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Personal Income Changes in Oklahoma Before and After the Great Recession

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Abstract

An analysis of personal income changes in Oklahoma during two periods, 2002-2007 and 2013-2018, is presented. These changes, both aggregate and by sector, are compared to personal income changes in the United States and a region composed of Oklahoma and its contiguous states: Arkansas, Colorado, Kansas, Missouri, New Mexico, and Texas. The comparisons will include results from a shift-share analysis. Recent events in Oklahoma and the surrounding are used to apply the results of the analysis.

1. Introduction

Oklahoma is a centrally located state, with major Interstate Highways 35 and 40 crossing in Oklahoma City. Shipments from ports near Los Angeles and Houston travel via important truck and rail routes through the Sooner State. Interstate 35 is a free-trade zone highway, acting as a major commercial corridor between Canada and Mexico (see Figure 1).



Figure 1: Oklahoma Interstate Highways and Surrounding States

Oklahoma's six cities with a population above 90,000 are all located along Interstate highways. As shown in Table 1, of those six metropolitan areas, four (Oklahoma City, Norman, Broken Arrow, and Edmond) experienced growth rates in excess of 25 percent during the period from 2000-2017 [Census (2017)].

| US Rank | City | Population | Increase (2000-2017) |
|------------|---------------|------------|-------------------------|
| 27 | Oklahoma City | 643,648 | 26.8% |
| 47 | Tulsa | 401,800 | 2.2% |
| 223 | Norman | 122,843 | 26.8% |
| 277 | Broken Arrow | 108,303 | 34.2% |
| 341 | Lawton | 93,714 | 1.2% |
| 352 | Edmond | 91,950 | 34.1% |

Table 1: Most Populated Oklahoma Cities, 2017

Source: US Census (2017)

The state has long been a leader in oil and natural gas production, with further potential for production using intensive processes such as fracking [Boyd (2002)]. The state is also known for casino gambling, as administered by native tribal nations [Eger (2019)]. This paper will identify industries in which Oklahoma has experienced growth in the periods before and after the Great Recession and compare them with the performance of the surrounding region and the nation using the shift-share methodology.

2. Methodology

This paper focuses on annual personal income data in the aggregate and by individual sectors. The analysis examines the five-year pre-recession period (2002-2007) data and the most recent five-years (2013-2018) of the post-recession data. The shift-share analysis methodology is used as is an examination of percentage change and rates of change of personal income.

The shift-share technique had early use in regional studies of employment changes [Creamer (1943), Fuchs (1959), and Dunn (1960)]. The technique was later employed in Buck (1970), Houston (1967) and Barff & Knight (1988). A brief discussion of the shift-share procedure follows. A more detailed discussion is available in Rice & Horton (2012).

The shift-share analysis is a decomposition of sector growth into three component parts. The comparisons include three entities: the United States (US), Oklahoma (OK), and a region composed of Oklahoma and its contiguous states, which are Arkansas, Colorado, Kansas, Missouri, New Mexico, and Texas [the Oklahoma contiguous region (CR)]. The OGS component (Overall-Growth Share) calculates the total percentage change of the larger entity (either US or CR) and applies that percentage change to each sector of the smaller entity (either CR or OK). Thus, the component represents the change in each sector of the smaller entity that

would be attributed to the percentage increase or decrease of the overall percentage change of the larger entity.

The DCS component (Differential-Compositional Share) calculates the percentage change for each sector of the larger entity (US or CR, depending upon the comparisons) and compares each larger entity sector percentage change with the percentage change of total personal income for the larger entity. If the sector percentage is greater, the sector is considered fast growth. If the sector percentage change is smaller than the total percentage change, the sector is considered slow growth.

The SCS component (Sector-Competitive Share) compares percentage change in each sector of the larger entity (either US or CR) with the percentage change of each corresponding sector of the smaller entity (either CR or OK). If the percentage change of a sector in the smaller entity, for example, OK, exceeds the percentage change of the corresponding sector in the larger entity, for example, US, then the sector in the smaller entity (OK) is considered to be a highly-competitive/high performing sector. Conversely, if the percentage change of the sector in the smaller entity is less than the percentage change of the corresponding sector in the larger entity, then the sector in the smaller entity is considered to be under-performing.

After calculating each component for each sector of the smaller entity, the three components are added together such that:

Total change (sector of the smaller entity) = OGS + DCS + SCS

Total change (all sectors of the smaller entity) = Σ (OGS) + Σ (DCS) + Σ (SCS)

3. Aggregate Analysis

Personal income data for the US, CR (which contains the states of Arkansas, Colorado, Kansas, Missouri, New Mexico, Oklahoma, and Texas) and OK for years 2002, 2007, 2013, and 2018 are obtained from the Regional Economic Accounts of the U.S. Bureau of Economic Analysis website: <u>http://www.bea.gov/regional</u>

Table 2 presents the total personal income for US, CR, and OK for years 2002, 2007, 2013, and 2018. It should be noted that total personal income for all three entities for 2018 (US = 17,572,929 million, CR = 2,239,254 million, and OK = 181,886 million) exceed the 2007 levels. Thus, all three entities have increased to well-above the pre-recession levels.

| | Personal Income (millions of dollars) | | | | | | Ove Perce Cha | erall ntage inge | Ave Anr Perce Cha | rage 1ual ntage 1nge |
|----|--|------------|-----------|------------|------------|-----------|---------------------|------------------------|----------------------------|-------------------------------|
| | 2002 | 2007 | Increase | 2013 | 2018 | Increase | 2002- 07 | 2013- 18 | 2002- 07 | 2013- 18 |
| US | 9,155,663 | 12,002,204 | 2,846,541 | 14,175,503 | 17,572,929 | 3,397,426 | 31.09 | 23.97 | 5.56 | 4.39 |
| CR | 1,080,680 | 1,464,686 | 384,006 | 1,881,192 | 2,239,254 | 358,062 | 35.53 | 19.03 | 6.27 | 3.55 |
| OK | 90,233 | 127,819 | 37,586 | 165,860 | 181,886 | 16,026 | 41.65 | 9.66 | 7.21 | 1.86 |

Table 2: Aggregate Results - Changes in Personal Income

Source: Personal Income date for tables obtained from "Regional Economic Accounts," Bureau of Economic Analysis: <u>http://www.bea.gov/regional</u>. All computations in tables and construction of CR by the authors.

Table 2 also presents the overall percentage changes and average annual percentage changes for the pre-recession (2002-2007) period and the post-recession (2013-2018) period. During the pre-recession period, OK experienced the largest overall percentage change (41.65%) and average annual percentage change (7.21%) followed by the CR (35.53%; 6.27%) and US (31.09%; 5.56%). In the post-recession period, the opposite growth pattern occurred, with US experiencing the largest overall percentage change (23.97%) and average annual percentage change (4.39%) followed by the CR (19.03%; 3.55%) and OK (9.66%; 1.86%). Additionally, all the percentages in the post-recession period are smaller than the corresponding pre-recession period lag behind the growth rates in the pre-recessionary period with OK experiencing the most dramatic decline from 7.21% during 2002-2007 to 1.86% from 2013-2018.

| Row | Comparisons | Overall- Growth (OGS) | Differential- Compositional (DCS) | Sector- Competitive (SCS) | Total |
|-----|-------------|-----------------------------|---|---------------------------------|---------|
| | | | US versus OK | | |
| 1 | 2002-2007 | 28,054 | 769 | 8,763 | 37,586 |
| | 2013-2018 | 39,752 | -7,455 | -16,271 | 16,026 |
| | | | CR versus OK | | |
| 2 | 2002-2007 | 32,063 | 604 | 4,918 | 37,586 |
| | 2013-2018 | 31,569 | -2,227 | -13,317 | 16,026 |
| | | | US versus CR | | |
| 3 | 2002-2007 | 335,989 | 5,136 | 42,881 | 384,006 |
| | 2013-2018 | 450,863 | -48,036 | -44,763 | 358,061 |

Table 3: Summary of Shift-Share Computations - Personal Income Changes

Source: Tables 8, 9, and 10 using Column Totals

Table 3 presents an aggregate summary of the shift-share computations for the prerecession period (2002-2007) and the post-recession period (2013-2018). Included in the table are the results for three different comparisons: 1. US versus OK, 2. CR versus OK, and 3. US

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versus CR.

Row 1 examines the growth in OK personal income when compared to the US. In the pre-recession period, Oklahoma's increase in personal income was stronger than that of the United States as evidenced by all three shift-share components (OGS = \$28,054 million, DCS = \$769 million, and SCS = \$8,763 million) are positive with a very strong SCS component, indicating that, in the aggregate, Oklahoma's individual sectors outperformed their corresponding United States sectors.

However, in the post-recession period, two of the three OK shift-share components (DCS = -\$7,455 and SCS = -\$16,271) were negative, causing the overall increase in Oklahoma personal income (\$16,026 million) to be less than OGS (\$39,752 million). Thus, in the post-recession period, Oklahoma personal income growth contained both slow-growth sectors (negative DCS) and many non-competitive sectors (negative SCS). This combination resulted in Oklahoma personal income growth that did not match the personal income growth (\$39,757 million) that would have occurred had Oklahoma personal income grown at the same percentage as the United States.

Row 2 compares OK to CR and the results mirror those shown in Row 1. That is, in the pre-recession period, Oklahoma personal income growth was stronger than that of the region in that all three shift-share components (OGS = \$32,063 million, DCS = \$604 million, and SCS = \$4,918 million) were positive with the SCS component indicating strong sector performances. But, in the post-recession period, Oklahoma's personal income increase lagged behind regional growth as evidenced by the two negative shift-share components (DCS = -\$2,227 million and SCS = -\$13,317 million). In particular, the large negative SCS component suggests many individual sectors were non-competitive.

Row 3 compares CR to US. Again, a similar situation exists in Row 3 as was found in Rows 1 and 2. In the pre-recession period, the region experienced personal income growth greater than that of the United States. As in Rows 1 and 2, all three shift-share components (OCS = \$335,989 million, DCS = \$5,136 million, and SCS = \$42,881 million) were positive. Once again, the SCS aggregate was very strong indicating many strong, competitive, sectors. However, in the post-recession period, the region's gains in personal income fell considerably when compared to that of the nation. The shift-share component (OGS = \$450,863 million) is the post-recession personal income increase that would have occurred had the Oklahoma contiguous region grown at the same rate as the United States. However, the other two shiftshare components (DCS = \$-48,038 million and SCS = -\$44,763 million) were both strongly negative. The implication is that the region contained an aggregate of slow-growth sectors (DCSnegative) and an aggregate of non-competitive sectors (SCS negative).

4. Sector Analysis

The sector analysis will focus on Oklahoma personal income change in the post-recession period. Table 4 provides the percentage of total personal income reported in each sector for all four years.

| | Oklahoma | | | | | | |
|-------------------------------------|----------|--------|--------|--------|--|--|--|
| Sector | 2002 | 2007 | 2013 | 2018 | | | |
| Farm employment | 1.09% | 0.53% | 1.08% | 0.46% | | | |
| Forestry/Fishing | 0.12% | 0.11% | 0.11% | 0.15% | | | |
| Mining | 2.32% | 7.80% | 9.09% | 6.70% | | | |
| Utilities | 1.02% | 0.91% | 0.94% | 0.79% | | | |
| Construction | 4.23% | 3.88% | 4.49% | 4.21% | | | |
| Durable Goods | 5.31% | 4.66% | 4.10% | 4.27% | | | |
| Nondurable Goods | 2.90% | 3.46% | 1.90% | 1.84% | | | |
| Wholesale Trade | 3.34% | 2.90% | 2.75% | 2.56% | | | |
| Retail Trade | 5.39% | 4.32% | 4.16% | 3.91% | | | |
| Transportation | 2.82% | 2.85% | 6.74% | 6.69% | | | |
| Information | 1.94% | 1.50% | 1.09% | 1.18% | | | |
| Finance and Insurance | 3.11% | 2.75% | 2.55% | 2.71% | | | |
| Real Estate | 1.23% | 1.08% | 1.37% | 1.05% | | | |
| Professional Services | 3.88% | 3.77% | 3.69% | 3.82% | | | |
| Management | 0.98% | 0.85% | 0.76% | 1.07% | | | |
| Administrative | 2.91% | 2.97% | 2.76% | 2.86% | | | |
| Education | 0.58% | 0.54% | 0.54% | 0.54% | | | |
| Healthcare | 7.09% | 6.75% | 6.75% | 7.17% | | | |
| Arts and Entertainment | 0.36% | 0.30% | 0.34% | 0.47% | | | |
| Accommodations | 2.63% | 2.17% | 1.98% | 2.16% | | | |
| Other Services | 3.23% | 2.58% | 2.34% | 2.41% | | | |
| Governments | 15.10% | 14.09% | 12.71% | 12.84% | | | |
| plus: Adjustment for residence | 1.09% | 0.66% | 0.29% | 0.23% | | | |
| plus: Dividends, interest, and rent | 18.65% | 19.30% | 17.00% | 18.42% | | | |
| plus: Personal current transfer | | | | | | | |
| receipts | 16.73% | 16.78% | 17.64% | 18.84% | | | |
| less: Contributions for OASDHI | 8.04% | 7.51% | 7.17% | 7.36% | | | |
| Total | 100% | 100% | 100% | 100% | | | |

 Table 4: Sector Analysis for Oklahoma - Percentage of Personal Income by Sector

For discussion, the top ten personal income sectors in Oklahoma in 2018 are identified and compared with their 2007 percentages and presented in Table 5, which is organized as follows.

- 1. The sectors listed are the top ten Oklahoma personal income sectors based on the 2018 percentages. These sectors contributed 86.87 percent of Oklahoma's personal income.
- 2. The arrows indicate whether the 2018 percentage is more than (up-arrow) or less than (down-arrow) the 2007 percentage.
- 3. The table is divided into two groups. The up-arrow group is the first five sectors, and the down-arrow group is the second five sectors.

| Sector | | 2007 | 2018 |
|-----------------------------------|--------------|--------|--------|
| Transfer Receipts | 1 | 16.78% | 18.84% |
| Healthcare | 1 | 6.75% | 7.17% |
| Transportation and Warehousing | 1 | 2.85% | 6.69% |
| Construction | 1 | 3.88% | 4.21% |
| Profession and Technical Services | 1 | 3.77% | 3.82% |
| Dividends, Interest, and Rent | \downarrow | 19.30% | 18.42% |
| Government | \downarrow | 14.09% | 12.84% |
| Mining | \downarrow | 7.80% | 6.70% |
| Durable Goods | \downarrow | 4.66% | 4.27% |
| Retail Trade | \downarrow | 4.32% | 3.91% |
| Totals | | 84.20% | 86.87% |

Table 5: Oklahoma Personal Income Percentages

Table 4 is the basis of the organization of Table 5. Tables 6 and 7 present selected shift-share results, and the detailed shift-share results are provided in Tables 8, 9, and 10.

| | 2018 Oklahoma | Shift-Shares: 2013-2018 (millions of dollars) | | | | | | |
|---|---------------------------------------|--|--------|---------|--------|--|--|--|
| SECTOR | Percentage | US versus OK | | | | | | |
| | Contribution to Personal Income | OGS | DCS | SCS | Total | | | |
| Transfer Receipts | 18.84 ↑ | 7,012 | -295 | -1,715 | 5,002 | | | |
| Healthcare | 7.17 ↑ | 2,684 | -77 | -768 | 1,839 | | | |
| Transportation and Warehousing | 6.69↑ | 2,680 | 1,042 | -2,739 | 983 | | | |
| Construction | 4.21 ↑ | 1,785 | 1,166 | -2,743 | 209 | | | |
| Profession and Technical Services | 3.82 ↑ | 1,466 | 386 | -1,017 | 834 | | | |
| Dividends, Interest, and Rent | 18.42 ↓ | 6,759 | 2,960 | -4,413 | 5,306 | | | |
| Government | 12.84 ↓ | 5,054 | -2.176 | -608 | 2,270 | | | |
| Mining | 6.70↓ | 3,612 | -8,278 | 1,787 | -2,879 | | | |
| Durable Goods | 4.27↓ | 1,629 | -410 | -246 | 973 | | | |
| Retail Trade | 3.91↓ | 1,654 | -390 | -1,052 | 212 | | | |
| Total | 86.87% | 34,335 | -6,072 | -13,514 | 14,749 | | | |

Table 6: Selected Summary of Results

Source: Tables 5 and 8

Table 6 presents thirty shift-share results for the United States versus Oklahoma comparison and Table 7 presents another thirty for the Oklahoma contiguous region versus Oklahoma comparison. First, it should be noticed that the Total columns are the same in both comparisons because it is the Oklahoma personal income change that is being reported. Second, discussion of these two tables will focus on the DCS and SCS columns.

Focusing on Table 6, which presents data from the United States versus Oklahoma comparison, four sectors (Transportation and Warehousing = \$1,042 million, Construction = \$1,166 million, Professional and Technical Services = \$386 million, and Dividends, Interest, and Rent = \$2,960 million) displayed positive differential-composition shares (DCS) and are considered fast-growth sectors. However, each of these sectors had negative sector-competitive shares (SCS) indicating that, although the four sectors are fast-growth nationally, the Oklahoma sectors are growing more slowly than are their corresponding national sectors.

| | 2018 Oklahoma | Shift-Shares: 2013-2018 (millions of dollars) | | | | | | |
|---|---------------------------------------|--|--------|---------|--------|--|--|--|
| SECTOR | Percentage | Region vs. Oklahoma | | | | | | |
| | Contribution to Personal Income | OGS | DCS | SCS | Total | | | |
| Transfer Receipts | 18.84 ↑ | 5,569 | 1,215 | -1,782 | 5,002 | | | |
| Healthcare | 7.17 ↑ | 2,132 | 380 | -672 | 1,839 | | | |
| Transportation and Warehousing | 6.69↑ | 2,129 | 2,834 | -3,979 | 983 | | | |
| Construction | 4.21 ↑ | 1,418 | 819 | -2,628 | 209 | | | |
| Profession and Technical Services | 3.82 ↑ | 1,164 | 596 | -926 | 834 | | | |
| Dividends, Interest, and Rent | 18.42↓ | 5,368 | 3,215 | -3,277 | 5,306 | | | |
| Government | 12.84 ↓ | 4,014 | -1,121 | -622 | 2,270 | | | |
| Mining | 6.70↓ | 2,868 | -8,428 | 2,681 | -2,879 | | | |
| Durable Goods | 4.27↓ | 1,294 | -667 | 347 | 973 | | | |
| Retail Trade | 3.91↓ | 1,314 | -177 | -925 | 212 | | | |
| Total | 86.87% | 27,269 | -1,335 | -11,183 | 14,749 | | | |

Table 7: Selected Summary of Results

Source: Tables 5 and 9

In Table 7, which focuses on the region versus Oklahoma, six sectors (Transfer Receipts = \$1,215 million, Healthcare = \$380 million, Transportation and Warehousing = \$2,834 million, Construction = \$819 million, Professional and Technical Services = \$596 million, and Dividends, Interest, and Rent = \$3,215 million) had positive differential-composition shares (DCS) and are considered fast-growth in the region. However, just as in Table 6, each of the sectors had negative sector-competitive shares (SCS), indicating that these six sectors are growing slower in Oklahoma than in the surrounding region.

Additionally, four sectors (Transportation and Warehousing, Construction, Professional and Technical Services, and Dividends, Interest, and Rent) had positive differentialcompositional shares (DCS) in both Table 6 and Table 7. However, as noted earlier, the positives were offset by negative sector-competitive shares (SCS) in both tables. Examining the total values in both tables shows DCS totals of -\$6,072 million in Table 6 and -\$1,335 million in Table 7 as well as SCS totals of -\$13,514 million (Table 6) and -\$11,183 million (Table 7). These negatives combine to significantly affect the overall-growth shares (OGS) of 34,335 million (Table 6) and 27,269 million (Table 7), resulting in weak growth in Oklahoma personal income in the post-recession period. Finally, it should be noted that the most significantly negative DCS sector is Mining (-88,278 million in Table 6 and =-88,428 million in Table 7).

| | | | | | 2012 2010 | | | |
|--------------------------|--------|-------|-------|--------|-----------|--------|---------|--------|
| Sector | | 2002- | 2007 | | | 2013- | 2018 | |
| Sector | OGS | DCS | SCS | Total | OGS | DCS | SCS | Total |
| Farm income | 305 | 261 | -869 | -304 | 428 | -1,169 | -199 | -940 |
| Forestry/Fishing | 34 | -25 | 20 | 29 | 45 | 5 | 32 | 81 |
| Mining | 652 | 863 | 6,356 | 7,871 | 3,612 | -8,278 | 1,787 | -2,879 |
| Utilities | 285 | -123 | 87 | 249 | 373 | -89 | -395 | -111 |
| Construction | 1,187 | -112 | 68 | 1,143 | 1,785 | 1,166 | -2,743 | 209 |
| Durable Goods | 1,490 | -878 | 557 | 1,168 | 1,629 | -410 | -246 | 973 |
| Nondurable Goods | 813 | -555 | 1,548 | 1,806 | 755 | -331 | -219 | 204 |
| Wholesale Trade | 936 | -69 | -170 | 697 | 1,093 | -404 | -598 | 91 |
| Retail Trade | 1,512 | -771 | -78 | 663 | 1,654 | -390 | -1,052 | 212 |
| Transportation | 792 | -36 | 336 | 1,092 | 2,680 | 1,042 | -2,739 | 983 |
| Information | 543 | -287 | -91 | 165 | 435 | 75 | -180 | 330 |
| Finance/Insurance | 871 | 54 | -219 | 706 | 1,013 | -19 | -301 | 694 |
| Real Estate | 346 | -431 | 349 | 264 | 546 | 353 | -1,268 | -369 |
| Professional Svcs | 1,090 | 258 | -32 | 1,315 | 1,466 | 386 | -1,017 | 834 |
| Management | 274 | 113 | -177 | 210 | 302 | 41 | 338 | 681 |
| Administrative | 815 | 148 | 214 | 1,177 | 1,099 | 159 | -647 | 611 |
| Education | 162 | 45 | -46 | 162 | 214 | -46 | -72 | 96 |
| Healthcare | 1,989 | 172 | 68 | 2,229 | 2,684 | -77 | -768 | 1,839 |
| Arts/Entertainmen | | | | | | | | |
| t | 101 | 10 | -49 | 61 | 135 | 22 | 129 | 286 |
| Accommodations | 737 | -84 | -243 | 409 | 786 | 293 | -423 | 655 |
| Other Services | 906 | -330 | -188 | 388 | 930 | -138 | -281 | 511 |
| Governments | 4,237 | -410 | 554 | 4,380 | 5,054 | -2,176 | -608 | 2,270 |
| plus: Adjustment | | | | | | | | |
| for residence | 307 | -329 | -116 | -138 | 114 | -218 | 50 | -54 |
| plus: Dividends, | | | | | | | | |
| interest, and rent | 5,233 | 2,550 | 47 | 7,830 | 6,759 | 2,960 | -4,413 | 5,306 |
| plus: Personal | | | | | | | | |
| current transfer | | | | | | | | |
| receipts | 4,694 | 509 | 1,146 | 6,349 | 7,012 | -295 | -1,715 | 5,002 |
| less: Contributions | | | | | | | | |
| for OASDHI | 2,256 | -228 | 309 | 2,337 | 2,851 | -83 | -1,278 | 1,491 |
| Total | 28,054 | 769 | 8,763 | 37,586 | 39,752 | -7,455 | -16,271 | 16,026 |

Table 8: Shift-share Analysis Results - Personal Income Changes for each Period United States versus Oklahoma (millions of dollars)

| Sector | 2002-2007 | | | | 2013-2018 | | | |
|--|-----------|-------|-------|--------|-----------|--------|---------|--------|
| Sector | OGS | DCS | SCS | Total | OGS | DCS | SCS | Total |
| Farm income | 348 | -27 | -624 | -304 | 340 | -1,086 | -194 | -940 |
| Forestry/Fishing | 39 | -32 | 22 | 29 | 35 | 11 | 35 | 81 |
| Mining | 745 | 1,707 | 5,419 | 7,871 | 2,868 | -8,428 | 2,681 | -2,879 |
| Utilities | 326 | -246 | 170 | 249 | 296 | -47 | -361 | -111 |
| Construction | 1,357 | -509 | 295 | 1,143 | 1,418 | 819 | -2,028 | 209 |
| Durable Goods | 1,703 | -798 | 263 | 1,168 | 1,294 | -667 | 347 | 973 |
| Nondurable Goods | 929 | -266 | 1,144 | 1,806 | 599 | -438 | 43 | 204 |
| Wholesale Trade | 1,070 | 187 | -559 | 697 | 868 | -262 | -515 | 91 |
| Retail Trade | 1,728 | -938 | -127 | 663 | 1,314 | -177 | -925 | 212 |
| Transportation | 905 | -244 | 431 | 1,092 | 2,129 | 2,834 | -3,979 | 983 |
| Information | 621 | -228 | -228 | 165 | 345 | -263 | 248 | 330 |
| Finance/Insurance | 996 | -16 | -274 | 706 | 805 | 8 | -120 | 694 |
| Real Estate | 396 | -294 | 163 | 264 | 434 | 521 | -1,323 | -369 |
| Professional Svcs | 1,246 | 139 | -70 | 1,315 | 1,164 | 596 | -926 | 834 |
| Management | 313 | 207 | -310 | 210 | 240 | 410 | 31 | 681 |
| Administrative | 931 | 402 | -156 | 1,177 | 873 | 158 | -420 | 611 |
| Education | 186 | -11 | -13 | 162 | 170 | -14 | -60 | 96 |
| Healthcare | 2,273 | -457 | 414 | 2,229 | 2,132 | 380 | -672 | 1,839 |
| Arts/Entertainmen t | 115 | -58 | 4 | 61 | 107 | 120 | 59 | 286 |
| Accommodations | 842 | -199 | -234 | 409 | 624 | 464 | -433 | 655 |
| Other Services | 1,035 | -375 | -272 | 388 | 738 | -25 | -203 | 511 |
| Governments | 4,843 | -810 | 348 | 4,380 | 4,014 | -1,121 | -622 | 2,270 |
| plus: Adjustment for residence | 351 | -137 | -352 | -138 | 90 | -70 | -74 | -54 |
| plus: Dividends, interest, and rent | 5,981 | 2,274 | -425 | 7,830 | 5,368 | 3,215 | -3,277 | 5,306 |
| plus: Personal current transfer receipts | 5,365 | 1,036 | -52 | 6,349 | 5,569 | 1,215 | -1,782 | 5,002 |
| less: Contributions for OASDHI | 2,578 | -301 | 59 | 2,337 | 2,265 | 379 | -1,153 | 1,491 |
| Total | 32,063 | 604 | 4,918 | 37,586 | 31,569 | -2,227 | -13,317 | 16,026 |

Table 9: Shift-share Analysis Results - Personal Income Changes for each Period Region versus Oklahoma (millions of dollars)

| Sector | 2002-2007 | | | | 2013-2018 | | | |
|--|-----------|---------|--------|---------|-----------|---------|---------|---------|
| Sector | OGS | DCS | SCS | Total | OGS | DCS | SCS | Total |
| Farm income | 2,389 | 2,046 | -1,920 | 2,514 | 4,375 | -11,958 | -51 | -7,634 |
| Forestry/Fishing | 609 | -450 | -39 | 120 | 672 | 79 | -44 | 707 |
| Mining | 7,969 | 10,554 | 11,446 | 29,969 | 26,693 | -61,176 | -6,605 | -41,088 |
| Utilities | 3,022 | -1,305 | -876 | 841 | 2,975 | -710 | -278 | 1,988 |
| Construction | 19,559 | -1,851 | -3,748 | 13,960 | 22,463 | 14,674 | -9,000 | 28,137 |
| Durable Goods | 21,045 | -12,403 | 4,141 | 12,783 | 19,885 | -5,005 | -7,227 | 7,653 |
| Nondurable Goods | 11,803 | -8,061 | 5,879 | 9,620 | 12,213 | -5,359 | -4,243 | 2,610 |
| Wholesale Trade | 14,222 | -1,053 | 5,921 | 19,089 | 18,480 | -6,833 | -1,405 | 10,241 |
| Retail Trade | 18,480 | -9,428 | 598 | 9,651 | 19,299 | -4,548 | -1,490 | 13,261 |
| Transportation | 11,931 | -545 | -1,429 | 9,956 | 15,218 | 5,916 | 7,040 | 28,174 |
| Information | 8,541 | -4,515 | 2,151 | 6,178 | 7,594 | 1,316 | -7,467 | 1,444 |
| Finance/Insurance | 14,049 | 866 | 882 | 15,796 | 19,633 | -372 | -3,507 | 15,755 |
| Real Estate | 5,038 | -6,267 | 2,705 | 1,476 | 6,359 | 4,111 | 642 | 11,112 |
| Professional Svcs | 20,677 | 4,890 | 711 | 26,277 | 27,922 | 7,355 | -1,750 | 33,526 |
| Management | 3,735 | 1,543 | 1,818 | 7,096 | 6,320 | 857 | 6,424 | 13,601 |
| Administrative | 9,474 | 1,717 | 4,311 | 15,502 | 13,998 | 2,030 | -2,897 | 13,131 |
| Education | 2,369 | 655 | -479 | 2,545 | 3,457 | -741 | -199 | 2,517 |
| Healthcare | 24,575 | 2,129 | -4,269 | 22,435 | 32,631 | -939 | -1,162 | 30,531 |
| Arts/Entertainmen t | 1,855 | 180 | -976 | 1,058 | 2,336 | 382 | 1,213 | 3,930 |
| Accommodations | 7,870 | -895 | -103 | 6,872 | 9,595 | 3,573 | 117 | 13,286 |
| Other Services | 10,264 | -3,735 | 947 | 7,476 | 11,789 | -1,751 | -993 | 9,045 |
| Governments | 43,535 | -4,218 | 2,117 | 41,434 | 52,519 | -22,615 | 154 | 30,058 |
| plus: Adjustment for residence | -1,014 | 1,089 | -780 | -705 | -1,327 | 2,543 | -1,454 | -238 |
| plus: Dividends, interest, and rent | 54,070 | 26,349 | 4,870 | 85,289 | 75,913 | 33,248 | -12,764 | 96,397 |
| plus: Personal current transfer receipts | 47,047 | 5,099 | 12,011 | 64,156 | 73,630 | -3,096 | 703 | 71,237 |
| less: Contributions for OASDHI | 27,124 | -2,746 | 3,007 | 27,385 | 33,780 | -980 | -1,481 | 31,320 |
| Total | 335,989 | 5,136 | 42,881 | 384,006 | 450,863 | -48,038 | -44,763 | 358,061 |

Table 10: Shift-share Analysis Results - Personal Income Changes for each Period United States versus Region (millions of dollars)

5. Conclusions

Mindful of the potential of some of the industries identified above, Oklahoma has taken steps in several of its potentially high-growth sectors to enhance its ability to compete in these areas [see Rickman & Wang (2019) and Wilkerson & Shupert (2019)]. In the case of healthcare, with the University of Oklahoma hosting a nationally ranked trauma center [Zizzo (2010)] and the Oklahoma State University Medical Center as the nation's largest osteopathic teaching hospital in Tulsa, Healthcare is potentially a high-growth sector for the state. The state's attempts to meet Oklahoma's healthcare needs through mergers with struggling, private, providers, has the benefit of not only addressing past deficiencies, but also training more physicians [Muchmore (2013)].

Transportation and Warehousing benefits from Oklahoma's access to major interstate freeways, as noted above, as well as the American Airlines maintenance facility in Tulsa [Sloan (2016)]. As a complement to other facilities in nearby Missouri and Texas, the airlines industry will continue to be a significant source of income for Oklahomans.

Fracking enabled the state to extract more oil than was previously thought possible but has come with its share of bad press [Boyd (2002)]. Neighboring states, such as Arkansas, Louisiana, Texas, and even New Mexico, will continue to compete heavily in minerals [Bryan (2019)]. As the price of oil and natural gas continue to trend downward, alternative industries will have to supplement the Minerals sector.

Throughout 2019, the governor has negotiated with tribal councils to adjust the share of profits from casino gambling that the state collects [Eger (2019), Forman (2019), and Payne (2019)]. However, even if the governor is successful, this revenue stream may be diminished by the recent election in neighboring Arkansas which authorizes the operation of four casinos in the state, at least one of which would be located along I-40 with close proximity to Oklahoma [Murphy (2019)]. If such funds are forthcoming, then the state would be wise to continue to invest in such high potential sectors as Transportation and Warehousing and Healthcare. As more medical and transportation facilities are built, the construction industry should also benefit. These three sectors can help to offset the volatility of minerals extraction.

6. Summary

1. Personal Income changes for the pre-recession period (2002-2007) and most recent postrecession period (2013-2018) are examined and compared for three entities: (1) the United States, (2) a region composed of Oklahoma plus contiguous states (Arkansas, Colorado, Kansas, Missouri, New Mexico and Texas) and referred to as the Oklahoma contiguous region, and (3) the state of Oklahoma.

| Entity | Pre-recession | | Post-recession | |
|---------------|---------------------------|--------|----------------|----------------|
| | Percentage Annual Rate of | | Percentage | Annual Rate of |
| | Change | Change | Change | Change |
| United States | 31.09% | 5.56% | 23.97% | 4.39% |
| Region | 35.53% | 6.27% | 19.03% | 3.55% |
| Oklahoma | 41.65% | 7.21% | 9.66% | 1.86% |

2. The percentage change and annual rate of increase for the pre-recession period and postrecession period were calculated for each entity:

- 3. The preceding table indicates that all three entities experienced a smaller percentage change and slower annual rates of change in the post-recession period. In particular, Oklahoma moved from the largest in both categories in the pre-recession period to the smallest in both categories in the post-recession period. The surrounding region remained in the middle during both periods.
- 4. The summary of the shift-share results (Table 3) indicates that, in the aggregate in the postrecession period, the combined personal income sectors are composed of slow-growth sectors (negative differential-compositional shares compared to both the nation and the region) and underperforming sectors (negative sector-competitive shares compared to both the nation and the region).
- 5. In the sector analysis of Oklahoma performance relative to the nation (Table 6) and region (Table 7), the state had negative sector-competitive shares in almost all its top ten sectors (all ten when compared to the United States and eight when compared to the region).
- 6. Four sectors: Transportation and Warehousing, Construction, Professional and Technical Services, and Dividends, Interest, and Rent, had positive differential-compositional shares compared to both the nation and region. However, in both comparisons, the positives were offset by a significant negative DCS component in the Mining sector.
- 7. A final observation is that future growth in Oklahoma personal income may be driven by fast-growth sectors identified directly above. In particular, two sectors: Transportation and Warehousing, an important sector regionally, and Construction, always important in economic recovery, seem to stand out as potentially strong sectors.

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Creating an Index to Measure Transparency in Arkansas Counties

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Abstract

We create a web transparency index for Arkansas counties. The index serves two main purposes. First, it informs citizens about how transparent their county is in comparison to others. Second, it allows researchers to assess the relationship between transparency and various economic and socioeconomic factors. The index divides transparency into three types: fiscal, political, and administrative. This categorization allows researchers and policy makers to pin down the type of transparency that yields the most benefit for citizens. Our assessment of the index reveals a deficiency of information on Arkansas counties' websites. Only 4 out of the 75 counties in Arkansas have an overall transparency score above 0.50 on a 0-1 scale. An empirical analysis of the determinants of web transparency reveals that education and population are key factors that explain differences in web transparency across Arkansas counties. More educated counties have higher transparency score than less educated ones. Similarly, more populous counties have higher transparency score than less populous ones.

Keywords: web transparency, fiscal transparency, political transparency, administrative transparency, transparency index, Arkansas

1. Introduction

Transparency is a key ingredient in promoting good governance (Transparency International, 2016). Transparency enhances accountability, instills fiscal discipline, improves economic performance, promotes trust between governments and citizens, and reduces corruption (Cucciniello, Porumbescu, and Grimmelikhuijsen, 2017). With such a vast range of benefits, improving transparency should be a top priority at all levels of government. The challenge, however, is this: How does one assess improvements in government transparency without a consistent measure of transparency? To that end, the Arkansas Center for Research in Economics (ACRE) has embarked on a transparency project that seeks to improve transparency at Arkansas's local government level. To achieve this goal, we have created a transparency index for Arkansas counties that will be updated regularly to assess improvements in county government transparency. The transparency index will serve two main purposes. First, it will inform citizens about the level of transparency in their counties and the improvements their county governments are making and need to make. Second, the index will provide researchers and policy makers with data to analyze the relationship between transparency and several economic and socioeconomic factors in Arkansas.

As noted, we currently focus on county-level governments rather than state-level government. County governments are just as important as state governments and to some extent even more important because of their closeness to citizens. For example, counties provide law enforcement, firefighting, paramedics, waste removal, and water. Despite this closeness, information on counties' decision-making processes and policy outcomes is not readily available and accessible to voters. A 2013 Sunshine Review of web transparency across the nation revealed that state governments are more transparent than local governments. In Arkansas, the state government earned a B compared to an F for its county governments. Indeed, Arkansas counties were the worst in the nation. Thus, our goal is to create awareness about the state of transparency in Arkansas counties and encourage counties to improve their transparency status. Further, to the best of our knowledge, none of Arkansas's neighboring states have a county-level transparency index. We hope our leadership will inspire neighboring states to create their own indices.

Our transparency index is calculated by assessing information that county governments publish on their websites. Web transparency is a good proxy for county transparency given the web's increased role as a platform for accessing information (Welch and Hinnant, 2003), as a medium of interaction (Shi, Scavo and Garson, 2000), and as a tool for promoting government transparency (Bovens and Zouridis, 2002; Lowatcharin and Menifield, 2015). Data from the Pew Research Center show that the percentage of people using the internet has grown from 52 percent in 2000 to 89 percent in 2018 (Anderson, Perrin and Jiang, 2018) and that 81 percent of adults get news on online platforms (Mitchell, Shearer, Gottfried and Barthel, 2016)

Our index is not the first attempt to assess county governments' web presence in Arkansas. Warner (2015) assesses Arkansas county websites, but her focus is on e-government, the provision of government services through the web. Our assessment closely resembles Harder and Jordan's (2013), with a few notable differences. Aside from our index being the most current assessment, it has two other unique features. First, instead of just creating an overall transparency score, we categorize our index into three types of transparency: fiscal, political, and administrative, as proposed by Cucciniello and Nasi (2014). This categorization allows researchers and policy makers to pin down the type of transparency that yields the most benefit for citizens. Second, in categories where past information is included, such as budgets, audits, and contracts, we assign more weight to the current information.

The paper is organized as follows. The next section discusses the components and calculation of our index. We then provide the results of our assessment for each type of transparency and for overall transparency. After that, we statistically analyze the characteristics of more transparent counties compared to less transparent counties. Section 5 concludes and suggests future projects that can benefit from this index.

2. The New Transparency Index for Arkansas Counties

Defining the Three Types of Transparency

Our overall transparency index is made up of three subindices: fiscal transparency, political transparency, and administrative transparency. In this section, we define each type of transparency and discuss the components of each. We adopt the definitions provided by Cucciniello, Porumbescu, and Grimmelikhuijsen (2017).

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Fiscal transparency is defined as the disclosure of financial information. Our fiscal transparency score thus comprises three components: budgets, audits, and fees and taxes. Budgets inform citizens about the level of government resources and how the government intends to spend those resources. Budget scrutiny by the citizenry can deter elected officials from directing resources toward unproductive projects. Financial statements provide information about the use of resources. Making such information easily accessible to voters can encourage elected officials to be prudent in the use of the resources, knowing that voters can check how responsible they were. Citizens need to know the burden they bear in providing resources to the government. Such knowledge makes them more willing to hold elected officials accountable if they misappropriate funds. Each of the three components comprise subcomponents. Table A1 in appendix A provides the subcomponents included in our measure of fiscal transparency.

Political transparency relates to the openness of elected officials and the quorum courts. Our political transparency score comprises three components: openness of the quorum courts; information about elected officials; and financial disclosures, conflict of interest statements, and salaries. An open quorum court encourages citizen participation, which is essential in providing scrutiny to the ordinances that affect their daily lives. Citizen participation should also deter the quorum court from abusing the allocation of funds to benefit certain individuals or groups. Knowing elected officials' contact information and job descriptions is important, too, as this information makes it easier for citizens to engage with their elected officials in the policy making process. Disclosure of conflict of interest statements is important for preventing corruption. Table A2 in appendix A provides the subcomponents included in our measure of political transparency.

Administrative transparency relates to the openness of the activities and processes of local officials. It comprises four components: public records, building permits and zoning, government contracts, and jobs. Making public information easy to access can deter government officials from engaging in dubious activities. It can also increase the chances of detecting dubious activities. Being open about the permit application process reduces the likelihood of favoritism and bribery. Similarly, openness in the bidding process adds a layer of scrutiny that can deter officials from favoritism in the awarding of contracts. The same applies to openness in hiring procedures. Table A3 in appendix A provides the subcomponents included in our measure of administrative transparency.

Calculating the Index

In beginning our study, we reviewed existing assessments to determine what they included in their web transparency indices. Previous assessments emphasize aspects of transparency such as the display of budgets and tax information (Fox 2007). Piotrowski and Van Ryzin (2007) and Armstrong (2011) add elected official information, open meetings, government contracts, criminal records, and public records. West (2007) includes foreign language access and search functions. Sunshine Review (2013) adds lobbying, audits, and permits. We drew most frequently from Harder and Jordan's (2013) assessment, since it incorporates all information from earlier assessments and also assesses Arkansas counties. Our goal, however, is to emphasize the transparency of information that can assist in detecting and deterring corruption. We omit from our index measures that require a value judgment, such as readability and presentation. Although counties should certainly ensure that information is readable and presentable, assessing these factors is beyond the scope of our project. We encourage other

researchers to look at these characteristics in their own studies.

After identifying the components and subcomponents that comprise each type of transparency, we assessed the availability of information on each county's website. First, we used a Google search of the county name to find each county's website. We then searched for information related to each type of transparency separately, moving from fiscal to political to administrative and timing our search for each type. On average, we required 14 minutes of searching to locate information on fiscal transparency, 7 minutes to locate information on political transparency, and 17 minutes to locate information on administrative transparency. We spent more time locating information on stand-alone county websites, which differ in architecture and nomenclature, than we did locating information stored on Arkansas.gov. There is little information on Arkansas.gov, and it is uniformly presented, which decreases search time. However, the only information published on the Arkansas.gov platform pertains to political transparency.

We coded a value of 1 if the information was available on the website and 0 if it was not. The only exception was the information on elected officials. We entered fractions if some elected officials did not have their information available. The cutoff date for our assessment was December 31, 2017. Once all the information was collected, we calculated scores for each type of transparency before calculating the overall transparency score. To illustrate how we calculated the index, we present the case of Washington County in each type of transparency in tables B1, B2, and B3 in appendix B.

In addition to the three types of transparency, we also include a fourth item: Does the website have a working search bar? A working search bar—one that actually yields the results the user is looking for—makes it easier to find information on the website. Only 16 counties had a working search bar. The rest either did not have a search bar, or the search returned no results. To avoid detracting from the importance of the three types of transparency, we assign a value of 0.5 if a website has a working search bar and a 0.0 if not.

To calculate the final score, we sum the four items and divide by the total possible points (3.5). Thus, the overall score for Washington County is calculated as follows:

(fiscal transparency score + political transparency score + administrative transparency score + search bar score) / total possible points = (0.77 + 0.83 + 0.83 + 0.5) / 3.5 = 0.84

3. The State of Transparency in Arkansas Counties

In this section, we describe the performance of Arkansas counties in each of the three types of transparency and in overall transparency. Tables C1, C2, C3, and C4 in appendix C provide the results of our assessment of Arkansas counties.

Fiscal Transparency

The mean fiscal transparency score for Arkansas counties is 0.072. The median and mode are 0. To show the distribution of Arkansas counties' fiscal transparency levels, we have graphed the histogram shown in Figure 1.



Figure 1: Distribution of Fiscal Transparency in Arkansas

Notice that 49 out of 75 counties in Arkansas have a fiscal transparency score of 0. All but three counties have a fiscal transparency score below 0.5. Arkansas's county governments need to improve their online disclosure of financial information. From our analysis, the most affected component of fiscal transparency is the publishing of audit reports. While these reports are published on the Arkansas Legislative Audit website, they should be made more accessible to citizens. An easy and quick fix to this shortcoming is to add to the county website a link directing citizens to the Arkansas Legislative Audit website. Audited financial reports take time which raises the question of the timeliness and usefulness of financial information by the time the reports come out. One way to get around this problem would be to provide unaudited financial reports as soon as they are available and provide updated ones when the audit is completed. Table 1 provides a further breakdown of each subcomponent of fiscal transparency.

| I tansparency | | | | |
|------------------------------|---------|-------|--|--|
| Subcomponent | Average | Count | | |
| Current budget | 0.107 | 8 | | |
| Previous year's budget | 0.120 | 9 | | |
| Two years prior's budget | 0.093 | 7 | | |
| Three years prior's budget | 0.080 | 6 | | |
| Current audit | 0.000 | 0 | | |
| Previous year's audit | 0.013 | 1 | | |
| Two years prior's audit | 0.027 | 2 | | |
| Three years prior's audit | 0.027 | 2 | | |
| County fees | 0.293 | 22 | | |
| Property tax rates | 0.147 | 11 | | |
| General sales tax rates | 0.053 | 4 | | |
| Special sales tax rates | 0.027 | 2 | | |
| All of the above on a single | | | | |
| webpage | 0.000 | 0 | | |

Table 1: Proportion and Number of Arkansas Counties Publishing Each Subcomponent of Fiscal Transparency

The second column in table 1 shows the average of each subcomponent of fiscal transparency, which is also the proportion of Arkansas counties that publish that information online. The third column shows the number of counties that publish that subcomponent of fiscal transparency. No county in Arkansas has published their current audited financial statements, perhaps because of the auditing lag mentioned previously. The most frequently reported subcomponent is county fees, which 22 of the 75 counties publish.

Political Transparency

The mean political transparency score for Arkansas counties is 0.283. The median is 0.267, and mode is 0.050. The histogram in Figure 2 paints a clear picture of the distribution of political transparency for Arkansas counties.



Figure 2: Distribution of Political Transparency for Arkansas Counties

Compared to the other types of transparency, Arkansas counties perform better on political transparency. But as the histogram shows, most counties have a score below 0.50. Table 2 provides a further breakdown of political transparency by each subcomponent.

| Subcomponent | Average | Count |
|--|---------|-------|
| Quorum courts meetings: time and place notices | 0.236 | 18 |
| Quorum courts meetings: agenda | 0.160 | 12 |
| Quorum courts meetings: minutes | 0.147 | 11 |
| Quorum courts meetings: archived videos | 0.053 | 4 |
| Elected officials' names | 0.808 | 61 |
| Elected officials' office phone numbers | 0.803 | 60 |
| Elected officials' emails | 0.554 | 42 |
| Elected officials' office locations | 0.687 | 52 |
| Elected officials' job descriptions | 0.444 | 33 |
| Financial disclosure and conflict of interest statements | 0.000 | 0 |
| Salaries | 0.014 | 1 |

Table 2: Proportion and Number of Arkansas Counties PublishingEach Subcomponent of Political Transparency

The second column in table 2 shows the average of each subcomponent of political transparency, which is also the proportion of Arkansas counties that publish that information online. The third column shows the number of counties that publish that particular subcomponent of political transparency. No county in Arkansas publishes financial disclosure and conflict of interest statements for elected officials. About 80 percent of the counties publish the names and office phone numbers of their elected officials.

Administrative Transparency

With a mean score of 0.063 and a median and mode of 0, administrative transparency is

the weakest area for Arkansas counties (compare 0.063 with a mean of 0.072 for fiscal transparency and 0.283 for political transparency). The histogram in figure 3 provides a clear picture of the distribution of administrative transparency across Arkansas counties.



Figure 3: Distribution of Administrative Transparency for Arkansas Counties

Fifty-eight counties in Arkansas have an administrative transparency score of 0. Only two counties, Washington and Benton, have a score greater than 0.5. Table 3 shows each subcomponent of administrative transparency.

| Transparency | | | | |
|--------------------------------------|---------|-------|--|--|
| Subcomponent | Average | Count | | |
| Court records | 0.133 | 10 | | |
| FOIA request contact person | 0.040 | 3 | | |
| FOIA contact information | 0.068 | 5 | | |
| FOIA request forms | 0.080 | 6 | | |
| Permit applications | 0.040 | 3 | | |
| Building permit holders | 0.000 | 0 | | |
| Planning board meeting announcements | 0.053 | 4 | | |
| Planning board agendas | 0.040 | 3 | | |
| Planning board minutes | 0.027 | 2 | | |
| Current RFPs | 0.067 | 5 | | |
| Archived RFPs | 0.027 | 2 | | |
| Current year bids and bid winners | 0.013 | 1 | | |
| Archived bids and bid winners | 0.013 | 1 | | |
| (Hiring) Job titles | 0.120 | 9 | | |
| (Hiring) Position descriptions | 0.093 | 7 | | |

Table 3: Proportion and Number of Arkansas Counties Publishing Each Subcomponent of Administrative Transparency

The second column in table 3 shows the average of each subcomponent of administrative transparency, which is also the proportion of Arkansas counties that publish that information

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online. The third column shows the number of counties that publish that particular subcomponent of administrative transparency. Ten counties in Arkansas (13 percent) have a link that directs visitors to CourtConnect, a database of court cases. Residents can view charges that have been brought up against their elected officials.

Overall Transparency

Having evaluated each of the three types of transparency, we then calculated the overall transparency score for Arkansas counties by combining the fiscal, political, and administrative transparency scores. We also included a fourth item: whether the website has a workable search bar, as described earlier.

The mean of the overall transparency score is 0.15. The median and mode are 0.09 and 0.01, respectively. Figure 4 shows a histogram of the distribution of overall transparency in Arkansas counties.



Figure 4: Distribution of Overall Transparency in Arkansas

From figure 4, we observe that the majority of counties have an overall transparency score of less than 0.5. Only four counties—Washington, Pulaski, Benton, and Garland—have an overall transparency score of greater than 0.5.

4. Statistical Analysis of the Determinants of County-Level Government Transparency in Arkansas

From our assessment of Arkansas counties' web transparency, we observed variation in the level of transparency across counties. This analysis would not be complete if we did not attempt to explain why some counties are more transparent than others. While not establishing any causality, our statistical analysis tries to identify the economic, socioeconomic, and demographic characteristics that distinguish more transparent counties from less transparent ones. Two variables of interest are education level and per capita income. We expect that counties with a more educated population are likely to be more transparent than those with a less educated population. From an information demand side, an educated population has the advantage of having a better understanding of public data and, therefore, is more likely to demand that the information be published online. From an information supply side, an educated population increases the likelihood of counties hiring IT personnel who can create and manage websites.

Per capita income is used as a measure of how economically well-off counties are. We expect that counties that are economically better off are able to generate more resources to publish public information online. We control for the following variables: population density, median age, racial composition, and voter turnout. Voter turnout is included to capture citizens' participation level, with the understanding that the higher the voter turnout, the more interested the voters are in government affairs, and the higher the demand for transparency. Table 4 provides the results of the ordinary least squares regression of the determinants of web transparency in Arkansas counties.

| Table 4: Determinants of Web Transparency in Arkansas | | | | | |
|---|---------------|----------------|----------------|----------------|--|
| (OLS regression) | | | | | |
| | Overall | Fiscal | Political | Administrative | |
| Education level (%) | 0.0159^{**} | 0.0232^{***} | 0.0205^{**} | 0.0129 | |
| | (0.0069) | (0.0075) | (0.0088) | (0.0089) | |
| White (%) | -0.0013 | -0.0007 | -0.0016 | -0.0014 | |
| | (0.0009) | (0.0008) | (0.0011) | (0.0009) | |
| Median age | 0.0133*** | 0.0108^* | 0.0159^{***} | 0.0113*** | |
| | (0.0043) | (0.0060) | (0.0057) | (0.0041) | |
| Log of per capita | | | | | |
| income | -0.0006 | -0.0985 | -0.0466 | 0.0926 | |
| | (0.0991) | (0.0890) | (0.1672) | (0.1230) | |
| Log of population | | | | | |
| density | 0.1336*** | 0.1060^{***} | 0.1095^{***} | 0.0986^{***} | |
| | (0.0234) | (0.0290) | (0.0313) | (0.0285) | |
| Voter turnout | 0.0031 | 0.0037 | 0.0028 | 0.0013 | |
| | (0.0026) | (0.0028) | (0.0034) | (0.0023) | |
| Ν | 75 | 75 | 75 | 75 | |
| F | 9.21 | 5.61 | 5.60 | 3.62 | |
| R-squared | 0.571 | 0.518 | 0.349 | 0.392 | |
| | | ale ale ale | 44 4 | | |

Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

The results show a positive relationship between education and overall fiscal transparency. This finding implies that counties with a larger percentage of people with a bachelor's degree or higher are more transparent than those with a smaller percentage. The result, while significant for overall transparency, fiscal transparency, and political transparency, is not significant for administrative transparency. No evidence supports income as an important determinant of transparency at Arkansas's county government level. We do find evidence that median age and population density are positively related to transparency. The higher the median age, the more transparent a county is. Similarly, the higher the population density, the more transparent a county is.

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5. Conclusion and Way Forward

The 2013 Sunshine Review gave Arkansas an F for web transparency. Our 2018 assessment shows why. Even without comparing Arkansas to other states, Arkansas counties do not provide sufficient information online. An average overall score of 0.15 on a 0 to 1 scale indicates a great deficiency in the publishing of public information.

Our assessment yields different results from Harder and Jordan (2013). Their assessment revealed that the top 5 most transparent counties were Benton, Washington, Pulaski, Sebastian and Faulkner in that order. Our assessment found that the top 5 performers were Washington, Benton, Pulaski, Garland and Baxter. This difference has two possible sources. First, our index emphasizes objective information only, while Harder and Jordan's allowed some level of subjectivity for some sub-indicators such general information about taxes and general information about auditing procedures. We also did not place a time limit for our search as Jordan and Harder. Second, some counties may have made some improvements since 2013 to displace each other. For example, Washington County is by far the most transparent county in Arkansas overtaking Benton County which was 2 points above (28 for Benton and 26 for Washington out of a possible 34 points) on the Harder and Jordan index. On our index Washington County's score is 0.84 compared to Benton County's score of 0.62 on a 0-1 scale. Our major contribution is that we break down transparency into three types—fiscal, political, and administrative-to allow counties identify the specific areas where they do not perform well. From the regression analysis of the determinants of transparency, we see that level of education is positively associated with transparency. Since education policy is affected at the state level, the state can indirectly play a role in improving overall transparency in Arkansas by instituting policies that will improve education in the whole state.

Apart from being a tool that citizens can use to assess how transparent their county governments are, the index enables researchers and policy makers to better understand the benefits of transparency in Arkansas. Without a measure of transparency, this task is a challenge. Our next paper will examine the relationship between transparency and fiscal discipline, examining whether counties that are more transparent have a higher level of fiscal discipline. In the future, we want to extend the exercise to city governments, municipal governments, and school districts.
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APPENDIX A: COMPONENTS AND SUBCOMPONENTS OF ARKANSAS WEB TRANSPARENCY

| Component | Subcomponents | Definition | | |
|-----------|--|---|--|--|
| | Current | 2017 plan that reveals county government's priorities | | |
| Dudget | Previous year | 2016 plan that reveals county government's priorities | | |
| Budget | Two years prior | 2015 plan that reveals county government's priorities | | |
| | Three years prior | 2014 plan that reveals county government's priorities | | |
| | Current | Certified 2016 financial statements | | |
| Andit | Previous year | Certified 2015 financial statements | | |
| Audit | Two years prior | Certified 2014 financial statements | | |
| | Three years prior | Certified 2013 financial statements | | |
| | County fees | Payments for use of services | | |
| | Property tax rates | Tax assessed on real estate | | |
| Fees and | General sales tax rates | Tax levied on sale of goods and services | | |
| Taxes | Special sales tax rates | Tax levied for a specific purpose | | |
| | All of the above (county fees & taxes) on a single webpage | All the county fees and taxes that the county levies, provided in one place | | |

Table A1: Fiscal Transparency

| Component | Subcomponents | Definition |
|---|----------------------------|---|
| | Meeting notices | Time and place where the meetings take place |
| Openness of | Meeting agendas | List of issues to be discussed at the meetings |
| quorum courts | Meeting minutes | Deliberations and resolutions of the meeting |
| | Archived meeting videos | Videos of deliberations in the quorum court |
| | Names | Names of the eight elected office holders |
| | Phone numbers | Office phone numbers for each of the eight |
| | | elected office holders |
| Information about | Email | Official email addresses for each of the eight |
| alacted officials | addresses | elected office holders |
| elected officials | Location | Office location addresses for each of the eight |
| | addresses | elected office holders |
| | Job descriptions | Duties of the elected officials |
| Financial disclosures, conflict of interest | Financial disclosure | A signed document showing whether an elected official is involved in multiple interests related to the their work |
| statements, and salaries | Salaries | Actual amounts received by elected officials |

Table A2: Political Transparency

| Component | Subcomponents | Definition |
|-------------------------|-----------------------------|-------------------------------------|
| | | Whom to contact for information |
| | FOIA request contact person | under FOIA |
| | FOIA request contact | |
| Public records | information | Email, phone number, and address |
| | FOIA request forms | Downloadable forms |
| | Court records | A link to CourtConnect |
| | Permit applications | Downloadable forms |
| Duilding | Permit holders | List of permit holders |
| Building permits and | Planning board meeting | |
| | announcements | Date and time of meetings |
| zonnig | Planning board agendas | What to discuss |
| | Planning board minutes | Meeting resolutions |
| | Current RFPs | Open RFPs |
| | Archived RFPs | Closed RFPs |
| Government | Current year bids and bid | List or searchable current bids and |
| contracts | winners | winners |
| | Archived bids and bid | Previous years' bids and bid |
| | winners | winners |
| | (Hiring) Job titles | Position being advertised |
| Jobs | (Hiring) Position | |
| | descriptions | Duties and required credentials |

| Table | A3: | Admin | istrative | Trans | narency |
|--------|-----|-------|-----------|----------|---------|
| I GOIC | | | | I I GIID | parency |

APPENDIX B: TRANSPARENCY IN WASHINGTON COUNTY, ARKANSAS

| ~ | ~ ~ |
|---|-------|
| Component | Score |
| Budget | 1.00 |
| Current budget | 1.00 |
| Previous year's budget | 1.00 |
| Two years prior's budget | 1.00 |
| Three years prior's budget | 1.00 |
| Average of previous years | 1.00 |
| Audit | 0.50 |
| Current audit | 0.00 |
| Previous year's audit | 1.00 |
| Two years prior's audit | 1.00 |
| Three years prior's audit | 1.00 |
| Average of previous years | 1.00 |
| Fees and taxes | 0.80 |
| County fees | 1.00 |
| Property tax rates | 1.00 |
| General sales tax rates | 1.00 |
| Special sales tax rates | 1.00 |
| All of the above (county fees & taxes) in the | |
| same spot on the website | 0.00 |
| Fiscal transparency score | 0.77 |

 Table B1: Washington County Fiscal Transparency

We first assign a value of 1 if the county publishes each of the subcomponents and 0 if the county does not. The scores for each of the components of fiscal transparency are calculated as follows:

budget score = (current budget + average of previous years) / 2 = 1.00audit score = (current audit + average of previous years) / 2 = 0.50fees and taxes score = average of the five subcomponents = 0.80

The fiscal transparency score of 0.77 is calculated by taking the average of the three components of fiscal transparency: (1.00 + 0.50 + 0.80) / 3.

| Component | Score |
|--|-------|
| Quorum courts meetings | 1.00 |
| Meeting notices | 1.00 |
| Meeting agendas | 1.00 |
| Meeting minutes | 1.00 |
| Archived meeting videos ¹ | 0.00 |
| Elected officials' contacts & duties | 1.00 |
| Names | 1.00 |
| Phone numbers | 1.00 |
| Email addresses | 1.00 |
| Location addresses | 1.00 |
| Job descriptions | 1.00 |
| Financial disclosure and salaries | 0.50 |
| Disclosure and conflict of interest statements | 0.00 |
| Salaries | 1.00 |
| Political transparency score | 0.83 |

Table B2: Washington County Political Transparency

Similar to fiscal transparency calculations, we first assign a value of 1 if the county publishes each of the subcomponents and 0 if the county does not. The scores for each of the components of fiscal transparency are calculated as follows:

quorum courts meetings score = (meeting notices + meeting agendas + meeting minutes) / 3 = 1.00

elected officials score = (names + phone numbers + email addresses + location addresses + job descriptions) / 4 = 1.00

financial disclosure and salaries = (disclosure and conflict of interest statements + salaries) / 2 = 0.50

The political transparency score of 0.83 for Washington County is calculated by taking the average of the three components of political transparency: (1.00 + 1.00 + 0.50) / 3.

¹ Archived videos are a substitute for meetings agenda and meetings minutes as citizens can go and watch the deliberations and be informed about the agenda as well as the minutes.

| Component | Score |
|--------------------------------------|-------|
| Public records | 0.50 |
| Court records | 1.00 |
| FOIA request contact person | 0.00 |
| FOIA request contact information | 0.00 |
| FOIA request forms | 1.00 |
| Building permits and zoning | 0.80 |
| Permit applications | 1.00 |
| Permit holders | 0.00 |
| Planning board meeting announcements | 1.00 |
| Planning board agenda | 1.00 |
| Planning board minutes | 1.00 |
| Government contracts | 1.00 |
| Current RFPs | 1.00 |
| Archived RFPs | 1.00 |
| Current year bids and bid winners | 1.00 |
| Archived bids and bid winners | 1.00 |
| Jobs | 1.00 |
| (Hiring) Job titles | 1.00 |
| (Hiring) Position descriptions | 1.00 |
| Administrative transparency score | 0.83 |

| Table B2: | Washington County Political |
|-----------|-----------------------------|
| | Transparency |

Similar to fiscal transparency and political transparency calculations, we first assign a value of 1 if the county publishes each of the subcomponents and 0 if the county does not. The scores for each of the components of fiscal transparency are calculated as follows:

public records score = (court records + FOIA request contact person + FOIA request contact information + FOIA request forms) / 4 = 0.50

building permits and zoning score = (permit applications + permit holders + planning board meeting announcements + planning board agenda + planning board minutes) / 5 = 0.80

government contracts score = (current RFPs + archived RFPs + current year bids and bid winners + archived bids and bid winners) / 4 = 1.00

jobs score = (job titles + position description) / 2 = 1.00

The administrative transparency score of 0.83 for Washington County is calculated by taking the average of the four components of political transparency: (0.50 + 0.80 + 1.00 + 1.00) / 4.

APPENDIX C: ARKANSAS COUNTY TRANSPARENCY RANKINGS

| Rank | County | Score | Rank | County | Score | Rank | County | Score |
|------|-------------|-------|------|--------------|-------|------|--------------|-------|
| 1 | Washington | 0.767 | 13 | White | 0.067 | 27 | Lincoln | 0.000 |
| 2 | Baxter | 0.533 | 27 | Arkansas | 0.000 | 27 | Little River | 0.000 |
| 2 | Pulaski | 0.533 | 27 | Ashley | 0.000 | 27 | Logan | 0.000 |
| 4 | Faulkner | 0.467 | 27 | Bradley | 0.000 | 27 | Lonoke | 0.000 |
| 5 | Carroll | 0.400 | 27 | Calhoun | 0.000 | 27 | Madison | 0.000 |
| 5 | Craighead | 0.400 | 27 | Clay | 0.000 | 27 | Marion | 0.000 |
| 7 | Van Buren | 0.344 | 27 | Cleburne | 0.000 | 27 | Mississippi | 0.000 |
| 8 | Benton | 0.300 | 27 | Cleveland | 0.000 | 27 | Monroe | 0.000 |
| 9 | Garland | 0.289 | 27 | Conway | 0.000 | 27 | Montgomery | 0.000 |
| 10 | Sevier | 0.200 | 27 | Crittenden | 0.000 | 27 | Nevada | 0.000 |
| 11 | Hempstead | 0.133 | 27 | Dallas | 0.000 | 27 | Newton | 0.000 |
| 11 | Pope | 0.133 | 27 | Desha | 0.000 | 27 | Ouachita | 0.000 |
| 13 | Boone | 0.067 | 27 | Drew | 0.000 | 27 | Perry | 0.000 |
| 13 | Chicot | 0.067 | 27 | Franklin | 0.000 | 27 | Phillips | 0.000 |
| 13 | Clark | 0.067 | 27 | Fulton | 0.000 | 27 | Pike | 0.000 |
| 13 | Columbia | 0.067 | 27 | Hot Springs | 0.000 | 27 | Poinsett | 0.000 |
| 13 | Crawford | 0.067 | 27 | Howard | 0.000 | 27 | Polk | 0.000 |
| 13 | Cross | 0.067 | 27 | Independence | 0.000 | 27 | Prairie | 0.000 |
| 13 | Grant | 0.067 | 27 | Izard | 0.000 | 27 | Randolph | 0.000 |
| 13 | Greene | 0.067 | 27 | Jackson | 0.000 | 27 | Scott | 0.000 |
| 13 | Miller | 0.067 | 27 | Jefferson | 0.000 | 27 | Searcy | 0.000 |
| 13 | Saline | 0.067 | 27 | Johnson | 0.000 | 27 | Sharp | 0.000 |
| 13 | Sebastian | 0.067 | 27 | Lafayette | 0.000 | 27 | Stone | 0.000 |
| 13 | St. Francis | 0.067 | 27 | Lawrence | 0.000 | 27 | Woodruff | 0.000 |
| 13 | Union | 0.067 | 27 | Lee | 0.000 | 27 | Yell | 0.000 |

Table C1: Fiscal Transparency

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| Rank | County | Score | Rank | County | Score | Rank | County | Score |
|------|------------|-------|------|--------------|-------|------|-------------|-------|
| 1 | Washington | 0.833 | 26 | Van Buren | 0.328 | 51 | Poinsett | 0.208 |
| 2 | Benton | 0.667 | 27 | Crawford | 0.317 | 52 | Crittenden | 0.200 |
| 2 | Garland | 0.667 | 27 | Hempstead | 0.317 | 52 | Jackson | 0.200 |
| 2 | Pulaski | 0.667 | 27 | Nevada | 0.317 | 52 | Randolph | 0.200 |
| 5 | Faulkner | 0.625 | 30 | Independence | 0.308 | 52 | Woodruff | 0.200 |
| 6 | Baxter | 0.556 | 31 | Cross | 0.300 | 56 | Perry | 0.194 |
| 6 | Craighead | 0.556 | 32 | St. Francis | 0.294 | 57 | Clark | 0.133 |
| 8 | Carroll | 0.533 | 33 | Columbia | 0.292 | 57 | Cleburne | 0.133 |
| 9 | Marion | 0.489 | 34 | Clay | 0.283 | 59 | Scott | 0.125 |
| 10 | Boone | 0.444 | 34 | Cleveland | 0.283 | 60 | Howard | 0.083 |
| 10 | Calhoun | 0.444 | 36 | Union | 0.275 | 61 | Arkansas | 0.050 |
| 10 | Chicot | 0.444 | 37 | Lafayette | 0.269 | 61 | Conway | 0.050 |
| 10 | Sebastian | 0.444 | 38 | Greene | 0.267 | 61 | Dallas | 0.050 |
| 14 | White | 0.428 | 38 | Johnson | 0.267 | 61 | Franklin | 0.050 |
| 15 | Stone | 0.422 | 38 | Sharp | 0.267 | 61 | Fulton | 0.050 |
| 16 | Miller | 0.411 | 41 | Montgomery | 0.258 | 61 | Lawrence | 0.050 |
| | | | | | | | Little | |
| 17 | Sevier | 0.394 | 41 | Prairie | 0.258 | 61 | River | 0.050 |
| 18 | Madison | 0.386 | 41 | Yell | 0.258 | 61 | Logan | 0.050 |
| 19 | Phillips | 0.361 | 44 | Hot Spring | 0.250 | 61 | Lonoke | 0.050 |
| 20 | Izard | 0.353 | 44 | Lincoln | 0.250 | 61 | Mississippi | 0.050 |
| 21 | Bradley | 0.333 | 44 | Monroe | 0.250 | 61 | Newton | 0.050 |
| 21 | Desha | 0.333 | 47 | Jefferson | 0.233 | 61 | Ouachita | 0.050 |
| 21 | Drew | 0.333 | 47 | Saline | 0.233 | 61 | Searcy | 0.050 |
| 21 | Grant | 0.333 | 49 | Lee | 0.225 | 74 | Polk | 0.042 |
| 21 | Pope | 0.333 | 50 | Ashley | 0.222 | 75 | Pike | 0.033 |

 Table C2: Political Transparency

| Rank | County | Score | Rank | County | Score | Rank | County | Score |
|------|------------|-------|------|--------------|-------|------|-------------|-------|
| 1 | Washington | 0.825 | 18 | Conway | 0.000 | 18 | Madison | 0.000 |
| 2 | Benton | 0.700 | 18 | Craighead | 0.000 | 18 | Marion | 0.000 |
| 3 | Pulaski | 0.475 | 18 | Crittenden | 0.000 | 18 | Miller | 0.000 |
| 4 | Garland | 0.425 | 18 | Cross | 0.000 | 18 | Mississippi | 0.000 |
| 5 | Baxter | 0.363 | 18 | Dallas | 0.000 | 18 | Monroe | 0.000 |
| 6 | Saline | 0.313 | 18 | Desha | 0.000 | 18 | Montgomery | 0.000 |
| 6 | Sebastian | 0.313 | 18 | Drew | 0.000 | 18 | Nevada | 0.000 |
| 8 | Pope | 0.250 | 18 | Franklin | 0.000 | 18 | Newton | 0.000 |
| 9 | Cleburne | 0.188 | 18 | Fulton | 0.000 | 18 | Ouachita | 0.000 |
| 9 | Faulkner | 0.188 | 18 | Grant | 0.000 | 18 | Perry | 0.000 |
| 11 | Calhoun | 0.125 | 18 | Greene | 0.000 | 18 | Phillips | 0.000 |
| 11 | Chicot | 0.125 | 18 | Hempstead | 0.000 | 18 | Pike | 0.000 |
| 11 | White | 0.125 | 18 | Hot Spring | 0.000 | 18 | Poinsett | 0.000 |
| 14 | Columbia | 0.063 | 18 | Howard | 0.000 | 18 | Polk | 0.000 |
| 14 | Crawford | 0.063 | 18 | Independence | 0.000 | 18 | Prairie | 0.000 |
| 14 | Izard | 0.063 | 18 | Jackson | 0.000 | 18 | Randolph | 0.000 |
| 14 | Union | 0.063 | 18 | Jefferson | 0.000 | 18 | Scott | 0.000 |
| 18 | Arkansas | 0.000 | 18 | Johnson | 0.000 | 18 | Searcy | 0.000 |
| 18 | Ashley | 0.000 | 18 | Lafayette | 0.000 | 18 | Sevier | 0.000 |
| 18 | Boone | 0.000 | 18 | Lawrence | 0.000 | 18 | Sharp | 0.000 |
| 18 | Bradley | 0.000 | 18 | Lee | 0.000 | 18 | St. Francis | 0.000 |
| 18 | Carroll | 0.000 | 18 | Lincoln | 0.000 | 18 | Stone | 0.000 |
| 18 | Clark | 0.000 | 18 | Little River | 0.000 | 18 | Van Buren | 0.000 |
| 18 | Clay | 0.000 | 18 | Logan | 0.000 | 18 | Woodruff | 0.000 |
| 18 | Cleveland | 0.000 | 18 | Lonoke | 0.000 | 18 | Yell | 0.000 |

 Table C3: Administrative Transparency

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| | Table C4: Overall Transparency | | | | | | | | |
|---|--------------------------------|--------------|-------|------|-------------|-------|------|--------------|-------|
| | Rank | County | Score | Rank | County | Score | Rank | County | Score |
| | 1 | Washington | 0.836 | 26 | Hempstead | 0.129 | 51 | Lee | 0.064 |
| | 2 | Pulaski | 0.621 | 27 | Crawford | 0.127 | 52 | Ashley | 0.063 |
| | 3 | Benton | 0.619 | 28 | Cross | 0.121 | 53 | Poinsett | 0.060 |
| | 4 | Garland | 0.537 | 29 | Stone | 0.121 | 54 | Clark | 0.057 |
| | 5 | Baxter | 0.415 | 30 | Izard | 0.119 | 54 | Crittenden | 0.057 |
| | 6 | Carroll | 0.405 | 31 | Union | 0.115 | 54 | Randolph | 0.057 |
| | 7 | Sebastian | 0.378 | 32 | Grant | 0.114 | 54 | Woodruff | 0.057 |
| | 8 | Faulkner | 0.365 | 33 | Madison | 0.110 | 58 | Perry | 0.056 |
| | 9 | Saline | 0.318 | 34 | Phillips | 0.103 | 59 | Scott | 0.036 |
| | 10 | Sevier | 0.313 | 34 | St. Francis | 0.103 | 60 | Howard | 0.024 |
| | 11 | Boone | 0.289 | 36 | Drew | 0.095 | 61 | Arkansas | 0.014 |
| | 12 | Marion | 0.283 | 36 | Greene | 0.095 | 61 | Conway | 0.014 |
| | 13 | Columbia | 0.263 | 38 | Nevada | 0.090 | 61 | Dallas | 0.014 |
| | 14 | Craighead | 0.257 | 39 | Bradley | 0.081 | 61 | Franklin | 0.014 |
| | 15 | Desha | 0.238 | 39 | Clay | 0.081 | 61 | Fulton | 0.014 |
| | 16 | Cleburne | 0.235 | 39 | Cleveland | 0.081 | 61 | Lawrence | 0.014 |
| | 17 | Independence | 0.231 | 42 | Lafayette | 0.077 | 61 | Little River | 0.014 |
| | 18 | Hot Springs | 0.214 | 43 | Johnson | 0.076 | 61 | Logan | 0.014 |
| | 19 | Van Buren | 0.208 | 43 | Sharp | 0.076 | 61 | Lonoke | 0.014 |
| | 20 | Pope | 0.205 | 45 | Montgomery | 0.074 | 61 | Mississippi | 0.014 |
| | 21 | Jackson | 0.200 | 45 | Prairie | 0.074 | 61 | Newton | 0.014 |
| | 22 | Chicot | 0.182 | 45 | Yell | 0.074 | 61 | Ouachita | 0.014 |
| | 23 | White | 0.177 | 48 | Lincoln | 0.071 | 61 | Searcy | 0.014 |
| | 24 | Calhoun | 0.163 | 48 | Monroe | 0.071 | 74 | Pike | 0.012 |
| - | 25 | Miller | 0.137 | 50 | Jefferson | 0.067 | 75 | Polk | 0.010 |

 Table C4: Overall Transparency

The Variability of Earnings in Chinese Subsidiaries Across Foreign Currency Translation Methodologies: An Empirical Comparison with UK Subsidiaries

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Abstract

Previous studies empirically tested the use of several foreign currency translation methodologies, including purchasing power parity (PPP) construct methods against the normative criterion of variability of earnings, and found that the use of PPP resulted in lower variability of translated earnings when translations were made between the US dollar and the UK pound. In the current study, the temporal characteristics of fifty sample companies were determined and used to translate accounts between the US dollar and the Chinese renminbi (RMB) and between the US dollar and the UK pound. Several translation methodologies were used, include PPP construct methodologies. In the current study, the US/UK translations using PPP translation methodologies resulted in lower variabilities of reported earnings of the subsidiaries than when using market-generated exchange rate translation methodologies, thereby replicating and expanding previous empirical results. But the US/Chinese translations produced a nearly opposite effect from the US/UK translations, reflecting the "managed floating" exchange rate system currently used in China.

KEYWORDS: International Accounting, Price Parity, Foreign Currency Translation, China, United Kingdom, Quality of earnings

1. Introduction

International Accounting Problem

In accordance with US generally accepted accounting principles (GAAP), parent companies usually must prepare consolidated statements with their foreign subsidiaries. To achieve this, the foreign subsidiary's accounts must first be recast in accordance with the parent country's GAAP. Second, the foreign accounts must be restated into the reporting currency of the parent. This second step, foreign currency translation, has been the topic of numerous studies over several decades.

Aside from the methodologies officially required in specific countries, there are a number of theoretically possible methodologies for foreign currency translation. Despite a massive literature, comparatively little is known empirically regarding how and in what ways the official choice of translation methodology matters. There is no theoretical closure on the issue, and only during the past decade have any empirical studies been performed to begin to determine which translation methodology, if any, is superior to others in accordance with any normative criterion.

In the United States, accounting policy makers have made major changes in GAAP for currency translation three times, each change more contentious than the previous one. The first

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official methodology in the US was the current-noncurrent method discussed in AICPA Bulletin No. 92 (1931), AICPA Bulletin No. 117 (1934) and Accounting Research Bulletin 43 (1953). The first change was required in 1965 by Accounting Principles Board Opinion No. 6 which required the monetary-nonmonetary method. The second change was made shortly after the organization of the Financial Accounting Standards Board (FASB) with the issuance of SFAS #8 (1975) which required the temporal rate method. The third change was SFAS #52 (1981) in which the current rate method was required under some conditions and the temporal rate method under others. It may well be that weariness with the issue, rather than widespread agreement, best characterizes the present situation.

Singh (2014) points out that "...only the Current Value Method (Purchasing Power Parity)(PPP) Method correctly reports the effects of the inflation of both countries" and that "the Current Rate Method fails to correctly report the effect of the subsidiary country's inflation and the temporal method does not correctly report the parent country's inflation." Further, it argues that exchange rate risk is related to violations of purchasing power parity.

Each of these four exchange rate methodologies, required by GAAP at one time or another, has its advantages and disadvantages, but none has been empirically or theoretically demonstrated to be superior to the others under all normative criteria. In fact, exchange rates are not related in any certain way to accounting measures, and there is therefore no definitive defense for the use of exchange rates for currency translation, Patz (1978).

Variability of Earnings

Managers are expected to be risk averse, to prefer ever-increasing reported earnings per share, with low variability, to major swings and greater variability. Investors in the United States see higher variability of earnings as a signal for a speculative investment. Managers of companies with significant foreign operations could therefore be expected to prefer translation methodologies that result in lower variability of translated subsidiary earnings. For these and other reasons, the variability of earnings can be viewed as a normative criterion. There is a substantial literature (see literature review) that reflects this normative criterion, specifically with respect to foreign currency translation.

It does not necessarily follow, however, that any currency translation methodology that produces a lower variability of translated earnings is superior in information content to any other methodology that results in greater variability. The preferences of managers and investors are not adequate support for lower variability as a normative criterion against which translation methodologies should be tested.

But to the extent that greater variability in reported earnings is caused by noise rather than additional, useful information, lower variability of reported earnings is superior and should be pursued when selecting from among currency translation methodologies. The following section provides some theoretical support for lower variability of earnings as a normative criterion.

Purchasing Power Parity (PPP) and the Variability of Earnings Issue

The PPP concept of exchange rates is summarized in Officer (1982) in three propositions: (1) PPP is the principal determinant of the long-run equilibrium exchange rate, (2) the short-run equilibrium exchange rate in any current period is a function of the long-run equilibrium

exchange rate in the sense that the latter variable is the principal determinant of, and tends to be approached by, the former, and (3) the short-run equilibrium exchange rate in any current period is determined principally by the PPP, with the former variable tending to equal the latter. Tyers and Zhang (2014) noted that "…real exchange rates are seen to be influenced in the long run by forces that return economies to purchasing power parity and by differences in productivity growth across sectors and across regions.

The equilibrium exchange rate between two currencies is the rate at which the demand for a currency and supply of the same currency are equal. At the equilibrium exchange rate, the price for exchanging two currencies will remain stable (The Free Financial Dictionary, 1/18/2020). It is intuitive that a time series of equilibrium exchange rates, which eliminates the temporary, market-generated noise, between any two currencies, is likely to be characterized by a lower variability than the time series of market-generated exchange rates.

The Committee on International Accounting suggested, in 1974, that purchasing power parity (PPP) constructs might be appropriate for foreign currency translation, indeed that such constructed time series might be superior to exchange rates. In effect, the committee was calling for research in this direction, and part of the spirit of the call was that the use of PPP, based on the equilibrium exchange rates, would result in lower variability of translated earnings and better information content in consolidated statements.

In more recent years, some empirical studies, based on translations between the US dollar and the UK pound, have found that the use of PPP does indeed result in lower variability of earnings and is superior to exchange rates when tested against a few other normative criteria (see the literature review). But, to date, no similar empirical studies are known to exist which describe what happens when a PPP time series is used instead of exchange rates for currency translation between the US dollar and various currencies other than the UK pound.

China's Foreign Exchange System

China's exchange rate regime evolves from a dual exchange rate system to a fixed exchange rate policy. Since 2005, The People's Bank of China adopted a "managed float" exchange rate of the RMB during the transition to a higher float degree regime. This is done to maintain a stable exchange rate as opposed to a more volatile exchange rate that would result from greater exposure to unexpected international market forces.

For the purposes of foreign currency translation for consolidation, it is not known whether the time series of managed float exchange rates or the time series of purchasing power parity constructs results in lower variability of reported earnings. See the Variability of Earnings as a Normative Criterion section below.

Prasad (2008) proposed a change from the managed float system to free float.

2. Purpose of the Study

Accordingly, the purpose of the present study is to compute the variability of translated earnings of subsidiaries, between the US dollar and the Chinese RMB, across different translation methodologies, including PPP methodologies, and to compare these results with those generated by translations between the US dollar and the UK pound.

The UK pound is used in this study for two reasons: (1) it is a floating exchange rate in contrast to the "managed float" of the RMB, and (2) studies exist which show PPP superior to

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the UK floating exchange rate based on several normative criteria.

China's business environment is substantially different from that of the UK. Thus, if PPP methodologies test well against exchange rate methodologies translating between the US dollar and the Chinese RMB, the proposition that PPP should be used for currency translation worldwide is enhanced. It is anticipated that the effects noted in previous studies, translating between the US dollar and the UK pound, would be repeated in translation between the US dollar and the Chinese RMB, but to a lesser degree.

3. Literature Review

Variability of Earnings as a Normative Criterion

Several early studies suggest that lower variability of translated earnings is more desirable than higher. Some of these studies were inspired by SFAS #8 which required that the resulting translation adjustment be shown in current reported earnings.

Allan (1976), Biel (1976), Herschman (1976), Mattlin (1976), Merjos (1977), Aggarwal (1978), Porter (1983), and Selling and Sorter (1983) indicated that the requirements of SFAS #8 were perceived by many financial statement users to result in greater variability of reported earnings than other possible translation methodologies.

Aggarwal (1978) and Reckers (1978) proposed that SFAS #8 resulted in financial statements that, in one way or another, did not reflect economic reality because of the increased variability of reported earnings.

Collins and Salatka (1993) concluded that including the translation adjustment in net income as required by SFAS #8 generated noisier earnings signals. When SFAS #52 was implemented, those companies whose currency translation gains or losses were most affected by the change from SFAS #8 to SFAS #52 showed significant increases in the earnings response coefficient. Markets perceived reported earnings under SFAS #52 to be of higher quality, that is, with less noise, than reported earnings under SFAS #8.

Relevant 21st Century Literature

The degree to which currency translation gains and losses under SFAS #52 affect equity security prices was explored in Bazaz and Senteney (2001) by applying an equity valuation model.

Louis (2003) considered the relationship between change in firm value and the translation adjustment and noted that accounting rules for currency translation typically result in financial statement numbers opposite to the economic effects of variations in exchange rates.

Holt (2004) was a descriptive study in which a complex method of estimating the temporal characteristics of accounts was used to compare the information content of return on assets across translation methodologies, including PPP. It was observed that the greatest difference in rank orderings of companies by return on assets was between the methodologies of SFAS #8 and SFAS #52 whereas the current-noncurrent and the current rate methodologies ranked companies similarly. Further, differences in information signals across translation methodologies were often enormous and were highly firm specific.

According to Kwon (2005), foreign investors commonly price exchange risk differently from local investors and the sources and magnitudes of differences in exchange risk pricing vary

considerably from country to country.

Pinto (2005) used an earnings and book value model to observe that translation adjustments are significantly value relevant.

Liu (2006) examined the forecasting and valuation properties of foreign currency translation gains and losses with an accounting-based equity valuation model for multinational firms. The study observed that translation gains and losses could be subdivided into a core component and a transitory component, and that translation gains and losses were more transitory than transitory earnings.

Wang et. al. (2006) suggested that currency-translation differences are at times incrementally relevant to returns. The study found consistent evidence that both reported income and clean surplus income are relevant in explaining stock returns, although asset revaluations and currency-translation differences are at times incrementally relevant to returns.

Chambers et. al. (2007) provided evidence in the post-SFAS #130 (1997) period that other comprehensive income is priced by investors on a dollar-for-dollar basis. The foreign currency translation adjustment component of other comprehensive income was found to be priced by investors.

Holt (2011 and 2012a) made normative evaluations of translation methodologies based on firm valuation and found that PPP performed well against this criterion compared to exchange rates when translations were made from the US dollar to the UK pound. The use of PPP was found to be superior over exchange rates for variability of reported earnings, and an analysis of meaningfully-paired observations indicated markedly different current ratio and inventory turnover numbers across translation methodologies.

4. Methodology

Overview

As indicated in the literature review, previous studies have indicated that the use of PPP is superior to the use of exchange rates for currency translation between the US dollar and the UK pound when tested against various normative criteria, including variability of earnings. The present study somewhat replicates the testing for variability of earnings when translated between the US dollar and UK pound, but updates the previous work with more recent pre-translation financial statements and expands the number of translation methodologies tested. Further, the same pre-translation financial statements are translated between the US dollar and the Chinese RMB, using the same translation methodologies, for the purpose of comparing the results.

Sample Firms and Study Period

Fifty US companies were selected at random to build a data base of pre-translation financial statements, under the inclusion criterion that financial statement data had to be available for fifteen consecutive years ending in 2018. This criterion insured the availability of the considerable information needed for this study that was not readily available from other sources, such as the cost of fixed assets acquired and retired, and when. Although the study period was the ten years ending in 2018, financial data for fifteen years were needed to estimate the temporal characteristics of various accounts accurately for the ten study period. The resulting sample was representative of a wide range of firms in terms of industry, size, capital structure,

profitability, etc.

The estimation of the temporal characteristics of various accounts, prior to translation, was achieved by the application of the methods described in detail in Holt (2012b). Month-end exchange rates between the US and the UK and China were obtained from January 2004 through December 2018. To construct the PPP monthly time series for the same period, the United States monthly consumer price indexes (CPI) and the corresponding CPIs for the UK and China were obtained.

Translations of the fifty companies were made between the US dollar and UK pound and between the US dollar and the Chinese RMB for each of the years in the study period, using each of the following eight translation methodologies:

ECD

ECN

ETD

ETN

PCD

PCN

PTD

PTN

Where:

E = exchange rates where used for translation

P = PPP constructed numbers were used for translation

C = the current rate method

T = the temporal rate method

D = deferral of translation gains and losses (not included in net income)

N = non deferral of translation gains and losses (included in net income)

For each of the years in the study period and for each of the translation methodologies, the variability of reported net income per share was calculated for each company, and the average variability of net income for each methodology determined.

Construction of the Purchasing Power Parity (PPP) Time Series

The PPP method of currency translation is described in detail in Patz (1981), and an analysis of the state of the art of currency translation theory and the lack of definitive research of the PPP is available in Patz (2006).

As discussed in the Patz articles, there is no clear way in which exchange rates are related to accounting measures, and there is no rigorous defense for the use of exchanges rates in translation. Further, no existing research shows any of the exchange-rate based translation methodologies to be theoretically or empirically superior to the others under all circumstances. Patz (1978) suggests that the problem lies with the use of exchange rates themselves. In the price parity methodology proposed by Patz, subsidiary accounts are translated using a temporal method approach, but using a constructed time series of price parity relative purchasing power indices.

In the present study, an additional PPP methodology, using the current rate approach, is also included. The purpose of a PPP methodology is to reflect the command over goods and

services in the economy in which the subsidiary operates. It is assumed that foreign subsidiaries do not exist solely for the purpose of generating dollar cash flows to the parent, Churchman (1961), but rather for the maximization of economic power which can be defined as the size of assets held.

The calculation of the price parity indices needed for translation under the PPP method was achieved as follows:

PPt = PPb(CPItk/CPIts)

Where

PPt = the price parity index for point in time t,

PPb = an exchange rate assumed to approximate purchase power parity at the point in time b (b = December 31, 1993, a base point.)

CPItk = consumer price index in the foreign environment at time t, standardized to base period b = 100, and

CPIts = consumer price index for the U.S. at time t, standardized to base period b = 100.

This method is called the "constructed rate" approach for generating a price parity index time series. It is the method suggested by Patz (1981) as the simplest and most practical for accounting application.

Research Questions

The study addresses two research questions:

- (1) Is the variability of earnings resulting from foreign currency translation using purchase power parity greater or less than the variability using China's managed float exchange rate time series?
- (2) Are the PPP translation methodologies as viable, based on variability of earnings per share, between the US dollar and Chinese RMB as between the US dollar and the UK pound?

5. Results and Conclusions

Research question 1

Is the variability of earnings resulting from foreign currency translation using purchase power parity greater or less than the variability using China's managed float exchange rate time series?

Table 1 shows the average variability of reported earnings per share, using each of the eight translation methodologies, of the fifty companies selected for the pre-translation sample over the ten-year study period ending in 2018, translated between the US dollar and the UK pound.

| Rank | Translation Methodology | Average Variability |
|------|-------------------------|------------------------|
| 1 | P C N | .819 |
| 2 | P T N | .853 |
| 3 | P C D | .955 |
| 4 | E C N | .956 |
| 5 | E C D | .957 |
| 6 | P T D | .959 |
| 7 | ETN | 1.108 |
| 8 | ETD | 1.457 |

Table 1: Rank Ordering of Translation Methodologies Based on Lowest Average Variability of Earnings, Translations between the US Dollar and the UK Pound

Three of the price parity methodologies have lower average variability of earnings than all the exchange rate methodologies. P T D is in the 6th position, although there is little difference between position 3 and position 6.

Table 2 shows the average variability of reported earnings per share, using each of the eight translation methodologies, of the fifty companies selected for the pre-translation sample over the ten-year study period ending in 2018, translated between the US dollar and the Chinese RMB.

| Rank | Translation Methodology | Average Variability |
|------|-------------------------|------------------------|
| 1 | E C D | 7.46 |
| 2 | E C N | 7.57 |
| 3 | ETD | 8.04 |
| 4 | ETN | 8.18 |
| 5 | P T D | 22.77 |
| 6 | P T N | 23.80 |
| 7 | P C D | 23.81 |
| 8 | P C N | 24.10 |

 Table 2: Rank Ordering of Translation Methodologies Based on Lowest Average

 Variability of Earnings, Translations between the US Dollar and the Chinese RMB

The results shown in Table 2 are in striking contrast to those of Table 1. All of the price parity translation methodologies result in higher variability of earnings than the managed float exchange rate methodologies.

Table 3 recasts Table 1 to demonstrate the head-to-head comparisons between PPP methodologies and exchange rate methodologies, translated from the US dollar to the UK pound.

| PPP Methodology | PP Methodology Average Variability | | Average Variability |
|-----------------|------------------------------------|-------------|---------------------|
| | | Methodology | |
| P C N | .819 | E C N | .956 |
| P T N | .853 | ETN | 1.108 |
| P C D | .955 | ECD | .957 |
| PTD | .959 | ETD | 1.457 |

Table 3: Head-to-Head Comparisons of PPP and Exchange Rate Methodologies Based on Average Variability of Earnings per Share as Translated Between the US Dollar to the UK Pound

In each of the four head-to-head comparisons, the PPP methodology results in lower average variability of earnings than the exchange rate methodology, although little difference is observed between P C D and E C D.

A striking difference is displayed in Table 4. The head-to-head comparisons, when translating between the US dollar and the Chinese RMB, show the opposite result; the price parity methodologies are consistently higher in variability than the managed float exchange rate methodologies.

Table 4: Head-to-Head Comparisons of PPP and Exchange Rate Methodologies Based on Average Variability of Earnings per Share as Translated Between the US Dollar to the Chinese RMB

| PPP Methodology | Average Variability | Exchange Rate | Average Variability |
|-----------------|---------------------|---------------|---------------------|
| | | Methodology | |
| P C N | 24.10 | E C N | 7.57 |
| P T N | 23.80 | ETN | 8.18 |
| P C D | 23.81 | E C D | 7.46 |
| P T D | 22.77 | E T D | 8.04 |

Research Question 2

Are the PPP translation methodologies as viable, based on variability of earnings per share, between the US dollar and the Chinese RMB, as between the US dollar and the UK pound?

Based solely on the normative criterion of variability of reported earnings, the answer to research question 2 is a clear no.

The argument that PPP translation methodologies should result in reported earnings less variable than exchange rate methodologies in the UK companies, is based on the theory that the time series of price parity constructs was closer to the equilibrium exchange rate than the market-driven time series. Previous research, summarized in Tables 1 and 3, strongly support that argument.

But China's managed float exchange rate time series is partly market driven. During the transition from fixed exchange rate framework to the free float regime, the exchange rates are intervened to reduce the negative impacts of unexpected international market forces and result in a more stable exchange rate series. As noted earlier in this study, at the equilibrium exchange

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rate, the price for exchanging two currencies will remain stable (The Free Financial Dictionary, 1/18/2020). The results of this study are consistent with the notion that the managed float exchange rate system in China produces a time series closer to the equilibrium exchange rate than the PPP system.

This answer may reduce the argument for a change in accounting principle related to foreign currency translation from exchange rates to price parity constructs, at least in China. But it was precisely because of major differences in the business environment and general culture between the UK and China that China was chosen for the present study.

6. Future Research

Foreign currency translation methodologies can be tested against a number of normative criteria other than variability of reported earnings.

One classification of criteria is value of the firm. For example, Ohlson (2001) studied the relationship between earnings, book values, and dividends in equity valuation. Ohlson (2005) examined accounting-based valuation formulae, and Ohlson and Juettner-Nauroth (2005) studied the relationship between earnings per share and firm value. These studies were not oriented specifically to foreign currency translation, but similar research methodologies could be developed to do so.

Other normative criteria for testing translation methodologies include the Fischer Black method of accounting method selection and the present values of future cash flows to investors.

Although the present study does not clearly support PPP over exchange rate methodologies for China, the authors feel that future normative research should include PPP translations among numerous other national currencies.

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An Economic Profile of the City of Lawton (2010-2018)¹

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Abstract

The objective of this paper is to chronicle the economic performance of the city of Lawton relative to the economies of the state of Oklahoma and the United States during the eight-year period from 2010 to 2018. The great recession of 2007 and 2008 had a relatively insignificant economic impact on the Lawton economy compared to the nation. The City of Lawton and the Oklahoma economy escaped the brunt of the financial crisis-induced recession because of the inherent strength of local and state economies and the large federal presence in Lawton. The national and most regional economies started gathering momentum within a couple of years of the end of the recession. It will be interesting to explore how the local, state and national economies performed since the end of great recession.

1. Introduction

The city of Lawton is in Comanche County in the southwest part of Oklahoma. Comanche County is one of Oklahoma's 77 counties and ranks 5th in the state in terms of population. The county was home to more than 120,400 residents in 2018. Lawton has in its backyard the Wichita Mountains Wildlife Refuge, the oldest managed wildlife refuge in the United States.

Lawton houses one of the nation's largest artillery bases, Fort Sill. The U.S. Army Fires Center of Excellence located in Fort Center combines both the U.S. Army Artillery Center U.S. Army Air Defense Artillery Center and School. Fort Sill is also the largest employer in Lawton contributing significantly to the local economy through retail spending and housing purchases by permanent soldiers stationed at the base. Lawton is very well positioned economically for the Fort Sill military base. Located along the Interstate 44 corridor and within about one-hour distance from Oklahoma City and Wichita Falls, Lawton is connected to the major airport hub, Dallas by American Airlines Group via the Lawton Ft. Sill Regional Airport.

Lawton has a solid manufacturing base supported by Goodyear Tire and Rubber manufacturing plant, Republic Paperboard Company, Bar-S Food, and Silver-Line Plastics. The Goodyear plant is the company's largest tire manufacturing plant in North America, producing more than 60,000 tires a day and employing 2,400 people. Besides Goodyear, Cameron University, Great Plains Technology Center (GPTC), the Lawton public school system, Comanche County Memorial Hospital, Southwestern Medical Center and retail outlets are the major employers. Lawton is also home of the headquarters of regional banks such as City National Bank and Trust Company and Fort Sill National Bank. The educational life of the city is enriched by the presence of Cameron University and Great Plains Technology center. The cultural life is improved by the Museum of the Great Plains, Lawton Theater, various music, theater and other live performances, and cultural events offered by Cameron University.

The objective of this paper is to review the economic performance of the city of Lawton during the period, 2010-2018. Since the last census took place in 2010 and most of the latest estimates of the economic data we are interested in are available until 2018, we chose the period 2010-2018 for our

study.³ In some cases, we included 2000 data to investigate changes between major economic variables between the last two census periods.

2. Demographics

According to United States census estimates, Lawton had a population of 92,859 as of July 1, 2018. The city experienced a 4.4% population growth between 2000 and 2010; however, the city population declined by 4.1% between 2010 and 2018, as shown in Table 1. During the time period from 2010 to 2018, the state of Oklahoma and the United States experienced population growth rates of 5.1% and 6% respectively. The decline in the city population since 2010 can be attributed to reductions in military personnel and civilian labor force in Fort Sill.⁴

Population distribution by age groups

Demographic profiles for Lawton, Oklahoma and the U.S.A. by different age-groups are shown in Table 2. Both Lawton and Oklahoma have the highest proportions of population in younger age groups, 15-24 and 25-34. By contrast, the leading age group for the nation is 45-54. The percentages of population aged 65 and over are similar among the three geographical entities. Figures 1 and 2 show the distribution of population by age groups in Lawton for years 2010 and 2018. Lawton experienced a decline in younger population between ages 15 and 34 in the age-group, 20-24. The city witnessed a surge in population in older age group, 55-59. The increase in older population can be explained by the normal aging of population, but also by the exodus of younger population in search of education and jobs elsewhere.

Table 3 shows the median ages of the Lawton, Oklahoma and the USA. The median age is lower in Lawton (30.8) than in the state (36.3) and the nation (37.2). Thus, the city has a younger population compared to the state and the nation by median age, which confirms the findings above by the age-group distribution.⁵

| | Lawton | Oklahoma | USA |
|--------------------------------------|--------|-----------|-------------|
| 2000 | 92,757 | 3,145,576 | 281,421,906 |
| 2010 | 96,867 | 3,751,583 | 308,758,105 |
| 2018 | 92,859 | 3,943,079 | 327,167,434 |
| Average annual growth (2000-2010) | 4.4% | 19.3% | 9.7% |
| Average annual growth (2010-2018) | -4.1% | 5.1% | 6.0% |

Table 1: Population

Source: Quickfacts, U.S. Census Bureau

| Age Group | Lawton | Oklahoma | United States |
|-------------|--------|----------|---------------|
| Under 5 | 6.1 | 6.5 | 6.1 |
| 5 to 14 | 12.6 | 13.7 | 12.6 |
| 15 to 24 | 13.1 | 13.6 | 13.1 |
| 25 to 34 | 14.0 | 13.8 | 14.0 |
| 35 to 44 | 12.6 | 12.5 | 12.6 |
| 45 to 54 | 12.7 | 11.6 | 12.7 |
| 55 to 64 | 12.9 | 12.5 | 12.9 |
| 65 to 74 | 9.3 | 9.2 | 9.3 |
| 75 to 84 | 4.7 | 4.7 | 4.7 |
| 85 and over | 2.0 | 1.8 | 2.0 |

 Table 2: Population by Age Groups in 2018 (in percent)

Source: U.S. Census Bureau

Table 3: Median age in 2018

| | Lawton | Oklahoma | United States |
|------------|--------|----------|---------------|
| Median age | 30.8 | 36.3 | 37.2 |
| Male | 44.7 | 49 | 49.2 |
| Female | 55.3 | 51 | 50.8 |

Source: U.S. Census Bureau

| Figure | 1: Distribution | of Population by | Age Groups in | Lawton – 2010 | (in percent) |
|--------|-----------------|------------------|--|---------------|---------------------------------------|
| 0 | | | 0 • • • • • • • • • • • • • • • • • • • | | · · · · · · · · · · · · · · · · · · · |



Source: U.S. Census Bureau (2010 American Community Surveys)



Figure 2: Distribution of Population by Age Groups in Lawton – 2018 (in percent)

Source: U.S. Census Bureau (2018 American Community Survey estimate)

Race, Ethnicity and Gender

Population by race groups as of July 1, 2018 is shown in Table 4. The largest race group in Lawton, is Caucasian, constituting 58.5% of the population, with the next largest being African American at 20.4%, then Hispanic at 13.8%, Native American with 5%, and Asian or Pacific Islander with 3.4%. The percentages of Caucasian population in the state and nation are 74.3% and 76.6% respectively. In Lawton, the Caucasian population slightly declined from 60.3% in 2010 to 58.5% in 2018. The second largest race group, 'Blacks or African Americans (AA)', accounted for 20.4% of Lawton population in 2017. Lawton has a higher proportion of 'Black or African Population' than the state and the nation. The 'Black or African Population' portion of the population has slightly declined from 2010 to 2017. 'Hispanic population' is the third highest group in Lawton. The proportion of 'Hispanic population' is higher in Lawton than in Oklahoma but lower than in the United States.

| Race | Lawton | Oklahoma | United States |
|-----------------------------------|--------|----------|----------------------|
| White alone, percent | 58.5 | 74.3 | 76.6 |
| Black or African American alone, | | | |
| percent | 20.4 | 7.8 | 13.4 |
| American Indian and Alaska Native | | | |
| alone, percent | 5 | 9.2 | 1.3 |
| Asian alone and Native Hawaiian | | | |
| and other pacific Islander | 3.4 | 2.5 | 6.0 |
| Hispanic or Latino, percent | 13.8 | 10.6 | 18.1 |

 Table 4: Distribution of Population by Races – 2018 (in percent)

Source: Quick facts, U.S. Census Bureau (2010 and 2017)

Lawton has a higher proportion of male population than both the state and the nation as shown in Table 5. This can be explained by the presence of a military base which has normally a higher male population.

 Table 5: Gender Composition (in percent)

| Pagion | 2000 | | 2010 | | 2018 | |
|---------------|------|--------|------|--------|------|--------|
| Region | Male | Female | Male | Female | Male | Female |
| Lawton | 52.1 | 47.9 | 51.9 | 48.1 | 51.2 | 48.2 |
| Oklahoma | 49.1 | 50.9 | 49.5 | 50.5 | 49.5 | 50.5 |
| United States | 49.1 | 50.9 | 49.2 | 50.8 | 49.2 | 50.8 |

Source: U.S. Census Bureau (2010 and 2017 American Community Surveys)

Household Characteristics

According to the 2010 Census, there were 34,901 households in Lawton in 2010. The average household size decreased slightly from 2.61 in 2000 to 2.48 in 2010. The average family size was 3.08 in 2010, which was slightly lower than the average family size (3.12) in 2000. Families accounted for 64.5% of all households in 2010, a reduction from 70.9% in 2000. Thirty two percent of households had children under 18 years, slightly down from 39.6% in 2000. About 16% of all households were headed by females.

3. Income and Employment

Income profile

Table 6 shows per capita personal incomes for 2000, 2010 and 2018.⁴ In 2018, Lawton had a per capita personal income (PCPI) of \$41,509. This PCPI ranked 288th in the United States and was 78 percent of the national average, \$53,217. Lawton experienced an annual average growth rate of 1.7% between 2010 and 2018, a sharp decline from annual growth rate of 6.1% between 2000 and 2010. Oklahoma experienced similar trends between 2010 and 2018. The annual average growth rate of PCPI slightly increased from 2010 to 2018. The lackluster growth in Lawton's per capita personal income

during this period may be attributed to the loss of high paid civilian jobs in Fort Sill in recent years. According to a study by the Lawton-Fort Sill 2019 Economic Review and Outlook, Lawton metropolitan area lost a total of 3000 military and civilian jobs but gained 500 private sector jobs with a net loss of 2500 jobs.⁴

| Year | Lawton | Oklahoma | USA |
|-----------------------------------|----------|----------|----------|
| 2000 | \$22,067 | \$24,096 | \$30,657 |
| 2010 | \$35,617 | \$36,544 | \$40,566 |
| 2018 | \$41,509 | \$46,233 | \$53,217 |
| Average annual growth (2000-2010) | 6.1% | 5.2% | 3.2% |
| Average annual growth (2010-2018) | 1.7% | 2.7% | 3.4% |

Table 6: Per Capita Personal income

Source: Bureau of Economic Analysis

In addition to per capita personal income, we also reported median household and median family incomes in Lawton, Oklahoma and the United States for years, 2000, 2010 and 2018 in Figure 2. In all the three categories, Lawton has lower incomes than those in Oklahoma and the USA. The average median household incomes in 2016 dollars for the period 2012-2016 stand at \$43,674, \$48, 038 and \$55, 322, in Lawton, Oklahoma and the USA respectively.



Figure 3: Income by different categories

Source: U.S. Census Bureau and American Community Surveys

Figure 4 shows personal income for Lawton during the nine-year period from 2010 to 2019. Personal income grew at an annual average rate of 3% or more, reaching a peak at 7.32% in 2008, just

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when the final crisis was underway. However, the growth slowed down to 2.51% in 2009 in the aftermath of the recession. The year 2010 witnessed a strong growth in PCPI in the city, but after that year, personal income grew at a much slower rate and declined in 2016 by 2%. During this same year, federal civilian and military earnings dipped to the lowest level in recent years, declining about 16% from its peak in 2010.⁵ During the 2014 to 2016 period, the federal share of total Lawton metro household earnings declined by 6%. We can conclude that the Lawton economy is more driven by the dynamics of federal civilian spending than the waves of the national economy.





Source: U.S. Census Bureau and American Community Surveys



Figure 5: Personal Income Growth Rate in Lawton

Source: U.S. Census Bureau and American Community Surveys

Cost of Living

An important advantage of Lawton is its low cost of living. The Council for Community and Economic Research compares costs of living in over 250 locations in all 50 states, allowing them to publish the Cost of Living Index. The nationwide average is 100 and each index for different categories of commodity groups is interpreted as a percentage of the average of all locations. Table 7 illustrates cost of living by different broad commodity and service groups in Lawton. The overall cost of living has slightly increased in Lawton during the period 2010-2018. Only the healthcare costs have gone up substantially (30%). Lawton has a lower cost of living than the nation for major commodity groups except transportation and healthcare. Healthcare costs are 22 percentage points higher than the national average. As shown in Figure 3, Lawton's cost of living has on average been slightly higher than that of either Oklahoma City or Tulsa.

The property tax rates vary from \$75 to \$110 per \$1,000 of assessed value. To determine the assessment value, Comanche county applies an assessment ratio of 11.25 per cent to market value of property with \$1000 homestead exemption for primary residence.

| Year | Composite Index | Grocery Items | Housing | Utilities | Transportation | Health Care | Misc. Goods and Services |
|------|--------------------|------------------|---------|-----------|----------------|----------------|-----------------------------------|
| 2007 | 89.5 | 97.5 | 76 | 93.4 | 98.8 | 92.5 | 93.2 |
| 2008 | 92.4 | 99.7 | 79 | 93.3 | 96.5 | 92.5 | 99.9 |
| 2009 | 86.7 | 91.1 | 77.2 | 81.8 | 101.9 | 93.8 | 88.4 |
| 2010 | 93.8 | 96.3 | 86.8 | 87.7 | 106.9 | 96 | 96.6 |
| 2011 | 95.6 | 95 | 98.2 | 93.1 | 104.2 | 94.6 | 91.7 |
| 2012 | 97.3 | 96.2 | 89.4 | 93.1 | 111.5 | 104.9 | 99.1 |
| 2013 | 96.2 | 86.5 | 92.4 | 86.5 | 108.1 | 103.4 | 100.4 |
| 2014 | 94.2 | 94.9 | 91 | 87.6 | 101.3 | 102.1 | 95.1 |
| 2015 | 92.2 | 99.5 | 90 | 88.3 | 95.4 | 105.4 | 89.5 |
| 2016 | 87.8 | 89.1 | 84.4 | 83.6 | 102.1 | 100.6 | 85.8 |
| 2017 | 90.9 | 83.4 | 84 | 89.9 | 99.9 | 115.1 | 94.2 |
| 2018 | 90.7 | 101.1 | 77.6 | 90.2 | 99.4 | 122.8 | 91.6 |

Table 7: Cost of Living in Lawton

Source: Council for Community and Economic research (C2ER), Cost of living Index

| Year | Lawton | Oklahoma City | Tulsa |
|------|--------|---------------|-------|
| 2007 | 89.5 | 90 | 91.6 |
| 2008 | 92.4 | 88.7 | 88.2 |
| 2009 | 86.7 | 89.9 | 87.4 |
| 2010 | 93.8 | 91.7 | 88.4 |
| 2011 | 95.6 | 90.5 | 90 |
| 2012 | 97.3 | 90.8 | 89.2 |
| 2013 | 96.2 | 90.3 | 88.3 |
| 2014 | 94.2 | 90.1 | 88.7 |
| 2015 | 92.2 | 88.1 | 86 |
| 2016 | 87.8 | 88.6 | 88.9 |
| 2017 | 90.9 | 84.9 | 92.8 |
| 2018 | 90.7 | 84.7 | 87.5 |

Table 8: Cost of Living index in selected cities in Oklahoma

Source: Council for Community and Economic research (C2ER), Cost of living Index



Figure 3: Cost of Living in Selected Oklahoma Cities

Source: Council for Community and Economic Research (C2ER)

Labor Market conditions

The civilian labor force participation rate was 55.3% in Lawton in 2018. The civilian participation rate increased by about 6% between 2000 and 2010 in Lawton, but slightly declined between 2010 and 2018. Both the state of Oklahoma and the USA showed a slightly declining trend in the civilian participation rate since 2000. The last column in Table 9 shows unemployment rates in Lawton, Oklahoma and the United States for years, 2000, 2010 and 2018. The national unemployment reached its lowest level in 49 years at 3.7% in 2018. The unemployment rates in Lawton and Oklahoma were 3.9% and 3.7% respectively in 2018.

| Lawton | | | | | | | |
|-------------------|-------------|--------------------|-------------|--------------|-------------------|--|--|
| Year | Labor Force | Participation Rate | Employment | Unemployment | Unemployment Rate | | |
| 2000 | 46,168 | 49.8% | 44,525 | 1,643 | 3.6% | | |
| 2010 | 54,506 | 55.7% | 51,342 | 3,164 | 5.8% | | |
| 2018 | 51,315 | 55.3% | 49,330 | 1,884 | 3.9% | | |
| Oklahoma | | | | | | | |
| 2000 | 1,660,870 | 64.4% | 1,610,266 | 50,604 | 3.0% | | |
| 2010 | 1,767,722 | 62.4 % | 1,648,126 | 119,596 | 6.8% | | |
| 2018 | 2,413,164 | 61.2% | 2,333,530 | 79,634 | 3.3% | | |
| The United States | | | | | | | |
| 2000 | 188,834,099 | 67.1% | 181,337,385 | 7,496,713 | 4.0% | | |
| 2010 | 200,117,100 | 64.7% | 180,885,846 | 19,231,253 | 9.6% | | |
| 2018 | 205,788,316 | 62.9% | 198,235,884 | 7,552,431 | 3.7% | | |

Table 9: Labor Force Participation

Source: Bureau of Labor Statistics

Overall, labor markets for the national and regional economies marked significant improvements since the end of the great recession in June 2009. Figure 4 shows the unemployment rates for Lawton, Oklahoma over the period from 2008 to 2018. The national unemployment rate has been higher than both the city and the state for the period shown. In addition, the national unemployment rate was much more drastically affected by the global recession than the Oklahoma state or the city of Lawton. The unemployment rates peaked for the state and nation in 2010 and gradually declined since then. Interestingly, the unemployment rate in Lawton remained almost flat between 2011 and 2013, reaching peak in 2012 and started declining sharply since 2014. The Oklahoma unemployment rate dipped below the Lawton unemployment rate from 2011 to 2014 and the two rates started tracking closely each other since 2015.



Figure 4: Unemployment Rates (2008-2018)

Employment pattern by type of industry

This section reports employment pattern by percentages of people employed in major industry groups as presented in Table 10. There are many similarities among the local, state and national economies. 'Educational services, health care and social assistance' was the leading job creation industry employing the highest percentage of the civilian population in Lawton. This industry employed 11,638 people or 23.1% of the total civilian employed population in Lawton. Oklahoma and the United States accounted for similar percentages of employment in this industry with 22.4% and 23.1% respectively. 'Retail trade' employed 6,619 workers, the second highest percentage, 11.4% in Lawton. The third largest industry in Lawton is 'Professional, scientific and management, et. al.' which employed 5,324 workers or 11.3%. The fourth highest job creation industry is manufacturing which accounted for 10.3% of civilian employment.

Percentage distributions of employment by major industries in Lawton for 2017 are presented in Figure 5. Distribution of employment changed only slightly across all industries between 2010 and 2017, with less than only one percent change for each industry.
| Industries | Lawton | Oklahoma | United States | | |
|------------------------------------|---------|---|---------------|--|--|
| Educational services, and health | 23.1 | 22.4 | 23.1 | | |
| care and social assistance | 23.1 | 22.4 | 23.1 | | |
| Retail trade | 11.4 | 11.6 | 11.3 | | |
| Public administration | 4.9 | 6.2 | 4.6 | | |
| Arts, entertainment, and | | | | | |
| recreation, and accommodation | 9.7 | 9.4 | 9.7 | | |
| and food services | | | | | |
| Manufacturing | 10.3 | 9.8 | 10.2 | | |
| Professional, scientific, and | | | | | |
| management, and administrative | 11.3 | 8.3 | 11.4 | | |
| and waste management services | | | | | |
| Construction | 6.4 | 7.1 | 6.5 | | |
| Other services, except public | 4.7 5.2 | | 49 | | |
| administration | 4.7 | 5.2 | 4.7 | | |
| Finance and insurance, and real | 6.6 | 56 | 6.6 | | |
| estate and rental and leasing | 0.0 | 9.7 9.4 9.7 10.3 9.8 10.2 11.3 8.3 11.4 6.4 7.1 6.5 4.7 5.2 4.9 6.6 5.6 6.6 5.1 5.1 5.2 1.9 5.1 1.8 2.1 1.8 2.1 2.7 2.6 2.6 | | | |
| Transportation and warehousing, | 5 1 | 5 1 | 5.2 | | |
| and utilities | 5.1 | 5.1 | 5.2 | | |
| Agriculture, forestry, fishing and | 1.0 | 5 1 | 1.9 | | |
| hunting, and mining | 1.7 | J.1 | 1.0 | | |
| Information | 2.1 | 1.8 | 2.1 | | |
| Wholesale trade | 2.7 | 2.6 | 2.6 | | |

Table 10: Employment by industries (Percentage of total civilian employment)

Source: U.S. Census Bureau (2017 American Community Survey)





Source: U.S. Census Bureau (2017 American Community Survey)

Employment pattern by Occupations

Employment patterns by broad occupation groups for Lawton, Oklahoma and the USA are shown in Table 11. Lawton had a total of 43,190 employees in 2017, which represents about 45.6% of the city population. The highest percentage (17.6%) of the civilian population was employed in 'Office and Administrative Support Occupations'. 'Sales and Related Occupations' employed the second highest percentage of the employed population, employing 10.9% of civilian population. The third highest category is the 'Food Preparation and Serving Related Occupations' employing about 10.7% of all civilian population.

| All Occupations | Lawton | Oklahoma | United States |
|--|----------|----------|------------------|
| Office and Administrative Support | 7,620 | 255,960 | 21,965,480 |
| Occupations | (17.64%) | (16.27%) | (15.41%) |
| Sales and Related Occupations | 4,710 | 162,610 | 14,522,580 |
| | (10.91%) | (10.34%) | (10.19%) |
| Food Preparation and Serving Related Occupations | 4,600 | 156,740 | 13,193,090 |
| | (10.65%) | (9.96%) | (9.26%) |
| Education, Training, and Library Occupations | 3,210 | 91,970 | 8,727,710 |
| | (7.43%) | (5.85%) | (6.12%) |
| Production Occupations | 3,150 | 102.570 | 9,024,560 |
| | (7.29%) | (6.52%) | (6.33%) |
| Healthcare Practitioners and Technical | 2,660 | 96,150 | 8,506,740 |
| Occupations | (6.16%) | (6.11%) | (5.97%) |
| Transportation and Material Moving | 2,350 | 106,020 | 9,978,390 |
| Occupations | (5.44%) | (6.74%) | (7.00%) |
| Management Occupations | 2,090 | 87,330 | 7,280,330 |
| | (4.84%) | (5.55%) | (5.11%) |
| Installation, Maintenance, and Repair | 1,980 | 71,820 | 5,528,390 |
| Occupations | (4.58%) | (4.57%) | (3.88%) |
| Business and Financial Operations | 1,740 | 69,400 | 7,472,750 |
| Occupations | (4.03%) | (4.41%) | (5.24%) |
| Building and Grounds Cleaning and | 1,500 | | 4,424,440 |
| Maintenance Occupations | (3.47%) | | (3.10%) |
| Construction and Extraction Occupations | 1,390 | 81,480 | 5,728,460 |
| | (3.22%) | (5.18%) | (4.02) |

Table 11: Employment by Major Occupations - 2017

Source: U.S. Bureau of Labor Statistics

Table 12 shows employment by broad industry groups for the year 2018. Service sector contributes to 82.4% of total nonfarm jobs in Lawton as compared to 80.4% in Oklahoma and 71.1%. The top four service producing industries are retail trade (21%), leisure and hospitality (19.9%), professional and Business services (18.6%), Education and Health services (16.2%). Together these four areas constitute three-quarters of total service sector of employment. The other significant industry is 'Financial Activities' accounting for 9% of total employment.

Goods producing sector accounts for about 17% of private sector jobs in Lawton. Manufacturing sector constitutes about two-thirds of the goods producing sector. Construction, mining and logging accounts for 32% of jobs.

As reported in Table 12, private sector jobs account for 67% of total nonfarm jobs in Lawton. These jobs account for 79.1% and 85% of all nonfarm jobs in Oklahoma and United States respectively. A relatively high number of federal civilian jobs accounts for higher percentage of public sector jobs in Lawton as compared Oklahoma and USA.

| | Lawton | Oklahoma | United States |
|---|--------|----------|---------------|
| Total Private as share of total nonfarm | 67.0 | 79.1 | 85.0 |
| Good Producing as share of total private employment | 17.6 | 19.6 | 16.3 |
| Construction, mining and logging | 32.2 | 50.1 | 6.3 |
| Manufacturing | 67.8 | 49.9 | 10.0 |
| Service providing as a share total private nonfarm | 82.4 | 80.4 | 71.1 |
| Trade, Transportation and Utilities | 28.5 | 28.5 | 21.9 |
| Wholesale Trade | 1.9 | 5.6 | 4.7 |
| Retail Trade | 21.0 | 16.7 | 12.5 |
| Transportation, warehouse and utilities | 5.4 | 6.2 | 4.2 |
| Information | 1.9 | 1.8 | 2.2 |
| Financial Activities | 9.1 | 7.4 | 6.8 |
| Professional and Business Services | 18.6 | 17.7 | 16.5 |
| Educational and Health Services | 16.2 | 22.0 | 15.7 |
| Leisure and Hospitality | 19.9 | 16.1 | 13.0 |
| Other Services | 1.6 | 6.5 | 4.6 |
| Government as a share of total nonfarm | 32.9 | 20.9 | 17.6 |
| Federal Government | 25.6 | 13.9 | 12.5 |
| State Government | 10.5 | 23.7 | 23 |
| Local Government | 63.8 | 62.4 | 64.5 |

Table 12: Employment by Industry Groups – 2018 (in percent)

Source: U.S. Bureau of Labor Statistics

4. Education

Table 13 shows average graduation rates for 'high school or higher' and 'bachelor's degree or higher' degree holders among people aged 25 years and over for the period, 2012-2016. Lawton has a slightly higher graduation rate (88.8%) than either the state (87.3%) or the nation (87%) for the 'high school graduate and higher group'. However, Lawton degree attainment for 'bachelor's degree (19.5%) and above' falls behind that of Oklahoma (24.5%) or the USA (30.3%).

| Degree | Lawton | Oklahoma | United States |
|--|--------|----------|----------------------|
| High school graduate or higher, percent of | | | |
| persons age 25 years+, 2012-2016 | 88.80% | 87.30% | 87.00% |
| Bachelor's degree or higher, percent of | | | |
| persons age 25 years+, 2012-2016 | 19.50% | 24.50% | 30.30% |

| Table | 13: | High | School | and | Bacheld | or's I |)egree | Graduation | rates – | 2012 to | 2016 |
|-------|-----|-------|--------|-----|---------|--------|--------|------------|---------|---------|------|
| ant | 1 | IIIgu | SCHOOL | anu | Dathth | , , , | Jugitu | Orauuation | raits – | 2012 10 | 4010 |

Figure 6 shows the high school and above graduation rates for students 18 to 24 years and 25 years and above for years 2010 and 2017. Both age groups show higher rates of graduation for Lawton than those of Oklahoma and the USA. For example, Lawton had 90.5% high school graduation rate, while Oklahoma and the USA had 84.1% and 76.3% graduation rates respectively. But for age groups 25 and over, Lawton still had a lead in the degree attainment, but the difference with the state and the nation narrowed down substantially. Figure 8 shows public educational spending per student from year 2007 to 2020. Educational spending increased by \$2000 during the period, while educational spending increased by \$800 and remained flat for Oklahoma.



Figure 6: Percentage of High School Graduation or Above

Source: U.S. Census Bureau (2010 and 2017 American Community Survey)



Figure 7: Percentage of Bachelor's Degree Completion or Above

Source: U.S. Census Bureau (2010 and 2017 American Community Survey) and 2018 Lawton-Fort Sill Economic Review and Forecast





Source: Oklahoma Office of Educational Quality and Accountability

5. Conclusion

The paper presents a snapshot of local, regional and national economies during the last decade. Even though the Lawton economy tracks closely state and national economies, certain characteristics of the city economy stand out. Lawton population has experienced a negative growth during the 2010-18 period and a bulge in older population. Other demographic characteristics such as race, gender age groups are very similar to those of the state and the nation. Per capita personal income, median household income, and median family income are all considerably less than those for the state and the nation. Growth rate in per capita income of Lawton exceeded those of the nation and the state in the previous decade, 2000-2010, but growth during the period, 2010-2018, has been slower than the state and the nation. The lackluster growth in the period can be explained by cutbacks in federal civilian and military spending in Fort Sill military base. The cost of living is slightly lower than the national average, with the exceptions of transportation and healthcare that are more expensive. The unemployment rate is lower than the national average but tends to stay higher than the state average. The composition of industries does not seem to have changed in the past ten years. Lawton has a higher rate of high school graduation than those of the state and the nation for all age groups. However, bachelor's degree completion rate for Lawton is lower than the United States by 3 percent for the 18 to 24-year age group and 11 percent lower for individuals 25 years or older.

Endnotes

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²Graduate student and research assistant.

³In some cases where 2018 data are not available, we used 2017 data.

⁴Economic Reviews and Forecast, 2019, Lawton Fort Sill Economic Development Corporation.

⁵Throughout the paper, the city of Lawton, the state of Oklahoma and the United States of America are sometimes referred to as the city, the state and the nation, respectively.

⁶Snead, Mark C. (2019). Economic Review and Outlook, May 15, 2019.

⁷Ibid.

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Submission Guidelines for Southwest Business and Economics Journal

The Southwest Business and Economics Journal (SWBEJ), is a peer-reviewed journal published by the Bill W. Burgess, Jr. Business Research Center, School of Business, Cameron University, Lawton, Oklahoma. Articles on a broad range of business and economics topics are invited from faculty in Business and Economics and business professionals. The journal solicits articles of high academic standards and research rigor that blends theory with practical research. Priority will be given to subjects dealing with interpretations or new understandings, and solutions to problems faced by business and government leaders. This *journal* is indexed in *Cabell's Publishing Opportunities in Business and Economics*.

Submission Guidelines:

- 1. Abstract: Includes a Single- column, single-spaced 150-200 words abstract.
- 2. Length: 3,000- 4500 words.
- 3. Paper: 8" x 11" Plain white paper.
- 4. Pitch: 12-point standard font.
- 5. *Margin*: 1" on all sides.
- 6. *Justification*: Left
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