Is the Mug Half Empty?
Evaluating Economic Development Theory, Producer Vulnerability, and the Future of Coffee in Bududa, Uganda

by

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international system. In other words, there may be hope! Her course in "Work and Labor in a Global Economy" piqued my interest in the international food system. I later refined important insights on the topic during an independent study course under her direction, many of which I engaged in this thesis. To quote the Stabler Award for Excellence in Teaching, which she was awarded in 2023, Dr. Madeira's interest in her students' lives outside of academia, as whole persons, certainly "extracts from students the full measure of their potential to learn" and sets her apart from her colleagues.

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Table of Contents:

Abstract:

This thesis investigates the relationships between coffee consumers, who largely reside in the global north, and coffee producers, who largely reside in the global south. In asserting that patterns of unequal exchange exist today as vestiges of colonial relationships, I critique the conventional doctrine of development. I assess the impacts of trade liberalization, privatization, and other neoliberal economic reforms through 32 in-depth, qualitative interviews of community members in Bududa, Uganda. I also investigate the impacts of neoliberal reforms on the government's response to climate change and decreasing land availability. I find that community members face mounting vulnerability in the face of changing circumstances, which the government is unable or unwilling to address. By neglecting the constraints imposed on both small farmers and governments by the current economic system, economists and theorists may miss serious threats to coffee's future. As Uganda's youth bulge enters their productive lives, many, unsatisfied with the current patterns of unequal exchange and volatility, will withdraw from coffee production.

Introduction:

People around the world engage with coffee differently. Around one billion people, located mainly in developed countries, drink coffee every day, including about half of United States adults. There are some who roast, package, and sell coffee beans; while today most of these activities are done by large coffee corporations headquartered in the global north, small-scale and niche coffee roasting also takes place, like my parents who supported a family this way for a decade. There are those who grow coffee. This portion of the global population is geographically bounded by "the coffee belt" or the equatorial zone roughly between the latitudes of -25 degrees North and 30 degrees South. Largely, this zone houses countries of the "global south" or less-developed countries. Then, there are those who make decisions about the structure of world trade patterns, the coffee sector, and impose economic reforms on less developed countries. This last group includes international financial institutions (IFIs), economists, and countries in the "global north". It is the last two groups upon which I focus this analysis.

Michael Pollan, esteemed food writer, described these relationships while visiting a coffee producing country in the global south:

> "It was hard to imagine how this remote and sleepy rural scene had anything whatsoever to do with our everyday urban lives, but one *doesn't exist* without the other. The two realms have become intimately connected and are now implicated in each other's destinies by powerful vectors of trade and desire. Our tase for coffee, only a few hundred years old, has reconfigured not only this landscape and the lives of the people who tend it, but the very rhythms of our civilization" (Pollan 156: 2021, emphasis added).

Indeed, the destinies of coffee consumers and producers are inextricably linked. <u>One does not exist without the other</u>. The economies of many former colonies were structured to produce exports to a colonial power. A good many of these economies center still center

around these relationships. I amend Pollan's commentary only slightly, *coffee consumers, largely in the global north*, have reconfigured the landscape of coffee producing countries, *largely in the global south,* and the lives of those *poor* people who tend it. But what happens when the neoliberal reforms of privatization imposed by the former push against the ability of the latter to live a quality life? Often, the edicts of IFIs neglect the impacts on individuals. Macroeconomic growth at a country level may belie increased suffering to small farmers.

To investigate these relationships, I interviewed community members in the Bududa district of Uganda, in July 2022. Uganda is a major coffee producing country; in fact, the country exports nearly a third of Africa's total coffee to the global market (ICO 2021). Uganda's internal economic reforms began as the broader, global liberalization of the coffee sector occurred. This unfortunate sequence of events intensified the vulnerability of Uganda's farmers. As international financial institutions restricted the Ugandan government's intervention in the sector, privatization of the country's coffee market began to replace the traditional cooperative society system.

I begin first by describing theories of the economic development of countries. Here, critical theories of world systems and ecologically unequal exchange challenge the dominant discourse by proponents of modernization theory and offer a broad lens through which we can understand how specializing in coffee will never allow countries like Uganda to "catch up" with developed economies in the global north. Then, I provide an overview of the region of study, the Bududa district of Uganda. I describe my research methods, qualitative interviewing, my participants, and methods of analysis. Next, I provide the findings of my research. I find that the diminishment of government support in coffee, concerns about

erratic weather, fertilizer use, and limited land increase the precariousness by which community members live. The discussion centers around the future of the coffee industry, both in Bududa, and globally.

Unequal Exchanges and Economic Development Theories:

Several academic literatures provide important insight into coffee production in Uganda, and the world generally. I first explore how inequitable global development patterns developed as a result of global hierarchy and colonialism. Here, I consult the world systems theory of development, which explains the formation of international division of labor, which concentrates low-profit and environmentally degrading, or dirty, industries in the global south. Next, I discuss the role of liberalization and the effect of structural adjustment policies on agriculture and development efforts. Additionally, specialization in one or a few crops, a strategy promoted by some theorists, leaves producers vulnerable to a large, unwieldy global trade system.

World systems theorists contend that colonial legacies endow core states, or affluent countries, with advantages on the global capitalist stage. Economic development is conceived as a zero-sum game. The affluent states, those who oversaw colonial holdings or developed since the colonial era, were allowed to engage in "core-like production process" or those processes with which few other countries can compete, quasi monopolies. Alternatively, former colonial states were forced to specialize in extractive or agricultural industries, providing the raw materials necessary for industrialization and development among the core countries. This created specializations in competitive or "peripheral processes" such as primary commodity production (Wallerstein 1974). Primary sector

products, such as agricultural items are produced across many poorer countries, and these products are not distinguished from one another. Therefore, producers of primary products have little bargaining power and prices of peripheral products tend to be lower.

Any importing country can choose *from where* they will import coffee beans, for example, but decisions from where to source highly profitable technological innovations are much more limited[1]. Those countries with more monopolized exports, such as in core countries, can capture larger profits and structure investments and trade policy to ensure continued access to "cheap" raw materials from the global south. Poor countries producing agricultural items, subsequently, hold little power in negotiating the price of their exports. Sheppard contends that this is because "profitability is directly related to the degree of monopolization" (Sheppard 93: 2009).

With over 70 countries producing coffee, most of whom are in the global south, consuming countries in the global north can negotiate prices more effectively than can producer countries (Deshmukh 2021). The consumer countries employ the threat of exit while also maintaining better alternatives to trade than their trading partners. Industrial upgrading in less developed countries faces many challenges, such as limited protections on local production, and a lack of domestic markets due to poverty. Less developed economies are stuck trying to grow economically by producing more and more primary products; without doing so, they will be unable to afford imports for domestic consumption.

[1] Some regional differences in beans are important to the highest end consumers of coffee.

A legacy of colonialism, peripheral countries' economies still are structured to specialize in the production and manufacture of the least profitable goods, primary commodities, and agriculture, while core countries maintain the most profitable industries for themselves, protecting these industries and products through policy and patent laws. In this way, the core countries reap the lion's share of monetary value from *any* exchange of goods between the periphery and core. There is a constant flow of surplus value to rich countries from trade. This phenomenon is known as unequal exchange.

This occurs on a commodity level as well. Within the coffee sector, farmers in less developed countries produce coffee but only represent one small node of the global system. Farmers generally sell coffee in its most basic forms, either as a fruit or a raw bean. The profits captured from coffee tend to accrue in the locations that "finish" a product. Value-addition processes, such as roasting, marketing, and brewing, largely occur outside the area of production, mostly in countries in the global north (Austin 2017).

The international division of labor describes the patterns of production, by country, originating during the colonial era. Extractive tendencies of former colonial powers continued following the independence of their colonies. Former colonies hold little negotiating power with the developed world, their former colonial powers, as each primary commodity producing country holds only a small share of the global market for their goods. This allows the global north to continue reaping the largest profits and granting them the widest choices. Ecologically unequal exchange (EUE) describes how this breadth of choice available to the richest countries result in the relocation of environmentally damaging processes to the global south.

Bunker (1985) assessed the extractive rubber industries in the Amazon, finding that environmental and social harms accrued more heavily to the poorest countries in the supply chain. Austin (2017), Jorgenson (2009), and Shandra et al. (2009) explore the environmentally degrading effects of agriculture on deforestation and biodiversity loss. Rich countries can import resource-intensive goods and skirt the environmentally degrading effects while contributing to, "declining utilization opportunities and imposition of exogenous environmental burdens within the periphery" (Clipet and Roberts 276: 2017). This analysis may usefully be applied to degradation of soil through the monocropping of coffee. EUE posits that "deteriorating terms of trade exist for countries that export raw materials" (Clipet and Roberts 374: 2017).

Patterns of EUE become evident in an analysis of Uganda's chief export, coffee. Coffee production is labor intensive and causes environmental degradation. EUE predicts that even if suitable climactic conditions existed in the global north, its production would concentrate in the global south as its cultivation degrades a producing country's natural resource base. In the context of coffee production, soil nutrients and topsoil organic material dimmish as a result of production. Countries that import coffee evade these deteriorations to their environments. The periphery supplies primary commodities and natural resources which stimulate core industrialization, a phenomenon that can be conceived as a double burden for them, where the periphery receives the lowest profits while degrading their natural resource base.

Modernization theory asserts that all countries, regardless of current economic conditions, geopolitical positioning, or history are capable of developing to the level of modern-day rich countries. Interdependent, stable societies pursue development most effectively through free market capitalism and specializing in "certain commodities and trading the excess" (Sheppard 76: 2009). According to modernization theorists and edicts from international financial institutions, Uganda is "doing the right thing" by specializing in a product, coffee, which is in demand on the global market and that fits their natural resource endowments.

By exporting what one produces cheaply, profits can be saved and reinvested into production processes where one reaps benefits from exponential returns. A country at the "bottom rungs" of the development ladder, according to conventional thinking espoused in modernization theory, has not adequately specialized or removed enough barriers to trade (Rostow 1959). Government intervention may be necessary to establish sectors and encourage consumption through minimum wage laws and rule of law. The creation of robust infrastructure to transport goods, like ports and roads, and to secure and provide capital, like banks, are critical to development. Modernization supposes that market forces, along with these government supports, lie at the heart of any countries' attempt to develop. This Keynesian conception of economics places states centrally in the story of development, but the neoliberal push of the 1980s described below has largely removed state-based intervention tools from the arsenal of the global south.

World system theorists reject the notion that free trade and global integration will "raise all boats", as rich country, "capitalists in fact need not totally free markets but rather markets

that are partially free" (Wallerstein 25: 1974). The partially free markets that rich countries construct result from state-backed social protections like unemployment benefits or free public education. These social protections are largely underfunded in less developed countries, in part, a result of structural adjustment programs discussed below. Economic drivers benefit from the relative capacity of their state to provide hospitable conditions under which to do business, while the periphery cannot depend on this "subsidy".

Modernization principles are codified in the rules and policies of international financial institutions (IFIs). IFIs, such as the World Bank and International Monetary Fund took hold of the global monetary system following debt crises in the 1970s and 80s. Less developed countries increasingly took out loans to finance industrialization projects such as infrastructure improvements. Upon the default of their loans, IFIs extended conditional loans. IFIs required that debtor countries reform their perceived failings through individualized Structural Adjustment Plans (SAPs).

SAPs were a set of macro-level economic changes required of a country to qualify for emergency loans from international financial institutions. SAPs required debtor countries to facilitate a transition to free market principles of privatized industries, heavy export orientation, devaluing of currency to encourage international investing, and the near-total reduction of trade restrictions. They represent extreme efforts to reduce trade barriers and advance trade liberalization in less developed countries.

Austerity measures necessitated the slashing of government programs. Subsidies to agricultural producers, which protected vulnerable farmers from global volatility were

discontinued, as were social services like health care and education (Odokonyero et al. 2017). Austerity measures also lead to a decline in the provision of infrastructure. The legacy of structural adjustment policies, along with associated neoliberal reforms handicap less developed countries' ability to promote economic growth. Few countries' experiences with SAPs is as dramatic as Uganda's. An economist wrote that, "Uganda is regarded as the African country that has adopted the neoliberal reform package most extensively" (Wiergratz 124: 2010).

Trade liberalization in the agricultural sector is hotly debated. Remember, world systems theorists' claim that the deck is stacked. Less developed countries' specialization in primary, competitive crops render them vulnerable to richer countries' political goals (e.g. Schumacher 2013; De Schutter 2009). There is an "almost unanimous agreement among mainstream *economists* [emphasis added] today that free trade is superior to protection", and IFIs recognize that state interventions in the economy distort prices from a free trade equilibrium point, which exacerbates food insecurity (Clapp 7: 2014; Anderson 2007). While IFIs required SAP countries to slash subsidies to their agricultural sectors, high-income countries in the EU and the United States maintain high subsidies to present. Producers in subsidizing countries capitalize on the cash transfers and can sell their goods on the global market at much cheaper prices.

In Uganda, market-based reforms led to a reduction in public spending on agriculture from 10% in 1980 to 3.7% in 2008 (Martinello 2015). Benefitting from a shrunken government role in day-to-day operations of the agricultural sector, multinational corporations (MNCs) gained a foothold in the sector. Land grabs, or the large-scale purchase of land plots,

accelerated. MNCs generally engage in export-orientated agriculture, diverting land from use for domestic crops. Countries that underwent specialization find it difficult to break from the path dependence that results from costly investments in specialized equipment/infrastructure (Garibaldi and Perez-Mendez 2019).

Following SAPs and liberalization, many less developed countries became heavy reliant on imported foodstuffs as they trended towards export-focused production. This leaves them vulnerable to the price fluctuations of the global market (Garibaldi and Perez-Mendez 2019). Global production gluts, adverse weather events, etc. cause the volatile price swings in those products imported for consumption (De Schutter 2009). In addition to the burden of variable priced imported food, coffee's volatile price compounds producers' uncertainty of income versus expenditures.

Producing a diversity of crops is important on an individual, country, and global level. At an individual level, it prevents soil nutrient depletion and protects producers from volatility on the world market (should one crop's price drop precipitously). The crops that a country chooses to pursue rely heavily upon the principles of liberalization discussed above. In the era of specialization and export orientation, many farmers increased their usage of monocropping. This creates a vulnerable landscape for low-income export-orientated countries should a major crop fail (due to adverse weather, global production gluts, or disease). Shocks to food security often present as crop failures that drive up commodity prices. Increasing the diversity of crops grown domestically may protect against exogenous shocks, slow down potentially treacherous biodiversity loss, and increase labor force participation in agriculture.

A particularly devastating vulnerability that countries with low domestic mixes of crops face is adverse weather. Global production shortfalls increase the price of commodities, "worsening access to food, especially for the world's poorest people" (Renard and Tilman 258: 2019). A method to combat increasing price sensitivities in the wake of increasingly common adverse weather patterns is increasing crop diversity at the national level. Different crops require different climactic conditions, increasing diversity essentially "hedges one's bets". Countries with a higher coefficient of crop diversity achieved better stability measures in food availability and distribution (Renard and Tilman 2019). In this scenario, all countries benefit when all countries produce a variety of crops, because dramatic yield loss has smaller absolute impacts on total production levels. However, crop diversification necessitates either a strong domestic market or an easily accessed international market (Newfarmer et al. 2013).

Farmers across the world face increasing weather variability. Increasing crop diversity is an especially advantageous adaptation that is made on an individual scale to capture a wider range of productive weather conditions and, "spread risk across various sources of income" (Covarrubias 6: 2015). Increased crop diversity at the farm level has been linked to greater agricultural output (Di Falco et al. 2010) but also productivity (Chavas and Di Falco 2012). A high level of domestic crop mix seems to offer protection against changing climactic conditions, variability in food availability and fluctuating global food prices. This mix is not conducive for a country aiming to follow the conventional development wisdom of single product specialization.

Overview of the Research Area – Bududa, Uganda

Uganda is a landlocked country on the eastern side of sub-Saharan Africa. It borders Kenya, South Sudan, the Democratic Republic of Congo, Rwanda, and Tanzania and gained independence from Britain in 1962. One in five Ugandans experience extreme poverty, and it ranks as an OECD "Least Developed Country" (The World Bank 2020). In 2020, the country produced 5.6 million 60-kg bags of coffee, ranking it the 2nd largest producer in Africa after Ethiopia. Uganda's coffee production accounts for 1/3 of Africa's total output and about 3% of the world output in 2020 (ICO 2021).

The majority of Uganda's coffee production is Robusta beans, while Bududa is situated in a high altitude, slightly cooler region of the country where Arabica beans dominate (Ojambo 2014). Arabica beans are the most lucrative, offering higher prices. Despite 70% of working women and 56% of working males primarily engaging in the agricultural sector, "Uganda exhibits one of the lowest agricultural productivity levels in the world" due in part to poor utilization of fertilizers and mechanized farm equipment (MAAIF 2022 & Hausmann et. al 2014).

The Bududa district is in the eastern region of Uganda. The population as of 2020 was around 270,000 (Uganda Bureau of Statistics 2020). Over half of the Bududa district's population is between the ages of 0-17. Agriculture is a bedrock of economic activity in the district. Nearly 96% of the population engage is farming, with 40% growing coffee. (Uganda Bureau of Statistics 2021). Given rampant poverty in the district, the average household income ranges from $100-$150USD a year, coffee production is an attractive option.

Research Methods:

This study collected exploratory data to assess conditions in Bubiita, Bududa, Uganda from July 11th to July 28th of 2022. This included 32 qualitative, in-depth interviews for a total of 1,315 minutes or approximately 22 hours (the average length of each interview was approximately 41 minutes). The majority of these interviews were conducted fully in the local language of Lugisu, via a male local translator. The translator, Wekoye Banuri resides in the Bubiita region speaking Lugisu natively. He is completing a collegiate degree with fluency in English. While I conducted very few of these interviews completely in English, and a handful were a mix between English and Lugisu, Banuri initiated each interview and obtained informed consent in the local language. He was present for the duration of each interview, even when conducted totally in English. The interviews were audio-recorded and transcribed into a Word document for analysis. Analysis consisted of coding the transcriptions, the identification of power quotes, and thoughtful consideration of key themes and trends.

I developed a preliminary interview guide in advance of the trip centered around my topics of interest. I finalized the guide in country with feedback from my translator to smooth any translation barrier. My community hosts assessed the relevance/applicability of questions and helped hone phrasing to promote clarity. Several questions sought information regarding changes over a long run horizon. Importantly, in asking about perceptions of climate change I aimed for participants to, largely, disregard the current, unusually dry season and discuss the region's weather patterns over years and decades. I achieved these sorts of answers through the use of sentence constructions such as, "from the time you

began growing coffee until now…". Most participants began growing coffee in their adolescent years, framing their consideration over years decades.

This project is embedded within the extended relationship that my principal investigator, Dr. Kelly Austin, and Dr. Mark Noble, developed in the Bubiita region of the Bududa district. They have deepened this relationship and research infrastructure over the 13 years, visiting the region a dozen times. The longevity of their involvement in the community imparts trust and legitimacy on new research projects each year. There is a favorable impression of Lehigh University in the community.

While in the Bubiita region, I resided in a homestay on the property of David and Elizabeth Zaale, esteemed community members, for 4 weeks. During the trip, I volunteered at the after-school athletics events regularly, patronized local businesses, learned friendly phrases in Lugisu, and adhered to the strict social/gender norms of dress and behavior. I leveraged Dr. Austin's relationships and worked to gain the community's trust in my own right, in an effort to obtain thoughtful, honest, and information-rich responses to my questions.

I utilized convenience, targeted, and snowball sampling methods to find participants. My translator's knowledge of Bubiita and its residents was invaluable. Chance, availability, and insight from my translator ultimately informed the demographic composition of my sample. My sample includes 24 men and 8 women. The average age of male and female participants was 37.7 and 53.3 respectively, the average age of all participants was 50.9. Most participants farmed coffee as their primary source of monetary income, additionally I

interviewed 2 coffee traders and 1 seedling grower (each additionally grew *some* amount of coffee) providing depth to my understanding of the whole coffee system in the district.

I submitted my research proposal to Lehigh University's Institutional Review Board and obtained IRB approval. Per Lehigh University research requirements, I completed an online course "Social & Behavioral Research - Basic/Refresher". Upon arrival in Uganda, I submitted a research proposal/summary along with a copy of my interview guide to the Bududa District Officer and received local approval to conduct my research.

Findings:

The contents of my findings section comprise of some external research along with direct quotations from Bududa community members, notably in the *shift towards privatization* section to contextualize interview responses. In this section, I explain community members frustration with the decline of the cooperative society system and additional pressures they face under a privatized system. I go on to explain how the privatized system, erratic weather patterns and limited land push many farmers to rely on fertilizer to ensure adequate yields. However, community members note diminishing returns on the investment as a chemical treadmill effect takes place. Uneven government support does not address these challenges. I conclude the section with the analysis of my participant's thoughts about the future of coffee and youth engagement in the crop.

The shift towards privatization:

The period of deregulation, privatization, and liberalization in the 1980s and 1990s resulted in a massive withdrawal of government intervention in agriculture in less developed

countries. In Uganda, this period marked the hollowing out of cooperative societies, the most stable feature of the country's coffee industry. Interviews of individuals directly impacted by these changes provided a rich analysis of how farmers experienced these neoliberal reforms on the ground. I rely on selected scholarly works and interview responses. The sample allows for interesting analysis of the trends described in detail by external sources as it contains participants with varying ages. The sample skews towards those older than 45 (n=18) allowing for rich analysis of experiences in coffee prior to and after the reforms. One expects that those aged ~35 and below (n=6) did not farm or otherwise engage in coffee prior to the abovementioned reforms.

In 1969, Uganda passed the Coffee Marketing Act which formalized legal monopolization of the coffee industry by the government. The government created a powerful, largely corrupt Coffee Marketing Board (CMB) to promote the export of beans from small farmers; creating a centralized marketing system through which all coffee flowed. Ugandans quickly noticed corrupt practices such as the illegal smuggling of beans. The Christian Science Monitor wrote in 1980 that, "corruption and theft have gotten so bad among all ranks of officials, police, Army, and customs officers that [it resulted in a] creeping decay of moral" (Worrall 1980).

Under the CMB, the fixed prices and margins allowed the government to stabilize international price fluctuations, largely moderating them before transmitting them to farmers. Upon liberalization in 1990/1991, Uganda's transition was rapid and complete. It remains one of the "most fully liberalized coffee market in East Africa" (Newman 552: 2009). Privatization invited private companies into the coffee sector, pushing the public

cooperative societies to the fringes of the industry. At the outset, privatization allowed farmers to fetch higher prices for their coffee, leading to a bloom of new coffee farmers. However, now open to international price fluctuations, participants noted their position in the global economy is more precarious than before.

Cooperative societies are government-run organizations which, prior to the liberalization of the coffee market in 1991, were the sole purchasers of all coffee produced in Uganda. Operating at small, local levels they offered advertised, nationally standard prices to small coffee growers. Effective bridges between farmers and government (each farmer interfaced with them), community members were mostly happy with the provision of inputs, tools, bonus payments, and other services. Once prominent in the lives of all Ugandan farmers, cooperative societies in Bududa are shells of their prior selves. Though they do operate, albeit at diminished capacity, many participants said cooperatives societies were dead, not operational, a *memory* of the past. The weakening of this primary site through which coffee flowed is monumental. Nearly all of my older participants discussed how their lives changed as a result.

A farmer who formerly sold to cooperative societies said, *"[cooperative societies] are <u>there as buildings</u> … there are a few people who take their coffee there, but most people have left[2]"*. A former government employee of a village cooperative society in Bubiita, Bududa described the hollowing out of the cooperative society system following privatization. He speculated that

[2] Direct quotes from interviews with interview participants appear in quotation marks and with italics. Underlines in quotes note an emphasis added by myself. Participant's personal pronouns may vary between the first and third person. Pronouns are recorded as spoken by my translator. Bracketed words/phrases were added by myself to improve clarity.

there were once 5,000 of farmers selling their coffee to them, where now there are around 100. A younger farmer who did not grow coffee under any prior arrangement spoke to his knowledge of coffee's history in the region*, "the societies have all stopped since Museveni came in. They have all collapsed"*. The former employee quoted above said damningly of the Museveni regime that, *"The current government has killed the cooperative union"*.

Participants missed many features of cooperative societies, but none more so than the stable price they offered. The Ugandan government had a monopolistic hold on the coffee sector, allowing them to manipulate and stabilize prices under the cooperative system. Cooperative societies were the vehicles through which farmers received predictable incomes for their harvest. The impact of which cannot be understated for those living in, or near, poverty. The ability to predict how much money a harvest will yield allows for thoughtful planning and savings. One farmer I interviewed talked about a notable shift from this predictability when the cooperative system collapsed:

> *When government was participating in buying coffee it used to be with a fixed price. But now you cannot tell. This year [in the absence of cooperative societies] they may buy it from 1kg at 1,000Ush[3] next year, 700Ush. It is very hard to predict what you can earn.*

Under the cooperative society system, the Ugandan government undertook the role of coffee marketer. The former employee of the cooperative society said, *"government is the one that used to sell the coffee in the past. They [farmers] used to take to cooperative societies who took it to BCU and after BCU, it was the work of the government to sell the coffee"*. A community member explained coffee, as a drink, is not popular, *"coffee is not used in the area. The farmer has no value*

[3] A kilogram of coffee is a bit more than 2 pounds. The abbreviation for the Ugandan Shilling is Uhs. At present 1 USD exchanges for about 3,700Ush. For context, during July of 2022 a light to-go meal cost in the village cost ~2,000shs.

[for] it". Farmers cannot effectively sell to a consumer that do not exist locally. Under the present, privatized system farmers must sell at whatever price a local buyer offers; they lack the external connections which the government leveraged in the past.

Historically, cooperative societies acted as conduits for government support. This included fertilizer, tools, and "bonuses". The bonuses, sometimes called "second payments", came upon the sale of coffee by the government. Once sold, the government, through the societies, distributed the proceeds to farmers. This payment helped farmers manage poverty during the months between coffee harvests. Describing the past arrangement, an older farmer said, *"government could give them sprays, and fertilizers and tools which they could prune and then spray the coffee plantations. Right now, none of those things are here"*.

In the face of the perceived withdrawal (and certain diminishment of power) of local cooperative societies, the incentives once provided by the government are offered in patchwork form from private companies and the Bugisu Cooperative Union (BCU), a large organization which offers some features of traditional cooperative societies. However, only members who to supply a minimum amount of coffee, which is much larger than many community members can produce, qualify. These incentives hope to ensure farmers' loyalty and induce their return the following season. A much different arrangement than the provision of governmentally provided goods. Under this arrangement, large producers receive incentives that make growing their operation easy, while small producers remain vulnerable to community traders.

The demise of strong cooperative societies was a direct result of, and happened as, the Museveni government pursued privatization. In the absence of the societies of the predictability that cooperative societies offer, a farmer described some community members, *"lost morale. Now, those plots of land with coffee, they started growing food crops. So, the production declined"*. Some farmers viewed privatization as wholly positive and subscribe to the tenants of the freedom and promise of free trade, liberalization, etc., while others yearned for the past.

The weakening of the cooperative societies is irreducibly tangled with the shift towards privatization. These phenomena occurred simultaneously. As the Ugandan government yielded their monopoly on coffee pricing and removed laws required coffee's sale to cooperative societies, the price farmers received grew increasingly erratic. Over the course of many participants' productive lives, seismic political shifts took place in both the economy, broadly, and the coffee sector. However, for impoverished small-holder farmers the change is described in terms of where and to whom they sold their coffee, rather than the complex set of neoliberalism reforms of which it is a part. Some of the reforms are described by Wiegratz, an economist:

> the new economic reforms included currency reform, the liberalization of the foreign exchange markets and the export crops sectors (coffee, cotton), the abolition of the respective marketing boards, the dismantling (directly or indirectly) of cooperatives, the transformation of ministerial responsibilities and practices including the agricultural extension service (Wiegratz 132: 2010).

In short, farmers went from selling all of their coffee to local cooperative societies to primarily selling to "middlemen" or "community traders". These actors' aggregate coffee from small farmers and sell them either to BCU or to private companies. These arrangements often leave farmers feeling "out of the know" or otherwise manipulated. One farmer expressed his distrust of the community traders:

> *The traders don't tell you the real price they sell coffee. They come and tell you they are selling for a certain price and you as a farmer sell at a low price, but they are going to sell it for a higher price.*

Some however, express positive feelings towards privatization and the freedom it affords. When asked about the impact of Museveni and the privatization of the coffee market, one farmer asserted that it was positive, *"the regime has given them authority to look for themselves for a market and sell their coffee"*. For some, privatization may still yield higher prices for their coffee, but for many small producers, predatory pricing and a lack of options render the dream of a competitive free markets moot. It is unclear whether those supporters of privatization own more land and sell more coffee than those who oppose privatization.

Community traders have adeptly identified a key problem for many farmers wishing to sell their coffee, transportation. Under the cooperative system, coffee sales occurred close to home. While transportation likely posed issues to those in the steepest terrain, community members reliably sold in their villages. Now, coffee is typically sold outside villages in larger cities. Transport to private companies or to BCU is prohibitively expensive for small producers. No one in my sample has a motor vehicle and rely on hired vehicles, motorcycles, to bring coffee from their gardens into towns. Transport costs eat into the small profits they expect from the sale of their coffee. A community member said that many opt to sell to the traders because they, *"come up to your gardens and buy"*. While

addressing the concern of transport costs, community traders do not allow farmers an opportunity to negotiate a price.

Recognizing that farmers have few options beyond selling at their gates, community traders offer low prices to ensure their profits upon resale. Since there is no longer a published fixed price, price variation fuels farmers concern of being cheated. No regulation and incomplete information on the part of the farmer may lead to predatory pricing. One farmer was certain that, "*the traders will cheat you with a lower price when they know you are in poverty"*. This situation often occurs at the beginning of a harvest or in cases of unforeseen expenses such as death or property destruction. The centralized system of selling to cooperative societies, while having problems of its own, protected farmers from direct exploitation and offered predictability. A farmer I spoke with posed a typical dilemma:

> *Now, they may sell 1 kg and 1,000Ush tomorrow you hear it is at 2,000Ush. But you sold yours yesterday. But you sold yours and you can feel jealous. Why did I sell mine yesterday?*

The challenges of limited land:

Limited land availability presents immediate challenges to community members' attempts to escape poverty and to diversify their crops and income streams. It also impacts youth perceptions of coffee's opportunity in the future. Uganda's population is rapidly growing. Its population growth rate is among the highest in sub-Saharan Africa, a region whose own growth rate is the highest in the world. Historically, male community members in Bududa divide their land holdings between their sons; as one farmer states, *"parents give their portions to their sons so that is how land becomes small"*. As population increases, inherited plots of land become smaller. Outside of this custom, purchases within the Bududa district are

competitive and fleeting. Small plots of land drive patterns of agricultural intensification and the desertion of coffee as a profession.

As plots of land become smaller, farmers increasingly decide to engage in continuous production of food and coffee crops rather than fallowing some portions. Land fallowing (resting) reintroduces the depleted nutrients that result from agriculture. Researchers find that benefits to, "fallowing are to maximize soil water storage through improved water intake… [and] maximize plant nutrient availability; minimize soil erosion hazards; and minimize energy and economic inputs" (Greb 8: 1979). Many participants noted that the practice, once possible in the past, no longer occurs. Many spoke of overcultivation patterns which neglecting fallowing. Diminishing land plot sizes are drive these overcultivation patterns as farmers attempt to optimize their plot. A community member explained overcultivation patterns:

> *…overcultivation of the land, [is] why the land lost its nutrients. In the past, they could cultivate the land, plant crops, then after harvesting they leave that land for two or three years without planting anything. But now, people are planting every time [annually]. That's why [soil] nutrients are depleted.*

Less clear from the community members' statements is the impact that limited land presents to raising livestock animals. Many community members raise animals (cows, chickens, etc.) for food. Often, farmers hope to acquire these animals after a particularly good coffee year, when money is more plentiful. Asked what he does with the proceeds from coffee, a farmer said, *"he buys some cows and some pieces of land. When money is short, he may sell some of the cows he bought last season"*. Importantly, livestock act as a de facto savings

account or insurance policy. In periods of economic boom, community members purchase livestock, selling them if money becomes scarce. The same farmer described how he acquired his wealth, *"he began by rearing some hens, after hens he sold them and then got a goat… after that he got a cow…when the time reached of harvesting, he sold the cow and got himself into buying small quantities [of coffee]"*. Livestock rearing is an important mechanism for gaining wealth that may be threatened as land availability diminishes.

In Bududa, cultivated grass is often fed to livestock animals. Growing grass in fallow fields serves the dual purpose of providing sustenance for livestock and replenishing soil nutrients for future agricultural endeavors. Though not directly addressed in interviews, limited land seems to impact an individual's ability to harvest grass to feed livestock. The inability to leave fields fallow may jeopardize a community member's ability to raise livestock and threatens their soil's health. A farmer I interviewed explained that fallowing her land is no longer possible:

> *In the past after harvesting, she could leave her land to rest of sometime and bring this grass to grow. After that she could go dig. But right now, you cannot leave your land to rest. The land now needs fertilizer because there is no way it is benefitting from the grass that they used to do.*

In the absence of fallow land "recharging" soil nutrients, fields generally yield less coffee or other crops. Given the threat of scarcity, some farmers reduce their coffee planting to prioritize food production. An older farmer fears, *"[limited land] will be a problem. They [young people] are going to lack land to acquire. They will not be growing coffee with limited land… [coffee production] will decline"*. The inability to engage in coffee, in favor of producing strictly food crops, handicaps community members' ability to obtain money. Though hurdles to the realization of economic growth are discussed above, the crop offers a *rare* path towards prosperity for an individual. While reducing coffee production is a blow to income, it is an

intuitive choice for a family who is hungry. Asked whether, when a family or household is hungry, they should prioritize food or coffee farming, nearly all participants said a family should do both. If unable to do both, they must prioritize food crops. One cannot eat coffee and cannot wait a year to eat. The family chooses to lose the battle (not gaining income with coffee) to "win" the war (avoiding starvation).

Relatedly, farmers described improper or suboptimal crop mixing practices associated with limited land. Farmers say that certain soil in the region is better suited for coffee or for food crops. A community member explained that, *"some farmers up there [situated higher on a mountain], they may be with 2 plots of land. One plot is strictly for coffee, one is strictly for food crops… [but] she also has limited land, so she has mixed in coffee, bananas, and maize"*. Facing land pressure, this woman knowingly cultivates crops in suboptimal soil conditions. Just as the necessity to constantly produce discourages farmers from leaving their land fallow (for fear of forgone income), farmers with small plots of land can no longer abide by tidy distinctions about optimal plots on which to produce coffee or food.

Limited land contributes to poverty by constraining a farmer's option set. Often a farmer loses the choice to practice land fallowing and must engage in continuous, intensive production. Regular cycles of crop rotations, fallowing, or optimizing plots for the production of food or coffee are practices few are able to afford as their absolute land area diminishes. Livestock rearing becomes more difficult or impossible, disallowing participation in the important wealth accruement strategy. Participation in coffee cultivation, the most prominent path to financial security in the region, requires land. As

new farmers butt against this land scarcity, many will be unable to partake in coffee cultivation. Importantly, youths' interest in coffee may wane, given limited land availability.

Perceptions of climate change:

Climate change is absent from most community members' vocabulary. Some use global warming but the majority comment exclusively on the "changing weather". The increase in weather variability poses significant stress on farmers and their ability to obtain and predict strong yields. At the time of this study, the area was in a prolonged dry period. Nation-wide, droughts, which are occurring more frequently due to changing climate, caused a 20% decline in coffee production during the first quarter of 2022 ("Uganda coffee exports plunge 20% in February as drought cuts yields" 2022). Questions about climate change probed participants to comment on their current situation, while also reflecting on weather changes over decades. As will be shown below, participants' perception on the cause of the variable weather varied greatly. Some implicated global warming and deforestation while others asserted that the reversal of climate changes is already in progress.

Farmers in Bududa follow the weather intimately. Peak coffee production requires predictable patterns of rain and sun. An experienced farmer explained, *"coffee needs both rain and then sunshine. That this rain helps it grow well. And expand. When it expands sunshine helps it produce more fruit"*. But now, rain comes erratically. Where March and April historically held high precipitation, heavy rains now occur in May (sometimes arriving as late as June or July). These periods of predicted rainfall become longer and less certain. If a farmer plants too early, coffee seedlings will wither and die. Too late, they will be inundated with water

and wash away. The opposite holds true; excessive sunshine and heat at disadvantageous points of the growing cycle prove disastrous.

Some farmers said they identified erratic weather as early as 12 years ago. Most participants said a change in weather occurred in the recent past (within the past 5 years) This is a vital, exogenous variable affecting harvests and an individual's income, yet consensus on the onset of the erratic weather does not exist. Confusingly, consensus that there *is* a phenomenon occurring also does not exist; one farmer said, *"no, the weather is usual. There is dry season and then wet season, they have never changed"*. It is unclear why these weather patterns evade some participants' notice. While pinpointing an exact time frame of increasing rainfall volatility is difficult, according to the World Bank's Climate Change Knowledge Portal:

> Precipitation for the country is highly variable, but overall, Uganda has experienced a statistically significant reduction in annual as well as seasonal rainfall. Seasonal rainfall for March, April, May has been most affected, with decreases of 6.0 mm per month, per decade…While trends in extreme rainfall conditions are more difficult to define due to the lack of data and seasonal variability, droughts have increased in Uganda over the past 60 years. Specifically, *over the past 20 years* (World Bank Group 2021, italics added)

Education on climate change is very limited among farmers in Bududa; Understanding of the true causes (like burning fossil fuels and the associated greenhouse gas emissions) is absent. No participant mentioned potential causes of climate change that originate outside of their immediate vicinity. Most identifying local causes as drivers of erratic weather; chiefly deforestation. Logging and timber for construction is lucrative business. An important site for logging and deforestation in Bududa is the Mt. Elgon region. Though a protected national park, many illegally enter and cut trees.

One respondent expressed certitude that deforestation in the region was the direct cause of variable weather, he also disclosed that he engaged in the illegal trade. For him (and most), the short-run benefits outweigh the potential future weather variability. Asked why he engages in the practice, he said, "*for money, people are hungry…even me, I cut the ones up there… and I sell it for money".* Another agreed that the illegal cutting happens, *"because they are in poverty…also they cut down trees to burn charcoal".* This illegal cutting in the national park is seemingly done out of desperation, rather than wholesale enrichment. In addition to selling timber, many illegally plant coffee in the national park. The virgin forest land is fertile, having avoided cultivation and the use of chemical inputs.

The government of Uganda has embraced aggressive policies and publicized campaigns to mitigate the illegal cutting in the Mt. Elgon region. One farmer assured that, *"government came in and it stopped and now they are planting trees. That's why you see the climate changes are coming back".* Farmers' belief that conservation strategies from the Ugandan government will successfully reverse the variable weather associated with climate change likely belies the scale of climate change and erroneously centers these efforts ahead of the necessary global, structural changes. Without full awareness of the scale of the issue, and potential future agricultural scenarios, community members may not implement best practices of climate smart agriculture.

The identification of deforestation as *the* cause and driver of changing weather pattern seems to have its roots in the government. Two responses from community members are representative of how many feel, *"He hears government saying that people are over-cutting down trees"* and, *"they hear that is because many people have cut down trees. That's why weather has been*

changing". Most participants' knowledge of deforestation and climate change comes entirely from the government. The government messaging seems to have percolated effectively. It very well may be in the government's interest to foster this false narrative. By presenting one-sided, unnuanced information on the problem, and purporting to have successfully reversed its impact, the government evades further calls for action and is credited with solving a crisis. Through the anti-deforestation campaigns, the government protects the Mt. Elgon National Park from further degradation; this, alone, may represent *the* goal of government education on climate change.

However, one should not take the effectiveness of the campaign to mean farmers internalized or believe it. In later interviews, I refined my line of questioning on the topic to ascertain *personal* beliefs. After rephrasing my question, I received responses like the following: *"he hears that it is because of deforestation. People are cutting down trees. That is why weather has changed",* as to his personal beliefs on the topic, *"for him, he believes it is God's plan"*. This response further suggests that some community members may not understand the larger, global nature of climate change.

Changing climactic conditions introduce uncertainty into a farmers already precarious life. In addition to adding mental stress, the impacts of "missing" the proper (but ever-changing) window to plant are devastating. If that is not enough to spur government action, the Ugandan government's 2015 Economic Analysis outlined the mechanisms by which climate change may reduce coffee production capacity in the country by 50% (Nsubuga and Rautenbach 2018). In light of the severe predicted decline coffee revenue for the government, their educational strategy seems ill-suited.

The education *seems* to provide incomplete information on the causes of climate change, favoring the unnuanced assertion that deforestation causes changing weather. This presents a dilemma. Deforestation doubtlessly is a very important contributor to worldwide climate change. Campaigns to reduce deforestation and unauthorized uses of public space are admirable. But assigning total blame and placing the onus on vulnerable, poverty-stricken farmers wrongly encourages a false sense of agency. Without coordinated efforts by Uganda, and the world, climactic conditions will likely increase in variability. Community members in Bududa, at present, are not adequately armed with the information to protectively adapt to changing weather.

Fertilizer use:

Facing increasingly smaller plots of land along with bouts of unpredictable weather attributed to climate change, some farmers perceive fertilizer as a panacea. With its use, they can (temporarily) ameliorate limitations posed by small plots of land and shore up variable yields from changing weather conditions. In the view of many participants, fertilizer offers desirable stability and predictability in the short run. This perception has its origins in the government's promotion of fertilizer. Community members held the most closely aligned experiences and opinions (consensus in other topic areas varied widely) regarding fertilizer use. In recent years, fertilizer became prohibitively expensive for many. This occurred alongside fertilizers increasing importance given diminishing land availability and changing weather. Perceptions regarding the price increase varied widely. Also, many farmers expressed confusion and conflicting knowledge as to how, when, and why to apply it.

The rising cost of fertilizer leads to confusion and suspicion among farmers. Some implicated the rising cost of gasoline and thus transport costs. Some theorized about predatory pricing from distributors and supplies. Since the weather was especially unforgiving in a particular season, *of course* vendors would raise the price to gouge needy farmers. In other accounts, the government raised prices on fertilizer to hamstring farmers ability to attain more power. On community member said that government:

> *Stopped [subsidizing fertilizer] because it was feeling like the local farmers would be rich by then… If they are rich they can't be controlled by the government…It wants to control them.*

Perhaps closest to the truth is the impact of major global conflict in large chemical producing countries. One participant said that the Ugandan government offers the Ukraine/Russia conflict as *the* explanation of rising costs. Of the 3 farmers who identified Ukraine/Russia as a potential cause of the increase, none knew the cause of the conflict and only offered speculation as to why or how the phenomena related. Prior to the conflict, fertilizer was expensive but not prohibitively so. Of the rise in fertilizer price, a community member said:

> *I don't know where it comes from, we are told some of the chemicals that they put in fertilizer comes from Ukraine. And now there is a battle between Ukraine and Russia. So, the transport of those chemicals to Uganda is a bit difficult. So, it has affected. Before the war, the fertilizers were at a low price, an affordable price.*

Education about fertilizer application is uneven. Participants expressed confusion about where fertilizer should be applied and in what quantities. Few could identify *what* fertilizer does to improve yields. A result of living and eating by their (usually small) plot of land, many competently and assertively claimed to know what the soil needed. Multiple participants, though, reported that *some farmers* did not possess this awareness. They posited

that many apply the wrong type of fertilizer to their soil. An older farmer described how some less knowledgeable farmers fall victim to usage of improper fertilizer:

> *Sometimes, them as local farmers, they may purchase fertilizer which is not for coffee. For you, you have not been told which fertilizer you are supposed to use. You just go to the shop and say I want fertilizer and they give you but that type of fertilizer is not good for coffee. But you bring and then you apply, such fertilizer can make your coffee to dry up.*

One farmer asserted that, *"someone who is not trained in using fertilizer will not use it as required… they use it in excess."*. He showed a bag of fertilizer, embossed with lengthy instructions, in English with scientific jargon. The over-application of fertilizer leads to a phenomenon participants referred to as "burning the soil". Several participants spoke fondly of a time in the past when agricultural extension workers came and applied fertilizer and sprayed pesticides *for* the farmers. In this scenario, those with the most sophisticated knowledge of science and chemical agrology apply the chemical inputs, presumably in the proper quantities and in the proper sites. Rather than educating and encouraging independence, the government fostered dependence on its (ultimately volatile) support. The longevity of this program presents its downfall. The extension workers did not come back regularly, fertilizer application became haphazard or stopped altogether, and cycles of a chemical treadmill began.

Chemical treadmill or "addicted land":

Similar to climate change, farmers clearly notice a *chemical treadmill* effect on their soil resulting from fertilizer use but do not use employ the term. Nearly one-third of farmer's expressed sentiments that fertilizer harmed and degraded soil or otherwise initiated a need to constant or escalating use of fertilizer. By applying fertilizer, a farmer diverges from some important natural processes. One may find that soil that once yielded coffee in

spades is producing less and less, even with constant application. This, in a nutshell is the chemical treadmill.

Many participants described challenges in obtaining and regularly applying fertilizer, given the price increases discussed above. Agricultural extension workers taught farmers how to use fertilizer, even applying it directly to farmers' land in the past. As that government support ended, they began purchasing fertilizer themselves. As the price increased (participants described this in the short-run, over the last 3 to 5 years) farmers began missing applications and harvesting less coffee. For those able to afford fertilizer, many applied it irregularly. This trend continued beyond coffee. One participant notes that her bananas and other food crops:

> *[They] are not doing well. The reason is that [she is] not supporting those food crops with fertilizers… The price just increased of recent, and it went really high to the extent that they were unable to afford it. The crops did not do well.*

This trend involves a shift away from traditional use of manure and natural fertilizers, towards an acceptance of chemical inputs, which ultimately lead to less resilient, fertile soil. Describing fertility prior to the government support of fertilizer, the same farmer quoted immediately above said that, *"in the past they used to use the land without fertilizer but at the moment it is a must that you refertilize it."* This dependence on chemical inputs leaves farmers vulnerable to their price volatility while weakening their natural stock of fertile soil. Farmers perceive the use of fertilizer as inhabiting growth in the long run in both their coffee and their food crops. This puts them at odds with extension workers who historically promoted fertilizer's use. A community member described the cycle of fertilizer application:

> *When you use local manure, and you can apply and then wait a long time. The moment you apply fertilizer, and then you don't again you cannot get more production again. It will kill it off. You have to do it regularly. Even if you plant another thing and do not put fertilizer, the crops will not grow very well. Definitely.*

Interestingly, many participants said using fertilizer does not harm the soil. However, nearly all ceded that once you apply fertilizer, you should or must use it every year. A community member explained her soil's dependence on fertilizer, "*soil has lost its nutrients that's why it needs fertilizer…. In the past they could grow crops without fertilizer but now they cannot"*. An older farmer put it simply, *"The land becomes addicted to fertilizers"*. Why, if a farmer can expect this dependence, would they *begin* using fertilizer? In response, a farmer who acknowledged that fertilizer fosters dependence on its continued use said, "*The way it shoots up feet when you put there. It grows faster"*. Many of the farmer *know* that using fertilizer may not be in their best, long-run, interest. However, driven by the limited land, poverty, and unpredictability, they take the risk to achieve a few strong yields. Fertilizer application becomes a way to maintain yields or slow the decline on yields, rather than supplementing or enhancing them. A community members explained this dilemma:

> *When you've applied, the next season you leave without it, it cannot grow well…You cannot say 'you will not apply the same'. You must apply the same to keep the soil fertile. The moment you leave it [unfertilized]… Coffee can become yellowish and…dry.*

There is some evidence that agricultural extension workers began changing recommendations vis-à-vis fertilizer use. A few participants noted that the advice now prioritizes local manure in place of fertilizer; a farmer saying that, *"technicians are now telling us that local manure is better than with fertilizers"*. In another interview a farmer posited at the shift in teaching, *"when you overuse fertilizer it makes the soil to evaporate, and it becomes weak… That's why they teach people to stop using it"*. It is unclear whether this shift in farmer education is in response to the lack of availability of cheap fertilizer, or in response to a chemical treadmill

effect of fertilizer. Regardless, this advice finds mixed agreement among my participants. While many are hesitant to begin using chemical fertilizers if they had not to date, to those whose land is accustomed to its application, there seems to be no escape. Some were frustrated at having been taught one thing for years that winded up handicapping their production potential.

Fertilizer, as used by the Bududa community members, acts to shore up harvests and predictability in the short run. Those who discontinued its use, typically in response to its price increase, reported that their harvest became more unpredictable. However, this particular coping mechanism of fertilizer application, may *create additional boundaries* on future choices. They realize that irregular application reduces their yields. They know, to some extent, that soil nutrients deplete faster in this style of farming. Critically, the government's promotion of fertilizer (by offering it free and providing frequent trainings) engaged farmers in a win-less situation. Farmers became beholden to chemical inputs, heightening the precariousness of their livelihood once prices rose. Poverty compounds the issue by disallowing large portions of the community from applying fertilizer with the regularity necessary to stabilize yields over years. Absent stable yields and incomes, farmers will not be able to plan applications appropriately.

The topic of fertilizer pertains to other subjects of importance. Its pervasiveness in my interviews cannot be overstated. I discussed how the intensification of fertilizer use (when available) closely relates to an individual farmer's land holdings and their desire to ameliorate the unpredictable weather associated with climate change. Young people, observing the chemical treadmill, make decisions to reduce agricultural activity. An older

farmer said that, *"50 years back, coffee did not take much care. Now, it takes care. More than it used to. That is why young people are hating it"*. The increase in temperamentality and reduction in yields dissuade youth from pursuing coffee.

***Seedlings**:*

Many participants engage with a government program that supplies farmers with free coffee seedlings to promote the growth of coffee. In short, farmers apply through local government for a certain number of seedlings. The request is forwarded to a local, UCDA (Uganda Coffee Development Authority) certified seedling grower who processes and then fulfills the request. Once the grower provides proof that farmers received the seedlings, he or she is paid by the government. Community members raised important issues and questions regarding this program. Community members raised important issues and questions regarding this program, including the type and quality of the seeds distributed.

A small minority of participants made the accusation that government-provided seedlings are not arabica. These individual farmers express intense suspicion. Some claimed the seedlings were Robusta (a lower quality, lower priced variety of bean) masquerading as Arabica. Robusta coffee's poor quality typically relegates its use to instant coffee mixes, thus garnering a very low price. Low price, unfamiliarity with growing the variety, and poor suitability for the soil conditions makes the seedlings undesirable. A farmer explained:

> *As a whole it is mostly growing Arabica. But government may give out seedlings that are not Arabica. They are Robusta. The soil in Bugisu [a region within Bududa] doesn't support the growth of Robusta very well.*

Most commonly, participants asserted that the government seedlings were raised with and thus require fertilizer. To regular fertilizer users, this may not represent a major problem.

But, for the majority of my participants who cannot reliably afford and apply fertilizer, this is damning. The seedlings are accustomed to fertilizer, on their own version of the chemical treadmill. Without subsequent application, the seedlings do not grow to be coffee trees but rather wither or do not produce fruit. One farmer speculates, *"those seedlings from government are used to proper care. They may use fertilizer and spray them while they are young on their nursery beds and if they supply them to you, you should do the same"*. Without knowing the seedlings *were* fertilized and poor education on the mechanics of fertilizer use, farmers face hurdles to the utilization of this government program.

Even though provided for free, these seedlings maintenance and upkeep require additional support that many cannot afford. Therefor the program positively impacts a fraction of its intended audience. Some participants now refuse government offers of free seedlings. They engage in their own seedling production, a tedious but simple process. For some farmers the assurance that no fertilizer enters the process is motivation enough. A farmer asserted that home-grown seedlings, *"you make are used to your soil. So, you don't need to over-care about them. You can just grow them"*. Farmers expressed frustration at the inadequacy of the government seedlings:

> *They need fertilizer! Even when they are preparing on the nursery beds, they apply fertilizer. That's why when you receive them even if they are free, you need fertilizer to apply. If you don't apply, they will wither, and you will not even get a single seedling surviving.*

The "choice" to use fertilizer, if you want to reap the benefit of free seedlings, is no longer a choice. By introducing fertilizer in the raising of seedlings, government officials influence farmers to its use in growing their mature coffee trees without extending comprehensive education. A woman who beds seedlings for UCDA was interviewed. She denies applying fertilizer to the young seedlings she raises. According to her, she supplies fertilizer-free

Arabica seedlings in accordance with the UCDA standards. After asking how many others supply government seedlings, as she does, I asked if any of those seven apply fertilizer, *"No. They get cow dung and then they dry it… So, they get a seedling from the nursery bed and then they put in cow dung… those that work with UCDA do not put fertilizers in their seedlings"*. This woman's primary worry surrounds UCDA ending the free seedling program, the source of most of her income. They told her that they will discontinue it in the coming months or years.

Despite the woman's assurance that *she* does not use fertilizer, many farmers are hesitant to accept the government-provided seedlings. They experienced failed seasons after relying on them. This analysis of suspected fertilized seedlings importantly informs how government support is utilized by community members. It is emblematic of the next discussion on government interventions. Seemingly well-intentioned, many do not meet farmers "where they are". They are timed improperly, reach farmers haphazardly, and most critically are being hallowed out or discontinued.

A farmer who accepted seedlings in the past but now grows his own seedlings said:

> *I get the ripe fruits and then ferments them [myself]… now that one that is small there [pointing to a small coffee tree], I got it from government and after some years it is still small. It's not growing.*

Government support:

The government of Uganda supports and encourages farmers to grow coffee in several ways. According to the Uganda Coffee Development Authority, and many participants, the government's interventions to promote coffee benefit farmers, by providing income, and the government , by capturing tax revenue and boosting GDP. This support, as noted by my participants includes the provision of seedlings (detailed above), chemical inputs, and agricultural extension workers who train farmers on effective, efficient cultivation methods

like pruning and planting in straight, orderly lines. Notably, community members in Bududa relayed that this support is distributed unevenly, totally absent, or poorly received in the case of the seedlings. Responses regarding government support oscillated between those who regularly received support and thought highly of the interventions, and those who had simply never benefitted from or even heard of the programs.

Community members commonly identified a decline in government support in the past (recently and over decades). A legacy of privatization, deepened by supply chain and financial issues associated with COVID-19, the recognition of less robust support is near unanimous. Some perceive this to be a short-term issue related to the challenges stresses to government in the recent past. Others attributed this decline to President Museveni's assumption of office which ushered in the period of intense liberalization of the coffee market. Both quotes come from interviews with community members:

> *They give them fertilizer, apart from this year…they have not done those things because of the economy which is also affecting the government. So, they are not in the position to give them those things that they used to… They claim, they said that the covid 19, which affected the governments. Those chemicals which they used to process the inputs did not come in time. So, it was because of COVID-19.*

> *Museveni doesn't want to support local farmers; he doesn't want them to gain from their farming. When we were very young, we heard the government used to bring support and follow up to the farmers. They gave plants, fertilizers, and then they came to buy. At a good price, the government. The government before was more serious [about supporting coffee]. Because they followed up with the farmers. They came to spray the crops, without fee. They [farmers] were even getting bonuses. I don't know why it changed. Maybe because of changes in politics. The economy?*

To many the decline is explained simply; it is the result of small- and large-scale corruption. Participants laughed when asked if corruption exists in Uganda. Politically powerful or otherwise rich people assure their access to government supports by restricting it to others, even their own constituents. According to a participant, local farmers, *"hear that government is*

giving out other inputs like seedlings, fertilizers, etc. They, who are on a low level, they don't see. The government doesn't follow up to see where that fertilizer went". Even if the government of Uganda adequality supplies coffee support, and many farmers disputed this, actors at the local level may interrupt the flow of support to local, small-scale farmers. While statistics on the *scale* of corruption are notoriously difficult to compile, it is clear that community members in Bududa perceive it as a major issue. An older community member said:

> *Government gives support but for the most part they give it to farmers who have shares in the government. Big leaders in the government… When they say there is support available, you should go there with some big money.*

Besides simple graft at local levels, others accused the government of *not wanting* to support farmers; If local farmers become rich, or even financially secure, they are more difficult to control and manipulate. Many used the word *control* to describe the government's ulterior motives. This position, that the government, in fact, does not want local farmers to grow coffee effectively may lead to disillusionment of would-be coffee farmers. For those to whom support does not flow, other options exist. Support comes from the private coffee companies discussed above, Mutindo, Khankaline, among others. These companies provide inputs and tools (fertilizer, wheel barrels, etc.) to some in efforts to secure their business in the future. They may offer bonuses or second payments months after the original purchase to entice farmers loyalty. A farmer explained his perception of the causes of corruption:

> *They want to cheat the local farmers. They don't want these local farmers to produce too much coffee… government wants to rule poor people. That's why they don't give them enough support so they can get enough resources to be with money.*

Agricultural extension work, as an institution, has the widest support among my participants of any government support. To those who attended seminars or have heard that seminars regularly run, there is faith that the information provided it useful. By

definition, these services aim to supply actionable information to those unfamiliar with technical jargon; a community member happily reported, "*You go to them, and they can measure your soil and then they'd tell you your soil needs this amount of a certain fertilizer"*. This firmly held confidence that the information is useful and correct can play a crucial role in the future of coffee education and support.

However, there was a wide spread of answers to the frequency of seminars. Some asserted that extension workers come once in a year, while others claimed they attended seminars half a dozen times in a year. Others had *never* heard that the government plays *any* role in supporting coffee. Many had been to or heard of the seminars. This finding raises questions. Are the meetings poorly publicized? The ease with which physical incentives (like bags of fertilizer or tools) are withheld should not be an issue; it is difficult to restrict access to public meetings. Additionally, the research area is a small village where such disparate knowledge of government support was unexpected.

Challenges to the future of coffee farming in Bududa:

My analyses also reveal that the future of coffee in the Bududa region, cannot follow its current trajectory. Changing climatic conditions along with a decline in government support increase uncertainty in production. The engagement of youth in coffee farming is fraught with concerns of poverty, limited land, and diminishing confidence in the crop to provide a stable future. And yet, despite concerns about the future of coffee production in the region, all but one of the farmers surveys as part of this study said emphatically that they would never stop growing coffee. This section focuses on my participants' stated opinion on *their* future in coffee and the future of coffee in the Bududa region. The

discussion section explores how these perceptions may inform consideration of coffee's future in Uganda and in similarly situated countries.

Stop coffee?

Tradition binds many to coffee farming. Over three quarters of participants learned to grow coffee from a parent or a grandparent. There seems to be a desire to continue in the footsteps of those who participants admire. A common sentiment was that coffee growing is the tradition of our grandfathers/ancestors, who are *we* to decide it is not a good enough lifestyle for ourselves? One older farmer said, *"at my age I cannot stop…It is traditional because I learned it from my parents. My grandparents."* Alternatively, there was a sense of inevitability. Alternative career choices are scarce, especially for adults without education. When asked what his educated children will do after completing school, one famer said, "*I think they will be farmers because I am a farmer. They get it from the father. As we all did it. Most of us we all copy from the father"*. This tradition seems to span further than familial groups. Participants identity as a member of the Bugisu region led a community member to say, *"No I cannot stop, because coffee is the backbone of Bugisu as region"*

Many expressed hope and confidence that current challenges notwithstanding, coffee will always return to a high price/desirable profession. While it is unclear whether the liberalized system will allow farmer to reap the profits possible in the past, farmers maintain faith in higher future prices.

Here, participants are identifying the pendulum swing of international coffee prices. International glut and scarcity cause a seesaw of prices. The ability of some farmers to dry and store harvested coffee, which requires access to expensive equipment (coffee grinders)

and dry storage space, means they can store harvests until a time reaches that the price increases. A farmer with access to grinders described a way to cope with low prices, "*when the prices are low, he can pick it and process it, dry it very well and keeps it until when the price goes high then he can sell."* Even those who cannot store coffee for sale at a later date hope that next year, or the following year, there will be a price boom. The overwhelming belief is that a boom season and favorable prices will be worth it in the end.

There was an unexpected ferventness with which participants responded to questions about stopping their coffee production. Asking if they would consider leaving coffee production seemed an affront to many. Even participants who were asked a follow-up question which qualified "even if the prices became very low?" did not waver in their fidelity to coffee production. Many answered similarly. One farmer vehemently said, "*No, not unless I die".* This seems due in part to positive associations with coffee and the income it provided in the past. A woman farmer said that since, *"Coffee has helped me, so I cannot leave it".* Another community member explained why he would never abandon the crop, "*coffee is what helped him get his children through school".*

Youth engagement in farming

All of my participants noted that youth are farming coffee less than before. To the majority of older participants this was the result of laziness, impatience, or the impact of social media and technology. Interestingly, many of the older participants *lived through* the shift towards privatization described above. One may expect them to advocate most fiercely for system reforms *so that* their children would engage in coffee production with more vigor. Only a minority of older participants noted that the proverbial deck is stacked against

young farmers entering the coffee sector; land and poverty notably limited one's option set. Additionally, the increasing in variability of harvests likely deters youth.

The youth in Bududa are not regarded well by their elders. Most noted that they are farming less than their generation because of their laziness. They do not appreciate hard work and would rather be idle. Some participants implicated parents who went "soft" on their children. Others blamed life beyond the immediate village, one woman told me that *,"They are very lazy, that's what I have to tell you… [they make a living] through dependence… they move to town and then they come back with smartphones. They don't concentrate"*. One woman said definitively that, *"those that aren't riding [motorcycles for hire] are stealing"*. Many older community members seem hesitant to extend the benefit of the doubt to youth who do not farm. A farmer said of children in the area:

> *His kids, they wake up at 5 in the morning and cut grass for their cows before school... This is not the case with other families. Some kids grow up and because they were not taught by their parents how to do hard work. That's why they will not do anything.*

One older participant admonished the impact that social media had had on the youth in Bududa saying that, *"[they] want to enjoy lives like Muzungus [outsiders or foreigners]"*. Older participants seemed uncomfortable that their youth imagine careers outside of agriculture. A woman farmer said, *"They go out, see a screen, and see how life is moving out there. Such and such parties have made them to go away from farming… in their generation they never used to party as much"*. Another farmer said that youth, *"admire life from outside the country and when they see that, they don't want to be dirty like the way he is. They want to look smart [clean, professional] all the time like people from other countries"*.

One may rightly assume that the older participants are being harsh on youth whose idea of a future no longer matches theirs. A handful of older participants acknowledged that the path they processed towards coffee was much different than that faced by youth today. The youth of today do not have access to the land that many older participants had. Without assurances of land (through inheritance), those youths with money purchase small plots of land, on which they must raise animals, grow food, and often, forgo coffee cultivation. Additionally, one must consider the impact of the loss of predictable prices and inputs once supplied by the government through cooperative societies. A farmer put it simply:

> *The generation is not farming much, they don't have land, they don't have money. They don't have time. They're looking for other sources of income. They look for greener pasture. They want to go work in office life.*

While some older farmers talked derisively of the youths' desire for quick money, surely a sign of impatience to them, others explained that poverty disallows the youth from the long-term investment of coffee. A father said of his son, *"he does not want a crop that will take a long time to yield… Motorcycles give a chance for sure money at the end of the day, coffee doesn't";* many youth ride motorcycles for hire, earning money immediately after their service is rendered.

Upfront costs (for land, seedlings, and fertilizers) present major challenges for youths entering the coffee sector. Those who want to begin farming must overcome these substantial barriers. At the same time, for many youths, coffee is an unattractive option; they want office work and jobs in urban centers. They want predictability. One participant thought that many of his community members have it wrong on the question of youth. Whereas his generation relied on the fixed price from government, "*Young people [today] don't want to engage themselves in growing because coffee doesn't have a fixed price. So they cannot grow and*

predict how much they will earn". Many older farmers grew coffee during *their* youth under a government's fixed price and support, without degraded soil, and with stable weather patterns. For today's youth, the path is much less certain, therefor making coffee farming a less attractive an option.

Discussion:

This analysis seeks to flesh out the connections between structural macroeconomic shifts and ground-level impacts. It is important to consider that for many agricultural commodities, especially those suitable for small-holder production like coffee, decisions whether to produce and how much to produce lie with individuals. Individuals with family histories and cultural traditions, unique financial concerns, and different ways of prioritizing their endeavors. The decisions are rarely made in strictly rational or self-maximizing ways. The decisions are the result of desperation, undesirable alternatives, and hope for the future. Perhaps the most interesting finding of this thesis is that despite the challenges addressed above, for those currently growing coffee stopping its production is not considered a viable choice. The section goes on to discuss the limitations of the present research project/design and propose future research.

"Coffee will die"

In light of the many challenges surrounding coffee production, what opinion do participants hold about the longevity of the sector? What will happen to coffee production in the future? Many responses bemoaned the lack of youth uptake of growing coffee. For others, limited land and the associated over-cultivation will spell coffee's demise in the

region. Few deny that coffee in the region is in trouble. Many are fearful that declines in coffee production in the country will lead to more intense and widespread poverty.

As the youth pursue careers outside of agriculture a father said that, *"coffee will not be here anymore…other countries will be growing [it] and Uganda will not be getting income]"*. Another older farmer asserted that when members of his generation die, *"coffee will die"*. Without the expertise of those with experience, young farmers will fail. Asked what will happen if a critical mass of young people begin working in offices instead of farming, a participant said that, *"coffee is going to reduce…[and] the country will be dead"*. For many, producing coffee in the Bududa region and in Uganda is a source of pride. Many cannot envision a scenario in which the crop does not dominate the economy and lives of the Ugandan people. Without coffee, according to many, there is nothing.

So, what can be done? To reverse or address some of these challenges, community members want government intervention. While land is extremely limited in the Bududa region of Uganda, land is plentiful in some neighboring areas. Another wanted improved infrastructure for processing coffee domestically, *"we need value addition for coffee. So, we could have our own small factories. You make a final product from it, you brand, and then you sell"*. A more complete, domestic supply chain may protect farmers from the pendulum swings of international commodity prices. One young farmer envisioned an activist government who acted in line with their *commitment* to coffee:

> *To improve the market, they need more land… maybe if they can transport to another area and grow coffee and have much…. There is enough land somewhere else, they should shift people to lands where coffee can be much. You would have no problems and production would be high.*

Older men, whose productive lives have always centered around coffee production seem bent on continuing in the sector, despite it becoming increasingly unrewarding. However, as the youth pursue other economic opportunities, Uganda, and the world, must reckon with the implications and shortcomings of the development model it has touted for decades. The modernization path, it seems, has slipped out from under those less-developed countries pursuing it. Industrial upgrading has not occurred. Put differently, no industrialized jobs materialized during the period in which Uganda pursued their comparative advantage in primary commodity production. Those developed countries in the global north invested the proceeds from comparative advantage production and created industrial jobs, such as factory work. For Ugandans, proceeds from coffee have not proved sufficient to spur internal job development. A rung of the modernization ladder has vanished.

As liberalization promoted the shift towards a privatized coffee sector, patterns of entrenched gains and increasing vulnerability emerged. As my participants noted, with the demise of the egalitarian cooperative societies, farmers began selling to private, profit-driven entities. These included middlemen traders and private corporations. Under this scenario, the economic benefits to coffee production increasingly accrue to individuals with capital and to corporations. This arrangement ensures that core countries maintain access to cheap coffee from Uganda. These corporations engage in value-addition processes such as cleaning, sorting/grading, and packaging coffee for export. Concentration of corporations renders a farmer's ability to wrest additional profits or engage in value-addition unlikely.

Almost all of the challenges that the community members of Bududa address in interviews stem from the shift in macroeconomic policy discussed above. As Uganda, and the world, undertook liberalization in the coffee sector, austerity measures restricted government involvement in agriculture. Participants resoundingly spoke of a withdrawal of government support, both recently, and upon the demise of the cooperative society system. Community members addressed limited land and erratic weather patterns. Presumably, agriculture in the region would butt against these realities despite macro-economic shifts. The government may be the best actor to supply solutions to some of the environmental issues facing farmers but cannot engage effectively as a result of both austerity measures and privatization.

The challenges identified and explained by my participants limit their choice sets. Their ability to direct decision making about their futures is bounded by local factors such as limited land and deteriorating soil fertility. Regional weather patterns increasing variability reduce the predictability of income and yields. Decisions made by their country's government, such as minimizing education on the root causes of climate change or providing seedlings which require fertilizer application, impede their ability to thoughtfully pursue adaptation strategies. Importantly, poverty reduces farmers' ability to call for systemic changes or economic reform. Survival must precede reform.

This precarious situation at the individual level offers a parallel to the position of less-developed countries on the world stage. Poverty, or the pursuit of increased government revenue, prevents less-developed countries from "shaking the boat" or calling for reforms to the extractive, capitalist system which underbeds unequal exchange. Decisions made by international financial institutions in pursuit of free trade limit Uganda's ability to provide

support to their farmers. The global north strips less-developed countries' capacity to self-determine and create futures conducive to economic well-being.

Research limitations:

The method for data collection in this study, qualitative interviewing, poses limitations. Convenience, snowball, and targeted sampling methods meant that I exerted minimal control in widening my pool of participants or diversifying it. My translator identified participants based on his relationships and knowledge of the region's inhabitants. Beyond asking to speak to younger farmers or a coffee trader on certain days, I exerted little control on the demography of my participants.

Ultimately, my sample includes 24 men and 8 women. The average age of male and female participants was 37.7 and 53.3 respectively, the average age of all participants was 50.9. While the age distribution of this study is conducive to questions about long-term changes in my areas of focus, it certainly leaves my discussion of youth perceptions of coffee production underdeveloped. Uganda is currently exhibiting a "youth bulge" with more than 75% of citizens under 30 years old (Uganda Bureau of Statistics 2021). Analyses on the future of coffee in Bududa and my participants outlook center on the perceptions of a generally older generation of farmers.

Being a white foreigner may have influenced the content of my participants responses. Every effort was taken to ameliorate the impacts of my identity upon participants. I, along with Lehigh University's entire research team, adhered to social/cultural norms of dress and behavior and participated in community activities during our time in Bududa. We

volunteered at after-school activities like sports practices and literacy events. The use of a locally respected translator, who initiated and remained present during each interview, likely put wary participants at ease and allowed for more open and honest responses.

Future research:

This disparity in gender of my participants raises some questions; are there fewer women farmers? Do women grow coffee less? Are conservative gender norms discouraging women from speaking with me? Because the average age of women in my sample is over 10 years younger than men, this may mean that many women participants had little to no experience farming prior to privatization. My participants skew towards older male farmers, many of whom farmed prior to the demise of the cooperative system. Their recollection of ample government support and price stability may inform their contributions and determination to continue farming despite mounting challenges.

Future research seeking to shore up understanding of the dynamics explored in the current paper should attempt to address limitations discussed above. These endeavors should seek to diversify their participants in respects to gender and age. More, and older women along with younger farmers of both genders may yield a more nuanced picture of the ground level impacts of the abovementioned phenomena. My research question would also benefit from a wider breadth of participants in different areas of the local coffee sector. For example, I was not able to interview any employees of the primary companies in the region or with government officials.

With any qualitative study, this project explores the situation in one region of one country, the Bududa district of Uganda. While discussions and analysis include research about the past history of government intervention and posits future scenarios, it centers on (and can only, with authority) describe the situation during the summer of 2022. To ascertain whether these findings *may* be generalizable to other similarly situated less-developed countries, a similar research design should be employed in other regions and countries. Given that many coffee producing countries are subject to the same development doctrines and liberalization/privatization schemes as Uganda, I expect the broad findings to be similar.

This study was unable to delve deeply into questions about youth employment outside of coffee. Given the age constraints of my participants, many speculated at what their children would pursue or what they knew that young people engaged in. Research into the prospects and experience of those youths pursuing careers outside agriculture may illuminate their attitudes towards coffee.

Conclusion:

To conclude, I return to Michael Pollan's assessment that "our everyday urban lives" and the "remote and sleepy rural scene" of coffee producing countries *do not exist without each other*. In fact, <u>they cannot</u>. These relationships of unequal exchange are vestiges of colonialism upon which the capitalist system is built. Patterns of the extraction of monetary value and natural resources, along with the displacement of ecological degradation have condemned many coffee producing countries in the global south to stymied development. The promises of modernization theorists, that neoliberal reforms and SAPs will lead to

development, of present, are unrealized. The opportunity for Uganda's small farmers to harness free trade to their advantage is waning, if it ever existed.

Pollan goes on to say that our taste for coffee has reconfigured both the landscape of coffee producing countries and "the lives of the people who tend it" (Pollan 156: 2021). Uganda's export orientation resulted in a specialization in coffee which may ultimately cause a large-scale reduction in soil fertility, impacting farmers' ability to grow food crops. In the Bududa district, the very land upon which coffee can be grown is becoming increasingly scarce and population increases. Small coffee producers are beholden to private, for-profit companies following the privatization of the coffee sector. Factors like trade liberalization, SAPs, and climate change work to limit the choice sets of small farmers. To world-systems theorists this comes as no surprise. The exertion of control and relocation of burden, social and environmental, upon less developed countries allows the global north to reap benefits which they did now sow.

The legacy of austerity measures and restrictions on government interventions lead to the poor provision of government support to agriculture. Even if the government changes tack and begins robustly supporting farmers, farmers will likely meet the support with skepticism and caution. Given that strong central governments may be best suited to address impacts of climate change, the distrust many of my participants feel may muddy the path going forward.

I hope that I have effectively presented this analysis as a multi-scaler story of *control and choice*. Those who have it, those that lack it, and the mechanisms by which Uganda and its

farmers are allowed to exert little of it. The agency with which Uganda pursued development was restricted by IFIs and neoliberal doctrine. Farmer's autonomy is limited by poverty, reliance on fertilizer, limited land, among other pressing concerns explained by my participants. Farmers also believe that *their government* is exerting undue control over them and purposefully limiting their power. Despite the world's reliance on a steady supply of cheap coffee, little attention has been paid to those who produce it. This oversight may lead to an eventual decline in coffee availability.

As the youth begin making decisions about their careers and futures in agriculture, they are seeing the unmet promises of free trade. They are experiencing increasing volatility in global prices for coffee and erratic weather patterns. For many of them, the golden days of coffee, the days of stable prices offered by cooperative societies, are nothing more than stories about the past. Seeking to widen their opportunities and shake the burdens of unequal exchange, they are seeking jobs in cities that require education. These trends, in a major coffee producing country whose youth account for over three-quarters of the population, may prove disastrous, or at the very least, illuminating, for coffee consumers in the global north.

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Appendix: IRB Notice of Exempt Status and Approval

Research Integrity
Alumni Memorial Building
27 Memorial Drive West
Bethlehem, PA 18015-3128
(610) 758-2871 Fax (610) 758-5810 *https://research.cc.lehigh.edu/research-integrity*

DATE: June 2, 2022
TO: Kelly Noble-Austin
FROM: Lehigh University Institutional Review Board

STUDY TITLE: The Impact of Export-Oriented Agriculture on Cultivation Patterns and Land Use in Bududa, Uganda.

IRBNet ID: 1906241-1

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS
DECISION DATE: June 2, 2022

Thank you for submitting materials for this research study. The IRB has reviewed the submission and determined that the research is exempt according to federal regulations in the exempt category listed below:

EXEMPT CATEGORY #2:

Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

1. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot be readily ascertained, directly or through identifiers linked to the subjects;
2. Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or
3. The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can be readily ascertained, directly or through identifiers linked to the subjects, and the IRB conducted a limited review to determine that there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of data.

Research may not be conducted prior to the receipt of permission from the Bududa District Officer. Documentation of permission from the Bududa District Officer must be shared with the IRB before human subjects research takes place.

Note: the only research activities involving children as subjects that may qualify for exemption under categories 2 (i) or (ii) is research involving educational tests or the observation of public behavior when the investigator(s) do not participate. Exempt category 2 (iii) may not be applied to research with children.

Study Changes or Amendments: Any changes or amendments to the approved study must be submitted to the IRB via an Amendment/Modification submission in IRBNet. Proposed changes

may not be initiated without IRB approval, except when necessary to eliminate immediate hazards to subjects.

Reporting Unanticipated Problems: All unanticipated problems involving risks to subjects or others must be reported to the IRB within five business days via a Reportable New Information submission
in IRBNet. All events that are considered reportable to the IRB, including noncompliance, subject complaints, and subject injury, are listed in the Lehigh University IRB's Policy: Reporting Unanticipated Problems/Adverse Events to the IRB. It is the investigator's responsibility to be aware of and follow any additional sponsor reporting requirements.

Please direct questions about this approval to Erin Karahuta, Research Integrity Specialist, at 610-758-2199 or inirb@lehigh.edu. Please include the study title and IRBNet ID in all correspondence.

Vitae:

Vincent Jakob Polignano was born in Phoenixville, Pennsylvania on 15 September 1999. His parents, Mary and Steven Polignano, reside in Pennsylvania. He graduated magna cum laude from Lehigh University, receiving his Bachelor of Arts with double majors of International Relations and Health, Medicine & Society in May 2022. Vincent received the Aurie N. Dunlap Prize in International Relations in recognition of his service to the department, serving as both research and teaching assistants.

Vincent was awarded one full calendar year of tuition-free enrollment at Lehigh University upon being named a President's Scholar in May 2022. He received his Master of Arts in Environmental Policy from Lehigh University in May 2023. While a graduate student, he served as an Environmental Summer Fellow in 2022, gaining full funding to conduct a qualitative research project on coffee cultivation in the rural district of Bududa, Uganda. Much of his academic work relates to the international food system, sustainable agriculture, and land conservation.

Vincent also competed on Lehigh University's Division I Varsity Track and Field team for five years (2018-2023). He served as a Student-Athlete Mentor for 4 years where he facilitated meetings with first-year student athletes to support their transition into college athletics. He served in leadership roles both on his team as an Event Group Leader and in the Athletic Department as a Co-Captain of student-athlete engagement groups.