eventually redeposited into the banking system, creating a cycle of deposits and loans that increases the overall money supply in the economy.

Example, 20% reserved

Initial Deposit: Suppose someone deposits $1,000 in Bank A.	Bank A keeps $200 (20% of $1,000) as reserves and lends the remaining $800.
Loan 1: Bank A lends $800 to a borrower who then spends it. The recipient of the $800 deposit it in Bank B.	Bank B keeps $160 (20% of $800) as reserves and lends the $640.
Loan 2: Bank B lends $640 to another borrower, who spends it. The recipient deposits $640 in Bank C.	Bank C keeps $128 (20% of $640) as reserves and lends the $512.
…	…

This process continues with each bank retaining 20% of the deposit and lending out the remainder. The $1000 deposit can ultimately lead to a total increase in the money supply of ($1,000 × 5) = $5,000.

Multiplier in a Closed Economy

If a bank maintains 20% in reserves, the potential expansion of loans can be multiplied by 5. This analysis considers the entire banking system. Now, consider the money supply in a closed economy, such as the State of Kansas, focusing solely on the impact within the state.

Assume 50 percent of the deposited amount will be in banks outside of Kansas. In this example, the multiplier reduced from 5 to .8.

With only a 10 percent leakage out of state the ratio still declines, from 5 to 3.2.

Income Multiplier

To understand the impact of deposits in Kansas banks on the Kansas economy, it is essential to discuss the concept of the income multiplier. This multiplier illustrates that income generated from a certain amount of spending is partially saved and partially re-spent.

Example

Consider an initial expenditure of $10,000 in Kansas. Reasonable assumptions suggest that in successive rounds, 50% of the income from the previous round will be spent on Kansas-produced goods and services. This process repeats with the $5,000 from the previous round, and so on. Summing the income generated in each round, including the initial expenditure, the total income for Kansans is $20,000, or twice the initial expenditure. Thus, the income multiplier in this example is 2.

Economic Impact

Using the income multiplier of 2 and data from the Tax Policy Center (2023), which shows that state and local tax collections in Kansas were 10.10% of personal income, we can estimate the impact of holding public funds.

Economic Impact: Deposits → Loans

Assuming there is a demand for loans in Kansas that match the ability of Kansas banks to supply loans, a new deposit of $10 million with a hold back of 20% would provide $8 million available to be lent out. Using the expansion multiplier of 2, this results in total deposits of $16 million. Utilizing the 20% in hold back, this produces $12.8 million in available loans made in Kansas.

Economic Impact: Deposits → Income

If the income multiplier is also 2, the increase in total personal income in the state would be $12.8 million. This increase is the product of the income multiplier and the amount of deposits in Kansas resulting from the original $10 million deposit.

Economic Impact: Revenue Creation

Only the portion of loans spent on Kansas-produced goods and services contributes to Kansas income, so the multiplier is applied to the Kansas deposits from the $10 million deposit. A tax rate of 10.10% on the $12.8 million dollar increase in personal income generates an additional $1.3 million in revenue for the state and local governments.

The Interstate Issue

Deposits serve as the “raw materials” enabling depository institutions to issue loans. Any decrease in deposits, whether collectively or individually, proportionately diminishes the institution’s capacity to provide loans.

The central concern of the interstate issue is the potential reduction in deposits at Kansas financial institutions when local funds are invested out of state.

Kansas Municipal Funds
The Model

Interstate Issue

In 2021, local governments in Kansas held an estimated $9.03 billion in noncommitted cash, total bank deposits in Kansas were estimated at $77 billion (FDIC, 2024). Currently only about $49 million of the Pooled Money Investment Portfolio Holdings are in Kansas Bank CDs. This represents only .06% of total deposits in the state. Whereas, if the full amount of Pooled Money Investment Holdings were invested in Kansas banks, we would see an increase in deposits to $87 billion, or an increase of approximately 12%.

At Risk Loans

In 2023, the loan-to-deposit ratio for banks in Kansas stood at 80%, while for those with assets under $1 billion, it was 73%.

The impact of local idle funds can dramatically impact the effect on an institutions' ability to meet credit needs. If local idle funds are not available, loans may become at risk, or the bank may have to pay even higher costs for deposits and pass this higher rate on to the consumer through higher interest rates on loans.

Sensitivity Analysis Model

Local governments in Kansas generate revenue from various sources. The direct impacts come from two factors: the **interest income** received on their investments and **the tax base**.

The tax base effect arises because deposits in Kansas financial institutions can finance the acquisition of capital goods in Kansas, such as property, plant, equipment, and other assets like education and training.

The Model: Variables

(T) denotes tax revenues

(i) the interest rate on deposits in Kansas banks

(i*) the interest rate on out-of-state investments

(D) the quantity of local government investment funds deposited in Kansas banks,

(A*) represent out-of-state investments.

Revenues (R) received by Kansas state and local governments can be expressed as:

$R=T + iD + i^*A^*$

The Model

$$R=T + iD + i^*A^*$$

Assuming tax receipts are fixed, local governments should invest in assets offering the highest return. If ($i^* > i$), deposits in Kansas financial institutions should be zero. Conversely, if ($i > i^*$), all deposits should be placed in Kansas banks.

The Model (continued)

Consider the asset allocation for Kansas banks:

$$D = L + O$$

(D) represents local government funds placed in Kansas financial institutions
(L) denotes loans made to Kansas borrowers
(O) represents other assets

This equation indicates that banks accept deposits and either make loans to increase Kansas's capital stock or purchase other assets. This represents how a bank's balance sheet changes when there are new deposits of state funds.

The Model (continued)

Similarly, out-of-state investments could finance additional assets. When local government funds are used for out-of-state investments, they could finance new capital in Kansas or purchase other assets. The change in the balance sheet for out-of-state investments (A*) is:

$$A^* = I^* + O^*$$

(I*) represents the volume of new Kansas capital acquisitions funded by out-of-state investments. If the proceeds from these purchases are used to make loans, then (I*) equals the quantity of loans made to Kansas borrowers. (O*) denotes all other assets and net worth purchased with local government funds after being invested out-of-state.

Although, L>I* (Kansas bankers would make more loans to Kansas borrowers than out of state investments would.)

New Kansas Loans

To determine how deposits placed in Kansas versus out-of-state impact Kansas revenue we will evaluate two ratios.

- m=L/D (loans relative to the size of the deposit of local funds)
- m*=I*/A* (new Kansas capital from out of state investments relative to total out of state investments). If out-of-state investments are not used for Kansas capital than m*=0.

The Model (continued)

Since capital is a key input influencing the state's income levels, the values of (m) and (m*) will impact state and local government revenues. If the new Kansas capital ratio for Kansas banks matches that of out-of-state investments (m = m*), local governments should invest where the return is highest.

If (m = m*) and (i* > i), local governments should deposit funds with out-of-state depository institutions. However, if (m > m*), the effect on state and local government revenues becomes less clear and should be further analyzed.

The Model (implications)

An increase in the capital leads to a larger output and pushes incomes up. Since Kansas tax receipts are tied to the income generated within the state, it follows that (T) depends on where the deposits are placed.

Specifically, an increase in the new Kansas capital ratio implies a larger capital stock in Kansas (K1>K0), resulting in higher incomes and, therefore, higher tax receipts.

Highest Yield Not Always Highest Revenues

Thus, state and local government revenues depend on tax receipts and the returns on local government investments.

The key takeaway is that selecting the highest-yielding asset does not always result in the highest general fund revenues.

It is important to remember that Kansas bankers specialize in assessing the risks of Kansas borrowers, making it more likely that deposits in Kansas banks will benefit the Kansas economy. More loans to Kansas borrowers mean more capital for production, leading to increased state income and higher tax payments as state income rises.

Model -Explained

To simplify, note that total local government funds are distributed between deposits in Kansas banks and out-of-state investments

(G =D + A*).

An increase in local government funds deposited in Kansas banks will offset a decrease in out-of-state investments. Essentially, $1 placed in a Kansas bank means $1 less in an out-of-state institution. The increase in loans to Kansas borrowers equals the difference between the new Kansas capital ratio (m) for Kansas banks and (m*) for out-of-state investments.

Factors Impacting Revenue

Three essential factors impact state and local government revenues

-Growth in Income and Tax Receipts: Tax revenues increase as Kansas's production increases. Kansas banks facilitate new capital acquisitions more swiftly than out-of-state investments.

-Rise in Interest Income from Kansas banks: This factor reflects the additional interest income generated by Kansas banks.

-Decline in Interest Income from Out-of-State Investors:

This factor measures the reduction in interest income when Kansas banks offer lower rates compared to out-of-state investments.

The Revenue Function

Effect of Loan/Deposit Ratio

The impact on economic activity and government revenues is determined using equation (MR).

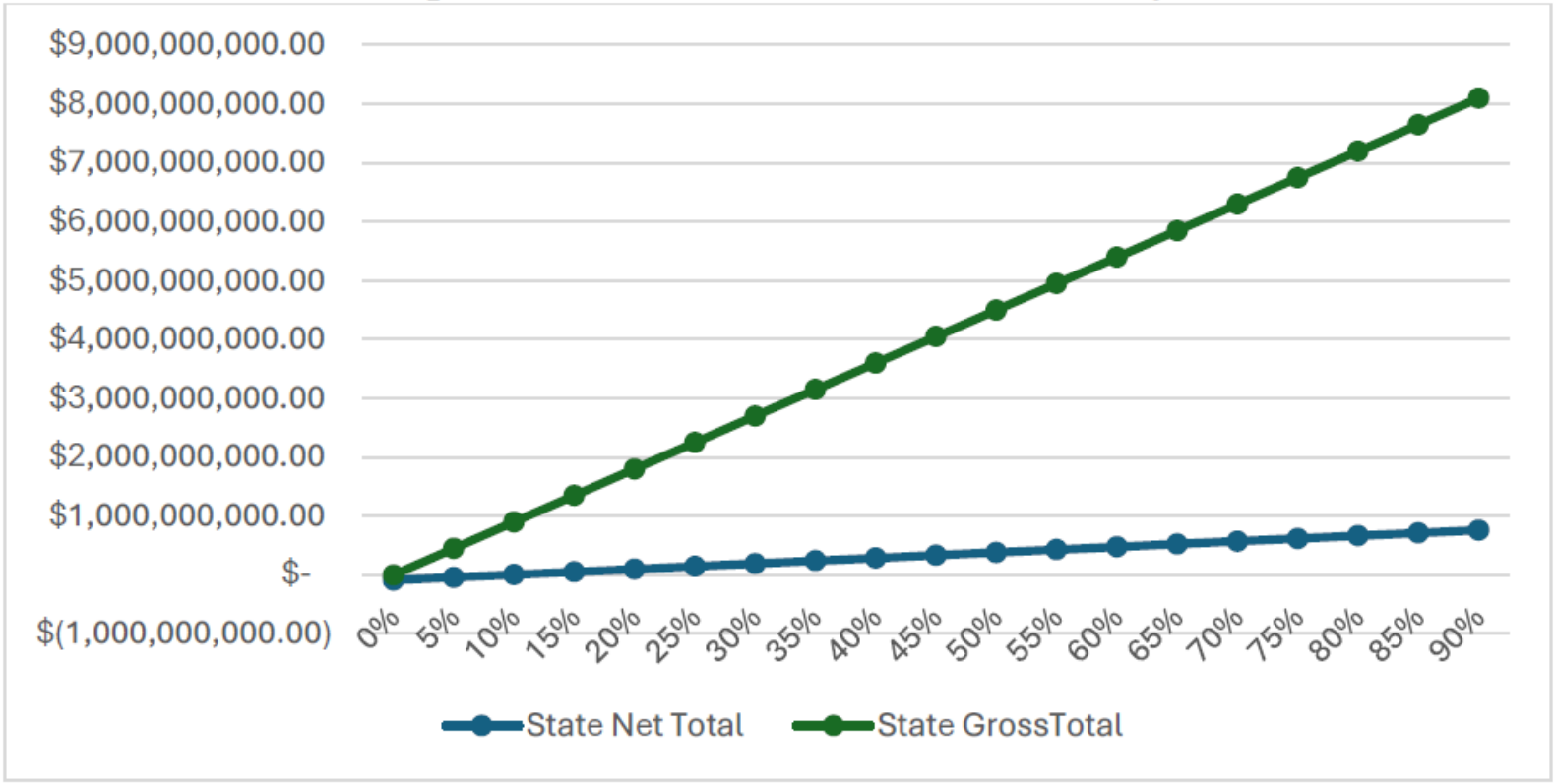
$$MR=tA(m-m^*)\,\Delta D+i\Delta D-i^*\Delta D$$

In this equation, the values for the loan to deposit ratio in banks (m) vary, while other parameters remain constant. The overall tax rate (t) is fixed at 10.0%. The marginal product of capital is set at 1.05, reflecting an assumed real return of approximately 5%. The new Kansas capital ratio for out-of-state investments is zero ($m^* = 0$). The interest rate offered by Kansas financial institutions (i) is 4.0%, while the interest rate for out-of-state investments (i^*) is 5.0%.

The Revenue Function

Overall, the equation (MR) demonstrates the net increase in state and local government revenues due to higher Kansas incomes, balanced against the loss of interest income when Kansas banks provide lower rates than out-of-state investments. Additionally, the local economy benefits from increased economic activity due to the presence of financial resources, extending beyond the tax advantages for state and local governments.

Effect of Loan/Deposit Ratio on State Economic Activity and Revenues



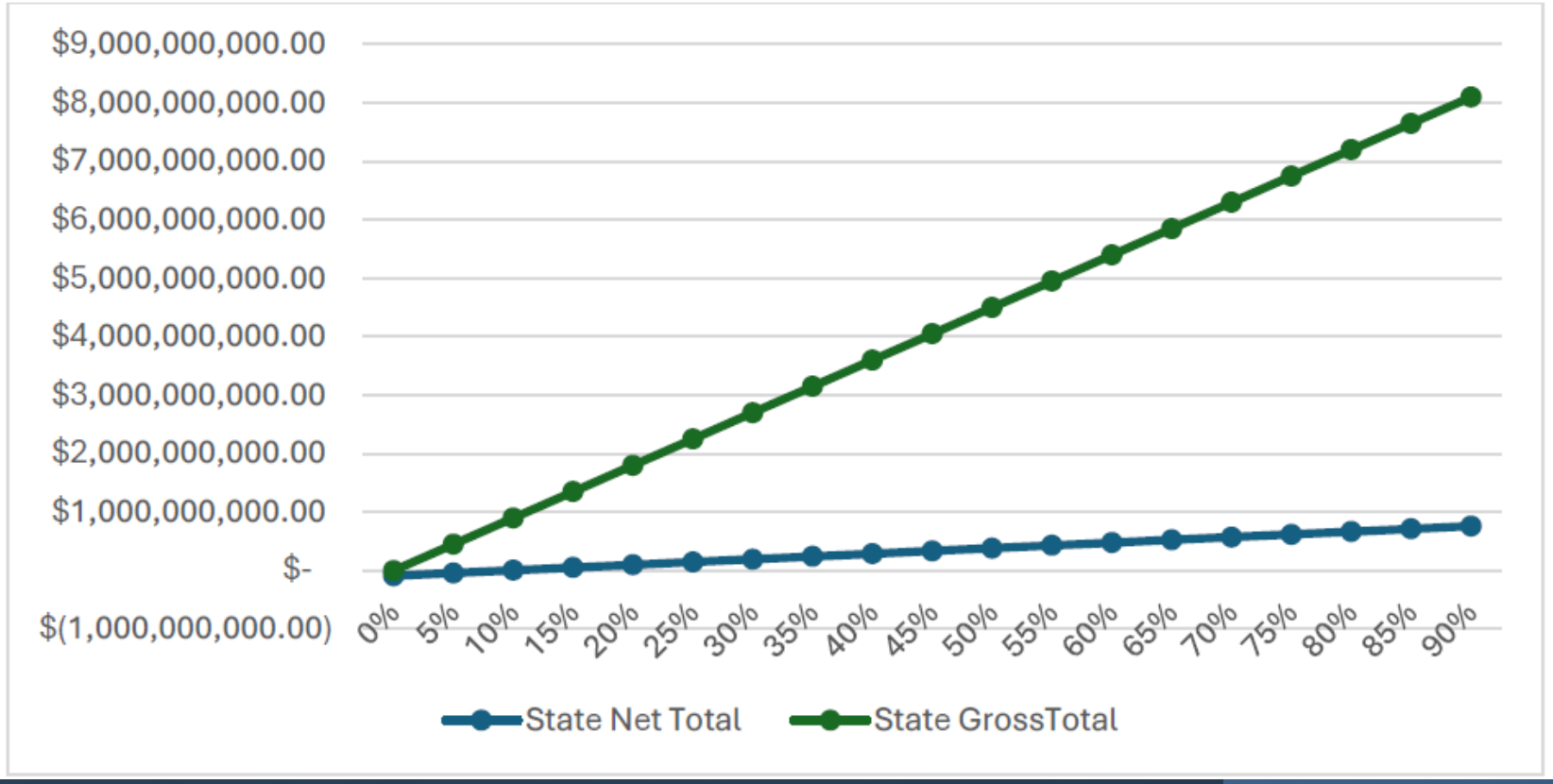
Results from Graph

The graph illustrates the difference in overall economic impact on state government revenues under alternative values of the new Kansas capital (loan/deposit)ratio. The vertical axis captures the change in overall economic impact and the impact on government revenues, given that local governments deposit $9 billion in Kansas banks (that is, ΔD).This value reflects the potential value of noncommitted local government deposits in Kansas.

Interpretation of Graph

Positive values indicate that the overall economic impact or impact on state government revenues will rise when the deposits are kept in Kansas financial institutions. In other words, the gain in economic activity from tax revenues would more than offset the loss of interest income to the state of Kansas. Conversely, negative values indicate that the lost interest income associated with keeping government funds in Kansas is greater than the gain in economic activity or tax revenue.

Effect of Loan/Deposit Ratio on State Economic Activity and Revenues



Interpretation of Graph

The slope of the line indicates that as the loan/deposit ratio (m) increases, the overall economic impact and state and local government revenues also rise.

This result is intuitive: as Kansas financial institutions accept more deposits, more capital is accumulated within the state, leading to higher income and greater tax revenues. When Kansas banks retain a larger portion of local government funds, the state's capital stock grows more rapidly, resulting in larger income gains and, consequently, greater increases in state and local government revenues.

Additionally, the graph reveals a breakeven value . This breakeven value is the point at which the change in overall economic impact and/or state and local government revenues is zero. In other words, local governments aiming to maximize general fund revenues would be indifferent between depositing the $9 billion in Kansas banks and investing the funds out-of-state.

Thus, the increase in economic activity and/or tax revenue is exactly balanced by the loss of interest income.

Interpretation of Graph

State Gross Total: This function illustrates the relationship between the loan/deposit ratio and the overall economic impact on the state, including gains in economic activity and income, sales, and property tax revenues. The state would experience a gain in economic activity and tax revenues from maintaining local government deposits in Kansas financial institutions, provided that **at least 1.0%** of these deposits are loaned out to support activities within the state. Wong (2006) also found a benefit as long as 1% of funds are loaned out.

State Net Total: This function illustrates the relationship between the loan/deposit ratio and its impact on state government revenues (including income, sales, and property taxes). **Revenues for state and local governments should increase if at least 9.52% of local government deposits in Kansas financial institutions are loaned out to support in-state activities.** This result is comparable to Wong (2006), who found a breakeven point of 10.6%.

Effect of Interest Rate Differential

The impact on economic activity and government fund revenue is calculated using equation (MR). In this equation, the interest rate differential (i-i*), which represents the difference between the rates paid by institutions in Kansas versus out-of-state, is allowed to vary, while other parameters remain fixed. The overall tax rate (t) is set at 10.0%, the marginal product of capital is 1.05, and the Kansas loan/deposit ratio (m) is conservatively set at 30.0%, in line with Wong's (2006) methodology.

Effect of Interest Rate Differential

A larger interest rate differential between out-of-state investments and deposits in Kansas institutions results in a decline in economic activity and state and local government revenues. When the interest rate differential is small, the change in state and local government revenues is minimal. However, **as the differential widens, the change in state and local government revenues becomes negative.**

This indicates that **only when returns on out-of-state investments significantly exceed the interest rates offered by Kansas bank**, should local governments aiming to maximize general fund revenues consider investing more funds out of state.

The Impact of Interest Rates

State Net Total	Rate Differential (i-i*)
$ 261,000,000.00	-0.25%
$ 238,500,000.00	-0.50%
$ 216,000,000.00	-0.75%
$ 193,500,000.00	-1.00%
$ 171,000,000.00	-1.25%
$ 148,500,000.00	-1.50%
$ 126,000,000.00	-1.75%
$ 103,500,000.00	-2.00%
$ 81,000,000.00	-2.25%
$ 58,500,000.00	-2.50%
$ 36,000,000.00	-2.75%
$ 13,500,000.00	-3.00%
$ (9,000,000.00)	-3.25%

Interest Rate Differential

The table demonstrates the relationship between the interest rate differential and its impact on government revenues (including income, sales, and property taxes). State and local government revenues should increase by keeping local government deposits in Kansas financial institutions, provided the interest rate differential is less than 3.15 percentage points.

Essentially, out-of-state investments would need to offer rates exceeding 3.15 percentage points above those of Kansas institutions for the state to be better off.

Advantage of Placing Deposits in Kansas Financial Institutions

The primary advantage of placing deposits in Kansas financial institutions is that these funds are more likely to be loaned to Kansas borrowers, supporting investment projects. This boosts the state's capital stock, economic activity, and income.

The key issue is not the exact value of the impact but the significance of the loss of financial resources from the community.

State of Kansas Projected Impact under Model Assumptions

Economic Impact of Adding Idle Funds to Kansas Banking System

According to the deposit expansion model, if local government funds were added to the Kansas banking system the economic impact could be significant.

The change in deposits when maintaining 20% as reserves could result in an increase of $14.44 billion in Kansas bank deposits, $11.55 billion of personal income, and $1.17 billion in state and local taxes.

Haslag's Sensitivity Analysis Model

Haslag's sensitivity analysis model indicates that state and local government economic development opportunities, income, and tax revenues would increase if funds were moved back into the state.

Revenues for state and local governments should increase if at least 9.52% of local government deposits in Kansas financial institutions are loaned out to support in-state activities.

Interest Rate Differential Impact

Haslag's model indicates state and local government revenues should increase by keeping local government deposits in Kansas financial institutions, provided the interest rate differential is less than 3.15 percentage points.

Out-of-state investments would need to offer rates exceeding 3.15 percentage points above those of Kansas institutions for the state to be better off.

Conclusion

Allowing local governments to invest funds out-of-state generally leads to fewer local economic development opportunities, reduced income, and lower tax revenues for both local governments and the state.

Deposits in Kansas financial institutions increase the state's capital stock, translating into higher economic activity and incomes.

Docking Institute of Public Affairs

docking@fhsu.edu
785-628-4197