

ONLINE APPENDIX

Proximity and Investment: Evidence from Plant-Level Data^{*}

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^{*}Any opinions and conclusions expressed herein are those of the author and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed.

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TABLE A.1
Summary Statistics: Hub Openings

This table provides a list of airline hubs that are opened during the sample period. “Airline” is the name of the airline carrier. “City” is the city of the airport in which the new hub is opened (Federal Aviation Administration (FAA) 3-letter airport codes are in parentheses). “Year” is the year of the hub opening. The list is compiled from newspaper reports and airlines’ annual reports. The sample period is from 1977 to 2005.

Airline	City	Year
American Airlines	Dallas (DFW)	1981
Piedmont Airlines	Charlotte (CLT)	1981
American Airlines	Chicago (ORD)	1982
Piedmont Airlines	Dayton (DAY)	1982
Trans World Airlines	St. Louis (STL)	1982
Western Airlines	Salt Lake City (SLC)	1982
Piedmont Airlines	Baltimore (BWI)	1983
Republic Airlines	Detroit (DTW)	1984
Republic Airlines	Memphis (MEM)	1985
America West Airlines	Las Vegas (LAS)	1986
American Airlines	Nashville (BNA)	1986
Eastern Airlines	Philadelphia (PHL)	1986
Northwest Airlines	Detroit (DTW)	1986
Northwest Airlines	Memphis (MEM)	1986
Northwest Airlines	Minneapolis (MSP)	1986
Piedmont Airlines	Syracuse (SYR)	1986
United Airlines	Washington (IAD)	1986
American Airlines	Raleigh-Durham (RDU)	1987
Continental Airlines	Cleveland (CLE)	1987
Delta Airlines	Salt Lake City (SLC)	1987
American Airlines	San Jose (SJC)	1988
Braniff	Kansas City (MCI)	1988
American Airlines	Miami (MIA)	1989
Delta Airlines	Orlando (MCO)	1989
US Airways	Baltimore (BWI)	1989
US Airways	Charlotte (CLT)	1989
America West Airlines	Columbus (CMH)	1991
Trans World Airlines	Atlanta (ATL)	1992
United Airlines	Los Angeles (LAX)	1997
Midwest Airlines	Kansas City (MCI)	2000

TABLE A.2
Summary Statistics: Airline Mergers

This table provides a list of airline mergers that are completed during the sample period and that account for at least one treatment during the sample period. The list includes only mergers that result in a merger of the airlines' operations. "Acquirer Airline" is the name of the acquiring airline carrier. "Target Airline" is the name of the acquired airline carrier. "Year" is the year in which the operations of the two airlines are merged. This list is compiled from newspaper reports, airlines' annual reports, and the Securities Data Corporation (SDC) database. The sample period is from 1977 to 2005.

Acquirer Airline	Target Airline	Year
North Central Airlines	Southern Airways	1979
Pan American World Airways	National Airlines	1980
Republic Airlines	Hughes Airwest	1980
Continental Airlines	Texas International Airlines	1982
People Express Airlines	Frontier Airlines	1985
Alaska Airlines	Jet America Airlines	1986
American Airlines	Air California	1986
Northwest Airlines	Republic Airlines	1986
Piedmont Airlines	Empire Airlines	1986
Trans World Airlines	Ozark Airlines	1986
Continental Airlines	New York Air	1987
Continental Airlines	People Express Airlines	1987
Delta Airlines	Western Airlines	1987
Braniff	Florida Express	1988
US Airways	Pacific Southwest Airlines	1988
US Airways	Piedmont Airlines	1989
Air Wisconsin	Aspen Airways	1990
Delta Airlines	Pan American World Airways	1991
Southwest Airlines	Morris Air	1994
AirTran Airways	ValueJet Airlines	1997
American Airlines	Reno Air	1999
American Airlines	Trans World Airlines	2001

TABLE A.3
Small versus Large Reductions in Travel Time

($\Delta t \leq 30$ min), ($\Delta t > 30$ min and $\Delta t \leq 1$ hr), ($\Delta t > 1$ hr and $\Delta t \leq 1$ hr 30 min), ($\Delta t > 1$ hr 30 min and $\Delta t \leq 2$ hr), and ($\Delta t > 2$ hr) are dummy variables indicating the magnitude of the travel time reduction. All other variables are defined in Table III. Standard errors are clustered at the MSA level. The sample period is from 1977 to 2005. Standard errors are in parentheses. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	Investment	TFP
	[1]	[2]
Treatment \times ($\Delta t \leq 30$ min)	0.003 (0.004)	0.002 (0.009)
Treatment \times ($\Delta t > 30$ min and $\Delta t \leq 1$ hr)	0.002 (0.003)	0.004 (0.005)
Treatment \times ($\Delta t > 1$ hr and $\Delta t \leq 1$ hr 30 min)	0.006** (0.003)	0.012** (0.006)
Treatment \times ($\Delta t > 1$ hr 30 min and $\Delta t \leq 2$ hr)	0.014*** (0.003)	0.017*** (0.006)
Treatment \times ($\Delta t > 2$ hr)	0.015*** (0.002)	0.019*** (0.004)
MSA-year	0.153*** (0.022)	0.080*** (0.012)
Firm-year	0.205*** (0.006)	0.186*** (0.005)
Age	-0.060*** (0.002)	0.015*** (0.002)
Size	0.029*** (0.001)	0.012*** (0.002)
Plant Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
R-squared	0.41	0.61
Number of Observations	1,291,280	1,291,280

TABLE A.4
ASM Sample Weights

This table presents variants of the regressions in columns [2] and [5] of Table III, except that the plant-year observations are weighted by either the ASM sample weight (plant-weighting in columns [1] and [3]), or the product of the ASM sample weight and the plant's total value of shipments in 1997 dollars (dollar-weighting in columns [2] and [4]). Standard errors are clustered at the MSA level. The sample period is from 1977 to 2005. Standard errors are in parentheses. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	Investment		TFP	
	Plant-weighted	Dollar-weighted	Plant-weighted	Dollar-weighted
	[1]	[2]	[3]	[4]
Treatment	0.008*** (0.001)	0.009*** (0.001)	0.012*** (0.003)	0.013*** (0.003)
MSA-year	0.147*** (0.020)	0.148*** (0.021)	0.089*** (0.014)	0.091*** (0.014)
Firm-year	0.214*** (0.007)	0.221*** (0.007)	0.188*** (0.006)	0.192*** (0.006)
Age	-0.062*** (0.002)	-0.063*** (0.002)	0.015*** (0.002)	0.018*** (0.003)
Size	0.030*** (0.001)	0.030*** (0.001)	0.018*** (0.002)	0.023*** (0.002)
Plant Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.40	0.43	0.61	0.62
Number of Observations	1,291,280	1,291,280	1,291,280	1,291,280

TABLE A.5
Alternative Measures of Productive Efficiency

Return on Capital is the total value of shipments minus labor and material costs, divided by capital stock. Operating Margin is the total value of shipments minus labor and material costs, divided by the total value of shipments. All dollar values are expressed in 1997 dollars using industry-level deflators from the NBER-CES Manufacturing Industry Database and the Bureau of Economic Analysis. Return on Capital and Operating Margin are industry-adjusted by subtracting the industry median across all plants in a given 3-digit SIC industry and year. TFP (Olley and Pakes) and TFP (Levinsohn and Petrin) are computed using the structural techniques of Olley and Pakes (1996) and Levinsohn and Petrin (2003), respectively. All dependent variables are winsorized at the 2.5th and 97.5th percentiles of their empirical distribution. All other variables are defined in Table III. Standard errors are clustered at the MSA level. The sample period is from 1977 to 2005. Standard errors are in parentheses. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	Return on Capital	Operating Margin	TFP (Olley and Pakes)	TFP (Levinsohn and Petrin)
	[1]	[2]	[3]	[4]
Treatment	0.013*** (0.004)	0.009*** (0.003)	0.010*** (0.004)	0.013*** (0.003)
MSA-year	0.153*** (0.018)	0.181*** (0.069)	0.247*** (0.014)	0.197*** (0.017)
Firm-year	0.219*** (0.008)	0.309*** (0.018)	0.399*** (0.007)	0.355*** (0.008)
Age	0.014*** (0.003)	0.021*** (0.003)	-0.018*** (0.005)	-0.012*** (0.004)
Size	0.070*** (0.002)	-0.007*** (0.002)	0.054*** (0.002)	0.059*** (0.002)
Plant Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.61	0.63	0.62	0.61
Number of Observations	1,291,280	1,291,280	940,064	1,081,893

TABLE A.6
Large Firms and Conglomerates

Large Firm is a dummy variable that equals one if the total number of employees of the parent company to which the plant belongs lies above the median value across all companies in the year prior to the treatment. Small Firm is defined analogously. Conglomerate is a dummy variable that equals one if the number of 3-digit SIC industry segments of the parent company to which the plant belongs lies above the median value across all companies in the year prior to the treatment. Not Conglomerate is defined analogously. The number of industry segments is obtained from the LBD. All other variables are defined in Table III. Standard errors are clustered at the MSA level. The sample period is from 1977 to 2005. Standard errors are in parentheses. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

Dependent Variable:	Investment	TFP	Investment	TFP
	[1]	[2]	[3]	[4]
Treatment × Large Firm	0.012*** (0.002)	0.017*** (0.004)		
Treatment × Small Firm	0.006*** (0.002)	0.008*** (0.004)		
Treatment × Conglomerate			0.013*** (0.002)	0.018*** (0.004)
Treatment × Not Conglomerate			0.006*** (0.002)	0.008** (0.003)
MSA-year	0.153*** (0.022)	0.080*** (0.012)	0.153*** (0.022)	0.080*** (0.012)
Firm-year	0.205*** (0.006)	0.186*** (0.005)	0.205*** (0.006)	0.186*** (0.005)
Age	-0.060*** (0.002)	0.015*** (0.002)	-0.060*** (0.002)	0.015*** (0.002)
Size	0.029*** (0.001)	0.012*** (0.002)	0.029*** (0.001)	0.012*** (0.002)
Plant Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
R-squared	0.41	0.61	0.41	0.61
Number of Observations	1,291,280	1,291,280	1,291,280	1,291,280