

Research Briefs on Land Value Tax

What happened when Pennsylvania taxed land?



**Resource
Justice**

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Over the past century, various forms of land value tax (LVT) have been implemented in 20 municipalities across Pennsylvania (PA). Beginning in 1913 with the gradual exemption of building values from taxation in Pittsburgh and Scranton, it took until the 1980s and 1990s before a flurry of PA cities adopted revenue-neutral transitions towards taxing land at higher rates than buildings and other improvements (LVT shifts). On average, these split-rate municipalities applied a mill rate on land values that was nearly eight times the tax rate on structures. Altoona, a city of 44,000 nestled in the Appalachian Mountains, even saw a pure land value tax between 2011 and 2016.

Table 1: A century of LVT experiments in Pennsylvania

Municipality Name	County Name	Starting Year	Last Year	Land-to-Structure Tax Rate Ratio Mean	Land-to-Structure Tax Rate Ratio Max
Aliquippa	Beaver	1988	–	9.01	16.20
Allentown	Lehigh	1997	–	4.46	5.29
Altoona	Blair	2003	2016	16.73*	Pure land value tax
Clairton	Allegheny	1989	–	11.54	22.95
Coatesville	Chester	1991	2005	2.13	2.54
Connellsville	Fayette	1992	2003	6.68	7.66
DuBois	Clearfield	1991	2018	24.24	44.00
Duquesne	Allegheny	1985	–	1.82	2.64
Ebensburg	Cambria	2000	–	3.46	3.91
Harrisburg	Dauphin	1975	–	5.03	6.00
Hazleton	Luzerne	1991	1992	3.30	3.44
Lock Haven	Clinton	1991	–	4.32	5.70
McKeesport	Allegheny	1980	–	4.20	5.26
New Castle	Lawrence	1982	–	3.66	3.98
Oil City	Venango	1989	2002	2.95	3.38
Pittsburgh	Allegheny	1913	2000	5.77	5.77
Scranton	Lackawanna	1913	–	4.88	5.50
Steelton	Dauphin	2000	2007	1.67	2.42
Titusville	Crawford	1990	–	3.36	4.09
Washington	Washington	1985	–	18.33	30.75

Note: The statistics are based on the 1990–2018 data. The mean and max land-to-structure tax rate ratios are calculated over the effective period (implementation period). *The calculation for Altoona's mean value excludes the years when a pure land value tax was implemented (2011–2016).

Source: Yang & Hawley (2022)

Looking for realistic solutions to issues of escalating rents, scarce housing supply, struggling commercial districts, blight and urban sprawl, there is rising interest in LVT throughout the world, from [California](#) to [Michigan](#), from [New Zealand](#) to [Ukraine](#). Municipal leaders considering whether a LVT shift might be right for their city rightfully ask what outcomes they can expect to see. Thankfully, the Pennsylvania LVT experience provides an ideal setting for conducting research into the effects of LVT on a number of relevant outcomes such as business activity, construction & renovation, urban sprawl, and property values.

In this article, we therefore conduct a thorough review of the rigorous empirical studies into LVT in Pennsylvania, to find out what the data tells us about the effects of shifting municipal taxes onto land. We find that **LVT shifts in PA produced clear and consistent benefits: increased construction of housing and office buildings, less sprawl, more businesses, and higher property values overall.** We proceed to explore each of these conclusions one by one, followed by an annotated bibliography that describes each study in turn. Finally, we bring these findings to life by exploring the downfall and revival of Pittsburgh over the past century.

Results of the Pennsylvania LVT Experience:

Expand Housing Supply

- Bourassa (1989) & (1990) find that a split-rate LVT led to a 13% increase in the number of housing units under construction in Pittsburgh.
- Likewise, Plassman & Tideman (2000) find that this LVT shift led to an additional 100 residential permits per year (compared to a baseline of 3,100), and that a land-only tax would have added an additional 200 housing permits per year.
- PA municipalities adopting split-rate taxes resulted in a 3 to 6 percentage point increase in the supply of rooms per hectare, in Banzhaf & Lavery (2008) & (2010).
- Yang (2014) built on the above data and methodologies, and found an even stronger effect on both the value and number of building permits, with the number of rooms per hectare increasing by 7 to 8% for the typical split-rate jurisdiction.

Combat Urban Sprawl

- The increase in housing construction in Bourassa (1989) & (1990) was concentrated in the center of Pittsburgh and not observed in the suburbs.
- LVT shifts slow the construction of single family housing, which is more than offset by an increase in the number of multifamily dwellings, increasing housing density by 2 to 5 percentage points. Banzhaf & Lavery (2008) & (2010) conclude that "the split-rate tax is potentially a powerful anti-sprawl tool."
- Split-rate taxes primarily increase housing supply by increasing density (of housing units in a given area) of around 6 to 8% for the typical tax shift.

Stimulate Commercial Activity in the CBD

- Oates & Schwab (1997) find that commercial office construction was on a downward trend across all Rust Belt cities in the late 1970s, but that Pittsburgh's adoption of split-rate tax helped stimulate the supply of commercial office buildings for a nascent professional services industry. They conclude: "Land value taxation provides city officials with a tax instrument that generates revenue but has no damaging side effects on the urban economy."

Encourage Renovation & Maintenance of Buildings

- Plassman & Tideman (2000) find that an LVT shift increases renovations of both residential and non-residential buildings.

Raise Property Values

- While increases in the absolute levels of LVT cause land values to fall, this can be partly or fully offset by the increase in the profitability of land caused by cutting taxes on improvements. Indeed, Yang (2018) finds that revenue-neutral LVT shifts increase overall property values. Homeowners benefit the most: for a 1% increase in the differential between mill rates on land versus improvements, residential land values also

rise by 1%. Commercial and industrial land also becomes more valuable, but only by 0.2%.

- Yang & Hawley ([2022](#)) build on the above study with two new land value datasets and an instrumental variables approach, and continue to find that split-rate tax shifts raise aggregate property values. However, this study finds that this is due to a modest decrease in land values, offset by an increase in structure values. Commercial properties experience larger increases in value, compared to residential and industrial sites.

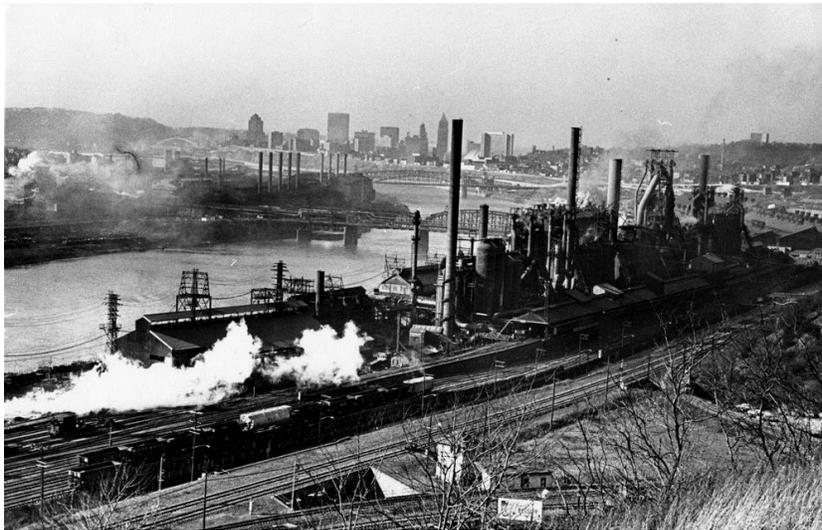
Boost Business Activity

- Hanson ([2022](#)) finds an immediate 12% jump in the number of business establishments following an LVT shift, only returning back to baseline levels after 20 years. In PA, the increase in business activity was concentrated in the retail, wholesale, transportation, manufacturing and construction industries, while declines were observed in the FIRE and services industries, although these trends are likely place-specific and may not generalize.

Case Study: Land Value Tax and Pittsburgh's Economic Revival

Let us consider what these research findings can tell us about the decline and revival of the city of Pittsburgh over the past century. Like many Rust Belt towns, Pittsburgh faced the rapid erosion of its economic core during the mid-1900s, as its once-dominant steel mills closed due to a combination of stagflation and competing supply from Asia. While manufacturing had comprised half of Pittsburgh's workforce in 1940, by 1985 this figure had dwindled to a mere 16%, at a time when unemployment hit 18%. Compounding this economic setback was the simultaneous suburbanization and depopulation, which saw the city's population plummet from 700,000 in 1950 to 400,000 by 1980.

Figure: J&L Steel Works in 1967 with Golden Triangle Behind



Source: [Brookline Collection](#)

To combat these challenges and breathe new life into the city, Pittsburgh embarked on a series of urban renewal programs. The first of these was Renaissance I in the 1940s, which aimed to improve the urban environment by addressing issues such as air quality and flood control. It also sought to revitalize the Central Business District (CBD) by introducing new office spaces in the Golden Triangle. Building on this initiative, Renaissance II in the 1970s continued the efforts to rejuvenate the CBD. However, it was in 1979 that Pittsburgh initiated a significant shift that would prove pivotal to its urban revival. The city began a series of LVT shifts, increasing mill rates on land to more than double those applied to structures:

Table 2: LVT shifts in Pittsburgh

PROPERTY TAX RATES, CITY OF PITTSBURGH 1972-91

Fiscal Year	(a) Land Tax Rate (Mills)	(b) Structure Tax Rate (Mills)	(c) County Tax Rate (Mills)	(d) School District Tax Rate (Mills)	(e) Total Land Tax Rate (Mills)	(f) Total Structure Tax Rate (Mills)	(g) (e) as a Percent of (f)
1972	53.0	26.5	15.5	23	91.5	65.0	141
1973	51.0	25.5	15.5	23	89.5	64.0	140
1974	51.0	25.5	15.5	23	89.5	64.0	140
1975	49.5	24.75	15.5	23	88.0	63.25	139
1976	49.5	24.75	15.5	29	94.0	69.25	136
1977	49.5	24.75	21.375	29	99.875	75.125	133
1978	49.5	24.75	21.375	29	99.875	75.125	133
1979	97.5	24.75	19.365	29	145.865	73.115	200
1980	125.5	24.75	23.0	29	177.5	76.75	231
1981	125.5	24.75	28.0	41	194.5	93.75	207
1982	133.0	32.0	29.0	36	198.0	97.0	204
1983	151.5	27.0	29.0	36	216.5	92.0	235
1984	151.5	27.0	29.0	40	220.5	96.0	230
1985	151.5	27.0	29.0	40	220.5	96.0	230
1986	151.5	27.0	31.25	40	222.75	98.25	227
1987	151.5	27.0	31.25	46	228.75	104.25	219
1988	151.5	27.0	31.25	46	228.75	104.25	219
1989	151.5	27.0	35.0	46	232.5	108.0	215
1990	184.5	32.0	36.5	46	267.0	114.5	233
1991	184.5	32.0	36.5	46	267.0	114.5	233

Source: Office of the City Controller, City of Pittsburgh.
 Note: The tax rates in this table are nominal rates. The assessment-sales ratio in Pittsburgh is 0.25; thus, effective tax rates are one-quarter of the nominal rates.

Source: Oates & Schwab (1997)

This decision had a profound impact on Pittsburgh's trajectory. In a study analyzing 15 Rust Belt cities, Oates and Schwab (1997) found that Pittsburgh stood out from the rest by reversing its decline in construction and experiencing a remarkable surge in building permits for commercial office buildings. This surge in construction played a crucial role in revitalizing the CBD, explained by the researchers: "Pittsburgh experienced a significant increase in building activity with several major new office buildings in the CBD after its adoption of the split-rate tax."

Further research by Bourassa (1989) & (1990) revealed that the LVT adoption resulted in a 13% increase in the number of housing units under construction. Plassman & Tideman (2000) attributed an additional 100 dwellings per year to the tax shift, and estimated that this would have been 200 houses per year higher if Pittsburgh had adopted a pure land only tax.

The combined effect of these developments was the attraction of both households and businesses back to Pittsburgh. This resurgence in population and economic activity stimulated the growth of nascent white-collar services and light manufacturing industries. Today, Pittsburgh stands as a vibrant center of education and innovation, renowned for its expertise in healthcare and medical technology. The city boasts prestigious universities such as Carnegie Mellon University, with a youthful workforce and the headquarters of major tech and financial companies.

The adoption of the land value tax in the early 1980s played a crucial role in Pittsburgh's remarkable urban revival. It ignited a construction boom, attracted new businesses, and encouraged the return of residents, fostering the city's transition into a thriving hub of professional services and medical research. Pittsburgh's story serves as a testament to the transformative power of LVT shifts for stimulating residential and commercial construction, boosting property values and attracting novel industries, as revealed throughout the deep economic research into the Pennsylvania LVT experience.

Pittsburgh's Golden Triangle Today



Annotated Bibliography

Bourassa ([1989](#)) & ([1990](#)): following the decline of its steel manufacturing industry, Pittsburgh conducted repeated tax shifts between 1978 and 1984 until land was taxed at more than twice the rate of structures. This LVT shift caused a 13% increase in the number of housing units under construction, helping spur Pittsburgh's renaissance with white collar services and light manufacturing. Interestingly, similar results were not observed in suburban locations. This suggests that LVT may be a powerful tool for preventing sprawl and stimulating housing supply in city centers. "Given the results of this study, land value taxation seems to be a desirable strategy for central cities to employ in seeking to encourage development and attract households."

Oates & Schwab ([1997](#)): They assembled data on building permits across 15 municipalities in the Rust Belt between 1960-1989. Both summary statistics and difference-in-difference models show that all cities were on downward trends over this time period, *except* for Pittsburgh which suddenly saw a dramatic increase in building permits after 1979, exactly when taxes on land were rapidly increased to 2 and then 5 times the rate of taxes on buildings. This helped stimulate the supply of commercial office buildings for a nascent professional services industry, and helped Pittsburgh recover from the economic slump caused by the decline of the steel manufacturing industry. "Pittsburgh experienced a significant increase in building activity with several major new office buildings in the CBD after its adoption of the split-rate tax" "Land value taxation provides city officials with a tax instrument that generates revenue but has no damaging side effects on the urban economy."

Plassman & Tideman ([2000](#)): Use data from the Bureau of the Census on the number and value of residential & nonresidential building permits issued for 219 municipalities in Pennsylvania between 1972 and 1994. This paper uses multiple models which account for the fact that in many years, some municipalities report zero construction activity. They find that an LVT shift increases housing construction and renovations of both residential and non-residential building types. While Pittsburgh saw residential permits for just over 3,100 dwellings each year between 1980 and 1994, this figure would have been 100 units lower if the city had not shifted to preferentially taxing land, and 200 dwellings higher if a land-only tax had been adopted.

Banzhaf & Lavery ([2008](#)) & ([2010](#)): Note that LVT shifts can increase housing supply by increasing either density, sprawl or house size. Using a panel of Census tract data from 1970 to 2000, they find that Pennsylvania municipalities which adopted a split-rate tax saw their capital/land ratio increase by 3 to 6 percentage points per decade, and that this was primarily due to increased density of housing per hectare. LVT shifts slow construction of single family housing and increases the number of multifamily dwellings. They conclude that "the split-rate tax is potentially a powerful anti-sprawl tool."

Yang ([2014](#)) improves the methodologies of the prior studies, collecting both split-rate and property tax rates for all counties in PA from 1970-2010, and using propensity score matching to create a control group. They find that LVT shifts improve housing supply, increasing the number

of rooms per hectare by 7-8% for the typical split-rate jurisdiction. This effect is primarily due to added density rather than larger houses, with the number of housing units per hectare rising by around 6-8% with a split-rate tax. An LVT shift also boosts construction activity, both in the value and number of building permits. “The findings suggest that the two-rate property tax can be used as an instrument to combat urban sprawl if appropriately designed.”

Yang (2018) investigates the impact of revenue-neutral LVT shifts on overall land values because, while increasing LVT makes land ownership less profitable, this may be partly or fully offset by the increase in profitability caused by cutting taxes on improvements. Using a first-difference model and panel data of property assessments from Pennsylvania municipalities which implemented split-rate taxes between 1990 and 2015, this paper finds that LVT shifts *increase* overall property values. For a 1% increase in the tax differential between land and improvements, owners of residential property can expect a 1% increase in the value of their land, compared to 0.2% for commercial and industrial land.

Hanson (2022) studies patterns of business formation after Pennsylvania municipalities implemented LVT shifts, using a difference-in-difference model with both area-specific and time fixed effects. For a municipality implementing an average split-rate tax (where mill rates on land are 7.7 times those on structures), there is an immediate 12% jump in the number of business establishments, with this effect becoming muted as time goes on, only returning to the pre-LVT baseline after 20 years. In PA, the increase in business activity was concentrated in the retail, wholesale, transportation, manufacturing and construction industries, while declines were observed in the FIRE and services industries, although these trends are likely place-specific and may not generalize to other cities. “Given the positive effect on the number of businesses establishments estimated in the Pennsylvania case, other municipalities may be interested in implementing a split-rate policy as an economic development tool.”

Yang & Hawley (2022) study the adoption and rescindment of split-rate LVTs in Pennsylvania municipalities between 1982-2003. They find that *revenue-neutral* shifts from property tax to split-rate taxes cause aggregate property values to rise overall. This suggests that while LVT capitalizes into lower land values, this is more than offset by the positive benefits of untaxing buildings, causing property values to increase overall. Commercial buildings appear to benefit more than residential or industrial properties.

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