# Do higher state income tax rates reduce employment and slow economic growth? *Analyzing the Illinois tax increase of 2011.*

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# About the Authors

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# Disclaimer

- The results and views expressed in this presentation are those of the authors and do not reflect an official economic or tax policy position of the Illinois Department of Revenue or the Governor of the State of Illinois.

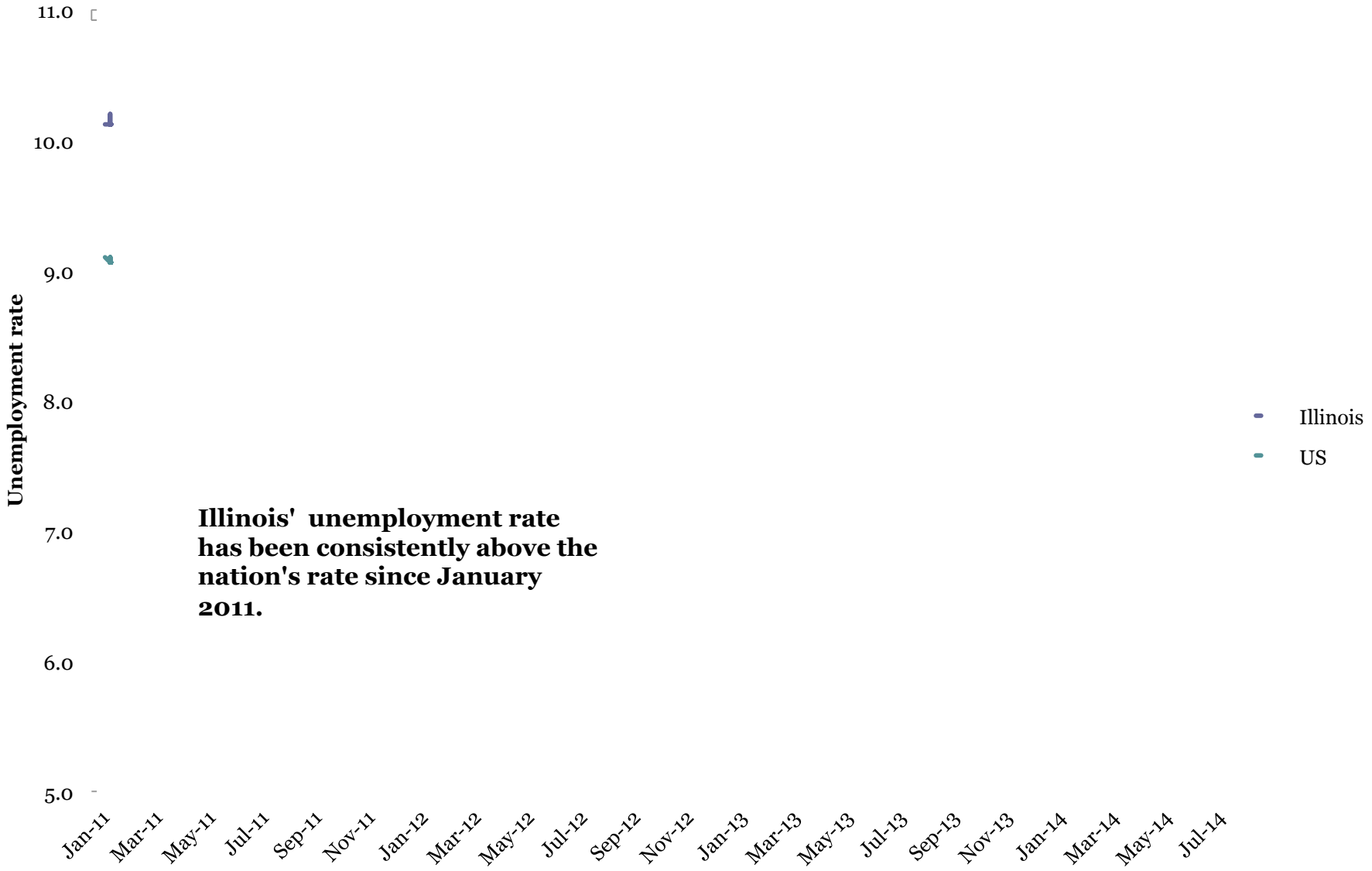
# Illinois recent policy changes

| Tax rates | Individual | Corporate |
|---|---|---|
| Pre-Jan/2011 | 3.00% | 4.80% |
| 2011 to 2014 | 5.00% | 7.00% |
| 2015 to 2024 | 3.75% | 5.25% |
| 2025 and after | 3.25% | 4.80% |

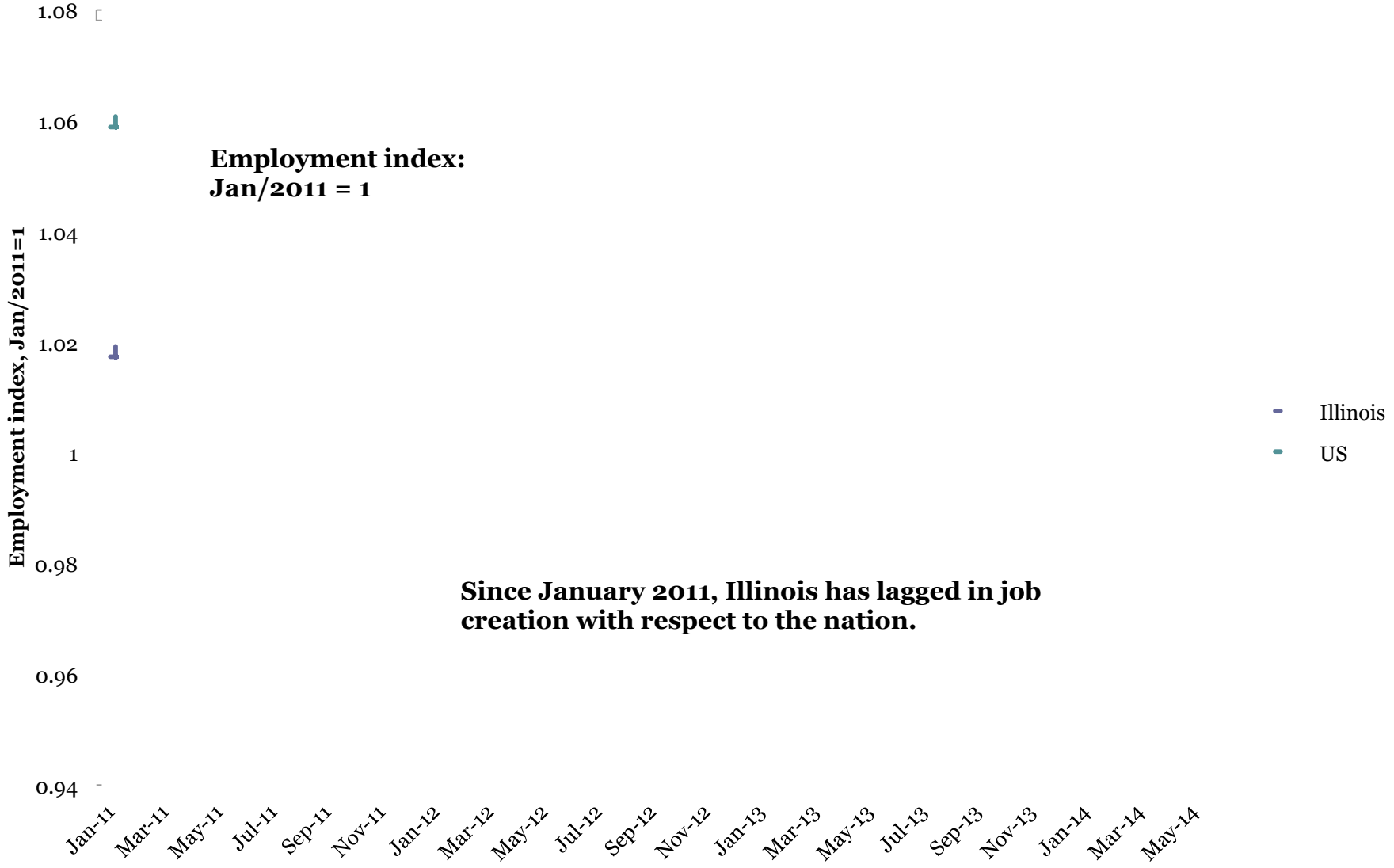
# Illinois economy since Jan/2011:

- Illinois unemployment rate is at 6.7% as of August 2014 while one year before - August 2013- it was 9.2%. For the US the unemployment rate is 6.1% and 7.2% respectively.
- Since Jan/2011 the average Illinois unemployment rate has been 9.0%, while for the nation it has been under 8%.
- Total state non-farm employment level is at 5,837,400 jobs (Aug/2014) while the same month the year before it was at 5,796,800. This represents a gain of 40,600 jobs during that 12 month period, which is a 0.7% growth. Conversely, the US job growth has been 1.8% for the same period of time.
- Since Jan/2011 through Aug/2014 the state has added 189.3 thousand jobs which is a 3.4% growth. On the other hand the US job growth for the same 44 months period is 6.3%.

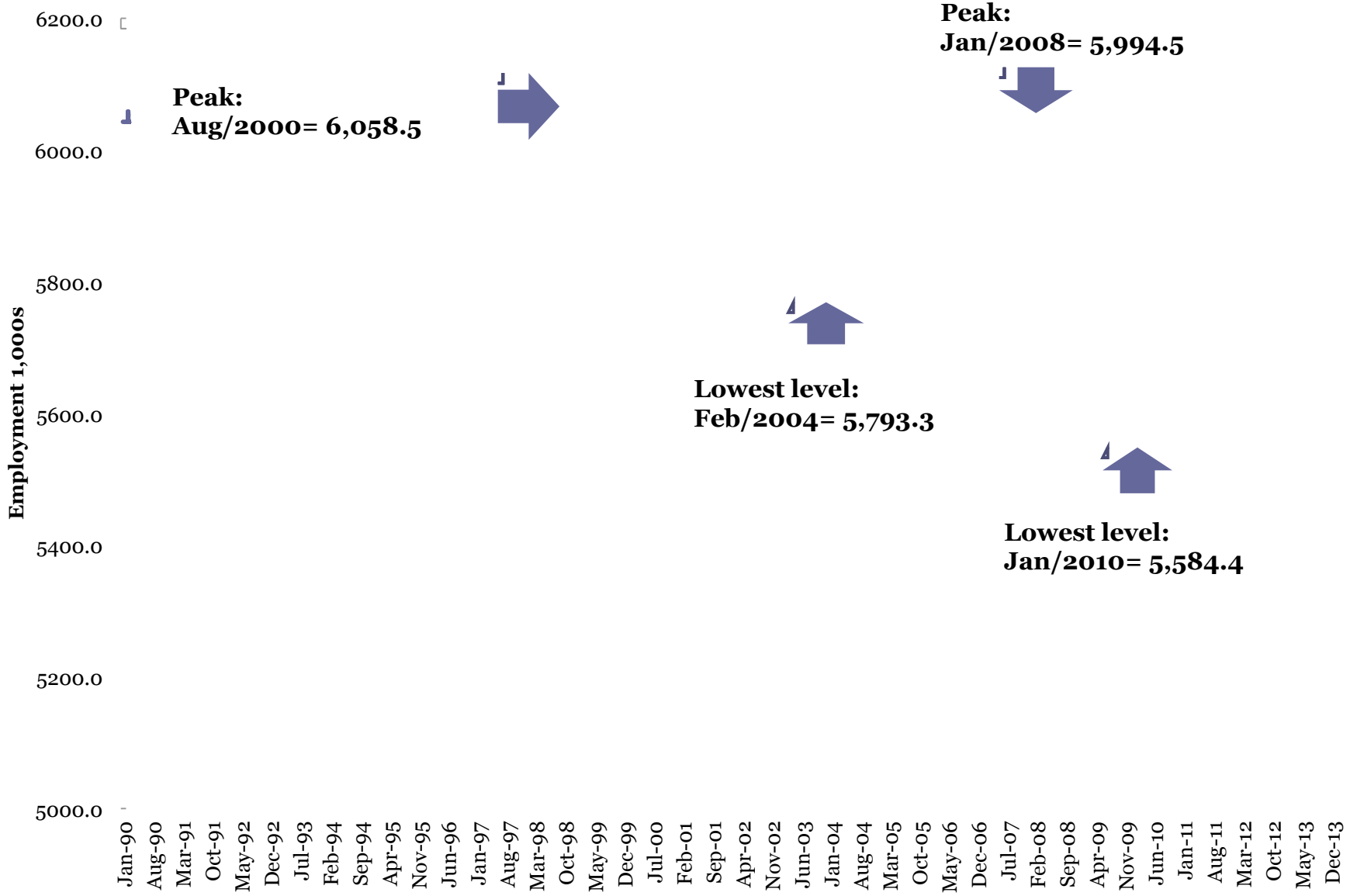
# Unemployment rate since Jan/2011: Illinois and US



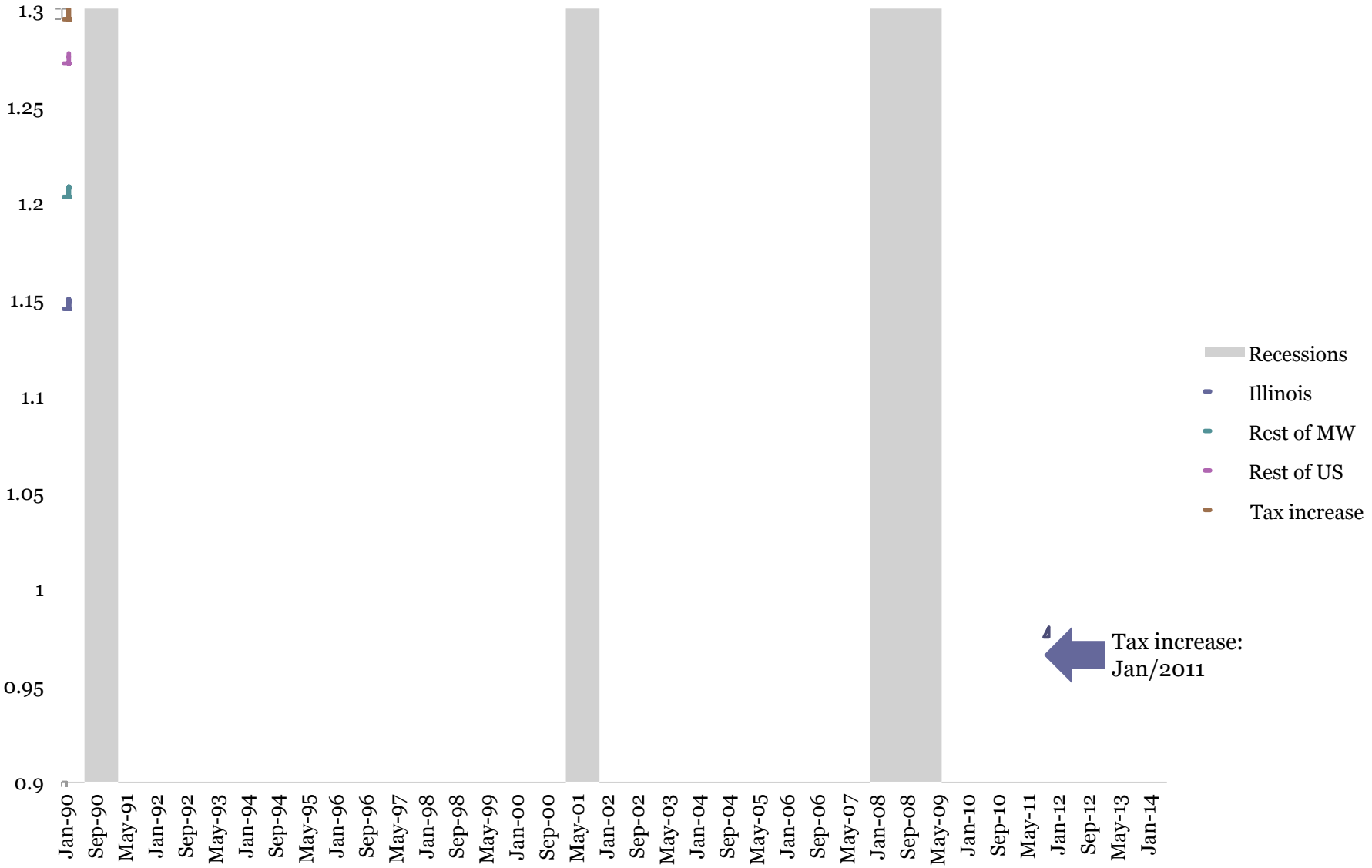
# Employment growth since Jan/2011: Illinois and US



# Illinois total non-farm employment, 1990-2014



# Employment growth (total non-farm), 1990=1



# Literature Review:

- Our literature review focused on empirical research examining state and provincial taxes rather than national or multi-national studies.

- Ergete Ferede & Bev Dahlby, *The Impact of Tax Cuts on Economic Growth: Evidence from the Canadian Provinces*, 65 National Tax Journal 563-594 (2012).
  - Canadian provinces (1977-2006)
  - Lower corporate tax rates are associated with higher private investment and a slightly higher economic growth rate.
  - Growth effects are temporary but persist over a long period.
  - Growth effect increases by 0.1 to 0.2 percentage points for every one percentage point reduction in the tax rate.

- John Mullen & Martin Williams, *Marginal tax rates and state economic growth*, 24 Regional Science and Urban Economics 687-705 (1994).
  - U.S. states (1969 to 1986)
  - States with higher initial levels of per-capita income have lower economic growth rates.
  - Higher marginal tax rates are associated with slower economic growth
  - Higher growth can be achieve with the same average level of taxation and less "confiscatory" tax rates.

# Literature Review (continued)

- Robert Reed, *The robust relationship between taxes and U.S. state income growth*, 61:1 National Tax Journal 57-80 (March 2008).
  - 48 Continental U.S. states (1970-1999, 5 year panels)
  - "Contemporaneous changes and lagged levels of taxes are negatively and significantly related to income growth."
  - "State–specific estimates of tax effects widely vary."

- N. Bania, J. A. Gray, & J. A. Stone, *Growth, taxes, and government expenditures: growth hills for U.S. states*, 60:2 National Tax Journal 193-204 (June 2007).
  - 49 U.S. States (Alaska excluded)
  - Taxes directed towards "productive" government activities produce first a positive linear effect followed by a negative non-linear effect.
  - Negative effects arise from the crowding out of private capital.

# Literature Review (continued)

- Marc Tomljanovich, *The role of state fiscal policy in state economic growth*, 22 Contemporary Economic Policy 318-330 (2004).
  - U.S. states (1972 to 1998, multi-year panels)
  - Higher average tax rates only have a temporary negative state growth effect.
  - Sales, property and income tax rates don't change long-run state economic growth.
  - Specific public spending and federal government aid do not change the results.

- Howard Chernick, *Tax progressivity and state economic performance*, 11 Economic Development Quarterly 249-267 (1997).
  - U.S. states (1977 to 1993)
  - Cutting tax rates for high income earners yields no positive effect.
  - A small number of northeastern states grew faster than the regional average.
  - Faster growing states had tax structures that were relatively more regressive than neighboring states.

# Literature Review (continued)

- Jay Helms, *The effect of state and local taxes on economic growth: a time series-cross section approach*, 67 Review of Economics and Statistics 574-582 (1985).
  - U.S. states (1965 to 1979)
  - Revenues dedicated to certain public service (e.g. higher education) will encourage growth.
  - Revenue used to fund transfer payments will slow economic growth.

- Crosby, Andrew and Merriman ,David. *Issue Brief: What happened to Illinois' Economy following the January2011 Tax Increases? A Midwestern Comparison*. Institute of Government and Public Affairs, University of Illinois (February 2014) http://igpa.uillinois.edu/system/files/Illinois-Economy-Post-2011-Tax-Increases.pdf
  - The Illinois tax increase negatively impacted the economy.
  - Could be explained by other factors e.g. fiscal condition and uncertainty about the phase out of the tax increase

# Data and sample description

- Monthly total non-farm employment. Source; Current Employment Statistics, US Bureau of labor Statistics.
- Midwest sample include: IL, IN, IA, KA, MI, MN, MO, NE, ND, OH, SD, WI (US Census Bureau definition).
- Balance panel of data from Jan/1990 through June/2014 for the Midwest sample of states and all 50 states.
- In the empirical part of this research, we used the methodology employed by Crosby and Merriman (2014).

# Model:

$$y_{it} = \alpha_i + \beta_t + \gamma_i t + \delta D_i + \lambda D_i t + \mu_{it}$$

*DEPENDENT VARIABLE*

- $Y_{it}$ = log of employment for each state *i* in period *t*.

*INDEPENDENT VARIABLES*

- $\alpha_i$ for each state *i*, is the mean of the dependent variable for the period of study.
- $\beta_t$ for each period *t*, is the mean of the dependent variable across states.
- $\gamma_i$ for each state *i*, is the mean growth per-period of the dependent variable.
- $\delta$ and $\lambda$ are the coefficients of interest to be estimated.
- $\mu$ is the error term.
- $D_i$ is a Dummy variable =1 for Illinois from Jan/2011 and forward.

# Order of results to be presented:

- Table 1: Midwest sample, dummy=1 after Jan/2011
- Table 2: Midwest sample excluding ND, dummy=1 after Jan/2011
- Table 3: Midwest sample, dummy=1 after Jan/2008
- Table 4: Midwest sample, dummy=1 after Mar/2001
- Table 5: Midwest sample excluding ND, dummy=1 after Jan/2008
- Table 6: Midwest sample excluding ND, dummy=1 after Mar/2001
- Table 7: 50 states sample, dummy=1 after Jan/2011
- Table 8: 50 states sample, dummy=1 after Jan/2008
- Table 9: 50 states sample, dummy=1 after Jan/2001
- Table 10: 50 states sample excluding oil and gas producers, dummy=1 after Jan/2011.
- Table 11: 50 states sample excluding oil and gas producers, dummy=1 after Jan/2008.
- Table 12: 50 states sample excluding oil and gas producers, dummy=1 after Jan/2001.

## Table 1: Midwest sample, IL Dummy=1 Jan/2011 and forward :

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-tax-trend variable. |
| IL dummy (δ) | 1.16637*** | 0.00662 | -0.05326*** | -0.05443*** | 0.01971 |
| *St. Error* | *(0.1399)* | *(0.0125)* | *(0.0063)* | *(0.0049)* | *(0.1095)* |
| IL trend (λ) | | | | | -0.000271 |
| *St. Error* | | | | | *(0.0004)* |
| *Adj. R square* | *0.019* | *0.9912* | *0.998* | *0.999* | *0.999* |

- The large positive magnitude of delta in regression 1 reflects that Illinois continue to have large employment relative to it Midwest neighbors after Jan/2011.
- The negative coefficient of delta in specification 4 indicates that after controlling for state, time specific and state employment trend; Illinois predicted employment would be 5.4% lower than expected.
- In the final specification, where Illinois is also allowed to have a different trend after Jan/2011, both parameters are not statistically significant.
- Using the coefficients in 5, we find IL predicted employment in Jan/2011 is 4.9% lower than expected. While in June/2014 IL predicted employment is 6.0% lower than expected.

# Table 2: Midwest sample excluding ND, IL Dummy=1 Jan/2011 and forward :

(in order to test for robustness ND is excluded from MW sample)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-tax-trend variable. |
| IL dummy (δ) | 1.01191*** | 0.00664 | -0.03552*** | -0.04022*** | 0.00362 |
| *St. Error* | *(0.1209)* | *(0.0112)* | *(0.0050)* | *(0.0041)* | *(0.0904)* |
| IL trend (λ) | | | | | -0.00016 |
| *St. Error* | | | | | *(0.0003)* |
| *Adj. R square* | *0.021* | *0.992* | *0.998* | *0.999* | *0.999* |

- Once we exclude North Dakota from the sample, the significance level of coefficients do not change much in any of the specifications.
- However, the negative coefficient of delta in specification 4 decreases in magnitude and it indicates that Illinois predicted employment would be 4.0% lower than expected, versus a 5.4% in the full MW sample.
- Using the coefficients in 5 under this modified sample, we find IL predicted employment in Jan/ 2011 is 3.7% lower than expected. While in June/2014 IL predicted employment is 4.3% lower than expected.
- However both parameters of interest, δ and λ , are not statistically significant.

# Additional robustness tests:

- We alternatively define Illinois dummy $D_i$ =1 for Illinois from Jan/2008 and forward. Our hypothesis is that the great recession (and its effects) is a better explanatory variable for Illinois sluggish job growth. Illinois lost over 400 thousand jobs from its peak in Jan/2008 to its lowest level in Jan 2010. Contrary to the rest of US, to this date the state has not recovered its pre-recession level.

- We later to define Illinois dummy $D_i$ =1 for Illinois from Mar/2001 and forward. Our hypothesis is that the 2001 recession is a better explanatory variable for Illinois disappointing job growth. The negative effects of the 2001 recession were long-lasting in Illinois such that the state never regained the pre-recession employment level exhibited in Aug/2000. On the other hand the rest of the nation did regain its pre-recession level.

- We also test both aforementioned alternative dummy definitions in the full Midwest sample and Midwest sample that excludes North Dakota.

## Table 3: Midwest sample, IL Dummy=1 Jan/2008 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-time trend variable. |
| IL dummy (δ) | 1.17745*** | 0.00567 | -0.04472*** | -0.04752*** | 0.08278** |
| *St. Error* | *(0.1023)* | *(0.0093)* | *(0.0047)* | *(0.0037)* | *(0.0402)* |
| IL trend (λ) | | | | | -0.00051*** |
| *St. Error* | | | | | *(0.0002)* |
| *Adj. R square* | *0.036* | *0.992* | *0.998* | *0.999* | *0.999* |

• The results for this alternative dummy definition are in general consistent with prior results. The main difference is that now delta and lambda (the coefficients of IL dummy and IL-trend dummy) are both statistically significant in columns 4 and 5.

• For example; using the coefficients in specification 5, under this modified dummy definition we find that IL predicted employment in Jan/2011 is 4.6% lower than expected. While in June/2014 IL predicted employment is 6.7% lower than expected.

## Table 4: Midwest sample, IL Dummy=1 Mar/2001 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-time trend variable. |
| IL dummy (δ) | 1.21980*** | 0.02087*** | -0.02935*** | -0.02804*** | 0.07240*** |
| *St. Error* | *(0.0707)* | *(0.0066)* | *(0.0034)* | *(0.0027)* | *(0.0117)* |
| IL trend (λ) | | | | | -0.00047*** |
| *St. Error* | | | | | *(0.0001)* |
| *Adj. R square* | *0.078* | *0.992* | *0.998* | *0.999* | *0.999* |

- The most striking result of this specification is that Delta is statistically significant under all specifications and Lambda (the coefficient for IL-trend) is also statistically significant.

- These results suggest then that Illinois employment underperforms relative to the rest of the Midwest since Jan/2001. Not only that, these results imply that the state has had a negative growth trend since 2001 compared with the rest of the Midwest.

## Table 5: Midwest excluding ND, IL Dummy=1 Jan/2008 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-time trend variable. |
| IL dummy (δ) | 1.02236*** | 0.00570 | -0.03205*** | -0.03638*** | 0.04699 |
| *St. Error* | *(0.0884)* | *(0.0084)* | *(0.0037)* | *(0.0030)* | *(0.0333)* |
| IL trend (λ) | | | | | -0.00033** |
| *St. Error* | | | | | *(0.0001)* |
| *Adj. R square* | *0.040* | *0.992* | *0.998* | *0.999* | *0.999* |

- We tested also the alternative dummy definition (D=1 from Jan/2008 and forward) under the modified Midwest sample that excludes ND.
- In terms of the significance level of coefficients, they do not change much in any of the specifications.
- We find again that excluding ND from the sample, the negative coefficient of delta in specification 4 decreases in magnitude. This suggests that ND inclusion in the sample is in part driving the results.
- In this case only λ (in column5) is statistically significant.

## Table 6: Midwest excluding ND, IL Dummy=1 Mar/2001 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-time trend variable. |
| IL dummy (δ) | 1.06338*** | 0.02114*** | -0.02417*** | -0.02263*** | 0.05025*** |
| *St. Error* | *(0.0610)* | *(0.0060)* | *(0.0027)* | *(0.0022)* | *(0.0097)* |
| IL trend (λ) | | | | | -0.00034*** |
| *St. Error* | | | | | (0.0000) |
| *Adj. R square* | *0.086* | *0.992* | *0.998* | *0.999* | *0.999* |

- We also tested the alternative dummy definition (D=1 from Mar/2001 and forward) under the modified Midwest sample that excludes ND.
- In terms of the significance level of coefficients, delta is statistically significant in all cases. Lambda (the coefficient for IL-trend) it is also significant.
- We find again that excluding ND from the sample, the negative coefficient of delta in specification 4 decreases in magnitude. This suggests that ND inclusion in the sample is at least in part driving the results.
- In this case λ as well as δ (in column5) are statistically significant.
- Using the coefficients in column 5, we estimate that IL predicted employment in Jan/2011 is 3.6% lower than expected. While in June/2014 IL predicted employment is 5.0% lower than expected. This compares with the 4.9% and 6.0% respectively when we use the full MW sample.

# Additional robustness tests:

- Next, we used a sample of all 50 states to test the same model used with our Midwest sample. We used also monthly employment data from Jan/1990 to June/2014. All variable definitions are the same to those presented in the model description.

- We followed the same steps than with the Midwest sample;
  - We define Illinois dummy $D_i$ =1 for Illinois from Jan/2008 and forward. This is to check the hypothesis if the economic damage caused by the great recession is a better explanatory variable for Illinois sluggish job growth.
  - We proceed later to define Illinois dummy $D_i$ =1 for Illinois from Mar/2001 and forward. Again - this is to check the hypothesis if the effects of the 2001 recession do a better job as explanatory variable for Illinois disappointing job growth.
  - Finally, we test all aforementioned alternative dummy definitions in a 41 state sample excluding states where oil and gas production is notably above the mean. The states excluded are: Arkansas, Colorado, Louisiana, New Mexico, North Dakota, Oklahoma, Texas, Utah and Wyoming.

## Table 7: 50 states, IL Dummy=1 Jan/2011 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-tax-trend variable. |
| IL dummy (δ) | 1.2971*** | 0.0065 | -0.0695*** | -0.0534*** | 0.0395 |
| *St. Error* | *(0.1537)* | *(0.0154)* | *(0.0075)* | *(0.0068)* | *(0.1519)* |
| IL trend (λ) | | | | | -.00034 |
| *St. Error* | | | | | *(0.0006)* |
| *Adj. R square* | *0.005* | *0.990* | *0.998* | *0.998* | *0.998* |

- The negative coefficient of delta in specification 4 indicates that after controlling for state, time specific and state employment trend; Illinois predicted employment would be 5.3% lower than expected.
- Using the coefficients in column 5, where we allow Illinois to have a different trend, we find that IL predicted employment in Jan/2011 is 4.6% lower than expected. While in June/2014 IL predicted employment is 6.0% lower than expected.
- As in the case of the Midwest states sample -in the final specification, where Illinois is allowed to have a different trend after Jan/2011, both parameters (δ and λ ) lack statistical significance.

## Table 8: 50 states, IL Dummy=1 Jan/2008 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-time trend variable. |
| IL dummy (δ) | 1.29922*** | 0.00542 | -0.06488*** | -0.04859*** | 0.03998 |
| *St. Error* | *0.1128* | *0.0113* | *0.0055* | *0.0050* | *0.0571* |
| IL trend (λ) | | | | | -.000347 |
| *St. Error* | | | | | *0.0002* |
| *Adj. R square* | *0.009* | *0.990* | *0.998* | *0.998* | *0.998* |

- The results for this alternative dummy definition are in general consistent with prior results for all 50 states. In this case, contrary to the results in our Midwest sample, both parameters (δ and λ ) don't have statistical significance in the last specification.

- Using the coefficients reported in column 5, under this modified dummy definition we find that IL predicted employment in Jan/2011 is 4.6% lower than expected. While in June/2014 IL predicted employment is 6.7% lower than expected. However, as we note above, these parameters are not statistically significant.

## Table 9: 50 states, IL Dummy=1 Mar/2001 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-time trend variable. |
| IL dummy (δ) | 1.31976*** | 0.01897** | -0.04521*** | -0.02724*** | 0.08662*** |
| *St. Error* | *(0.0786)* | *(0.0079)* | *(0.0039)* | *(0.0036)* | *(0.0166)* |
| IL trend (λ) | | | | | -0.00053*** |
| *St. Error* | | | | | (0.0001) |
| *Adj. R square* | *0.019* | *0.990* | *0.998* | *0.998* | *0.998* |

•The most notable result of this specification -which defines IL dummy =1 from 2001 and forward- is that the parameters Delta as well as Lambda are statistically significant.

•These results are consistent with those using the Midwest sample and suggest then that Illinois employment underperformed relative to the rest of the US since Jan/2001. Furthermore, these results imply that the state has had a negative growth trend since 2001 compared with the rest of US.

## Table 10: 50 states, excluding oil and gas producers:
IL Dummy=1 Jan/2011 and forward

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-tax-trend variable. |
| IL dummy (δ) | 1.19557*** | 0.00648 | -0.05456*** | -0.04394*** | 0.02808 |
| *St. Error* | *(0.1454)* | *(0.0141)* | *(0.0071)* | *(0.0065)* | *(0.0015)* |
| IL trend (λ) | | | | | -0.00026 |
| *St. Error* | | | | | *(0.0005)* |
| *Adj. R square* | *0.005* | *0.991* | *0.998* | *0.998* | *0.998* |

- Once we exclude those states with significant oil and gas production from the 50 states sample, the significance level of coefficients do not change much in any of the specifications.
- However, the negative coefficient of delta in specification 4 decreases in magnitude (compared with the full 50 states sample). This suggests that those oil/gas producer states at least in part drive the results.
- Just like in the case of the Midwest and 50 states samples, both parameters of interest, δ and λ , are not statistically significant.

## Table 11: 50 states excluding oil and gas producers IL Dummy=1 Jan/2008 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All prior variables plus state-time interaction term. | All prior variables plus IL-time trend variable. |
| IL dummy (δ) | 1.19808*** | 0.00544 | -0.05221*** | -0.04099*** | 0.02118 |
| *St. Error* | *(0.1067)* | *(0.0105)* | *(0.0052)* | *(0.0048)* | *(0.0543)* |
| IL trend (λ) | | | | | -0.00024 |
| *St. Error* | | | | | *(0.0002)* |
| *Adj. R square* | *0.010* | *0.991* | *0.998* | *0.998* | *0.998* |

•When comparing this results with those of the full 50 states sample, we observe that the coefficient of delta in column 4 decreases in magnitude. As mentioned before we believe that this is an indication that oil/gas producer states , at least in part, drive the results.

• It is noteworthy that both parameters of interest, δ and λ , are not statistically significant. We observe that was also the case when we defined the dummy=1 for 2011 and forward or 2008 forward, for both samples: all 50 states and excluding oil and gas producers.

## Table 12: 50 states sample, excluding oil and gas producers
## IL Dummy=1 Mar/2001 and forward:

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | No controls. | State specific effect. | State & time specific effects. | All in 3 plus state-time interaction term. | All prior variables plus IL-time trend variable |
| IL dummy (δ) | 1.21959*** | 0.01907*** | -0.03909*** | -0.02505*** | 0.06387*** |
| *St. Error* | *(0.0743)* | *(0.0074)* | *(0.0037)* | *(0.0034)* | *(0.0157)* |
| IL trend (λ) | | | | | -0.00041*** |
| *St. Error* | | | | | (0.0001) |
| *Adj. R square* | *0.022* | *0.991* | *0.998* | *0.998* | *0.998* |

- The coefficients for Delta as well as Lambda using this dummy definition are all statistically significant. These results are consistent with those of the Midwest sample (with and without ND) and all 50 states sample.

- These results suggest then that Illinois employment underperforms relative to the rest of the US since Jan/2001. Moreover, these results imply that the state has had a negative growth trend since 2001 compared with the rest of the nation.

# Conclusions

- The results –suggesting a lower than predicted employment growth- after the tax increase of 2011, fail to exhibit statistical significance in a sample of Midwest states.

- Using a sample of all 50 states we corroborate our initial findings. In the sense that any predicted negative effect of the tax increase on employment is not statistically significant and fragile to alternative specifications and time periods.

- We find that -at least partially- the implied negative effect of tax increase on employment (although not statistically significant), is being driven by states that produce oil and gas and enjoyed the commodity boom of the last decade.

- The results mentioned above are statistically significant and robust under all samples employed.

# The bottom line

- After testing for robustness, there is no compelling evidence that 2011 tax increase produced a negative effect on Illinois employment.

- Equally important; our results suggest that Illinois has underperformed compared to the rest of the Midwest and the nation since the recession of 2001. This may be an indication of a long term structural problem with state economy and labor market in particular.

# Future Research Opportunities

- In our view future research should focus in

- Industry composition analysis

Bill Testa, Federal Reserve Bank of Chicago , *Is Something Ailing the Illinois Economy?* May 8, 2014 http://midwest.chicagofedblogs.org/archives/2014/05/is_something_ai.html

  - Illinois' high concentration in construction and mining machinery.
  - Relatively low concentration in automotive.
  - The downstate Illinois economy is relatively highly concentrated in manufacturing.

- Capital and human capital investment.

Thomas Piketty, *Capital in the 21st Century*, Belknap Press of Harvard University Press, 305 (2014)

  - "If the supply of skills doesn't keep the same pace as needs of technology then groups who's training is not sufficiently advanced will earn less…"
  - Individuals could also become unemployed or even leave the labor force altogether.
  - Have cuts in higher education spending slowed economic growth?

- Outmigration and population growth
  - Net domestic migration, cross-border migration, births, deaths, and immigration.
- Demographic changes in the last few decades.
  - Aging of the population, average educational attainment, etc.