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Economy

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Revisiting the Foxconn Agreement:

Comments on

**“The Economics of a Targeted Economic Development Subsidy”
by Mitchell, Farren, Gonzalez, and Horpedahl***

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Abstract

In 2017 the state of Wisconsin agreed to an unprecedented agreement, both in the scale of the project and the accompanying state subsidies, for a planned large-scale manufacturing plant by Foxconn. While Foxconn’s plans are uncertain and have changed over time, a recent report by Mitchell, Farren, Gonzalez, and Horpedahl (2019) used the Foxconn agreement as an illustration of the economics of targeted government subsidies. While they raise a number of important points about the negative consequences of government-provided development subsidies, a complete cost-benefit analysis of the Foxconn deal does not support their conclusion that, “the subsidy may depress state economic activity by tens of billions of dollars over the next 15 years.” Apart from other issues, their results assume that Foxconn would likely have located in Wisconsin with no subsidy at all, and thus discount 50-98% of all activity Foxconn would generate. Instead, taking full account of the costs and benefits suggests net benefits of \$34 billion at my midpoint estimate for the original plant, or roughly \$8 billion for a smaller plant as is now planned. However this finding does not argue for the Foxconn incentive package or government incentives more broadly, which are generally inequitable and inefficient.

* I thank Junjie Guo, Matt Mitchell, Michael Farren, Olivia Gonzalez, and Jeremy Horpedahl for helpful comments. The views expressed herein are those of the author and not necessarily those of the Center for Research on the Wisconsin Economy, the Department of Economics, or the University of Wisconsin.

1 Overview

In the summer of 2017 the state of Wisconsin agreed to an unprecedented deal for a planned large-scale manufacturing plant by Foxconn. The agreement was unprecedented both in terms of its overall scale, spelling out a planned investment of up to \$10 billion with employment of up to 13,000, and the size of the state subsidy, a state payoff of up to nearly \$3 billion in payroll and investment subsidies (with additional sales tax relief and local government subsidies added later). Since the time of announcement the Foxconn deal has proved controversial, and has highlighted the role of government subsidies and incentive packages that encourage economic development. The uncertainty associated with the project has grown over time, as Foxconn’s plans have shifted toward building a much smaller plant than originally announced, and several of the company’s announced commitments around the state have yet to be fulfilled. Most recently, it has even become unclear whether the state would continue to grant the tax credits due to the changes in plans Foxconn has made from what was originally contracted.

With this background, the recent report issued from the Mercatus Center at George Mason University by Mitchell, Farren, Gonzalez, and Horpedahl (2019), henceforth “MFGH,” has gained significant attention. Their report provides a broad overview of many of the issues bearing on the impact of government development subsidies, but at the center of the report is a cost-benefit analysis of the Foxconn deal. While MFGH raise a number of valid and useful points about the negative consequences of government-provided development subsidies, a complete cost-benefit analysis of the Foxconn deal does not support their conclusion, “that under realistic scenarios the subsidy may depress state economic activity by tens of billions of dollars over the next 15 years.”

As I discuss in more detail below, the report by MFGH adds to the previous analyses of the Foxconn proposal by considering two additional factors: (1) the state subsidies may not have been decisive in Foxconn’s investment decision, and (2) the state could have used the subsidy revenue in a different way, namely to cut taxes. These are both valid issues which add to our understanding of incentive programs. However, MFGH understate the evidence of decisiveness for the Foxconn case, and only focus on an ex-ante evaluation where they deduct 50% or more of any realized output.

Benefits				
	Decisive	Plant only	Conservative estimated impact	EY estimated impact
Ex-post	100%	39.3	52.3	78.9
Ex-ante	75%	29.5	39.2	59.2
	50%	19.7	26.2	39.5

Costs		
	Tax Multiplier	Total Cost
Base	1.0	3.5
Mid	1.5	5.3
High	3.0	10.5

All figures in billions of dollars. See text for description and sources.

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MFGH also focus only on the gains of the plant itself, fully discounting any activity generated in construction, by suppliers and contractors, or through spending by employees at the plant. Finally, their range of estimates of gains from tax reductions is skewed toward implausibly large values. My estimated ranges of costs and benefits of the Foxconn deal in the table above suggest large net *benefits*: roughly \$34 billion for the midpoint estimate, which implies roughly \$8 billion for the smaller plant now planned.

It is important to emphasize that finding net benefits in this case does not argue for the Foxconn incentive package in particular or government incentives in general. As MFGH note, there are additional costs of incentives that they do not quantify which would lower the net gains. More broadly, most subsidy programs would fail such an analysis, and government subsidies in general are inequitable, inefficient, and may have further negative consequences. Finally, while quantifiable costs and benefits are an important component in making policy decisions, many other factors also come into play.

2 The Mercatus Report and Previous Foxconn Analyses

Before going into detailed comments on the Mercatus report by MFGH, I briefly review previous analyses of the Foxconn project and what MFGH add to the discussion.

At the time the Foxconn deal was announced in the summer of 2017, there was an official analysis of the planned investment and its economic impact by EY, which was commissioned by Foxconn. This analysis mostly served as the template for the state Legislative Fiscal Bureau (LFB) analysis of the fiscal impact, which also provided a timeline of how investment and employment at the plant was projected to evolve over time. A related study by Baker Tilly yielded roughly similar conclusions on the overall employment impact of the project, although differing rather substantially in detail. They also considered a more conservative scenario with smaller spillovers from the plant. Later in 2018, the Milwaukee Metropolitan Association of Commerce released an updated analysis drawing on these studies, finding smaller economic impact than EY.

Shortly after the initial studies were made public, I was asked to review them and the economic impact of the Foxconn project. Although not directly germane to the current discussion, my report was cited by MFGH, and it has sometimes been mischaracterized, so I wanted to address it. I wrote the report in response to a request from the Wisconsin Tech Council, which was forwarded to me through the UW-Madison Chancellor's office. This request – provided for no payment and with a quick turnaround deadline – had no preconditions or expected outcomes. I reviewed the existing studies on the project, surveyed some of the relevant economics literature, and considered a few different scenarios. I relied on the LFB and EY analyses, evaluating potential economic benefits as compared to fiscal costs. MFGH cite my report on the economic impact and the “fiscal multiplier” associated with the project, but these came from the EY numbers. My report had a limited objective, which I acknowledged, noting that my analysis, “only accounts for the direct income from the project, but does not account for either the cost of subsidy

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funds or the adjustment of prices and associated reallocation of resources that would follow the investment.” Importantly, the report was not an argument for or against the incentive package, but rather tried to gauge the economic impact of the project. This is clearly an important factor, but far from the sole determinant, in such a policy decision.

As MFGH note, since the time of the announcement and signing of the Foxconn agreement, uncertainty about the size and scope of the project has increased. While the original plans called for a Generation 10.5 plant, it is no longer planned. Rather, a smaller Generation 6 plant is (presumably) in the works. Quite a bit is unknown, even though Foxconn has publicly maintained that its long-term employment goals remain unchanged. Further uncertainty surrounds the makeup of the planned employment (Foxconn has at times stressed that it would now employ more “knowledge workers”), as well as its other investments. The announced “innovation centers” around the state are seemingly dormant and Foxconn’s announced commitment to the University of Wisconsin remains unfulfilled. Foxconn did not meet the 2018 employment targets, so has yet to receive any state subsidy, although local governments have spent and committed funds for land procurement, infrastructure, and site development. Most recently, the new state administration has taken the position that a Gen 10.5 plant was specified in the contract, so the smaller Gen 6 plant now planned is not eligible for tax credits. What exactly will develop from Foxconn in Wisconsin remains to be seen.

In the following I focus on the costs and benefits associated with the development of a Generation 10.5 plant, even though such a plant is no longer in development. Nonetheless, those numbers and valuations are most often quoted in the press, were in the original and only complete evaluations of the project to this point, and are the values most highlighted by the MFGH report. Usefully, MFGH also provide estimates for a Generation 6 plant, which in most cases (apart from some fixed costs) simply scale costs and benefits down proportionally by a factor of 4, which gave the \$8 billion figure above.

Relative to the earlier analyses which were focused solely on the Foxconn incentive package, the MFGH report is a broader analysis of the issues associated with government subsidies for economic development, with Foxconn serving as an example. These broader points, which are included in Sections 5 and 6 of their report, focus on waste, rent-seeking, anti-competitive behavior, inefficiency, and inequity associated with targeted government subsidies, as well as the incentives for politicians to grant subsidies. I largely agree with these points, which MFGH note are difficult to quantify. Nonetheless, we have already seen some of these impacts in Wisconsin. For example, in January 2018 Kimberly-Clark announced plans to close two facilities in Wisconsin, and a bailout incentive package modeled on the Foxconn deal was proposed, which would have cost up to \$100 million over 15 years. While this proposal did not pass in the legislature, it illustrates the political consequences of the Foxconn deal. The political pressure and example of Foxconn helped lead to a smaller (\$28 million) incentive package for Kimberly-Clark under Wisconsin’s standing Enterprise Zone program discussed below.

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In the remainder of the report, I focus on the cost-benefit analysis that MFGH provide. As discussed above, they add two main components relative to the previous analyses: (1) the state subsidies may not have been decisive in Foxconn's investment decision, and (2) the state could have used the revenue going to the subsidy in a different way, namely to cut taxes. Moreover, in calculating potential gains from Foxconn, they only consider activity directly generated by the plant. I now turn to these points.

3 The Decisiveness of Subsidies and Ex-Post vs. Ex-Ante Evaluation

The first new element of the MFGH report is that the subsidies provided to Foxconn may not have been decisive in the company's decision to locate in Wisconsin. In particular, MFGH suggest that there was a 75-98% likelihood that Foxconn would have come to Wisconsin without any subsidy at all (although they also allow for only a 50% chance). Thus they count as a benefit only 2-25% of the economic activity generated (or up to 50%). I argue that this misrepresents Foxconn's bargaining situation, understates the degree of decisiveness in this case, and is more relevant for an ex-ante evaluation of a standing program rather than the ex-post analysis of a particular agreement.

First, while of course we cannot know for sure, it seems highly unlikely that Foxconn would have come to Wisconsin without any subsidy at all, or even one significantly smaller than what was agreed to. As mentioned above, Wisconsin has a standing Enterprise Zone program which provides incentives to attract and retain businesses.¹ This program provides a 7% payroll subsidy for employment and a 10% subsidy for capital investment. There are currently \$700 million in contracted credits to companies through this program, including Kimberly-Clark as discussed above. These subsidies are smaller than the Foxconn agreement, which increased the payroll subsidy to 17% and the capital subsidy to 15%. Using the planned investment and employment figures, the Enterprise Zone program would have provided Foxconn a subsidy 53% as large as the one that was agreed to. The Enterprise Zone parameters likely provided a starting point for the negotiations, and it seems unlikely that Foxconn would have settled for less.

Foxconn was also negotiating with other states. In addition to Wisconsin, Michigan, Ohio, Pennsylvania, and North Carolina were in the running for the plant. While the details of all offers are unclear, Michigan in particular offered a \$3.8 billion incentive package, which was larger on its face than the Wisconsin subsidies.² However \$1.5 billion of the Michigan total included tax exemptions offered to any manufacturer coming to the state, while Wisconsin largely exempts manufacturers from corporate income taxes. Nonetheless, Michigan provided at least \$2.3 billion in new targeted subsidies.

¹ See:

https://docs.legis.wisconsin.gov/misc/lfb/informational_papers/january_2019/0006_business_tax_credits_informational_paper_6.pdf

² See <https://www.jsonline.com/story/news/politics/2017/10/19/michigan-offered-foxconn-3-8-b-flat-screen-plant-still-lost-wisconsins-3-b-bid/772803001/>

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Many factors go into site selection, and perhaps Wisconsin was a better fit along some dimensions than the other states, and so could offer a smaller subsidy package. However these numbers do suggest that it was unlikely that the Foxconn would have chosen Wisconsin without a subsidy of at least a couple billion dollars, let alone without any subsidy at all as MFGH suggest.

In addition, the size of the Foxconn incentives from Wisconsin likely means that they were much more decisive than MFGH suggest. They take their range of 2-25% decisiveness (and hence 75-98% chance Foxconn would have chosen Wisconsin with no subsidy) from a 2018 survey by Bartik of state-based incentive programs. However this survey includes small incentive packages for retention and expansion of existing incumbent firms already located within a state (who presumably have less bargaining power and require less compensation), as well as smaller targeted programs for locating firms. However the Foxconn package was very different from all of these programs, as Bartik himself acknowledged in a separate study.³ He wrote, “As a more extreme example, consider the incentive package recently agreed to by Wisconsin with Foxconn. This incentive package is at least 10 times the current national average incentive package. With the assumed sensitivity, the estimated probability of a Foxconn-size incentive package tipping a location or expansion decision is **76 percent** [emphasis added].” The problem with taking Foxconn as an example to illustrate subsidy programs is precisely that Foxconn is not representative of typical subsidies.

While of course it's impossible to know for sure, this evidence suggests that there was little chance that Foxconn would have chosen Wisconsin without any subsidy. Perhaps Foxconn would have agreed to a smaller package (or perhaps Foxconn could have held out for more), but it is unlikely the package would have been less than half as large as the \$3 billion Wisconsin state subsidy. Thus based on the evidence and the bargaining situation, the range of ex-ante decisiveness of the subsidy is likely in the 50-100% range. This is the upper range of what MFGH calculate, and beyond what they deem plausible.

Furthermore, there is an important difference between ex-ante evaluation of incentive programs and the ex-post evaluation of any particular agreement. This difference has gotten blurred in the interpretation and reporting of the results of MFGH. Discounting the benefits by the degree of decisiveness, as MFGH do, is appropriate for an ex-ante evaluation of the potential costs and benefits of incentive programs. For a given incentive program, we cannot know in advance how much new activity it will generate as opposed to simply providing funds for activity that would have happened anyway (or more generally, for a smaller subsidy). Thus when deciding whether to implement an incentive program, policymakers would want to weigh the projected benefits by the probability that the activity would actually be newly generated by the program, as MFGH propose. This would provide the expected benefits of the incentive program.

But once an agreement has been signed, the possibility of potentially signing a better deal or generating the activity without providing a subsidy is forgone. Thus compared to the

³ See https://research.upjohn.org/cgi/viewcontent.cgi?article=1037&context=up_technicalreports

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ex-ante evaluation, a different question is what would be the ex-post impact of the deal in hand, counting its full benefits. This ex-post approach was taken by the previous evaluations of the Foxconn agreement.

To give an analogy along the lines of one in MFGH, consider the case of a grower who has purchased an orange grove. While the grower's bidding strategy would be affected by the ex-ante likelihood of being successful in the purchase, his ex-post valuation of the output from the orange grove would not. Suppose that ex-post the grower overpaid and could have gotten the grove for half the price that he agreed to. The fact that the grower overpaid does not mean that he would throw out half of the oranges that it produces once he owns the grove. Only by deducting half or more of the economic activity generated by Foxconn do MFGH find that, "the subsidy may depress state economic activity over the next 15 years." But once the Foxconn plant is operational, all of its activity will in fact contribute to the economy of the state of Wisconsin.

4 Projected Benefits and Multipliers

The MFGH report also seems to understate the potential gains associated with the potential Foxconn plant opening. They quote a value of \$39.3 billion from my report, which (based on values from the EY analysis) was the total contribution to Wisconsin's state GDP over 15 years from the operations of the Foxconn plant itself. Thus MFGH fully discount any spillovers from increased economic activity coming from Foxconn's suppliers (what is known as "indirect activity" in the economic development literature), and the increased activity that comes as the income from Foxconn's employees and suppliers works its way through the state economy (known as "induced activity"), as well as any potential spillover effects on the productivity of existing firms or on property values in the region. Moreover, the MFGH report includes infrastructure spending as part of the total cost of the subsidy, but they do not count any of the gains (in employment and incomes, and hence GDP) from construction of that infrastructure or the plant itself. While these additional effects beyond the direct plant operations are uncertain, they would likely add at least \$13 billion, and perhaps much more than that, to state GDP. Thus the cost-benefit analysis of MFGH substantially undercounts benefits.

Although the MFGH report includes a discussion of the multipliers associated with the input-output approach to development, they use a GDP figure which does not account for any additional output beyond the plant itself (a multiplier of 1). Perhaps this was due to confusion about multiple meanings of the term "multiplier." As noted, MFGH cite my report for the cumulative GDP contribution from the plant itself. To give a sense of the scale of this GDP contribution relative to the size of the subsidy, I calculated a "fiscal multiplier" of 13.8, which is simply the total GDP from the plant divided by the total subsidy. This notion is similar to tax and government spending multipliers which are commonly discussed in the fiscal policy literature (and discussed more below).

In the input-output approach to economic project evaluation there are different "multipliers" which account for how an increase in economic activity of one type, in this case a new plant opening, has a larger impact on total overall economic activity (through

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the indirect and induced channels discussed above). The EY analysis of the Foxconn agreement used an employment multiplier of 2.7, meaning that for every 1 job created at Foxconn, there were an additional 1.7 jobs created at suppliers or through increased overall economic activity. The analysis by Baker Tilly considered two different scenarios with employment multipliers of 2.39 in their full analysis and 1.93 in a conservative case. In all cases, there are clear limitations to the input-output multiplier analysis, particularly for a project as large as the planned Foxconn plant: it is partial equilibrium, does not account for any impacts on wages or prices, scales linearly with the size of the project, and assumes the development of a significant in-state production stream. Nonetheless a multiplier of 1 takes a very strong stand that the plant would generate no additional activity beyond its own operations. In reviewing the evidence, my original report found a range of 1.7-3.0 of employment multipliers from different sources.

Converting the employment multipliers to output is not straightforward, as some of the induced activity would be in lower value-added service industries. For GDP, the EY analysis used a multiplier of 1.55, so an additional \$21.6 billion in cumulative GDP would be generated over the 15-year horizon along with the \$39.3 billion from the plant. The Baker Tilly analysis did not include GDP calculations, but the later MMAC report estimated that the conservative case considered by Baker Tilly would add an additional \$12.2 billion to state GDP.⁴ Being conservative and allowing for an effect half as large as EY estimated, the additional economic activity would generate \$10.5 billion in state GDP beyond the direct Foxconn operations.

In addition to the operations of the plant, the construction of the plant and its associated infrastructure would generate economic activity in Wisconsin. MFGH consider some of the subsidy costs associated with this construction, but none of the benefits. Both the Wisconsin State Legislative Fiscal Bureau analysis and my report focused on the direct payroll and capital investment subsidies from the state to Foxconn, which totaled \$2.85 billion. The MFGH report includes the additional local government credits, including the costs of roadway construction, which together total \$615 million. Deducting the sales tax exemption from the \$615 million, this amounts to \$476 million in additional government spending, which provides income to contractors and developers. None of this income and the activity it provides is counted by MFGH.

Beyond the direct payments from the government in building infrastructure, the construction of the plant itself would generate economic activity. For example, Foxconn has already awarded \$350 million in construction contracts.⁵ The EY analysis calculated that construction over a four year period would add an additional \$3 billion to GDP in direct activity, with an additional \$2 billion in indirect and induced activity. While the Baker Tilly analysis did not consider the GDP impact of construction, they did consider the employment impact. Even in their conservative scenario, they estimated that

⁴ See <https://www.mmac.org/metro-business-news/foxconn-package-returns-18-in-economic-impact-for-every-1-in-state-incentive>

⁵ See <https://www.jsonline.com/story/money/business/2019/12/02/foxconn-awards-31-million-more-contracts-total-now-350-million/2587890001/>

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construction would generate substantially more jobs than EY (roughly 20,000 compared to 16,000). Thus if we take even half of the EY total GDP contribution as a conservative estimate, construction would add \$2.5 billion to state economic activity.

Including the additional impacts from greater economic activity and construction of the plant and infrastructure leads to an additional \$26.6 billion in GDP using the EY estimates. Even supposing the additional effects only are half as large yields roughly \$13 billion in additional GDP. Thus a conservative estimate of the cumulative economic impact of the plant, including construction and operations, would total \$52.3 billion.

4 Tax Revenue Costs and Tax Multipliers

A valuable contribution of the report by MFGH is that it considers the potential gains from other uses of the fiscal revenue which goes toward subsidies. In other words, the “opportunity cost” of funding a targeted government subsidy is that it forgoes other potential uses of the revenue. While previous analyses only considered the direct fiscal cost of the subsidy, the alternative uses of government revenue may also generate economic activity which is forgone when funding the subsidy. Thus in addition to the fiscal multiplier which captures how the subsidy generates additional GDP, there would be a cost multiplier capturing forgone GDP from funding the subsidy. While this is an important point, most of the cost multipliers reported by MFGH seem implausibly large.

In their report MFGH illustrate alternative uses for the revenue, such as cutting individual income taxes, sales taxes or corporate income taxes. In their cost-benefit analysis, they focus on the gains from an across-the-board tax cut of the same size as the Foxconn subsidy, which would cut all taxes by roughly 1%. To project the impact of these cuts, they consider three elasticity estimates from a range reported in Bartik (1991). However in making these projections, their calculations imply tax cut multipliers which, apart from their lowest reported value, are far outside the ranges estimated in the literature. That is, rather than imputing impacts on GDP from changes in tax rates, there is a substantial literature in fiscal policy which estimates tax cut multipliers, the additional GDP for each dollar of taxes cut. While there is a wide range of tax multiplier estimates in the literature, many are below 1.0 and few are larger than 3.0, whether relying on studies of federal or state level fiscal policy.⁶ By contrast, the range of implied multipliers in the MFGH report are roughly 1.7, 5.8, and 9.9. They mostly focus on the middle value, which is still quite large when compared to values estimated in the literature. In my table above, I consider three cases, 1.0 (which corresponds to the baseline in the previous analyses), 1.5, and 3.0. Thus, using the \$3.5 billion total subsidy value reported by MFGH, I estimate that the total opportunity cost would be at most \$10.5 billion, but more likely in the \$3.5-5.3 billion range.

⁶ See https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/workingpaper/49925-FiscalMultiplier_1.pdf for federal examples and https://scholar.harvard.edu/files/chodorow-reich/files/cross_sectional_multipliers.pdf for an overview of state-level studies. Other papers find no impact at all of state taxes on state output, such as <https://www.brookings.edu/research/the-relationship-between-taxes-and-growth-at-the-state-level-new-evidence/>.

5 Conclusion

Overall, this discussion suggests that most of the range of estimated costs and benefits reported by MFGH are outside of plausible values for the Foxconn agreement, and a full evaluation does not support their conclusion. The subsidies were likely 50-100% decisive (with 100% being appropriate for an ex-post evaluation), the Foxconn plant and its construction would likely generate economic activity beyond the operations of plant itself, and only their lowest fiscal cost is consistent with the literature. Taking the midpoint of the reasonable range of estimates yields net gains of roughly \$34 billion for a Generation 10.5 plant, or roughly \$8 billion for a Generation 6 plant.

Let me reiterate that finding net GDP benefits in this cost-benefit analysis in itself is not an argument that the Foxconn incentive package was a good idea or that governments should subsidize business investment. My reading of the literature suggests that on average (or even in most cases) government incentive programs do not yield net output gains. But that does not imply that every single case leads to net losses. The problem with taking Foxconn as an example of incentive programs is that, due to its size and scope, the Foxconn deal is not representative. Furthermore, as MFGH discuss, targeted government incentives have many additional negative effects, some of which we have already witnessed in Wisconsin following the Foxconn agreement, as discussed above. Finally, simply because a policy may contribute to GDP does not in itself make it worth pursuing, as broader issues of equity, efficiency, and the role of government come into play. Overall, while I disagree with aspects of their analysis of the Foxconn agreement, the study by MFGH was valuable in raising many of the larger issues associated with government sponsored targeted incentive programs.