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Will COVID-19 be one shock too many for smallholder coffee livelihoods?

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ABSTRACT

Coffee supports the livelihoods of millions of smallholder farmers in more than 52 countries, and generates billions of dollars in revenue. The threats that COVID-19 pose to the global coffee sector is daunting with profound implications for coffee production. The financial impacts will be long-lived and uneven, and smallholders will be among the hardest hit. We argue that the impacts are rooted in the systemic vulnerability of the coffee production system and the unequal ways the sector is organized: Large revenues from the sale of coffee in the Global North are made possible by mostly impoverished smallholders in the Global South. COVID-19 will accentuate the existing vulnerabilities and create new ones, forcing many smallholders into alternative livelihoods. This outcome, however, is not inevitable. COVID-19 presents an opportunity to rebalance the system that currently creates large profits on one end of the supply chain and great vulnerability on the other.

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The International Monetary Fund has warned that COVID-19 could result in one of the worst economic fallout since the Great Depression. Amidst forecasts of a global economic downturn, the financial impacts associated with this novel disease will likely be long-lived and levy uneven impacts across commodity markets and individuals. The threats that COVID-19 pose to the global coffee sector are therefore daunting with profound implications for producers.

In more than 52 countries, coffee supports the livelihoods of millions of farmers (Hirons et al., 2018), most of whom cultivate small plots (Bacon, 2005; ICO, 2019a). Furthermore, coffee contributes to the livelihoods of millions more, including seasonal laborers and local businesses. In Guatemala, for example, coffee provides income for roughly 10% of the labor force (Bunn et al., 2019). And while coffee exports are large—valued at USD 20 billion in 2017–18 (ICO, 2019b)—they are just a small fraction of coffee's total value. In 2018, the retail value of coffee in the U.S. alone reached USD 87 billion (SCA, 2018).

Prior to COVID-19, coffee leaders had been concerned that small-scale production was approaching a tipping point as prices

had fallen to historically low levels (Sieff, 2019). COVID-19 could thus push the sector into social and economic upheaval with smallholders among the hardest hit. The impacts on the smallholder system, we argue, are rooted in the systemic vulnerability of the coffee production system and the unequal ways it is organized: Large revenues from the sale of coffee in the Global North are made possible by mostly impoverished smallholders in the Global South.

We recently argued that coffee vulnerability can be thought of as a Gordian Knot, a metaphor derived from a Greek myth that describes a seemingly intractable problem (Guido, Knudson, Finan, Madajewicz, & Rhiney, 2020). The intractability of coffee's vulnerability arises from its many intertwined crises produced by recurrent shocks and structural inequalities. COVID-19's unprecedented global shock will likely exacerbate the Gordian vulnerability of small-scale growers, forcing many into alternative livelihoods. This outcome, however, is not inevitable. COVID-19 presents an opportunity to rebalance the system that currently creates large profits on one end of the supply chain and great vulnerability on the other.

1. Coffee producers experience systemic vulnerabilities

Coffee is central to the economic, social, and cultural fabric of many countries. However, coffee's production system destabilizes

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the livelihoods of smallholders. Farmgate prices fluctuate according to international markets, and supply is dominated by a few producing countries (ICO, 2019a). Coffee also creates export dependency for its producers with only 30% of all coffee sold within producing countries (ICO, 2019a). In adverse times farmers have difficulty switching to other crops because coffee trees require large and long-term investments (Eakin, Bojórquez-Tapia, Diaz, Castellanos, & Hagggar, 2011; ICO, 2019a). Moreover, production costs have steadily increased in recent years (ICO, 2019a) at the same time that institutional support for smallholders has waned. In particular, national investments in agricultural development have remained low or declined (Del Mar Polo et al., 2014).

2. Coffee production exposed to recurring and interrelated shocks

Coffee growers face repeated and often overlapping production shocks (Guido et al., 2020). In any given year they may struggle with climatic extremes, such as droughts and hurricanes, price volatility, and plant diseases (Tucker, Eakin, & Castellanos, 2010). Fig. 1 illustrates this for growers in Jamaica's Blue Mountains where historical records reveal few years of respite.

The last eight years have been particularly difficult for Latin American and Caribbean (LAC) growers. Beginning in 2012, a fungus known as coffee leaf rust (CLR) swept across the region. CLR is caused by *Hemileia vastatrix*, a parasite adapted to moist tropical regions that requires a host—coffee—to survive and reproduce (Avelino, Willocquet, & Savary, 2004). CLR is found in nearly every coffee-growing country (McCook & Vandermeer, 2015). While infections seldom kill the host, they cause defoliation that reduces yield for multiple years (Talhinhas et al., 2017). In 2012 CLR caused some LAC countries to lose more than half their harvests (Jacques Avelino et al., 2015). Regional losses exceeded USD 500 million (ICO, 2013). The LAC region was also struck by a widespread drought beginning 2013 and resulted in the largest 3-year rainfall deficit since 1950 (Herrera & Ault, 2017). The drought had extensive impacts, including nearly 75% losses of corn and legume crops in Nicaragua in 2015 (Bacon, Sundstrom, Stewart, & Beezer, 2017).

In 2016, an economic shock compounded the environmental stresses as the benchmark price for international coffee fell. By the summer of 2019, the global price had dropped 30% below the 10-year average (ICO, 2019a), a crash largely attributed to overproduction (ICO, 2019a). For decades coffee price volatility has been at critically high levels (ICO, 2019a). From March through at least May 2020, world market coffee prices have been even more volatile than usual, in contrast to the relatively stable prices of other major staples (Hernandez, Pandolph, Sanger, & Vo, 2020).

Each shock in isolation has catastrophic impacts, at least regionally. More troubling, though, is that the accumulation of shocks increases farmers' sensitivity and exposure to future events. One prominent example is the 2007–08 global economic recession which decreased coffee imports in 2009 at the same time that farmgate prices fell in many producing countries (Fig. 2). Although

farmgate prices rebounded several years later, the lower prices, along with higher production costs, limited the ability of many farmers to purchase inputs, such as fertilizers. Because CLR incidence and fertilization are negatively correlated (Avelino et al., 2006), fewer fertilizer applications likely made coffee trees more susceptible to CLR (Villarreyna et al., 2020). The lost revenues and labor-wages in turn made the livelihoods of smallholders more insecure, leading some farmers to migrate (Griffith, Zamudio Grave, Cortés Viveros, & Cabrera Cabrera, 2017) or abandon coffee cultivation (Jacques Avelino et al., 2015; Bacon et al., 2017; Tucker et al., 2010; Valencia et al., 2018). In countries like Jamaica, farmers simply left ripe cherries on the trees to rot because they were not worth the cost of harvesting (Guido et al., 2018).

3. Production costs outpacing coffee revenues

Smallholder revenues depend on the quantities sold and the farmgate prices, both of which vary substantially by season and growing location. While production is influenced by the use of fertilizers, pesticides, and irrigation, as well as the weather and incidences of plant pests and diseases, farmgate price varies by variety, quality, and market destinations. The broad range in farmgate prices is evident in Fig. 2. Smallholder profits also depend on operating costs which often outpace inflation. Between 2016 and 2018, fertilizer costs increased internationally by more than 25% (ICO, 2019b).

Despite variability in these conditions across the growing regions, many smallholders operate at a loss. In 2015–16, nearly 53% of coffee farmers in Colombia operated at a loss, as did 25% of farmers in Honduras (ICO, 2019a). With the coffee indicator price in recent months approximately 20% lower than in 2015 and 2016 (ICO, 2020a), even more farmers are likely losing money. Operating at a loss, or near break-even, causes some farmers to underutilize inputs. This was a coping strategy that Jamaican coffee farmers relied upon in the aftermath of the 2012–13 CLR epidemic (Guido et al., 2020). More broadly, the cost of living as measured by the Consumer Price Index (CPI) is increasing at a faster rate than farmgate prices. Fig. 3 juxtaposes these two metrics. While the average CPI has steadily increased, average farmgate prices have generally declined. Taken together, it is clear that the gap between the cost of living and revenues is widening. Although this gap can be compensated by yield increases, the required agriculture intensification is likely difficult to achieve for many smallholders who are capital-poor,

4. COVID-19 will accentuate existing vulnerabilities and create new ones

Historically, a 1% drop in GDP growth globally has been associated with 0.95% lower growth in coffee demand (ICO, 2020c). The current oversupply will thus likely persist longer than it otherwise would have, delaying a price rebound that would have occurred sooner in the absence of the pandemic. Coffee income to farmers,

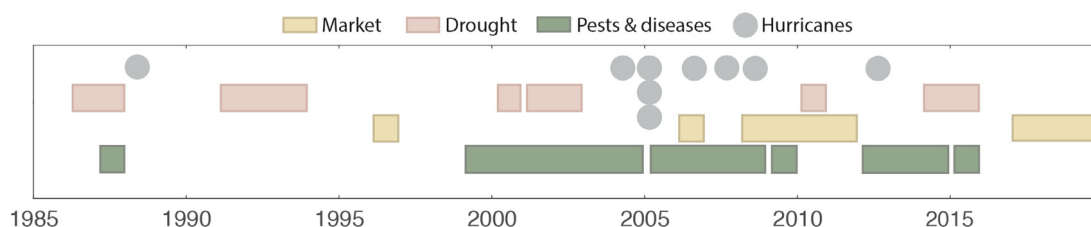


Fig. 1. Recurring shocks experienced by Jamaican Blue Mountain coffee farmers. Source: Guido et al., 2020. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

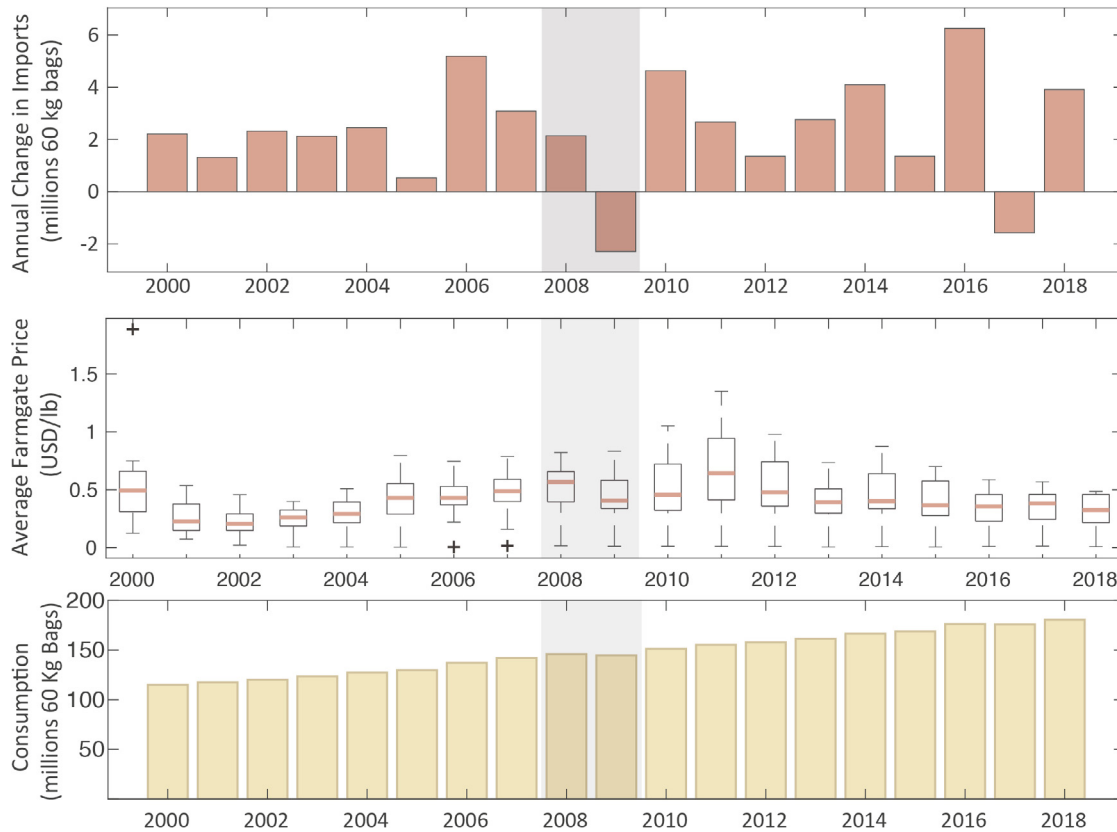


Fig. 2. Data for global imports (top), distributions of nationally averaged farmgate prices corrected for inflation at the country-level (middle), and global consumption (bottom) is from the International Coffee Organization (ICO, 2020a). Imports are summed for all importing countries; consumption is summed for across all importing countries and the domestic consumption of exporting countries. Farmgate price includes only the 25 producing countries with no more than 5 years of missing data since ICO records began in 1990. These 25 countries account for the more than 87% of the coffee grown. Grey boxes highlight years of global economic recession.

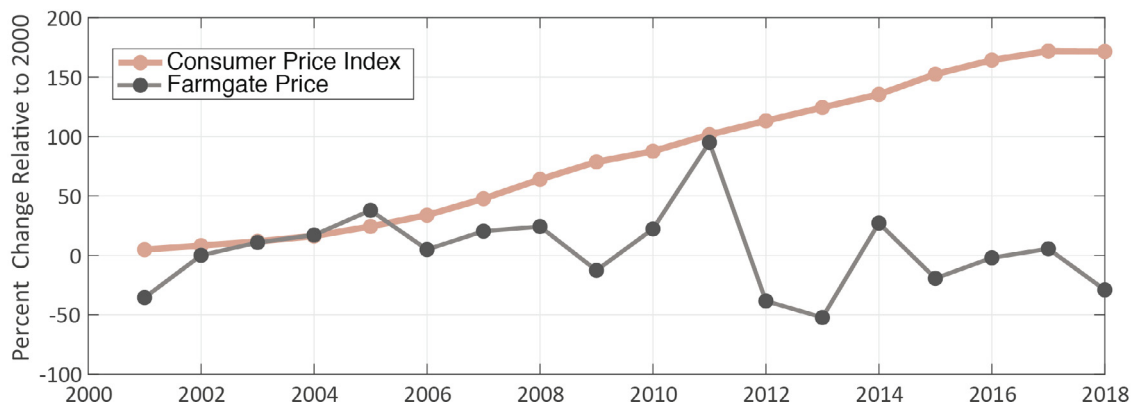


Fig. 3. CPI and farmgate prices are averaged across the 25 coffee growing regions with consistent farmgate price data. CPI data is from the World Bank; the farmgate price data is from the ICO (2020a).

state and private trading companies, and governments will decline, with the latter further reducing investment in the coffee sector. Many smallholders also rely on other sources of income and remittances, both of which will also likely decline (United Nations, 2020). Farmers will thus be less able to manage their farms, creating favorable conditions for CLR and other pests and diseases while being more vulnerable to drought or hurricanes. With the global economy likely requiring years to rebound, many farmers may not be in a position to prevent or recover from future shocks.

COVID-19 is also a progenitor of new shocks for the coffee sector. Many coffee-growing countries rely on seasonal migrant labor-

ers, particularly during harvests. A recent survey of coffee exporting countries revealed a deep concern for the loss of laborers (ICO, 2020b). In Guatemala and Colombia, it is estimated that around 100,000 and 135,000 laborers are needed to complete the harvests. As of May 2020, Guatemala (as well as other countries including Colombia) had restricted internal movement and closed their international borders. Restricted transborder movement policies, coupled with fears of infection and public stigmatization among migrant workers and farm owners, currently jeopardize at least the 2020–21 coffee harvest (IOM, 2020). In addition, field visits by extension services have been cancelled in many countries,

thus reducing the farmers' access to technical assistance in a time of great need (Hernandez et al., 2020).

5. Post-pandemic coffee futures

The demand for coffee is strong. Only twice since 2000 has global consumption declined year over year (Fig. 2). While COVID-19 will likely have little long-term effect on demand, the pandemic imperils smallholders. From our experience studying coffee prior to COVID-19, the system had already failed to create resilient, prosperous small-scale producers. Our hope is that rather than returning to a pre-pandemic normalcy, or worse, COVID-19 can be the impetus to make the system more just and productive. There is no inherent trade-off between a resilient, productive smallholder system and one that is fair. Indeed, the Global Commission on Adaptation states that with governments investing more than USD10 trillion in crisis relief in 2020 alone, COVID-19 is an impetus for smallholder systems to "get on a new path, one that makes human society more resilient, more equitable, healthier, and stronger" (Global Commission on Adaptation, 2020, p. 1).

How then might a more just, less vulnerable system be structured? We can begin with farmers receiving a higher price, one that at minimum allows farmers to cover their costs when prices are low. Fair-Trade certification, for example, requires price floors to reduce economic strain during low coffee prices and price premiums that enable communities to invest in their social wellbeing. The International Coffee Organization (ICO) has identified numerous economic mechanisms that could also help raise coffee producer incomes (ICO, 2019a). These include "fix[ing] farmgate prices according to export prices, establish[ing] stabilization funds or introduc[ing] purchase guarantee mechanisms" (ICO, 2019a, p. 66). There are but a few examples where these measures have been formalized. Costa Rica, for example, signed a law in 1961 that has ensured that producers receive a high fraction (around 90%) of the export price of green coffee (Dragusanu & Nunn, 2018).

It is fair to assume COVID-19 will have a lasting impact on the global coffee sector and that small-scale coffee producers will be hardest hit. Minimizing the pandemic's impact will therefore require a multi-pronged approach that tackles systemic disparities in the industry. While higher farmgate prices can make a difference, solutions should also address the underlying conditions that render the coffee sector vulnerable in the first place. Among these, the industry needs to confront the unequal power and control among its members in order to bring about a "more equitable, healthier, and stronger" future. Small-scale coffee producers need to have a say in what is good change, for whom that change is good, and how that change should occur.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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