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Ohio Utica Shale Region Monitor

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Ohio Utica Shale Region Monitor

March 2013

Maxine Goodman Levin College of Urban Affairs

Cleveland State University

Executive Summary

The following report provides a summary of two economic indicators, local sales receipts and total employment, with the goal of identifying early stage economic activity related to the exploration and early-stage production of oil and gas from the Utica and Marcellus shale reservoirs in the state of Ohio.

The key findings of this preliminary report include:

- Strong shale counties, which extend south from Ashtabula to Guernsey County, experienced a **21.1% increase in total sales activity in 2012 (\$14.9 billion)** as compared to 2011 (\$12.3 billion).
- This rebound in sales activity in strong shale counties began in mid-2011 and has continued strongly through 2012.
- The growth in sales activity among the strong shale counties is occurring in a part of Ohio that has experienced little investment over the last several decades.
- Employment growth in strong shale counties is not yet evident.

In mid-to-late 2011, the strong shale counties (Ashtabula, Belmont, Carroll, Columbiana, Coshocton, Geauga, Guernsey, Harrison, Mahoning, Portage, Stark, Trumbull, and Tuscarawas) began to experience a positive growth trend in terms of estimated sales receipts. This trend continued and strengthened through 2012 with these counties averaging a **21.1% increase in average sales activity** as compared to 2011. Strong shale counties not only reversed negative average sales trends from the previous three years, but also outperformed the moderate, weak, and non-shale counties on this metric between 2011 and 2012. While there is a clear positive trend in sales receipts, the employment data show very modest increases for the strong shale counties between 2011 and 2012. Furthermore, these modest increases in **strong shale counties (1.4%)** are similar to those experienced by **moderate (1.4%)** and **non-shale counties (1.3%)**. The trends detected at the county-level also hold true for the Metropolitan Statistical Area (MSA)-level. **Strong shale MSAs** experienced an average sales receipt increase of **17.3%** between 2011 and 2012, outpacing **moderate/weak MSAs (11.0%)**, and **non-shale MSAs (6.4%)**.

Introduction

In 2011, drilling for oil and gas recommenced in the state of Ohio after a century of dormancy, due to recently developed technologies enabling the extraction of hydrocarbons from shale reservoirs that had previously been assumed impermeable and therefore uneconomical.¹ The purpose of this report is to analyze two indicators of economic activity, sales receipts and employment, related to the early stages of Utica and Marcellus shale development in the State of Ohio. Tracking these two measures will assist in the preliminary detection of economic trends that are likely related to the growth of the oil and gas industries in Ohio. Data for these two indicators are readily available from the State of Ohio, which will facilitate the planned quarterly updates to this report.

What is ‘Shale Country’?

In order to assess estimated sales activity and employment growth in counties experiencing shale exploration and early stage production, the state of Ohio was divided into four groups: strong shale counties, moderate shale counties, weak shale counties, and non-shale counties. The primary source for classifying the counties was a map from the Ohio Department of Natural Resources, Division of Oil and Gas Resources Management, published in the Akron Beacon Journal (Figure 1). In addition, information from Bell (2011) and discussions with Andrew Thomas, Executive-in-Residence with the Energy Policy Center in the Maxine Goodman Levin College of Urban Affairs of Cleveland State University were used to create these groupings. Figure 2 and Table 1 display the each of the counties and their current classification. It should be noted that since shale exploration and production remains in its early stages throughout Ohio, there is potential for these classification to change with future developments. The current classifications help to shed light on retail and employment activity in shale areas versus the rest of the state.

For this report, all counties in Ohio were classified into one of four groups: strong shale counties, moderate shale counties, weak shale counties, or no shale counties. These classifications were made based the following sources: Ohio Department of Natural Resources, Division of Oil and Gas Resources Management map published in the Akron Beacon Journal (Figure 1, Appendix), information from *Columbus Business First*, and discussions with Andrew Thomas, Executive-in-Residence with the Energy Policy Center in the Maxine Goodman Levin College of Urban Affairs of Cleveland State University.² Table 1 displays the classification of counties and they are depicted in Figure 2. Sales receipt data was gathered from the Ohio Department of Taxation, Sales Tax Distributions.³ Employment data was sourced from the Ohio Department of Jobs and Family Services, Civilian Labor Force Estimate.⁴

While this report does provide important insights into the short-term, early stage economic activities related to exploration and the early stages of shale production, **it is beyond the scope of this report to analyze the complete economic impact of shale exploration and production** and to address more complex issues such as consumer spending leakages and direct and indirect spending in the supply chain. Rather, this report addresses the more basic questions of: *Has sales activity in the shale counties been growing faster than elsewhere in Ohio? Has employment growth in the shale counties been faster than elsewhere in Ohio?*

Figure 1

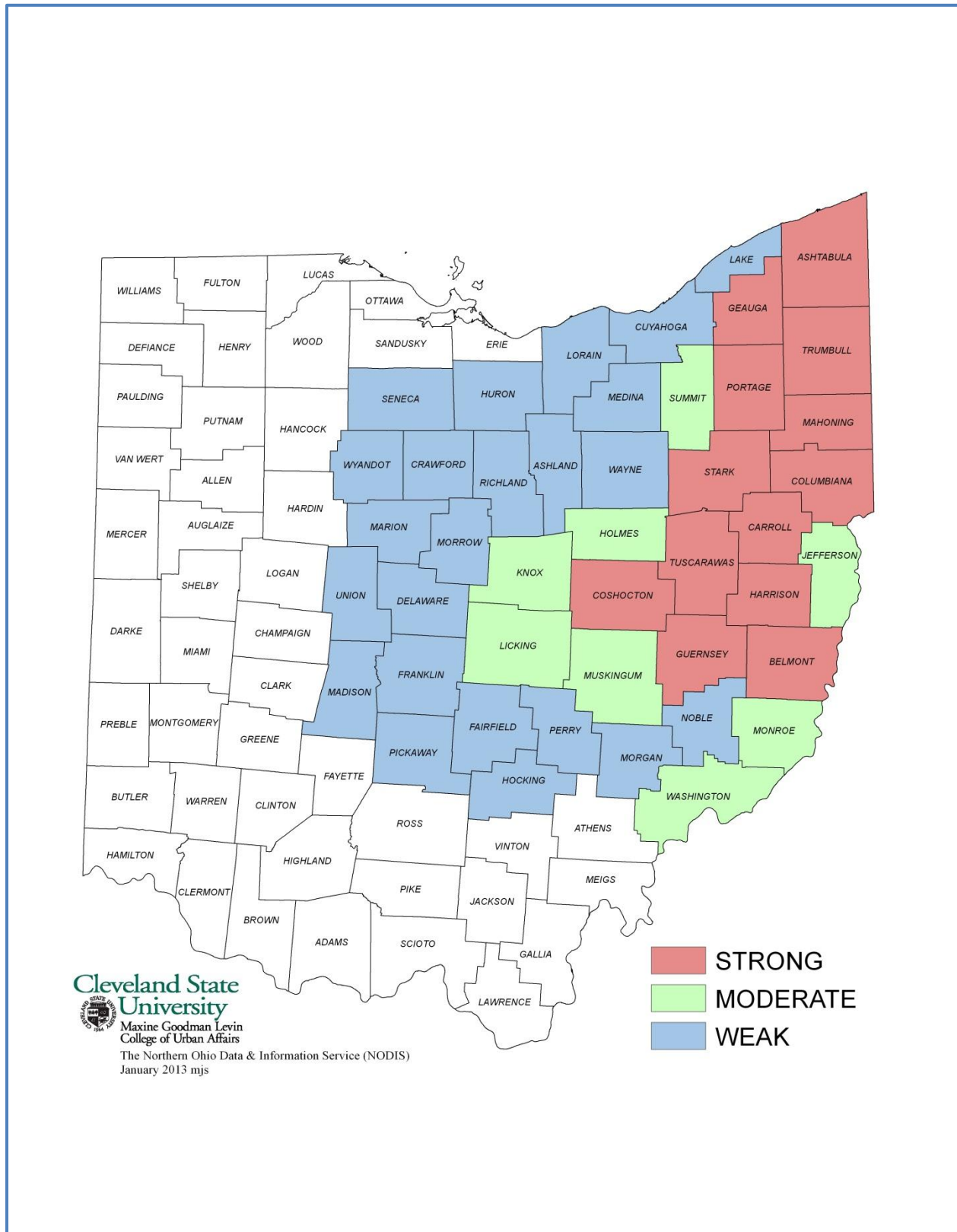


Table 1: County Classifications			
Strong (n= 13)	Moderate (n= 8)	Weak (n=23)	Non-shale (n= 44)
Ashtabula	Holmes	Ashland	Adams
Belmont	Knox	Crawford	Allen
Carroll	Licking	Cuyahoga	Athens
Columbiana	Jefferson	Delaware	Auglaize
Coshocton	Monroe	Fairfield	Brown
Geauga	Muskingum	Franklin	Butler
Guernsey	Summit	Hocking	Champaign
Harrison	Washington	Huron	Clark
Mahoning		Lake	Clermont
Portage		Lorain	Clinton
Stark		Madison	Darke
Trumbull		Marion	Defiance
Tuscarawas		Medina	Erie
		Morgan	Fayette
		Morrow	Fulton
		Noble	Gallia
		Perry	Greene
		Pickaway	Hamilton
		Richland	Hancock
		Seneca	Hardin
		Union	Henry
		Wayne	Highland
		Wyandot	Jackson
			Lawrence
			Logan
			Lucas
			Meigs
			Mercer
			Miami
			Montgomery
			Ottawa
			Paulding
			Pike
			Preble
			Putnam
			Ross
			Sandusky
			Scioto
			Shelby
			Van Wert
			Vinton
			Warren
			Williams
			Wood

Results

County Sales and Employment:

Table 2 reflects the average growth in sales receipts for each group of counties. The yearly average of sales receipts (January-December) was calculated for all years in the data set (2008-2012). The percent change in the average sales receipts during each year (2009-2012) for each of the four county classifications was then calculated; these percent changes are reflected in Table 2. During 2009, each of the four groups experienced declines in average sales tax receipts, as compared to 2008, which coincides with the last economic recession.⁵ While the moderate, weak, and non-shale counties saw their average sales tax receipts rebound starting in 2010 the strong shale counties did not experience strong positive growth in average sales tax receipts until 2012. During 2012, strong shale counties clearly outpaced the rest of the state in terms of average sales receipts.

Table 2: Average Sales Receipts Yearly Growth Rate				
	Strong Shale Counties (n= 13)	Moderate Shale Counties (n= 8)	Weak Shale Counties (n=23)	Non-shale counties (n=44)
2009	-9.8%	-7.0%	-11.4%	-9.4%
2010	-0.7%	4.0%	5.1%	3.5%
2011	-3.6%	4.3%	5.2%	4.9%
2012	21.1%	7.6%	10.9%	6.9%
Source: Ohio Department of Taxation, http://www.tax.ohio.gov/government/distributions_sales_.aspx				

Table 3 reflects the average employment growth for each group of counties. The yearly average of total monthly employment (January-December) was calculated for all years in the data set (2008-2012). The percent change in average yearly employment during each year (2009-2012) for each of the four county classifications was then calculated; these percent changes are reflected in Table 3. The employment trends in 2009 mirror the declines in average sales receipts noted above. However, unlike sales receipts, positive average employment trends were not experienced across the board until 2011. Among the four groups of counties, change in average employment was about the same among the strong, moderate, and non-shale counties in 2012, and each of these groups experienced a slightly greater increase in average employment when compared to the state as a whole and to the weak shale counties. Analysis of the 2012 employment data shows that employment growth in the strong shale counties has not been faster than elsewhere in the state of Ohio.

Methodology

The estimated sales receipts data were derived from the Current and Prior Years' sales tax distribution data and the County and Regional Transit Authority Permissive Sales and Use Tax Collections and Tax Rates, by Month (S1) available from the Ohio Department of Taxation (<http://www.tax.ohio.gov/Home.aspx>). Although most shale activity did not commence until 2011, data were collected from the previous three years to allow for comparisons with previous time periods and to be able to identify any trends that might be occurring.

Estimated sales receipts were arrived at by dividing the sales tax distribution by the local sales tax rate adopted by the individual counties during the time period investigated (2008-2013). "Because of the time required to process tax returns and to identify the proper permissive tax amounts for each county and transit authority, the revenue from the monthly collections is distributed to the counties and regional transit authorities in the second month following the collection month. For example, this means that sales made in January are primarily reflected in February collections, which are distributed as revenue to the counties and transit authorities in April."⁶ The months displayed in the tables throughout this report reflect the month when revenues are distributed to the counties. ***Therefore, these tables reflect sales receipts at an approximately three month lag from when the actual activity occurred.***

The local sales tax in Stark County expired in July 2011 and was reinstated in April 2012. In order to maintain an unskewed dataset, sales data for Stark County data from October 2011 to June 2012 were estimated using the average growth rate of the five previous months (5.4%).

Sales receipts data apply to retail sales; business-to-business transactions are currently generally exempt.

County and MSA yearly calculations: The average yearly growth rate in sales receipts were calculated by summing the monthly sales receipts for each of the county grouping from 2008-2012. The average of each 12-month period was then calculated to arrive at the yearly average sales receipts. The percent change between each yearly average was then calculated to arrive at the growth rates reflected in Tables 2,3,5, and 6. The same process was used to calculate average employment growth rates.

County monthly calculations: As previously stated, most of the activity related to shale production and extraction began in 2011 and 2012. In order to monitor the sales activity during this time period, the estimated total sales receipts for each month in 2012 are compared to the same month's activity in 2011. The percent change is reflected in the final column in Tables 7-10.

Table 3: Average Employment Yearly Growth Rate					
	State of Ohio (n= 88)	Strong Shale Counties (n= 13)	Moderate Shale Counties (n= 8)	Weak Shale Counties (n=23)	Non-shale counties (n=44)
2009	-4.1%	-4.4%	-4.4%	-3.5%	-4.2%
2010	-0.9%	-0.7%	-0.8%	-0.5%	-1.4%
2011	0.5%	0.5%	0.4%	1.0%	0.2%
2012	1.1%	1.4%	1.4%	0.8%	1.3%
Source: Ohio Department of Jobs and Family Services, http://ohiolmi.com/asp/laus/vbLaus.htm					

MSA Sales and Employment:

The eleven Metropolitan Statistical Areas (MSAs) in Ohio were classified into three groups (Table 4): strong shale MSAs (Akron, Canton, Youngstown), moderate/weak shale MSAs (Cleveland, Columbus, Mansfield), and non-shale MSAs (Cincinnati, Dayton, Lima, Sandusky, Toledo). Strong shale MSAs had at least one county that was individually identified as a strong shale county; the moderate/weak MSAs have at least one moderate or weak shale county.

Table 4: Metropolitan Statistical Area Classifications		
<u>Strong Shale MSAs</u> (n= 3)	<u>Moderate/Weak Shale MSAs (n= 3)</u>	<u>Non-shale MSAs</u> (n= 5)
Akron	Cleveland	Cincinnati
Canton	Columbus	Dayton
Youngstown	Mansfield	Lima
		Sandusky
		Toledo

Table 5 displays the average growth in sales receipts for Ohio's eleven MSAs. The percent change in the average sales tax during each year (2009-2012) for each of the MSA categories was then calculated; these percent changes are reflected in Table 5. Similar trends to those described in Table 2 are evident among the MSAs, with both the strong shale MSAs outpacing other MSAs during 2012.

Table 5: Average Sales Yearly Growth Rate, MSAs			
	Strong Shale MSAs (n= 3)	Moderate/Weak Shale MSAs (n= 3)	Non-shale MSAs (n= 5)
2009	-9.8%	-11.3%	-9.1%
2010	-0.1%	4.9%	2.4%
2011	-2.2%	5.4%	5.1%
2012	17.3%	11.0%	6.4%
Source: Ohio Department of Taxation, http://www.tax.ohio.gov/government/distributions_sales.aspx			

Table 6 reflects the average employment growth rate for each classification of MSAs. The annual total employment (January-December) was calculated for all years in the data set (2008-2012). The percent change in the average employment during each year (2009-2012) for each of the three MSA classifications was then calculated; these percent changes are reflected in Table 6. Increases in average total employment again appear in 2011 for all MSAs. In 2012, strong shale and non-shale MSAs experienced an average employment increase of about 1.5%, while the moderate/weak MSAs average gain was slightly less than in 2011 and about 0.7% less than the strong and non-shale MSAs. As was noted above with county trends, employment in “shale country” is not yet growing faster than elsewhere in the state.

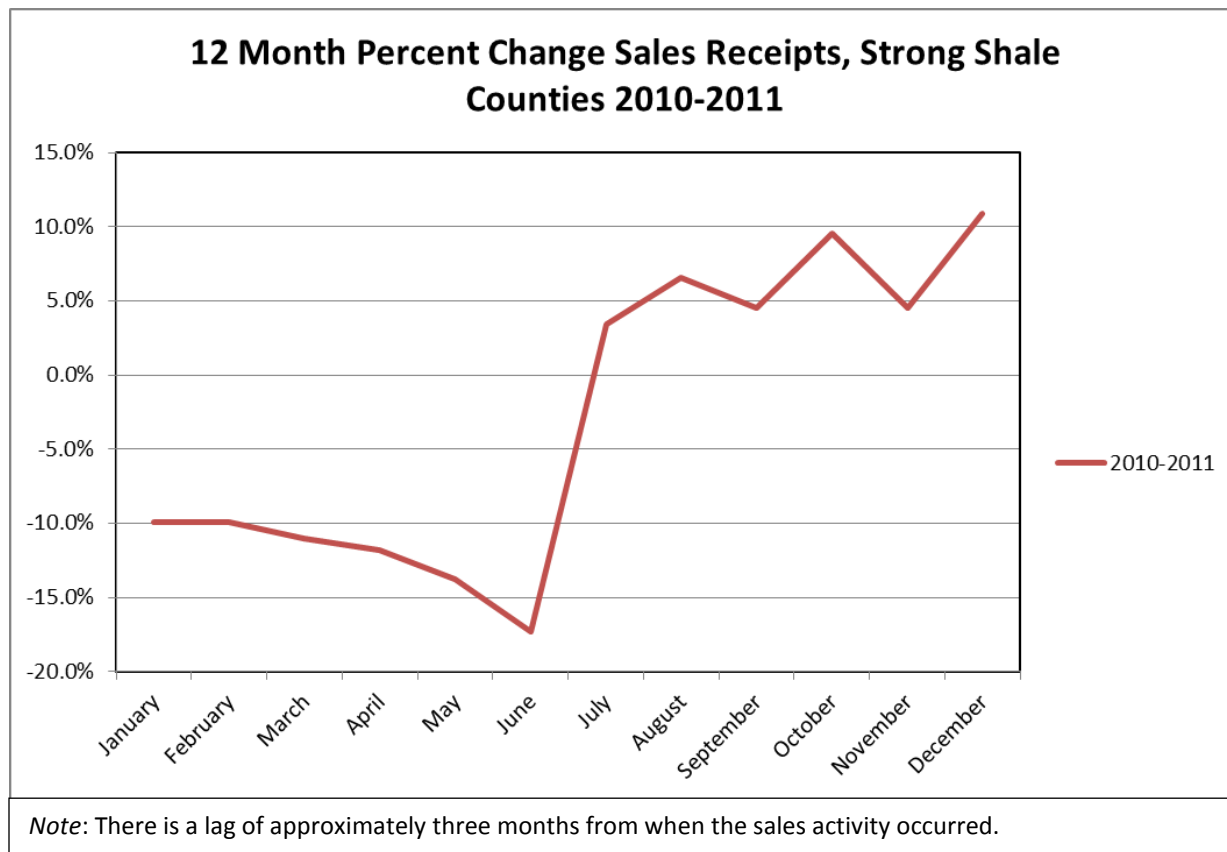
Table 6: Average Employment Yearly Growth Rate, MSAs			
	Strong Shale MSAs (n= 3)	Moderate/Weak Shale MSAs (n= 3)	Non-shale MSAs (n= 5)
2009	-4.8%	-3.1%	-4.3%
2010	-1.0%	-0.5%	-1.6%
2011	0.4%	1.1%	0.5%
2012	1.5%	0.9%	1.5%
Source: Ohio Department of Jobs and Family Services, http://ohiolmi.com/asp/laus/vbLaus.htm			

County Monthly Sales Growth:

Charts 1 display the percent change in monthly estimated sales receipts between 2010 and 2011 in strong shale counties (similar charts for the other county groups can be found in the Appendix). The positive trend in sales receipts begins in July 2011 and continues strongly through 2012 (see Tables 7-10

in the Appendix). Strong shale counties experienced a 21.1% increase in total sales activity in 2012 (\$14.9 billion) as compared to 2011 (\$12.3 billion). The increase total sales activity was greater than each of the other groups of counties (moderate- 7.6%, weak- 10.7%, and non-shale- 6.6%). This offers further proof that sales activity in strong shale counties was clearly more robust than elsewhere in the state, during 2012.

Chart 1:



Observations and Conclusions

This report evaluates the preliminary retail sales and employment activity of Ohio's "shale country." Towards this end, Ohio's 88 counties were subdivided into four groups: strong, moderate, weak, and non-shale counties. Sales activity in strong shale counties has clearly been faster than elsewhere in the state of Ohio during 2012. Moderate and weak shale counties also experienced growth in sales activity but at a slower pace. At this point in time, employment growth in strong shale counties has not been faster than elsewhere in the state of Ohio. Significantly, much of the early positive sales activity is benefiting regions of Ohio that experienced severe disinvestment over the last 50 years.

Employment growth associated with exploration and early stage production may have been captured by out-of-state workers that already possessed the necessary skills and training. With the first phase of shale gas activity having occurred in Pennsylvania, a majority of employment, headquarters, and servicing activity has occurred within the Commonwealth's borders. Employment growth should accompany the increased scale and scope of shale activities in the coming years. Recent signs of a strong office real estate market in Canton are early positive indicators.⁷ Furthermore, with the leadership of local institutions including Stark State College and their expanded education and training programs related to oil and gas industry, there is greater potential for long-term employment gains to be captured by Ohio workers.⁸ While the full-extent of the long-term growth potential for shale and gas in Ohio is still being analyzed, the early evidence appears promising.⁹

Appendix

Figure 2¹⁰

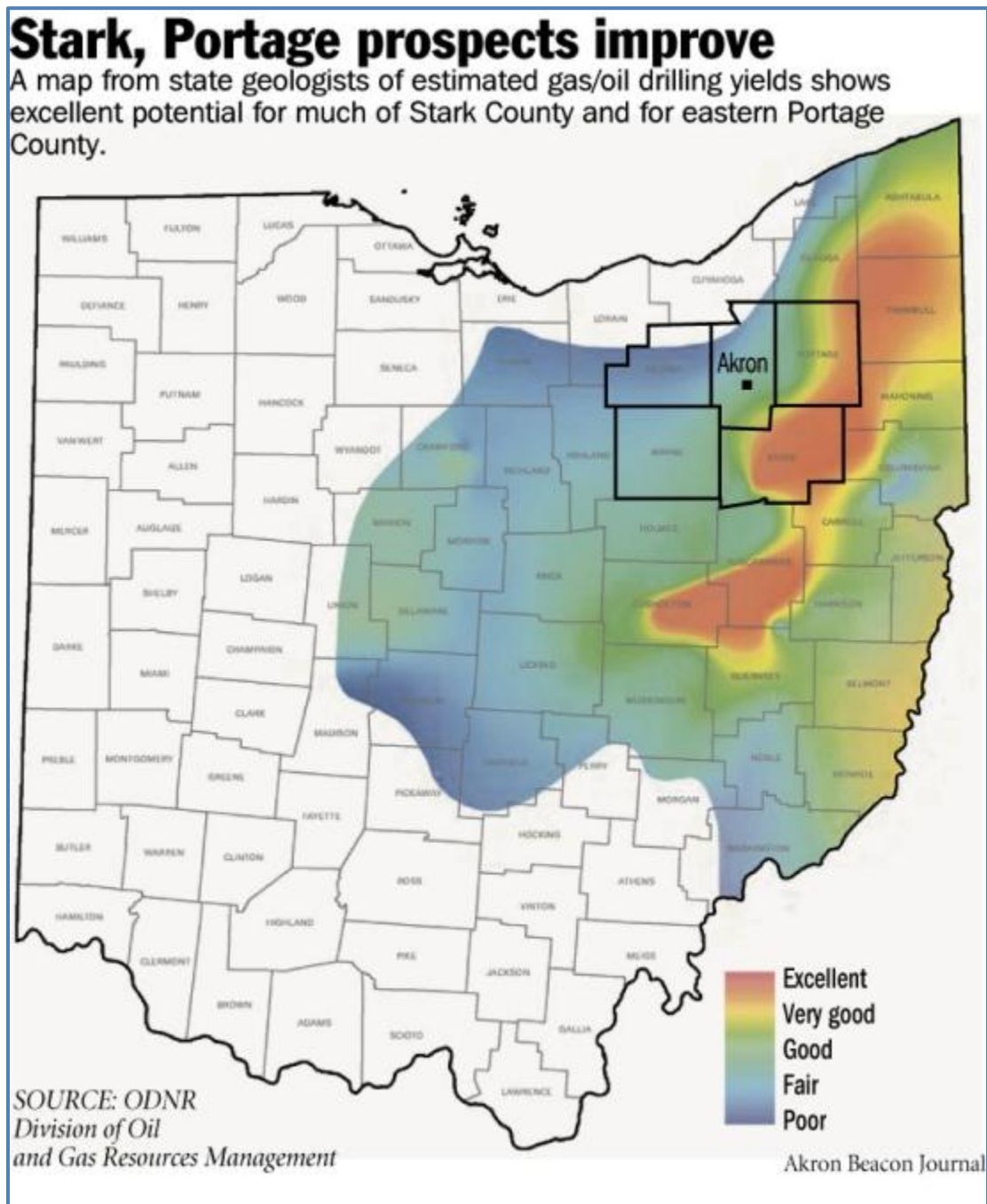


Table 7: Total Monthly Sales Receipts, Strong Shale Counties

					12 month Percent Change		
	2010	2011	2012	2013	2010-2011	2011-2012	2012-2013
January	\$1,033,836,149	\$931,030,061	\$1,070,847,655	\$1,268,058,810	-9.9%	15.0%	18.4%
February	\$1,090,591,323	\$982,442,680	\$1,117,441,763	\$1,299,063,940	-9.9%	13.7%	16.3%
March	\$1,369,097,106	\$1,217,926,480	\$1,347,090,459		-11.0%	10.6%	
April	\$975,260,970	\$860,222,580	\$1,056,062,592		-11.8%	22.8%	
May	\$1,066,571,972	\$919,759,474	\$1,115,748,117		-13.8%	21.3%	
June	\$1,310,712,269	\$1,084,234,569	\$1,259,142,661		-17.3%	16.1%	
July	\$905,376,667	\$936,318,909	\$1,231,430,397		3.4%	31.5%	
August	\$977,126,152	\$1,041,693,752	\$1,323,296,957		6.6%	27.0%	
September	\$1,077,249,457	\$1,125,944,291	\$1,450,244,965		4.5%	28.8%	
October	\$993,513,699	\$1,088,829,557	\$1,308,700,266		9.6%	20.2%	
November	\$965,978,169	\$1,009,516,776	\$1,297,891,032		4.5%	28.6%	
December	\$968,002,088	\$1,073,086,036	\$1,277,881,639		10.9%	19.1%	
Totals:	\$12,733,316,023	\$12,271,005,166	\$14,855,778,505	\$2,567,122,750	-3.6%	21.1%	

Note: There is a lag of approximately three months from when the actual sales activity occurred.

Table 8: Total Monthly Sales Receipts, Moderate Shale Counties

					12 month Percent Change		
	2010	2011	2012	2013	2010-2011	2011-2012	2012-2013
January	\$838,846,502	\$847,483,482	\$902,730,298	\$969,163,883	1.0%	6.5%	7.4%
February	\$851,101,688	\$886,065,563	\$951,632,165	\$994,841,118	4.1%	7.4%	4.5%
March	\$1,057,437,569	\$1,092,175,482	\$1,174,513,345		3.3%	7.5%	
April	\$741,391,436	\$753,806,517	\$838,370,232		1.7%	11.2%	
May	\$753,565,470	\$793,020,100	\$884,853,041		5.2%	11.6%	
June	\$882,205,822	\$960,939,390	\$1,020,440,415		8.9%	6.2%	
July	\$811,434,203	\$864,369,244	\$929,428,586		6.5%	7.5%	
August	\$852,115,778	\$910,318,601	\$929,566,836		6.8%	2.1%	
September	\$943,018,463	\$1,008,713,901	\$1,094,684,876		7.0%	8.5%	
October	\$890,818,819	\$906,505,386	\$979,517,388		1.8%	8.1%	
November	\$855,702,870	\$880,071,468	\$953,245,038		2.9%	8.3%	
December	\$891,574,808	\$910,299,569	\$971,289,872		2.1%	6.7%	
Totals:	\$10,369,213,428	\$10,813,768,703	\$11,630,272,091	\$1,964,005,001	4.3%	7.6%	

Note: There is a lag of approximately three months from when the actual sales activity occurred.

Table 9: Total Monthly Sales Receipts, Weak Shale Counties

					12 month Percent Change		
	2010	2011	2012	2013	2010-2011	2011-2012	2012-2013
January	\$3,554,538,410	\$3,708,151,342	\$3,984,863,280	\$4,520,466,464	4.3%	7.5%	13.4%
February	\$3,811,762,558	\$3,928,029,957	\$4,097,869,864	\$4,571,170,129	3.1%	4.3%	11.5%
March	\$4,755,972,332	\$4,933,880,826	\$5,398,880,999		3.7%	9.4%	
April	\$3,367,113,945	\$3,473,091,788	\$3,797,394,076		3.2%	9.3%	
May	\$3,329,844,277	\$3,598,889,544	\$3,994,967,824		8.1%	11.0%	
June	\$4,055,905,012	\$4,291,853,815	\$4,352,703,039		5.8%	1.4%	
July	\$3,588,448,401	\$3,688,548,156	\$4,415,737,867		2.8%	19.7%	
August	\$3,782,348,931	\$4,022,769,568	\$4,615,646,181		6.4%	14.7%	
September	\$4,164,982,075	\$4,524,250,783	\$5,132,965,212		8.6%	13.5%	
October	\$3,792,396,599	\$4,110,967,540	\$4,454,978,600		8.4%	8.4%	
November	\$3,699,379,776	\$3,830,654,568	\$4,638,910,761		3.6%	21.1%	
December	\$3,915,675,242	\$4,102,378,034	\$4,487,863,220		4.8%	9.4%	
Totals:	\$45,818,367,558	\$48,213,465,921	\$53,372,780,922	\$9,091,636,593	5.2%	10.7%	

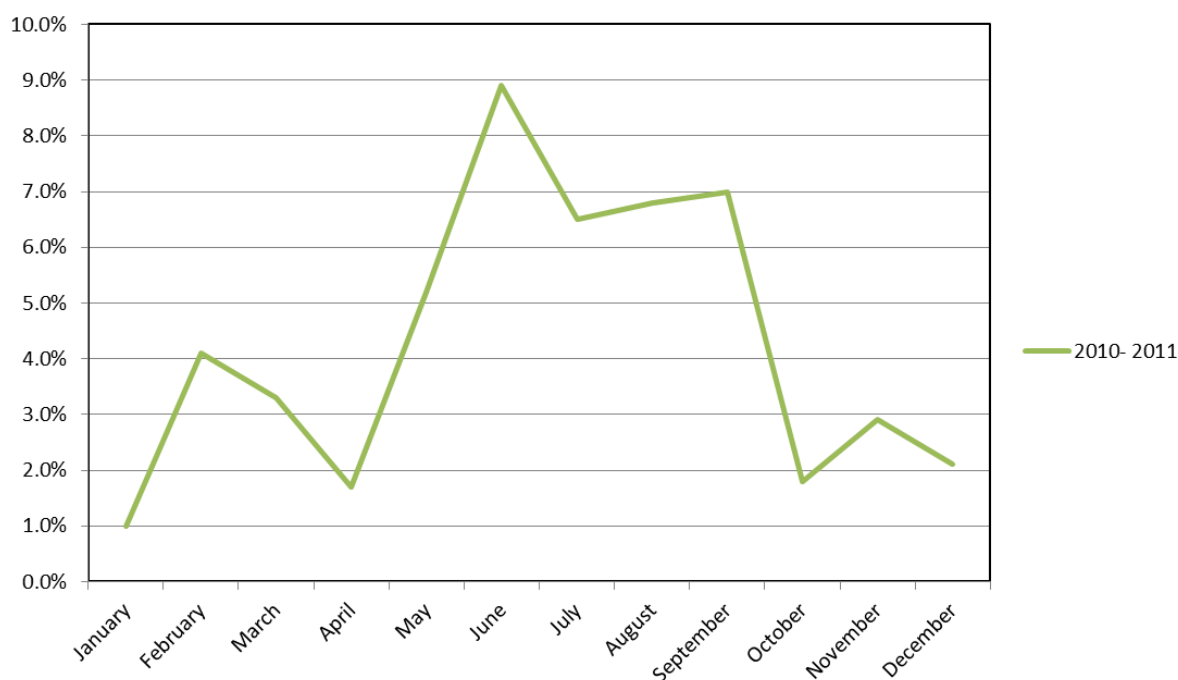
Note: There is a lag of approximately three months from when the actual sales activity occurred.

Table 10: Total Monthly Sales Receipts, Non-Shale Counties

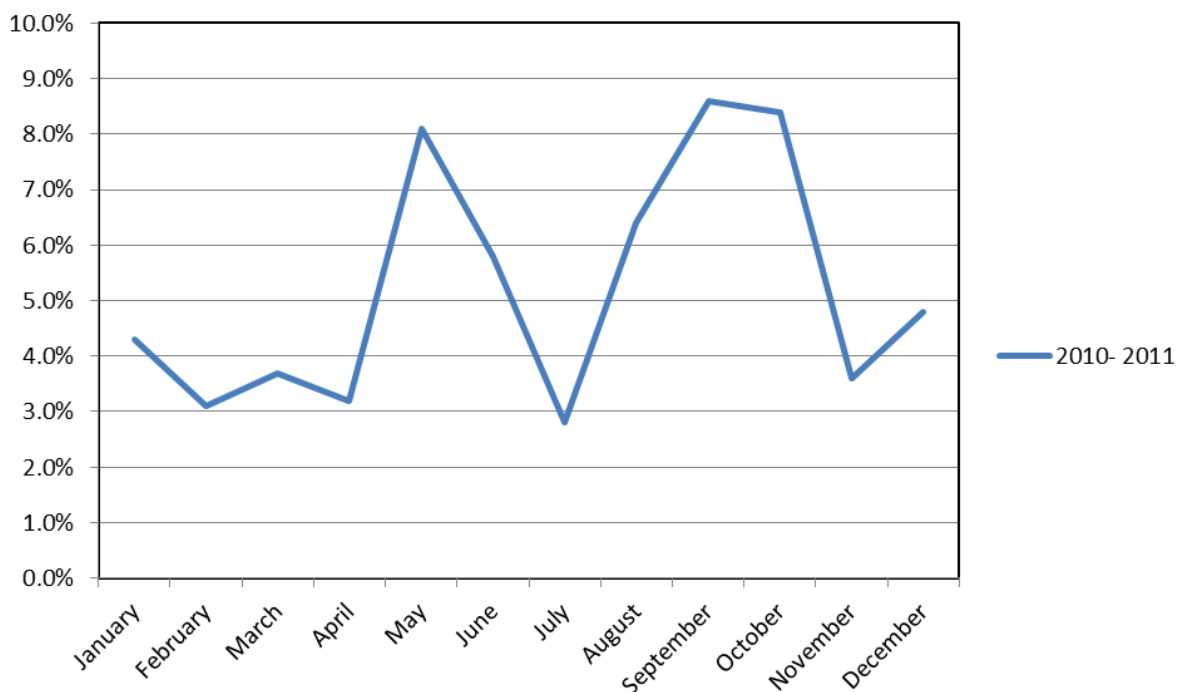
					12 month Percent Change		
	2010	2011	2012	2013	2010-2011	2011-2012	2012-2013
January	\$3,194,525,472	\$3,283,564,503	\$3,584,791,775	\$3,684,608,798	2.8%	9.2%	2.8%
February	\$3,260,078,971	\$3,462,391,575	\$3,679,131,691	\$3,755,847,276	6.2%	6.3%	2.1%
March	\$4,209,446,291	\$4,344,308,840	\$4,707,754,526		3.2%	8.4%	
April	\$2,903,530,328	\$3,070,698,810	\$3,277,705,816		5.8%	6.7%	
May	\$2,909,684,707	\$3,247,438,957	\$3,513,059,233		11.6%	8.2%	
June	\$3,519,367,231	\$3,813,994,490	\$4,029,646,854		8.4%	5.7%	
July	\$3,204,636,789	\$3,262,375,921	\$3,607,509,346		1.8%	10.6%	
August	\$3,394,365,470	\$3,562,711,821	\$3,772,868,377		5.0%	5.9%	
September	\$3,840,452,710	\$4,054,251,070	\$4,310,375,070		5.6%	6.3%	
October	\$3,435,334,423	\$3,717,663,501	\$3,817,742,644		8.2%	2.7%	
November	\$3,518,865,713	\$3,465,586,884	\$3,857,399,605		-1.5%	11.3%	
December	\$3,512,228,421	\$3,637,438,719	\$3,584,791,775		3.6%	-1.4%	
Totals:	\$40,902,516,527	\$42,922,425,090	\$45,742,776,712	\$7,440,456,074	4.9%	6.6%	

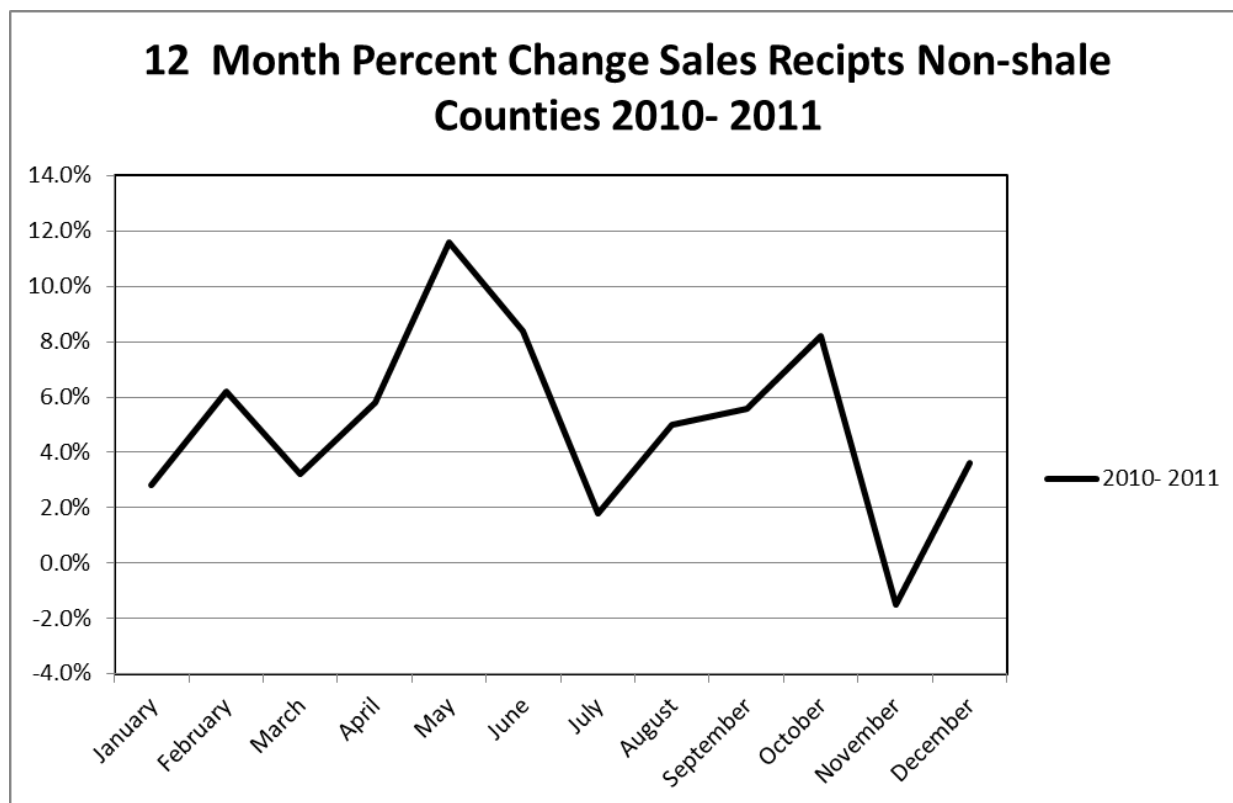
Note: There is a lag of approximately three months from when the actual sales activity occurred.

12 Month Percent Change Sales Receipts, Moderate Shale Counties 2010- 2011



12 Month Percent Change Sales Receipt, Moderate Shale Counties 2010- 2011





Endnotes

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