KENNESAW STATE UNIVERSITY
COLES COLLEGE OF BUSINESS
Bagwell Center for the Study of Markets and Economic Opportunity

Commentary

Title:

"Vending Machines, Government Policy, and Economic Organization"

Author(s):

James Boudreau, Assistant Professor of Economics at Kennesaw State University and Bagwell Center Affiliated Faculty Member

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Consider a thought experiment: you own and operate a vending machine. It's a quirky vending machine for these modern times, though, and doesn't accept credit cards. In fact, it only accepts quarters. Fortunately, everything in the machine is priced at $0.25.

You are planning to increase the prices of everything in your vending machine. You have two options: increase the prices from $0.25 to either $0.30 or $0.50. Note that your vending machine will not be able to accept credit cards any time soon, so if you choose the $0.30 option, you'll have to overhaul the payment mechanism to accept nickels and/or dimes. Otherwise, things are as they are in our world. Which new price would you choose, $0.30 or $0.50?

Clearly there is no right answer because there aren't enough details, though one thing is for sure: this author is terrible at creating thought experiments. Oh, one more thing: I'm terrible at introductions. Nevertheless, if you're still reading and at all curious, let's go back to the scenario. A few weeks ago a friend of mine was at an unnamed U.S./Mexico border town, taking a quick trip across and back. It's worth noting that I'm withholding names and locations only in the interest of not having to check for any related work complications. Not because I think there might be any, because there really shouldn't be any issues, but university policies can be almost as bad as governm… wait, wait, I don't want to spoil my ending.

Anyway, my friend can assure you that this is a relatively easy-going border area. Boring, really. We're probably all aware that more exciting border locations do exist, but take my (and his) word for it, this is not one. Crossing back and forth on foot from the U.S. side to the Mexican side and back is extremely easy.

The ease of crossing, combined with an interesting bit of regulatory arbitrage that allows some pharmaceuticals to be much cheaper and available without prescriptions on one side of the border but not the other, is what makes this area so popular with one demographic in particular: senior citizens. Sorry, kids. To my (and my friend's) knowledge, none of *that other* sort of drug trade goes on there, though keep in mind we're only aware of what's legally crossing the border and very happy to keep it that way.

Anyway, that bit of regulatory arbitrage itself may be an interesting economics lesson, as many people come from great distances to take advantage of these easily available differences in legal status and price. That's not what interested me, when my friend told me this story, however. What interested me was a change from $0.25 to $0.30.

To cross the border each way, one has to pay a toll. For years the toll each way had to be paid in quarters. The turnstiles on each side read, "quarters only," in bright red letters. The fee was $0.50 to go over to Mexico, $0.25 to go back to the U.S. – this was convenient since there were change machines that dispensed quarters on the U.S. side, and changing a dollar covered your trip over and back.

Sometime a bit longer ago, several months or perhaps a year, my friend can't quite remember, the fee going over from the U.S. side increased from $0.50 to $1. While this was a large increase in percentage terms, it hadn't increased in a very long time, and $1 was still relatively cheap, so the fee increase itself wasn't the problem. The problem was the extra dollar.

To cross back and forth, each individual now required more than just a single dollar bill in change. The turnstiles on each side still accepted only quarters, so each person would need five. This caused quite a bit of commotion when the change first occurred, since many people don't carry many single dollar bills these days, and the change machines either don't accept larger bills, or people didn't want that many extra quarters. Additional employees (border patrol, if my friend recalls correctly) were then dispensed to stand watch for the next few weeks, with stacks of single dollar bills, ready to make change.

The commotion for that first price increase died down eventually, and things returned to normal. After all, though the turnstiles now required more quarters, quarters were still available before crossing. Imagine the commotion, however, when, after crossing to one side and spending a day shopping, happy travelers ready with their quarters were greeted with: $0.30, exact change only. Now, once again, the amount of the fee was not the problem. The need for nickels and or dimes in the year 2019, however, was. Especially for people otherwise ready to return safely to the U.S., who were now having a brief moment of panic.

People had planned for a fee of $0.25, quarters only. What was happening? Why was it different? And honestly, who carries other coins? $0.30? Exact change, really? Is that right? Check your pockets! These were the reactions that cascaded backward through a growing mess of a line. Fortunately my friend was at least tall enough to see what was causing the mess.

It was also fortunate that once again an employee had been dispensed to make change, though this time it was change in nickels and dimes, and this time it was only one employee, so things took a while.

Throughout the process, my friend could not help but laugh at the situation. In particular he marveled at the choice to switch away from a quarters-only system, and the adoption of a system not only friendly to nickels and dimes, but that admits only precise combinations of the three coins. They had to either install new turnstiles or at least overhaul the old ones to accomplish that.

Reality is not a thought experiment, unfortunately, and the border toll is not a vending machine. (The vending machine idea doesn't get any deeper, I'm sorry, I needed an opener.) This story is real, and as such I can at least offer my best guess at an explanation of the $0.25-to-$0.30

border toll hike. I will emphasize, though, that I have no idea what the real explanation is. This is just the one that seems most likely to me.

The simplest explanation, I think, is that the neighboring economy has both a different currency and a lower average income. In terms of purchasing power, the $0.05 matters much more for their residents than we may realize, and the equivalent of $0.30 in their currency has much more straightforward denominations than $0.30 in ours. And I have no idea what any of the other border towns anywhere else in the country look like, so for all I know the exact change-only machine confusion may have only occurred in this one place. So maybe the minor confusion and machine upgrades in that location were an acceptable cost. Or it could be that before enacting the toll hike, a precise inventory of all toll-taking equipment was made, and policy makers did a thorough cost-benefit analysis to optimize the toll increase.

However the decision was made, maybe the confusion my friend witnessed was a regrettable but necessary cost from an efficiency standpoint. That honestly could be the case. Feel free to assume whichever scenario you choose. Because my point here (such that it is) is not to fault the decision process in any way. Again, I have no clue what that process was.[1] My point here is that all the commotion over the sudden need for nickels and dimes reminded me of transaction costs.

Loosely speaking, the economic phrase "transaction costs" refers to all the costs of doing business. There are big transaction costs, like finding the sellers who can be trusted most, and negotiating and enforcing contracts, and there are small transaction costs, like going to the ATM and having to carry cash in situations where that's the only acceptable means of payment. One of my favorite professors used to refer to these as friction in the economic system—we still usually manage to buy and sell things successfully, but it's not always as smooth a process as we'd like.

Transaction costs are a big reason why firms exist. That may seem odd, but to provide an absurdly quick version, consider someone who is becoming successful selling some kind of craft from home. Suppose they become in fact so successful, that they have to order more and more specialized materials, or they need help. When they were a very small operation, they could simply order what they needed from other private sellers or hire part-time help. With enough success and the need to scale up, however, the transaction costs—shipping, the need to coordinate, explaining

[1] It's also fair to say that although I have no idea how the decision to increase the toll was made, I have to admit that I can picture myself making such a decision with the best of intentions. In fact, I can imagine thinking that I'd covered my bases by making sure the amount of the increase was an amount that had coin denominations in both currencies. Then fast forward to a few weeks later when I get the news that the current turnstiles only accept quarters. Then I'd start freaking out, rushing to see how expensive my lack of knowledge on the ground will be, how to fix it, angrily cursing whoever installed quarter-only machines in the first place even though the error was clearly my own, worrying about who will find out… But maybe that's a unique viewpoint.

things to different part-timers—all mount up. Pretty soon a firm with its own full-time employee(s) becomes a more efficient way to handle things.[2]

One of the things I always found interesting about markets, and the activity within them, is that economic activity is not magic. It doesn't *just happen*. It's basically people bumping around, looking for deals and trying to make money. The fact that it ends up working out so smoothly into the society we have is a miracle. No one magically tells a select subset of people which products to invent or sell, or better ways to make things or ship things. It's just a lot of individuals trying to come up with better ways to get around those annoying transaction costs.

So back to the border toll. This toll was a planned decision. And whether it was a decision made with the best intentions, but that was simply made by people who didn't know the machines in place only took quarters (which seems possible), or it was a very carefully thought-out decision and this one incident was a minor casualty, centrally-planned decisions inevitably create these extra little costs. Because central planners could not properly account for the exact conditions of this local scenario, chaos ensued.

Now, clearly the costs in this story were very minor. To my knowledge no one was stranded on either side of the border, and the worst that happened was a much longer wait to get back across. As far as policy mistakes go—if indeed this was a mistake—these were extremely minor consequences. But whereas individuals live in a world where we seemingly always grapple with these often "mundane" transaction costs of life (to adapt a phrase from my professor) and we continually come up with ways to eliminate them, get around them, or at least deal with them more efficiently, central planning creates them.

There's certainly much more to firms, because of course they make many mistakes too, but that's a whole course. Well, many courses if you're interested enough. But I think I've finally come to my point: private firms and individuals do their best to surmount all the little costs of life. Otherwise they're too costly! Consider even the most benevolent government project, however, and all the little costs it creates, regardless of the good intentions, and how frustrating those costs are in the moment.

My guess is that if the vending machine were run by a profit-seeking owner, they'd put in a credit card reader. Or come up with some better idea than moving away from quarters, and toward nickels and dimes in precise combinations.

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[2] Please look for a better, more detailed explanation of the theory of the firm elsewhere, but hopefully this gets the basic idea across.