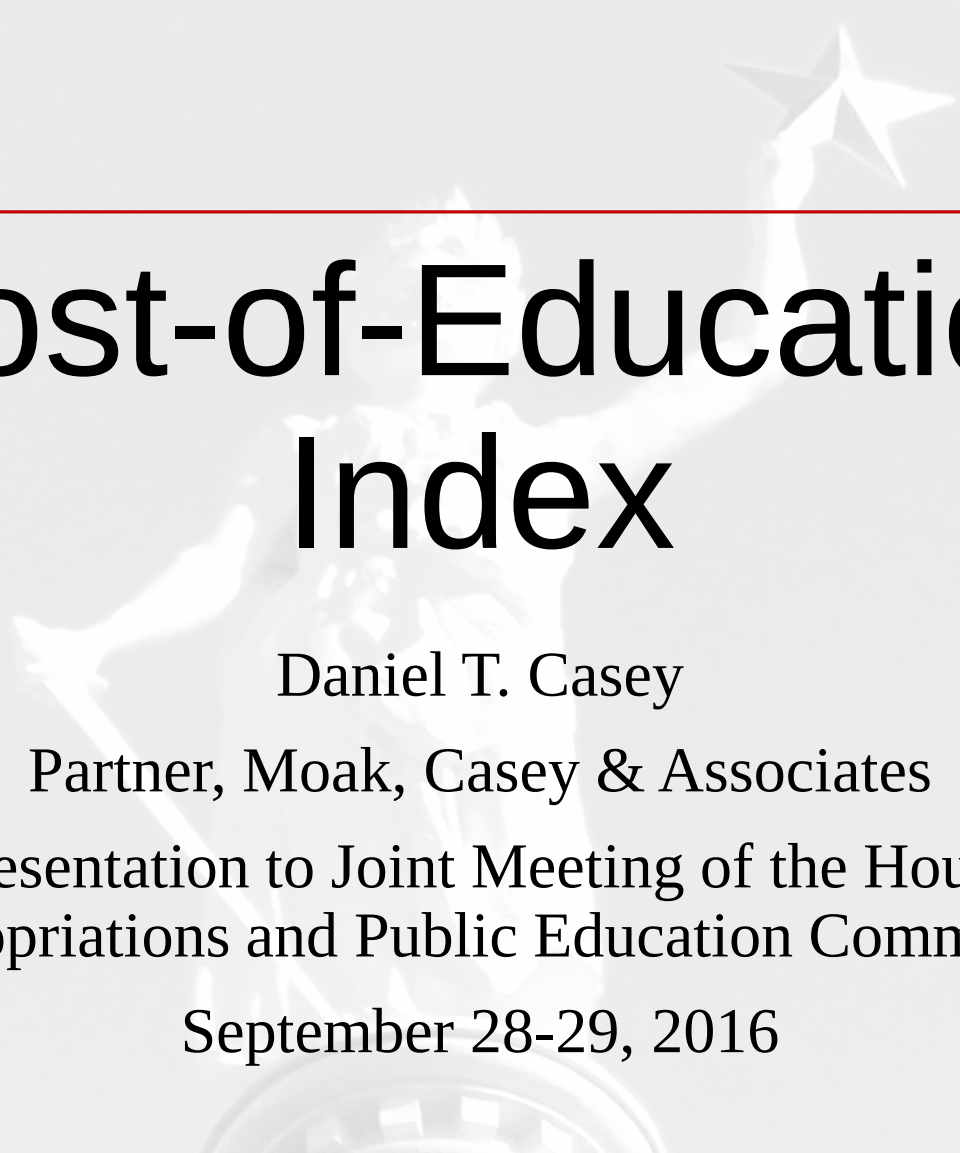




Cost-of-Education Index

Daniel T. Casey

Partner, Moak, Casey & Associates

Presentation to Joint Meeting of the House
Appropriations and Public Education Committees

September 28-29, 2016

Outline

- Background and Mechanics
- Financial Effects
- History
- Other States

Background

- A modern school finance system recognizes:
 - Differences in students and their needs
 - Reflected in the program funding weights
 - Differences in school districts and local conditions
 - District enrollment or diseconomies of scale
 - Taxable values as a measure of local revenue capacity
 - Geographic variations in resource costs beyond the control of school districts (cost-of-education index (CEI))

Background (cont.)

- Texas school finance system has recognized many of these differences for more than a half-century
- Past research has identified legitimate, uncontrollable costs that affect the ability of school districts to provide educational services

Statutory Reference

Education Code, Section 42.102. Cost-of-Education Adjustment:

(a) The basic allotment for each district is adjusted to reflect the geographic variation in known resource costs and costs of education beyond the control of the school district.

(b) The cost of education adjustment is the cost of education index adopted by the foundation school budget committee and contained in Chapter 203, Title 19, Texas Administrative Code, as that Chapter existed on March 26, 1997.

Mechanics of CEI

- Current index was adopted in 1990
 - Readopted by rule through 1997, which is now referenced by statute
- Index values range from 1.02 to 1.20
- Modifies only 71 percent of basic allotment
 - Percentage of M&O budgets attributed to professional salaries and benefits in 1990 study

Mechanics of CEI, (cont.)

- Computation of weighted average daily attendance or WADA excludes 50 percent of the effect of CEI
 - Result of 1989 House/Senate compromise on WADA definition
 - Affects Tier II state aid and calculation of recapture owed to the state

How the CEI is Applied (2016-17 Example)

- 71 % reflects professional salaries and benefits as a share of operating expenses in 1990 study
- 2016-17 Basic Allotment (BA) = \$5,140
- Adjusted Basic Allotment (CEI = 1.123 (state avg.))

$$\begin{aligned} \text{ABA} &= \text{BA} * (((\text{CEI} - 1) * .71) + 1) \\ &= \$5,140 * (1.123 - 1) * .71 + 1) \\ &= \$5,140 * 1.08733 \\ &= \$5,589 \end{aligned}$$

Financial Impact of CEI

- 2016-17 estimated M&O state and local FSP revenue: \$38.878 billion
 - Current estimated WADA count: 6,367,749 (excludes charters)
 - The current 50% of the CEI used to determine Tier II funding and recapture accounts for 266,104 WADA, or 4.2%

Financial Impact of CEI, (cont.)

- Eliminate CEI with no redistribution (2016-17 data)
 - Reduces FSP cost by \$2.590 billion
 - Increases recapture by \$196 million, or 10%
- Eliminate CEI and increase basic allotment by \$470 to \$5,610
 - Redistributes about \$400 million, or about 1% of FSP
 - 769 districts gain; 45% of ADA
 - 250 districts lose; 55% of ADA
 - Reduces recapture by \$177 million, or 9%

Applying 100% of CEI to WADA Calculation

- Increased 2016-17 state cost: \$419.2 million (1.1% of FSP total)
 - Increases WADA count by an estimated 270,191
 - Tier II districts would received additional state aid, about \$100 million
 - Most significant impact would be on reduced recapture costs for Chapter 41 school districts, about \$180 million
 - Remainder of effect is in ASATR (in effect in 2016-17)
 - Total state cost for 2017-18 school year would be approximately \$300 million (in the absence of ASATR)

Current CEI

- Explains variations in teacher salaries
- Uncontrollable factors
 - Competitive beginning average teacher salary
 - County population (less than 40,000)
 - Percent low-income students
 - District type
 - District size based on ADA
- Model accounted for about 85% of the variation in teacher salaries
- Created look-up table for uncontrollable factors

Current CEI (cont.)

- Controllable factors and those adjusted for elsewhere in the funding formulas:
 - Property wealth per teacher
 - Total effective tax rate
 - Graduation rate
 - Percent minority teaching staff
 - Non-salary benefit expenditures per pupil
 - Advanced degree
 - Secondary teaching assignment (grades 7-12)
 - Number of years of teaching experience

Determination of District CEI Value (Look-Up Table)

Value To Add to 1.00	Competitive Beginning Average Annual Salary (1989 Data)	County Population <40,000	District Type	Percent Low Income	Size of District
-0.01			Indep. Town		
0.00	Below \$17,300	No		Below 50%	200 to 499
0.01	\$17,300 to 17,750	Yes	Rural	50 - <68%	500 to 999 or <200
0.02	\$17,751 to 18,250			68 - <77%	1,000 to 1,599
0.03	\$18,251 to 18,700			77 - <86%	1,600 to 2,399
0.04	\$18,701 to 19,100			86 - <93%	2,400 to 3,599
0.05	\$19,101 to 19,500			93% or more	3,600 to 5,399
0.06	\$19,501 to 20,000				5,400 to 8,499
0.07	\$20,001 to 20,450				8,500 or more
0.08	\$20,451 to 20,850				
0.09	\$20,851 or more				

Special additional adjustment for districts between 1,600 and 2,000 ADA

History:

1974 Governor's Office Report

- Governor's Office study of cost-of-living index
- Based on analysis of Florida index
- Fixed market-basket consumer-price-index approach
- Would require data collection across the state
- Recommendation called for further study

1979: More Research and Recommendations

- Augenblick and Adams study
- Constructed indices for teachers and administrators
- Regression model that included the following uncontrollable factors:
 - Percentage of minority students
 - Number of students in average daily attendance (ADA)
 - Regional population density and percent urban population
 - Labor market conditions—measured by price of agricultural land per acre

1979: More Research and Recommendations (cont.)

- Model explained 72% of variation in actual salaries for teachers
- Explained 47% of variation in administrators' salaries (broadly defined)

Price Differential Index (PDI) for the 1984-85 School Year

- Statutorily prescribed precursor of CEI
- Key factors:
 - Ratio of actual salaries for contiguous districts to state minimum salaries for same teachers
 - Additional factor of one-tenth of the percentage of low-income students
 - Special adjustment applied if full-time state employees at specified pay grades and public university faculty exceeded 125 percent of federally-funded-only teachers in county

Methodology: 1985-86 and 1986-87 School Years

- Statute required development of econometric model
- Must consider effect of school district characteristics on the prices paid in the school district for goods and services
- Study excluded construction, debt service, federal funds, textbooks, TRS and transportation
- Three-stage analysis to explain variation in 1983-84 average teacher salaries

1985-86 and 1986-87 School Years (cont.)

- Personnel Characteristics
 - Experience, degree status, grade level assignments of the teacher (adjusted statistically)
- Wealth and Tax Effort of School District
 - Property wealth per teacher, total effective tax rate
- Uncontrollable District Characteristics
 - Number of students enrolled (ADA), students per square mile, percentage of low-income students, average county wages for sectors other than education
- Model explained 89.6% of variation in monthly teacher salaries

Other Major Studies

- 1986: TEA and SBOE*
- 1990: TEA and Legislative Education Board (LEB)*
- 1992: LEB and LBB
- 1994: TEA*
- 1996: LBB (Education Development Index (EDI))*
- 2000: UT-Austin: Dana Center Report*
- 2003-04: Joint Select Committee on Public School Finance
- Late 1990s-early 2000s: USDOE: National Center for Education Statistics series of studies*

*CEI or alternative was major focus

Historical PDI/CEI Values

School Years	Range of Values	Average Index Value	Percent of Basic Allotment
1984-85	1.00-1.29	1.144	75%
1985-89	1.000-1.247	1.141	76%
1989-91	1.01-1.20	1.128	63%
1991-2017	1.02-1.20	1.123	71%

Similar Adjustments in Other States

Comparable Wage Index

- Florida
- Massachusetts
- Missouri
- New Jersey
- New York
- Virginia

Cost-of-Living Index

- Colorado
- Wyoming

Teacher Cost Index

- Texas
- Alaska
- Wyoming

Source: Lori L. Taylor, “*When Equal is Not Equitable: Adjusting for Geographic Differences in Education Costs*,” **The Takeaway**, Mosbacher Institute, Vol. 6, Issue 4, 2015.

Conclusion

- Texas and national studies over the last 40 years validate the concept of adjusting for education costs due to factors beyond the control of local school districts
- Section 42.007, Education Code, calls for biennial study of equalized funding elements (including the CEI) by the LBB—still on the books



The Takeaway

Policy Briefs from the Mosbacher Institute for
Trade, Economics, and Public Policy

When Equal is Not Equitable:

Adjusting for Geographic Differences in Education Costs

LORI L. TAYLOR

Director, Mosbacher Institute

An educational dollar doesn't stretch as far in some parts of the country as it does in others. School districts in high cost areas need additional dollars just to be able to purchase the same resources and hire the same quality teachers as other districts. Ignoring these differences in the price of labor leads to real differences in school district purchasing power and undermines the equity and adequacy goals of any school finance formula.

Texas was one of the first states to incorporate regional cost differences into its school funding formula. In 1991, Texas adopted the Cost of Education Index (CEI) as a tool to adjust state aid to compensate for variations in labor costs that are beyond

the control of school districts.¹ The CEI increases the amount of state aid received by school districts in high cost areas and reduces the amount recaptured from high cost areas and redistributed through a process informally known as Robin Hood.



WHAT'S THE TAKEAWAY?

Regional cost adjustments are needed to ensure that all school districts are able to purchase the same amount of real educational resources.

The pattern of costs has shifted dramatically since the Texas CEI was created 25 years ago.

Texas school districts face substantial and uncontrollable differences in labor costs which have been growing over time.

Updating the Texas CEI is both desirable and feasible.

Unfortunately, the Texas CEI has not been updated since its inception. Thus, today's CEI is based on 25-year-old values for five school district characteristics—district size, district type, the percentage of low income students, the average beginning teacher salary in surrounding districts, and whether or not the county population was below 40,000. Over the last 25 years, much has changed in Texas. Enrollment has grown from 1,419 to nearly 46,000 in Frisco Independent School District (ISD); the share of low income students has increased by 30 percentage points in Houston ISD; and average beginning teacher salaries have more than doubled in the districts surrounding San Antonio ISD, for example. One cannot help but conclude that the CEI has become outdated.

There are a number of strategies that could be used to update the Texas CEI.

On the other hand, the need for a CEI has never been greater. According to the most-recent estimates from the National Center for Education Statistics, labor costs within Texas differ by more than 60% from the lowest-cost school district to the highest-cost school district.² Housing costs—the primary determinants of cost-of-living differences—differ by nearly 70%.³

STRATEGIES FOR UPDATING THE CEI

Fortunately, there are a number of strategies that could be used to update the Texas CEI.

One method is to use a comparable wage index (CWI) based on the prevailing wage for non-educators in each labor market. Since teachers are not the only workers who are

sensitive to cost of living and amenity differences, regional variations in the salaries of comparable professionals who are not teachers should be similar to the price variations that school districts must pay to attract high quality teachers. Six states—Florida, Massachusetts, Missouri, New Jersey, New York and Virginia—use a CWI to adjust their school finance formula.⁴

Another way is to use a cost-of-living index (CLI), which would be constructed at the local level using the same strategy the US Bureau of Labor Statistics uses to construct the Consumer Price Index. For each location, researchers would tabulate the price of a basket of consumer goods and services. The assumption is that districts in areas with a high cost of living will need to pay higher salaries to attract school employees and, therefore, will need more funding than other districts just to be able to provide the same level of services. Colorado and Wyoming use a CLI in their school finance formulas.

A third popular strategy is to use a teacher cost index (TCI). A TCI is based on a regression analysis of existing teacher salaries. Researchers use statistical technique to divide the observed variation in teacher salaries into that which is explained by controllable factors and that which is explained by uncontrollable factors. Only factors outside of school district control represent cost differences that should be accounted for in funding formulas, so researchers construct a TCI assuming that all districts had the same values for the controllable cost factors. The Texas CEI is a TCI. Alaska and Wyoming also use a TCI in the labor components of their school finance formulas.

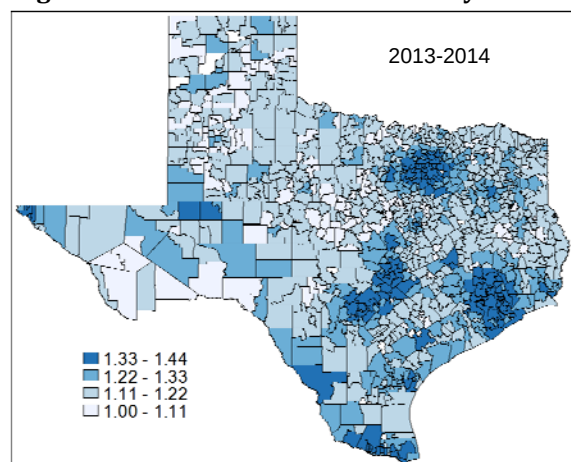
Each method has its advantages and disadvantages. Either a CWI or a CLI will provide

cost adjustments that are clearly outside of school district influence, but they are both market-level measures. They cannot detect specific cost differences at the school or district levels. A TCI can reflect fine-grained differences in labor cost, but must rely on researcher judgment and statistical technique to avoid mislabeling high spending districts as high cost ones. A CLI tends to overstate the cost of hiring in locations with a lot of attractive amenities, while a CWI is only reliable if the comparable workers have the same sensitivity to amenities and living costs as teachers.

LIKELY CONSEQUENCES OF UPDATING

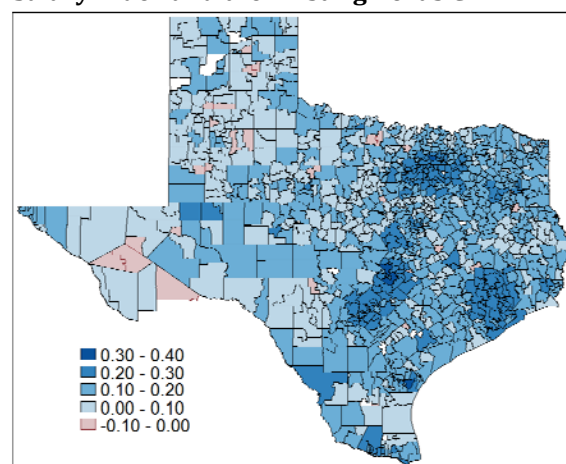
Texas has explored updating the CEI many times. In 2000, the Charles A. Dana Center published a study that presented four alternative strategies for updating the CEI.⁵ In 2003 and 2004, I led a research team that explored strategies for updating the CEI on behalf of the Joint Select Committee on Public School Finance (JSC).⁶ Each study found that there were substantial cost differences from one Texas district to another, and that the CEI had become outdated.

Figure 1: Teacher-Fixed-Effects Salary Index



Source: Texas Public Education Information Management System (PEIMS) data and author's calculations

Figure 2: Differences in the Updated Teacher Salary Index and the Existing Texas CEI



Source: PEIMS data and author's calculations

One option explored in each of those prior analyses was to estimate a new TCI using more recent data and improved statistical methods. Following the modeling strategy in the JSC report, I have extended the analyses through 2013-14 using the teacher-fixed-effects methodology described in the earlier report. The resulting Teacher Salary Index reflects uncontrollable cost factors, including average daily attendance; distance to the nearest teacher certifying institution; distance to the center of the nearest metropolitan area; the percent of students who are limited English proficient (LEP); average fair market rent for a two-bedroom apartment; average cooling degree days; the unemployment rate; and population density.

Figure 1 maps the updated Teacher Salary Index for Texas unified school districts. As the figure illustrates, teacher salaries are highest in major metropolitan areas. Index values range from less than 1.02 in a handful of small, rural districts to 1.44 in the Lamar Consolidated and Conroe ISDs.

Figure 2 compares the updated Teacher Salary Index with the existing CEI. Darker shades

indicate school districts where updating the CEI with the Teacher Salary Index would increase the index value; the light maroon indicates school districts where updating the CEI would lower the index value. As the figure illustrates, most Texas school districts would have higher CEI values if the index were updated. Only 33 districts (14 urban and 19 rural) would experience declines in the CEI. The biggest beneficiaries of updating would be fast growth districts like Frisco, and districts in the Austin metropolitan area.

CONSEQUENCES OF NOT UPDATING

The goal of the CEI is to ensure that all districts are able to purchase the same amount of real educational resources. Without a regional cost adjustment, school districts in high cost areas like Dallas and Houston would be unable to provide the same real educational resources (teachers, administrators, software) as districts elsewhere in the state. In other words, when labor costs vary, equalized funding implies highly unequal schooling.

Analysis strongly suggests that Texas school districts face substantial and uncontrollable

differences in labor costs. Furthermore, the differences in labor cost have been growing over time. Updated measures imply that geographic variations in the price of teachers are more than double those reflected in the existing CEI. Whatever method is chosen, one cannot help but conclude that the pattern of costs has shifted and the Texas CEI needs to be revised.

Lori L. Taylor, Director of the Mosbacher Institute, holds the Verlin and Howard Kruse '52 Founders Associate Professorship at the Bush School. She is the author of numerous articles on public sector productivity and regional differences in the cost of education.

Notes:

¹ Taylor, Lori L. March 2004. "Adjusting for Geographic Variations in Teacher Compensation: Updating the Texas Cost-of-Education Index." A report prepared for the Texas Legislature Joint Committee on Public School Finance. <http://bush.tamu.edu/research/faculty/TXSchoolFinance/>

² National Center for Education Statistics. <http://nces.ed.gov/edfin/adjustments.asp>

³ US Dept. of Housing and Urban Development. <http://www.huduser.org/portal/datasets/fmr.html>

⁴ Education Law Center. 2013. *Funding, Formulas and Fairness: What Pennsylvania Can Learn from Other States' Education Funding Formulas*.

⁵ <http://www.utdanacenter.org/downloads/products/cei/ceireport.pdf>

⁶ Taylor, 2004.

ABOUT THE MOSBACHER INSTITUTE

The Mosbacher Institute was founded in 2009 to honor Robert A. Mosbacher, Secretary of Commerce from 1989-1992 and key architect of the North American Free Trade Agreement. Through our three core programs—Integration of Global Markets, Energy in a Global Economy, and Governance and Public Services—our objective is to advance the design of policies for tomorrow's challenges.

Contact:

Cynthia Gause, Program Coordinator
Mosbacher Institute for Trade, Economics, and Public Policy
Bush School of Government and Public Service
4220 TAMU, Texas A&M University
College Station, Texas 77843-4220

Email: bushschoolmosbacher@tamu.edu
Website: <http://bush.tamu.edu/mosbacher>

The views expressed here are those of the author(s) and not necessarily those of the Mosbacher Institute, a center for independent, nonpartisan academic and policy research, nor of the Bush School of Government and Public Service.



To share your thoughts
on *The Takeaway*,
please visit
<http://bit.ly/1ABajdH>