



# Piggyback Historic Tax Credits: Are States Getting Their Money's Worth?

Presentation to the 2014 FTA Revenue  
Estimation & Tax Research Conference  
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# Presentation Goals

Aim to provide:

- New information on fiscal and economic value of piggyback historic credits
- Analytical foundation for others to build upon
- Helpful evaluation framework for similar credits



# Presentation Outline

- Brief overview of federal and state historic rehabilitation credits
- Existing data and prior research
  - Quick refresher on panel data methods
- OSBM & NC Commerce analysis
- Proposed revisions to credit
- Concluding thoughts & questions



# Historic Tax Credits

- Federal historic credit
  - Income tax credit equal to 20% of rehabilitation expenditures
  - Only income-producing properties eligible
- State historic credits
  - Majority of states offer own credits
  - Most piggyback on federal credit
  - Substantial variation in characteristics of state credits



# NC Historic Tax Credits

- Adopted a 5% piggyback credit in 1994
- Expanded the credit dramatically in 1997
  - 20% credit for federal-eligible properties
  - 30% credit for non-income-producing properties
  - Five-year installments for both credits
- Second major expansion in 2006: historic mills
  - 30% credit for mills in high-income counties
  - 40% credit for mills in middle- and low-income counties
  - No installments; not limited to income tax
- All credits sunset at end of 2014



# Evaluating NC Historic Credits

- NC Commerce & OSBM separately tasked with evaluating credit
  - Opted to collaborate on evaluation
- Key objectives of analysis:
  - Estimate scale of credit's impact on rehabilitation
  - Quantify net fiscal & economic impacts
  - Describe and assess less-quantifiable impacts
- Existing research
  - Large body of advocacy-driven analysis
  - Little independent analysis



# Data & Prior Research

- Previous research by DC Office of CFO economists – Jeffrey Oakman & Marvin Ward
  - Paper\* on state historic credits presented to NTA in November 2012
  - Analysis based panel dataset compiled by authors
  - 18 years of federal credit-eligible historic rehabilitation spending in 49 states
- Key research questions:
  - The *but for* question, and how much
  - Credit design: what matters?

\* Jeffrey Oakman & Marvin Ward. “Leveraging Federal Economic Development Resources With State Historic Rehab Tax Credits.” Annual Proceedings from the 105<sup>th</sup> Conference of the National Tax Association, November 2012.



# Data & Prior Research

- Key variables in Oakman-Ward paper:
  - Annual state-level “qualified rehabilitation expenditures” (QREs)
  - State credit characteristics:
    - credit percentage
    - per project & statewide caps
    - refundable/transferable credits
  - State-level demographic and economic data





# Panel Data Analysis

Q: What is panel data?

A: Panel datasets include observations of multiple entities over multiple periods of time.

Ex:

State	Year	Historic Rehab \$	State Historic Credit?
NC	2000	\$47,107,584	Y
NC	2001	\$18,449,772	Y
NC	2002	\$95,113,992	Y
SC	2000	\$5,962,654	N
SC	2001	\$9,066,849	N
SC	2002	\$31,842,145	Y
TN	2000	\$24,907,182	N
TN	2001	\$11,425,704	N
TN	2002	\$42,975,609	N



# Panel Data Analysis

Q: What's special about panel data?

A: Allows for superior estimation of relationships between variables by controlling for unobserved heterogeneity across entities (or across time periods).



# Panel Data Analysis

Ex:

```
. regress y x1
```

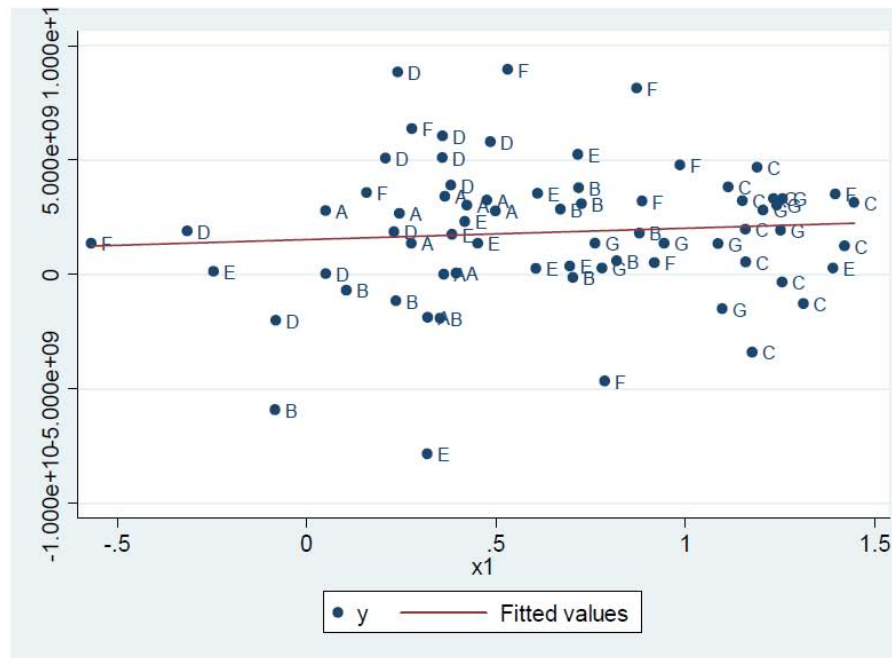
Source	SS	df	MS
Model	3.7039e+18	1	3.7039e+18
Residual	6.2359e+20	68	9.1705e+18
Total	6.2729e+20	69	9.0912e+18

Number of obs = 70  
 F( 1, 68) = 0.40  
 Prob > F = 0.5272  
 R-squared = 0.0059  
 Adj R-squared = -0.0087  
 Root MSE = 3.0e+09

OLS regression

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
x1	4.95e+08	7.79e+08	0.64	0.527	-1.06e+09 2.05e+09
_cons	1.52e+09	6.21e+08	2.45	0.017	2.85e+08 2.76e+09

```
twoway scatter y x1,
mlabel(country) || lfit y x1,
clstyle(p2)
```





# Panel Data Analysis

Ex:

```

. xi: regress y x1 i.country
      i.country          _Icountry_1-7      (naturally coded; _Icountry_1 omitted)
  
```

Source	SS	df	MS	Number of obs =
Model	1.4276e+20	7	2.0394e+19	70
Residual	4.8454e+20	62	7.8151e+18	F( 7, 62) = 2.61
Total	6.2729e+20	69	9.0912e+18	Prob > F = 0.0199

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
y					
x1	2.48e+09	1.11e+09	2.24	0.029	2.63e+08 4.69e+09
_Icountry_2	-1.94e+09	1.26e+09	-1.53	0.130	-4.47e+09 5.89e+08
_Icountry_3	-2.60e+09	1.60e+09	-1.63	0.108	-5.79e+09 5.87e+08
_Icountry_4	2.28e+09	1.26e+09	1.81	0.075	-2.39e+08 4.80e+09
_Icountry_5	-1.48e+09	1.27e+09	-1.17	0.247	-4.02e+09 1.05e+09
_Icountry_6	1.13e+09	1.29e+09	0.88	0.384	-1.45e+09 3.71e+09
_Icountry_7	-1.87e+09	1.50e+09	-1.25	0.218	-4.86e+09 1.13e+09
_cons	8.81e+08	9.62e+08	0.92	0.363	-1.04e+09 2.80e+09

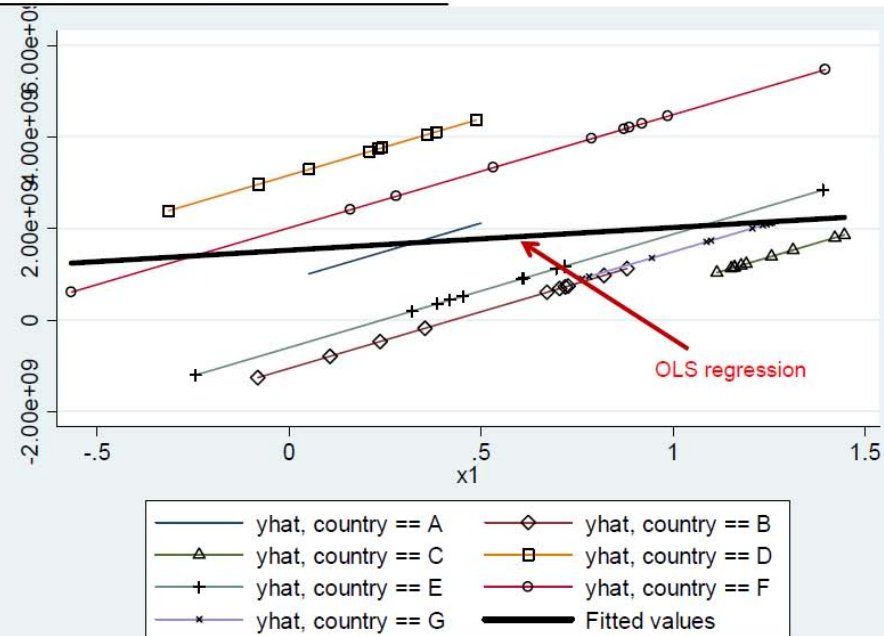
Fixed Effects using least squares dummy variable model (LSDV)

```

xi: regress y x1 i.country
predict yhat
separate y, by(country)
separate yhat, by(country)

twoway connected yhat1-yhat7
x1, msymbol(none
diamond_hollow triangle_hollow
square_hollow + circle_hollow
x) msize(medium) mcolor(black
black black black black
black) || lfit y x1,
clwidth(thick) clcolor(black)
  
```

**NOTE:** In Stata 11 you do not need "xi:" when adding dummy variables





# Data & Prior Research

- Summary of key results:
  - State credit associated with ~\$25 million increase in QREs
  - Some credit features strongly associated with state QRE levels:
    - Credit percentage ↑
    - Transferability ↑
    - Geographic targeting ↓
  - Substantial unexplained variation



# Data & Prior Research

- Several outstanding questions/concerns:
  - Inconsistent results between models
  - Impact of re-scaling QREs to state size
  - Presence of underlying trends in data
  - Potential explanatory power of omitted variables
  - Robustness of results to alternative specifications



# OSBM Analysis

- Oakman & Ward shared their data
- Modified and supplemented data:
  - Validated data
  - Added three recent years of data
  - Adjusted values for inflation
  - Log-transformed inflation-adjusted QREs & other variables
  - Shifted time period of dependent variable
  - Added more demographic & economic variables



# OSBM Analysis

- Initial focus on presence-of-credit effect
- Tested a multitude of regression models
- Several variables consistently significant:
  - Presence of a state credit
  - Housing: current new home prices & number of pre-1939 homes
  - Population and/or real state GDP





# OSBM Analysis

- Preliminary results for presence-of-credit
  - Range of 30% to 80% higher QREs
  - *If causal*, 25% to 45% of QREs attributable to credit
- Attempted to analyze credit features
  - Results highly unstable
  - Insufficient number of observations
  - High potential for upward bias



# OSBM-Commerce Analysis

- Next stage: incorporate results into input-output model
- Key inputs and parameters:
  - Preliminary results
  - Best estimate of QREs representing *net new* in-state spending
  - Economic and fiscal return of rehabilitation versus displaced spending



# OSBM-Commerce Analysis

## Annual Gross Tax Revenue Impact, Based on Average QRE

Model	Lower Bound	Point Estimate	Upper Bound	Assumptions
Most Generous Model		\$3.9 m		100% Attribution 100% Net New
Step # 1: Attribution	\$1.2 m	\$1.7 m	\$2.5 m	Lower Bound = 20% Point Estimate = 37% Upper Bound = 60%
Step # 2: Share Net New	\$0.6 m	<b>\$0.7 m</b>	\$1.7 m	Lower Bound = 20% Point Estimate = 30% Upper Bound = 100%

### Other Fiscal Information

Average Credits Taken (estimate)	\$8.2 m
Best Estimate of Net Tax Revenue Impact	-\$7.5 m
Gross Revenue per Dollar of Credit Taken:	\$0.09

\* Annual average QREs for Article 3D income-producing projects 2006-2011 = \$62m



# OSBM Analysis

- Rising interest in redesigning credits
- Extension of preliminary analysis
  - New year of federal data: FFY 2013
  - Grouping of credits by generosity

Criterion	Low	Medium	High
Credit %	10% or less	11% to 20%	21% or more
Per Project Cap	\$100k or less	\$100k to \$1m	\$1m or more
Statewide Cap	\$1 per capita or less	\$1 to \$3.50 per capita	>\$3.50 per capita
Transferability	Not transferable	Disproportionate allocation	Directly transferable or refundable



# OSBM Analysis

- Models' results changed significantly with credit grouping
  - Improved explanatory power
  - Low-generosity credits no significant effect
- Substantial impact on results for NC credits
  - Initial results: 25% to 45% attribution for any credit
  - Final results: 55% to 70% attribution for middle-level credit\*

\*Note: NC credits fit into middle group



# OSBM Analysis

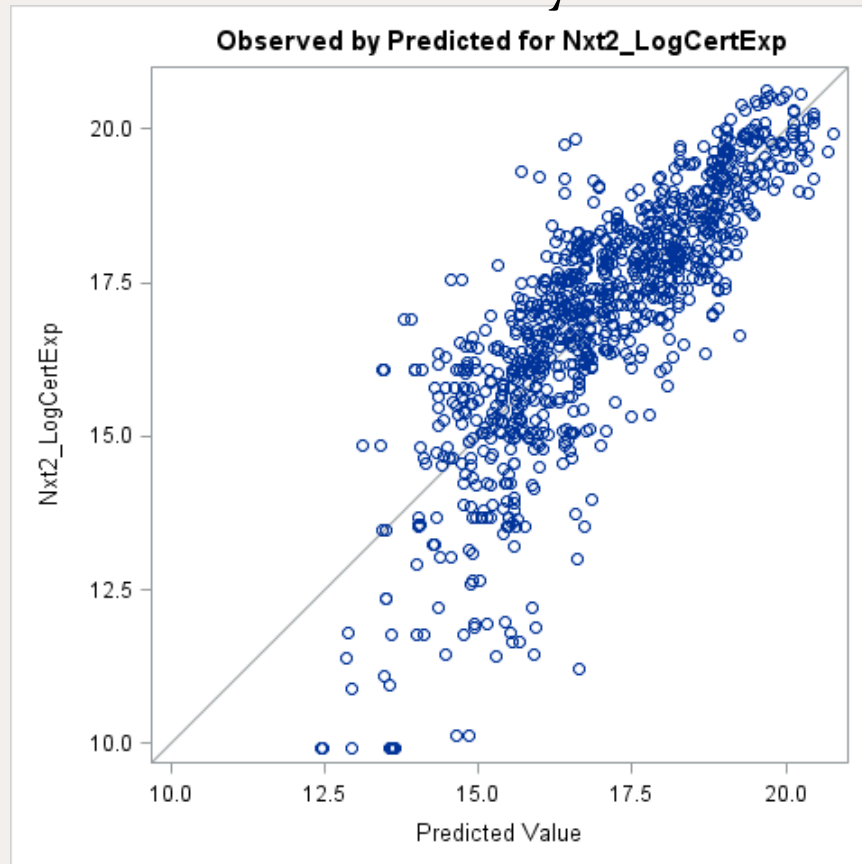
- Robustness checks
  - Visual analysis of residuals plots
  - Drop high and low outliers
  - Drop earliest years
  - Compare multiple model specifications
  - Analyze over- and under-performing credits
- Final results relatively stable



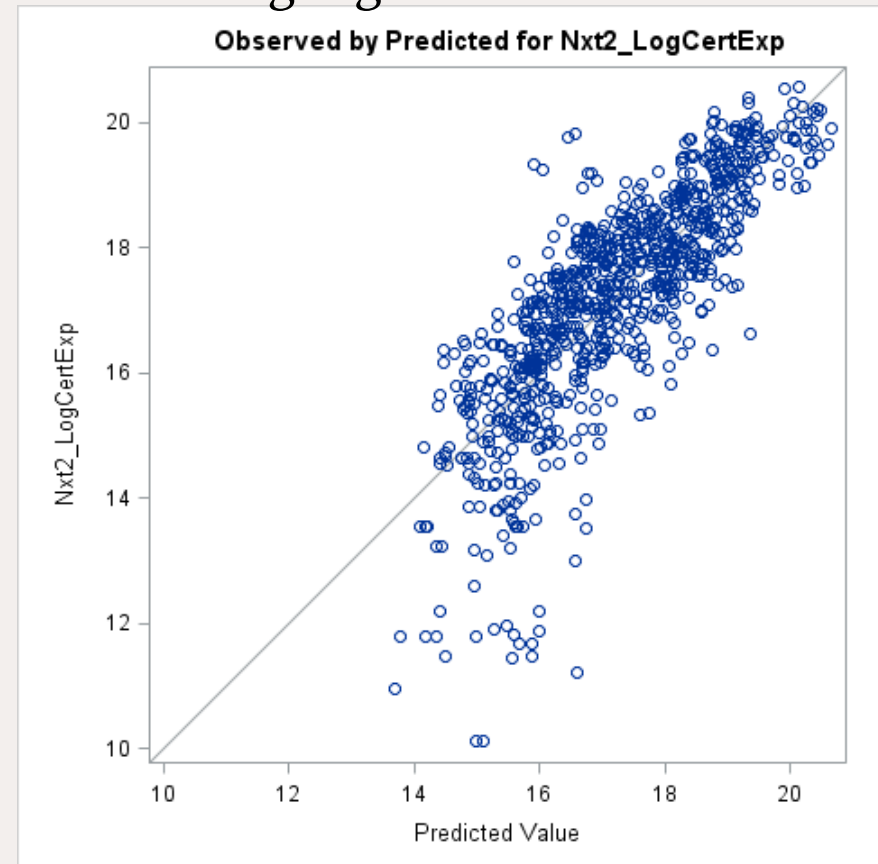
# OSBM Analysis

- Robustness checks – visual analysis examples  
Time fixed-effects model

All states and years



Excluding highest & lowest states



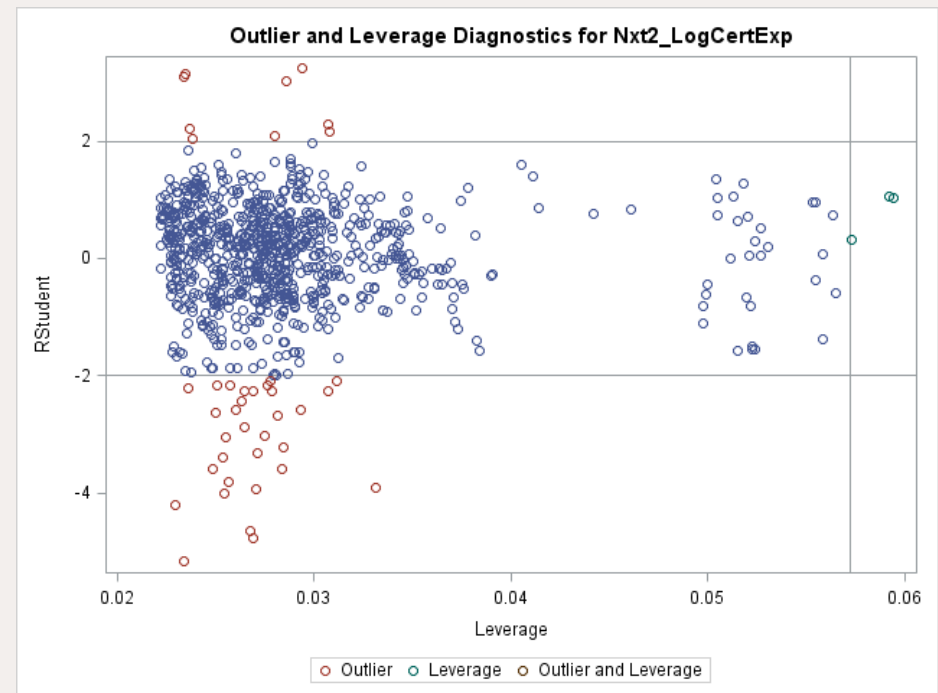
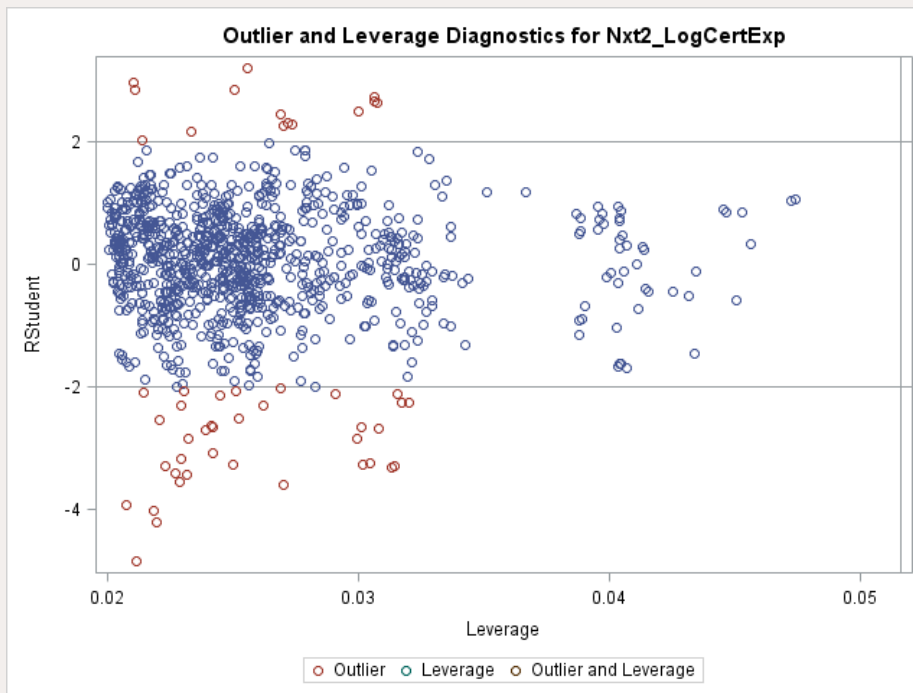


# OSBM Analysis

- Robustness checks – visual analysis examples  
Time fixed-effects model

All states and years

Excluding highest & lowest states



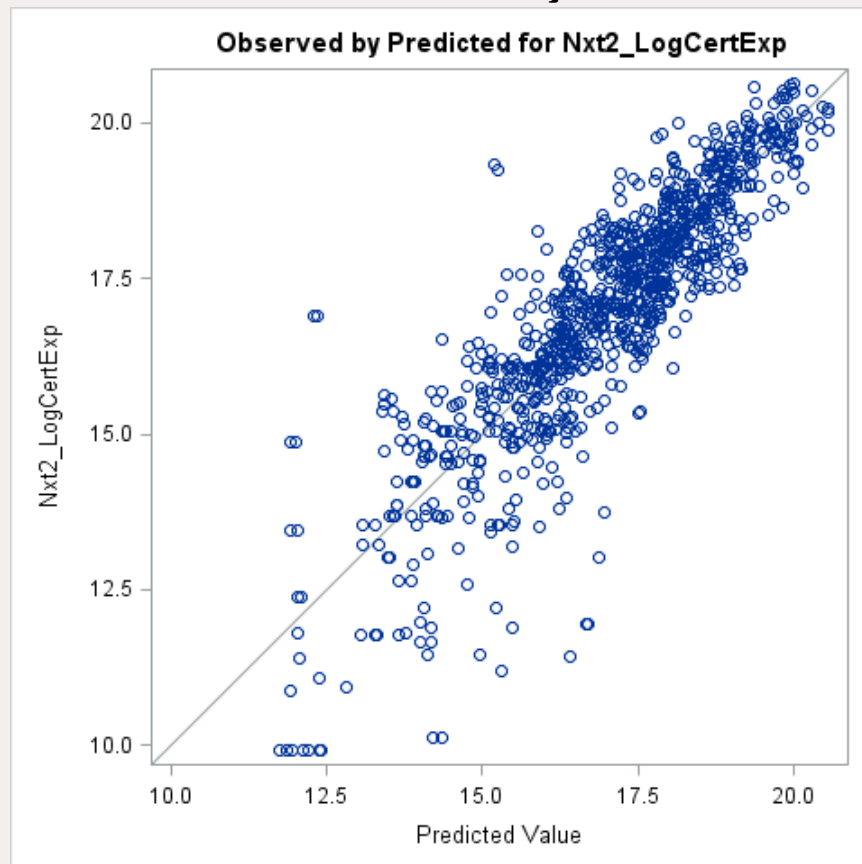




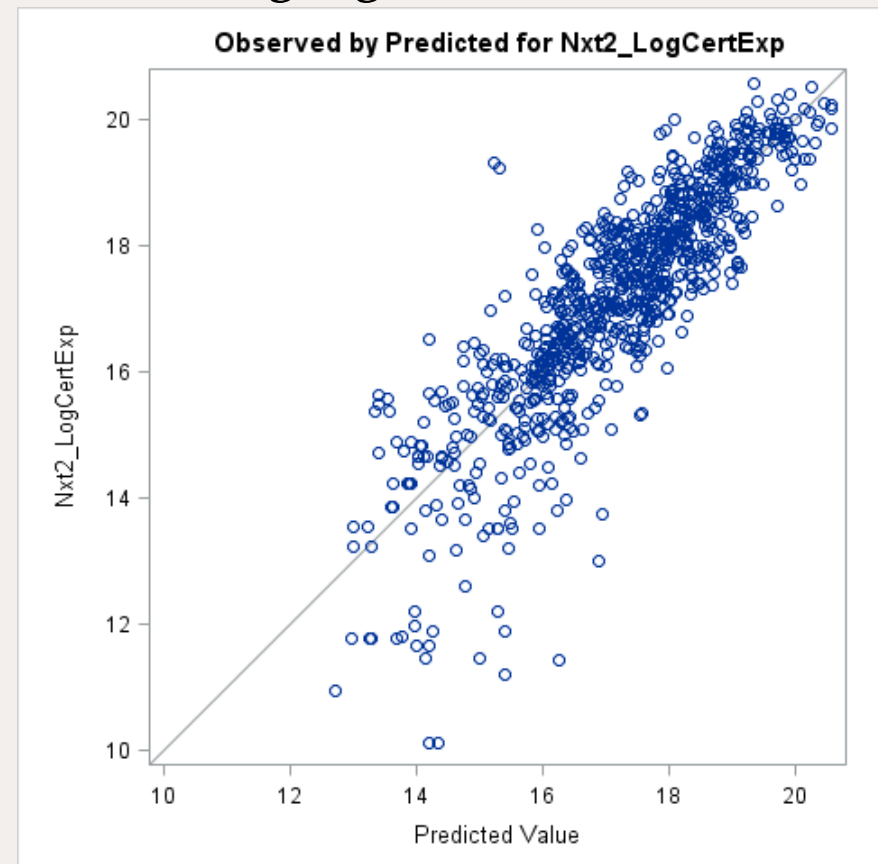
# OSBM Analysis

- Robustness checks – visual analysis examples  
State fixed-effects model

All states and years



Excluding highest & lowest states

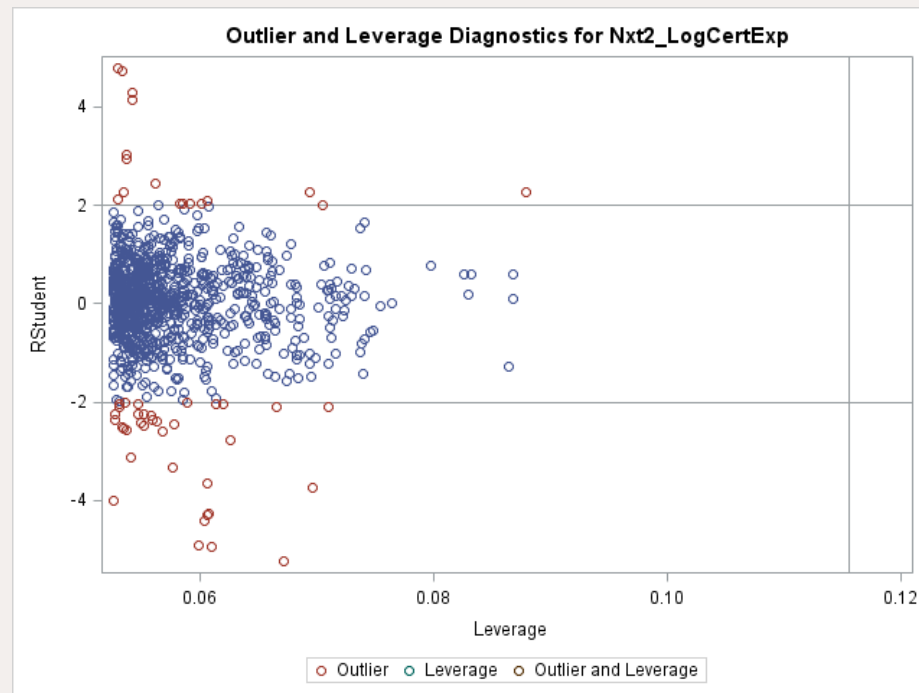




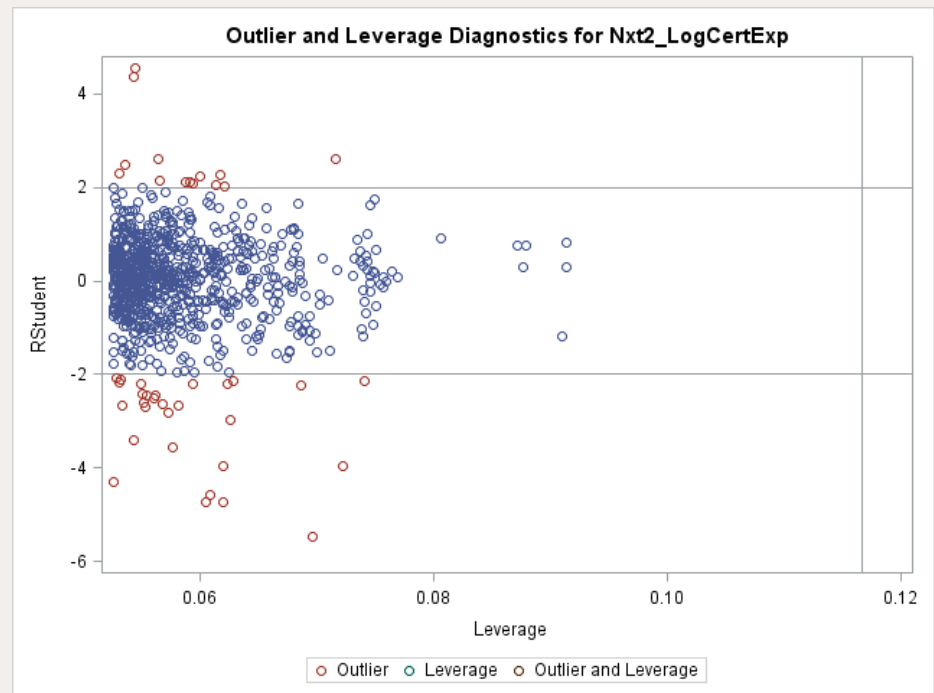
# OSBM Analysis

- Robustness checks – visual analysis examples  
State fixed-effects model

All states and years



Excluding highest & lowest states





# OSBM-Commerce Analysis

- Second round of fiscal & economic analysis
  - Improved net fiscal and economic impact
  - Construction-related net fiscal return still strongly negative
  - Insufficient data to quantify other impacts
- Results helped inform redesign of NC credits



# Credit Redesign Proposal

- Proposed redesign of credit informed by:
  - Panel data results and economic modeling
  - Cash-flow analysis of hypothetical projects
  - Constitutional constraints
  - Feedback from developers and preservationists
- Goal to narrow gap in present value between State and developers



# Credit Redesign Proposal

## Current Credits and Redesign Proposal

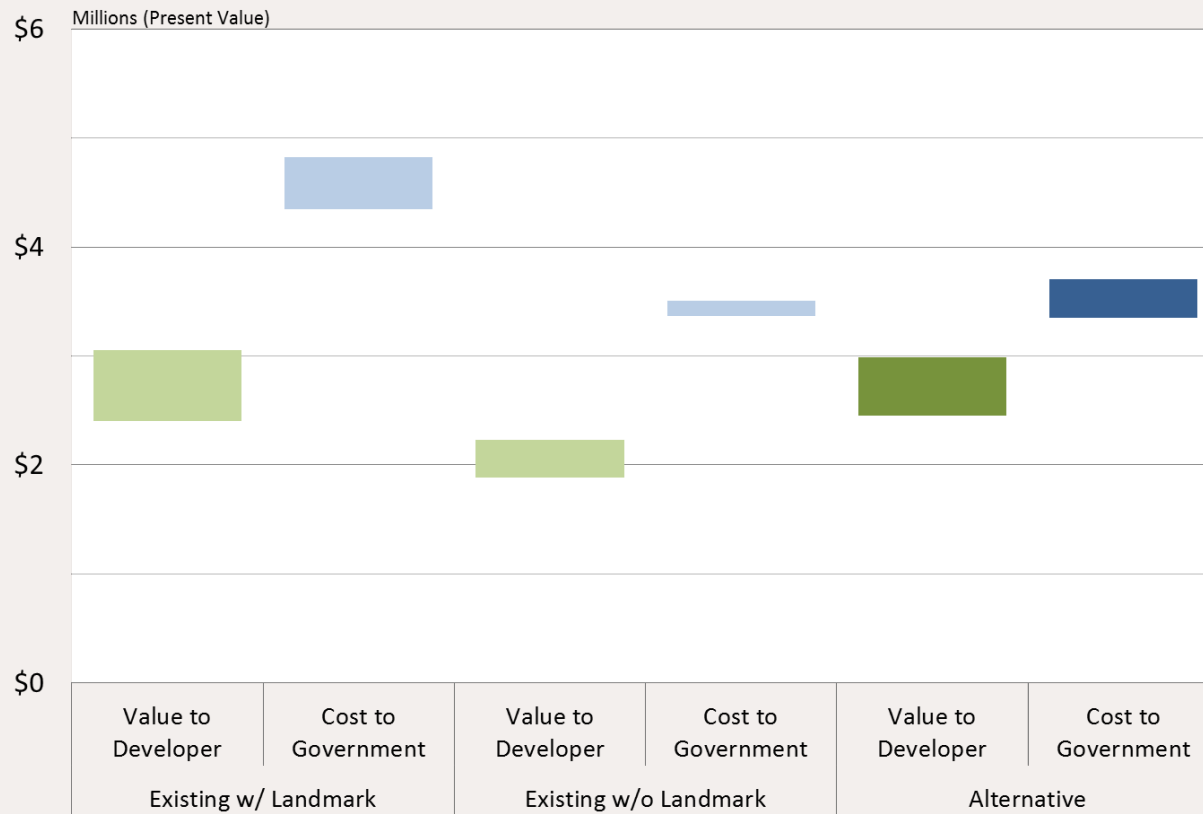
	<b>Commercial Credit</b>	<b>Mill Credit</b>	<b>Redesigned Combined Credit</b>
<b>Rates</b>	20% in all counties	30% in high-income counties 40% in low- & moderate-income counties	15% base credit rate +5% for mills +5% in low- & moderate-income counties
<b>Caps/Steps</b>	None	None	\$0 to \$10M base rate \$10M to \$20M base rate reduced by 5% Hard cap at \$20M
<b>Installments</b>	Five annual installments	No installments	No installments
<b>Applicable Taxes</b>	Income taxes only	Income taxes, gross premium taxes, and franchise taxes	Income taxes, gross premium taxes, and franchise taxes



# Credit Redesign Proposal

## Examples from Valuation Models – Commercial Credits

Estimated Range of Present Values for Art. 3D Comm. Credits & Property Tax Abatements to Private Developers & to State & Local Governments for a Hypothetical \$20 million Project





# Credit Redesign Proposal

## Examples from Valuation Models – Mill Credits

Estimated Range of Present Values for Art. 3H Mill Credits & Property Tax Abatements to Private Developers & to State & Local Governments for a Hypothetical \$20 million Project





# Credit Redesign Proposal

## Estimated/Projected Revenue per Dollar of Incentive Cost (ROI)

	Lower Bound	Point Estimate	Upper Bound
<b>Commercial Credit</b>	\$ .07	\$ .09	\$ .26
<b>Mill Credit</b>	\$ .05	\$ .12	\$ .16
<b>Combined Credits</b>	\$ .06	\$ .11	\$ .20
<b>Redesigned Credit</b>	\$ .07	\$ .15	\$ .28

## Estimated/Projected Total Net Annual Budget Cost

	Lower Bound	Point Estimate	Upper Bound
<b>Commercial Credit</b>	-\$6.6 m	-\$6.5 m	-\$5.3 m
<b>Mill Credit</b>	-\$13.0 m	-\$12.0 m	-\$11.4 m
<b>Combined Credits</b>	-\$19.6 m	-\$18.5 m	-\$16.7 m
<b>Redesigned Credit</b>	-\$12.2 m	-\$11.2 m	-\$9.5 m





# Credit Redesign Proposal

- Variant of redesigned credit included in proposed budget
- Support in one chamber of legislature
- Not included in final budget
- Discussion likely to resume next year



# Concluding Thoughts

- Analysis imperfect but valuable
  - Association not necessarily 100% causal
  - Potential confounding variables
  - Limited data underlying some key assumptions
  - Unable to quantify non-construction impacts
  - Analysis integral to credit redesign
- Potential to extend to other piggyback credits
  - Low-income housing credits
  - New Markets Tax Credit



# Piggyback Historic Credits

Questions? Comments?