With Amazon HQ2, the Losers Are the Winners: Why Economic Development Subsidies Hurt More than They Help

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On September 7, 2017, Amazon, Inc., announced that it would open a second headquarters by building "HQ2," a new office equal in size to its Seattle campus, that would involve $5 billion in local business investments over 15–17 years and would eventually employ 50,000 workers with an average compensation more than $100,000.[1] Amazon requested that interested cities submit proposals making the case for why their community would be the best fit for this massive new endeavor, including information on the public subsidies the city and state governments would offer to sweeten the deal. Amazon's six-week deadline created a mad scramble among the 238 North American cities that eventually submitted bids, each attempting to illustrate why it in particular would be the best location to host Amazon's new headquarters.[2]

Despite arguments from economic development officials justifying such subsidies, both economic theory and experience suggest that cities and states are throwing their money away when they court Amazon's favor through subsidies. Even subsidies worth billions of dollars are unlikely to sway Amazon's decision. Worse, these kinds of targeted economic development incentives fail to produce economic growth.

In this paper, we examine the publicly known subsidies offered to Amazon as enticements to locate its second headquarters. We show that these subsidies are unlikely to alter the location decision of the company or lead to economic growth for the communities that offer them. We illustrate the tradeoffs that these subsidies would require in terms of forgone tax cuts and alternative uses of these funds for public services, such as safety and education. Lastly, we offer examples of institutional reforms—constitutional gift clauses, direct democracy, and interstate compacts—that could reduce the number of corporate subsidies in the future.

1. Amazon, *Amazon HQ2 RFP* (Seattle, WA: Amazon Office of Economic Development, 2017).
2. Monica Nickelsburg, "Amazon HQ2 Deadline Day: Everything You Need to Know about the Biggest Headquarters Contest Ever," *GeekWire*, October 19, 2017.

AMAZON HQ2: THE STORY SO FAR . . .

In January 2018 Amazon cut the pool of applicants to 20 semifinalists and required city representatives to sign nondisclosure agreements to prevent the public from knowing each city's Amazon subsidy bid.[3] Because of this, there is limited publicly available data on the subsidies offered by most of the semifinalists.[4] There are, however, three exceptions:

Newark, New Jersey

Newark and the state of New Jersey's 20-year, $7 billion combined subsidy offer ($2 billion from the city and $5 billion from the state) is publicly known because it required an act of the state legislature in January 2018 to authorize, with Newark's city council passing similar enabling legislation in July 2018.[5]

Montgomery County, Maryland

Maryland's 10-year, $8.5 billion subsidy offer is also publicly available because it was approved by Maryland's legislature in April 2018.[6] Montgomery County made a separate subsidy offer, but the specifics were redacted in a publicly released document.[7]

Columbus, Ohio

The initial October 2017 subsidy offer letter to Amazon from Columbus was made public and estimated by local news media to be worth $2.3 billion over a

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3. Martin Austermuhle, "Amazon Insists on Silence from Twenty HQ2 Finalists," *WAMU*, January 30, 2018; Julie Creswell, "Cities' Offers for Amazon Base Are Secrets Even to Many City Leaders," *New York Times*, August 9, 2018, Technology; Sarah Holder, "What Did Cities Actually Offer Amazon?," *CityLab*, May 29, 2018.
4. Some media reports have suggested that there is more concrete information on the HQ2 subsidy bids available than is actually true. Our investigation revealed that there is even less verifiable information available to the public than is commonly realized. Mary Hanbury, "Amazon Is Reportedly Revisiting HQ2 Contenders as It Prepares to Make Its Decision — Here's Who's Left in the Running," *Business Insider*, October 19, 2018.
5. Alyana Alfaro, "Christie Signs Bill That Could Give $5 Billion in Tax Breaks to Amazon," *Observer*, January 11, 2018; City of Newark, "Newark City Council Approves Amazon HQ2 Incentives Creating at Least 30,000 Jobs," July 11, 2018.
6. Erin Cox, "Maryland OKs $8.5 Billion in Incentives to Lure Amazon, Biggest Offer in Nation," *Baltimore Sun*, April 4, 2018.
7. Creswell, "Cities' Offers for Amazon Base Are Secrets Even to Many City Leaders."

15-year period.[8] This amount did not include any subsidies offered by JobsOhio, the state's economic development organization, or the state legislature.

Averaging this limited publicly available information across the three states and three municipalities results in an average known subsidy bid of $8.9 billion over 15 years: $2.15 billion from cities and $6.75 billion from states. We anticipate that this estimate is low. History has shown that the intensity of final negotiations allows corporations to drive up the size of the subsidy above the amount initially reported in the media.[9] And existing economic development programs can provide substantial subsidies without the need for additional legislation; North Carolina's Job Development Investment Grant and One North Carolina Fund programs by themselves could offer Amazon $12 billion in subsidies.[10] Furthermore, after subsidies are initially given, there is a tendency for the corporation to demand additional subsidies to underwrite future expansion or to remain local.[11]

WHY SPENDING BILLIONS ON HQ2 ISN'T WORTH IT

Subsidies Typically Don't Sway Corporate Location Decisions

Despite claims made by the corporations requesting tax incentives, subsidies aren't a strong factor in their location decisions. The best research investigating business location decisions finds that other factors are more important to a firm's productivity and profitability. These non-incentive factors include the following:[12]

8. Esther Honig, "To Lure Amazon, Columbus Promises Tax Breaks and Transit Investment," *WOSU Public Media*, October 20, 2017.
9. Elkind Peter, "Inside Elon Musk's $1.4 Billion Score," *Fortune*, November 14, 2014; Bruce Murphy, "Foxconn Subsidy Now Exceeds $4 Billion," *Murphy's Law*, December 21, 2017; Dominic Rushe, "'It's a Huge Subsidy': The $4.8bn Gamble to Lure Foxconn to America," *Guardian*, July 2, 2018, Cities.
10. Based on publicly available information and authors' calculations. Economic Development Partnership of North Carolina, "Transformative Project – Job Development Investment Grant," accessed October 26, 2018, https://edpnc.com/incentives/job-development-investment-grant-transformative-project/; Craig Jarvis, "NC Has Already Sweetened the Pot for Amazon-Size Jobs and Spending," *News & Observer*, September 18, 2017.
11. Reid Wilson, "Washington Just Awarded the Largest State Tax Subsidy in U.S. History," *Washington Post*, November 12, 2013.
12. "In a survey of business leaders, 72 percent cited workforce suitability as the top criterion in the selection of a city. Market access and cost structure followed with 65 and 59 percent, respectively." Natalie Cohen, "Business Location Decision-Making and the Cities: Bringing Companies Back" (Working Paper, Brookings Institution, Washington, DC, April 2000), 12; Daphne A. Kenyon et al., *Rethinking Property Tax Incentives for Business* (Cambridge, MA.: Lincoln Institute of Land Policy, 2012), 29; Richard Florida, "The Uselessness of Economic Development Incentives," *CityLab*, December 7, 2012.

- The presence of a skilled workforce
- The local cost of living and trends in worker compensation
- Access to transportation or communication networks
- Synergies with other industries, especially production supply chains and professional services
- Consumer market accessibility
- The presence of competing firms
- Availability of natural resources
- Other region-specific factors affecting the cost of production or access to customers[13]

Local tax costs do indeed affect final profitability, but the aforementioned factors have a much larger impact on whether a particular location will be profitable in the first place. In fact, government bureaucratic hurdles, such as permitting delays and regulatory restrictions, bear a larger influence on firm location decisions than local taxes do.[14] Government finance expert Natalie Cohen interviewed site selection consultants and economic development experts in research conducted for the Brookings Institution, finding that

> While corporate decision-makers' top location concern is the availability of education and training, policymakers and lay people often think that tax incentives matter most. Tax incentives and tax packages are uniformly viewed as low priorities by location consultants, relatively unimportant to the basic decision.[15]

Tax incentives are generally considered only after the primary location analysis is conducted, and at that point the decision is between different municipalities in the same region.[16]

Recent research by University of Texas professor Nathan Jensen found that fewer than 15 percent of companies receiving subsidies from the Texas Chapter

13. It's worth noting that these are the business-focused reasons to locate in a particular location. Politics might also play a role, especially if being located near political decision makers would allow the corporation to influence regulations and legislation toward more favorable outcomes.
14. Cohen, "Business Location Decision-Making and the Cities: Bringing Companies Back," 15.
15. Cohen, 16.
16. "High taxes or an insufficient tax package may also be used as the excuse for a move when other reasons are really at play. For example, a CEO is unlikely to state publicly that he or she is moving the company to flee organized labor; it is more politically acceptable to say that taxes are too high." Cohen, 16.

313 economic development program had their location decision swayed by the program's handouts.[17] A majority of the companies in the 86 case studies Jensen conducted were likely to locate in Texas regardless of subsidies—for example, oil and chemical companies that needed access to region-specific natural resources and ports did not need subsidies to sway their decision. Jensen concludes that "many of the companies involved were coming to Texas even before being authorized to receive the incentives."[18]

Long-Term Growth Is More Important than Short-Run Subsidies

In Amazon's case, the paramount importance of factors affecting long-term profitability can be illustrated with a thought experiment:[19]

If the best location for HQ2—that is, the one with the best local workforce, the best access to communication and transportation networks, the best synergies with suppliers, the greatest access to potential customers, etc.—enabled Amazon to grow its total revenue just 1 percent faster than the second-best location, we project that over the first 15 years, Amazon's cumulative revenue would be $345 billion higher in the best location than in the second-best location. Applying Amazon's recent average net profit margin of 0.82 percent suggests that this additional revenue would create an extra $2.8 billion in profits over those 15 years.[20]

However, Amazon's annual net profit margin is substantially lower than that of similar companies, and stock market experts expect Amazon to shift toward earning higher profits in the future (this has already been the case for the

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17. Nathan M. Jensen, "Bargaining and the Effectiveness of Economic Development Incentives: An Evaluation of the Texas Chapter 313 Program," *Public Choice* 177, no. 1–2 (October 2018): 29–51.
18. Jensen, 30.
19. See the appendix for a description of data sources and methodology for this thought experiment.
20. Although this is just a thought experiment, the underlying concept is not unreasonable. Consider a simpler example: Oranges are grown primarily in Florida rather than Alaska, for obvious reasons. But oranges aren't even grown in southern Georgia across the state border from Florida. Orange production illustrates the extreme case that locating a company in the best place to do business is crucial to its success.

In the same way, Detroit was ideally situated to become home to the nascent American automobile industry. Its centralized location between resource suppliers and customers combined with its existing metalworking industries increased the potential for success of the early automotive manufacturers located there, and this developing hub of automotive knowledge then generated its own critical mass that further accelerated growth and turned Detroit into Motor City. The same outcome could have occurred in Chicago, Cleveland, or Buffalo, but Detroit's unique advantages allowed for faster growth, and the companies there outcompeted the hundreds of other early automobile manufacturers spread throughout the United States.

first three quarters of 2018).[21] If over the first 15 years Amazon instead earned the average annual profit margin of the entire US stock market from 2000 through 2017—6.32 percent—then the same additional revenue gained from choosing the optimal location for HQ2 would earn an extra $21.8 billion in profits—almost 2.5 times more than the average combined subsidy ($8.9 billion).[22]

Furthermore, while the average combined subsidy would end after 15 years, choosing the best location for HQ2 would continue to pay off long into the future. Extending the considered time frame just five more years illustrates the value of this compounding growth: Amazon would earn an extra $471 billion in cumulative revenue and between $3.9 billion and $29.8 billion in additional profits by choosing the best location for HQ2 versus the second-best location.

That such a small difference—just 1 percent faster annual revenue growth—can have such an inordinately large impact over the long run supports the conclusion that subsidies don't drive firm location decisions.[23] A leading economic development researcher, Timothy Bartik, writes,

> The existing research on incentives is that in some cases they can affect business location decisions, but that in many cases they are excessively costly and may not have the promised effects. The new research suggests that much of this consensus is justified.[24]

Elsewhere, he writes,

> Typical incentives probably tip somewhere between 2 percent and 25 percent of incented firms toward making a decision favoring the location providing the incentive. In other words, for at least 75 percent of incented firms, the firm would have made a

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21. Jeremy Bowman, "Why the Amazon of the Future Could Be Much More Profitable Than It Is Today," *Motley Fool*, September 13, 2018; Steve Dennis, "Is Amazon Finally Getting Serious about Retail Profitability?," *Forbes*, May 8, 2018; Eugene Kim, "Amazon Reports Q3 2018 Earnings," *CNBC*, October 25, 2018.
22. Aswath Damodaran, "Margins by Sector (US)," January 2018, http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/margin.html; Aswath Damodaran, "Data: Archives," accessed November 4, 2018, http://people.stern.nyu.edu/adamodar/New_Home_Page/dataarchived.html.
23. In the cases where subsidies might influence company location decisions, it's more likely that these are "flighty firms," which can easily pull up their roots and move in pursuit of the next subsidy offer. Matthew D. Mitchell, "Florida Man Seeks a Quarter of a Billion Dollars That Won't Help State," *Medium*, October 30, 2015.
24. Timothy J. Bartik, "A New Panel Database on Business Incentives for Economic Development Offered by State and Local Governments in the United States" (Kalamazoo, MI: W.E. Upjohn Institute for Employment Research, February 2017), 116.

> similar decision location/expansion/retention decision without the incentive.[25]

Simply put, opportunities for future business growth are far more important than subsidies when companies select the best location for their business.

Targeted Economic Development Subsidies Don't Lead to Economic Growth

The general conclusion of academic research suggests that targeted economic development subsidies don't lead to broad-based economic growth or improvements in community welfare when measured against comparison cities.[26] The major beneficiaries are the companies receiving the subsidies, as my colleague Matthew Mitchell found in his initial review of the research:

> Most of the studies look at the performance of the subsidized firms relative to non-subsidized firms. Unsurprisingly, 65 percent of these studies find that the privileged group tends to fare better than non-privileged groups. If you tax Peter and Paul in order to subsidize Mary it's not particularly surprising to find that Mary fares better.[27]

Mitchell's more in-depth review of the academic research with Jeremy Horpedahl and Olivia Gonzalez revealed that a large majority of studies (more than 64 percent) examining the broader impact of targeted economic development incentives found either mixed effects (both positive and negative) or no measurable effects on the local economy.[28] And when measurable effects were present, they were more often negative than they were positive. This parallels research by University of Maryland professor Dennis Coates, who found negligible and even negative effects of professional sports stadium construction—which is nearly always subsidized by public funding—on local economic outcomes, like

25. Timothy J. Bartik, "'But For' Percentages for Economic Development Incentives: What Percentage Estimates Are Plausible Based on the Research Literature?" (Upjohn Institute Working Paper, W.E. Upjohn Institute, Kalamazoo, MI, July 2018).
26. Mitchell, "Florida Man Seeks a Quarter of a Billion Dollars That Won't Help State"; Matthew D. Mitchell, Jeremy Horpedahl, and Olivia Gonzalez, "Do Targeted Economic Development Incentives Work as Advertised?" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, forthcoming).
27. Mitchell, "Florida Man Seeks a Quarter of a Billion Dollars That Won't Help State."
28. Mitchell, Horpedahl, and Gonzalez, "Do Targeted Economic Development Incentives Work as Advertised?"

“The bottom line is that unwarranted business subsidies lower economic efficiency.”

per capita personal wages, wages per job, and total wage and salary disbursements.[29]

Why is this the case? First, when government officials grant targeted tax cuts, they distort the market forces of supply and demand. This is a problem because the artificial manipulation of the relative prices of different goods and services creates economic inefficiency.[30] In a market free from interference, prices respond to the relative scarcity of resources and the continuous fluctuation in the demand for goods and services. This responsiveness is one of the most valuable aspects of a market economy because an amazing amount of information regarding production costs and consumer preferences is aggregated into the market-determined price of a good or service. Prices intrinsically convey this information to potential buyers and sellers and are one reason why a market economy tends to use resources in the most efficient way.[31] But subsidies disrupt the information contained in prices, signaling producers to engage in less valuable production and distorting consumer choices, creating an economic loss compared to what otherwise would occur. Joseph Stiglitz, chairman of President Clinton’s Council of Economic Advisers, succinctly described this problem in the 1996 *Economic Report of the President*: “The bottom line is that unwarranted business subsidies lower economic efficiency.”[32]

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29. Dennis Coates and Brad R. Humphreys, “Do Economists Reach a Conclusion on Subsidies for Sports Franchises, Stadiums, and Mega-Events?,” *Econ Journal Watch* 5, no. 3 (2008): 22; Dennis Coates, “Stadiums and Arenas: Economic Development or Economic Redistribution?,” *Contemporary Economic Policy* 25, no. 4 (2007): 565–77; Dennis Coates, “Growth Effects of Sports Franchises, Stadiums, and Arenas: 15 Years Later” (Mercatus Working Paper, Mercatus Center at George Mason University, Arlington, VA, 2015).
30. Shahira ElBogdady, “The Inefficiency of Targeted Tax Policies” (Washington, DC: Joint Economic Committee Republicans, April 1997), https://www.jec.senate.gov/public/_cache/files/fe2eafaa-f355-462f-b515-15ad4a8f5e74/the-inefficiency-of-targeted-tax-policies-april-1997.pdf.
31. Donald J. Boudreaux, “Information and Prices,” *Library of Economics and Liberty*, accessed February 21, 2017.
32. *Economic Report of the President* (Washington, DC: Council of Economic Advisers, February 14, 1996), 87.

Second, nearly every kind of tax causes price distortions and corresponding "deadweight loss"—a pure loss of economic value. And because larger taxes cause increasingly larger distortions (the size of the deadweight loss grows exponentially as the tax rate rises), lowering taxes for all businesses would do more to increase economic efficiency across the entire economy–increasing the overall quality of living by minimizing wasted resources–rather than lowering taxes for a select few companies.[33]

Lastly, politicians don't make good investment decisions with economic development subsidies. Their choice of whom to subsidize isn't limited by their own budget because they are not investing their own resources, nor do they reap the long-run future payoff for investing wisely. Their decision is more likely to be based on political payoffs (e.g., choosing the subsidy that will maximize their political capital with special interest groups or the general body of voters) rather than the company that will make the most profitable use of the additional investment—which is how a normal investor would choose which company to invest in.[34]

Research by George Mason University professor Chris Coyne and then-graduate student Lotta Moberg found that targeted subsidies are most often used to benefit large, highly visible corporations, rather than smaller local businesses.[35] The politicians who provide these corporate handouts benefit from the limelight of legislation-signing, ground-breaking, and ribbon-cutting ceremonies.[36] These popularity-building activities suggest to the public that the politicians are attempting to improve the local economy, cultivating a favorable impression that is intended to pay off in the voting booth later. This means that while subsidies don't make sense from an *economic* point of view, they may be viewed as a

33. William G. Gale and Andrew A. Samwick, *Effects of Income Tax Changes on Economic Growth* (Washington, DC: Brookings Institution, September 2014), 11–12; James R. Hines Jr., "Excess Burden of Taxation" (Working Paper, Office of Tax Policy Research, University of Michigan Ross School of Business, Ann Arbor, MI, May 31, 2007); David R. Henderson, "Taxes and Deadweight Loss," *EconLog*, February 18, 2017.
34. Nathan M. Jensen and Edmund Malesky, *Incentives to Pander: How Politicians Use Corporate Welfare for Political Gain* (Cambridge, UK: Cambridge University Press, 2018).
35. Christopher J. Coyne and Lotta Moberg, "The Political Economy of State-Provided Targeted Benefits," *Review of Austrian Economics* 28, no. 3 (2015): 337–56.
36. "It is likely that incentives are offered in some cases primarily to give politicians 'talking points' or 'bragging rights' regarding their role in expansions whose true cause cannot be clearly identified by the electorate. Furthermore, voters generally do not receive information on whether businesses that receive incentives actually create the number of jobs they promise. Given the imperfect information available to voters, the overestimation of announced jobs might result from complicity between business managers and politicians, both of whom presumably gain from the arrangement." Todd M. Gabe and David S. Kraybill, "The Effect of State Economic Development Incentives on Employment Growth of Establishments," *Journal of Regional Science* 42, no. 4 (2002): 724.

politically useful—albeit economically wasteful—method of building support for reelection.[37] The consequence of this practice is that struggling local businesses must pay higher taxes to fund public subsidies for politically well-connected larger corporations. And adding insult to injury, the subsidies are unlikely to actually benefit the broader economy.

The Tradeoffs Created by the Amazon HQ2 Subsidy

The subsidies offered to Amazon for HQ2 provide a useful illustration of the inherent tradeoffs created when politicians provide government privileges—like targeted economic development subsidies—to specific companies. Using the average subsidy at the state level, we estimate how much each state could reduce its corporate income tax over the life of the subsidy if the subsidy were forgone. The results are shown in table 1.

On average, these states could reduce their corporate income taxes by 29 percent for the 15-year duration of the $6.75 billion subsidy. Most strikingly, Colorado, Maryland, and North Carolina could all cut their corporate income taxes by over 70 percent. But even for the states like California, for whom the subsidy corresponds to a seemingly low share of forecast corporate tax revenue ($6.75 billion is only 3.62 percent of forecast corporate tax revenue), the tax cut would be a better idea. Even a small tax cut spread across all companies or state residents would be more equitable and encourage less future subsidy-seeking behavior by large corporations.[38] It would also reduce the inherent deadweight loss caused by taxation.[39]

Examining the public services that could otherwise be provided by the tax revenue spent on the HQ2 subsidy offers another way to understand the tradeoffs caused by the proposed handouts. Public safety, transportation, and education are all critical economic building blocks. Markets will function smoothly to the extent that economic agents believe they are safe and that their trading partners won't engage in fraud. Ensuring that transportation routes remain open and passable is critical for moving goods to consumers or people

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37. International evidence suggests, counterintuitively, that economic growth does not actually contribute to politicians' reelection success. But recent research suggests that appearances are more important than actual results. Politicians who were seen as "doing something" to stimulate economic growth enjoyed greater success. Adi Brender and Allan Drazen, "How Do Budget Deficits and Economic Growth Affect Reelection Prospects? Evidence from a Large Panel of Countries," *American Economic Review* 98, no. 5 (2008): 2203–20; Jensen and Malesky, *Incentives to Pander*.
38. Coyne and Moberg, "The Political Economy of State-Provided Targeted Benefits."
39. Henderson, "Taxes and Deadweight Loss."

TABLE 1. TRADEOFFS IN STATE-PROVIDED PUBLIC SERVICES AND TAX CUTS THAT COULD BE FUNDED INSTEAD OF THE AMAZON HQ2 SUBSIDY

Jurisdiction	Amount that corporate income taxes rates could be reduced (percent)	Number of full-tuition scholarships that could be funded each year at the state's flagship public university	Number of years of state-wide road maintenance that could be funded
California	3.62%	22,206	4
Colorado	84.04%	28,732	14
District of Columbia	17.64%	13,026	40
Florida	17.90%	46,151	5
Georgia	34.79%	24,915	14
Illinois	23.89%	24,464	6
Indiana	57.32%	27,952	8
Maryland	70.23%	62,598	14
Massachusetts	13.73%	38,215	17
New Jersey	15.22%	11,825	6
New York	5.42%	44,145	3
North Carolina	71.94%	41,950	6
Ohio	11.87%	27,801	10
Pennsylvania	10.78%	16,907	4
Tennessee	4.30%	22,702	15
Texas	5.66%	28,274	2
Virgina	45.16%	22,059	4

Notes: For most states we use $6.75 billion over 15 years as the expected Amazon HQ2 state subsidy, which is based on the average of publicly available state-level subsidy bids. For New Jersey and Maryland, we use the actual state legislature–approved subsidy bid: $5 billion over 20 years and $8.5 billion over 10 years, respectively.
Source: See appendix for data sources and calculation methodology.

to the services they desire. And education helps create the human capital that improves productivity, leading to increased wealth creation and improved quality of life.

We illustrate these tradeoffs by comparing the average subsidy bid for HQ2 to what that subsidy could instead purchase in terms of public services in these states and cities over the duration of the subsidy. For states, table 1 shows how many full-tuition college scholarships could be funded at the state's flagship public university each year and the number of years the subsidy could pay for all state highway maintenance costs. In lieu of the average Amazon HQ2 state subsidy ($6.75 billion), these state governments could pay the annual tuition for almost 30,000 college students or for eight years of road maintenance, on average. For cities, table 2 shows how many public school students could be educated each year and how large an expansion of the city police department could be funded

TABLE 2. TRADEOFFS IN CITY-PROVIDED PUBLIC SERVICES THAT COULD BE FUNDED INSTEAD OF THE AMAZON HQ2 SUBSIDY

Municipality	Number of public school students who could be educated each year	Number of police officers who could be hired	Percentage increase in the municipal police department sworn officers
Atlanta, GA	8,205	835	49.3%
Austin, TX	11,053	533	29.5%
Boston, MA	5,703	724	34.1%
Chicago, IL	7,360	911	7.6%
Columbus, OH	11,975	720	37.8%
Dallas, TX	11,064	740	22.6%
Denver, CO	9,361	769	51.9%
Indianapolis, IN	7,274	806	50.0%
Los Angeles, CA	8,537	755	7.7%
Miami, FL	11,464	538	19.2%
Montgomery County, MD	11,292	609	65.3%
Nashville, TN	9,344	855	61.2%
Newark, NJ	3,157	560	50.3%
New York City, NY	4,678	788	2.2%
Alexandria, VA	6,523	558	181.7%
Arlington County, VA	5,920	618	168.4%
Fairfax County, VA	8,034	822	60.4%
Philadelphia, PA	7,940	1,056	16.7%
Pittsburgh, PA	4,687	1,060	116.8%
Raleigh, NC	12,121	897	123.1%
Washington, DC	5,752	761	20.3%

Notes: For most cities we use $2.15 billion over 15 years as the expected Amazon HQ2 municipal subsidy, which is based on the average of publicly available city-level subsidy bids. For Newark, New Jersey, and Columbus, Ohio, we use the actual city council–approved subsidy bid, $2 billion over 20 years and $2.3 billion over 15 years, respectively.
Source: See appendix for data sources and calculation methodology.

by the subsidy. For the average Amazon HQ2 city subsidy ($2.15 billion), these cities could pay the annual education cost for over 8,000 students or increase the size of their police forces by 56 percent, on average.

Targeted Economic Development Subsidies Harm Economic Growth and Undermine Democratic Institutions

Perhaps the worst impact of targeted subsidies is the corrupting effect they have on democratic institutions. Humans respond to incentives—within the scope of the existing system of formal rules and informal social norms they are constrained by—as they seek to accomplish their goals.[40] But trouble occurs when entrepreneurial individuals shift from *economic competition* (focusing on improving customer welfare by reducing production costs or increasing product quality) to *political competition* (leveraging government authority to gain an advantage over their competitors via politically granted privileges, such as selective tax write-offs or weaponized regulations).[41]

Political competition for government-granted privileges generates additional economic costs on top of the inefficient allocation of resources caused by subsidies.[42] Lobbying policymakers for economic privileges reallocates resources away from wealth-creating activities (such as developing new products to better serve customers) in an attempt to involuntarily transfer resources and wealth that have already been created.[43] Meanwhile, the targets of the wealth transfer have an incentive to resist this attack, in much the same way that homes, cars, and businesses are locked against thieves.[44] These protections against involuntary transfer are also part of the privilege-seeking cost because they are a direct response to it.

The total sum of wasted resources can be quite large. In fact, because the privilege seeker has an incentive to continue to fight for the wealth transfer until the cost is equal to the expected gain, and because the target of the wealth transfer has an incentive to spend resources in defense until the cost is equal to the

40. Steven Horwitz, "On Human Action," *Foundation for Economic Education*, September 13, 2012.
41. George J. Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science* 2, no. 1 (1971): 3–21; Matthew D. Mitchell, *The Pathology of Privilege: The Economic Consequences of Government Favoritism*, 2nd ed. (Arlington, VA: Mercatus Center at George Mason University, 2014); Adam Thierer, "Regulatory Capture: What the Experts Have Found," *Technology Liberation Front*, December 20, 2010; Morten Hviid and Matthew Olczak, "Raising Rivals' Fixed Costs," *International Journal of the Economics of Business* 23, no. 1 (2016): 19–36; David T. Scheffman and Richard S. Higgins, "Twenty Years of Raising Rivals' Costs: History, Assessment, and Future," *George Mason Law Review* 12, no. 2 (Winter 2003): 371.
42. Gordon Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft," *Western Economic Journal* 5, no. 3 (1967): 224–32; Russell S. Sobel and Thomas A. Garrett, "On the Measurement of Rent Seeking and Its Social Opportunity Cost," *Public Choice* 112, no. 1 (2002): 115–36.
43. Economists call the practice of seeking government-granted economic privileges "rent-seeking", where "rent" is defined as an extra amount of profit or benefit that can't be gained through voluntary exchange. In essence, it's nonmarket competition, or competition to use force and fraud for economic gain, since market competition is premised on voluntary exchange. David R. Henderson, "Rent Seeking," in *The Concise Encyclopedia of Economics*, ed. David R. Henderson (Carmel, IN: Liberty Fund, Inc., May 31, 2010); Michael Munger, "Rent-Seek and You Will Find," *EconLog*, July 3, 2006.
44. Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft."

expected loss, the total resources spent fighting over the wealth transfer can actually be larger than the amount of wealth being fought over.[45]

The misallocation of resources causes short-run economic inefficiency and waste, but the misallocation of entrepreneurial talent leads to a long-run loss of economic growth.[46] Economist William Baumol coined the term "unproductive entrepreneurship" to describe this negative impact:

> Entrepreneurs are always with us and always play some substantial role. But there are a variety of roles among which the entrepreneur's efforts can be reallocated, and some of those roles do not follow the constructive and innovative script that is conventionally attributed to that person. Indeed, at times the entrepreneur may even lead a parasitical existence that is actually damaging to the economy. How the entrepreneur acts at a given time and place depends heavily on the rules of the game—the reward structure in the economy—that happen to prevail.[47]

To the extent that our political system allows itself to be twisted to serve narrowly focused special interests rather than the public interest, it will encourage entrepreneurs to misuse their skills in seeking political privilege. Not only does this reduce the economic growth that would otherwise occur, it actively degrades democratic institutions as corporations and special interest groups wrestle to use government authority to involuntarily bend others to their will.[48]

SOLVING THE SUBSIDY ARMS RACE: WAYS TO END THE ECONOMIC WAR BETWEEN THE STATES

Unfortunately, the solution to the problem of economic development is neither simple nor straightforward. Even if offering corporate subsidies doesn't make economic sense, elected officials perpetuate the practice because they believe it gains them popular support.[49] This means that any solution to the problem

45. Michael R. Baye, Dan Kovenock, and Casper G. de Vries, "The Incidence of Overdissipation in Rent-Seeking Contests," *Public Choice* 99, no. 3 (1999): 439–54.
46. Kevin M. Murphy, Andrei Schleifer, and Robert W. Vishny, "The Allocation of Talent: Implications for Growth," *Quarterly Journal of Economics* 106, no. 2 (1991): 503–30.
47. William J. Baumol, "Entrepreneurship: Productive, Unproductive, and Destructive," *Journal of Political Economy* 98, no. 5 (1990): 3–4; Robert E. Litan and Ian Hathaway, "Is America Encouraging the Wrong Kind of Entrepreneurship?," *Harvard Business Review*, June 13, 2017.
48. Mancur Olson, *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven, CT: Yale University Press, 1982).
49. Jensen and Malesky, *Incentives to Pander*.

requires cultural change—politicians must credibly believe that the voting public will punish them for offering corporate handouts, and businesses must similarly fear losing customers if they accept subsidies.[50]

But cultural change is difficult to bring about in the best circumstances, let alone when the political culture is trapped in a durable vicious cycle like that of targeted economic development subsidies. And even if the necessary shift is achieved, there is a very real possibility that the cultural values surrounding corporate subsidies will revert back, especially because unproductive entrepreneurs would still have the opportunity and incentive to lobby for the reversion. As a result, cultural change alone is not a sustainable solution to the problem of targeted economic development subsidies. But if cultural change were paired with institutional reforms that removed the option to engage in government privilege-granting, this might be sufficient to serve as a quasi-sustainable solution.[51]

A twofold solution is required because institutional reform will be nearly impossible without a general public desire to change the status quo. And the institutional reforms in turn would help cement the cultural values in place by forestalling the creeping degradation of democratic norms that is caused by unproductive entrepreneurs using their talents to twist government authority to their advantage.[52]

Closing off the political arena from entrepreneurial innovation should inhibit the practice of privilege granting in the same way that economic regulations motivate entrepreneurs to avoid the areas of the economy where exploration is

"This means that any solution to the problem requires cultural change—politicians must credibly believe that the voting public will punish them for offering corporate handouts, and businesses must similarly fear losing customers if they accept subsidies."

50. Cristina Bicchieri, *Norms in the Wild: How to Diagnose, Measure, and Change Social Norms* (New York: Oxford University Press, 2017).
51. This twofold solution is only "quasi-sustainable" because it can be undone with a reversion in cultural values that subsequently erodes the institutional reforms. But no policy reform is fully and permanently sustainable because every policy depends, more or less, on the public's acceptance and compliance.
52. Randall G. Holcombe, *Political Capitalism: How Political Influence Is Made and Maintained* (New York: Cambridge University Press, 2018); Olson, *The Rise and Decline of Nations*; Tullock, "The Welfare Costs of Tariffs, Monopolies, and Theft."

restricted.[53] And a side benefit of reducing the possibility of regulatory capture and privilege granting is that it would encourage a reallocation of the entrepreneurial talent in society away from politics and toward the economy, resulting in greater economic growth in addition to the reduction in government favoritism.[54]

Constitutional Gift Clauses

Although it's not common knowledge, most states (47 out of 50) already have constitutional restrictions that—at least upon plain reading—forbid the kinds of targeted economic development subsidies that we see today. For example, the Tennessee Constitution includes the following clause:

> The credit of this State shall not be hereafter loaned or given to or in aid of any person, association, company, corporation or municipality: nor shall the State become the owner in whole or in part of any bank or a stockholder with others in any association, company, corporation or municipality.[55]

These "gift clauses" grew out of problems in the early 1800s when politicians' subsidization of private corporations, especially canal and railway businesses, drove many states to the brink of bankruptcy. Today these constitutional barriers do little to prevent similar misuse of public funds. Lack of enforcement reflects a cultural shift away from the hard lessons learned in that previous period. And modern courts interpret public purposes so broadly that the line between public and private is blurred, thus stripping the gift clause of its power to prevent the granting of government privilege.[56]

Direct Democracy

Another means of inhibiting corporate favoritism is for voters to act directly to reverse the economic and regulatory privileges that their government representatives have granted. Citizens' groups in both Austin, Texas, and Seattle,

53. Matthew Mitchell, Christopher Koopman, and I illustrated how the taxi industry fell victim to a lack of innovation caused by excessive regulation. Michael D. Farren, Christopher Koopman, and Matthew D. Mitchell, "Rethinking Taxi Regulations: The Case for Fundamental Reform" (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, 2016).
54. Baumol, "Entrepreneurship."
55. Tenn. Const. art. II, § 31.
56. See the forthcoming paper, "The History, Economics, and Law of Constitutional Gift Clauses" by Matthew Mitchell and Anne Philpot for more information.

Washington, have filed petitions to override their local governments' provision of stadium subsidies for professional sports teams.[57] Voters in 27 states and Washington, DC, have some ability to place statutory initiatives or constitutional amendments on the state ballot, allowing the public to directly approve (or repeal) changes to law or government authority. This approach offers an end run around the likely intransigence of local politicians and state legislators, who believe they benefit from being able to tout the economic development programs they have supported.[58]

Interstate Compacts

In comparison with the direct democracy approach, interstate compacts offer a legislature-directed escape from the current paradigm of political favoritism. Many elected officials and economic development officials have expressed dissatisfaction with corporate subsidies, but they argue that they're forced to offer targeted privileges because other states and cities are doing it—that providing privileges allows them to compete with other regions for economic growth and that failing to do so would violate their responsibility to their constituents. Sean O'Byrne, Vice President of Business Development for the Downtown Council of Kansas City, told the *New York Times*, "It sounds like I'm talking myself out of a job, but there ought to be a law against what I'm doing."[59]

Economists call this situation a "prisoner's dilemma" after the game theory example of the same name, but it also resembles an arms race between hostile nations.[60] In much the same way as economic subsidies, military buildups reduce economic growth by shifting investments away from products and services that improve people's lives.[61] It would be better for all the nations involved in an arms race to mutually agree to disarm and resume peaceful relations, but the difficulty in credibly committing to disarmament hinders the best resolution to the

57. Mike Roseberg, "Petition Filed for Potential Referendum Against $135 Million in Tax Funds for Mariners Ballpark," *Seattle Times*, September 27, 2018; Chad Swiatecki, "Petitioners Seek Public Vote on City's Soccer Stadium Deal," *Austin Monitor*, September 28, 2018.
58. See our forthcoming paper with Matthew Mitchell: "Does Direct Democracy Offer a Solution to Government-Granted Economic Favoritism?" See also Jensen and Malesky, *Incentives to Pander*.
59. Louise Story, "As Companies Seek Tax Deals, Governments Pay High Price," *New York Times*, December 1, 2012.
60. Avinash Dixit and Barry Nalebuff, "Prisoners' Dilemma," in *The Concise Encyclopedia of Economics*, ed. David R. Henderson (Carmel, IN: Liberty Fund, Inc., May 31, 2010).
61. Matthew D. Mitchell and Michael Farren, "Amazon HQ2: Cities Should Stop Wasting Money on Corporate Handouts," *Fiscal Times*, October 18, 2017.

problem.[62] But in comparison, states *do* have a way to credibly commit to a given course of action—an interstate compact.

Interstate compacts are suprastate, subfederal, regional and national contracts between states that are backed by the authority of the US Constitution.[63] They allow state legislatures the ability to create interstate governance bodies (like the Port Authority of New York and New Jersey), to commit to common standards of rules and information-sharing (like the Driver License Compact), and to restrict the authority of future state legislatures (like the Virginia and West Virginia Boundary Agreement of 1863). In fact, interstate compacts are the only way outside of constitutional amendments or legal contracts for a current state legislature to restrict the authority of a future legislature. And interstate compacts actually offer a more durable means of restricting government authority compared to constitutional amendments because (1) other states can serve as monitors to ensure that each member is satisfying the compact's requirements, and (2) amending or repealing an interstate compact generally requires another interstate compact, similar to the way changing the terms of a contract requires the consent of the affected parties.[64]

CONCLUSION

The meteoric rise of Amazon since its initial humble launch as an internet bookseller barely 20 years ago illustrates the effectiveness of the company and its leadership. Because of this, we find it implausible that Amazon's corporate leaders didn't already have a good idea of where they would locate HQ2 even before launching the competition between cities.[65] The research on corporate location decisions finds that subsidies rarely affect the final decision, lending weight to

62. It of course bears noting that this is made more difficult when there are also philosophical differences driving the international animosity.
63. Michael L. Buenger et al., *The Evolving Law and Use of Interstate Compacts*, 2nd ed. (Chicago: American Bar Association, 2016).
64. See our forthcoming paper with Matthew Mitchell: "Interstate Compacts: A Solution to the Economic Development Subsidy War?"
65. Indeed, some clues suggest that Amazon might have used a real-estate developer to acquire land in the suspected location, Northern Virginia's Crystal City neighborhood, in the summer of 2017 before the HQ2 competition was announced. Of course, if Amazon selects another location, then this supposition can simply be chalked up to another Amazon HQ2 conspiracy theory. Karen Weise, "Amazon HQ2 Watch: Northern Virginia Checks the Most Boxes," *New York Times*, October 19, 2018, Business Day; Jon Bannister, "Crystal City Set to Undergo Transformation as JBG Smith's Top Priority," *Bisnow*, July 19, 2017; Leanna Garfield, "A Major Real-Estate Fund Is Making a $10 Million Bet That Amazon Will Choose the Washington, DC Area for Its Second Headquarters," *Business Insider*, April 18, 2018; Karen Goff, "JBG Smith's Top Target: The Reinvention of Crystal City,"

our skepticism. It also suggests that any relocation subsidies would simply be extra icing on the cake that Amazon had already picked.

This study has illustrated that such targeted tax incentives are a waste of public funds because of the following reasons:

1. Subsidies are unlikely to change Amazon's final location decision.
2. Targeted economic development subsidies don't create broad economic growth or improvements in community welfare. Rather, they're more likely to cause economic inefficiency and reduce long-run growth (see table 3 for a summary of the economic effects).
3. Offering economic subsidies to one corporation or industry inevitably requires tradeoffs that force other businesses and taxpayers to pay higher taxes or force local residents to endure lower-quality public services, or both.
4. Our political system's allowance of targeted subsidies leads to the corruption of our democratic ideals and institutions.

Solving the problem of targeted subsidies will require a two-pronged approach to (1) shift culture against the granting of economic privilege so that the politicians granting subsidies and the corporations accepting them pay a price for their decision, and (2) reform the rules governing state and local governments to restrict the ability of policymakers to offer subsidies or provide special treatment in the first place.

Washington Business Journal, July 18, 2017; Jonathan O'Connell, "Would Anyone Like to Own Half of Crystal City?," *Washington Post*, May 10, 2016.

TABLE 3. SUMMARY OF THE ECONOMIC EFFECTS OF GOVERNMENT FAVORITISM

1.	Production and consumption shift away from the most efficient outcome, leading to a loss of economic welfare. This is similar to the deadweight loss created by taxation, but the weaponization of government policy to serve a special interest rather than the public interest causes additional problems.
2.	Entrepreneurial (albeit unprincipled) individuals see the opportunity to use government authority to increase their profits beyond what is possible through voluntary exchange and spend resources to gain this advantage. This represents a pure waste of resources, since they are spent in pursuit of an economic outcome that is worse than what would otherwise occur.
3.	Those who will suffer the wealth transfer have the incentive to spend resources to prevent it. The resources spent on this protection, although completely logical, are also considered to be “wasted” because they simply attempt to maintain the outcome that would otherwise naturally occur in an economic system of voluntary exchange. The spending of these resources also inevitably shifts the economy away from the best potential outcome.
4.	As the amount of wealth targeted for transfer increases, the resources wasted in pursuit of or in defense of the transfer also increase.
5.	Because both the privilege seeker and the target of the wealth transfer have an incentive to spend resources up to the expected value gained or lost by the involuntary exchange, the sum of the wasted resources can actually *exceed* the value of wealth transfer.
6.	Lastly, future economic growth and the associated improvements in quality of life decrease as more and more talented entrepreneurs are drawn away from economic competition and toward political competition. This vicious cycle produces an accelerating increase in economic waste and stunts economic growth even further in the future.

APPENDIX: DATA SOURCES AND CALCULATION METHODOLOGY

Estimating Amazon's Future Revenue and Profits

We obtain Amazon's past annual revenue and net income (i.e., profit) data from 2005 through 2017 from publicly available sources.[66] We calculate the average of Amazon's year-over-year revenue growth rate for the latest 5-, 10- and 13-year time horizons. We use the five-year horizon average annual growth rate, 23.9 percent, as our baseline revenue growth rate to estimate total annual revenue in 2018 because it provides the most cautious estimate of future growth and uses the most recent—and therefore most comparable—data.[67] Because of the likelihood that Amazon will experience slower growth in the future, we apply an annual adjustment to the growth rate starting in 2019, decreasing the growth rate by 0.78 percentage points each year.[68]

We use the average annual net profit margin from the latest five-year time horizon (0.82 percent) as the lower bound of Amazon's likely future net profit margin.[69] However, because Amazon's annual net profit margin is likely to increase in the future, we use the average annual net profit margin for the entire US stock market from 2000 through 2017, 6.32 percent, as an upper-bound estimate of what Amazon's future net profit margin might be.[70]

We apply our annual growth rate to Amazon's 2017 reported revenue to estimate Amazon's total annual revenue for the period from 2018 through 2040, making the simplifying assumption that Amazon HQ2 will be fully operational in the year 2021 (the results of the estimation should be similar regardless of when this assumption is made). We apply our upper and lower bounds of annual net profit margins to this annual revenue to estimate the potential range of Amazon's future net income.

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66. Macrotrends, "Amazon Revenue 2006-2018 | AMZN," accessed November 1, 2018, https://www.macrotrends.net/stocks/charts/AMZN/amazon/revenue; Macrotrends, "Amazon Net Income 2006-2018," accessed November 1, 2018, https://www.macrotrends.net/stocks/charts/AMZN/amazon/net-income.
67. The 10-year and 13-year total revenue growth rates were 28.4 and 29.0 percent, respectively.
68. The estimate of 0.78 percentage points slower growth each year is based on regressing Amazon's year-over-year percentage increase in total revenue from 2005 through 2017 (12 growth periods) against time. We advise the reader against putting confidence in this estimate—there is substantial variation in the data and the trendline does not fit the data well. However, we believe that some accounting of slower growth in the future is necessary.
69. The 10-year and 13-year annual net profit margins were 1.58 percent and 1.92 percent, respectively.
70. Bowman, "Why the Amazon of the Future Could Be Much More Profitable Than It Is Today "; Dennis, "Is Amazon Finally Getting Serious about Retail Profitability?"; Kim, "Amazon Reports Q3 2018 Earnings"; Damodaran, "Margins by Sector (US)"; Damodaran, "Data: Archives."

We then apply our thought experiment assumption—that choosing the optimal location for HQ2 will allow Amazon's annual total revenue to grow just 1 percent faster than the second-best location. We assume that the same upper and lower bounds of annual net profit margins apply to the increased revenue and estimate future revenues and net income.

Estimating the Potential Tradeoffs Created by the HQ2 Subsidy

The average combined publicly available subsidy offered by the 20 semifinalists for Amazon HQ2 is $8.9 billion over 15 years ($6.75 billion from the average state and $2.15 billion from the average city). We compare these subsidies with the anticipated future state corporate income tax revenue and with the anticipated cost of providing various public services over the same time period to illustrate the inherent tradeoffs in offering subsidies.[71]

Our methodology for evaluating each of these future revenues and costs is detailed below.

Anticipated Future Corporate Income Tax Revenues

To estimate future corporate income tax revenues, we use data on previous corporate income tax collections from each state's Comprehensive Annual Financial Report (CAFR).[72] We calculate the year-over-year growth in tax revenue from 2006 through 2017 (11 growth periods) and use the average of these values to forecast the annual growth in corporate income tax revenue in the future. We compare the total anticipated corporate income tax collections for each state over the course of the subsidy with the average Amazon HQ2 subsidy (or with the actual subsidy offered, in the cases of Maryland and New Jersey). This allows us to estimate the percent reduction in state corporate income tax that could be offered to all businesses in place of the Amazon HQ2 subsidy.

71. Our US-focused analysis of the subsidy tradeoffs does not include Toronto, Ontario. The omission does not affect the final results because neither the city nor the province offered targeted subsidies to Amazon.
72. Where CAFR data were not available, we use information from the state's Department of Revenue.

Anticipated Cost of Full-Tuition Scholarships at the State Flagship University

To estimate future tuition costs we apply an annual growth rate of 5.8 percent to the tuition at each state's flagship university for the 2017–2018 academic year.[73] We compare the cost to each state of providing a full-tuition scholarship each year over the course of the subsidy with the average Amazon HQ2 subsidy (or with the actual subsidy offered, in the cases of Maryland and New Jersey). This allows us to estimate the number of full-tuition scholarships that could be awarded each year instead of the Amazon HQ2 subsidy.

Anticipated Roadway Maintenance Costs

To estimate future state road maintenance costs, we apply the average annual inflation rate over the previous 30 years (2.6 percent) to each state's roadway maintenance expenditures.[74] Starting in the year 2019, we calculate the running sum of the annual estimated state expenditures on roadway maintenance until the amount equals the estimated Amazon HQ2 subsidy for each state (or with the actual subsidy offered, in the cases of Maryland and New Jersey). This allows us to estimate how many years of state roadway maintenance could be paid for by the proposed subsidy.

Anticipated Future Cost of Municipal Public School Education

We collect data on expenditures per student directly from the relevant municipal school district's publicly available documents (often annual reports or annual budgets) where possible. In the few cases where the data were not available, we use third-party reports of expenditures per student (generally newspaper articles or data aggregated by the Census Bureau).[75] We then apply the average annual

73. The 5.8 percent average annual tuition growth rate accounts for both inflation as well as the increase in 4-year public university tuition above the level of inflation over the 10-year period from 2008 through 2018. The College Board, "Average Rates of Growth of Published Charges by Decade," accessed October 31, 2018, https://trends.collegeboard.org/college-pricing/figures-tables/average-rates-growth-published-charges-decade#Key%20Points.

74. We use the Reason Foundation's 23rd Annual Highway Report (which covers FY 2015) as the source of highway maintenance costs. We prefer this resource because there is substantial variation in how states report their own road maintenance costs, making equivalent comparisons difficult. The Reason Foundation report offers a data source that is appropriately comparable between states. However, because the Reason report does not include data for Toronto or Washington, DC, we gathered these data from local reports. M. Gregory Fields and Spence Purnell, "23rd Annual Highway Report on the Performance of State Highway Systems" (Policy Study No. 457, Reason Foundation, Washington, DC, February 2018).

75. The per-student expenditures include all costs of education: the salary of the teacher directly interacting with students, administrative costs, nonsalary compensation (e.g., retirement benefits), and nonteacher support costs (e.g., school nurses and counselors).

inflation rate over the past 30 years (2.6 percent) to estimate future per-student expenditures for each city over the course of the average Amazon HQ2 subsidy (or for the time span of the actual subsidy offered in the case of Newark and Columbus). This allows us to estimate the number of local public school students' educations that could be funded each year instead of the Amazon HQ2 subsidy.

Anticipated Future Cost of Police Officer Salaries

We collect data on each municipal police department's number of sworn officers from the FBI's Uniform Crime Reporting data from 2016 (the most recently available data). We then collect data on each municipal police department's total annual budget from the same year to estimate the average expenditure per sworn officer.[76] We then apply the average annual inflation rate over the past 30 years (2.6 percent) to estimate future per-officer expenditures for each city over the course of the average Amazon HQ2 subsidy (or for the timespan of the actual subsidy offered, in the cases of Newark and Columbus). This allows us to estimate the number of additional police officers (and the percentage increase in the police force) that could be funded instead of the Amazon HQ2 subsidy.

76. This methodology incorporates the cost of support activities (such as administrative costs, nonsalary compensation such as retirement benefits, and compensation of nonsworn officer employees, such as dispatchers) that are necessary for effective police operations.

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