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Public Finance in the Era of the Covid-19 Crisis

Abstract

The COVID-19 crisis poses new policy challenges and has spurred new research agendas in public economics. In this article, we selectively reflect on how the field of public economics has been shaped by the COVID-19 pandemic and discuss several areas where more research is necessary. We highlight major changes and inequalities in the labor market and K-12 education, in addition to discussing how technological change creates new challenges for the taxation of income and consumption. We discuss various policy responses to these challenges and the role of fiscal federalism in the context of worldwide crises. Finally, we summarize the key issues discussed at the 2021 International Institute of Public Finance Congress and the papers published in this special issue.

JEL-Codes: H000, J000.

Keywords: public economics, labor economics, education, tax, expenditure, Covid-19, inequality, fiscal federalism.

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1 Introduction

The COVID-19 crisis will influence health, labor, education, social insurance and tax policies for many years to come. The long-term consequences of the pandemic on female participation in labor markets and the implications for school-aged children remains uncertain. These distributional consequences of the pandemic are important to understanding the dynamics of inequality over the long-term, along with the appropriate policy responses. In the short-run, the pandemic has also created the need for additional sources of tax revenue to fund recovery efforts, including discussions of the taxation of wealth. At the same time, rapid digitization of consumer purchases and the rise of telework have created new challenges for tax systems that will persist in the future. Within federations, the degree of decentralization of various health, education, labor, social insurance, and tax policy responses remains a contentious area of debate in the face of global problems.

We survey several of the ways the COVID-19 crises has changed the field of public economics and policymaking, highlighting fruitful areas of research.[1] We first discuss issues related to labor markets, schooling and inequality, including the potential long-term implications of the pandemic. We then discuss how technological changes will influence the ability of governments to collect tax revenues, including possibly different effects on small and large jurisdictions.

First, the effect of the pandemic on labor markets and schooling have been profound. Although governments around the world enacted short term policies to combat the virus and the resulting economic downturn, social distancing measures and other pandemic-related shocks/policies affected individuals and families differently. These differential effects may have profound consequences in the labor market for current workers on the basis of gender, income, or industry. In addition to possible earning losses, there are also implications for future health status. The consequences of the COVID-19 pandemic also *interact* with pre-existing inequalities and have distributional impacts along various dimensions. One dimension is the gender wage gap, which has also been influenced by women facing increased costs of caring for young children. Overall, the COVID-19 pandemic has had unprecedented short-term effects on the the nature of work, labor market institutions, and family well-being, with uncertain long-term consequences. While some workers benefit from the rapid technological changes made during the pandemic, the COVID-19 crisis also reinforces existing inequalities by gender and skill levels. Each of these issues pose new challenges for government policies and demand further research by public finance scholars.

[1] The topics we have selected are not exhaustive, and inevitably, our own personal interests have influenced the topics we have selected to emphasize.

The effects of the pandemic likely extend beyond the current labor market and could be amplified in future years for current school-age children. At the onset of the pandemic governments suspended in-person learning and, in some countries, (partly) replaced it with virtual classrooms, while others entirely closed schools. The global disruption in education has potentially harmful long-term consequences for millions of young people. The consequences of this learning loss may widen inequality both across and within cohorts, as virtual learning relies on access to technology that not all schools and families can afford and requires in-home supervision that not all families can afford to provide. The heterogeneity in school policies across the globe, combined with different initial conditions and education costs, may also amplify cross-country inequities in education. In addition, the school lockdowns may have mental health implications for children unable to visit with friends. In response to the expected learning losses from school closures, many high-income families exited the public schools in favor of homeschooling or private education, which creates long-term policy issues related to the composition of the student body in public schools. Overall, these results suggest that the pandemic has taken a large toll on children from poorer backgrounds and that educators in high-poverty districts face additional challenges. Thus, more research is need to shed light on what additional resources are necessary to support the transition back to in-person learning, with a particular focus on the most vulnerable students in order to mitigate the inequities already created by the pandemic.

Second, we discuss how technology—or more accurately, changes to how commonplace the technologies of e-commerce and telework are—creates new challenges for governments seeking to raise tax revenue. These technologies make consumption and labor income more globalized, with individuals buying from and earning income in nonresident jurisdictions.

With respect to e-commerce, the pandemic made e-commerce more commonplace. Because many online transactions cross state or international borders, e-commerce poses challenges over how to enforce taxes in the destination jurisdiction. Although there is a general agreement to follow the destination-principle, enforcing it requires that taxes be remitted by firms. But, in the case of small online vendors—such as those found on a markeplace platform—enforcing consumption taxes is challenging. One possible solution is to shift the remittance responsibility from the small vendor to the platform or marketplace, but such policies are still only beginning to be implemented. For the United States, where the taxation of goods is decentralized to state and local governments, e-commerce has implications who receives the tax revenue. As a result, with the appropriate policies in place, e-commerce can "redistribute" tax revenues from larger jurisdictions to smaller jurisdictions. This also raises interesting equity issues for commodity taxes. Because smaller jurisdictions often set lower tax rates than larger jurisdictions, e-commerce lowers the effective tax rate that consumers located there pay. But if more rural areas do not have affordable access to broadband, then access to goods online may be problematic, raising new equity issues.

Just as e-commerce creates fiscal challenges for governments, so too does remote work and work-from-home (WFH) arrangements. Telework fundamentally changes the standard joint choice of where to live and work by decoupling the state of employment and the state of residence. Severing the link between employment and residence may make taxpayers more footloose. Telework disproportionately benefits high-income workers, which raises equity issues. High-income taxpayers can now more easily chose to live and work in different jurisdictions, possibly taking advantage of different productive amenities in the employment state and different consumption amenities in the residence state. But, there is currently little consensus among governments over who has taxing rights over teleworkers—the resident state, the employment state or both states—and the mobility responses to taxation depend on which jurisdiction taxes personal income. Telework also raises important enforcement issues by making standard tools such as information reporting less effective if firms cannot be compelled to provide information about, or withhold taxes for, workers living in another state. Each of these issues may threaten the ability of governments to engage in progressive redistribution as taxpayers increasingly earn income from nonresident states.

Finally, we discuss the benefits and costs of decentralized policymaking in the context of global crises such as the pandemic. Although the COVID-19 crisis is a worldwide problem, policy responses to it are necessarily decentralized to different countries. In turn, federal systems may delegate some policies to state or even local governments. On the one hand, decentralized policymaking will not internalize externalities and will not account for spillovers across jurisdiction boundaries. But, on the other hand, decentralization can allow governments to exploit local information and better match policies to the preferences of citizen. The COVID-19 pandemic highlighted the tradeoffs between the disadvantages and the advantages of decentralization along a wide range of policies including social insurance, mask mandates, school closures, and health policies, among others. Certainly, COVID-19 is not the last global problem, with environmental threats such as global warming also being met with uncoordinated policies by nations and states. Understanding and quantifying the tradoffs of decentralization under COVID-19 can help inform governments how to optimize the level of government implementing policy in response to other global challenges.

We conclude by summarizing our reflections, as scientific co-chairs, on the 2021 Congress of the International Institute of Public Finance (IIPF). We then discuss the papers in this special issue of the Congress.

2 How COVID-19 Has Changed Public Economics

2.1 Labor Markets, Schooling, and Inequality

In an effort to limit the spread of COVID-19, governments introduced severe social distancing measures at the start of the pandemic. These regulations led to the closure of many businesses and entire sectors of the economy with immediate and dramatic consequences for individuals' ability to earn a living and to consume goods and services. Governments also designed and introduced new labor policies to protect the jobs and livelihoods of those most affected by the social distancing measures. Social distancing measures not only closed businesses but also schools and learning institutions for the majority of the school children and students around the globe with profound consequences for millions of young people, their families, and in the long-run the society in general. In addition, social distancing measures hit individuals and families differently and might have profound consequences for inequality in the labor market, household, and education.

2.1.1 Labor Market, Home Production, and Inequality

The effect of the pandemic on labor markets around the globe has been profound. In the OECD, the unemployment rate saw an unprecedented 3 percentage point increase within one month to reach 8.8% in April 2020. Hence, just one month into the lockdowns implemented in most Western countries, the entire increase in employment since the financial crisis was erased (OECD, 2021). The large number of temporary layoffs in the United States—where the number of people in unemployment increased by nearly 16 million in the first lockdown month—contributed substantially to the sharp increases in unemployment.

The effects of the COVID-19 pandemic on employment and earnings are likely to be long-lasting. Job loss during an economic downturn has far larger consequences than job loss in in a boom (see, e.g., Davis and Wachter, 2011; Schmieder, von Wachter and Heining, 2022; Eliason and Storrie, 2006) and prolonged job loss has been shown to have a negative effect on health and mortality (Sullivan and von Wachter, 2009). Based on previous recessions, von Wachter (2020*a*) estimates that lifetime earnings losses from pandemic related job loss. For a subset of vulnerable U.S. workers who lost a job, he finds that the declines in lifetime earnings could be up to $2 trillion and that the overall employment–population ratio could decline permanently. Moreover, job loss has important effects on health status. Critically, von Wachter (2020*a*) suggests that the losses in potential life years for these vulnerable individuals who lost a job are substantially larger than losses in potential life years from deaths directly due to COVID-19 in the United States. Moreover, young people finishing their education and entering the labor market during the pandemic are at risk to suffer from persistent changes to their earnings and mortality (von Wachter, 2020*b*), which can have substantial consequences for future income tax revenue and public pensions.

Early in the pandemic, many European countries implemented policies such as furloughing schemes to protect matches between employers and employees during the pandemic (see, e.g., Nekoei and Weber, 2015, 2020; Adams-Prassl et al., 2020). Hence, an unusual feature of the COVID-19 crisis is that government policy resulted in an increase in temporary unemployment and workers not working, but while maintaining their employment contract. While aggregate job search tends to increase during a downturn, job search activity during the pandemic appears to have declined (Forsythe et al., 2020; Hensvik, Le Barbanchon and Rathelot, 2021). There are various reasons for this decline ranging form the fear of infection from COVID-19, limited employment services, school and childcare closures limiting the ability of parents to participate in the labor market, or more generous labor policy benefits. While Hensvik, Le Barbanchon and Rathelot (2021) and Marinescu, Skandalis and Zhao (2021) show that the limited job search, in the short-run, was not driven by changes in benefit generosity in Sweden or the United States, a more open question is whether increased benefit generosity could affect job search in the longer-run. Another reason for the declining job search activity during the COVID-19 downturn are the high numbers of unemployed individuals who expect to return to their previous positions. Hence, this large pool of unemployed individuals, who are not actively looking for new jobs, may distort traditional measures of labor market tightness (based upon unemployment numbers) and hamper vacancy creation (Forsythe et al., 2020). Despite the fact that the recall rates among those on temporary layoffs have been relatively high in previous downturns (Katz and Meyer, 1990), the benefits of labor hoarding are most pronounced during temporary shocks because only the expected costs of hoarding are time dependent and not the savings from avoiding firing and rehiring workers (Giupponi and Landais, 2018). As expectations of the length of the pandemic increases, an increasing number of businesses will likely no longer rely on furloughing schemes but instead lay off workers on a permanent basis. Moreover, while different policies protected firms from the immediate impact of the public health crisis, more firms will struggle in the long-run and some of the workers who expect to return to their previous positions will be laid off permanently (Demmou et al., 2021). Overall, implementing generous policies such as furloughing schemes demand careful consideration and likely the support of further policy instruments to make the labor market matching process after the pandemic more efficient.

The consequences of the COVID-19 pandemic also interact with pre-existing inequalities and have distributional impacts along various dimensions. The increased usage of video conferencing, home office, and intelligent assistants during the pandemic has led to technological changes that will likely persist. Technological change will reinforce inequalities between workers employed in occupations at high-risk of automation that are generally low-skilled and workers doing non-routine and creative tasks that are more difficult to automate and at the same time easier to transition to telework. In addition, social distancing measures have hampered workers in sectors with frequent human interactions, such as retail, hotels, restaurants, and travel. Hence, the distribution of jobs and workers affected from the COVID-19 downturn varies from previous recessions where often the construction and manufacturing sectors are hit hardest. While women are over-represented in the service sector industries that have been most affected by social distancing measures, they are also over-represented in sectors that have been defined as critical to the COVID-19 response such as the health care sector. At the same time, women are more likely to have occupations that can be performed from home (see, e.g., Alon et al., 2020; Hupkau and Petrongolo, 2020). Hence, it is unclear where or to what extent we should expect gender differences in the labor market effects from the pandemic. Alon et al. (2020) conclude that the gender wage gap will widen throughout the recovery in the United States and Andrew et al. (2021) document that mothers are more likely than fathers to be out of work or furloughed in the United Kingdom.

The pandemic has also affected home production, which in turn affects the labor market, due to school and childcare closures and the sudden inability to outsource some home production to market-based providers. If the burden of these care responsibilities are unevenly shared within the family, the COVID-19 crisis might affect gender inequality in earnings and the division of work in the longer run. Sevilla and Smith (2020), Farré et al. (2022), and Boca et al. (2020) document that women took over most of the increased childcare burden in the United Kingdom, Spain, and Italy, but evidence on their labour market outcomes is mixed.

Moreover, Boca et al. (2020) find that women with children aged 0–5 years are struggling most with balancing work and family during the pandemic in Italy. Oreffice and Quintana-Domeque (2021) present evidence that decreases in female labor market outcomes in the United Kingdom during COVID-19 are associated with a higher incidence of mental health issues and Zamarro and Prados (2021) observe a widening difference in psychological distress between mothers and women without school-age children in the United States. Hence, the increased burden on mothers during the pandemic might also increase mental health treatment costs in the future.

While women's increased care burden may rather reinforce existing gender inequalities, the tendency towards flexible work arrangements and remote work may come as an advantage for women because women's demand for remote work is higher than for men and as women, in particular mothers, have a lower willingness to commute (Mas and Pallais, 2017;

Le Barbanchon, Rathelot and Roulet, 2020). Nevertheless, remote work arrangements may also weaken employee presence and attachment to the workplace, possibly limiting career progression (Hupkau and Petrongolo, 2020). Moreover, the historically high job turnover rates during the pandemic—also known as the Great Resignations—are partly fueled by childcare issues and the lack of temporal and geographical flexibility.

Overall, the COVID-19 pandemic has had unprecedented short-term effects on the the nature of work, labor market institutions, and family well-being with likely persistent long-term consequences. While some workers benefit from the rapid technological changes made during the pandemic, the COVID-19 crises also reinforced existing inequalities between gender and skill levels. Each of the issues discussed above poses new challenges for government policies and demands further research, both with respect to short-term labor market effects, but also with respect to longer-term inequalities in the labor market.

2.1.2 Learning Loss, Child Mental Health, and Inequality

With the goal of slowing the spread of COVID-19 and preventing the overcrowding of health services, governments around the globe suspended in-person classroom learning in schools in 2020. By affecting approximately 95% of the world's student population, this change in education and learning mode constitutes the largest disruption to education in history (UN, 2020). The global disruption in education has potentially harmful long-term consequences for millions of young people. If virtual learning options are a poor substitute to in-person learning, the pandemic might have particularly long-lasting consequences on the children's socialization and eventual labor market outcomes. Moreover, suspended classroom learning threatens to widen inequality both across and within cohorts, as virtual learning relies on access to technology such as fast internet and laptops that not all schools and families can afford. Home-based virtual learning might also depend on the parents' ability to support their children (or to hire support for their children). And the difficulty to meet friends and teachers might affect children's mental health and expectations.

The transition period to online-based solutions for instruction as well as the new schooling mode led to substantial learning loss. Engzell, Frey and Verhagen (2021), for example, exploit a feature in the Dutch education system where the national exams took place both before and after the March 2020 lockdown. The authors show that the progress students made between the two test dates is approximately 0.08 standard deviations, or about 3 percentile points, lower compared to student progress in the same period in the three years prior to the pandemic.[2] These results imply that student progress was limited while learning from home even though the lockdown in the Netherlands was relatively short (eight weeks) and

[2] Maldonado and De Witte (2022) find similar results in Belgium.

despite the fact that the Netherlands has a very high rate of broadband access. Hence, the learning losses might even be larger in countries with weaker infrastructure or longer school closures. Educational disruptions also continued during the 2020-21 school year as different countries, districts, cities, or schools alternated learning modes. While some schools offered in-person schooling all day, other schools offered virtual learning and some combined these two learning modes. Halloran et al. (2021) shows that children who attended school virtually or in a hybrid format (a combination of in-person and virtual learning) in the United States have significantly lower grades than children enrolled in schools with in-person teaching. The results suggest that suspended classroom learning over longer periods has had substantial negative consequences for children's schooling outcomes that are even larger than the learning loss experienced by New Orleans students after schools closed following Hurricane Katrina (Sacerdote, 2012).

While the short-term losses during the initial spring-2020 lockdown were substantially larger among students from less-educated homes (Engzell, Frey and Verhagen, 2021; Maldonado and De Witte, 2022), the longer-term exposure to remote online instruction has increased inequality in education even further. Werner and Woessmann (2021) and Agostinelli et al. (2022) document that learning losses are particularly severe for children from disadvantaged backgrounds and that school closures have a large, persistent, and unequal effect on human capital accumulation both in Germany and the United States. Moreover, virtual schooling is associated with growing achievement gaps, especially for Black and Hispanic students attending high-poverty schools in the United States: Goldhaber et al. (2022) show that the learning loss from remote instruction in the 2020-2021 school year is equivalent to 13 weeks of in-person instruction, reaching as much as 22 weeks for students in high-poverty schools. The average achievement losses for children in schools that reopened was between 7 and 10 weeks of in-person instruction. As learning is a cumulative process, some of these learning losses will likely persist and affect children's future economic prospects, reinforcing racial and income inequalities.

Not only are test scores affected by school closures, but students also delay graduation and students have substantially lower expectations about their future earnings (Aucejo et al., 2020). Mental health visits for children increased substantially during the pandemic and public schools experienced an increase in the number of children seeking school mental health services. School closures are also associated with worse child mental health outcomes and this association is stronger for children from poorer families (Hawrilenko et al., 2021). In addition, school personnel is the number one source of child maltreatment reports. Baron, Goldstein and Wallace (2020) shows that the large decline in maltreatment allegations was largely driven by school closures, with potentially long-term consequences for child welfare.

Nevertheless, some surveys also suggest that a portion of adolescents describe their mental health as having improved during school closures (Ford, John and Gunnell, 2021), perhaps related to the observed decrease in school bullying and cyber-bullying as schools shifted to remote learning (Bacher-Hicks et al., 2021).

Learning losses due to school closures have led parents to "vote with their feet" and opt for alternatives such as homeschooling and private schools.[3] In the U.S., public school enrollment declined noticeably in fall 2020. Musaddiq et al. (2022) documents that homeschooling increased more in areas where schools provided in-person learning. On the other hand, in areas with virtual learning, private schooling increased more where instruction was remote. These changes imply potential longer-run consequences for the composition of the student body at public schools.

Overall, these results suggest that the pandemic has taken a larger toll on children from poorer backgrounds and that educators in high-poverty schools likely have an even more challenging task to address the effects of the pandemic. Hence, policymakers may need to consider what additional resources are needed to support the transition back to in-person learning and with a particular focus in the most vulnerable students. These issues also pose challenges for policymakers and researchers seeking to address additional inequalities created from the pandemic.

2.2 Taxation and Revenue Policies

The pandemic has also spurred discussions relating to the need for new sources of tax revenue to fund recovery efforts, including discussion about the taxation of wealth. At the same time, and easily measurable via empirical studies, the rapid digitization of consumer purchases and the rise of telework create new challenges for tax systems. In particular, increases in online commerce mean consumers now buy goods from vendors located all around the world and increased telework means that individuals may earn income from many jurisdictions around the world. In other words, taxpayers are increasingly "globalized," implying that traditional administrative tools like information reporting become less effective. In this section, we focus on how technological change poses challenges for for raising revenue due to increasingly globalized taxpayers and consumption patterns.

[3] In some cases, the pandemic has induced households to move across school district boundaries depending on the policies.

2.2.1 Online Shopping and Commodity Taxation

Online shopping is not a new phenomenon. Policy commentators have long argued—and economists estimated—that the tax revenue consequences of e-commerce could be substantial (Bruce and Fox 2000; Bruce, Fox and Luna 2015). But, the pandemic made e-commerce more commonplace by accelerating the growth rate of online purchases and expanding its reach to new types of products such as food, which previously were mainly purchased in-store. For example, Chetty et al. (2020) note that online shopping increased by 37% in the early quarters of the pandemic in the United States, with the increase largely sustained in the ensuing quarters. In a world where goods purchased online are simply shipped from a local store, a change in the modality of how an individual buys goods would pose few challenges for fiscal systems. However, many online transactions cross state or international borders, potentially creating consequences for which jurisdiction receives the tax revenue and raising issues with respect to the enforcement of taxes.

In some ways, online shopping raises similar issues as the international issues in response to corporate taxation. When a buyer in seller are located in different jurisdictions, possibly using an online platform or marketplace located in a third jurisdiction, who should have taxing rights on the sale? What is the most effective way to effectively tax an interjurisdictional transaction? Depending on how these questions are answered, the revenue consequences for some jurisdictions may be substantial.

With respect to the first question, there is a broad consensus that taxes on online purchases should be sourced to the destination state, e.g., the state where the consumer resides. The basic intuition is that consumers are more immobile than firms and government revenues then fund public services provided to residents. Despite this consensus, for many years, parts of e-commerce in the United States were effectively untaxed because states could only require firms with nexus to remit taxes on a destination basis. A recent Supreme Court ruling largely resolved this issue in many states. Similar challenges for some services existed in the European Union. But, exceptions to destination taxation of online commerce still remain and only recently did the European Union switch away from the origin principle for the taxation of digital services.

Although such a consensus for destination taxation has emerged, the COVID-19 pandemic has highlighted that enforcing consumption taxes on a destination based can be challenging in the presence of e-commerce. Internationally, for a physical good shipped from another country—especially a country outside of the European Union—enforcement may be difficult, especially in the case of small or informal sellers. The same is true for small online sellers across state borders within the United States. In practice, these challenges arise because states adopt thresholds for firms to be required to remit and, moreover, enforcement of small sellers that are external to the jurisdiction is costly. As a result, more focus on tax administration and the enforcement of remittance rules for commodity taxes are necessary. While much of the public finance literature has focused on tax rates and tax bases at the extent of tax enforcement (Slemrod, 2019), the globalization of goods and services poses challenges to administration.

Related to this issue of destination-bases sourcing, is who should remit the tax to the government (firms or individuals) and, in the case of e-commerce from marketplace transactions, whether the platform should remit on behalf of its sellers? Although standard models in public economics suggest that many things are invariant to who remits the tax, recent theories suggest that due to differential evasion, invariance may no longer hold (Kopczuk et al. 2016; Hansen et al. 2022). In the United States, for example, when remittance of the tax was assigned to the consumer, enforcement was nonexistent. As a result, in most countries, remittance rules assign the responsibility to firms, due to easier enforcement opportunities. However, small firms may still avoid the tax, especially if they are outside of the jurisdiction's borders. Even in cases of the Value Added Tax, small suppliers from outside the European Union have posed challenges. One possible solution has been to shift the remittance rule from the small vendor to the larger platform or marketplace, but the empirical and theoretical evidence on the role of platforms is limited (Köthenbürger 2020; Fox, Hargaden and Luna 2022). The existing empirical evidence indicates that moving the remitting party higher up in the supply chain seems to increase enforcement, raising tax revenues.

Finally, e-commerce–combined with appropriate remittance rules and destination sourcing—are not only useful at increasing enforcement, but also affecting the distribution of which jurisdictions receive tax revenue. This was especially the case in the United States, where states and even local government can levy tax rates on the sales of goods. In the pre-Internet era, individuals in smaller remote areas would need to travel to larger jurisdictions with retail agglomerations. Then, because cross-border sales are effectively taxed in the location of purchase (origin principle), tax revenues on those sales accrue to the larger jurisdiction. As a result, large jurisdictions raised a share of revenue that was in excess of their share of population or income. With e-commerce and appropriate rules, this is not necessarily the case. In particular, online vendors remit taxes to the consumer's home jurisdiction (destination principle). Individuals no longer need to travel to other localities, and instead buy those goods from the convenience of their own home, with tax revenues now accruing to their smaller hometown. As a result, successful enforcement of those remittance rules implies that e-commerce "redistributes" revenue from larger agglomerated jurisdictions toward smaller hometown jurisdictions (Agrawal and Wildasin 2020; Agrawal and Shybalkina 2022). This also raises interesting equity issues for commodity taxes. As pointed out by Seegert, Gaulin and Yang (2022): because smaller jurisdictions often set lower tax rates than larger jurisdictions, e-commerce lowers the effective tax rate that consumers located there pay.[4] If rural areas are lower income, this shift mitigates some of the regressivity of consumption taxes but may create inequities if some households do not have affordable access to broadband technologies.

One way to encourage firms comply is to simplify tax administration. Within the E.U., the mini-one-stop-shop (MOSS) was created to allow firms to file a single tax return rather than a return in every state their consumers are located. Then, tax revenues are appropriately allocated to the correct destination location by the member state that receives the return. As discussed in Agrawal and Fox (2017), this substantially reduces compliance costs, while allowing the revenues to be appropriately allocated.

Of course, physical goods are not the only way individuals consume online. An increasingly large share of consumption occurs through digital services. While in the United States, the taxation of these services is up to debate, the recent consensus in the European Union is to tax these goods at destination. However, unlike physical goods, discerning the location of consumption can be tricky. Even if firms remit taxes, consumers can, for example, alter the information in their Netflix account, in order to think the firm that consumption is occurring in a low-tax jurisdiction. These concerns are understood (Hellerstein 2015), but empirical evidence on the extent of such evasion is not well documented. As digital services become a larger share of consumption, new policy issues will arise with respect to their taxation.

To summarize, the COVID-19 crisis has accelerated a trend toward digital consumption of both goods and digital services. This increase in e-commerce shifts standard tax avoidance opportunities away from consumer-driven cross-border shopping toward new avoidance opportunities by firms and consumers. At the same time, e-commerce, combined with effective remittance rules, have the potential to act as an enforcement tool, especially for smaller jurisdictions. These trends of e-commerce will likely continue into the future justifying a need to focus on administrative and compliance issues related to interjurisdictional sellers of goods and services.

2.2.2 Telework and Income Taxation

Just as e-commerce poses fiscal challenges for governments, so too does remote work and work-from-home (WFH) arrangements. Remote work poses a challenge because states and countries are usually limited to taxing activity within their jurisdiction's boundaries. But remote work allows workers to essentially work from anywhere, raising questions as to whether the activity occurs where the employer or the employee is located. Like e-commerce, these

[4] See Kanbur and Keen (1993) and Nielsen (2001) for a discussion of the role of jurisdiction size.

remote work arrangements were technologically possible prior to the pandemic, but COVID-19 made work-from-home commonplace, with survey evidence indicating that it will persist into the future (Barrero, Bloom and Davis, 2021).

The most direct impacts of telework pertain to personal income taxes. In particular, WFH raises important questions of where income should be taxed. Should personal income be taxed in the state of residence or in the state of the employer? To what extent do individuals benefit from local public services in the state of the employer, even without setting foot in the state? Does telework undermine progressive redistribution by making households more mobile? While there is a large literature on the effect of work-from-home on labor markets and on the structure and desirability of urban cities (Larson and Zhao 2017; Brueckner, Kahn and Lin 2022; Brueckner and Sayantani 2022), the analysis of the effects of telework on fiscal systems is understudied.

In the pre-telework era, interstate work arrangements mainly concerned cross-border workers, often times in metropolitan areas that straddle state or international borders.[5] Given the share of interstate commuters was historically relatively small, the vast majority of individuals made a joint decision over where to live and work. As a result, issues related to the income taxation of nonresident workers could readily be resolved in the form of bilateral tax treaties. In the United States, the default taxation of nonresident workers was such that the employment state first taxes income earned within its borders. Then, the resident tax state can tax that same income, after offering a tax credit for taxes already paid. As a result, resident tax states only would tax cross-border workers if they levy a higher tax rate, implying the effective tax rate is the maximum of the two state rates. Alternatively, states can sign a bilateral tax treaty (reciprocity agreement), whereby the employment state gives up taxing rights on the nonresident workers (Coomes and Hoyt, 2008). Then, individuals only file a return in the resident state, making taxes entirely resident-based. At the international level, bilateral tax treaties imply that frontier workers that engage in an interstate commute can be taxed either in the source or residence state.

Telework fundamentally changes the standard joint choice of where to live and work by severing the link between the state of employment and the state of residence. As a result, an individual can chose a vector of amenities and housing prices that are independent of the productivity and wages in the employment state. Severing the link between employment and residence may make taxpayers more footloose because now they can separately relocate their residence and employment. In this way, despite a large literature studying the residential relocation decisions of taxpayers (Kleven et al., 2020), there is almost no evidence on the

[5] Of course, exceptions to this include athletes and musicians, along with other high-income individuals with consulting contracts from employers in multiple states.

employment relocation decision of taxpayers, holding fixed the residence state. Indeed, much of the literature assumes these two elasticities are the same.

Understanding employment responses is especially critical if teleworkers are taxed according to the source, rather than the residence principle because under source-based taxation, a worker can only avoid taxes by changing jobs. Of course, that is not to say that in the presence of telework, a tax increase will only change the employment location of workers. In particular, taxes also fund valuable public services, and as a result, tax increases in a state will change the population of individuals working there even if taxes are only due to the state of employment. This dual response is not evident if taxes are purely residence based, as individuals only respond to taxes (and public services) by adjusting their residential location (Agrawal and Brueckner, 2022).

Then, the question is whether a residence-based or employment-based sourcing rule is most appropriate for the taxation of teleworkers. One consideration is the relative elasticity of residential choice and the employment choice location. Taxing the more inelastic factor might be reasonable, but note that, even if taxes are entirely employment-based, residential relocations will occur due to endogenous public amenities. Another consideration is that taxes are used to fund public services. In so much as nonresidents do not consume much public services, then taxes might reasonably be levied in based on residential location. Wildasin (1980) and Wildasin (2013) show how the congestion costs of public services influence the efficiency conditions for decentralized taxation. Finally, the extent of tax competition also depends on the sourcing rule in place.

The sourcing rule may also raise important enforcement issues. In particular, when individuals live and work in different places, standard enforcement tools, such as information reporting can break down. This is especially the case if one state or country cannot compel another state or country to provide them with information. For example, with residence based taxation, are firms in other states required to report and withhold income taxes from individuals living in another state? If not, then the resident state may have to rely on the taxpayer to report her income. In this way, the globalization of taxpayers threatens tax administration by mitigating the effectiveness of standard information reporting and enforcement tools.

Finally, telework also has implications for progressivity. Individuals most able to take advantage of telework arrangements are likely higher-income individuals. As a result, if telework increases the mobility of individuals, then telework increases the mobility of high-income taxpayers relative to that of lower-income taxpayers. Even if these issues could be resolved by appropriately designing state tax systems, telework will still presumably have effects on progressivity. As argued in Agrawal and Stark (2022), telework has also spurred an increase in within-state mobility as individuals have fled high-cost urban centers for lower cost suburban or rural jurisdictions, as they no longer need to be located close due to no longer facing a costly commute. With many companies linking the wages they pay to the cost of living where the worker resides, telework could compress the wage distribution by mitigating any pre-existing urban wage premium. This in turn, could effectively reduce the progressivity of state taxes.

The move of individuals from city to suburbs also raises interesting issues in local public finance that are not directly related to the taxation of personal income (Agrawal and Brueckner, 2022). For example, as individuals flee the city for more remote parts of the metro area, property values in central cities are likely to fall. Declines in residential property values are likely to be accompanied by falling rents in office buildings as firms reduce their office space in central cities. These declines in both residential and commercial property values, will reduce property tax revenues for central cities. Given the property tax is the main tax that funds local governments in the United States, this could substantially reduce urban public services, further amplifying the flight of high-income workers out of central cities. Declines in economic activity in urban downtowns will also cause negative effects on restaurants and retail businesses, reducing sales tax revenue in urban cores. At the same time, more rural areas of the state will see the opposite effects: rents and property values may increase as individuals bid more intensely for suburban land, raising property tax revenue there.

Interestingly, the parallels between e-commerce and telework are remarkably similar. They both raise issues over where to tax economic activity, but also will work to potentially redistribute tax revenues from traditional centers of agglomeration toward more remote jurisdictions. The "globalization" of taxpayers is similar to that of consumption, and may cause challenges for standard enforcement tools. Each of these issues deserves more emphasis in the economics literature.

2.3 Fiscal Federalism and Decentralization

The literature on fiscal federalism debates the benefits and costs of decentralization (Oates 1999; Boadway and Shah 2009). The global nature of the pandemic might suggest the need for national or even international responses to the public health and economic crises it created. Under such a view, the COVID-19 crisis may not be favorable to fiscal federalism, as decentralized policymaking may not internalize externalities or deal with public health spillovers across jurisdiction's boundaries. Despite this, in many federal systems around the world, many pandemic policies—mask mandates, school closure decisions, vaccine dissemination, social insurance policies—were allowed to be state or even local decisions or were administered by state and local governments.

The arguments for centralization relate to classic interjurisdictional externalities and spillovers. For example, failure to contain the spread of the virus in one jurisdiction imposes costs on other jurisdictions if borders are open. In addition, state and local governments may lack capacity and the administrative capabilities to make a speedy response to the crisis. Further, the lack of uniformity across jurisdiction may raise important equity issues, especially in countries like Canada where provinces act as the primary decision makers of health care policy or in the United States where states are often designated to administer social insurance programs.

At the same time, the fiscal federalism literature suggests that there may be reasons to decentralize pandemic policies to state and local governments. For example, lower level governments may have more information "on the ground" related to the severity of the pandemic. Seegert et al. (2020) argues that lower-level government policies can perhaps be more effective at mitigating the spread of the virus because households will infer a better signal from county mask mandates than from federal mandates. In other words, households can infer from county mandates that the risk of transmission is high in their area, but federal mandates do not shed light on any local conditions. Furthermore, local governments may be better able to match their policies to the preferences of their citizens. Finally, the optimal response to the pandemic was quite uncertain, and as a result decentralized policy making could allow lower level governments to experiment and observe other jurisdictions, hopefully leading to better policymaking as a result of learning.

At the same time, while some policies were decentralized, others were more centralized. This implies that state and local governments would need to coordinate some policies with the federal government. Here, coordination problems may emerge, especially given how politically polarized many pandemic policies such as mask mandates and school closures were. This inevitably led to conflicts between state and local government officials which had different political views than those of federal policy makers. Given that disagreement, policymakers in those states view centralized policymaking as an even worse outcome because the federal government's response to the pandemic did not match the interests of the citizens of their states.

The COVID-19 pandemic highlighted the many tradeoffs of centralized versus decentralized policymaking. As a result, many classic problems in the fiscal federalism literature will likely remain in the future. Environmental threats, despite their global nature, will too be met by decentralized policy making. COVID-19 provides an opportunity to learn about centralized versus decentralized policymaking in the presence of a global crisis. Understanding these tradeoffs are important for policy design and more research is needed on these topics.

2.4 Need for New Types of Data

Many of the issues discussed above highlight the need for new sources of data that allow researchers to assess policy and economic impacts across fine levels of geography such as urban/suburban/rural areas and at a high-frequency. In addition, to respond to crises, it is useful to have data in near real-time. Many public finance databases do not allow such criterion to be met. For example, the Census of Governments releases only annual data, does not sample many smaller jurisdictions each year, and is only released with considerable time lag.

One approach, taken by Chetty et al. (2020), is to build a database using information from provide companies. But, alternatives often exists. For example, many state governments release monthly statistics on program statistics or tax revenues at the monthly or quarterly frequency. The main challenge is then to trade off the ease of acquiring one state's data versus attempting to assemble a nationally representative database. Similar issues, likely hold true in other federations and even supra-national institutions such as the European Union. Assembling national (or supra-national) databases come with challenges that states (member states) often release data at different time lags and frequencies. Furthermore, states do not rely on common local government identifiers, so that researchers may need to place considerable effort harmonizing these data. Certainly, national standards on what statistics, what frequency, and what government identification codes to use would help the process, but researchers can still be creative to assemble these data to shed new light on interesting and important questions.

3 A Brief Summary of the IIPF 2021 Congress

After the COVID-19 pandemic forced the 2020 Congress to go virtual, our original intent was to host the 2021 Congress in-person. Þórólfur Geir Matthíasson (Toti) once again agreed to host the conference in Iceland, expecting to see everyone in Reykjavík. But, the pandemic prevented this from happening. We are especially grateful to Toti, and his entire team at the University of Iceland, including Pálmi Gautur Sverrisson, for hosting the event again. The annual Congress is arguably the most important event hosted by the IIPF, and it is essential for providing the field with research, networking, and social activities. Toti is responsible for steering the IIPF through not one—but two—challenging years in a manner that provided the field of public finance with intellectual rigor and support for all researchers. For that, we are eternally grateful to Toti and his entire team.

The theme of the 2021 congress, held virtually from Reykjavík, was "Public Finance in the Era of the COVID-19 Crisis". The theme was designed to highlight the impact of the pandemic on public finance. In particular, the coronavirus created a public health crisis, triggered economic recessions, and created new challenges with respect to elementary education, female labor supply, the safety net, digitization, and raising tax revenue to fund necessary services. Against this backdrop, we organized four keynote address to focus on such issues. Regular conference submission could be on any theme, but there were a large number of pandemic related papers that were presented at the conference.

The four keynote talks drew attention to health policy, the social safety net, labor markets, and the economic impacts of the crisis. The four keynote addresses were:

- Jérôme Frans Adda (Bocconi University): "Preventing the Spread of Antibiotic Resistance"
- Marianne P. Bitler (University of California, Davis) on "Entitlements, Block Grants, and the Safety Net: Evidence from the US"
- John N. Friedman (Brown University): "The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data"
- Andrea Weber (Central European University): "What Can We Learn from Temporary Layos and Recall Hires about Firm and Worker Expectations?"

In terms of the regular program, 444 papers were submitted with 334 papers initially accepted and 300 papers ultimately presented. As the scientific chairs, we were aided by an outstanding scientific committee.[6] The program consisted of 10 sessions in labor and demographic economics, 9 sessions on corporate and international tax, 7 session on inequality,

[6] The scientific committee consisted of Daniel Da Mata (Sao Paulo School of Economics FGV, Brazil), Meltem Daysal (University of Copenhagen, Denmark), Lucie Gadenne (University of Warwick, UK), Aart Gerritsen (Erasmus University Rotterdam, Netherlands), Anne C. Gielen (Erasmus University Rotterdam, Netherlands), Christian Gillitzer (University of Sydney, Australia) İrem Güçeri University of Oxford, UK), Martin Halla (Johannes Kepler University Linz, Austria), Jarkko Harju (VATT Institute for Economic Research, Finland), Makoto Hasegawa (Kyoto University, Japan), Xing Jing (Shanghai Jiao Tong University, China), Sebastian Kessing (University of Siegen, Germany), Nadine Ketel (Vrije Universiteit Amsterdam, Netherlands), Brian Knight (Brown University, USA), Elira Kuka (George Washington University, USA), Etienne Lehmann (CRED(TEPP), Université Paris II Panthéon-Assas, France), Stephan Litschig (National Graduate Institute for Policy Studies, Japan), Olga Malkova (University of Kentucky, USA), Isabel Martínez (ETH Zürich, Switzerland), Clara Martínez-Toledano (Imperial College London, UK), Katherine Meckel (University of California, San Diego, USA), Lucija Muehlenbachs (University of Calgary, Canada), Athiphat Muthitacharoen (Chulalongkorn University, Thailand), Yukihiro Nishimura (Osaka University, Japan), Raphaël Parchet (Università della Svizzera italiana, Switzerland), Paola Profeta (Bocconi University, Italy), Anna Raute (Queen Mary University London, UK), Johanna Rickne (Stockholm University, Sweden and Nottingham University), Josef Sigurdsson (Norwegian School of Economics, Norway), Marianne Simonsen (Aarhus University, Denmark), Alisa Tazhitdinova (University of California, Santa Barbara, USA), and Christian Traxler (Hertie School, Germany).

6 sessions each of theory, political economy and tax enforcement / administration, 5 sessions on health economics and 4 sessions in local public finance. In addition there were many more sessions on education, consumption taxes, income taxes, environmental, social insurance, and behavioral economics.

Of the papers presented, 86 papers applied for IIPF prizes and 71 papers applied for the ITAX PhD student prize. The Peggy and Richard Musgrave Prize for the best paper presented at the IIPF Annual Congress was awarded to "Effects of International Tax Provision on Domestic Labor Markets" (Garrett, Ohrn and Serrato, 2021). The IIPF Young Economists Award was given to "Gender Norms and Income Misreporting within Households" (Roth and Slotwinski, 2021). Finally, the *ITAX* PhD student award was given to "Wealth Inequality in the US: The Role of Heterogeneous Returns" (Xavier, 2021).

Due to the virtual nature of the conference, we organized two new initiatives at the IIPF Congress to facilitate networking and advising junior scholars. First, given the pandemic hindered networking, which has been especially harmful for junior scholars, we organized several hour long mentoring sessions for individuals currently in a PhD program or within 6 years of graduating (discounting for parental leave). Eleven mentors volunteered to meet with small groups of 5-6 students, and we received 68 applications from individuals to participate in mentoring sessions.[7]

Second, we attempted to address issues of diversity in the profession. As a result, we organized a session "Women in Public Economics: How to Thrive in Academia." The session was chaired by Nadine Riedel and featured presentation on the status of women in the profession (Miriam Wüst), publishing (Marianne Bitler), networking (Katarzyna Bilicka) and managing services (Kaisa Kotakorpi). We hope both of these initiatives persist as the conference returns to its in-person format.

Finally, the social aspects of the IIPF continued in virtual form. Despite the virtual format of the Congress, the local organizers arranged a live virtual geological walk around the area of Fagridalur where the volcanic eruption of the Reykjanes Peninsula was taking place. In addition, Toti and his team organized a happy hour hosted by Sævar Helgi Bragason that highlighted Icelandic culture, nature, local foods, northern lights, and Iceland's innovative solutions for environmental issues. These events allowed the IIPF to continue its tradition of not only academic, but also social, interactions among researchers.

[7] The mentors and topics of the mentoring sessions were: David R. Agrawal (Tax Competition, Commodity Taxes), N. Meltem Daysal (Health Economics), John N. Friedman (Economic Mobility, Education), Clemens Fuest (International Taxation), Etienne Lehmann (Optimal Tax, Theory), Lucija Muehlenbachs (Energy, Environmental), Victoria Perry (Taxes and Development, Government and International Organizations), Nadine Riedel (Publishing in *ITAX*), Sebastian Siegloch (Local Public Finance), Marianne Simonsen (Public Policies and and Children), Joel Slemrod (Tax Evasion and Enforcement), and Andrea Weber (Labor Market and Social Policy).

We're grateful to IIPF President, Clemens Fuest, for his confidence in our ability to act as scientific co-chairs and deeply appreciative of all the help provided to us by Barbara Hebele. And as stated previously, we are very grateful to Toti and his team, for making sure the academic, social, and mentoring aspects of the IIPF continued through two virtual conferences.

4 Papers in This Special Issue

This special issue features several papers that were presented at the Congress, some of which concern to pandemic-related issues, while others focus on more traditional topics. We briefly summarize each of these papers:

"**Incomplete Program Take-Up During a Crisis: Evidence From The COVID-19 Shock In One U.S. State**" Bitler et al. (2022) investigate the reasons behind a long-standing issue in public economics: why take-up rates of people eligible for social-insurance programs are less than 100%. They focus on what determines partial program take-up in light of the deep and swift COVID-19 recession using a state-representative survey of Utah households in 2020 and 2021. They focus on three large social safety net programs in the U.S.: The Supplemental Nutritional Assistance Program (SNAP), the Unemployment Insurance Program (UI), and the Economic Impact Payment program (EIPs, or stimulus). Overall, their results show that the programs were well targeted to those with need, but that many of the non-participants had even higher need. Among the determinants of non-use of programs are both classical reasons such as lack of knowledge as well as more behavioral-science reasons such as difficulty applying. Moreover, stigma is shown to play a role in the uptake of UI benefits and transactions costs matter less for broadly targeted programs such as the EIPs.

"**Public Support for Tax Policies in COVID-19 Times: Evidence from Luxembourg**" Olivera and Kerm (2022) studies the popular support for the introduction of hypothetical new taxes to finance the cost of the COVID-19 pandemic in Luxembourg. In a survey carried out in late spring/early summer 2020, respondents were asked for their agreement with: a one-time net wealth tax, an inheritance tax, a temporary solidarity income tax, and a temporary increase in the value added tax (VAT). Characteristics and attributes of the tax system (e.g., rates and exemption amounts) were randomly assigned. The results of the suggest relatively high support for a one-time net wealth tax and the introduction of inheritance taxes on direct heirs, but relatively low support for increases in VAT and income taxes. Support for each of the is negatively associated with the predicted revenues. However, the results indicate that a one-time wealth tax could raise substantial revenues and still garner public support, while the expected revenue from the proposed and supported inheritance tax scenarios would be rather low.

"**The Impact of COVID-19 on Japanese Firms: Mobility and Resilience via Remote Work**" Kawaguchi, Kitao and Nose (2022) investigate how the regulations concerning social distancing at the start of the COVID-19 pandemic affected Japanese firms and whether firms' adoption of work-from-home arrangements helped them mitigate the negative impact on performance. Using data from a survey of Japanese firms during the COVID-19 pandemic, the results show that the lockdown measures significantly reduced mobility, sales, and hours worked, but did not alter employment. Moreover, the paper documents that firms that adopted work-from-home possibilities prior to the pandemic were less affected by the social distance measures and less in need for government subsidies.

"**Corporate Taxes and Union Wages in the United States**" Felix and Hines (2022) provides an interesting new perspective on the old idea of tax incidence. It starts with the positive premium between union and non-union wages and then explores to what extent this differential is sensitive to state taxes. Among other findings, in 2000, workers in unionized firms receive some of the benefits of lower taxes: high corporate tax rates are associated with lower union wage premiums. This effect is larger for capital-intensive industries and in states without right-to-work laws. By 2019, however, state tax rates appear to have little effect on the union wage premium, reflecting declines in union power and changes in the opportunity cost of capital.

"**The Impact of the International Tax Reforms under Pillar One and Pillar Two on MNE's Investment Cost**" Hanappi and Cabral (2022) examines the impact of the OECD's Pillar One and Pillar Two proposals on investment costs for multinational enterprises (MNEs). For this purpose, the authors extend the model of Devereux and Griffith (2003) by considering multinational profit shifting and the various provisions in the two proposals. Then, they calculate the changes in the effective average tax rates (EATRs) and the effective marginal tax rates (EMTRs) following the implementation of these two proposals. The main finding is that the implementation of the two proposals (particularly, the Pillar Two proposal) would modestly increase the average EATR and EMTR.

"**Tax Haven, Pollution Haven or Both?**" Madiès, Tarola and Taugourdeau (2022) proposes a game-theoretic intergovernmental competition model in which two countries compete both in corporate tax rates and environmental standards. Policy-making is assumed to be sequential. In the first stage, countries compete in environmental standards and then countries compete in corporate tax rates in the second stage. This sequential structure creates a "strategic motive" in the choice of environmental standards because the equilibrium tax rate of the opponent country in the second stage can be manipulated by the choice of environmental standards in the first stage. Large countries never act as both a tax "heaven" and pollution "heaven". However, while higher firm mobility narrows the tax gap between the large and the small countries but does not affect the optimal environmental policy because tax competition protects countries against the detrimental effect of globalization on emission caps.

"**Political Alignment and Project Funding**" Schneider, Wech and Wrede (2022) investigate how the alignment of party affiliation of politicians at the federal and local level influence the spatial distribution of funding for research, development, and innovation projects. Using detailed data on publicly funded projects in Germany from the period 2010 to 2019, the findings indicate that having a state government that is of the same party as the providing federal ministry is associated with a substantial increase in the amount of funding received. While the exact party alignment is crucial, as parties in the same governing coalition or on the same political spectrum do not see the same benefits, party alignment influences only the funding amount, particularly for smaller projects, and not the number of projects.

5 Conclusion

The COVID-19 pandemic has changed the world we live in. While many classic questions in public economics remain important, the COVID-19 crises raises new issues worthy of study. We hope this article provides a guide for researchers to begin thinking about these questions and stimulates new and interesting sources of data to answer these questions.

The long-term consequences of the pandemic are potentially stark. While much of the focus of this paper has been on policy heterogeneity within countries and the resulting effects on within country inequalities, the pandemic also has important effects across countries. One obvious area is related to inequities in vaccination coverage. In particular, only 11% of the population in low-income countries has been vaccinated, compared to 73% in high-income countries (WHO, 2022). In the early days of the pandemic, the supply of vaccines and the funding model of vaccines were the main constraints, but now, low-income countries face challenges in vaccine delivery. As the vaccine is one of the critical ways to control the pandemic, these inequities in vaccinations mean that lower-income economies face further challenges in terms of the economic recovery and educating school aged children. These issues could have long-term effects on the development and growth of countries.

In addition to vaccine equity, the heterogeneous impacts of the pandemic may have increased global income inequality. Deaton (2021) shows that when countries are weighted by population, international income inequality increased, but much of this is due to the divergence between India and China. But, the longer-term cross-country effects on inequality resulting from lost human capital development or the pandemic exacerbating pre-existing conditions in labor markets remains uncertain, and should be an area of focus in comparative studies of the pandemic.

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