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The impact of the coronavirus on economic policy and the economy☆

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This paper examines the economic policy responses to and the economic impact of the Coronavirus. It starts with responses and changes in the private sector. It then considers ways in which a range of government economic policy actions can affect these developments. It considers regulatory policy, fiscal policy, monetary policy, and international policy.

The focus is not on "demand side" stimulus packages per se, but rather on policy changes that encourage more expansion of certain parts of the "supply side" of the economy. The emphasis is on encouraging and stimulating private sector actions and innovations so that the economy recovers from its depressed state as fast as possible, and so that economic and income growth are even stronger in the new normal state.

1. An economic model

The economic model underlying the analysis is one in which the pandemic causes a switch, broadly speaking, *from in-person transactions*—such as in-store shopping, movie theaters, and large lecture halls—*to remote transactions*—such as non-store shopping, electronic commerce, remote conferences, streaming services, and on-line teaching. Initially, the negative effects on in-person transactions are very large. They result in an overall decline in production, sales, and employment because they overwhelm the positive effects of the growth in remote transactions. Over time, however, the growth of remote transactions increases and its effects multiply, more than offsetting the initial decline.

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The increase in the growth of remote transactions occurs for two reasons. First, the switch to on-line transactions causes a greater utilization of the technology that was already there. Second, the technology expands, improves, and spreads, thereby greatly accelerating the growth of the existing trend. For example, the Coronavirus has led to the creative use of existing technologies, such as those provided by Zoom Video Communications in fields ranging from education to business. But, then, as more people see the advantages of working away from their offices or other places of work, and economic policy responds, the technology change accelerates with polls and breakout session to make working away both cheaper and more close-up and personal.

The pandemic is the catalyst, but then the growth feeds on itself. In the new normal, these remote, on-line, non-store activities become a larger fraction of consumption and the other components of GDP. If government actions and responses do not get in the way of this transformation, but rather reduce impediments to the transformation, then the economy will be best able to grow and thrive.

2. Fitting the model to data

Gross Domestic Product can be divided up in many ways to study different economic phenomenon. Most often it is divided in consumption, investment, government purchases, and, in an open economy, net exports, because the purchasers and the time series of these for items are quite different.

Here we divide production or sales into two types depending on whether personal contact of some kind is an integral aspect of the means of production and sale. We thus distinguish between *store (S) sales*, which require in-person contact, versus *non-store (N) sales*, which, because of on-line, electronic, or remote technologies, do not require personal contact. Total production or sales Y is thus given by:

$$Y = S + N$$

an economic aggregate, which we do not yet endeavor to break down further by who purchases the item, say households, firms, or government. The S versus N notation is just one of many different ways to name the different types. Some names—such as electronic commerce—have different connotations. The S versus N terminology is similar to what is used to disaggregate retail sales by the Census Bureau in the United States, and the reported data provides an easy way to check if the model fits the data.

To examine the data, we note that at the start of the Coronavirus there was, of course, some positive amount of non-store sales. We thus first focus on total retail sales over and above these non-store sales (*Y-N)*. The onslaught of the pandemic in the second quarter of 2020 immediately caused a sharp decline in retail sales less non-store sales in the United States; this was followed by rebound in the second third quarter of 2020. These data are shown in Fig. 1, which plots total retail sales less non-store retail sales.

Note, however, that the rebound, while very sharp, initially left total retail sales in stores no greater than they were before the pandemic. In January 2020, retail sales less non-store sales were $461,515 million and in November 2020, they were actually less at $459,033 million. But by January 2021 they were up to $480,318 million

Now look at non-store sales. As shown in Fig. 2, there was a huge increase non-store sales from the time the pandemic began, just as in-stores sales were collapsing. Here we see that there was an especially large shift from January 2020 to November 2020. The growth of non-store retail sales rose to 28 percent in the months from January to November 2020. After a short-lived

Fig. 1. Retail sales less non-store sales.

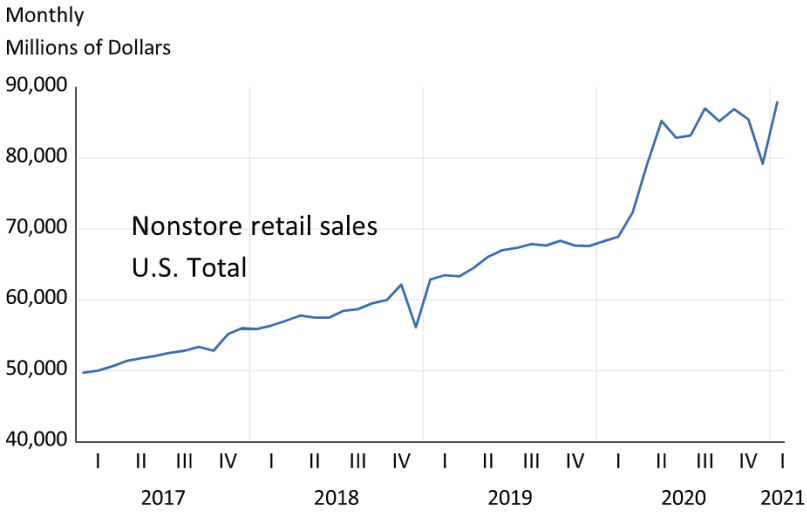

Fig. 2. Non-store retail sales.

decline in December 2020 they rebounded to a new high in January 2021. This caused the growth of total sales (store plus non-store) to be 3 percent higher, or an increase to $546,504 million from $529,616 million. This positive rebound in total retail sales was thus completely due to the increase in non-store sales. Without non-store sales, total retail sales would have declined.

Figs. 1 and 2 together show how the underlying model fits the basic data. First, the pandemic has a big negative economic impact on in-person store sales, measured by total sales less non-store sales. Second there is a countervailing positive economic effect through non-store sales. The increase in non-store sales abates for a while, but then continues to rise, even after the in-store sales have rebounds, and reaches a new high. This suggests the relatively fast growth in non-store sales will continue, and should be built into the economic model.

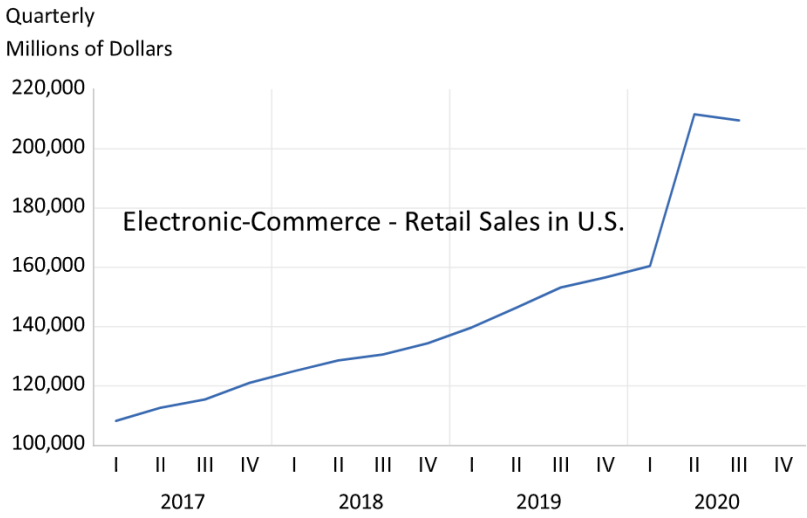

Fig. 3. E-Commerce retail sales in the US: 2017Q1 – 2020Q3.

It seems that the experience of growing non-store activity is creating a dynamic where better technologies are allowing non-store purchases to grow even more rapidly. Higher growth is building on itself and leading to even more non-store activity, as perhaps captured by a dynamic equation $N(t) = (1 + g)N(t - 1)$ where g is a growth rate. The best guess is that this will continue unless impeded by government actions.

3. Robustness checks

It is important to check to see it these results are robust to different ways of dividing up retail sales, as it is not clear at this point which is the best way given available data. Another way that the US Census measures non-store sales is by looking at e-commerce, which Census defines as "The sale of goods and services where the buyer places an order, or the price and terms of the sale are negotiated over an Electronic Data Interchange, the Internet, or any other online system (extranet, e-mail, instant messaging). Payment may or may not be made online."

This is a slightly different measure, as explained with helpful examples in the report prepared by the United States Census Bureau (2020). For example, a small mom-and-pop type clothing store may sell some of its clothes in-store and some by e-commerce. In this case, e-commerce is actually counted as in-store, so that the two measures are not the same. However, the e-commerce method of sales results in no personal contact between buyer and seller, so it serves the same purpose as the store versus non-store division. Thus, one needs to see if the alternative measure suggests a different model, or whether it is consistent with the same model.

Fig. 3 shows this alternative electronic-commerce measure using the most recently available date, though it is only available on a quarterly basis. The story is much the same as the in-store versus non-store story, with a large increase starting at the time of the pandemic. The increase was 37 percent over the four quarters from the third quarter of 2019 to the third quarter of 2020. This is similar to the 28 percent growth of non-store sales.

A model with non-store or e-commerce growth even one half or one-quarter these amounts going forward would indicate a much rosier picture of the future. One difference with the e-commerce data, however, is that there is slowdown in the third quarter of 2020.

Table 1
Retail sales by stores, non-stores (N) and electronic commerce 2019–20 (Billions of Dollars, Quarterly). Source: US Census Bureau, Latest Quarterly E-Commerce Report, https://www.census.gov/retail/index.html. Estimates are not adjusted and based on data from the Monthly Retail Trade Survey and administrative records. The data are currently an experimental product of the U.S. Census. N = Non-Store, EC = Electronic-Commerce.

	2020:3		2020:2		2020:1		2019:4		2019:3	
	Store		Store		Store		Store		Store	
	& N	EC	& N	EC	& N	EC	& N	EC	& N	EC
Total Retail	1472	199	1332	201	1273	147	1460	186	1377	145
Non-Store	168	112	156	108	140	87	165	108	138	88

While these robustness results are encouraging, further research—and perhaps additional data collection—is needed to determine the best way to measure the phenomenon of non-store sales and electronic commerce. Table 1 shows how this jump is evident for both non-store sales and electronic commerce sales. Table 1 gives a full breakdown over the past few quarters. For each quarter, it shows that, while electronic commerce is bigger than non-store sales, both show a big increase during the course of 2020.

4. Specific developments in the private sector and predictions

To assess and predict future tends it is necessary to look at the details for particular types of goods or services. The U.S. Census retail sales report for November 2020 shows that seasonally unadjusted non-store retail sales rose to $97.3 billion in November from $85.4 billion in October. The increase in total unadjusted non-store retail sale was by 30 percent from November 2019 to November 2020.

In contrast, all other major goods and services spending categories in the Census report declined in the second quarter before rebounding in the third. Some specific items that were booming included home office essentials and exercise equipment, such as Pelotons.

Telemedicine is also exploding. More service providers opened markets for healthcare online and encouraged people to switch to online. An example is the merger of cloud communications firm, Twilio, and doctor-patient network, ZocDoc. Twilio's usage, measured by peak concurrent participants, has recently surged. Twilio launched a ZocDoc Video Service and made it free for consumers and doctors. Consumers will be responsible for the medical bills, but not to connect securely with doctors. Twilio's technology will enable ZocDoc to make virtual visits quickly and effectively.

The new ways to buy and sell on-line went into unexplored areas, including education and finance, via video meetings and conferences. Zoom Video Communication had 10 million daily meeting participants a year ago, and this rose to over 200 million or 300 million. Competitors to Zoom such as Google Meet and Microsoft Team also sprung up. Microsoft Teams has shown no signs of slowing down as it revealed that the company's workplace platform had 115 million daily active users in October 2020—a 53% increase since April.

More is going on regarding future plans and predictions of a brighter future. Firms are developing plans to have more remote work on a permanent basis following COVID-19. Facebook announced that it will enable half of its employees to work online from home within a decade. RadNet CEO Howard Berger noted an actual increase in the imaging business as improvements in telemedicine will cause doctors to use online diagnostic tools such as videos or photos without an office visit.

5. Regulatory reform

Government policy actions have begun to encourage the growth in "non-store" activities. Barriers to telemedicine were reduced when Medicare and Medicaid declared that they would pay the same rates for virtual visits as for in-office appointments. Moreover, Medicare paid clinicians to provide telehealth services for beneficiaries residing anywhere in the US.

In May 2020 an Executive Order on "Regulatory Relief to Support Economic Recovery," was issued by the White House stating that "Agencies should address this economic emergency by rescinding, modifying, waiving, or providing exemptions from regulations and other requirements that may inhibit economic recovery." They should suspend or repeal regulations that "inhibit economic recovery."

More along these lines could be done. State, county or city government officials could issue their own executive orders covering regulatory issues that are state and local responsibilities, such as occupational licensing, land use, and transactions across state and county lines. Suspending or repealing actions which require tax increases on internet purchases to level the playing field with brick and mortar stores would be a good place to start. The passage of Proposition 22 in California which allowed gig workers in Uber and Lyft to operate with fewer regulations is a key example.

Whether or not in-person schools open soon, online education's capability must be increased. Even though the issue is becoming increasingly polarized, it is no longer a choice between in-person and online. Both are needed. Any new infrastructure bill should include payments for broadband internet infrastructure for the underserved as discussed by Mallery and Taylor (2020a), Mallery and Taylor (2020b). The pandemic revealed both the strengths and weaknesses of the existing broadband internet. Internet usage increased dramatically during the pandemic as there was a remarkable expansion of demand for e-commerce, telehealth, and communications; it has also expanded along with the demand. But, the pandemic also revealed fundamental weaknesses in the internet that need to be addressed. A significant problem is unequal digital access—a digital divide. Subsidizing connections for those that do not have access is more important now than roads and bridges, and needed legislation should be focused on this. Alphabet, Google's holding company, has promised to promote remote learning and telehealth and internet broadband. We have learned as much in the past few months as in the previous decade.

It is unlikely that we are simply moving toward a new normal, but rather toward a state of continual change and modernization. To survive and benefit from this new state of change, the United States should have a comprehensive economic strategy to open markets, keep them open, and keep them growing.

First, there should be a strategy for regulatory reform. Pro-growth ideas include repeal, or at least temporary suspension, of regulations that hamper growth of the non-store sector. Congress and state legislatures should repeal, modify, or at least suspend for the foreseeable future, regulatory actions that might impede growth such as worker compensation, occupational licensing, minimum wage, right to work laws, mandatory medical benefits, unemployment insurance, and short-term disability regulations. Each regulation—even hidden ones like occupational licensing—creates costs, and relatively higher costs on the small firms.

Repealing occupational licensing which will open the labor market to many people now shut out by the pandemic. Licensing has spread to many occupations including tour guides, florists, and interior decorators, where there is really no justification. President Obama asked his Council of Economic Advisors to study the issue and it concluded these requirements "restrict employment

opportunities." There are also big differences in land-use regulations which restrict the way land may be used for residential, commercial, or recreational uses. Land use regulations are often determined by city or county governments.

6. Fiscal policy

Recent big deficits and large-scale monetary financing of these deficits by the Federal Reserve make it seem like there is no limit to the size of these fiscal actions. But basic economics and real-world lessons from the past suggest otherwise. Single payments will not induce people to spend and thereby stimulate the economy. Such temporary measures may sound like a stimulus, but the merely increase the federal debt and place burdens on the future. That is what economic research, such as the permanent income and life cycle theories, tell us, and that is what has been the experience of many years past as the paper by Cogan, Taylor, Wieland, & Wolters (2013) makes clear. Recent research on the impact of the CARES by Coibion, Gorodnichenko, & Weber (2020) confirms these earlier findings as the payments were saved or used to draw down debt. Rather the government spending should be aimed to help people directly affected by the pandemic and aimed at particular problems in the economy. These include small businesses loans, extension of unemployment payments, liability protection, and vaccine distribution.

Another challenge is to follow these actions with a commitment to return to sound fiscal policy in the near future. This is essential to get a strong recovery driven by the private sector. If an agreement could be made simultaneously to take action to reverse or lower the growth rate of government spending going forward and also to keep tax rates from rising, then the resulting package will be even more powerful. Simulations of such a policy shows that it will lead to stronger growth. Cogan, Heil, & Taylor (2020) considered an illustrative fiscal consolation proposal of this kind that restrains the growth in federal spending. The policy is to hold federal expenditures as a share of GDP at about the 20 percent ratio that prevailed before the pandemic hit. They estimated the policy's impact using a macroeconomic model with price and wage rigidities and adjustment costs. The spending restraint avoids a potentially large increase in future federal taxes and prevents the outstanding debt relative to GDP from rising from its current level. The simulations show that the consolidation plan boosts short-run GDP growth by as much as 10 percent and increases long-run annual GDP growth by about 7 percent.

While tax policy has become partisan, a useful bipartisan agreement in light of the pandemic would be to simply say "no tax increases for the foreseeable future." That would be a boost, especially in light of the calls for increases taxes, and these calls are expected to increase once the deficit grows even higher as government spending increases.

7. Monetary policy

If such a fiscal consolidation package could be passed, it should be matched with a longer term plan for the Fed to return to a rules-based policy. No Treasury Secretary has ever spoken out so much, so favorably, and with greater authority about monetary policy rules and strategies than Secretary Janet Yellen. This emphasis on rules and strategies continued after Yellen let the Fed under Jerome Powell with sections in the *Monetary Policy Report* and with Powell stating "In evaluating the stance of monetary policy, the FOMC routinely consults monetary policy rules. . .. I find these rule prescriptions helpful. . . .I would like to note that this Monetary Policy Report provides further discussion of monetary policy rules and their role in the Federal Reserve's policy

process". In March 2018, the Fed posted a new web site on "Monetary Policy Principles and Practice" with a rule-based section Policy Rules and How Policymakers Use Them.

Covid-19 changed all this. After six consecutive issues of the *Monetary Policy Report* since the fundamental July 2017 Report under Yellen, the July 2020 Report had absolutely nothing about monetary policy rules. To be sure, the emergency actions taken by the Fed in March and April were necessary and effective in opening financial markets, but that period is behind us and there are now hopes for vaccines and a return to more normal economic conditions.

We do not yet know about the future of monetary policy, but many have been calling for a return to some kind of monetary policy rule forward guidance. The minutes of the November 2020 Federal Open Market Committee meeting have hints of a possible move in this direction, at least for parts of monetary policy, in which "Many participants judged that the Committee might want to enhance its guidance for asset purchases fairly soon."

While the Federal Reserve must maintain its independence going forward, views in other parts of the Administration and Congress matter greatly on future appointments and even on legislation. Having such a more rules-based monetary policy in place at the Fed will greatly simplify negotiations over fiscal packages, and lead to a better fiscal policy. This in turn will encourage the growth of non-store sales as the private sector economy moves forward. Having a Treasury Secretary who is supportive of moving to a clear, predictable, systematic, rule-based monetary strategy at the Fed will help greatly. Indeed, the just released February 19, 2021 *Monetary Policy Report* again had sections devoted to rules-based policy, indicating a move back to a more rules-based policy.

8. International policy issues

The pandemic is global and so are the economic policy responses and economic impacts. It is beyond the scope of this paper to consider all these international and global economic issues, but the message is much the same as discussed here for the United States. The pandemic will bring about changes that increase the use of "non-store" sales and "electronic commerce" broadly defined. The required changes in regulation and the role of government in the private sector are even more monumental at the international level, but it is essential that beneficial changes are not thwarted by government actions and responses. Ongoing economic reform is essential.

Economic reforms were underway in many parts of the world, including in Africa, before the pandemic, with very positive economic changes. Reform is now more important than ever. Ideas of expanding free trade zones, such as through Economic Community of West African States (ECOWAS) which includes Nigeria, Senegal, Côte d'Ivoire, Ghana, Liberia, Mali, Niger, Benin and Togo are key, especially if combined with other pro-growth reforms.

But most of all I have been impressed about how economic ideas are spreading throughout the continent of Africa and all regions of the world. The latest economic methods, including big data, were evident throughout a meeting of the African Meeting of the Econometric Society in Africa, as described in Taylor (2019). Papers presented at that 2019 meeting examined such things as export and import data in Malawi from 219 countries, with tens of thousands of observations, or the impact on net interest margins of 2442 banks affected by negative interest rates. This transmission and global conversation is in marked contrast to previous years long before there were African meetings of the Econometric Society and long before the internet and other means of electronic communications. It bodes well for the spread of technology generally, once the pandemic recedes, and the growth of electronic commerce as a means to improve people's lives.

There are of course retrogressions, as for example when central banks deviated away from more rules-based approaches, and economic performance deteriorated in the global financial crisis. The lesson learned from history is that we need to get back to rules based policies generally. Before the Covid-19, there was a revival of policy rules research at central banks, evident in papers, publications, actions, and statements by central bankers. That has to continue post Covid-19.

The history shows that there are important benefits from a rules-based policy, and that even expectations of a return to rules has benefits. Recent changes in research toward rules based policy analysis are promising. What can economists do to prevent the deviations and encourage rules-based policy. How can economic research ideas help? The following would help: More robustness studies on different models and parameters, more development and use of international models to evaluate rules, more research with "quantitative easing" as an instrument in a rule, and a greater focus on the interface between research on rules and the decisions of policymaking officials.

9. Conclusion

In this paper, I have examined the impact of the Coronavirus on economic policy and the economy. I started with a simple model where economic production and sales are divided into "in-store" versus "non-store" categories, or other similar categories with different names such as e-commerce. I showed that the impact of the pandemic had large short run negative effects and more positive long run effects that differed widely in their impact.

I then examined the data and showed that the facts are quite consistent with the model. Government actions started by combating short run negative economic impacts, and the private sector economy has since responded creating a remarkable positive supply side impact which is beginning to gain speed. The main policy implication is that government regulatory policy, fiscal policy, monetary policy and international policy should encourage such continued positive supply side responses of the private sector and to be sure not to thwart it in any way. This requires newer models, better data collection and an enlightened policy response.

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