

Appendix A: IN-SEEM Model Specifications

Electricity consumption—Commercial			
Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity price—Commercial	-483.980	-0.16	(0.002)
Natural gas price—Commercial	453.230	0.05	(0.009)
Employment in the Wholesale trade sector	0.145	0.12	(0.000)
Employment in Finance, Insurance, and Real Estate; 1-year lag	0.126	0.29	(0.000)
Earnings per employee in the Government sector	1,535	0.51	(0.000)
Adjusted R-squared	0.991		
Electricity consumption—Industrial			
Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity price—Industrial	-772.510	-0.18	(0.013)
Gross state product, per capita	3,679,372	0.82	(0.000)
Adjusted R-squared	0.963		
Electricity consumption—residential			
Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity price—residential	-1,098	-0.34	(0.000)
Natural gas price—residential; 2-year lag	1,485	0.15	(0.000)
Employment in Finance, Insurance, and Real Estate	0.296	0.62	(0.000)
Cooling degree days, annual	10.297	0.09	(0.000)
Adjusted R-squared	0.987		
Natural gas consumption—Commercial			
Predictive variable	Coefficient estimate	Standardized β	p-value
Natural gas price—Commercial	-1,084	-0.25	(0.051)
Natural gas price—Commercial; 1-year lag	-661.912	-0.15	(0.043)
Electricity price—Commercial; 2-year lag	-1,231	-0.98	(0.000)
Heating degree days, annual	7.474	0.38	(0.000)
Heating degree days, annual; 2-year lag	-5.084	-0.28	(0.019)
Earnings per employee in the Retail Trade sector	642.673	0.24	(0.059)
Earnings per employee in the Government sector; 1-year lag	-521.676	-0.38	(0.054)
Adjusted R-squared	0.827		
Natural gas consumption—Industrial			

Predictive variable	Coefficient estimate	Standardized β	p-value
Natural gas price–Industrial	-4,177	-0.22	(0.005)
Motor gas price–Transportation	3,808	0.57	(0.000)
Electricity consumption–Industrial; 1-year lag	0.852	0.64	(0.000)
Employment in all Industrial sectors	0.257	0.63	(0.000)
Employment in the Manufacturing sector; 1-year lag	-0.203	-0.40	(0.000)
Earnings per employee in Transportation & Utilities; 1-year lag	-2,207	-0.19	(0.026)
Natural gas price–Industrial; 1-year lag	-5,188	-0.27	(0.001)
Adjusted R-squared	0.895		

Natural gas consumption–Residential			
Predictive variable	Coefficient estimate	Standardized β	p-value
Natural gas price–Residential; 1-year lag	-1,261	-0.20	(0.048)
Electricity price–Residential; 2-year lag	-1,174	-0.60	(0.004)
Natural gas consumption–Residential; 2-year lag	0.117	0.11	(0.093)
Electricity consumption–Residential	-0.329	-0.52	(0.014)
Heating degree days, annual	23.919	0.77	(0.000)
Unemployment rate	-159,566	-0.34	(0.001)
Adjusted R-squared	0.858		

Motor gas consumption–Transportation			
Predictive variable	Coefficient estimate	Standardized β	p-value
Motor gas price–Transportation	-1,473	-0.22	(0.004)
Motor gas consumption–Transportation; 2-year lag	0.266	0.26	(0.046)
Employment in the Manufacturing sector	0.123	0.25	(0.000)
Earnings per employee in the Manufacturing sector; 1-year lag	2,261	0.34	(0.001)
Earnings per employee in the Retail Trade sector	4,617	0.39	(0.005)
Employment in Transportation & utilities; 1-year lag	0.666	0.32	(0.001)
Adjusted R-squared	0.953		

Employment in the Construction sector			
Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity price–Industrial; 2-year lag	-1,054	-0.18	(0.001)
Employment in Finance, Insurance, and Real Estate	-0.207	-0.22	(0.003)
Employment in the Wholesale Trade sector	2.563	0.95	(0.000)
Earnings per employee in Transportation & Utilities	2,337	0.15	(0.000)
Employment in the Government sector	-0.231	-0.22	(0.005)
Adjusted R-squared	0.994		

Employment in the Farming sector			
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Predictive variable	Coefficient estimate	Standardized β	p-value
Employment in the Farming sector; national	0.020	0.54	(0.000)
Employment in the Government sector; 1-year lag	-0.204	-0.35	(0.000)
Employment in the Construction sector	-0.125	-0.22	(0.000)
Adjusted R-squared	0.988		

Employment in Finance, Insurance, and Real Estate

Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity consumption–Commercial; 2-year lag	-1,039	-0.16	(0.031)
Motor gas price–Transportation	1,654	0.21	(0.000)
Nonwage income, per capita; 2-year lag	13,625	0.84	(0.000)
Employment in the Government sector; 1-year lag	-0.308	-0.29	(0.065)
Employment in the Wholesale Trade sector; 1-year lag	0.528	0.19	(0.001)
Adjusted R-squared	0.981		

Employment in the Government sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Labor force participation rate; 2-year lag	201,074	0.33	(0.001)
Employment in the Services sector; 1-year lag	0.035	0.34	(0.005)
Motor gas consumption–Transportation	-0.211	-0.20	(0.004)
Electricity consumption–Commercial	1.392	0.66	(0.000)
Adjusted R-squared	0.982		

Employment in the Manufacturing sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Natural gas price–Industrial; 1-year lag	-4,857	-0.13	(0.034)
Employment in the Services sector; 1-year lag	-0.276	-1.38	(0.000)
Employment in the Construction sector	2.951	1.60	(0.000)
Employment in Transportation & Utilities; 1-year lag	-2.028	-0.47	(0.000)
Adjusted R-squared	0.949		

Employment in the Mining sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity price–Industrial; 1-year lag	130.617	0.38	(0.015)
Employment in the Construction sector	-0.055	-0.97	(0.000)
Employment in Transportation & Utilities	0.060	0.45	(0.000)
Labor force participation rate; 2-year lag	-14,563	-0.40	(0.001)
Adjusted R-squared	0.952		

Employment in the Retail Trade sector			
Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity consumption–Commercial; 1-year lag	2.707	0.51	(0.000)
Motor gas price–Transportation	-3,501	-0.20	(0.000)
Motor gas consumption–Transportation; 1-year lag	1.100	0.41	(0.000)
Earnings per employee in Transportation & Utilities; 1-year lag	-4,504	-0.14	(0.019)
Adjusted R-squared	0.983		

Employment in the Services sector			
Predictive variable	Coefficient estimate	Standardized β	p-value
Employment in Finance, Insurance, and Real Estate	2.367	0.27	(0.000)
Motor gas consumption–Transportation	-0.603	-0.06	(0.014)
Employment in the Retail Trade sector	0.319	0.08	(0.020)
Electricity consumption–Commercial	8.732	0.42	(0.000)
Adjusted R-squared	0.999		

Employment in Transportation & Utilities			
Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity consumption–Industrial; 2-year lag	-0.157	-0.26	(0.005)
Motor gas price–Transportation; 2-year lag	378.672	0.11	(0.009)
Employment in the Construction sector	-0.200	-0.48	(0.000)
Employment in the Wholesale Trade sector	1.442	1.27	(0.000)
Gross domestic product, per capita	1,265,699	0.46	(0.000)
Adjusted R-squared	0.990		

Employment in the Wholesale Trade sector			
Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity price–Commercial; 2-year lag	722.069	0.31	(0.000)
Natural gas price–Commercial	736.187	0.09	(0.003)
Electricity consumption–Commercial; 1-year lag	0.446	0.55	(0.000)
Motor gas consumption–Transportation; 1-year lag	0.082	0.20	(0.000)
Employment in the Retail Trade sector	0.170	1.13	(0.000)
Adjusted R-squared	0.982		

Earnings per employee in the Construction sector			
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Predictive variable	Coefficient estimate	Standardized β	<i>p</i> -value
Earnings per employee in the Retail Trade sector	1.819	1.61	(0.000)
Motor gas price–Transportation	0.315	0.50	(0.000)
Motor gas price–Transportation; 1-year lag	-0.290	-0.43	(0.000)
Natural gas price–Industrial	-0.318	-0.18	(0.001)
Electricity consumption–Industrial; 1-year lag	0.000	0.19	(0.001)
Adjusted <i>R</i>-squared	0.953		

Earnings per employee in the Farming sector

Predictive variable	Coefficient estimate	Standardized β	<i>p</i> -value
Electricity price–Industrial	0.428	0.23	(0.386)
Motor gas price–Transportation; 2-year lag	-0.120	-0.05	(0.820)
Employment in the Farming sector; 1-year lag	0.000	-0.85	(0.011)
Adjusted <i>R</i>-squared	0.547		

Earnings per employee in Finance, Insurance, and Real Estate

Predictive variable	Coefficient estimate	Standardized β	<i>p</i> -value
Electricity price–Commercial	-0.842	-0.68	(0.000)
Motor gas price–Transportation; 1-year lag	-0.266	-0.19	(0.000)
Employment in the Manufacturing sector	0.000	0.48	(0.000)
National unemployment rate	117.986	0.29	(0.003)
Gross domestic product, per capita	1,177	0.98	(0.000)
National nonwage income, per capita	-1.204	-0.50	(0.010)
Adjusted <i>R</i>-squared	0.970		

Earnings per employee in the Government sector

Predictive variable	Coefficient estimate	Standardized β	<i>p</i> -value
Electricity price–Commercial; 1-year lag	0.400	0.42	(0.000)
Motor gas consumption–Transportation; 1-year lag	0.000	-0.35	(0.000)
Employment in the Services sector; 1-year lag	0.000	1.27	(0.000)
Earnings per employee in Finance, Insurance, and Real Estate	0.441	0.54	(0.000)
Adjusted <i>R</i>-squared	0.972		

Earnings per employee in the Manufacturing sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Natural gas price–Industrial; 1-year lag	-0.471	-0.16	(0.001)
Motor gas price–Transportation	-0.137	-0.13	(0.004)
Electricity consumption–Industrial	0.000	0.36	(0.001)
Employment in the Retail Trade sector; 1-year lag	0.000	-0.57	(0.000)
Employment in the Services sector; 2-year lag	0.000	0.54	(0.000)
Adjusted R-squared	0.967		

Earnings per employee in the Mining sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Motor gas price–Transportation	0.455	0.24	(0.045)
Employment in the Manufacturing sector	0.000	0.90	(0.000)
National earnings per employee in the Mining sector	0.316	0.61	(0.000)
Unemployment rate	180.547	0.47	(0.007)
Motor gas consumption–Transportation; 1-year lag	0.000	0.47	(0.002)
Employment in Transportation & Utilities; 1-year lag	0.000	-0.30	(0.018)
Adjusted R-squared	0.875		

Earnings per employee in the Retail Trade sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Motor gas price–Transportation	-0.076	-0.14	(0.028)
Electricity consumption–Commercial; 1-year lag	0.000	-0.40	(0.000)
Motor gas consumption–Transportation; 1-year lag	0.000	0.56	(0.000)
Employment in the Retail Trade sector; 1-year lag	0.000	-0.26	(0.000)
Adjusted R-squared	0.961		

Earnings per employee in the Services sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity consumption–Commercial	0.000	0.43	(0.000)
Motor gas price–Transportation	-0.049	-0.07	(0.001)
Earnings per employee in the Wholesale Trade sector	0.266	0.49	(0.000)
Employment in Transportation & Utilities	0.000	0.13	(0.011)
Adjusted R-squared	0.986		

Earnings per employee in Transportation & Utilities

Predictive variable	Coefficient estimate	Standardized β	p-value
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Natural gas price—Industrial	0.293	0.21	(0.000)
Earnings per employee in the Retail Trade sector	1.668	1.94	(0.000)
Earnings per employee in the Manufacturing sector; 1-year lag	0.111	0.23	(0.015)
Electricity consumption—Industrial; 1-year lag	0.000	-0.54	(0.002)
Earnings per employee in Finance, Insurance, and Real Estate	-0.103	-0.28	(0.007)
Adjusted R-squared	0.950		

Earnings per employee in the Wholesale Trade sector

Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity price—Commercial	-0.534	-0.44	(0.000)
Natural gas price—Commercial; 2-year lag	0.764	0.21	(0.000)
Earnings per employee in the Retail Trade sector; 1-year lag	0.801	0.34	(0.000)
Motor gas consumption—Transportation; 1-year lag	0.000	0.28	(0.006)
Adjusted R-squared	0.959		

Gross state product, per capita

Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity consumption—Industrial	0.000	0.60	(0.003)
Electricity consumption—Commercial; 1-year lag	0.000	0.40	(0.002)
Motor gas price—Transportation; 1-year lag	0.000	-0.19	(0.000)
Earnings per employee in Finance, Insurance, and Real Estate	0.000	-0.22	(0.008)
Adjusted R-squared	0.980		

Nonwage income, per capita

Predictive variable	Coefficient estimate	Standardized β	p-value
Electricity consumption—Residential	0.000	0.38	(0.003)
Motor gas price—Transportation; 1-year lag	-0.045	-0.09	(0.030)
Employment in the Government sector; 1-year lag	0.000	0.56	(0.000)
Natural gas price—Commercial; 1-year lag	0.179	0.13	(0.004)
Adjusted R-squared	0.969		

Unemployment rate

Predictive variable	Coefficient estimate	Standardized β	p-value
Earnings per employee in Finance, Insurance, and Real Estate	0.001	0.33	(0.002)
Employment in the Manufacturing sector	0.000	-0.40	(0.001)
National unemployment rate	0.752	0.49	(0.000)
Nonwage income, per capita	-0.005	-0.49	(0.006)
Motor gas price—Transportation; 1-year lag	0.002	0.36	(0.000)
Adjusted R-squared	0.970		

Note: Intercepts and dummy variables not reported. $N=33$.

