



**KING UNIVERSITY SCHOOL OF BUSINESS
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Economic Impacts of Job Losses in the Coal Mining Industry

Introduction

Coal companies in Southwestern Virginia announced a new round of layoffs in their industry in early February 2013. Layoffs have been ongoing in the Central Appalachians and other coal mining regions since the latter half of 2012. These layoffs have resulted from the substitution of cheaper natural gas for coal and, from the industry's perspective, a harsh regulatory environment for coal. The US department of Energy (DOE) in its February 2013 outlook for coal production in the Appalachian region forecast a decline of 5.4 million tons in 2013, on the heels of a 33-million-ton decline in 2012. The DOE forecast implies that more layoffs may be in the offing. This paper presents estimates of the impacts of potential job losses in the coal industry on the economy of the Coalfield region of Southwestern Virginia.

The Coalfield region encompasses the counties of Lee, Russell, Scott, Wise, Buchanan, Dickenson, Tazewell and the city of Norton. Background information on this region may be found in KIRES Paper No. 4, "Economic Impact Multipliers for the Coalfield Region of Southwestern Virginia", May 2012. The report is available in electronic format at <http://kires.king.edu>.

Impact Multipliers

Economic impact multipliers for the coal mining industry and other selected industries in the Coalfield region are presented in Table 1 (see KIRES Paper No. 4 for supporting documentation).

Inspection of Table 1 reveals that:

- Each coal mining job supports 1.27 jobs in other sectors of the region's economy. The loss of 100 coal mining jobs would lead to 127 jobs being lost in all other industries, for a total loss of 227 jobs.
 - For each dollar in earnings paid directly to households employed in the coal mining industry, 64 cents in earnings are generated for households employed in all other industries. Stated another way, for every \$100 loss in earnings paid to coal miners, households employed in all other industries lose \$64 in earnings, for a total loss of \$164.
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- Each job in the coal mining industry generates almost \$128,000 in earnings paid to households employed in all industries of the region's economy. A loss of 100 coal mining jobs would depress total earnings paid to households employed in all industries of the Coalfield economy by \$12.8 million.
- The earnings multiplier per job column in Table 1 may be used to estimate the number of new jobs needed in other industries of the economy to offset the loss in total earnings resulting from the elimination of one coal mining industry job. For example, it takes 4.7 new jobs in the retail industry to offset the loss of one coal mining job (found as 127,595 divided by 27,280).

Economic Impact of Coal Mining

The information in Table 2 demonstrates the important role that coal mining plays in the regional economy.

- Coal mining employment directly accounts for 7.5 percent of total employment in the Coalfield region. However, after taking into account the multiplier or spillover effects of coal mining, we can state that coal mining is the basis for 17 percent of total employment in the region.
- Earnings paid to households employed by the coal mining industry directly account for 16.5 percent of total earnings paid to households employed in all industries in the region. The percentage of total earnings tied to coal mining is 27.1 percent, after the spillover affects of coal mining are taken into account.
- The significant spillover impacts attributable to coal mining arise from the combined effect of the relatively large employment multiplier associated with coal mining and the relatively high earnings paid to coal mining industry employees.

Conclusion

Layoffs in the coal mining industry have significant and wide ranging impacts on the Coalfield economy. The short-term economic losses may be mitigated somewhat by severance pay packages and unemployment insurance and/or the extent to which terminated employees find alternative employment. However, the unfortunate economic fact for the Coalfield economy is that it takes the creation of 2 to 6 service sector jobs, depending on the sector, or nearly two manufacturing jobs to offset the total amount of earnings lost when one coal mining job is eliminated.

Table 1. Multipliers, Selected Industries, Coalfields			Earnings
			Multiplier
	Jobs	Earnings	Per job
ROW INDUSTRY	Multiplier ¹	Multiplier ²	annual \$'s ³
Food services and drinking places	1.1655	1.3828	17690
Business support services (includes call centers)	1.2	1.3477	26290
Retail trade	1.2171	1.3249	27280
Nursing and residential care facilities	1.2232	1.264	27670
Other educational services	1.285	1.3598	42140
Colleges, universities, and prof. schools	1.2971	1.3077	42975
Hospitals	1.4133	1.3164	47575
Professional, technical and scientific services	1.5754	1.2836	45920
Ambulatory health care services	1.4349	1.2828	54165
Truck transportation	1.5412	1.4984	58905
Wholesale trade	1.5893	1.3434	60355
Public admin. (includes correctional facilities)	1.7923	1.6183	60250
Construction	1.4821	1.4362	58475
Telecommunications	2.1679	1.6406	71065
Plate work and fabricated structural product mfg.	1.7234	1.502	70295
Management of companies and enterprises	1.7546	1.2832	72730
Offices of physicians	1.5006	1.2756	74555
Wood Product Manufacturing	2.5196	2.3729	77490
Utilities	2.0356	1.4958	86495
Mining and oil and gas field machinery mfg.	1.7537	1.5702	78060
Support activities for coal mining	1.9096	1.7079	118385
Coal mining	2.2715	1.6413	127595
Oil and gas extraction	2.0112	2.0583	151340
¹ Total change in the number of jobs in all industries for each additional job in the row industry.			
² Total change in earnings paid to households employed in all industries for each additional dollar of earnings paid to households employed by the row industry.			
³ Total change in earnings paid to households employed by all industries for each additional job in the row industry.			

Table 2. Economic Impact of Coal Mining			
	Direct Impact	Spillover Impact	Total Impact
Employment:			
Coal Mining	4,829 ¹	6,140 ²	10,969
All Industries	64,441 ¹		64,441
Pct. Coal Mining	7.5 %		17.0 %
Earnings:			
Coal Mining	\$93.9 mil. ¹	\$60.2 mil. ²	\$154.1 mil.
All Industries	\$569.4 mil. ¹		\$569.4 mil.
Pct. Coal Mining	16.5 %		27.1 %
	¹ Average monthly employment and total earnings for the first quarter of 2012. Source: <i>Quarterly Census of Employment and Wages</i> , US Bureau of Labor Statistics	² Equals direct measure times (M-1), where M is the relevant multiplier.	Multipliers for coal mining(M): Employment 2.2715 Earnings 1.6413

KIRES Paper No. 7 was prepared by Dr. Sam Evans, associate professor of Economics and Finance for King University. Dr. Evans may be contacted at rsevans@king.edu.