

BEFORE THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of)	
TimkenSteel Corporation for Approval of a)	
Unique Arrangement for the TimkenSteel))	Case No. 15-1857-EL-AEC
Corporation's Stark County Facilities)	

DIRECT TESTIMONY OF PAUL A. COOMES, Ph.D.

1 **Q.1. Please state your name, title and business address.**

2 My name is Paul Coomes. I am a consulting economist and Emeritus Professor of
3 Economics at the University of Louisville College of Business. My business address is
4 3604 Trail Ridge Road, Louisville, Kentucky 40241.

5 **Q.2. Please describe your educational background.**

6 I received a bachelor's degree in economics from Brescia College. I earned a master's
7 degree in economics from Indiana University Bloomington and a Ph.D. in economics
8 from the University of Texas at Austin.

9 **Q.3. What is your professional background?**

10 I am Emeritus Professor of Economics at the University of Louisville, where I have
11 taught since 1985. A copy of my current CV is attached to this testimony as
12 Exhibit PAC-1. As a professor, I have taught courses in urban economics, forecasting,
13 microeconomics and macroeconomics. I have also worked on projects for numerous
14 large public and private entities. Much of my research for both academic and
15 commercial interests has involved regional and urban economics and economic
16 development. Over the course of my career, I have performed hundreds of studies using
17 economic impact models to quantify economic and fiscal impacts for large commercial

1 entities as well as for public agencies, departments, economic development organizations
2 and utilities in Ohio and Kentucky and throughout the country.

3 I am a past president of the Kentucky Economic Association, and past chair of the
4 Economics Department at the University of Louisville.

5 **Q.4. On whose behalf are you offering testimony?**

6 I am testifying on behalf of TimkenSteel Corporation in support of the Application filed
7 in this proceeding.

8 **Q.5. What is the purpose of your testimony?**

9 The purpose of my testimony is to quantify the regional economic and fiscal impacts of
10 TimkenSteel's Stark County, Ohio facilities. I will also explain how I conducted an
11 economic impact analysis and calculated the economic and fiscal impacts of the Stark
12 County facilities. A true and correct copy of my impact analysis, "The Estimated
13 Economic and Fiscal Impacts of TimkenSteel Corporation's Operations in Stark County,
14 Ohio." is attached to this testimony as Exhibit PAC-2.

15 **Q.6. What is an economic impact analysis?**

16 An economic impact analysis determines the impact that a specific project or program
17 may have on a region's economy by identifying the impact on business activity,
18 employment, and personal income. The direct economic impact, indirect economic
19 impact, and induced economic impact of a project's operations are included in the
20 economic impact analysis.

21 **Q.7. Is economic impact analysis widely used and accepted?**

22 Yes. Economic impact analysis is widely-used and relied upon by economists in
23 government, academia and the private sector. It is used to study and quantify both the

1 direct impacts of economic activity, such as the operations of a steel mill, and the
2 additional indirect and induced effects on other businesses and households whose income
3 and spending depend in part on the demand created by the steel mill and its employees.

4 **Q.8. Please explain the direct and additional impacts that are measured in an economic**
5 **impact analysis.**

6 Direct effects are the starting point for an economic impact study. In the context of this
7 proceeding, the direct effects include the actual production activity by TimkenSteel, and
8 the associated jobs and employee compensation at the facilities in the region. Indirect
9 impacts are those impacts on supplier business and their employees supported by
10 TimkenSteel. These are also referred to as the inter-industry effects. Finally, induced
11 effects are those impacts on the local economy attributable to local spending by
12 TimkenSteel employees, as well as the spending by employees of other linked industries.
13 These are also referred to as the household effects.

14 Both the indirect and induced impacts are calculated using multipliers that
15 represent the rounds of re-spending in the regional economy that create new sales, jobs
16 and payroll.

17 For my study of the economic and fiscal impacts of the Stark County facilities, I
18 obtained detailed economic data for the State of Ohio and used it to build an IMPLAN
19 input-output model of the region. This model produced the economic multipliers for the
20 steel industry in Ohio that I used to make my estimates of the TimkenSteel impacts.

21 **Q.9. What is “IMPLAN” and how does it work?**

22 IMPLAN is a well-researched regional input-output modeling system that has been used
23 for thousands of impact studies by economists in government, academia and the private

1 sector. An IMPLAN input-output model is able to simulate the effects of changes in
2 economic activity for any of 500 regional industries.

3 The regional IMPLAN model begins with data from the national transactions
4 matrix, produced by the U.S. Bureau of Economic Analysis, which reveals how much
5 each industry purchases from every other industry to make its products. The national
6 data are adjusted to state and county values that represent inter-industry purchases and
7 household spending related to industrial changes. A key aspect of this step is to estimate
8 how much of an industry's vendor purchases are made in the region versus what must be
9 purchased from outside the region. Similar calculations are made for household spending,
10 to estimate how much goods and services can be provided by organizations within the
11 region versus what needs to be imported from other regions. The resulting predictions
12 take the form of multipliers that make it possible to quantify the indirect effects of
13 additional business spending (through the supply chain) and the induced effects of
14 employee and household spending (in the local consumer economy).

15 **Q.10. What data and inputs did you use for your study?**

16 TimkenSteel provided data and information used to define the relevant region and
17 industry for the IMPLAN input-output model and to calculate the regional economic and
18 fiscal impacts of the Stark County facilities. For 2014, TimkenSteel had, on average,
19 [REDACTED] full-time employees, almost all of whom lived in Stark County or one of five
20 other surrounding counties. TimkenSteel's total employee payroll for 2014 was about
21 \$216 million, plus \$ [REDACTED] in fringe benefits. For 2014, TimkenSteel made about
22 \$ [REDACTED] in direct tax payments to state and local governments.

1 **Q.11. Please explain the economic impacts of TimkenSteel's Stark County facilities.**

2 TimkenSteel's Stark County facilities have a total net annual economic impact in Ohio of
3 approximately 12,600 jobs and \$866 million in employee compensation. These impacts
4 include the direct impact of jobs and payroll at the Stark County facilities plus the
5 indirect effect of jobs and payroll at TimkenSteel's suppliers statewide and the induced
6 effect on the local businesses where TimkenSteel's employees spend their pay.

7 The IMPLAN model provides multipliers that estimate the amount of regional
8 purchasing that occurs based on data for the steel production industry as well as typical
9 supplier needs and typical household spending by employees. Based on the IMPLAN
10 model and data, the job multiplier for TimkenSteel's Stark County facilities is 4.952,
11 meaning that for every job at the Stark County facilities, another 3.952 jobs are created
12 elsewhere in Ohio. The income multiplier here is 3.069, meaning that for every \$1 of
13 payroll at the Stark County facilities, another \$2.069 in payroll is created in other Ohio
14 industries.

15 **Q.12. What are fiscal impacts and how are they different from the economic impacts?**

16 As explained, the economic impacts of the Stark County facilities account for jobs,
17 payroll and indirect and induced economic activity in the regional economy. Fiscal
18 impacts are related to but separate from those economic impacts and measure the state
19 and local tax revenues attributable to the Stark County facilities. Fiscal impacts are
20 estimated by applying published and effective tax rates to the economic impacts of the
21 Stark County facilities.

1 **Q.13. What are the regional fiscal impacts of TimkenSteel's Stark County facilities?**

2 Above and beyond regional economic impacts, the Stark County facilities directly and
3 indirectly support state and local tax revenue of about \$69.8 million.

4 At the state level, TimkenSteel directly paid approximately \$ [REDACTED] to the
5 State of Ohio for sales and use, commercial activity and energy taxes in 2014. By using
6 publicly available data, I also calculated effective sales and income tax rates. Applying
7 those rates to the total regional impact on employee compensation, I determined that
8 more than \$25 million in state individual income taxes and more than \$24 million in state
9 sales taxes are linked to TimkenSteel's payroll.

10 TimkenSteel's payroll also has local fiscal effects. For example, the company
11 pays about \$ [REDACTED] in property taxes each year. Using ratios of local tax
12 collections relative to local income, I estimate that TimkenSteel's payroll is linked to
13 about \$7.9 million in local income tax and to about \$4.2 million in local sales tax.

14 **Q.14. Please provide the Commission a brief summary of your conclusions regarding the**
15 **economic and fiscal impact of TimkenSteel's Stark County facilities.**

16 TimkenSteel's Stark County facilities have a large economic and fiscal impact in
17 Ohio. The facilities directly and indirectly support approximately 12,600 jobs, about
18 \$866 million in employee compensation, millions of dollars in purchases from suppliers
19 in Ohio, and more than \$70 million in state and local tax revenues each year.
20 TimkenSteel's sales also bring new dollars into Ohio from TimkenSteel's non-Ohio
21 customers and for every dollar in sales from the Stark County Facilities, other companies
22 in Ohio see an additional \$0.65 in sales.

1 The Stark County facilities have other positive economic impacts that are known
2 but hard to quantify. For example, the Canton area real estate market is linked to the
3 payrolls at the Stark County Facilities, as are social indicators, like unemployment and
4 crime, as well as the public costs to address them.

5 Q.15. **Does this conclude your direct testimony?**

6 Yes, but I reserve the right to supplement my testimony.

CERTIFICATE OF SERVICE

The Public Utilities Commission of Ohio e-filing system will electronically serve notice of the filing of the public version of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served upon the persons below via electronic mail this 25th day of November, 2015.

s/ Michael J. Settineri

Michael J. Settineri

Steven T. Nourse
American Electric Power Service Corporation
1 Riverside Plaza, 29th Floor
Columbus, OH 43215
stnourse@aep.com

Kimberly W. Bojko
Carpenter Lipps & Leland LLP
280 North High Street, Suite 1300
Columbus, OH 43215
bojko@carpenterlipps.com

David F. Boehm
Michael L. Kurtz, Esq.
Boehm, Kurtz & Lowry
37 East Seventh Street, Suite 1510
Cincinnati, OH 45202
dboehm@BKLawfirm.com
Mkurtz@BKLawfirm.com

Frank Darr
McNees Wallace & Nurick LLC
21 East State Street, 17th Floor
Columbus, OH 43215-4228
fdarr@mwncmh.com

Jodi Bair
Office of the Ohio Consumers' Counsel
10 West Broad Street, Suite 1800
Columbus, OH 43215-3485
bair@occ.state.oh.us

William L. Wright
Section Chief, Public Utilities Section
Assistant Attorney General
180 East Broad Street, 6th Fl
Columbus, OH 43215-3793
Telephone: (614) 466-4397
Facsimile: (614) 644-8764
bill.wright@puc.state.oh.us

Paul A. Coomes, Ph.D.

HOME: 3604 Trail Ridge Road Louisville, KY 40241 502.394.9017

OFFICE: Department of Economics, College of Business

University of Louisville Louisville, KY 40292 502.852.4841 paul.coomes@louisville.edu

Academic training

Ph.D. in Economics, 1985, University of Texas, Austin TX; Fields: Control Theory, Mathematical Programming, Econometrics; Dissertation: "Optimal Stochastic Control and U.S. Agricultural Policy"

M.S. in Economics, 1975, Indiana University, Bloomington IN

B.S. in Economics, 1973, Brescia College, Owensboro KY

Professional experience

Emeritus Professor of Economics, University of Louisville, August 2012 forward.

Professor of Economics, and National City Research Fellow, College of Business, University of Louisville, July 1999 to July 2012.

Executive Director, School of Economics and Public Affairs, College of Business and Public Administration, University of Louisville, August 1996 to June 1999.

Associate Professor of Economics and National City Research Fellow, College of Business and Public Administration, University of Louisville, January 1995 to June 1999.

Associate Professor of Economics, College of Business and Public Administration, University of Louisville, 1992-1999.

Assistant Professor of Economics, School of Business, University of Louisville, 1985-1991.

Teaching Assistant, Economics Department, University of Texas, Spring 1983 and 1985.

Research Associate, Bureau of Business Research, University of Texas, Fall 1981 to Summer 1983.

Assistant Director, Center for Applied Economic Research, University of Kentucky, 1981.

Consulting Economist, May to December 1980.

Manager, Kentucky Economic Information System, Kentucky Council of Economic Advisors, University of Kentucky, Lexington, January 1977 to May 1979.

Instructor, Brescia College, Owensboro KY, 1975-76 academic year.

Courses taught

Urban Economics (Ph.D. and undergraduate levels), Intermediate Microeconomic Theory, Economic Analysis and Forecasting (MBA and undergraduate levels), Senior Seminar in Economics, Principles of Economics, Economic Foundations for MBA students.

Other relevant experience, distinctions

2014 Distinguished Economist award, Kentucky Economic Association.

Dissertation committee member for 8 successful doctoral students in Urban Affairs program

Best Paper Award, Kentucky Economic Association, 2010.

Chair, Board of Directors, Wellspring, 2014 to present

Treasurer, Falls Creek Homeowners Association, January 2013 to present
 2007 and 2010 Faculty Distinguished Service Award, College of Business, University of Louisville
 2004 Chairman's Award, KentuckianaWorks
 2003 Community Service Award, Greater Louisville Inc Technology Network
 Member, Board of Directors, Bluegrass Institute for Public Policy, 2004 to 2005
 Member, Board of Directors, Thomas D. Clark Foundation, 1998 to 2005
 Consulting Editor (Economics), *The Louisville Encyclopedia*, 2000
 First Place Winner, Research Publication Category, American Council of Economic Development, 1996
 Associate Editor, *Journal of Urban Affairs*, 1995 to 1998
 President, Kentucky Economic Association, 1993-94
 Frankenthal Group faculty research award, academic years 1990-91 and 1991-92
 Board of Directors, Kentucky Economics Association, 1988-1991
 1988 Distinguished Faculty Service Award, School of Business, University of Louisville.
 Speaker's Bureau, University of Louisville
 Co-developer of *MODLER BLUE* software for advanced econometrics work on microcomputers, by contract with Alphametrics Corporation, Philadelphia, 1985-86
 Editor, *Kentucky Economy: Review and Perspective*, a quarterly publication of the Kentucky Council of Economic Advisors, Vol. 2, No. 2 through Vol. 3, No. 1
 Staff member, Indiana Public Interest Research Group (INPIRG), Bloomington IN, 1974-75

Professional organization memberships

American Economic Association
 North American Regional Science Association
 Kentucky Economics Association

Academic journal articles

with Glenn Blomquist, Christopher Jepsen, Brandon Koford, and Kenneth Troske, 2014, "Estimating the Social Value of Higher Education: Willingness to Pay for Community and Technical Colleges", *Journal of Benefit-Cost Analysis*, 5(1): 3-41, January.
 with Christopher Jepsen, Kenneth Troske, 2014, "The Labor Market Returns to Community College Degrees, Diplomas and Certificates", *Journal of Labor Economics*, 32(1): 95-121.
 with Jose Fernandez and Steve Gohmann, 2012, "The Rate of Proprietorship among Metropolitan Areas: The Impact of Local Economic Environment and Capital Resources", *Entrepreneurship Theory and Practice*, March, 26 pages.
 with Tom Rockaway, Joshua Rivard, and Barry Kornstein, 2011, "North American Water Usage Trends", *Journal of the American Water Works Association*, 103(2): 76-89, February.
 with William Hoyt and Amelia Biehl, 2011, "Tax Limits and Housing Markets: Some Evidence at the State Level", *Real Estate Economics*, 39(1): 97-132.
 with William Hoyt, 2008, "Income Taxes and the Destination of Movers to Multi-state MSAs", *Journal of Urban Economics*, 63: 920-937.

- with Nan-Ting Chou, 2005, "Cyclical Patterns and Structural Changes in the Louisville Area Economy Since 1990", Federal Reserve Bank of St. Louis *Regional Economic Development*, Volume 1, Number 1, pages 17-29.
- with David Simpson, Thomas Rockaway, Terry Weigel, and Carol Holloman, 2005, "Framing a New Approach to Critical Infrastructure Modelling and Extreme Events", *International Journal of Critical Infrastructures*, Volume 1, Number 2/3, pages 125-143.
- with Darren Clark and Alexei Izyumov, 2005, "The Location of Employment-based Immigrants Among US Metropolitan Areas", *Journal of Regional Science*, Volume 45, Number 1, pages 113-145 (February).
- with Alexei Izyumov, Nan-Ting Chou, and Babu Nahata, "Immigrant Concentration and Educational Attainment: Evidence from US Data", 2002, *Journal of International Migration and Integration*, Volume 3, Number 1, 2002, pages 17-39.
- with Alexei Izyumov and Babu Nahata, 2002, "Immigration to the Louisville Metropolitan Area: Recent Trends, Policy and Recommendations" *Brandeis Law Review*, Volume 40, Number 3, pages 1-24.
- with Tom Lambert, 2001, "An Evaluation of the Effectiveness of Louisville's Enterprise Zone", *Economic Development Quarterly*, May, Volume 15, Number 2, pages 168-180.
- "Economic Performance Measures for Metropolitan Areas", 1998, *Journal of Economic and Social Measurement*, Volume 24, pages 157-179.
- with John Vahaly, 1998, "The Economic Importance of the Military in Kentucky", *Kentucky Journal of Economics and Business*, Volume 17, pages 99-125.
- with Sung-Gun Lee, "Housing Finance in Korea", 1998, *Kyung Hee Public Affairs Journal*, Volume V, Number 1, February, pages 155-176.
- with Kevin Stokes, "On the Local Economic Impact of Higher Education in Kentucky", 1996, *Kentucky Journal of Economics and Business*, Volume 15, pages 37-49.
- with William Stober and Richard Thalheimer, 1994, "Measuring the Intrastate Distribution of State Government Funds: A Case Study", *Journal of Economic and Social Measurement*, Volume 20, Number 4, pp. 285-329.
- "A Kalman Filter Formulation for Noisy Regional Job Data", 1992, *International Journal of Forecasting*, Vol.7, pp. 473-481.
- with Dennis Olson, "An Economic Performance Index for U.S. Cities", 1991, *Economic Development Quarterly*, Vol.5 No.4, pp. 335-341 (November).
- with Dennis Olson and John Merchant, 1991, "Using a Metropolitan Area Econometric Model to Analyze Economic Development Proposals", *Urban Studies*, Vol.28, No.3, pp. 369-382.
- with Dennis Olson, 1990, "Using BEA and BLS Data to Monitor Metropolitan Area Economic Performance", *Journal of Economic and Social Measurement*, Vol.16(3), pp. 167-83.
- with Dennis Olson and Dennis Glennon, 1990, "The Interindustry Employment Demand Variable: An Extension of the I-SAMIS Technique for Linking Input-Output and Econometric Models", *Environment and Planning A*, Vol.23, pp. 1063-1068.
- "Forecasting the Present: MSA Employment by Industry", 1989, *Kentucky Journal of Economics and Business*, pp. 1-10.

"An Illustration of the Application of Control Methods in Choosing Optimal US Agricultural Policy", *Journal of Economic Dynamics and Control*, 1988, Vol. 12, pp. 161-166.

"PLEM: A Computer Program for Passive Learning, Stochastic Control Experiments", *Journal of Economic Dynamics and Control*, 1987, Vol. 11, pp. 223-227.

"Solvency and Adequacy of Kentucky's Unemployment Insurance Trust Fund", *Kentucky Journal of Economics and Business*, Volume 7, 1986-87, published for the Kentucky Economic Association, pp. 114-129.

"The Agriculture Industry in Texas", *Texas Business Review*, November 1983, Bureau of Business Research, University of Texas, Austin, pp. 272-278.

Conference presentations

with William Hoyt and Amelia Biehl, 2009, "Tax Limits and Housing Markets: Some Evidence at the State Level", North American Regional Science Association meetings, San Francisco, November 2009.

with Glenn Blomquist, Chris Jepsen, Brandon Koford, and Ken Troske, "Estimating the Social Value of Higher Education: Willingness to Pay of Community and Technical Colleges", North American Regional Science Association meetings, New York, November, 2008.

with William Hoyt, "A Model of Metropolitan Housing", North American Regional Science Association meetings, Savannah, November, 2007.

with William Hoyt, "A Model of Metropolitan Building Permits", Federal Reserve of St. Louis BERG Conference, St. Louis, May 2007.

with William Hoyt, "The Quantity and Price of New Housing Units in Metropolitan Areas", North American Regional Science Association meetings, Toronto, November, 2006.

with William Hoyt, "State Income Taxes and the Destination of Movers", Allied Social Science Association meetings, Boston, January 2006.

with Barry Kornstein, "Metropolitan Clusters: Stability of Membership over Time", North American Regional Science Association, Seattle, November 2004.

"Economic Conditions in Markets Around Kentucky", Federal Reserve Bank of St. Louis, meetings in Memphis, September 2004.

with Barry Kornstein, "Metropolitan Clusters: How Many Market Types are There", North American Regional Science Association, Philadelphia, November 2003.

with Darren Scott and Alexei Izyumov, "The Initial Location Choice of Legal Immigrants Among US Metro Areas", Southern Regional Science Association meetings, Louisville, March 2003.

with Chris Bollinger, "Initial Estimates of Underemployment in Kentucky Counties", Kentucky Economic Association, Lexington, October 2002.

with Alexei Izyumov and Darren Scott, "Why Did Vladimir Choose Omaha? The Initial Location Choice of Legal Immigrants", North American Regional Science Association meetings, San Juan, Puerto Rico, November 2002.

"The Enclave Effect on Education of Immigrants", with Alexei Izyumov, Babu Nahata, and Nan-Ting Chou, North American Regional Science Association meetings, Charleston SC, November 2001.

- "The Recent Economic Performance of Regions in Kentucky", Kentucky Economic Association meetings, Lexington, October 2001.
- "Measurement Systems for Regional Economic Development", at Federal Reserve Bank of Dallas conference *Can Cities Control Their Destiny?*, San Antonio, TX, August 1999.
- "An Economic Indicator System for Metropolitan Areas", Regional Economic Indicators Workshop, Braga, Portugal, June 1998
- "Comprehensive Measures of Metropolitan Area Performance: Accounting for Economic Development", Southern Regional Science Association annual meetings, Baltimore, MD, April 1996.
- "Long Range Economic and Demographic Forecasting in Support of Local Land Use Planning", North American Regional Science Association meetings, Cincinnati, OH, November 1995.
- "Long Range Economic and Demographic Forecasting in Support of Local Land Use Planning", Kentucky Economic Association annual meeting, Lexington, KY, October 1995.
- "Greater Louisville Forecasts of Jobs, People and Income: 1995 to 2020", Kentucky Economic Association annual meeting, Lexington, KY, October 1994.
- "The Recreation Quotient: Measuring the Import Substitution Effect of Local Events", with Dennis Olson, Western Economic Association Meeting, Lake Tahoe, Nevada, June 1993.
- "Measuring the Impact of the Kentucky Derby", Kentucky Economics Association annual meeting, Lexington KY, October 25, 1991.
- "Using Linked Input-Output/Econometric Models to Analyze Economic Development Proposals", Association of University Business and Economic Research, 1991 Fall Conference, St. Petersburg, FL, October 9, 1991.
- "Using a Metropolitan Area Econometric Model to Analyze Economic Development Proposals", Kentucky Economic Association meeting, Lexington KY, September 14, 1990.
- "Research Tools for Economic Development", presentation to State Governments/Higher Education Partnership Conference, Louisville KY, December 5, 1989
- "Tools for Evaluating the Benefits of Economic Development Proposals", presentation to Leadership Kentucky conference, Erlanger KY, October 13, 1989.
- "Regional Information Sources, Applications and Techniques of Analysis", invited presentation at MODLER/DATAVIEW Users' Conference and Training Session, Philadelphia PA, October 10-11, 1989
- "An Earnings-Weighted Job Index for Cities", Kentucky Economic Association meeting, Louisville KY, September 29, 1989
- "Input-Output Studies and Econometric Models", American Chambers of Commerce Research Association, San Diego, CA, June 1989.
- "The Recovery of Louisville and Other Midwestern Cities", The Economic Roundtable, Louisville KY, February 28, 1989
- "Forecasting Regional Employment by Industry: Kalman Filters", 35th North American Meetings of the Regional Science Association, Toronto CANADA, November 13, 1988.
- "Forecasting the Present: Regional Employment by Industry", presented at annual meeting of Kentucky Economic Association, Lexington, KY, September 23, 1988.

- "Filtering Provisional Regional Employment Estimates by Industry", presented at 5th Annual Regional Modelling Conference, Louisville, KY, May 3, 1988
- "Filtering Provisional Regional Employment Estimates by Industry", presented at Midwest Decision Sciences Institute meetings, Louisville, KY, May 7, 1988
- "Using Your Model to Improve Preliminary Estimates of Regional Income and Employment", presented at 41st Annual Conference of Association of University Business and Economic Research, San Francisco, CA, November 3, 1987.
- "Organizing Your Data for Economic Analysis" invited presentation at MODLER/DATAVIEW Users' Conference and Training Session, Philadelphia, PA, October 20-21, 1987.
- "An Illustration of the Application of Stochastic Control Methods in Choosing Optimal U.S. Agricultural Policy", presented at Ninth Annual Conference of Society of Economic Dynamics and Control, Boston, June, 1987.
- "Forecasting the Present in Regional Economies," (revised), presented at Seventh International Symposium on Forecasting, Boston, May 1987
- "Forecasting the Present in Regional Economies," presented at Fourth Annual Economic Regional Modeling Conference, University of Louisville, May 1987.
- "PLEM: A Computer Program for Passive Learning Stochastic Control Experiments," presented at Fifth IFAC/IFORS Conference on Dynamic Modeling of National Economies, June 1986, Budapest, HUNGARY.
- "An Optimal Control Approach to Managing Unemployment Insurance Trust Funds," Third Annual Regional Economic Modeling Conference, University of Louisville, May 1986.

Reviewing and Refereeing

articles for:

Environment and Planning A
European Journal of Operational Research
Growth and Change
Kentucky Journal of Business and Economics
Regional Science Perspectives
International Journal of Forecasting
Journal of Forecasting
Journal of Economic and Social Measurement
Journal of Development Economics
Journal of Urban Affairs
National Tax Journal
Real Estate Economics
Regional Science and Urban Economics
Urban Studies

books for:

Dryden Publishing Company

Grawemeyer World Order Award
Harcourt, Brace, Jovanovich, Publishers
McGraw-Hill
Society of Economic Dynamics and Control Sightings
West Publishing Company
Wadsworth Publishing Company

Contract research reports (most available at <http://monitor.louisville.edu>)

- with Barry Kornstein, "The Economic and Fiscal Importance of the Distilling Industry in Kentucky", for the Kentucky Distillers Association, January 2012, 30 pages.
- with Barry Kornstein and Chris Heiniger, "The Economic and Fiscal Impacts of the 2010 Breeders' Cup World Championships at Churchill Downs in Louisville, Kentucky", for Breeders Cup Lmt'd, March 2011, 17 pages.
- with Tom Rockaway, Barry Kornstein and Josh Rivard, *North American Residential Water Usage Trends Since 1992*, for the Water Research Foundation, Report #4031, 2010, 148 pages.
- with Barry Kornstein, "The Economic and Fiscal Importance of the Distilling Industry in Kentucky", for the Kentucky Distillers Association, July 2009, 25 pages.
- with Paminder Jassal, Barry Kornstein, and Greg Virgin, "The Economic Importance of Military Activity in Kentucky: 2008 Update", for the Kentucky Commission on Military Affairs, December 2008, 28 pages.
- with Glenn Blomquist, Chris Jepsen, Brandon Koford, and Ken Troske, "Estimating the Social Value of Higher Education: Willingness to Pay for Community and Technical Colleges", for the Kentucky Community and Technical College System, December 2007, 75 pages.
- with Barry Kornstein, "The Economic Impact of Events in 2005 at the Kentucky Fair and Exposition Center and the Kentucky International Convention Center", for the Kentucky State Fair Board, January 2006, 19 pages.
- with Margaret Maginnis, "Louisville's Health-Related Economy 2006", for the Greater Louisville Health Enterprises Network, May 2006, 77 pages.
- with Barry Kornstein, "Kentucky's Economic Competitiveness: A Call for Modernization of the State's Fiscal Policies", November 2004, 73 pages.
- "The Economic Importance of Owensboro's Riverport", for Owensboro Riverport Authority, October 2004, 12 pages.
- with Barry Kornstein and Raj Narang, "The Economic Importance of Military Activity in Kentucky: 2004 Update", with Raj Narang and Barry Kornstein, January 2004, 32 pages.
- "Capacity and Performance of Philanthropy, Charitable Giving, and the Public Sector in Owensboro-Daviess County Kentucky", for the Hager Educational Foundation, January 2004, 30 pages.
- with Michael Price, "The Louisville Labor Force: Report on the State of the Regional Workforce 2003", for KentuckianaWorks, 30 pages, April 2003.

with Ted Strickland, "The Size, Characteristics, and Performance of Technology-intensive Industries in the Louisville Area Economy", for Greater Louisville Inc Technology Network, October 2003, 56 pages.

with Mark Berger et al, "Kentucky Labor Supply and Demand Surveys", for Kentucky Cabinet for Workforce Development, November 2002, University of Kentucky and University of Louisville, 84 pages.

with Barry Kornstein, "The Economic Impact of Events in 2001 at the Kentucky Fair and Exposition Center and the Kentucky International Convention Center", for the Kentucky State Fair Board, January 2002, 19 pages,

with Alexei Izyumov and Babu Nahata, "Immigration to the Louisville Metropolitan Area: Trends and Characteristics", for C.S.&E. Foundation, June 2001, 52 pages.

with Raj Narang, "Louisville's Health-Related Economy: Size, Character and Growth", for Greater Louisville Inc, May 2001, 25 pages.

with Michael Price, "The Recent Economic Performance of Regions in Kentucky", for Kentucky Economic Development Cabinet, May 2001, 67 pages,.

with Barry Kornstein, "Macro Performance Indicators for the Louisville Area Economy", March 2001, sponsored by National City, 65 pages.

with William Hoyt and Mark Berger, "Statutory and Economic Incidence of Taxes in Kentucky and Surrounding States" for the Kentucky Chamber of Commerce, January 2001, 25 pages.

with Barry Kornstein, "An Economic Analysis of the Gainsborough to Rembrandt Art Show", Speed Art Museum, December 2000, 16 pages.

with Raj Narang, "The Economic Importance of Arts and Cultural Attractions in the Louisville Area", Greater Louisville, Inc., November 1999, 22 pages.

with Michael Price, "The Louisville Labor Force: Trends and Issues", Workforce Investment Board, October 1999, 20 pages.

with Barry Kornstein, "The Intrastate Distribution of Kentucky State Government Revenues and Expenditures", Fiscal Year 1996-97", August 1999, 16 pages.

with Alexei Izyumov and Babu Nahata, "Attracting Immigrants to Urban Areas", C.S.&E. Foundation, August 1999, 50 pages.

with Barry Kornstein, "The Economic Impact of the Breeders' Cup Race", Churchill Downs, July 1999, 18 pages.

with John Vahaly, "The Economic Impact of Military Activities in Kentucky", Kentucky Commission on Military Affairs, Fall 1997 (and December 2000 update), 32 pages.

with Barry Kornstein, "The Economic Impact of 1997 Events at the Kentucky Fair and Exposition Center and Commonwealth Convention Center", for the Kentucky State Fair Board, 1997, 22 pages.

with Nan-Ting Chou, "Long-Term Economic and Demographic Forecasts for the Louisville Market, including Forecasts of Electricity and Water Sales by Customer Type", for the Louisville Gas and Electric Company and the Louisville Water Company, five year contract beginning 1997, 23-page reports annually.

“The Economic Impact of Louisville’s Downtown Medical Center”, for Jewish Hospital, October 1996, 23 pages.

with Barry Kornstein, “1995 Macro Performance Indicators”, sponsored by National City, March 1996, 75 pages.

“Agribusiness in the Louisville Area Economy”, for Louisville Area Chamber of Commerce and Kentucky Department of Agriculture, May 1996, 65 pages.

with Michael Price, "Sub-Area Forecasts of People, Housing and Jobs: 1995 to 2020", for Jefferson County Comprehensive Land Use Plan, Louisville Area Chamber of Commerce and Greater Louisville Economic Development Partnership, August 1995, 68 pages.

with Michael Price and Nan-Ting Chou, "Greater Louisville Forecasts of Jobs, Population and Income: 1995 to 2020", for Jefferson County Comprehensive Land Use Plan, Louisville Area Chamber of Commerce and Greater Louisville Economic Development Partnership, July 1994, 24 pages.

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"The Economic and Fiscal Impact of the Downtown Medical Center", for Jewish Hospital Corporation, June 1994, 18 pages.

with Bruce Gale, "The Economic Impact of Events at the Kentucky Fair and Exposition Center and the Commonwealth Convention Center", for the Kentucky Fair Board, Summer 1993, 20 pages.

University Research Contracts (Principal Investigator)

with Barry Kornstein, “Economic and Fiscal Impact Models”, Kentucky Economic Development Cabinet, 2011-12, \$28,000.

with Barry Kornstein, and Shaheer Burney, “The Economic Importance of Military Activity in Kentucky: 2012 Update”, Kentucky Commission on Military Affairs, June 2012, \$30,000.

“Economic Research Support to Bluegrass Economic Advancement Movement”, sponsored by BEAM group, 2011-12, \$45,000.

with Barry Kornstein, “Updates to Occupational Outlook, Human Capital Scorecard”, for KentuckianaWorks, July 2011 to June 2012, \$40,000.

with Barry Kornstein, “The Economic and Fiscal Impact of Kentucky’s Distilling Industry”, for the Kentucky Distillers Association, 2011-12, \$25,000.

“Economic and Fiscal Performance Measures of Downtown Louisville”, Downtown Development Corporation, 2011, 2012, 2013, \$75,000.

with Barry Kornstein, “Updates to Occupational Outlook, Human Capital Scorecard”, for KentuckianaWorks, July 2010 to June 2011, \$40,000.

“Water Demand Forecasts for the Cleveland Region”, for Cleveland Division of Water, November 2009 to March 2010, \$30,000.

“Forecasts of Metro Government Revenues”, for Louisville-Jefferson County Government, January to July, 2009, \$9,000.

with Barry Kornstein, “Updates to Occupational Outlook, Human Capital Scorecard”, for KentuckianaWorks, July 2009 to June 2010, \$40,000.

“The Economic and Fiscal Impact of Changes at Fort Knox”, for Lincoln Trail Area Development District, July 2009 to December 2010, \$40,000.

with Barry Kornstein, “The Economic and Fiscal Impact of Kentucky’s Distilling Industry”, for the Kentucky Distillers Association, May to August 2009, \$30,000.

with Barry Kornstein, “Economic, Demographic and Water Sales Forecasts for the 23-County Regional Economy”, for the CDM Engineering Company /Louisville Water Company, June 2008 to July 2009, \$40,000.

with Barry Kornstein, “Updates to Occupational Outlook, Human Capital Scorecard”, for KentuckianaWorks, June 2008 to June 2009, \$40,000.

with Paminder Jassal, Barry Kornstein, and Greg Virgin, “The Economic Importance of Military Activity in Kentucky: 2008 Update”, December 2008, \$30,000.

with Barry Kornstein, “Economic Impact Modeling System for Hospitals”, for Kentucky Hospital Association, May to December, 2007, \$25,000.

with Ken Troske, “ The Economic Value of the Kentucky Community and Technical College System”, for KCTCS, joint with University of Kentucky, \$260,000, January to December, 2007.

“The Economic Impact of 2007 Events at the Kentucky Horse Park”, for Kentucky Horse Park, January 2007 to June 2008, \$35,000.

with Tom Rockaway, “Changes in Water Use Patterns”, for the American Water Works Association Research Foundation, November 2006 to August 2008, \$301,000.

with Michael Price, “Updates to Occupational Outlook, Human Capital Scorecard”, for KentuckianaWorks, \$60,000, June 2006 to June 2007.

“Update to Strategic Plan”, for Kentucky Commission on Military Affairs, \$20,000, June to December 2006.

with William Hoyt (UK) “Property Taxation Practices and Impacts throughout the United States since Proposition 13”, for National Center for Real Estate Research, \$37,000, July 2005 to June 2006.

“Louisville’s Health Related Economy”, for the Greater Louisville Health Enterprises Network, \$35,000, January to June 2006.

“Economic and Demographic Forecasting Model, with Forecasts, for Regions in Kentucky”, for Louisville Gas and Electric Company, \$20,000, November 2005 to June 2006.

“The Economic Impact of 2005 Events at the Kentucky Fair and Exposition Center, and the Louisville International Convention Center”, for Kentucky Fair Board, \$36,000, January 2005 to June 2006.

“Revenue Forecasting Model, with Forecasts”, for Louisville-Jefferson County Metro Government, \$30,000, July 2004 to June 2005.

“The Economic Importance of Owensboro’s Riverport”, for Owensboro Riverport Authority, October 2004, \$15,000, July to December 2004.

“Economic and Demographic Forecasting Model, with Forecasts, for Regions in Kentucky”, for Louisville Gas and Electric Company, \$20,000, July 2004 to December 2004.

with Michael Price, "Occupational Characteristics and Forecasts for 24-County Louisville Economy", plus other labor-related projects, sponsored by KentuckianaWorks, April 2004 to June 2005, \$70,000.

"The Intrastate Distribution of Kentucky State Government Revenues and Expenditures, FY 2003", sponsored by Greater Louisville Inc, Northern Kentucky Chamber of Commerce, TRI-ED economic development group in northern Kentucky, and Lexington Urban County Government, March to December 2004, \$24,000.

"Capacity and Performance of Philanthropy, Charitable Giving, and the Public Sector in Owensboro-Daviess County Kentucky", for the Hager Educational Foundation, February to December 2003, \$15,000.

"The Economic Importance of Military Activity in Kentucky: 2004 Update", for the Kentucky Commission on Military Affairs, May 2003 to February 2004, \$20,000.

with Ted Strickland, "The Technology Industry in the Louisville Economy", for Greater Louisville Inc Technology Network, March to December 2003, \$20,000.

with Michael Price, "Labor Supply Analysis of the Louisville Market", KentuckianaWorks, July 2002 forward, \$25,000.

with Barry Kornstein, "Comparative Study of Light Rail Systems", Transit Authority of River City, July 2002, \$20,000.

"Economic Impact Model for Hospitals in Kentucky", Kentucky Hospital Association, November 2001, \$18,000.

with Bruce Gale, "Labor Market Supply and Demand Study", Kentucky Workforce Cabinet, September 2001, \$155,000.

"Economic, Demographic and Water Sales Forecasts for the 23-County Regional Economy", for the Black and Veatch Corporation/Louisville Water Company, July 2001, \$33,000,

with Nan-Ting Chou and Barry Kornstein "Economic, Demographic and Industrial Electricity Forecasts for the Louisville Area", for the Louisville Gas and Electric Company, \$10,000.

"Economic Development Strategies for Kentucky Regions", Kentucky Economic Development Cabinet, July 2001, \$20,000.

"Economic Analysis of Kentucky Fair Board Events During 2001", Kentucky Fair Board, February 2001, \$30,000.

"Economic Monitoring System for Louisville's Health-Related Economy", Greater Louisville Inc, January 2001, \$27,000.

"Economic Analysis Tools" for Industry Inc. of Owensboro, December 2000, \$10,000.

with Michael Price, "Economic Performance Measures for Kentucky Regions", Kentucky Economic Development Cabinet, November 2000, \$50,000.

with Barry Kornstein, "An Economic Analysis of the Gainsborough to Rembrandt Art Show", Speed Art Museum, September 2000, \$15,000.

"The Economic Importance of Arts and Cultural Attractions in the Louisville Area", Greater Louisville, Inc., November 1999, \$18,000.

with Michael Price, "Labor Force Analysis of the Louisville Economic Area", Workforce Investment Board, October 1999, \$25,000.

with Alexei Izymov and Babu Nahata, "Analysis of Immigration Patterns Among US Cities", CS&E Foundation, August 1999, \$56,000.

"The Economic Impact of the Breeders' Cup Race", Churchill Downs, October 1998, \$18,000.

"The Fiscal Impact of UPS Operations in Louisville", United Parcel Service, Fall 1998, \$6,000.

"Strategic Marketing Plan for Military Assets in Kentucky", the Kentucky Commission on Military Affairs, 1998-99, \$200,000.

with Steve Gohmann, "The Economic Impact of the Hospital Industry in Kentucky", Kentucky Hospital Association, Winter 1997-98, \$25,000.

with John Vahaly, "The Economic Impact of Military Activities in Kentucky", Kentucky Commission on Military Affairs, Fall 1997, \$25,000.

"An Economic Impact Model for the Owensboro, Kentucky Regional Economy", Industry Incorporated, Owensboro, Spring 1997, \$5,000.

"The Economic Impact of 1997 Events at the Kentucky Fair and Exposition Center and Commonwealth Convention Center", for the Kentucky State Fair Board, 1997, \$20,000.

with Nan-Ting Chou, "Long-Term Economic and Demographic Forecasts for the Louisville Market, including Forecasts of Electricity and Water Sales by Customer Type", for the Louisville Gas and Electric Company and the Louisville Water Company, five year contract beginning 1997, at \$20,000 per year.

"The Economic Impact of Louisville's Downtown Medical Center", for Jewish Hospital, July 1996, \$6,000.

"Agribusiness in the Louisville Area Economy", for Louisville Area Chamber of Commerce and Kentucky Department of Agriculture, March 1995 to February 1996, \$25,000.

with Michael Price, "Database on Municipal Finances", Jefferson County Governance Task Force, Louisville Area Chamber of Commerce, September 1995, \$8,000.

with Michael Price, "Sub-Area Forecasts of People, Housing and Jobs: 1995 to 2020", for Jefferson County Comprehensive Land Use Plan, Louisville Area Chamber of Commerce and Greater Louisville Economic Development Partnership, September 1994 to August 1995, \$30,000.

with Michael Price and Nan-Ting Chou, "Greater Louisville Forecasts of Jobs, Population and Income: 1995 to 2020", for Jefferson County Comprehensive Land Use Plan, Louisville Area Chamber of Commerce and Greater Louisville Economic Development Partnership, December 1993 to July 1994, \$65,000.

with Stephan Gohmann, "The Impact of the University of Louisville on the Louisville Economy", for President's Office, University of Louisville, September 1994, \$6,000.

"The Economic and Fiscal Impact of the Downtown Medical Center", for Jewish Hospital Corporation, June 1994, \$6,000.

with Bruce Gale, "The Economic Impact of Events at the Kentucky Fair and Exposition Center and the Commonwealth Convention Center", for the Kentucky Fair Board, Summer 1993, \$18,000.

Economic impact study for ARCO Aluminum, June 1993, \$6,000.

Economic consultant to Bank One of Kentucky, 1993 to 1995, \$10,000 per year.

Economic consultant to General Electric Company, Winter 1992-93, \$4,000.

Economic consultant to Louisville Water Company, 1992-95, \$5,000 per year.

Economic consultant to Galloway Appraisal Company, Louisville, August 1992.

Principal Investigator, "A Cost Comparison Between the Archdiocese of Louisville School System and the Jefferson County Public School System" and "Public Tax Savings from the Operation of Catholic Schools in Jefferson County Kentucky, for the Archdiocese of Louisville, November 1993 to February 1994, \$5,000.

Principal Investigator, "The Archdiocese of Louisville Factbook", for the Archdiocese of Louisville, December 1992 to January 1993, \$5,000.

Principal Investigator, "The Intra-State Distribution of Kentucky State Government Revenues and Expenditures", for Louisville Area Chamber of Commerce, funded by Greater Louisville Economic Development Partnership, November 1991 to August 1992, \$20,000.

Principal Investigator, "Economic Development Electronic Information Network", sponsored by a grant from First National Bank, 1990 to 1995, \$25,000 per year.

Principal Investigator, "The Impact of the 1991 Kentucky Derby and 1991 Breeders' Cup", sponsored by the Equine Industry program at the University of Louisville, February 1991 to July 1992, \$30,000.

Co-Principal Investigator with Dennis Olson, "Analysis and Critique of Louisville Gas and Electric Company's 1988 Load Forecast, December 1989, \$3,000.

Principal Investigator and Creator, "Economic Performance Index for Cities" for the Greater Louisville Economic Development Partnership, through the University Bureau of Economic Research, 1987 to 1993, \$20,000 per year.

Principal Investigator, "Economic Impacts of Economic Development Initiatives", retainer with City/County Office for Economic Development to evaluate the economic and fiscal impact of proposed initiatives, 1989 to 1994, \$20,000 per year.

Co-Principal Investigator with Dennis Olson, Dennis Glennon and Julia Lane, Economic Development Modelling System, funded by City of Louisville and Jefferson County through Bureau of Economic Research, University of Louisville, June to December, 1988, \$120,000.

Long Range Economic Forecasts of the Louisville Economy, for Louisville Gas and Electric Company, through Bureau of Economic Research, University of Louisville, annual, 1987 to present, \$6,000 per year.

Co-Principal Investigator with John Bernardo and Charles Hultman, "Impact of Increased User Fees on Kentucky's Waterborne Transportation," for Kentucky Department of Commerce, by Office of Research, College of Business and Economics, University of Kentucky, April 1982, 105 pages, \$15,000.

Other Consulting, Service

Chair of Board of Directors, Wellspring, Louisville, 2014 forward.

Treasurer, Falls Creek Homeowners Association, 2013 forward.

Member of transition team, Kentucky Governor Matt Bevin, 2015, pro bono.

Economic consultant, expert witness, for TimkenSteel Corporation, 2014 forward.

Economic consultant, Kentucky Hospital Association, 2015.

Economic consultant, Louisville Convention and Visitors Bureau, Economic Impact of PGA Championship at Valhalla, 2014.

Senior Economic Advisor, Kentucky Chamber of Commerce, 2014 forward.

Economic consultant, Kentucky Industrial Utility Customers, 2013.

Economic consultant, Kentucky Wine and Spirits Wholesalers, 2010 to 2015.

Economic consultant on Ohio River Bridges project, Ogle Foundation, 2012.

Economic consultant, Kentucky Oil and Gas Association, 2012.

Economic consultant, Brown-Forman, 2007, 2008, 2010, 2011, 2015.

Economic consultant, expert witness, for Kentucky Industrial Utility Customers, 2010, 2011.

Economic consultant, Gallatin Steel Corporation, 2010.

Economic consultant, PPL Corporation, 2010.

Economic consultant, expert witness, for Noranda Aluminum, 2009-10.

Economic consultant, expert witness, for Ormet Aluminum, 2008-13.

Economic consultant to E.ON (LGE, KU), 2009.

Economic consultant to Home Builders Association of Louisville, 2008-09.

Economic consultant to Century and Rio Tinto aluminum companies, 2007, 2009, 2011.

Pro bono economic consultant to Louisville Arena (Yum! Center) task force, 2004-05.

Economic consultant to Nally and Haydon Holdings, Bardstown, 2006-07.

Economic consultant to Amazon Corporation, 2006

Member of Transition Team, Governor Ernie Fletcher, November-December 2003, pro bono.

Economic Consultant to Elizabethtown Tourism and Convention Bureau, July 2003.

Economic Consultant to Bullitt family, per their real estate development of farm.

Member, Merger Transition Task Force, City of Louisville and Jefferson County Governments, 2001-2002, pro bono.

Expert witness before Kentucky Public Service Commission, E.ON acquisition of Powergen, August 2001.

Consultant to Indiana 21st Century Fund, dispersing \$50 million to commercialize high tech ideas, May 2000.

Economic Consultant to Kentucky Economic Development Corporation, May-July, 1999.

Economic consultant to the City of Los Angeles and the Milken Institute for Job and Capital Creation, 1996-1998.

Economic consultant to Bullitt County (Kentucky) Tourist Commission, January to March, 1997.

Economic consultant to Professional Golfers Association, PGA Championship, 1996.

Economic consultant to Harrison County (Indiana) Chamber of Commerce.

Economic consultant to Kentucky Utilities Company.

Member of Task Force, Jefferson County Governance Project (merger), 1995, pro bono.

Economic consultant to Bullitt County (Kentucky) Tourist Commission, October-December 1994.

Economic consultant to Carroll County (Kentucky) Economic Development Corporation, July 1994.

Economic consultant to Perry County (Indiana) Economic Development Corporation, June 1993 forward.

Expert testimony, Reynolds Metal Company, April 1993.

Chairman of research committee, Louisville Area Chamber of Commerce, 1992-93, pro bono.

Member of Steering Committee, Regional Economic Development Strategy (REDS), Louisville Area Chamber of Commerce, 1992-94, pro bono.

Member of research committee, Goals for Greater Louisville, 1991-92, pro bono.

Economic consultant to Chi-Chi's restaurant company, 1990-91.

Computer system design and purchasing consultant to Kentucky Indiana Planning and Development Authority (KIPDA), pro bono, February 1989, pro bono.

Member, Delphi Panel on long-range utility forecasts, Louisville Gas and Electric Company, May 1987.

Forecasts for the Retail Automotive Sales and the Coal Industry in central and eastern Kentucky, for First Security National Bank, Lexington, KY, with Charles G. Renfro and Associates, 1980.

Study of the Impact of the Proposed Coal Gasification Plant on the Economies of Daviess and Henderson Counties, KY, for U.S. Department of Energy, with Charles G. Renfro and Associates, 1979.

PAC-2

The Estimated Economic and Fiscal Impacts of TimkenSteel Corporation's Operations in Stark County, Ohio

by
Paul A. Coomes, Ph.D.
Consulting Economist

August 19, 2015

EXECUTIVE SUMMARY

TimkenSteel Corporation's "Stark County Facilities" – its worldwide headquarters and three manufacturing plants in Stark County, Ohio – have a large economic and fiscal impact in Ohio. I estimate that at the Stark County Facilities, every job created results in another 3.952 jobs elsewhere in Ohio and every dollar of payroll supports another \$2.069 in payrolls in other Ohio industries. Based on these economic multipliers, the Stark County Facilities' have a total net annual economic impact in Ohio of approximately 12,600 jobs and \$866 million in employee compensation. TimkenSteel's sales also bring new dollars into Ohio from TimkenSteel's non-Ohio customers and for every dollar in sales from the Stark County Facilities, other companies in Ohio see an additional \$0.65 in sales. More than \$70 million in tax revenues in Ohio are linked to the Stark County Facilities – including more than \$56 million in taxes paid to the State of Ohio and more than \$13 million paid to local governments in the six-county region where most of the employees at the Stark County Facilities live and work. TimkenSteel directly supports more than \$500,000 in annual charitable, civic and community initiatives and has a large economic impact on the manufacturing economy in Stark County.

INTRODUCTION

TimkenSteel Corporation has its worldwide corporate headquarters and three manufacturing plants in Stark County, Ohio (the "Stark County Facilities"). It is a major producer of specialty alloy steel in the United States. TimkenSteel is interested in learning about and documenting the regional economic importance of its Stark County Facilities. The purpose of this report is to document and communicate the regional economic and fiscal importance of its Stark County Facilities to Ohio.

The Stark County Facilities employed [REDACTED] people on average per month in 2014. The annual payroll is about \$216 million, plus \$[REDACTED] in fringe benefits paid by the company for the employees. Ninety-five percent of its employees reside in six Ohio

counties – Stark, Tuscarawas, Carroll, Summit, Wayne, and Columbiana. TimkenSteel reports industrial vendors across the state of Ohio. Based on this and other regional economic data, and using a customized industry input-output model to estimate the economic impacts of the Stark County Facilities, it is my opinion to a reasonable degree of economic certainty that the Stark County Facilities’ total net annual economic impact in Ohio is approximately 12,600 jobs and \$866 million in employee compensation. Further, it is my opinion to a reasonable degree of economic certainty that state and local governments in Ohio received at least \$70 million in tax revenues in 2014 related to operations at the Stark County Facilities.

The above estimates are for the economic and fiscal categories most easily quantified. Although difficult to quantify, there are other, positive economic impacts related to the operation of the Stark County Facilities. For example, the Canton area real estate market is linked to the payrolls at the Stark County Facilities, but it is very difficult to sort out all the factors that contribute to housing values and commercial properties. Real estate markets are impacted over decades by complex interactions among many factors, including retirements, migration, mortgages, second incomes, second careers, children, as well as any industrial changes in the marketplace. Social indicators, like unemployment and crime, also are likely related to the TimkenSteel Stark County Facilities’ employment levels, as are public costs for unemployment benefits, retraining, and social services. And the finances of local school districts are linked to TimkenSteel’s operations. TimkenSteel directly pays about \$[REDACTED] in property taxes annually, and employees also pay property taxes on their homes.

Since acquiring the steel operations and headquarters in 2014, TimkenSteel and its employees have also supported the local community in ways not easily captured by economic models. The company reports the following charitable initiatives:

- It has a matching gift program, to leverage employee donations to about seventy nonprofit organizations.
- The TimkenSteel Charitable Fund has awarded about \$140,000 in grants to community charities.
- The company-wide United Way campaign resulted in about \$400,000 in contributions in 2014 from employees and company grants.
- Employees contributed \$57,000 to the 2015 ArtsinStark campaign.
- Company sponsorships of local events total \$47,000 so far.

In the remainder of the report, I describe the methods used in this study, provide the detailed economic and fiscal estimates, and also highlight the relative importance of manufacturing industries to the Stark County region.

METHODOLOGY

Because the steel and related manufacturing operations of the Stark County Facilities serve primarily national and international markets, they bring new dollars into the regional economy – as opposed to simply absorbing local dollars, as is the case for most retail and service operations. In this sense, the opening or closing of the Stark County Facilities would have large and predictable economic and fiscal impacts in Ohio. I now turn to a discussion of the methods used to measure the regional economic and fiscal impacts. First, I explain how I defined the regional economic footprint for purposes of this impact study. Then, I discuss in some detail the input-output model used to measure the statewide impacts.

Location and Economic Footprint

The Stark County Facilities include three plants and TimkenSteel's corporate headquarters, and are all located in zip code 44706 in Stark County, about 60 miles south of Cleveland. The corporate headquarters and the Harrison Plant on Dueber Avenue are in the City of Canton. The Faircrest Plant is in Perry Township. The Gambrinus Plant is a tube rolling facility on Gambrinus Avenue in Canton Township. The approximate locations are identified on the google map in Figure 1.

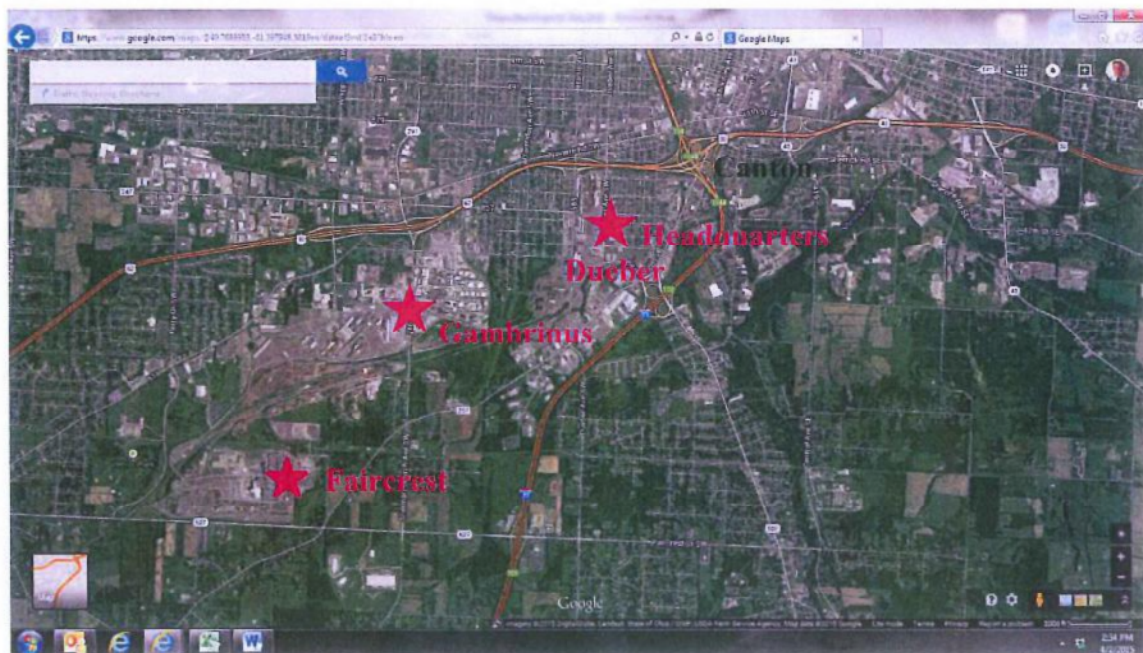


Figure 1. Map showing locations of facilities

The high paying jobs at the Stark County Facilities attract workers from a large area. In 2014, for example, company records showed that TimkenSteel employees lived in about two dozen different Ohio counties. The distribution is illustrated by green shading on

the map in Figure 2. At the same time, ninety-five percent of the employees reside in six counties: Stark, Tuscarawas, Carroll, Summit, Wayne, and Columbiana. That concentration is shown in the darker green shading in the upper right of Figure 2. TimkenSteel reports that it has suppliers all over the state of Ohio. Therefore, the economic impacts are statewide, though the primary employee spending and tax impacts are in the region around the facilities.

Input-output model of Ohio

To evaluate the economic and fiscal impacts of the Stark County Facilities, I use standard regional economic impact methods. I obtained detailed economic data for the State of Ohio, and used them to



Figure 2. Where TimkenSteel employees live in Ohio

build an IMPLAN input-output model of the region.¹ The model is able to simulate the effects of changes in economic activity for any of 500 regional industries. It also can predict detailed inter-industry purchases and household spending related to industrial changes. Such region-specific models have the advantage that they take into account those industrial supplies and retail items likely available in the region, and thus provide more precise economic impact estimates than one that assumes everything is available in the region. The more that local industries can support the plant operation and the employees' household demands, the greater the regional economic multipliers, and hence the greater the predicted regional economic impact.

¹ IMPLAN is a well-researched and popular regional input-output modeling system, and has been used for thousands of impact studies. It was originally developed by economists at the University of Minnesota, and is sold by IMPLAN Group, LLC. See www.implan.com for documentation.

The IMPLAN sector of interest used for this study is number 217, Iron and Steel Mills and Ferroalloy Manufacturing. This industry is defined according to the North American Industrial Classification System (NAICS) code 331111. The official definition is as follows:

This U.S. industry comprises establishments primarily engaged in one or more of the following:

(1) direct reduction of iron ore; (2) manufacturing pig iron in molten or solid form; (3) converting pig iron into steel; (4) making steel; (5) making steel and manufacturing shapes (e.g., bar, plate, rod, sheet, strip, wire); and (6) making steel and forming tube and pipe.

www.census.gov/naics/2007/def/N331111.HTM

At the heart of regional input-output models are the estimates of how much of the supply needs of an industry can be provided by other regional industries. The models use federal data on the presence of industries in the local economy to predict how much of an industry's inputs can be supplied locally versus that which must be imported from other regional economies.

Table 1. Top Commodities Purchased per \$1 million of Steel Production in Ohio

	from everywhere	from Ohio suppliers
Iron and steel and ferroalloy products	\$142,791	\$40,894
Scrap	\$103,558	\$34,045
Wholesale trade distribution services	\$98,654	\$76,941
Coal	\$93,825	\$4,138
Rail transportation services	\$51,051	\$27,599
Iron ore	\$37,536	\$2
Nonferrous metal (exc aluminum) smelting and refining	\$28,762	\$928
Truck transportation services	\$26,997	\$26,367
Electricity transmission and distribution	\$18,641	\$14,615
Natural gas distribution	\$13,325	\$11,140
Maintained and repaired nonresidential structures	\$8,444	\$8,144
Petroleum lubricating oil and grease	\$7,962	\$5,036
Management of companies and enterprises	\$7,759	\$7,497
Steel wire	\$7,345	\$1,093
Bricks, tiles, and other structural clay products	\$6,965	\$4,603
Industrial gases	\$6,894	\$5,545
Refined petroleum products	\$6,245	\$3,197
Architectural, engineering, and related services	\$6,108	\$4,980
Ground or treated mineral and earth products	\$5,926	\$1,430
Securities and commodity contracts intermediation and brokerage	\$5,829	\$3,754
Water transportation services	\$4,878	\$1,384
Artificial and synthetic fibers and filaments	\$4,288	\$110
Noncomparable imports	\$4,230	\$0
Paperboard containers	\$4,207	\$1,492
Copper ore	\$4,205	\$0
Aluminum products	\$4,171	\$615
Carbon and graphite products	\$3,817	\$1,061
Marketing research, all other misc. prof., scientific, and tech. svc	\$3,689	\$2,296
Secondary processing of other nonferrous metals	\$3,317	\$404
All other petroleum and coal products	\$3,257	\$941
Lime	\$3,168	\$2,450
Services to buildings	\$2,952	\$2,605
Monetary authorities and depository credit intermediation	\$2,929	\$2,583
Machined products	\$2,607	\$1,106
Commercial and industrial machinery and equip. repair	\$2,607	\$2,325
Semiconductors and related devices	\$2,528	\$171
Relay and industrial controls	\$2,466	\$128
Other motor vehicle parts	\$2,362	\$500
Air transportation services	\$2,266	\$1,091
Plastics packaging materials and unlaminated films and sheets	\$2,170	\$558
Printed circuit assemblies (electronic assemblies)	\$2,025	\$168
Waste management and remediation services	\$1,984	\$1,955
Coated and engraved products	\$1,940	\$875
Ferrous metals	\$1,817	\$515
Gypsum products	\$1,680	\$800
Leasing of nonfinancial intangible assets	\$1,628	\$830
Business support services	\$1,426	\$1,400
Automotive repair and maintenance, except car washes	\$1,361	\$1,321
Landscape and horticultural services	\$1,313	\$1,305
Data processing, hosting, and related services	\$1,309	\$919
Electroplated, anodized, and colored metal	\$1,285	\$727
Valve and fittings, other than plumbing	\$1,268	\$228
Specialized design services	\$1,228	\$1,175
Other basic inorganic chemicals	\$1,165	\$249
other commodities not shown	\$28,471	\$16,318
Total, all commodities	\$800,631	\$332,553

Source: IMPLAN version 3 input-output model of State of Ohio, using 2013 economic data.

In Table 1, I show the top 50 commodities supplied to make steel, as predicted by the IMPLAN model. I show both the predicted supply from everywhere, as well as the predicted supply from Ohio companies, stated per million dollars of steel production. One can see, for example, the model anticipates that some commodities like coal and iron ore are primarily supplied from outside Ohio. Other important commodities, like wholesale distribution, rail and truck transportation, electricity, and natural gas, are modeled as being supplied by Ohio companies. The economic richness and industrial detail of the IMPLAN modeling system, as well as the sound, peer-reviewed, methodology gives us confidence in the ultimate predictions of regional economic impact based on the custom model.

Based on that method, the IMPLAN model uses annual economic data to provide reasonable estimates of statewide effects on sales, jobs, and payrolls for export-based expansions or contractions of any of 500 industries in Ohio. In Table 2, I summarize the multiplier effects for a hypothetical change of 100 jobs at an Ohio steel mill. A discussion of the relevant economic terms follows the table.

Table 2. Estimated Statewide Impact of 100 Steel Mill Jobs, Sector 217

Impact Type	Employment	Labor Income	Value Added	Output
Direct Effect	100.0	\$10,634,458	\$22,080,400	\$110,931,470
Indirect Effect	223.3	\$14,599,374	\$23,847,689	\$49,554,265
Induced Effect	171.9	\$7,406,323	\$12,915,516	\$22,514,286
Total Effect	495.2	\$32,640,155	\$58,843,606	\$183,000,021
<i>Implied Multiplier</i>	<i>4.952</i>	<i>3.069</i>	<i>2.665</i>	<i>1.650</i>

Source: IMPLAN version 3 model of State of Ohio, using 2013 economic data.

For each of several impact types (Employment, Labor Income, Value Added and Output), the IMPLAN model begins with a direct effect – here, a change of 100 jobs. Given a Direct Effect, the IMPLAN model calculates an Indirect Effect, Induced Effect, Total Effect, and an economic Multiplier.

The Indirect Effect in Table 2 refers to the linkages between the exporting industry (steel) and its industrial vendors (raw materials, transportation, electricity, tools, computers, insurance). When the exporting industry expands or contracts, it raises or lowers its purchases from its vendors, thus changing their employment and payrolls. Of course, the vendors also purchase goods and services from each other, so that the total indirect effect includes all the inter-industry linkages.

The Induced Effect refers to the impact of the new sales in the exporting industry (steel) on the local economy through the rounds of re-spending of the additional household income caused by the expansion. Regional sales of cars, groceries, building supplies, banking services, and so on are all sensitive to growth in disposable income, as are donations to nonprofit groups, churches, and charities. The Total Effect is the sum of the Direct, Indirect and Induced Effects.²

The IMPLAN Multipliers allow a reasonable prediction of the total statewide economic impact of a change such as the Direct Effect. For example, looking at the last entry in the Employment column of Table 2, the estimated job multiplier for the steel production industry in Ohio is 4.952, meaning that for every job at a steel plant, another 3.952 jobs are created elsewhere in Ohio. Similarly, the multiplier for Labor Income in Table 2 is 3.069, meaning that for every dollar of payroll created at a steel plant another \$2.069 in payrolls are created in other Ohio industries. These employment and labor income multipliers are used in the next section to estimate the statewide economic impacts of the Stark County Facilities.

The Output Multiplier, 1.65 as shown in Table 2, measures the total statewide revenues of companies divided by the direct steel mill revenues of \$111 million. The Output Multiplier of 1.65 means that companies in Ohio see an additional \$0.65 in sales when steel mill sales rise by one dollar. Finally, the Value Added Multiplier estimates the sales dollars that 'stick' to Ohio. Value added refers to the portion of total sales that is accounted for by regional companies and which stimulate the regional economy.³ In Table 2, note that 100 direct jobs leads to \$111 million in steel mill Output and \$22 million in Value Added. The distinction is important in regional economic studies since much of what goes into the total value of a product is purchased from vendors outside the region, and thus the sales dollars end up flowing to many regions.

² The distinction between Indirect and Induced Effects is evident in the simulation summarized in Table 2. For each Impact Type, the largest contributor to the Total Effect is the Indirect Effect, or inter-industry spending. The Induced Effect is significant, but is much lower than the Indirect Effect. This model is reflecting the fairly dense network of suppliers to the steel industry located in Ohio.

³ For an insightful example of value added, consider the purchase of a new car at a Canton area dealership. If a resident spent \$25,000 on a new Ford Taurus, most of dollars would flow immediately to the manufacturer of the car, built in Chicago with top management in Detroit. Only a few thousand dollars in dealer prep work and commissions would be captured in the Canton economy. So, in economic parlance, the value of output (sales) would be \$25,000, and value added might be only \$3,000.

ECONOMIC AND FISCAL IMPACTS

In this section, I provide estimates of the total regional economic and fiscal impacts. The estimated economic impacts flow directly from the IMPLAN modeling system just discussed. The estimated fiscal impacts are based on company records and an analysis of state and local tax rates, and thus require a more extensive discussion.

Economic Impacts

I used the custom input-output model to simulate the impact of [REDACTED] jobs at the steel plants and headquarters (the average monthly employment for the Stark County Facilities in 2014) on the state of Ohio. Using the multipliers in Table 2, I estimate the total statewide employment impact is 12,623 jobs, including the direct steel company jobs. And I estimate that the \$[REDACTED] in direct employee compensation at the Stark County Facilities results in total statewide employee compensation of \$866 million. These estimates are set forth here in Table 3.

Table 3. Estimated Regional Economic Impact of TimkenSteel's Canton Facilities	
Direct Impacts	
Employment, average in 2014	[REDACTED]
Wages and salaries paid in 2014	\$216,222,973
Fringe benefits paid in 2014*	\$[REDACTED]
Total employee compensation	\$[REDACTED]
Total Economic Impacts **	
Jobs	12,623
Employee compensation	\$866,451,838
* Includes company payments for federal payroll taxes (Social Security, Medicare), retirement plans, health and other insurance. Following methods used by the US Bureau of Economic Analysis, employee compensation also includes company payments for unemployment insurance and workers' compensation.	
** Total economic impacts estimated using IMPLAN version 3 input-output model of State of Ohio, constructed using economic data for 2013.	

Taxes and fiscal impacts

To reasonably estimate the fiscal impacts of an industrial expansion or contraction in a region, analysts must rely on company records and local sources of data. I turn now to a discussion of the types of taxes and how I link fiscal impacts to economic impacts. My estimates are summarized in Table 4. The company provided me with information showing direct payments of about \$[REDACTED] to local and state governments for

property taxes, sales taxes, commercial activity taxes, and energy taxes, as shown in the first two lines of the table. However, the revenue impacts on governments are much greater than these direct payments, since employees end up paying an array of state and local income and sales taxes. These estimated tax revenues are related both to the direct TimkenSteel employee compensation and to the indirect and induced employee compensation statewide, as predicted by our IMPLAN model. I estimate that the total annual fiscal impact in Ohio is \$69.8 million, as summarized in Table 4 and discussed below.

Table 4. Estimated Fiscal Impacts of TimkenSteel's Canton Facilities		
Line	Total Fiscal Impacts	
1	Local property taxes paid directly by company	\$ [REDACTED]
2	State of Ohio sales and use taxes, incl. kwh tax, paid directly by company	[REDACTED]
3	State of Ohio individual income taxes linked to payrolls	\$25,547,129
4	State of Ohio sales taxes linked to payrolls	\$24,180,588
5	City and Village income taxes attributable to TimkenSteel, Six Counties	\$7,902,582
6	Local sales taxes linked to payrolls	\$4,244,544
	Total State and Local Taxes	\$69,820,983

I estimate the sales and income tax revenues linked to TimkenSteel's Stark County Facilities at both the state and local levels. Most of the employees who work at the Stark County Facilities also live and spend their paychecks in the six-county region including Stark, Tuscarawas, Carroll, Summit, Wayne, and Columbiana counties. Employees pay state and local sales taxes when they spend their wages in the local economy, and are also liable for state and local income taxes in Ohio. There is a wide range of local taxing jurisdictions and tax rates in the region, and I provide details below.

Ohio State Sales and Income Tax

Based on US Bureau of Economic Analysis data from 2009 to 2013, all workers in the six-county region earn on average about \$22 billion annually in wages and salaries, and including fringe benefits, about \$28 billion in total employee compensation. We also know that, over the same time in the six-county region, average annual state income tax liabilities were about \$825 million, and average annual state sales tax receipts were about \$782 million. By comparing the ratio of tax receipts and liabilities to regional employee compensation, I calculate 'effective' tax rates and use those to estimate the amount of Ohio income and sales taxes linked to TimkenSteel's payroll. I average the rates over five years to smooth over any annual fluctuations. For example residents of the six core Ohio counties had about \$799 million in Ohio state income liabilities in

Table 5. Effective Tax Rates, Stark and Five Nearby Counties, Ohio

	2009	2010	2011	2012	2013	average, last five years
Economic and Tax Receipt Data						
Compensation of employees, by place of work	\$26,348,251,000	\$26,815,454,000	\$27,975,631,000	\$28,989,793,000	\$29,950,760,000	\$28,015,977,800
Ohio state individual income tax liability	\$763,728,480	\$820,313,379	\$834,696,465	\$908,797,856	\$798,528,723	\$825,212,981
Ohio state sales tax receipts	\$784,836,036	\$749,725,260	\$652,744,290	\$796,860,459	\$927,635,872	\$782,360,383
Local sales tax receipts	\$130,115,028	\$130,203,441	\$124,939,022	\$142,661,676	\$159,125,780	\$137,408,989
Effective Tax Rates, using employee compensation						
Ohio state income tax	2.90%	3.06%	2.98%	3.13%	2.67%	2.95%
Ohio state sales tax	2.98%	2.80%	2.33%	2.75%	3.10%	2.79%
Local sales taxes *	0.49%	0.49%	0.45%	0.49%	0.53%	0.49%

Sources: compensation data from US Bureau of Economic Analysis; tax data from Ohio Department of Revenue. Counties include Carroll, Columbiana, Stark, Summit, Tuscarawas, Wayne.

* Local sales tax includes the tax levied in the six counties, plus the tax for the transit systems of Stark and Summit counties.

2013. This is 2.67 percent of the employee compensation earned by workers in the six counties that year. One can see from the calculations in Table 5 that the ratios are fairly stable over the time period analyzed. Averaging over five years of data yields an effective state income tax rate of 2.95 percent of total employee compensation. Similarly, the effective state sales tax rate is 2.79 percent of employee compensation. The average effective tax rates in the bottom right of the table are multiplied by the total regional employee compensation estimated above to predict actual state government revenues (\$25.5 million in income taxes, and \$24.2 million in sales taxes) as shown on lines 3 and 4 of Table 4.

Local Income and Sales Taxes

Note that employees of the Stark County Facilities not only pay state income and sales taxes, they also pay local income and sales taxes. The annual impact of these payments can be reasonably estimated, too, and are significant.

Seventy-five municipalities in Stark and surrounding counties levy a local income tax, with total tax revenues of \$425.7 million in 2013. An appendix provides a table of jurisdictions, rates, and annual revenues. This tax applies to the wages, salaries and most other income of city and village residents. I do not know the residential distribution of TimkenSteel employees among the municipalities, nor how much of their incomes are subject to the income taxes. I have made an estimate of local income taxes attributable to TimkenSteel operations by first estimating the company's total wage and salary impact on the region (\$439.9 million).⁴ This impact represents 1.9 percent of total

⁴ To estimate the total wage and salary impact in the six-county region, I apply the labor income multiplier discussed above times the company's annual wages and salaries. However, since the multiplier is based on the whole state of Ohio, I discount it by half, conservatively assuming that only one-half of

annual wages and salaries in the six-county region (\$23.7 billion for 2013). Then I multiply that share by the total income tax receipts. Thus, I estimate that TimkenSteel employees and those of other impacted companies in the region are responsible for about \$7.9 million of the total \$425.7 million in local income tax receipts in the region. This is the source of the entry in line 5 of Table 4.

Beyond the state government receipts from the 5.5 percent state sales tax, local governments in Ohio collected \$159 million in sales taxes in 2013. In the six-county region, I identified eight local jurisdictions collecting sales taxes, including two county-wide transit authorities. Table 6 provides the tax rates and collections for that year. Here again I can determine an effective tax rate by comparing the ratio of that average local sales tax collections for 2008-2013 to the average annual compensation of employees working in the six counties during the same time period. As a result, the effective tax rate for sales tax in the six counties is 0.49%, as illustrated in bottom right entry of Table 5. Multiplying the effective sales tax rate of 0.49% times the statewide income attributable to the Stark County Facilities, I estimate that \$4.2 million in local sales taxes are generated as a result of TimkenSteel's Stark County Facilities. This is the source of the entry in line 6 of Table 4.

Table 6. Local Sales Taxes in Six Ohio Counties

	Tax Rate	Collections 2013
Carroll County	1.00%	\$3,381,433
Columbiana County	1.50%	\$15,660,509
Stark County	0.50%	\$25,690,061
Stark Area Regional Transit	0.25%	\$13,216,571
Summit County	0.50%	\$39,627,439
Metro Regional Transit Authority, Summit County	0.50%	\$40,528,840
Tuscarawas County	1.00%	\$11,470,820
Wayne County	0.75%	\$9,550,108
Total		\$159,125,780

Source: Ohio State Department of Taxation

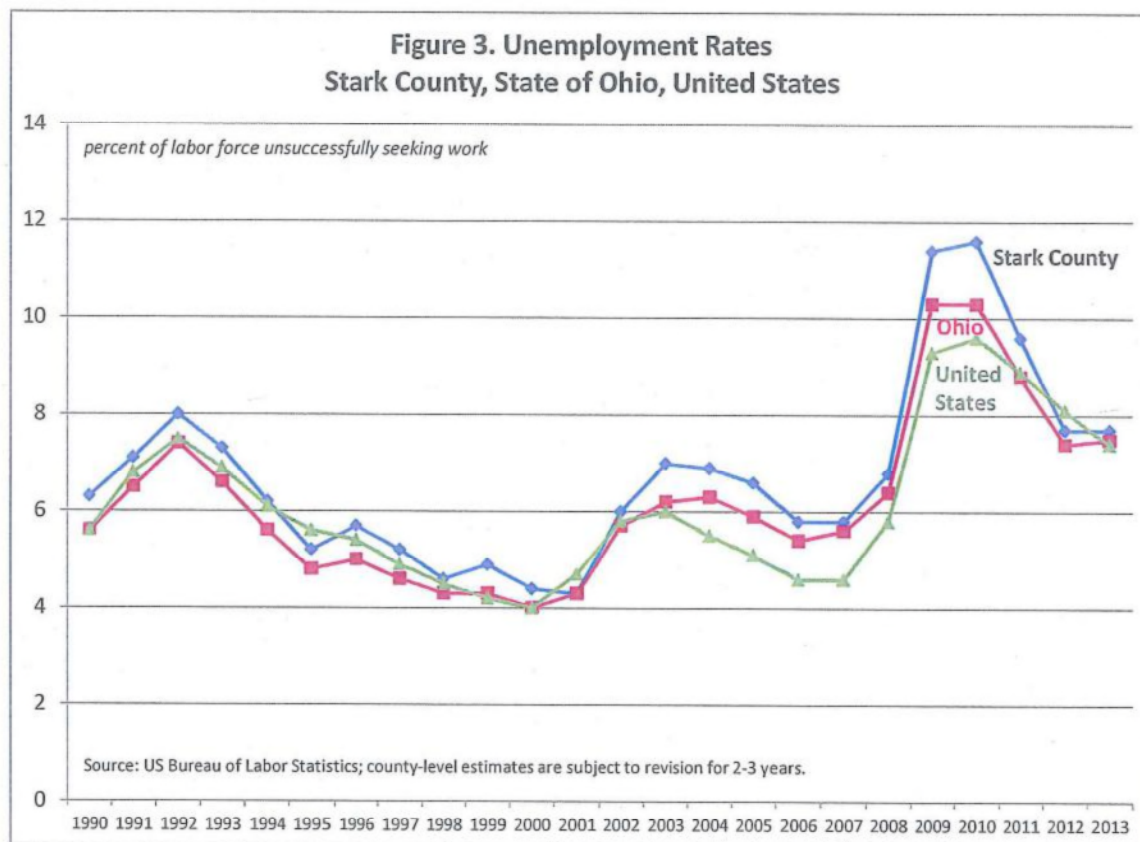
www.tax.ohio.gov/tax_analysis/tax_data_series/sales_and_use/publications_tds_sales/S1M1214.aspx

the indirect and induced effects of the steel operations are captured in the six counties. While the amount of this discount is somewhat arbitrary, in my experience, the multiplier effects in the core region, where 95 percent of TimkenSteel employees live and spend their incomes, are likely to be well above one-half of the total statewide effects.

Although harder to measure, additional tax impacts are also likely. For example, corporations around the region are liable for state commercial activity taxes, and there are many such businesses linked to TimkenSteel operations. Unemployment insurance taxes, insurance premiums taxes, building permit fees, motor vehicle sales taxes, and many other business tax categories would see some decline in receipts if the steel plants were to shut down. Employees would also pay less in the way of gasoline taxes and property taxes, and there would be a dampening effect on the regional real estate market.

NOTE ON MANUFACTURING'S IMPORTANCE IN CANTON AREA

While not the primary focus of this report, it is useful to highlight the relative concentration of manufacturing in the Canton area economy. Due to its concentration in heavy industry, Stark County sees higher spikes in unemployment rates during recessions than the rest of Ohio or the United States. As shown by Figure 3, the US Bureau of Labor Statistics estimates that at the bottom of the last recession, the Stark County unemployment rate (11.6%) was a percentage point higher than that for Ohio (10.3%), and two percentage points higher than the United States (9.6%). Steel is one of the most cyclical industries, with production relying on the strength of demand from durable goods like automobiles, aircraft, and building materials – products that typically see the largest sales declines during recessions.



Stark County supported 27,000 manufacturing jobs in 2013, accounting for 13 percent of all jobs in all industries in the County, and 22 percent of total labor compensation (due to the high average annual pay of manufacturing jobs) in the County. These concentrations are much higher than that for the state of Ohio, or the United States as a whole. I organized data on jobs and compensation by industry over the past eight years, and summarize it in Table 6. Note that Stark County is about twice as dependent on

manufacturing as the US. The 2007-09 recession reduced manufacturing activity in all three geographies, and made the respective economies less dependent on manufacturing. However, note that in Stark County manufacturing continues to be a large contributor to the local economy, accounting for over one in five dollars in labor compensation.

Table 6. Manufacturing's Economic Importance in Canton Area

	2006	2007	2008	2009	2010	2011	2012	2013
Manufacturing's Share of All Jobs								
Stark County, OH	14.3%	14.2%	14.0%	12.6%	12.3%	12.6%	12.9%	13.1%
State of Ohio	12.1%	11.7%	11.3%	10.2%	10.1%	10.2%	10.4%	10.4%
United States	8.3%	8.0%	7.8%	7.2%	7.0%	7.0%	7.0%	7.0%
Manufacturing's Share of Total Labor Compensation								
Stark County, OH	24.5%	24.3%	24.0%	21.2%	20.8%	22.1%	22.3%	21.9%
State of Ohio	18.8%	18.3%	17.5%	15.6%	15.6%	15.9%	15.8%	15.6%
United States	12.3%	12.0%	11.6%	10.8%	10.7%	10.7%	10.7%	10.6%

Source: US Bureau of Economic Analysis

Appendix

Local Income Taxes, Six Ohio Counties										
County		Municipality	Tax Rate (%)	Gross Revenue		County		Municipality	Tax Rate (%)	Gross Revenue
Carroll	Village	Carrollton	1.00	\$944,323		Summit	City	Norton	2.00	\$4,848,364
Carroll	Village	Malvern	1.00	\$172,048		Summit	Village	Peninsula	1.00	\$297,834
Carroll	Village	Sherrodsville	1.00	\$20,077		Summit	Village	Reminderville	1.50	\$1,434,723
Columbiana	Village	Columbiana	1.00	\$2,011,928		Summit	Village	Richfield	2.00	\$7,859,820
Columbiana	City	East Liverpool	1.50	\$2,874,790		Summit	Village	Silver Lake	2.00	\$485,662
Columbiana	City	East Palestine	1.00	\$959,338		Summit	City	Stow	2.00	\$13,564,116
Columbiana	Village	Leetonia	1.50	\$530,473		Summit	City	Tallmadge	2.00	\$8,299,566
Columbiana	Village	Lisbon	1.50	\$1,087,469		Summit	City	Twinsburg	2.25	\$23,537,424
Columbiana	Village	New Waterford	1.00	\$131,004		Tuscarawas	Village	Baltic	1.00	\$123,855
Columbiana	City	Salem	1.00	\$4,321,303		Tuscarawas	Village	Bolivar	1.00	\$141,859
Columbiana	Village	Salineville	1.00	\$116,733		Tuscarawas	Village	Dennison	2.00	\$610,744
Columbiana	Village	Wellsville	1.00	\$381,941		Tuscarawas	City	Dover	1.50	\$6,837,154
Stark	City	Alliance	2.00	\$10,274,712		Tuscarawas	Village	Gnadenhutten	1.50	\$281,926
Stark	Village	Beach City	1.00	\$72,603		Tuscarawas	Village	Midvale	1.00	\$170,430
Stark	Village	Brewster	1.00	\$698,527		Tuscarawas	Village	Mineral City	1.00	\$49,426
Stark	Village	Canal Fulton	1.50	\$2,215,042		Tuscarawas	City	New Philadelphia	1.50	\$6,407,930
Stark	City	Canton	2.00	\$45,506,906		Tuscarawas	Village	Newcomerstown	2.00	\$1,510,558
Stark	Village	East Canton	1.50	\$301,253		Tuscarawas	Village	Port Washington	1.00	\$72,340
Stark	Village	Hartville	1.00	\$911,269		Tuscarawas	Village	Roswell	1.00	\$18,263
Stark	City	Louisville	2.00	\$3,673,573		Tuscarawas	Village	Stone Creek	1.00	\$15,161
Stark	City	Massillon	1.80	\$14,370,720		Tuscarawas	Village	Strasburg	1.00	\$444,923
Stark	Village	Minerva	1.50	\$2,324,082		Tuscarawas	Village	Sugarcreek	1.50	\$1,028,385
Stark	Village	Navarre	1.50	\$893,203		Tuscarawas	Village	Tuscarawas	1.00	\$70,355
Stark	City	North Canton	1.50	\$6,175,252		Tuscarawas	City	Uhrichsville	1.75	\$1,293,436
Stark	Village	Wilmot	1.50	\$97,669		Wayne	Village	Apple Creek	1.00	\$203,203
Summit	City	Akron	2.25	\$132,439,409		Wayne	Village	Creston	1.00	\$258,207
Summit	City	Barberton	2.00	\$10,165,492		Wayne	Village	Dalton	1.00	\$434,046
Summit	Village	Boston Heights	2.00	\$1,074,623		Wayne	Village	Doylestown	2.00	\$804,356
Summit	Village	Clinton	1.00	\$108,163		Wayne	Village	Fredericksburg	1.00	\$65,213
Summit	City	Cuyahoga Falls	2.00	\$19,252,832		Wayne	Village	Marshallville	1.00	\$57,422
Summit	City	Fairlawn	2.00	\$10,973,720		Wayne	Village	Mount Eaton	1.00	\$75,053
Summit	City	Green	2.00	\$19,074,594		Wayne	City	Orrville	1.00	\$5,441,469
Summit	City	Hudson	2.00	\$17,600,926		Wayne	City	Rittman	1.50	\$959,516
Summit	Village	Lakemore	2.00	\$740,478		Wayne	Village	Shreve	1.00	\$243,240
Summit	City	Macedonia	2.25	\$8,242,815		Wayne	Village	Smithville	1.50	\$516,612
Summit	Village	Mogadore	2.25	\$2,663,725		Wayne	Village	West Salem	1.00	\$227,572
Summit	City	Munroe Falls	2.00	\$1,095,136		Wayne	City	Wooster	1.00	\$10,470,377
Summit	City	New Franklin	1.00	\$1,041,026				Total		\$425,728,915
Summit	Village	Northfield	2.00	\$1,029,198						
Source: Ohio Department of Taxation										
www.tax.ohio.gov/tax_analysis/tax_data_series/individual_income/publications_tds_municipal/LG11CY12.aspx										

Source: Ohio Department of Taxation

www.tax.ohio.gov/tax_analysis/tax_data_series/individual_income/publications_tds_municipal/LG11CY12.aspx

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Case No(s). 15-1857-EL-AEC

Summary: Testimony of Dr. Paul A. Coomes electronically filed by Mr. Michael J. Settineri on behalf of TimkenSteel Corporation