Life and Debt:

a political ecology of agrarian debt in south India

By

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Abstract

Debt, a fundamental part of agrarian life and a key contributor to agrarian change, undermines farmer autonomy, limits future farm investments, and sets the emotional and economic conditions of households. Debt is a key mechanism of surplus extraction, exploitation, social differentiation, labor control, and dispossession, and has always been central to Agrarian Studies. Farmers juggle debts to meet not just agricultural needs but also everyday household reproductive expenses, from medical bills to marriage expenses, in ways that are not well understood. In India, more than 50 percent of agricultural households are indebted, and in states such as Telangana, the number is more than 90 percent. There have been decades of rural credit policies put in place to invigorate the agrarian sector and eliminate usurious informal moneylending. Despite this, informal lending makes up to 85 percent of credit sources for marginal farmers who own less than one hectare of land. This dissertation therefore asks: **Why are farmers in debt? Why has rural credit policy failed to eliminate exploitative informal credit? And finally, in what ways does debt impact farmers lives and livelihoods?** In the political ecology tradition, I draw on different theoretical traditions including agrarian political economy, feminist political economy, and concepts such as social reproduction, precarity, and peasant autonomy. To examine these concepts and their relation to debt, I gathered life and debt histories in addition to surveys of farmers in Mastanbad[1] mandal, Telangana, India over a total period of nine months. I find that debt via financialization of social reproduction leads to increasing precarity of smallholders via the loss of autonomy. In their

[1] Mastanbad mandal is a pseudonym for the name of the mandal I conducted research in.

quest for autonomy, smallholders enter increasingly precarious relationships, which further erodes their autonomy.

Dedicated to my *ammamma* and (late) *tathagaru*

I am because you are.

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* Pseudonyms

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Chapter 1: Introduction

In November 2020, thousands of farmers marched to India's capital, New Delhi, demanding the repeal of the 'farm laws' passed by the Indian Government in September of that year. The farmers, mainly from the states of Punjab and Haryana, were protesting three specific farm laws aimed to liberalize and deregulate the farm sector: Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020; Essential Commodities (Amendment) Act, 2020; and Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020 (Express Web Desk, 2021; N. Singh, 2021). These laws were intended to open the agricultural sector for private investments and allow farmers to sell their harvests in private markets at the best prices. To a farmer, these laws meant the removal of a minimum support price for agricultural products and being further exploited by middlemen and big businesses (Datla, 2020).

At the height of the Covid-19 pandemic, these farmers, denied permission to march and protest by the Delhi police, were tear gassed, sprayed with water cannons, and faced increasing state violence. Nevertheless, farmers continued to protest and camp out in the capital for over a year. It was not only farmers from a few north Indian states protesting. They were accompanied by farmer protests all over the country at various times in that year. After almost a year of the continuing protests, on November 19, 2021, India's prime minister announced the repeal of the farm laws (Express Web Desk, 2021).

While at first glance these protests might appear to be against the new farm laws, that were enacted by the government with no consultation with the farmers, they are in fact a result of the long-standing agrarian crisis in the country. More than 50 percent of

agricultural households in India are indebted, and in some states the number is as high as 90 percent (NSSO, 2014). Farmer suicides are the most visible and terrible face of debt and the agrarian crisis in India, with more than 10,000 farmers killing themselves each year since 1995 (Nair, 2022). There have been decades of rural credit policies put in place to invigorate the agrarian sector and eliminate usurious informal moneylending. Despite this, informal lending makes up to 40 percent of farmers' credit sources and as much as 85 percent for marginal farmers who own less than one hectare (ha) of land (NSSO, 2014). This dissertation therefore asks: **Why are farmers in debt? Why has rural credit policy failed to eliminate exploitative informal credit? And finally, in what ways does debt impact farmers lives and livelihoods?**

The agrarian crisis is the result of decades of state policies in India (Patnaik, 2003). In pre-independence India under colonial rule, the agricultural sector was not only stagnant but also geared towards imperial interests, such as the production of cash crops such as coffee, tea, indigo, jute, and poppy to export (Siddiqui, 2015). The ryotwari system, the British taxation policy, is considered one of the key contributors to frequent famines, notably the Bengal famine in the 1770s, land alienation, and the poverty, indebtedness, and backwardness of agriculture in India (Dutt, 1950; Siddiqui, 2015; Thorner & Thorner, 1962). Post-independence, there was a push by the Indian government to regulate informal moneylenders and introduce formal sources of credit to rural agrarian India, enact land reforms, and develop major irrigation projects (Hardiman, 1996; Tripathi & Prasad, 2010).

Green revolution technologies, which included high-yielding varieties of wheat and rice, were introduced in India in the 1960s in response to famines and population

pressures (Eliazer Nelson et al., 2019; Freebairn, 1995; Hazell, 2009). These high-yielding varieties came as a package which included seed, fertilizers, pesticides, and often irrigation, necessary for crop success (Harriss, 1987). While these technologies were promoted as being scale-neutral, farmers often relied on credit to purchase the inputs. At the beginning, wheat was the crop primarily adopted in northern India by larger and richer landholders. It soon spread to other regions of India, even semi-arid regions where agriculture was primarily rainfed and among smallholders. The adoption of these technologies was heavily subsidized by the Indian government by way of electricity subsidies and price supports (A. Gupta, 2017; Harriss, 1987). While the absolute quantity of production of food grain increased with the introduction of high yielding seed varieties, it did not necessarily improve access to food for the country's poor (Patel, 2013). Moreover, the negative impacts of the green revolution on local ecologies as well as on poor and marginal farmers and especially women have been widely documented (Agarwal, 1992; Das, 1998, 2002; Freebairn, 1995; Lipton & Longhurst, 1989; Patel, 2013; Sharma, 1985; Shiva, 1991).

Liberalization of the Indian economy, including the agricultural sector, was announced in 1991. This involved trade liberalization that opened import and export markets for crops such as rice, wheat, cotton, pulses, and oil seeds. In addition, seed imports were allowed, and fertilizer and electricity subsidies were reduced (Vakulabharanam, 2005). As a result, farmers faced rising input costs as well as the brunt of a crash in world food prices, especially those of cash crops. Neoliberal reforms and trade liberalization along with a world recession led to an agrarian crisis "involving a collapse of

employment growth, falling export prices and a rising spiral of farm debt" (Patnaik, 2003, p. 41).

Farmer suicides were and continue to be the much-publicized face of the agrarian crisis in India. The first such incidents were reported in 1997 from the cotton-growing regions of Vidarbha in Maharashtra and Warangal in Andhra Pradesh. While suicides were reported among farming households that cultivated other crops such as soyabean, rapeseed, and redgram for instance, suicides among cotton cultivators were most prominent (Vasavi, 2012). Between 1997 and 2012, at least 264,388 farmers committed suicide in India, amounting to about 16,500 every year. These figures are most likely underestimated due to the different ways suicides are recorded in different states (Nagaraj et al., 2014).

Most of the reported suicides were in regions that cultivated Bt cotton. Bt cotton, a genetically modified cotton cultivar that includes the bacterium *bacillus thuringiensis* which naturally repels the cotton bollworm, was officially approved in India in 2002 (Gruère & Sengupta, 2011). Bt cotton constitutes 92 percent of all cotton cultivated in India (Gutierrez et al., 2015). Bt Cotton cultivation on the one hand has been said to increase cotton yields, and reduce pesticide usage (Kouser & Qaim, 2011; Subramanian & Qaim, 2010), but on the other hand it has also been accused of causing agronomic failure and farmer suicides (Shiva, 2008). But it is important to remember in this context that correlation does not mean causation (A. Gupta, 2017). It is now well known that it is not Bt cotton by itself that causes farmer suicides but rather the structural conditions that farmers operate in. Bt cotton is associated with high costs of cultivation, and therefore linked to debt and suicide.

While it therefore has a role to play in farmer suicides, it is not the primary cause (Gruère & Sengupta, 2011). Intensive cash-cropping by smallholders, cultivation in unsuitable areas with unreliable irrigation, and neoliberal policy measures that have led to increasing indebtedness are all responsible for the agrarian crisis resulting in farmer suicides (Gruère & Sengupta, 2011; A. Gupta, 2017; M. Taylor, 2014).

Indebtedness is a leading cause of farmer suicide in India (Assadi, 2000; Gruère & Sengupta, 2011; Kennedy & King, 2014; Nagaraj et al., 2014; Sarma, 2004), and in the case of smallholders it can be especially devastating. The agriculture and allied[2] sector contributed 18.8 percent to India's GDP in 2021-22 while employing 54.6 percent of the total workforce (Department of Agriculture and Farmers Welfare, 2022). In India, 85 percent of farmers operate on less than two hectares but produce 51 percent of the country's agricultural output (S. Singh, 2021). Over 50 percent of agricultural households are in debt.[3] In some states such as Andhra Pradesh and Telangana, the percentage of indebted agricultural households is as high as 93.2 and 91.7 percent. The rate of growth in rural debt has also been nonlinear. The average outstanding debt of an agricultural household in 2019 was Rs. 74,121 (approx. USD 1,052.71[4]) (MOSPI, 2021), a 57 percent increase from debt levels in 2013, which was itself a 273 percent increase over the level

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[2] Agricultural allied sector includes activities such as livestock, horticulture, fisheries, and sericulture (EPTRI, 2017).

[3] The NSS 70th round defined a household with outstanding debt as one which has at least one cash loan of Rs 500 or more outstanding on the day it was surveyed.

[4] In 2019, the average exchange rate between USD and INR was 1 USD = 70.41 INR. The 2019 exchange rate is used here as this average debt figure is from 2019. The rest of the INR to USD conversions in this dissertation use the 2017 average exchange rate, unless mentioned otherwise.

reported in 2003. While debt is a normal and arguably healthy part of all modern agrarian systems, this rate of increase is notable, and raises questions about its sustainability.

Smallholder producers, who farm on less than two hectares of land, make up 84 percent of all farms in the world and produce about 35 percent of the world's food (Lowder et al., 2021). They are known to persist around the world amid multiple stressors such as climate change and unequal market access. There are about 510 million of these small farmers in total, and they collectively cultivate over 100 million hectares of land, typically employing family labor. They endure especially in areas of biophysical variability, including changing temperatures, rainfall, and groundwater levels (IPCC, 2007; Lobell & Gourdji, 2012). Their livelihood and food security are dependent not only on self-provisioning, but also on their ability to market produce and find capital to maintain and invest in production. As a result, credit and debt are central features of agrarian landscapes across the world. The rise in agricultural indebtedness can be attributed to a number of causes, but it drives us to ask how it originates and what are the broader economic, behavioral, social, and environmental consequences of debt (Gerber, 2014).

Small farmers in India and around the world make a range of critical decisions, especially regarding new technology (notably hybrid and genetically modified crops as well as intensive irrigation) and accepting far higher levels of credit than earlier, which puts them at risk of falling into high levels of debt (Louis, 2015; M. Taylor, 2013a, 2013b). While some novel cropping and credit strategies lead to sustainable and viable livelihood outcomes, others lead to cycles of chronic debt and impoverishment. Debt is transitory when the borrowing farmers are not overwhelmed by the debt amount and can pay back

their yearly debt amount with annual income. It is chronic when their annual income in a year is lower than their outstanding debt and this debt amount increases every year (Guérin et al., 2013).

Debt, or indebtedness, is usually viewed as "bad" and a "burden," whereas credit on the other hand is considered "good" and "beneficial" (James, 2014, p. 3; Peebles, 2010, p. 226). Indebtedness is not a new phenomenon, and some form of credit has always existed for more than 5000 years of human history (Graeber, 2011). Credit is used not only for productive investments but also for life cycle events, and it is "essential to the very survival of households and communities in money-based economies" (Gerber, 2015, p. 415). Though it has historically been considered immoral, moneylending is now found in virtually every corner of the world. Formal credit continues to be an important instrument for rural development and poverty reduction (Gerber, 2013, 2021; M. Taylor, 2011), and credit and debt are viewed as mechanisms for upward mobility (James, 2014).

Debt has been widely studied among different social science disciplines. Di Muzio & Robbins (2016, p. 7) classify the literature under several recurrent themes: national debt, debt throughout history, odious debt, country-specific debt crises, and debt crises of the 1980s as well as the more current sovereign debt crises. While economics is usually the first discipline that comes to mind when thinking about debt, other social sciences such as anthropology have contributed to a rich understanding of debt. An economic perspective of debt would include a monetary transaction that involves a principal amount, interest rate, and a repayment deadline. But debt is so much more; it is shaped and constituted by social relationships, values, morals, and culture (Guérin, 2014). There are particular forms of debt

that ceremonial exchanges create, as well as theological notions of debt (Gregory, 2012). Debt can be an emotional experience that brings both disgrace and honor, and it can embody aspirations (Guérin, 2014; Shipton, 2007). Debt also links the past to the present (Peebles, 2010).

The study of debt at the household level is often divided into moral and monetary debt as well as the differences between credit and debt (Peebles, 2010). The study of moral debt goes back to work on moral economies from James Scott (1976). Economic anthropology highlights the moral and social meaning of debt, wherein familial relationships and social organization of the domestic economy shape individual household borrowing and repayment of loans (Bouman & Hospes, 1994; Guérin et al., 2012; Maurer, 2006; Polanyi, 1944; Shipton, 2007; Villarreal, 2004). More recently, Graeber (2011) has argued that a system of debt works when it is sensibly derived from social relationships. It is important to pay attention to more than the material meaning of debt if "we want to understand how people get into debt and to whom and for what purposes" (Guérin, 2014, p. 541).

There have also been a limited number of studies on the consequences of debt in rural settings. These usually fall under four themes: stagnationists study the poverty-generating and stagnation impact of debt; entrepreneurialists or formalists study the production improvements generated by credit; culturalists show the shift from a moral economy (Scott, 1976) to impersonal formal credit systems; and the Marxist camp focuses on the surplus labor extraction properties of debt (Gerber, 2021).

Geographers, agrarian studies scholars, and political ecologists also study debt using interdisciplinary theoretical approaches with a focus on agrarian debt and its role in capitalist transitions (Blaikie, 1985; Gerber, 2014; Green, 2020, 2022; Watts, 1983). Debt has always been a central part of agrarian life owing to the temporality of agriculture. The very same temporality and inherent risk in agricultural production act as a barrier to the entry of capitalism (Mann & Dickinson, 1978). But, capitalism has found a way into agriculture via enclosing the seed (Kloppenburg, 2004), and more importantly, debt. The adoption of green revolution technologies in India described earlier was mainly possible through the availability of credit (Patel, 2013). Debt in turn has very material impacts on the agricultural landscape leading to agrarian change and ecological degradation (Gerber, 2013; Green, 2020; Li, 2014; Ramprasad, 2019).

Debt is a key mechanism of surplus extraction in agrarian landscapes. The role of debt as a mechanism of exploitation, social differentiation, labor control, and dispossession has always been central to agrarian studies (Akram-Lodhi & Kay, 2010a; Bernstein, 1979; Fairbairn et al., 2014; Gerber, 2014). The effects of debt on land dispossession and bonded labor have been extensively studied (Bernstein, 1979; Brass, 2010; Gerber, 2014). Debt relations are not necessarily detrimental and are a central economic feature of agricultural landscapes in developing countries. Indebtedness, however, is viewed as a negative feature and a symptom of agrarian distress. Under agrarian capitalism, debt can be a sign of precariousness or of increasing consolidation and capitalization (Gerber, 2014). There is a need for research into livelihoods entangled in debt. Rural indebtedness is not a new phenomenon, but it is important to theorize the broader economic, behavioral, and social-

environmental consequences of debt (Fairbairn et al., 2014; Gerber, 2014). This dissertation seeks to do this by drawing on agrarian Marxist and feminist political economy traditions including literature on social reproduction and precarity to explain why farmers are in debt and what some of the consequences of debt are.

The rest of this dissertation is organized as follows: Chapter 2 explains the theoretical underpinnings of my work including the concept of surplus value and its relation to credit and debt, agrarian political economy with an emphasis on the agrarian question and the peasant condition of autonomy, social reproduction, precarity, and political ecology. Chapter 3 describes the research location, Mastanbad mandal, in Telangana, India and the physical geography of the region that has resulted in a landscape of failed borewells. It thereafter explains the mixed methods approach used to conduct this research, which includes semi-structured interviews, life and debt histories, and household surveys. Chapter 4 analyzes the types of debt undertaken by farmers in Mastanbad mandal. Classifying debt into productive and reproductive debt, it explains the processes of debt-driven financialization of social reproduction. This chapter argues that productive and reproductive debt are increasingly entwined and lead to cascading patterns of indebtedness. Chapter 5 examines the proliferation of credit sources in agrarian India and argues that state projects of increasing formal credit to displace informal credit result in a class struggle over surplus labor. Chapter 6 presents some of the consequences of agrarian debt. Describing the strategies farmers employ to repay debt, this chapter argues that financialization for social reproduction results in increasing precarity and an erosion of farmer autonomy. Finally, the conclusion lays out some material strategies that can have a

positive impact of farmer lives, including timely access to formal credit, communal groundwater management, payment for harvests immediately in government markets, and the provision of good quality, subsidized, rural health care.

Chapter 2. Theoretical underpinnings

Agrarian societies have been the focus of study for many disciplines over many decades. Anthropology, economics, sociology, geography, development studies, and history, as well as their many sub-disciplines have all been concerned with how rural communities organize, function, and relate to the wider global economy. With the advent of industrial capitalism, it was expected that agrarian societies would transition into capitalist modes of production and small farmers would essentially disappear. But small farmers, or peasants, continue to exist and continue to be the focus of scholarship. While the classic agrarian question, described further in this chapter, was concerned with how capital would take over the countryside and the proletarianization of the peasantry, contemporary iterations analyze the ways in which capitalist relations have changed agrarian landscapes and how smallholders resist and continue to survive (Akram-Lodhi & Kay, 2010b).

As the introduction laid out, debt is a key mechanism of surplus extraction in agrarian settings. While small farmers continue to own their means of production, they are entrenched in capitalist relations via relations of debt. Why are farmers in debt? While farmers borrow for production purposes, feminist political economy tells us that social reproduction is just as important as production. And farmers indeed borrow to reproduce their households in the context of declining agricultural productivity and neoliberal state policies (Gerber, 2013; Green, 2020; M. Taylor, 2013b). Farmers find themselves dependent on others for their survival, which is a sign of precarity, the opposite of autonomy. While some forms of dependence do build community and tie people together,

financial dependence on others for household reproduction and livelihood activities tends to increase precarity and erode autonomy.

The struggle for autonomy and reduction of dependency are fundamental to the peasant condition. In this dissertation I show that debt, resulting from the financialization of social reproduction and the capitalization of agriculture that follows, leads to increasing precarity of small farmer households via the loss of autonomy.

1. Surplus value, credit, and debt

Surplus value, in a Marxist sense, is the value produced by labor over and above what is needed for their survival. Surplus labor therefore is the labor performed by a worker that is over what is needed for that labor's survival and reproduction as a worker (Gibson-Graham, 2006; Marx, 1976). This surplus labor is often appropriated by someone who is not the producer in most societies, even pre-capitalist ones (Gibson-Graham, 2006). For example, in feudal systems, tenant farmers paid their surplus product to the landlords; enslaved people produced surplus for their slaveholders; and even within a patriarchal household, a women's surplus is appropriated by the head of household (Gibson-Graham, 2006). "The social process of producing and appropriating surplus labor (more commonly known as *exploitation*) and the associated process of surplus labor distribution" is a class process as the duo Gibson-Graham define it (1996, p. 52). And "whenever there is an attempt to change the way in which surplus labor is produced, appropriated, or distributed," it is emblematic of a class struggle (Gibson-Graham, 1996, p. 59).

Claims on surplus value by multiple competing actors is characteristic of a capitalist mode of production. While surplus value is created within the production process and as a result of the capitalist-labor class relation, its distribution among the many individual capitalists depends on the rules of competition (Harvey, 2006). Struggles over the distribution and redistribution of appropriated surplus value have taken different forms over history, ranging from worker unions' struggles to reduce the rate of exploitations to a shift in the sites of redistribution to the state (Gibson-Graham, 1996). Under Marxist theory, distribution is concerned "with the conversion of surplus value into profit" (Harvey, 2006, p. 61). This distribution, and competition, is usually highly state-regulated and signals that the capitalists are not a harmonious group but competing actors.

In relation to distribution, the circulation of money and commodities is essential for capitalist accumulation. And the credit system is a key component of this circulation. While exploring the role of the credit system, Marx makes a distinction between the usurer's capital and interest-bearing capital (Harvey, 2006). Usurer's capital is seen as the antiquated version of interest-bearing capital, which operates under different conditions. This represents the historical succession from informal moneylending to more formal banking and credit systems with state control. While usury helped separate small producers (such as peasants and artisans) from their means of production and thus aided in the creation of the capitalist and wage-labor classes, it can impede the circulation of capital and thereby the accumulation of capital (Harvey, 2006). This leads to the prohibitions and sanctions against usury (Harvey, 2006; Marx, 1991).

In agricultural settings, debt enables capital to enter peasant production systems, with interest a mechanism of surplus extraction. Interest is an ancient form of appropriation, and as Marx explains, interest-bearing capital leads to capitalist accumulation. The owner of the money (lender) is the seller, and the borrower is the buyer of the money. The buyer here also owns means of production which they use their own labor-power to work on. And so the class relation between a capitalist and wage laborer exists here (Harvey, 2006; Marx, 1992), and surplus value is extracted in the form of interest payments to the owner of the money. This leads to capitalist accumulation, provided that the credit is formal credit which allows the surplus value to enter capitalist circulation and distribution networks. A formal credit system enables capitalist accumulation whereas an informal moneylender has the capacity of derailing the circulation of surplus value and thereby capitalist accumulation.

Formal institutional credit systems such as banks are state-enabled and are promoted as mechanisms for rural development and eliminating usurious moneylending. Increasing access to formal credit is also often used as the policy solution to agrarian indebtedness in developing countries (Collins et al., 2009; Mohan, 2006; Rangarajan, 1996; M. Taylor, 2011). It is unclear to what extent such policies help liberate a smallholder from the clutches of a moneylender.

2. Agrarian political economy

Peasants in general are subsistence-oriented, small, or family farmers who have existed under many different historical conditions (Bernstein, 1996). Classic definitions of

peasants describe them as rural cultivators who raise crops and livestock primarily for subsistence on a small piece of land that they control and make autonomous decisions on, who do not depend on the market for survival, and who produce and store surplus to pay rent to a dominant class (Shanin, 1971; van der Ploeg, 2021; E. R. Wolf, 1966).

Under agrarian studies, terms like peasant, smallholder, and family farmer are often used interchangeably. But analytically they can be distinguished. Family farms are those that are primarily owned and controlled by the family, where the labor and decision-making are almost entirely done by family members (van der Ploeg, 2018). On the other hand, smallholding refers to the relative size of a farm based on indicators such as acreage, units of livestock owned, etc. Most often farms less than 2 hectares are considered smallholdings, but this depends based on the regional context (Bernstein, 1996). While peasants can be family farmers or smallholders, van der Ploeg (2018) makes a distinction and defines peasants as those who engage in peasant agriculture.

Peasant agriculture is different from entrepreneurial and capitalist agriculture, although most often a farm might exist on a continuum between these systems based on the organization of the means of production. Peasant agriculture involves cultivation for self-provisioning and reproduction on a self-controlled resource base, including land and animals, which tend to be limited. It is characterized by an organic unity of labor and the means of production, and its labor is primarily household labor and abundantly available. Entrepreneurial agriculture is highly dependent on markets for survival, including financial and industrial input markets. This usually emerges from state programs to modernize or develop agriculture. Capitalist agriculture in contrast, where the means of production are

owned by an owner separate from the wage labor that works the land to produce a surplus, is completely embedded within market relations (Robbins et al., 2021; van der Ploeg, 2018).

Historically, the term peasant has had negative connotations. Dominant narratives from the State perpetuated the idea of peasants or smallholders as old-fashioned, backward, innovation resistant, inefficient, and an antithesis of modernity (Netting, 1993; van der Ploeg, 2018). Peasants have always frustrated development efforts aimed at modernization and were expected to be subsumed by a capitalist mode of production (Edelman & Wolford, 2017; Robbins, 2020b). The field of peasant studies, subsequently followed by agrarian studies, explores "the life and times of female and male agricultural workers whose livelihoods are primarily but not exclusively based on having access to land that is either owned or rented, who have diminutive amounts of basic tools and equipment, and who use mostly their own labour and the labour of other family members to work that land" (Akram-Lodhi & Kay, 2010a, p. 178).

Research in agrarian studies has drawn on diverse intellectual traditions (Edelman & Wolford, 2017). These include Marxist agrarian political economy which included the agrarian question analytic from both Kautsky (Kautsky, 1988) and Lenin, the Russian agrarian economics such as the work of Chayanov on the peasant mode of production (Chayanov, 1986), agrarian history and transitions to a capitalist mode of production (Beckert, 2015), comparative social science (Mintz, 1973; Scott, 1976; E. Wolf, 1969) including sociology and anthropology (Geertz, 1961) and more recently political ecology and agroecology (Akram-Lodhi, 2021; Edelman & Wolford, 2017; McMichael, 2013;

Netting, 1993). While recent research covers food sovereignty, agroecology, commoditization, food empires, etc., the classic agrarian question and the Chayanovian peasant mode of production continue to animate debates on the continued existence of the peasantry (Akram-Lodhi & Kay, 2010a) and a contemporary turn towards repeasantization (van der Ploeg, 2018).

2.1 Agrarian Question

Agrarian societies have over the years been transformed by various political, economic, and social contexts (Fairbairn et al., 2014). With capitalism increasingly impacting the agrarian sector, the agrarian question became concerned with how capital has entered the rural countryside and impacts agricultural activities. The agrarian question, which is an analytical framework used to examine rural transformation and agrarian change (Akram-Lodhi & Kay, 2010b), was developed by Marx, Kautsky, and Lenin in the late nineteenth century (Akram-Lodhi & Kay, 2010a). Kautsky defined the agrarian question as "whether, and how, capital is seizing hold of agriculture, revolutionizing it, making old forms of production and property untenable and creating the necessity for new ones" (Akram-Lodhi & Kay, 2010a; Kautsky, 1988, p. 12). The agrarian question has placed rural transformation and peasant livelihoods at the center of a transition to agrarian capitalism.

The agrarian question stems from an analysis of capitalist transformation in western societies, primarily Europe, where agricultural surplus extraction was required for the development of industrial capitalism (Patnaik, 2012). Over time, the agrarian question

has been interpreted in different ways. On the one hand, this question is used to argue that the capital-labor relation must subsume small scale agriculture to allow development of rural capitalism. Under this view, the agrarian question would be resolved by some sort of agrarian transition from peasant farming to petty commodity productions to capitalist production (Akram-Lodhi, 2021; Akram-Lodhi & Kay, 2010b, p. 257). Byres defines an agrarian transition as "those changes in the countryside of a poor country necessary to the overall development of capitalism and its ultimate dominance in a particular national social formation" (Byres 1996, 27). Byres essentially reformulates the agrarian question into one of agrarian transition, where the transition does not have to be the complete development of a capitalist mode of production in agriculture (Byres 1996, 15).

Byres theorized that the ways in which the agrarian question is resolved by an agrarian transition can be "analyzed by examining how accumulation, production, and politics influence an agrarian transition." (Akram-Lodhi & Kay, 2010b). Henry Bernstein critically deconstructed these three problematics, and in doing so, he characterized the agrarian question as one of capital, especially industrial capital, and of labor (McMichael, 2008). The accumulation problematic "seeks to understand the extent to which agriculture can supply a surplus and meet these resource costs, the ways by which such a surplus can be appropriated to fund industrialisation and accumulation, and the ease or difficulty with which such an appropriation may occur" (Byres, 1991, as cited in Akram-Lodhi & Kay, 2010b, pp. 255–256;). "This problematic explores 'the extent to which capitalism has developed in the countryside, the forms that it takes and the barriers which may impede it'" (Byres, 1991, p. 10, as cited in Akram-Lodhi & Kay, 2010b, p. 256;). The politics

problematic "examines the impact of the balance of class forces on political forms and processes and their subsequent impact on the evolution of agrarian change and structural transformation" (Akram-Lodhi & Kay, 2010b, p. 256).

These three problematics have provided "a rigorous but flexible analytical framework to explore the processes that contribute to or constrain the emergence of agrarian capital and rural capitalism" (Akram-Lodhi & Kay, 2010b, p. 257). This framework has underpinned a large body of research all over the world that draws on political economy traditions, both Marxist and non-Marxist. Central to the process of agrarian transition into agrarian capitalism is the transformation of peasants into wage labor via dispossession from the means of production such as land (Akram-Lodhi & Kay, 2010b).

More contemporary readings of the agrarian question hold that small-scale farming is no longer relevant for capitalist development, as there are other sources of accumulation in a neoliberal globalized world economy (Akram-Lodhi, 2021; Bernstein, 1996). This view assumes that advanced economies underwent a successful industrial revolution. But as Utsa Patnaik (2012) explains, this view is false, as industrial countries depended extensively on colonization and extraction of surplus from tropical peasant agriculture for their own capitalist accumulation. This continues to this day in the guise of free trade and neoliberalized economies promoted by the Bretton Woods Institutions and the World Trade Organization (Patnaik, 2012).

Contrary to the expectation that the entry of capitalism into agriculture would result in just two classes, capitalist farmers and rural wage laborers (Ellis, 1993), small farmers still persist, are sustainable, and are the most common form of agricultural producers in

developing countries (Brookfield, 2008; Netting, 1993). They however face unequal terms of trade, protectionism, and politically networked agribusiness (Robbins, 2012). Mann & Dickinson (1978), in their classic essay "Obstacles to the Development of a Capitalist Agriculture," explain that this continued existence of small farmers is a result of the very material nature of agricultural production that serves as a barrier to the entry of capitalism. However, capital has found new ways of entering the agrarian landscape and extracting surplus, with debt being one of the key mechanisms.

Scholars of agrarian studies have extensively studied the role of debt as a mechanism of exploitation, social differentiation, labor control, and land and labor dispossession (Akram-Lodhi & Kay, 2010a; Bernstein, 1979; Brass, 2010; Fairbairn et al., 2014; Gerber, 2014). Debt relations are a central economic feature of agricultural landscapes in developing countries and are not always detrimental. Indebtedness, however, is viewed as a negative feature and a symptom of agrarian distress. Under agrarian capitalism, debt can be a sign of precariousness or increasing consolidation and capitalization (Gerber, 2014), and there is need to theorize the broader economic, behavioral, and social-environmental consequences of debt (Fairbairn et al., 2014; Gerber, 2014).

Over the years, the agrarian question has undergone several revisions to examine agrarian change and rural transformation, but scholars argue for its relevance even today (Akram-Lodhi & Kay, 2010b; Bernstein, 1996; McMichael, 2008). The agrarian question continues to provide an analytic framework to examine how debt relations shape agrarian landscapes which exist within global capitalism. The impact of class, gender, and ecology,

as well as the ways they shape and are shaped by agrarian systems are some of the important new questions being asked (Akram-Lodhi & Kay, 2010b). While examining corporate food regimes and the commoditization of agriculture, Philip McMichael reformulated the agrarian question as a question of food regimes dominated by multinational agribusiness conglomerates. This iteration of the question is shaped by peasant struggles against accumulation and shifts focus from production to social reproduction (McMichael, 2008). But in what ways does capitalist accumulation impact social reproduction and the classic peasant condition of autonomy?

2.2 The peasant condition: a struggle for autonomy

Around the time when the agrarian question emerged in the writings of Kautsky, Marx, and Lenin, the Soviet agricultural economist Alexander Vasil'evich Chayanov explained how the peasant or family farms had their own peasant economic system, which differed from the more dominant capitalist economic system. A family farm was not organized as a business, but as a system that depended only on the labor of family members and whose income sources included crafts and trade in addition to agriculture (Chayanov, 1986). Chayanov's theory of peasant economy provides an analytical framework to help explain why smallholders or peasant farms continue to exist under capitalism and a globalized economy.

Chayanov's central concept to analyze peasant family economies was the *labor-consumer balance*: a peasant household will apply labor until their consumption needs are met. According to Chayanov, "the degree of self-exploitation is determined by a peculiar

equilibrium between family demand satisfaction and the drudgery of labor itself" (Chayanov, 1986, p. 6). Drudgery is the labor effort needed to produce a unit of output. This model stressed that the motivation of a peasant family is simple reproduction and not profit-maximization (Chayanov, 1986; Ellis, 1993). Accordingly, peasants seek to reach a balance between the family's needs and the drudgery of labor required to satisfy those needs. This labor-consumer balance is influenced by the household's demographics, i.e., the ratio of consumers to workers in the household.

Drawing on Chayanov's peasant economy, scholars of the New Peasantries, most notably van der Ploeg, explain the continued existence of the peasantries and the cycles of depeasantization and repeasantization[5] (van der Ploeg, 2018). Contrary to arguments based on agrarian question approaches that the peasantry is not really relevant for capitalist accumulation, scholars such as McMichael argue that peasants resist and struggle against capitalist accumulation, aim for food sovereignty, and work towards the "peasant condition" (Calvário, 2017; McMichael, 2015).

The peasant condition, a defining feature of peasant agriculture, is "a struggle for autonomy and improved income within a context that imposes dependency and deprivation" (van der Ploeg, 2013, p. 61). Peasants engage in co-production to self-provision and thereby reproduce their households. This applies to farmers all over the world who make choices to maintain autonomy and avoid drudgery (Boserup, 1965;

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[5] Re-peasantization is "the process through which agriculture is restructured as peasant agriculture. It may also refer to a quantitative increase in the number of peasants" (van der Ploeg, 2013, p. 135)

Chayanov, 1986; Robbins et al., 2021). Retention of land is key to autonomy, as is self-provisioning, which is key to reproduction of the household (Friedmann, 1978; van der Ploeg, 2010). Pluriactivity, or the activities which farmers engage in to earn additional income outside of agriculture, is also important in the struggle for autonomy and to stay on the land (van der Ploeg, 2018). In essence, the peasant struggle to balance autonomy and drudgery is in service of socially reproducing their households.

3. Social reproduction

"*Social reproduction is the fleshy, messy, and indeterminate stuff of everyday life.*" - Cindi Katz, 2001.

Social reproduction has animated Marxist and feminist thinking for decades. For Marx, the reproduction of the working class was as important to capitalist accumulation as production (Cammack, 2020; Marx, 1976). Social reproduction as conceptualized by Marx and Engels involves "the labor necessary to ensure that workers arrive the next day at the factory gate" (Strauss & Meehan, 2015, pg 3). But, "Marx is mostly silent about the circuits producing the most extraordinary commodity of all under capitalism; namely, the worker" (Mezzadri, 2019, p. 36).

Feminist scholars have long used social reproduction as a critical lens to analyze paid labor and unpaid work in the household (Strauss & Meehan, 2015). They build on Marx's conceptualization of social reproduction to broadly include whatever is needed to maintain and reproduce life, daily and intergenerationally, as well as individually and on a social scale (Katz, 2001; Laslett & Brenner, 1989; Winders & Smith, 2019). Definitions of

social reproduction usually include aspects of 1) biological reproduction, 2) reproduction of the labor force that involves not just subsistence but also education and training, and 3) the provision of care (Bakker, 2007; Bakker & Gill, 2003; Hopkins, 2015; Katz, 2001). These aspects of social reproduction are also inherently spatial (Katz, 2001). Missing from the early conceptualizations of social reproduction was the role of the state, which first appeared in the 1990s in feminist theorizations on the impacts of neoliberalism (Meehan & Strauss, 2015; Mitchell et al., 2004).

Social reproduction as a concept can be traced to Enlightenment-era Physiocrats who theorized it to "indicate the processes by which a social system reproduces itself" (Federici, 2019). Early feminist scholarship on social reproduction that focused on "wages for housework" highlighted the significance of women's unpaid household labor for reproduction of the labor force in a capitalist mode of production (Dalla Costa & James, 1972; Federici, 2004). Federici reflects on the use of this concept by feminist scholars and remarks that what made work on social reproduction revolutionary was not just the field that it examined, but also what it revealed including large areas of exploitation, and the extraction of value from unpaid labor at times outside of the waged work day (Federici, 2019). Studies today around social reproduction are interdisciplinary and can be found in fields such as geography, sociology, political economy, political theory, and feminist economics (Strauss & Meehan, 2015).

A critique of the social reproduction scholarship has been its binary representation of production and reproduction. Wage labor is prominent while household unpaid labor is

seen as the "other"[6] (Gibson-Graham, 1996; Strauss & Meehan, 2015, p. 3). Mitchell, Marston, and Katz problematize this separation of production and reproduction in the book *Life's Work*, where they highlight the blurring boundaries between "work" and "non-work" (Mitchell et al., 2004). Much of the early work on social reproduction focused on the relations between capitalists and waged workers in a capitalist mode of production (Strauss & Meehan, 2015). But, as Gibson-Graham (1996) eloquently describe, alternative economies are possible and do exist, and a capitalocentric conception of the economy only reinscribes the production-reproduction binary. This does not do anything to change the status of women who are typically those from whom unpaid labor is extracted and exploited (Gibson-Graham, 1996; Strauss & Meehan, 2015). As the edited volume *Precarious Worlds* describes, social reproduction and production are codependent while also being distinctive (Meehan & Strauss, 2015), and in fact "there can be no production without social reproduction" (Katz et al., 2015, pg 175), but this is still not widely understood.

Social reproduction continues to be at the center of feminist debates, and a new wave of feminist scholarship emerged following the 2008 economic crisis (Rodríguez-Rocha, 2021). Some of the original scholarship on social reproduction by Marxist Feminists since the 1970s argue that so-called ageless, non-productive work in a Marxist sense, that reproduces the labor force is fundamental to the capitalist mode of production and

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[6] The 'other' is widely used in Anthropology to describe the social relationship of the researcher to the researched in different kinds of knowledge construction. In this context, the 'other' refers to the non-capitalist economy that includes the gendered, domestic household space that is undervalued under capitalism as Gibson-Graham explain in 'The End of Capitalism (as We Knew It) (1996).

produces value (Rodríguez-Rocha, 2021). On the other hand, Social Reproduction Theory views socially reproductive labor as not producing value but being a precondition to production (Bhattacharya, 2017; Rodríguez-Rocha, 2021), with current scholarship on this focusing on care work (Bhattacharya, 2017; Fraser, 2017). While these debates result in a call for scholarship at the intersection of both these strands, social reproduction continues to play a key role in contemporary capitalism. With the ever-expanding informal labor relations and markets and the precarization of life in both the developing and the developed world, there is a renewed attention to scholarship on social reproduction (Federici, 2019; Rodríguez-Rocha, 2021).

With the advent of neoliberalism and increasing economic crises, social reproduction is intimately linked with financialization and debt (Montgomerie & Tepe-Belfrage, 2017; Roberts, 2016; Rodríguez-Rocha, 2021). An increase in austerity measures following the 2008 economic crisis in countries such as the UK and others in the Western world have resulted in increased financialization of households and a dependence on personal debt for a household's survival and reproduction (Dowling, 2016; Roberts, 2016). The crisis of social reproduction, i.e. "the inability of people to adequately reproduce their livelihoods" (Dowling, 2016, pg 455), has resulted in attention to the connections between financialization, indebtedness, and social reproduction, even in non-Western and rural contexts.

While social reproduction in general has been extensively theorized by feminist scholars, especially its relation to production (Bakker, 2007; Federici, 2019; Katz, 2001; Meehan & Strauss, 2015), what has been undertheorized is the relation between social

reproduction and finance (Roberts & Zulfiqar, 2019). Not all aspects of this relation have been ignored, however. Feminist scholars have critiqued neoliberal financial policies and global financial restructuring as well as financial crises and their gendered impacts (Bakker, 2007; Roberts & Zulfiqar, 2019). But the ways in which social reproduction and finance and debt are related at the household and individual levels has not received much attention (Roberts & Zulfiqar, 2019).

Critical agrarian studies has been examining the ways in which financialization is impacting the agricultural sector, which is a contemporary version of the agrarian question (Clapp & Isakson, 2021). Financialization has been defined as "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies" (Epstein, 2005, p. 3). Financialization is impacting the agri-food sector in specific ways. There is increasing investment in agriculture from financial firms via financial instruments, which has resulted in land grabs and dispossession of small-scale farmers (Fairbairn, 2014). Agri-food businesses prioritize shareholder value over investment in productive agriculture (Clapp & Isakson, 2021; B. Jones & Nisbet, 2011). And most importantly, financialization is now ever-present in the sphere of food provisioning, which is essential for social reproduction. The neoliberal policies that eliminated government support and protection to agrarian sectors led farmers to increasingly depend on private institutions to access credit, agricultural inputs, and markets (Martin & Clapp, 2015). These policies have also drawn farmers into a crisis of social reproduction (M. Taylor, 2011).

Debt has always been a central feature of rural, agrarian landscapes across the world, and it is intimately related to social reproduction. Under the current corporate food regime, income deflation, which is characteristic of neoliberal policies (lowering in prices of goods and services), has undermined social reproduction of the peasantries (McMichael, 2009). Given the temporal nature of farming and increasingly volatile markets, farmers depend on debt to meet their everyday needs (Gerber, 2013; Green, 2020; M. Taylor, 2013b). Farmers "juggle" various types of debt to meet not just agricultural needs but also household (reproductive) needs (Guérin, 2014). Just as the boundaries between production and social reproduction are often blurred, so too is the distinction between debt taken for these purposes (Green & Estes, 2019). The financialization of social reproduction and material agricultural practices has consequences on local agroecology and biodiversity (Green, 2020). Debt also "reshapes relations of social reproduction"(Green & Estes, 2019). Thus, debt via financialization of social reproduction is increasingly shaping agricultural landscapes.

This understanding me to ask: In what ways are these different types of debt related? And what consequences do they have on agrarian lives and landscapes? The social reproduction analytic, with its intrinsic geographic place-based nature, is useful to untangle the ways that different types of debt are related within a household and the subsequent material consequences (Rodríguez-Rocha, 2021). Geographers have also drawn attention to how the increasing influence of finance on social reproduction and agrarian change has resulted in an increase in agrarian precarity (Green & Estes, 2021). The next section

examines precarity, providing a brief history of the concept and how it specifically relates to agrarian lives.

4. Precarity

Precarity as a concept is increasingly being used as a theoretical lens to study uncertain lives. It has notably been employed to describe labor conditions and is also viewed as a generalized condition of human life.

Bourdieu (1963) first used the term "précarité" in his research in Algeria in the 1960s while distinguishing permanent workers from casual workers (Bourdieu et al., 1963; Waite, 2009). In 1998 he used this term to critique temporary, part time, and casual employment in France that was rising in the 1990s (Bourdieu, 1998; Millar, 2017). Precarity as a concept was popularly used by social movements in Europe in the early 2000's (Neilson & Rossiter, 2008). The EuroMayDay protests started in 2001 as a day of action against precarity and continued till about 2006. But this popularity was short-lived.

A decline in precarity's popularity as a political concept corresponded with an increasing interest in precarity as an academic concept. This concept is especially popular in the industrialized Global North, where it is used to describe labor conditions in a post-Fordist economy (Cruz-Del Rosario & Rigg, 2019). The usage of precarity to describe a labor condition follows from the idea of precarity being associated with a socioeconomic condition or class, especially resulting from the conditions of late capitalism (Kalleberg, 2009). Guy Standing (2011) famously argued that the precariat, a neologism that combines

"precarious" and "proletariat," is characterized by labor insecurity. (Millar, 2017; Han, 2018; Standing, 2011).

Several scholars, however, have critiqued this class-based approach. The way precarity is experienced differs across historical moments, geographical locations, and social positions (Millar, 2017; Neilson & Rossiter, 2008). Munck (2013) argues against precariat as a class, as it does not alter relations of production in contemporary capitalism, and it acts as a colonizing concept (Millar, 2017, Munch 2013: 751). Munck also criticizes work on precarity that has focused on the Global North, as the labor conditions described by this term are in fact the norm in the Global South (Munck, 2013). Precarity is a wider condition that can clearly be associated with capitalism (Neilson & Rossiter, 2008).

Another perspective sees precarity as an ontological condition. Most famously, Judith Butler explains precariousness as a generalized condition of human life (Butler, 2004; Millar, 2017), and precarity has been argued to be "…an enduring feature of the human condition" (Ettlinger, 2007, p. 320). In her book *Precarious Lives and Frames of War*, Butler uses the concepts of precarity and precarious lives to understand what lives are grievable following the events of 9/11. Precariousness, she describes, is an existential condition of the body, and precarity is a more political notion (Butler, 2009). "Precariousness implies living socially, that is, the fact that one's life is always in some sense in the hands of the other" (Butler 2009, pg 14). The conditions that sustain life are both social and political, and Butler defines precarity as "that politically induced condition in which certain populations suffer from failing social and economic networks of support and become differentially exposed to injury, violence, and death" (Butler, 2009, p. 25).

Precarity in its different conceptions has been applied to studies of labor (Green & Estes, 2021), migrants and informal workers (Davis, 2004), gig workers (Anwar & Graham, 2021), academics (Ivancheva et al., 2019), and more. There have been review articles on the use of precarity in Anthropology (Han, 2018), Sociology (Millar, 2017), Geography (Waite, 2009) and the sub-disciplines of Labor Geography (Strauss, 2018) and Population Geography (Tyner, 2016), as well as region specific studies such as precarity in contemporary Asia (Cruz-Del Rosario & Rigg, 2019). In specific relation to agriculture, the concept of precarity has been applied to smallholders in Peru (Stensrud, 2019), youth farming in rural Burundi (White & Berckmoes, 2013), rural and predominantly agricultural livelihoods in Myanmar where community social organizations enable resilience and adaptive capacity in the face of increasing rural precarity (Griffiths 2019), and in Cambodia in the context of microfinance and translocal labor migration (Green & Estes, 2019, 2021).

Precarity is often used interchangeably with the closely linked concept of vulnerability. In agrarian studies, vulnerability is often used to describe agrarian lives, especially in relation to biophysical hazards and climate change (M. Taylor, 2013a; Turner, 2016; Watts, 1983) and financialization (Ramprasad, 2019). Vulnerability has been popular among scholars of development, and it is especially prominent in livelihood studies and the sustainable livelihoods approach (Waite, 2008). Some works of rural livelihood precarity make a distinction between precarity and vulnerability (Kusakabe & Myae, 2019; Rigg et al., 2016). Is it necessary to distinguish between these two terms? Some scholars argue that conflating precarity with vulnerability leads to losing the analytical purchase of precarity (Millar, 2017). While precarity is at times used in relation to different states of uncertainty

such as vulnerability and risk, the political potential of precarity distinguishes it from these other descriptors. Where risk and vulnerability are generally referred to as conditions, the socio-political framing of precarity "captures both a condition and a point of mobilization in response to that condition" (Waite, 2008: 421).

Judith Butler importantly relates the two concepts of precarity and vulnerability. Butler (2004) explains that precarious life is a common human vulnerability, and "humans are fundamentally constituted through relations and thus, through exposure to the other" (Han, 2018, p. 337). Precarity here derives from people's relations to other people. In the words of Anna Tsing, "precarity is the condition of being vulnerable to others" (Tsing, 2015, p. 20). This in fact resonates with one of the earliest uses of the term "precarious" (Latin: *precārius*) in 1626, meaning "vulnerable to the will or decision of rothers" (Oxford English Dictionary, n.d.-b). As a result, precarious people are "something other autonomous" (Butler, 2004, p. 27).

The struggle for autonomy, which is a reduction of precarity, is central to the peasant condition. While peasants are not wholly autonomous and are at least partially integrated into a broader political economy, autonomy here refers to financial and agricultural autonomy. Smallholders do not want to depend on others for money or agricultural production. Precarity in agrarian lives is intimately linked to financialization of social reproduction. Neoliberal policies that eliminated government supports and privatized basic services such as healthcare, enmeshing small farmers in global markets and necessitating complex debt relations, leads to increasingly precarious lives (Green & Estes, 2021; Guérin, 2014; Rigg et al., 2016). Small farmers around the world struggle with

issues of dependency, and caught in a reproduction squeeze, they find themselves in diversified and precarious livelihoods (Stensrud, 2019). This leads to the question: How does debt via financialization of social reproduction shape precarious agrarian lives?

5. A political ecology of agrarian debt

Rooted in the political ecology tradition, I argue in this dissertation that debt via the financialization of social reproduction increases precarity, which erodes peasant autonomy. Political ecology is often described as the study of human-environment relations within a broadly defined political economy (Blaikie & Brookfield, 1987). Even more, it is "*something people do*" and "constitutes a *community of practice*" (Robbins, 2020b, p. 4). Research in political ecology follows a mode of explanation which analyzes variables at different scales ranging from the local to the global to uncover "winners and losers, hidden costs, and the differential power that produces social and environmental outcomes" (Robbins, 2020a, p. 16). Following this tradition, I ask: What causes farmer debt, in what ways does debt shape the social and material agrarian landscape, and what impacts do state-promoted formal credit policies have on farmer lives?

To answer these questions, I draw on some of the critical tools of political ecology, described earlier in this chapter: agrarian political economy and feminist political economy. I use the concepts of social reproduction, precarity, and autonomy to examine how debt impacts smallholder lives. In another classic political ecology tradition, I understand precarity and autonomy dialectically. In this dissertation, I demonstrate that in the quest for autonomy and to reduce precarity, smallholders enter even more precarious

relationships, which further erode their autonomy. Moreover, the concepts of precarity, autonomy, and social reproduction require methods that can reveal the complex pattern of household logics as well as human experiences. Therefore, I draw from the life history research method and gather life and debt histories to examine the phenomenon of debt within agrarian lives (Cole & Knowles, 2001). I pair this with household surveys and other secondary data that provide context and a breadth of information (Creswell, 2012; Fetterman, 2010). These methods are described in the next chapter along with the research site, Mastanbad mandal, in the state of Telangana, India, which has high levels of agricultural indebtedness.

Chapter 3. A mixed methods approach to studying life and debt in Telangana, India

Just as political ecology research is not based on one theory but draws on multiple intellectual traditions, the methods used for this field are diverse. These include qualitative interviews, discourse analysis, soil samples, transects, household surveys, Geographic Information Systems, etc. Political ecologists choose methods beyond disciplinary boundaries and often use mixed methods to find the most appropriate way to answer specific questions (Doolittle, 2015; Turner, 2015). I follow this tradition and use a mixed methods approach that includes ethnographic interviews and household surveys in Mastanbad mandal, Telangana, India. In these interviews and surveys, I ask why farmers are in debt and how debt impacts their lives and livelihoods. This chapter describes the research site and the mixed methodology that underpinned over nine months of fieldwork and data collection.

1. Research site: Mastanbad mandal, Telangana, India

This research is situated in Mastanbad mandal[7] in Vikarabad district in the state of Telangana in India's Southern Peninsula. Telangana has some of the highest levels of rural indebtedness in India; 91.7 percent of agricultural households are indebted (NSSO, 2014), and so the state is an ideal location to examine the nuances of farmer debt. The names of

[7] Mandal is an administrative unit comprising several villages and habitations.

the mandal, villages, and nearby towns are given pseudonyms in this dissertation, as are the names of respondents, to protect the confidentiality of interviewees.

Telangana is India's newest and 29th state, formed out of the north-central region of the erstwhile Andhra Pradesh state on June 2, 2014. It covers a geographical area of 112,077 km^2 and lies between NL 15° 48' and 19° 54' and EL 77° 12' and 81° 50'. The state shares its borders with Maharashtra on the north and west, Karnataka on the west, Andhra Pradesh on the east and south, and Chhattisgarh on the east. According to the 2011 census of India, Telangana had a population of approximately 35 million with 61 percent of the population living in rural areas and 39 percent in urban areas (Central Ground Water Board, India, 2021).

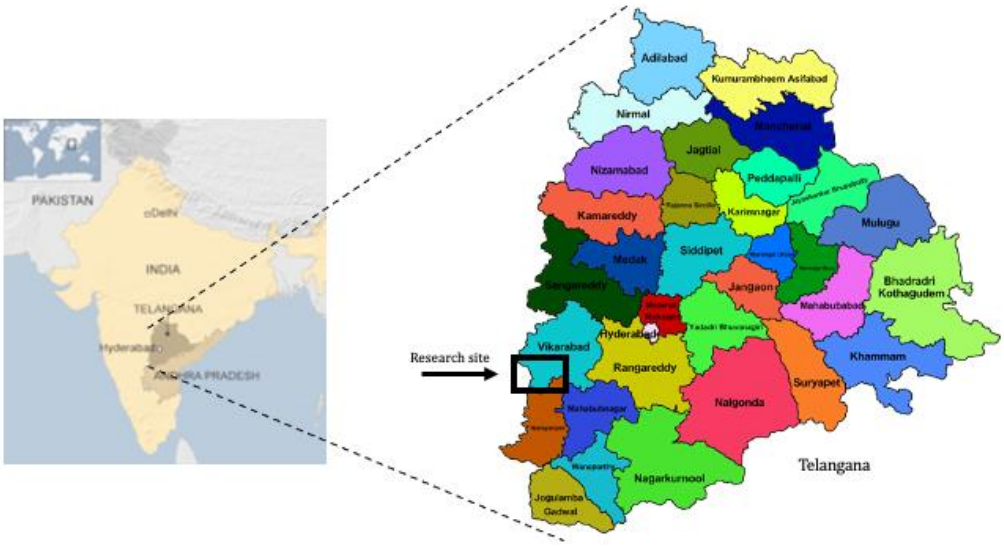

Figure 1. Research site: Approximate location of Mastanbad mandal within Vikarabad district, Telangana, India[8]

Administratively, states in India are divided into districts, which are further divided into revenue divisions and mandals, also known as tehsils. Telangana has 33 administrative districts; the original 10 were redistricted into 31 districts on October 11th, 2016 (Kurmanath, 2016). Two new districts were created in February 2019, taking the total districts in Telangana to 33 (PTI, 2019). At the beginning of this research project, Mastanbad mandal (the research site) was part of Mahabubnagar district, but since redistricting, it is in Vikarabad district. Mastanbad mandal comprises 26 villages and 21

[8] Image sources: Image on the left from https://www.bbc.com/news/world-asia-india-27658817, and image on the right from https://www.telangana.gov.in/About/State-Profile; accessed on June 12, 2022)

Gram Panchayats. Mastanbad mandal is spread over 196.94km^2 (19,694 hectares) and comprises 10,456 households with a population of 51,497 (Census of India, 2011).

Telangana's climate is semi-arid and is predominantly hot and dry. Summer starts in the month of March and lasts till the onset of the monsoons in June. The month of May typically sees an average temperature of 42°C (Central Ground Water Board, India, 2021). The yearly average total rainfall in Telangana is 905.4mm. 79 percent of the yearly rainfall in Telangana falls during the south-west monsoon, which occurs June through September. 14 percent of the rainfall occurs during the north-east monsoon from October to December, and 7 percent falls during the winter and summer months,[9] i.e., January-May (Department of Agriculture, 2021). The region is characterized by inter-annual rainfall variability, as seen in Mastanbad mandal over the period 1981-2014 (Figure 2).

[9] The meteorological seasons in India, as classified by the Indian Meteorological Department, are winter season: January-February, pre-monsoon season (or summer): March-May, southwest monsoon season: June-September, and post-monsoon season: October-December (IMD, n.d.).

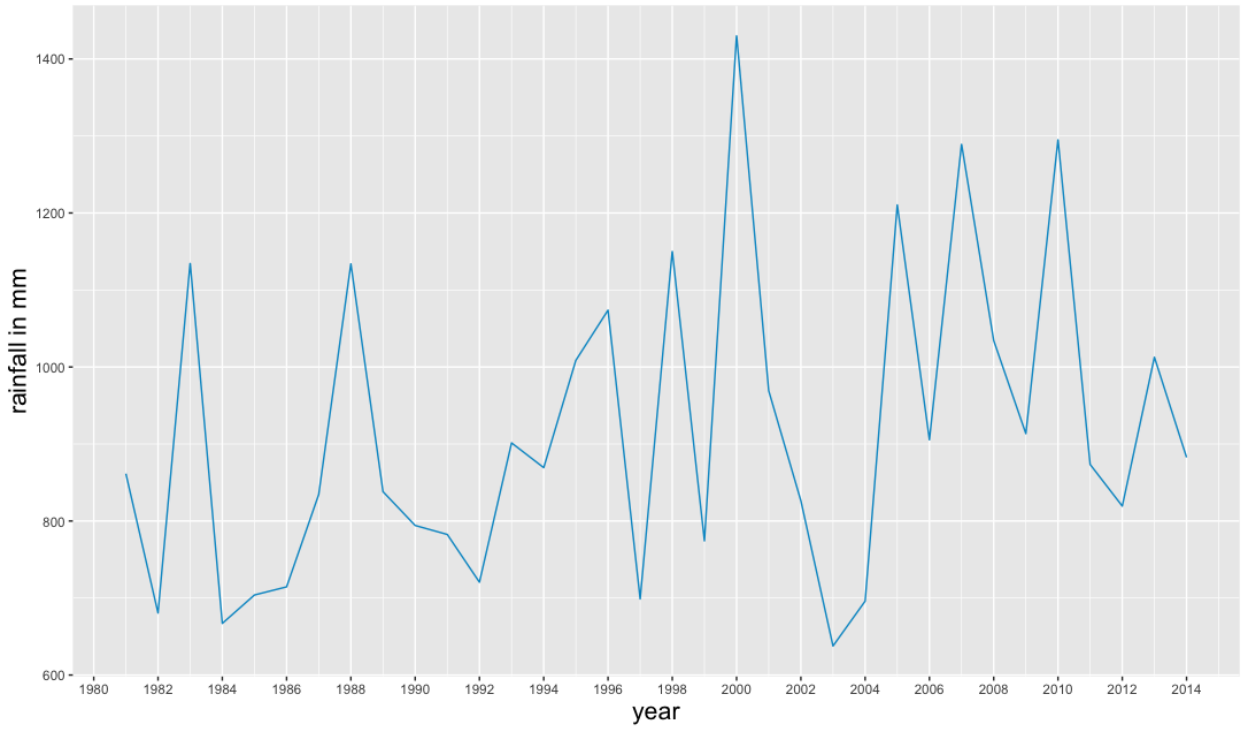

Figure 2. Annual total rainfall (in mm) in Mastanbad mandal, Vikarabad district, Telangana. Data source: Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS)

The state has a wide range of geological formations that range from ancient (Archaean) to recent (Holocene). Almost 85% of the state's bedrock consists of hard rock or consolidated formations. These include granite-gneiss, granite, basalt, charnockite, quartzite, etc. The rest of the state is underlain by soft rocks or semi-consolidated sediment formations such as Gondwana sandstones, Penganga shales, and limestones (Central Ground Water Board, 2021; Government of Telangana, 2021). The hard rock aquifers lack primary porosity but develop secondary porosity from weathering and fracturing. The weathering depth of these hard rock aquifers ranges from 10-20m and occasionally reaches up to 40m. About 95 percent of fractures are found at 100m depth and yield 75-150 lpm (liters per minute). On the other hand, the soft rock aquifers are

productive between 25 and 297m depth and yield between 250 and 2000 lpm (Madhnure & Lavanya, 2021; SGWD & CGWB, 2012). In other words, the hard rock aquifers tend to be shallow aquifers. Mastanbad mandal is underlain by Banded Gneiss Granite and some basalt, both hard rock aquifers, and shallow aquifers.

The major soils in India go by the traditional names of alluvial soils, coastal alluvial soils, red soils, laterites, brown forest soils, hills soils, terai soils, black soils, and desert soils (Bhattacharyya et al., 2013). Appendix I lists the soil orders corresponding to each traditional soil name. Soils in Telangana include red soil, lateritic soils, and black soils. These include Inceptisols, Vertisols, Entisols, Alfisols, and Mollisols (Biswas et al., 2015; R. Reddy et al., 1996). Red soils, mostly Alfisols and Entisols, cover almost 60 percent of the state (Central Ground Water Board, India, 2021; Venkateswarlu, 1982). These red soils are nutrient-poor and deficient in organic matter but usually rich in phosphoric acid. The also require irrigation as their moisture-holding capacity is poor. Black soils (Vertisols), popularly known as black cotton soils or regur soils, predominantly consist of smectitic clays[10] (Bhattacharyya et al., 2013; Venkateswarlu, 1982). As a result, they have higher moisture retention capabilities (Satyavathi & Reddy, 2006).

The red and black soils in Telangana are derived from similar parent material, but their development has depended on topography. Red soils are in general found in higher elevations and are derived from weathering of solid rock, namely the Gneissic Complex (*chalka* soils) and Deccan trap rock (*masah* soils), in situ. Black soils are found in valleys

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[10] A category of clay minerals that exhibit a common characteristic of hydrational swelling when exposed to water.

and areas of lower elevation. They are derived from the Deccan trap rock, from residual weathering and deposition of material from higher elevations. Their texture is heavier (containing a higher proportion of clay), and they are more fertile than the red soils (Venkateswarlu, 1982).

Mastanbad mandal in Vikarabad district has a mixture of red sandy soils with loamy sub-soils and black cotton soil (Central Ground Water Board, India, 2021; S. Reddy et al., 2019). Farmers locally refer to the red soil as *chalka* and the black soil as *regadi*.

Agriculture is an important component of Telangana's economy. About 55 percent of the state's population depends on agriculture and allied activities, such as livestock, horticulture, fisheries, and sericulture, for their livelihoods (EPTRI, 2017). The net sown area is 49.07 percent of the total land area of the state (Government of Telangana, 2022). The Indian Agricultural Census classifies agricultural landholdings based on their size as marginal, small, semi-medium, medium, and large. Most of the agricultural land holdings in Telangana are marginal and small in area: 64.6 percent are less than 2.47 acres (or 1 hectare), and another 23.7 percent are between 2.48 and 4.94 acres (Table 1).

Table 1 Land holdings by size class in Telangana (Source: Agricultural Census of India, 2015-16).

Size class (acres)	Number of holdings (thousands)	Percentage of holdings	Area operated (thousands of acres)
Marginal (Below 2.47)	3,840	64.6	4,216
Small (2.48 – 4.94)	1,409	23.7	4,885
Semi-Medium (4.95 - 9.88)	564	9.5	3,625
Medium (9.89 - 24.77)	126	2.1	1,700
Large (24.78 and above)	9	0.2	334
Total	**5,948**	100	14,757

The main crops cultivated in the state are paddy also known as rice (*oryza sativa*), cotton (*gossypium*), maize (*zea mays*), and redgram (*cajanus cajan*) in the kharif season[11] or vanakaalam (rainy season). These four crops account for almost 85 percent of the total cultivated area in the state. In the rabi season[12] or yasangi (winter season) the main crops cultivated are paddy, maize, groundnut (*arachis hypogaea*), and bengalgram (*cicer arietinum*) (Government of Telangana, 2022). In Mastanbad mandal specifically, the main crops cultivated are redgram, cotton, paddy, sorghum, green gram (*vigna radiata*), and groundnut.

In Mastanbad mandal farmers in general place higher value on black soils for crop cultivation, as they have better moisture retention capabilities compared to red soils. While most crops are cultivated on both types of soils, there are some such as white sorghum that farmers prefer cultivating in the black soils in the rabi season. This is because following a good rainy season, the black soils would have retained enough moisture to cultivate this crop in the winter season.

Even though farmers accept that a particular soil is better to cultivate a particular crop, such as cotton in the black cotton soils, their practices do not often reflect this. Farmers cultivate cotton on both red and black soils. And given rainfall variability in this region, all farmers, irrespective of soil type, drill borewells to access groundwater for

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[11] Kharif season or vaanakalam or rainy season if the agricultural season that begins with the onset of the southwest monsoon in the month of June and continues till October (World Bank, 2010). Some of the crops planted in this season are harvested upto November and December, such as redgram and cotton.

[12] Rabi is the winter or dry season that lasts approximately from October to about March or April (World Bank, 2010).

irrigation when necessary (described below) and reduce some of the climate risk of agriculture.

Water availability is key to agricultural productivity, and harnessing water from different sources to cultivate crops is not new. Agrarian societies over centuries have used different forms of irrigation systems all over the world to cultivate crops. The British in India undertook large scale development of water infrastructure in the country, such as canals and dams, not only to help farmers but also to further their own economic interests (Briscoe & Malik, 2005; T. Shah, 2009). Canal irrigation was and is largely dependent on political interests and therefore has limited coverage (Pingle, 2011). Water infrastructure development continues to be a priority for the Indian government post-independence. The success of green revolution technologies introduced in India in the 1960's depended on water availability. But canal irrigation even up to the year 2000 covered only 15 percent of the country. Critical to the so-called success of the green revolution was the extraction of groundwater.

Pumping groundwater using small mechanical pumps and boring rigs, also referred to as borewells, has grown prolifically in India since the 1970's. Borewells are vertically drilled wells that are bored into an underground aquifer to access groundwater for both agricultural irrigation as well as domestic consumption. Electrical pumps are used to pump water from borewells (India Water Portal, n.d.). While borewells (also known as tubewells) were introduced in India by the British in the late 1800s, they became increasingly popular as well as accessible following bank nationalization and rural electrification in the late 1960s (Birkenholtz, 2009). The number of borewells used for irrigation in the country

increased from about 150,000 in 1950 to almost 19 million in 2000 (T. Shah, 2009). Some of the reasons for borewell popularity included the availability of individual small mechanical pumps for groundwater extraction in the 1970's along with subsidized credit, the potential for providing just-in-time irrigation to crops, extended electricity supply to rural areas, and electricity subsidies and at times free electricity provided to agricultural users in many states (T. Shah, 2009; World Bank, 2010).

Agriculture in Telangana is primarily rainfed, as a little less than half of the net cultivated land is irrigated. The primary sources of irrigation are tanks, canals, and wells – dugwells[13] and borewells. In the early 1900s, tank irrigation[14] was the major source of irrigation in the state but has been in decline since the 1950's, whereas well irrigation, dominated by private borewells has drastically increased. Borewells and other dug wells contributed to 89 percent of irrigated land in Telangana in 2015-16 (Department of Agriculture and Co-operation, 2017). Private borewells for irrigation, that allow farmers to tap into groundwater whenever necessary, became feasible with rural electrification. In Telangana, they gained popularity especially around the year 2004 when the Congress government provided 7 hours of free electricity to farmers (Pingle, 2011). This policy, in combination with rainfall deficits, led to an explosion of borewells.

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[13] Dugwells are usually dug with a pick and a shovel using manual labor. These work when the ground is soft, and in areas where the water table is shallow. These have become outdated, and borewell drilling using a truck-mounted drilling rig are more common (USGS, 2018).

[14] Tanks are structures built by villagers to collect and store rainwater during the monsoons to use for drinking as well as irrigating agricultural crops, when necessary, especially during dry spells (N. Jain, 2019).

India is the largest consumer of groundwater in the world (Jain et al 2021; Siebert et al 2010). Sixty percent of irrigation in the country is from groundwater (Jain et al 2021; World Bank 2010). About 89 percent of groundwater extracted annually is used for irrigation in India. Telangana's numbers are similar to these national figures, with around 85 percent of groundwater extracted used for irrigation annually (Central Ground Water Board, 2021). Despite, and even because of, its widespread use, groundwater is in danger of depletion.

Groundwater availability depends on several factors, such as the porosity and permeability of the aquifer, depth of the water table, precipitation, crop choices and cropping intensity, irrigation intensity, and availability of electricity subsidies. Of these, groundwater recharge in India primarily depends on precipitation, either directly or indirectly (Asoka et al., 2017; Jha & Sinha, 2009).

In India, groundwater depletion changes soil chemistry and reduces cropping intensity (Birkenholtz, 2009; M. Jain et al., 2021), and also increases poverty (Sekhri, 2014). The northwest and south of India are predicted to have critically low levels of groundwater by 2025 (M. Jain et al., 2021; T. Shah, 2009). This is both due to high rates of extraction for irrigation (Siebert et al., 2010) as well as climate change (R. G. Taylor et al., 2013; Zaveri et al., 2016). Groundwater in Mastanbad mandal was characterized as semi-critical in 2017 (Central Ground Water Board, India, 2021).

Climate change influences groundwater not only directly through precipitation, but also through the choices it leads people to make (to increase their security via reliable access to water). Precipitation directly determines groundwater replenishment and

recharge, and human-induced climate change currently causes and is projected to increase precipitation variability (IPCC, 2022), creating the possibility of groundwater scarcity. While climate change's specific impacts on groundwater remain understudied, there is substantial consensus on climate change's impacts on precipitation and temperature variability (R. G. Taylor et al., 2013). Changing precipitation patterns and increased drought will likely also determine the future of groundwater use for irrigation and associated land use changes, because drought-years lead to higher extraction of groundwater. Thus, even though borewells are drilled to provide water security, they often fail to meet this goal, and in rainfed agriculture areas, farmers' dependence on rainfall continues despite widespread borewell drilling.

The increasing reliance on and use of groundwater combined with its increasingly critical status in Telangana result in an unpredictable situation for farmers. With indiscriminate borewell drilling, and groundwater recharge dependent on rainfall in a drought-prone region with hard rock and shallow aquifers, the landscape of Telangana is littered with failed borewells[15] (Taylor, 2014). Despite this, borewell drilling continues to this day, and as this dissertation will explain, the practice is intimately tied to debt.

2. Methodology – a mixed methods approach

This dissertation uses a mixed methods approach to uncover the nuances of farmer debt in Mastanbad mandal, asking why farmers are in debt and not just what level of debt

[15] Failed borewells refers to either borewells that never hit water when they were drilled, or those that have since dried up.

they are in. "Mixed methods research combines qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purposes of breadth and depth of understanding and corroboration" (Johnson et al., 2007, p. 123). A mixed methods approach is more than just a mixture of quantitative and qualitative methods; it includes an integration of these two methods (Creswell, 2010). While quantitative studies of debt abound (for example, Christen & Morgan, 2005; Justiniano et al., 2015), it is important to ground these with qualitative work to understand how debt is shaping peoples' lives.

I use a mixture of ethnographic techniques including qualitative oral histories and semi-structured interviews for depth, and quantitative household surveys for breadth of understanding (Creswell, 2012; Fetterman, 2010). Initial semi-structured interviews informed the survey questions via a sequential approach. Thereafter, I undertook survey data collection with the help of my research assistant simultaneously with the oral history interviews. In addition, I also used secondary data including the Indian agricultural census data (available for 1995-96, 2000-01, 2005-06, 2010-11, and 2015-16) and rainfall data from Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS).[16]

I conducted fieldwork over nine months, spread over two field seasons. I first conducted preliminary investigations while on a summer fellowship, June – August 2015, with the Revitalizing Rainfed Agriculture Network (RRA-N), India. Following this I spent

[16] 35+ year quasi-global rainfall data set. https://www.chc.ucsb.edu/data/chirps

seven months, June – December 2017, collecting data for this dissertation in Mastanbad mandal, funded by a junior fellowship from the American Institute of Indian Studies (AIIS).

2.1 Study villages and sampling

As part of the RRA-N summer fellowship in 2015, I conducted qualitative, semi-structured interviews of farmers in Mastanbad mandal to examine crop choices under changing climatic conditions. Key informants were identified with the help of the NGO Rythu. Using a snowball sampling approach, I interviewed 50 farmers in 10 villages of Mastanbad mandal, and five seed and fertilizer shop dealers. I also observed meetings of two farmer self-help groups. Access to many of the farmers I spoke to and observed were tied to the NGO in some way, which introduced bias especially with regards to some of the NGO programs. But almost every farmer I spoke to then had a life story to tell involving some mix of cotton, borewells, and always, debt.

I therefore chose to return to Mastanbad mandal, where I had established connections with some of the farmers and Rythu's employees, for my main dissertation work on farmer debt. Debt is a sensitive topic, one that is intimately connected to people's lives. Asking people about their debt is challenging. Thus, it was important to start with a community where I had some connections and knew the local language, Telugu, to understand the nuances of what was being said about debt. In addition, this region has some of the highest levels of agricultural indebtedness in the country (NSSO, 2014), and my preliminary conversation with farmers in 2015 revealed a wide range of credit sources,

both formal and informal. Furthermore, this region faced inter-annual rainfall variability, which is predicted to worsen with climate change (Kadiyala et al., 2021).

In 2017, I returned to Mastanbad mandal with a junior fellowship from AIIS for a period of 7 months, June-December. With the help of Rythu and conversations with farmers I knew, I identified 5 villages to conduct household surveys. This involved purposeful sampling to include villages in which at least some farmers cultivated cotton and a village where no cotton was cultivated. It also included villages with a mixture of red and black soils. The villages sampled were Korapur, Gudur, Ambar Tanda, Kavur, and Shapalle villages. In addition to these, interviews were also conducted in Beripalem, Mastanbad, and Rampet. I also hired and trained a research assistant, Karthik, a resident of Mastanbad mandal, to conduct surveys.

2.2 Semi-structured interviews

Semi-structured interviews are a useful tool to start understanding the local context. Using a snowball sampling method I had conversations, both informal and semi-structured interviews, with over 50 farmers. I started with farmers I was acquainted with from my previous visit in 2015. Rythu's employees also helped identify a few older farmers who had knowledge of the agricultural history in the region. I also observed farmer group meetings that Rythu facilitated, including both men's farmer groups and women's goat groups.[17] I also interviewed a couple of seed and fertilizer shops, a local moneylender, manager of the

[17] These farmer groups are explained in Chapter 5

Mastanbad mandal branch of State Bank of India, Mastanbad mandal's Agricultural Officer, Mastanbad mandal Revenue Officer, and two village Sarpanch's.[18] Participants for these interviews were recruited until data saturation was reached and no new information emerged (Creswell, 2012; Guest, et al., 2006; Mason, 2010).

I asked questions around themes such as cropping patterns over the last 20 years, agricultural infrastructure (markets, production assets), seed, fertilizer and pesticide prices, government promoted crops, government extension services, terms of credit, eligibility, and recovery mechanisms. These data were analyzed thematically and played two important roles: 1) they shaped the survey questions to be relevant and appropriate to the local context, and 2) they informed some of the questions I asked as part of the life and debt histories and provided context to farmer lives. These interviews provided information on the general conditions under which credit is available, as well as the cropping and other livelihood choices that farmers make.

2.3 Life and debt histories

Life and debt histories are at the heart of this dissertation research. Life histories have long been used in disciplines such as sociology and anthropology, since the studies of Polish peasants by Thomas Znaniecki in 1920 (Adriansen, 2012; Cole & Knowles, 2001). They have since been used in a wide range of other disciplines such as psychology, family and health studies, nursing, and women's studies (Cole & Knowles, 2001; De Chesnay,

[18] Sarpanch is the head of the Panchayat, which is a village's governing body

2014; Richardson et al., 2009). Life histories allow researchers to gain insights into how human experiences and the patterns in different life stories are related to broader social, political, and environmental contexts (Adriansen, 2012; Cole & Knowles, 2001; George & Stratford, 2005). They are also used to gain significant insights into the lived realities of the poor and poverty dynamics (Kothari & Hulme, 2004). Drawing from this life history research tradition, I conducted ***life and debt histories*** of farmers to explore the conditions under which they borrow money, adopt Bt cotton, drill borewells, and what their livelihood strategies and challenges look like because of debt.

Fourteen participant households were selected using purposive sampling (Devers & Frankel, 2000; Onwuegbuzie & Collins, 2007; Patton, 1990). While I started with a plan to recruit farmers in different debt levels[19] and those that did and did not cultivate cotton in each debt level, identifying such farmers proved challenging. No one would reveal debt numbers, and everyone would say that they suffer from debt and that agriculture was not profitable. Thereafter I changed tactics and tried to talk farmers that cultivated cotton and those that did not. I used a snowball sampling approach where I would ask my interviewees to help me identify the next farmer to interview and if they could point me to those in a lot of debt or those for whom debt was not a big problem.

Seven of the fourteen farmer households I interviewed were from Gudur village as this was what worked logistically. There were also women in Gudur village who introduced

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[19] The range of debt here was loosely defined as those famers having a high level of outstanding debt to those that had not much debt. This was based on the NGO workers (who were locals in Mastanbad mandal), estimation as well as other farmers.

me to others willing to talk with me. The fourteen households included a range of castes – four Scheduled Tribes, two Scheduled Castes, one Open (or Other) Caste, and seven Backward Castes. Five of the fourteen farm households cultivated cotton. I conducted multiple interviews with each household, often with multiple family members. I spoke to women in two households, men in eight households, and both women and men in four households. Interviews with men tended to be shorter as the men were mostly suspicious and reluctant to talk about debt details.

I planned on conducting timeline interviews to reconstruct crop plantation, loan/debt, and family event histories using a life grid (Adriansen, 2012). Life grids are known to overcome some of the problems associated with recalling life events (Parry, et al., 1999). These interviews would usually be overlaid with the policy or political economy history as well as biophysical history (e.g., droughts, floods), but several farmers got frustrated with me trying to sketch out a timeline in front of them. They would ask me to bring out the survey sheet and "survey them." Thereafter I modified my technique.

I started by asking farmers about important events in their lives, a classic timeline interview technique. I would have a copy of my survey instrument with me, and thereafter while asking questions on the survey I would ask for details. For example, when a farmer reported a health expense in the last five years, I asked if they borrowed money to meet the expense, whether they changed the crops they grow following the expense, how long it took them to repay the loan and how they repaid it, and such. When they told me they stopped cultivating a crop such as sorghum, I asked why and under what conditions they

might cultivate it again. Once the respondent warmed up to me, I would ask about their big debt events and what was happening in their lives around those times.

Many farmers complained that "*dyaasam undadu amma,*" they don't remember. To aid in recollection, I would ask about their lives and debt events in relation to larger well remembered events, such as the free 7-hours of electricity provided to farmers by the state Congress government in 2004, when a popular chief minister was in power, or the 2015 drought year. If people were reluctant to talk about money, I would ask about their problems. It appeared to me that they were happy someone cared about their problems.

At the same time, I also faced suspicion especially from the men when I asked about debt particulars. Their answers would be vague, they would worry about officials imposing fines on them, and wanted to know what they would get in return – they were ready to tailor their answers if there was a benefit to it. These farmers had clearly been extensively surveyed, and some of them had worked with local NGOs to take advantage of rural development programs such as agricultural performance around development initiatives (Flachs, 2018). There were men in some villages who were upset that I didn't 'survey' them and threatened harm, but at the same time there were women who accompanied me to the bus stop to keep me safe. Some of the best information I gathered was from talking with women in the farm fields where I worked alongside them harvesting vegetables.

I audio recorded these interviews with participant permission. Back in Madison, I transcribed the interviews and wrote up a narrative of each farmer based on what they told

me. Following this, I qualitatively coded these farmer life and debt history narratives using the computer-aided qualitative data analysis software MAXQDA.[20]

In general, I used In Vivo and Pattern coding. I first used In Vivo coding, which is an elemental coding method. Under this method, codes were assigned based on the terms the participants used or concepts that were drawn from their words (Saldaña, 2016). This helps "to capture the meanings inherent in people's experience" (Stringer, 2014, p. 140, in Saldaña, 2016). I followed this with Pattern coding as a second cycle coding method. In quite a few instances, Pattern coding was done simultaneously with In Vivo coding as patterns emerged (Saldaña, 2016). I coded specifically to identify certain thematic information related to why farmers were in debt, the changes that resulted in their lives and livelihoods because of debt, and debt repayment mechanisms. Some of the main themes that emerged thereafter were borrowing to repay, debt for weddings, cultivating cotton with the hope of a good return and to repay debt, borewell drilling to increase agricultural productivity and repay debt, debt for health expenses, and migration to repay debt. Even though the sample was not random, this helped uncover some of the specific conditions and life events that lead farmers to make the choices that they do, that cause different debt and agricultural and other livelihood outcomes. Results from this analysis are described in Chapters 4, 5, and 6.

[20] https://www.maxqda.com/

2.4 Farmer household surveys

The household survey instrument, aimed at capturing a breadth of information, was designed 1) based on survey questions generally asked by social scientists such as demographic and income information, and more importantly, 2) informed by the informal and semi-structured interviews of farmers and other agricultural actors in the region. The questions were grouped under several categories: family size, income sources, major expenditures in the last 5 years, borewell history, debt history, land and operational holdings, crop history, livestock, and migration. I conducted a survey pilot with five farmers and edited the survey based on their feedback. Thereafter, I entered the survey data in Excel and further edited the survey so that answers collected could be entered more efficiently. The full survey instrument is in Appendix II.

I surveyed 207 households in five villages of Mastanbad mandal with 40-43 households surveyed in each village (Teddlie & Yu, 2007). To capture what variability I could, of the five villages, two had a mix of red and black soils, three had only red soils, and one village cultivated no cotton, or so I was told. Within each village the sample was spatially stratified to capture caste variability, and the surveys were collected with the help of my research assistant Karthik. The surveyed households excluded those with whom I conducted life and debt histories.

In this dissertation, the survey data has primarily been used to generate descriptive statistics that show general trends in the region, such as cotton cultivation, borewell drilling, wedding loans, etc. I also calculated a debt level variable based on agricultural assets owned. There are many ways of creating an index of debt based on resources, but for

the purpose of this dissertation I used a simple calculation of total outstanding debt divided by agricultural wealth, which included land and livestock values. Based on the interquartile ranges of this debt by agriculture variable, I classified debt levels as low, medium, and high. I thereafter conducted correlation tests to identify relationships between variables of interest such as debt level and cotton cultivation, as explained in Chapter 6.

2.5 Secondary data

In addition to the primary data, secondary data gathered included agricultural census data, and rainfall data. Agricultural census data at the mandal level is available in India for the years 1995-96, 2000-01, 2005-06, 2010-11, and 2015-16.[21] Rainfall data for Mastanbad mandal for the years 1981-2014, available from the Climate Hazards Group InfraRed Precipitation with Station data (CHIRPS), shown in Figure 2, was obtained with the help of the Revitalizing Rainfed Agriculture Network. This is a dataset of rainfall estimates from rain gauge and satellite observations.[22]

3. Life and debt of Mastanbad mandal farmers

Debt is very personal and can be hard to talk about. While it can be easy to talk about problems, revealing the extent of them is another matter. As the next few chapters will show, oral histories are an important method in deconstructing farmers lives and debt,

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[21] Indian agricultural census data is freely available on the website https://agcensus.dacnet.nic.in/

[22] https://www.chc.ucsb.edu/data/chirps

especially to understand farmer precarity and autonomy. When I ask a farmer what their outstanding debts are, most reply that their debt is all from drilling borewells or due to cotton cultivation. But only when prodded about their life events around their debt events do they reveal the real nature of their debt. As the next chapter explains, farmers are not just in debt because of borewells or cotton, but they are in significant amounts of debt due to health and children's wedding expenses. These different types of debt are intimately related and materially shape farmer lives, livelihoods and the agrarian landscape.

Chapter 4. Why are farmers borrowing money? Production, reproduction, and debt in agrarian households in Telangana, India.

Farmers borrow money for a multitude of reasons. Historically this borrowing has been classified as production debt and consumption debt, loans for economic investment and loans for household expenditures and life event expenses, and loan repayments (Basu, 2006; Guérin, d'Espallier, et al., 2013; J. H. M. Jones, 2008). What is less clear is how these different types of debt relate to each other in a farming household.

Historically, the field of agrarian studies, using the agrarian question framework (Akram-Lodhi & Kay, 2010a), has explained the role of debt in rural transformation and agrarian change. Debt is a central economic feature of agrarian landscapes. It has been studied as a mechanism of surplus extraction, social differentiation, labor control and dispossession (Akram-Lodhi & Kay, 2010a; Bernstein, 1979; Fairbairn et al., 2014; Gerber, 2014). Debt has also been found to shape agrarian landscapes and contribute to agricultural land degradation (Green, 2020; Li, 2014). What has been understudied, however, is how debt via financialization of social reproduction is increasingly shaping agricultural landscapes.

Social reproduction in general has been extensively theorized by feminist scholars, especially its relation to production (Bakker, 2007; Federici, 2019; Katz, 2001; Strauss & Meehan, 2015). What has been undertheorized is the relation between social reproduction and finance (Roberts & Zulfiqar, 2019). Not all aspects of this relation have been ignored, however. Feminist scholars have critiqued neoliberal financial policies and global financial restructuring as well as financial crises and their gendered impacts (Federici, 2014;

Roberts, 2016; Roberts & Zulfiqar, 2019). However, the ways in which social reproduction and finance/debt are related at the household and individual levels has not received much attention (Roberts & Zulfiqar, 2019).

In the context of agrarian change, some of the work on the relationship between debt and social reproduction has shown how household debt and agroecological practices are related (Li, 2014). From analyzing this relationship in the context of microfinance in agrarian Cambodia, Green (2020) finds that debt, borrowed from diverse sources for both agricultural production and social reproduction, has material consequences on the agroecological landscape (Green, 2020). I further explore this relation between debt, production, and social reproduction in southern India in a context where small farmers are increasingly capitalizing agriculture.

The distinction between debt undertaken for agricultural production and household social reproduction can be blurry. I distinguish the two areas here to analyze the ways in which 'productive debt' is different but also related to 'reproductive debt' and the agricultural outcomes that follow. This chapter seeks to answer the following questions: 1) What are the different types of debt that farmers undertake? 2) To what degree is reproductive debt a significant part of an agrarian household's debt portfolio? 3) What relationships, if any, are there between productive and reproductive debt? 4) How do farmers manage complex debt loads?

Drawing from feminist political economy's analysis of social reproduction, this dissertation classifies agrarian debt as productive and reproductive. Examining these different types of debt leads me to the conclusion that the increasingly financialized space

of an agrarian household includes considerable amount of reproductive debt. I also find that productive and reproductive debt are increasingly entwined and lead to cascading patterns of debt, which include an important third type of debt: borrowing to repay.

In this chapter I first describe in detail the different types of debt that farmers in Mastanbad mandal undertake. I then explain some key findings: the significant presence of reproductive debt, the relationship between productive and reproductive debt and agricultural intensification, and the cascading patterns of debt. Thereafter, I discuss the financialization of social reproduction and the increasingly important role it plays not only in agrarian change but also in a farmer's everyday life.

1. Types of debt

Due to the seasonal nature of agriculture production, farmers turn to credit not only for agricultural investment but also for their everyday life expenses. Farmers borrow money for a range of livelihood and life events that have been classified in various ways – production debt and consumption debt, loans for economic investment (which includes agricultural investment, housing, land and livestock expenses), and loans for expenses related to household expenditures, life ceremonies, health, education, and loan repayments (Basu, 2006; Guérin, d'Espallier, et al., 2013; J. H. M. Jones, 2008). In rural India, the largest debt amounts tend to be for loans taken for economic investments and ceremonies. However, the most common purpose for loans is household expenses followed by economic investment and ceremonies (Guérin, Roesch, et al., 2013).

Drawing from the conceptual separation between production and social reproduction that comes from feminist political economy literature, I classify farmer debt as productive and reproductive debt. Production commonly refers to commodity production in traditional and feminist political economy literature, but in an agrarian setting it is used to refer to a farmer's agricultural livelihood activities. Productive debt, therefore, includes loans taken to cultivate crops, drill borewells, or purchase livestock or land. Social reproduction, on the other hand, encompasses all activities that involve both short-term and long-term reproduction of the labor force (Katz, 2001). This includes not just biological reproduction but also subsistence, education, provision of care, and maintenance of kinship networks (Bakker, 2007). Following this, reproductive debt includes all activities that constitute a farm household's social reproduction and therefore includes loans taken for medical, matrimonial, household, and other life ceremony expenses.

There is also a third type of debt that agrarian households undertake: borrowing to repay. Due to the seasonality of farmers' expenses and incomes in addition to declining agricultural productivity, farmers frequently borrow to repay old loans. They use this as a mechanism to maintain creditworthiness, and relations with their creditors who are often relatives, neighbors, and other people that they know.

1.1 Productive debt

Most farmers borrow money or obtain inputs on credit at the beginning of the agricultural season. This investment on crop cultivation is known as *lagodi*, which varies

based on the acreage of land and type of crop cultivated. While this is a classic debt taken for productive purposes to earn a return over and above investment, this section describes other types of productive debt undertaken by Mastanbad farmers: to drill borewells, to cultivate new crops, and for other purposes such as purchasing land or livestock.

Borewell debt

A primary mechanism of agricultural intensification is borewell drilling. Borewells are drilled in rainfed areas, which lack access to canal irrigation, to access groundwater. In Mastanbad mandal, agriculture is primarily rainfed. Before borewell drilling proliferated, farmers there used open wells or dug wells for irrigation to supplement the rainwater supply. These types of wells were at a depth of 10 to 15 feet. When borewells were first drilled in this region in the early 2000s, they were drilled to a depth of 70 to 120 feet. Today, borewell depth ranges between 200 and 400 feet.

There has been widespread borewell drilling in this region since 2005. Most farmers have drilled anywhere between 1 and 30 borewells each. Some of them have drilled multiple borewells in the same year; one farmer drilled 30 in one day. A majority of borewells drilled do not work, meaning that they do not connect with water. Borewell drilling involves a significant amount of expenditure of Rs. 30,000 to 50,000 (USD 462-769) on average. If the drilled borewell strikes water, additional expenses for the motor and pipes can add an extra cost up to Rs. 50,000 (USD 769).

Almost every farmer interviewed has drilled at least one borewell, and these drilling expenses were met by taking a loan. Only Padmamma's household had not drilled a borewell – not because they did not want to, but because there was no electricity line near

their farm fields. And many of the farmers echo Thimmappa: *"borela vallane appulu"* (debt is because of borewells).

New crop cultivation debt

Farmers in Mastanbad mandal have had to cope with rising costs of cultivation. In general, they all agree that *lagodi* used to be much lower in the old days. Not only has *lagodi* increased for their traditionally grown redgram crop due to an increasing use in pesticides and increase in input costs in general, but it has also increased due to the cultivation of new market-oriented crops.

Some of the newer crops cultivated in recent years in this region include cotton, maize, cucumber, and groundnut. These crops require a high investment of at least Rs. 10,000-20,000 (USD 150- 308) per acre compared to Rs. 6500-7500 (USD 100-115) on more traditional crops such as redgram. Yet they are attractive as they fetch higher market rates – especially cotton (Rs. 4020 (USD 62) per quintal in 2017-18) – than more traditional crops such as sorghum (Rs. 1700 (USD 26) per quintal in 2017-18). Cotton is the most popular 'new crop' in this region, and farmers in Mastanbad mandal have increasingly been cultivating it. "*Digubadi ekkuva vasthundi ani*" - they cultivate cotton thinking they will obtain a high yield. Cotton requires twice the investment compared to redgram, but it also yields twice the return.[23] However, cultivating cotton under rainfed conditions can be a

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[23] A note on costs and prices:

- Farmers report a wide range of agricultural investments on crops. For example, while farmers in general report that cotton cultivation requires an investment of about Rs. 8,000-

gamble. In recent years, in which the landscape experienced a mixture of drought and changes in yearly rainfall patterns, farmers have lost their cotton crop, which resulted in an increase in debt.

Farmers in general try new crops based on the success of other people cultivating those crops. One of the farmers interviewed said that they saw some people in their village cultivating cotton and decided to try it themselves. If someone cultivates a plant that does well, others will also want to try it.

Other productive debt

In addition to drilling borewells and cultivating new crops, farmers also are in debt to buy agricultural land, to sharecrop or rent land to farm on, and to purchase livestock. Farmers say that land prices have only increased in recent memory, with *regadi* (black soil) land commanding a higher price than *chalka* (red soil) land. They pay between Rs. 400,000 and 500,000 (USD 6156-7692) for an acre of *chalka* and between Rs. 700,000 and 800,000 (USD 10,769-12,308) for an acre of *regadi*. The exact land price depends on the condition of the land in question and can vary from village to village. Farmers pay for land with any

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9,000, many farmers spend vastly higher amounts. Jangamma's family spent Rs. 10,000 on half an acre of cotton in 2010. Srinivas spent Rs. 21,000 per acre on two acres of cotton crop in 2014, and this increased to Rs. 25,000 in 2017.

- While the market price of redgram, the most commonly cultivated crop in the region, is higher per quintal compared to cotton (Rs. 5,450 vs 4,020 in 2017-18), farmers report that cotton is a higher return crop. This is because, in a good year, the yield in quintal from an acre of cotton crop is higher than that of redgram. Redgram yields about 3 to 6 quintals per acre, whereas cotton can yield up to 10 quintals an acre.

- Farmers also reported that the frequency and quantity of pesticides that they have been spraying on redgram crops has been increasing in recent years.

combination of savings, livestock sale, remittances from family members, and almost always, loans.

Some farmers cultivate not only their own land but also land that they sharecrop (*paaleki)* or rent (*kavulu*). When they sharecrop, they split the cost of the crop including pesticides and fertilizers but excluding labor such as hired labor for weeding, and they share agricultural return with the owners of the sharecropped land. When farmers rent land, they pay a fixed rate of rent to the landowner. These rates can vary between Rs. 5000 and 7000 (USD 77-108), with *regadi* lands renting for up to Rs. 2000 (USD 31) higher.

Another productive expense for farmers is purchasing livestock such as goats, sheep, cows, buffaloes, or oxen. With buffaloes, farmers tend to assign a high value to *jersey cows* compared to local indigenous breed (*oora jati*). Farmers can spend on average Rs. 5,500 (USD 85) on adult goats, Rs. 2,500 (USD 38) on kid goats, Rs. 5,250 (USD 81) on adult sheep, Rs. 1,750 (USD 27) on sheep kids, Rs. 20,000 (USD 308) on cows, Rs. 30,000 (USD 462) on buffaloes, and Rs. 17,000 (USD 262) on oxen.

1.2 Reproductive debt

This section describes the main types of debt farmers undertake to reproduce their households. This includes medical debt to maintain household members' health, matrimonial debt mainly to get children married, and other debt taken for everyday household expenses, building a house, children's education, etc.

Medical debt

Every farmer household that was interviewed had medical expenses related to their household members' health. The older the farmers are, the higher these expenses typically are, and they recur every year. In addition to general ill-health, there can be one-off health expenses due to accidents, delivery expenses of a daughter's first child, and deaths, including suicides in some cases. These health expenses range from a few thousand to a few hundred thousand rupees. They are for doctor visits, medications, lab tests, radiology, and surgeries. Farmers in Mastanbad mandal travel to nearby towns such Kondapalle, Darsi, Rampet, Podur, and Mahabubnagar, as well as the more distant Hyderabad city to access these medical services.

There is a public health insurance scheme called *Aarogyasri* in the state of Telangana, but none of the farmers interviewed were familiar with it. In most cases, the first point of health care contact is the local RMP (Registered Medical Practitioner) who charges an exorbitant sum. RMP's recommend going to a private hospital for further check-ups, usually those hospitals that give them a commission for sending patients. While most farmers prefer going to government hospitals as private hospitals can be very expensive, there are also those who associate private hospitals with a better standard of care and therefore prefer them.

Matrimonial debt

Weddings are some of the biggest one-time expenses that farmers borrow money for. Getting a son married can cost between Rs. 100,00-300,000 (USD 1,538-4,615), and a

daughter's marriage can cost upwards of Rs. 400,000 (USD 6,156). These wedding costs can differ among different castes.

Scheduled Caste (SC) weddings are usually a less expensive affair, ranging between Rs. 100,000 and 150,000 (USD 1,538-2,308). They do not involve a dowry, though the bride's family gives *saamanu* (basic things required to start a household such as kitchen and storage utensils, and cots and bedding). It is the groom's family that funds the wedding ceremony in SC families. The other castes' weddings are performed by the bride's family, and they usually involve a dowry given by her family which can include gold, silver, and a car for the groom. Farmers say the *katnam* (dowry) was much lesser in the old days. Everything is more expensive now, including getting a child married.

Other reproductive debt

Building a house is another big expense that constitutes reproductive debt for a farmer. While some farmers live in houses originally built by their parents or grandparents, many others have built new ones or at least undertaken improvements to their old house. Farmers made use of the *INDIRAMMA* (Integrated Novel Development In Rural Areas and Model Municipal Areas) housing scheme introduced by the Congress government of Andhra Pradesh[24] in the year 2006. House building expenses (Rs. 100,000-800,000, i.e., USD 1,538-12,308) are usually more than what the scheme provides (about Rs. 45,000, i.e., USD 692),

[24] Telangana was a part of Andhra Pradesh until 2016

and farmers take loans to pay the difference. The current Telangana government continues the practice of housing schemes, though these too fall short of costs.

Another continual reproductive expense is for a farmer's *samsaram*. This is a term used to capture the everyday living expenses, such as those for food, of a farmer's family that includes their spouse, children, and parents.[25] When they do not have enough cash in hand, farmers borrow money for their *samsaram.* Often, bank crop loans are used for this purpose.

Some farmers with school-age children also have education expenses that they take loans for. While local government schools are preferred by most farmers, some of the younger farmers are sending their children to private schools. In some families, the sons are even sent to private schools in neighboring towns while the daughters attend the local village government school. One of the farmers, Srinivas, has his daughters (he does not have a son) attend private school in a town about 40 minutes away from his village. His wife and children live in that town during the week and come back to the village on the weekends. Srinivas spends Rs. 50,000 (USD 769) yearly for this purpose.

1.3 Repayment debt

A third type of debt found in agricultural households in Mastanbad mandal is repayment debt. Farmers borrow money to repay portions of their existing loans. Not only

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[25] Parents here refer to those of the male head of the household who usually live with their eldest son. Families in Mastanbad are primarily patriarchal.

does this help them keep their word on when they say they would repay, but it also helps maintain creditworthiness. This in turn allows farmers to borrow again from the same and other sources. Additionally, most farmers personally know their creditors, who are relatives, friends, neighbors, and other people they know. “How can we not repay them?” they say. When agricultural income is not sufficient to repay their loans, farmers borrow to repay. Thereby, the debt cycle continues.

To illustrate, both Venkatamma and Kishtappa have borrowed to repay older loans. Venkatamma says she did this to “keep her word”. Kishtappa explains that this is how they live: by borrowing to repay loans if their agricultural returns and other income are not sufficient for repayment. Another farmer, Jangamma, concurs: “*ikkada kadtam akkada thestham,*” meaning we pay here, get (money) there.

1.4 Discussion on types of debt

Debt is a common feature of agricultural landscapes. Farmers borrow money at the beginning of the agricultural season and repay with their harvests, assuming no untoward crop or weather events. Farmers in Mastanbad mandal are no exception to this, but what the life and debt histories show is that farmers are in a substantial amount of reproductive debt, not just productive debt. Is there any relation between these two and does it change over time? The next section delves deeper into these two types of debt based on the life and debt histories of fourteen farmers in Mastanbad mandal.

2. The significance of reproductive debt

Almost every agricultural household has a mixture of both productive and reproductive debt events. Figures 1 and 2 show the number and timing of debt events of the 14 farmers interviewed. The productive events shown in these graphs do not include cultivating traditional crops such as redgram or sorghum that the farmers have always cultivated. They do however capture any new crops that the farmers have started cultivating in recent years such as cotton, maize, and even rice that a farmer might newly cultivate with the help of a working borewell.

Figure 1 shows that there is clearly an increasing cascade of both productive and reproductive debt events. Productive debt events are higher in number. Every farmer, as figure 2 shows, has both productive and reproductive debt events. All of them have multiple productive events and at least one reproductive debt event.

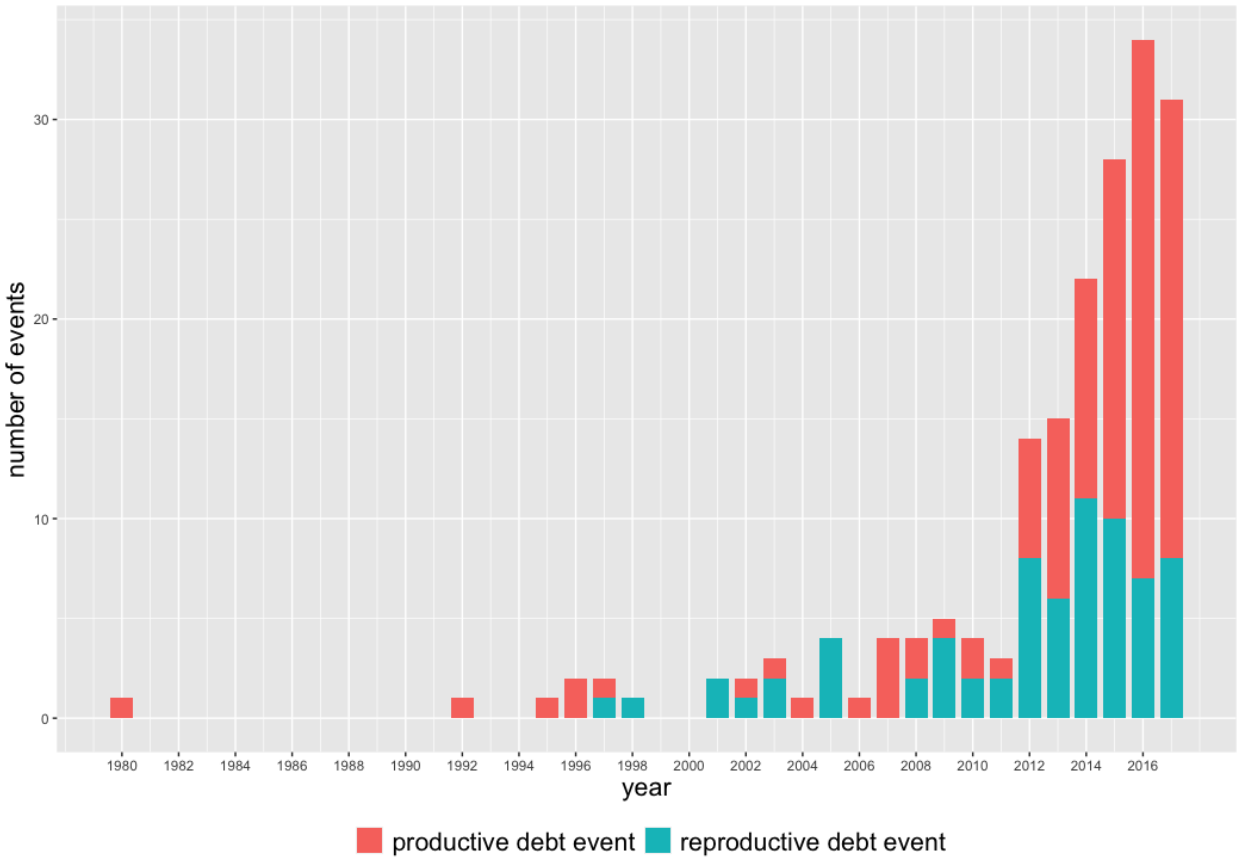

Figure 3. Productive and Reproductive debt events of 14 farmers (from life and debt histories)

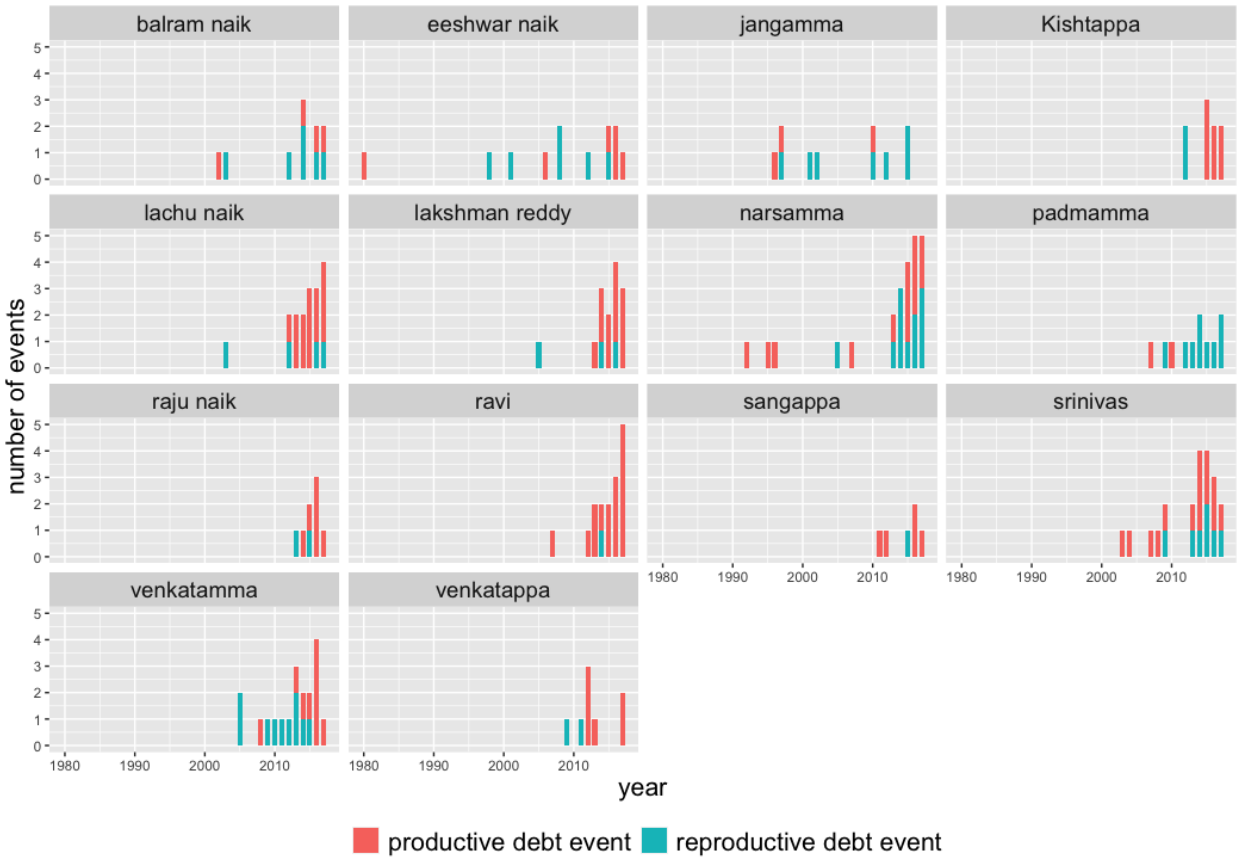

Figure 4. Productive and reproductive debt events of each farmer

While all farmers clearly have had productive debt events in recent years, the reproductive debt events are more scattered. One likely reason for this is the age of farmers. Older farmers have more health expenses and further likely to have children for whose weddings they would have borrowed money.

Farmer Ravi, who only reports one reproductive event in his lifetime, is a young farmer. He mostly takes care of livestock in his family and is evasive when talking about his debts. This is possibly because he has drilled 30 borewells in a year, most likely all drilled in one day. This information was acquired from other farmers, including Ravi's sister.

Ravi's father, despite not knowing the extent of borewell drilling, attributes their family debt to his son's decisions.

For a farmer like Padmamma, Figure 4 shows mostly reproductive events and not productive ones in recent years. This does not mean that her family was not practicing any agriculture. Instead, it reflects that they have not taken loans to intensify their production by drilling borewells, planting a new type of crop, or buying land. Padmamma is also a more cautious farmer, and even though she wants to try cultivating cotton, she hesitates because none of her immediate neighbors grows it, and she does not have the increased security provided by borewell irrigation.

While these debt events can vary by age of the farmer (for example, a younger farmer might not have children's wedding expenses), in general a farmer has a higher number of productive debt events compared to reproductive debt events as seen in Table 2. Between 2013 and 2017 (the past five years from the time of these interviews)[26], each farmer on average had 2.25 productive debt events each year and 0.6 reproductive debt events each year. In addition, on average for each farmer, productive debt events ranged from 1 to 3.6 each year, and reproductive debt events ranged from 0 to 2 each year. The productive debt events reported in Table 2 include the yearly total agricultural investment

[26] Only reported figures from the last five years are considered for two main reasons. One, recollection of dates and amounts gets less accurate as more time passes, and two, amount from further back in time will need to be adjusted for inflation.

(*lagodi*) that almost every farmer incurs, leading them to borrow for investments on new crops such as cotton as a separate debt event.

Table 2. Number of productive and reproductive debt events per farmer (annual average 2013-2017)

	Productive	Reproductive
Min	1	0
Max	3.6	2
Mean	2.25	0.6
Median	2.3	0.4

Table 3. Reproductive and productive event costs in rupees (averages over 2013-2017); 1USD = 65 Indian rupees

	Average	Minimum	Maximum
Reproductive			
Wedding (daughter)	360,000	140,000	400,000
Wedding (son)	200,000	100,000	300,000
Health expense	48,174	3,000	300,000
Productive			
Borewell	46,833.33	25,000	100,000
Cotton (per acre)	35,000		
Redgram (per acre)	7,000		

Even as the productive events are more numerous than reproductive events, each individual reproductive event in general tends to be more expensive than a productive event, as shown by Table 3. While reported debt amounts tend to be suspect, as people do not reveal exact details of their finances, they do give a general sense of how expensive certain events can be. As Table 3 shows, weddings cost upwards of Rs. 100,000 (USD 1,538). On average a health event costs Rs. 48,174 (USD 741), but some health events can also cost upwards of Rs. 100,000. In contrast, drilling a single borewell costs around Rs. 46,833 (USD 721) on average. Cultivating cotton in 2017 cost a farmer at least Rs. 35,000

(USD 538) per acre, whereas redgram cost Rs. 7,000 (USD 108) per acre. A caveat here is that farmers can spend a lot more money on cultivating cotton, redgram, or other crops by using more and more pesticides and fertilizer. Nevertheless, these figures show that reproductive debt is a significant part of the overall debt a farmer owes.

Weddings are a striking example of how expensive reproductive events can be. Figure 3 shows the proportion of reported amounts spent on weddings and health by each farmer family since the respondents (or respondents' husbands) have been the head of their household. On average (of the reported reproductive expenses), a health event can cost close to Rs. 50,000 (USD 769), whereas a wedding can cost Rs. 280,000 (USD 4,308), with a girl's wedding more expensive than a boy's wedding. And as Figure 5 shows, the proportion of money spent on weddings is much higher than money spent on health, even though health expenses are one of the more frequent kinds of expenses. Of course, there can be exceptions to this, such as in the event of a serious illness or accidents.

These expenses also increase with the farmers' age. Figure 5 also shows that wedding expenses become more prominent as farmers are older. This is because they are more likely to have older children who are married. A note here on the two younger farmers who show wedding expenses: Kishtappa has been married twice and reported his second marriage's expenses, and Srinivas reported his sister's wedding expenses. All the other farmers have reported their own children's wedding expenses. The older farmers are also likely to have increasing total health expenses as they age. The one exception that appears in this graph, is Balram Naik, who has underreported his health expenses; he was very reluctant to reveal the extent of his expenses and debt.

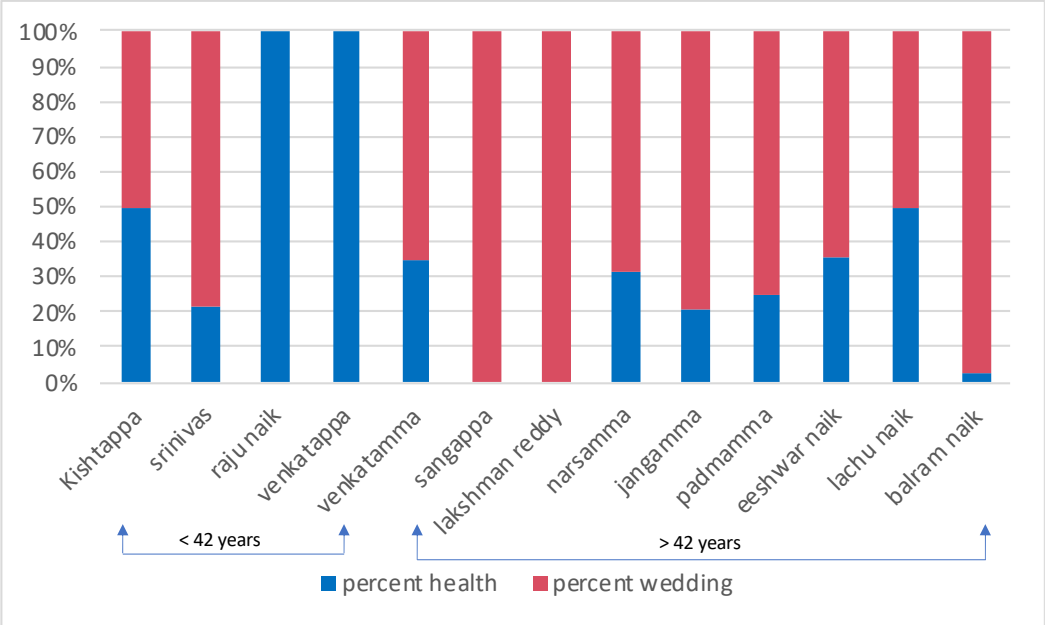

Figure 5. Proportion of health and wedding events in a farm household. (Note: Arranged by age of male head of household, except Jangamma, whose husband is deceased)

This section has demonstrated that reproductive events are expensive and a significant portion of farmers debt. It has also shown that over time farmers have an increasing number of productive events for which they borrow money. The next section further examines this relationship between reproductive debt and agricultural intensification via Mastanbad farmer's narratives.

3. Reproduction, agricultural intensification, and debt

While reproduction and production activities are intimately linked, it is possible to untangle some of these processes. The previous section has established that reproductive debt is a significant portion of farmers' debt. Farmers have a higher number of productive events compared to reproductive events, while each reproductive event can be much more

expensive than a productive event. This section dives further into how these events are related. Before the analysis, here is a series of farmer vignettes that tell their stories of expenses and choices to provide context:

Venkatamma and her husband have been planting cotton since the year of their daughter's wedding. They hoped to repay their daughter's wedding loan by planting cotton. Cotton is a crop that commands a higher rate in the market compared to other traditional crops, and so they thought they would earn enough money to make a profit and pay back this loan. Of the four years they planted cotton, they made a profit only in two of those years. Venkatamma emphasizes that they started taking out loans and finding their lives governed by the need to repay ever since they drilled a borewell, got[27] their daughter married, built a house extension, and since her father-in-law fell ill.

To increase agricultural productivity, another farmer, Raju Naik drilled one borewell in 2014 and another in 2015. Neither of them worked. He then planted a new crop, maize, in 2015 and again in 2016, hoping to clear his outstanding borewell loans. But in both years, his maize crop was destroyed by pigs, and he failed to make a profit. He subsequently planted cotton for the first time in 2017, encouraged by his neighbors' success with this crop and hoped to repay his outstanding loans with cotton crop returns. Unfortunately, at the time of this fieldwork in 2017, his cotton crop had become afflicted with a *rogam* (disease), and it looked like he was going to suffer a loss on it. A few years

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[27] I use the phrase 'got a son' daughter married' to reflect the fact that these are arranged marriages. At the time of this research work in 2017 children's weddings in Mastanbad mandal were primarily arranged by their parents.

prior to drilling borewells, Raju Naik's wife had an operation (health expense) for which they borrowed Rs. 100,000 (USD 1,538), which was still outstanding in 2017. Raju Naik himself had a health expense when he had his appendix removed in 2015 which cost Rs. 40,000 (USD 615). He explains his biggest expenses have been for borewells and hospital expenditures. He has also stopped growing *korra* (foxtail millet), a crop he always used to cultivate, because wild pigs have been destroying the crop. In addition, the market rate for *korra* is quite low.

Venkatappa drilled four borewells, two each year in 2012 and 2013, but only one was a success. Of the Rs. 100,000 (USD 1,538) borrowed to drill these borewells, Venkatappa still has Rs. 30,000 to 40,000 (USD 462-615) outstanding. The year he first drilled borewells, Venkatappa also planted some new crops: cotton and cucumber. He suffered a loss on both crops. The year prior to drilling borewells, his daughter had health expenses of about Rs. 60,000-70,000 (USD 923-1,077), of which Rs. 20,000 (USD 308) is still outstanding. He also built a house around 2009 on which he had Rs. 40,000 (USD 615) of the loan outstanding. He used to cultivate several other crops that he no longer does: notably, he has stopped cultivating *korra* because of wild pigs and *tella jonnalu* because of small yields and low market prices in addition to wild pigs.

Eeshwar Naik has a significant amount of borewell debt outstanding. He has drilled over 30 borewells in his lifetime with the goal of increasing his agricultural productivity. Prior to drilling borewells, his biggest expenses (and loans) have been for health expenses and his children's weddings. To repay these reproductive loans, he has drilled borewells, most recently in 2016 following his youngest son's wedding in 2015. Only one of the drilled

borewells is working, and he uses it for their vegetable garden and paddy when there is sufficient water. He has been growing groundnut in the rabi season since 2015 using water from borewells belonging to another farmer. His wife explains that they never cultivated cotton as they do not have anyone to do the hard work it requires; they do not have the labor for it.

When Jangamma and her (late) husband were younger, they repaid their health expense loans by working in the city as wage labor. They got two of their children married in 2010 (daughter) and 2012 (son). They intensified their agriculture by planting cotton for the first time in 2010, hoping to repay the outstanding wedding loans and to stay in the village and continue farming. But the cotton crop failed, and their debt increased. After working as wage labor in the years that followed, they went back to their village in 2014 when their grandchild was born and cultivated cotton again. Their cotton crop did not do as well as they had hoped, and they ended up selling their land that year to repay some of their mounting debt. Jangamma's husband committed suicide in 2015, due to mounting debt.

Balram Naik drilled two borewells about 15 years ago, the same year he got his elder daughter married. He managed to repay the loan taken for borewell drilling in a year with the paddy crop they cultivated using borewell irrigation. In 2014, Balram Naik got his younger daughter married, and in that same year he also built a house. He planted groundnut for the first time that same year.

Lachu Naik also drilled borewells the same year he got a child married, his son. He drilled three borewells in 2012, of which only one worked. He cultivated groundnut for the first time with the working borewell water in the 2013 rabi season.

Ravi's family has quite a bit of debt from building a house and drilling several borewells. While they sold a lot of sheep, they also cultivated cotton and maize, both new crops for them, to repay borewell loans.

Srinivas drilled three borewells in 2014, all of which failed. He still has outstanding borewell loans amounting to Rs. 110,000 (USD 1,692), to two moneylenders from his village. He then cultivated cotton for the first time that same year, hoping to get a good yield and return to repay his loans. But he has suffered a loss on his cotton crop each year since.

It is clear from the above excerpts that farmers are intensifying agriculture in large part to repay their reproductive debt. With declining agricultural productivity and a landscape of disappearing traditional crops due low market values and pest[28] attacks, they strive to intensify their production by drilling borewells and cultivating new crops. But, when production fails, their total debt burden increases.

3.1 "*Kaalam ledu*" – Insufficient rainfall, decline in agricultural productivity

Every farmer complains that the returns on agriculture have greatly decreased in recent years. "*Kaalam ledu,*" they say, by which they mean 'no season,' referring to the

[28] Primarily wild pigs as described in the farmer vignettes above, and later in this section.

rains/rainy season. Farmers explain that rains in the agricultural growing season are not like they used to be; there is either too little rain, or it rains in the wrong times (e.g., just before harvest time). The changes in yearly rainfall patterns lead to agricultural losses. For example, rains in November result in cotton rotting in the fields.

Analyses of historical precipitation trends in India have shown a decrease in precipitation throughout India (Sen Roy & Balling Jr, 2006). They also show "an increase in the frequency of extreme precipitation events over the period 1910 to 2000" over most of the Deccan Plateau, especially during the monsoon season in July (Sen Roy & Balling Jr, 2004, p. 464). Drought severity also has a historically increasing trend across most of southern India (V. Gupta & Jain, 2018). The Intergovernmental Panel on Climate Change's (IPCC) projects an increase in extreme weather events across India (Aggarwal & Ghosh, 2021). These will take the form of more intense and frequent heat waves as well as increasing and more frequent precipitation events.

3.2 "*Borela vallane appulu*"[29] – Debt is because of borewells

The rains are not like in the old days and so, farmers explain, they have been drilling borewells with the *hope* that they get access to water (*"aashaki dorukutudi emo ani"* - Thimmappa, Korapur). They see their neighbors drilling borewells and do the same, hoping they can gain a reliable source of water too.

[29] Quote from Farmer Thimmappa.

Under rainfed conditions with no access to irrigation, farmers in this region can cultivate only redgram successfully. This is in addition to more traditional drought tolerant crops like sorghum, but it is redgram that fetches a higher market price. But with borewell water, farmers expect to cultivate any crop they want to and thereby increase their agricultural productivity.

Rice is a staple food that farmers want to cultivate. This is a crop that can now only be cultivated if farmers have access to borewell water for irrigation. Two to three crops of rice a year are possible with access to irrigation, and several farmers started cultivating rice only after they had a working borewell. Farmers also drill borewells with the goal of cultivating groundnut in the rabi season. Lachu Naik even says that he drilled borewells to cultivate these (rice and groundnut) crops and survive ("*palli kayalu, vadlu, manam bathakalani aesthi"* - Lachu Naik).

Rice and groundnut are not the only crops cultivated with borewell irrigation. When there is water available in their borewell, farmers use it for whichever of their crops needs watering. They can also grow crops in the rabi (winter) season with borewell water. When there is only a little water available through their borewell(s), farmers generally use it to grow vegetables. In addition to irrigating their crops, farmers use borewell water to water their livestock, to drink water, to mix fertilizers and pesticides.

However, borewells are expensive. And in the Deccan Plateau where Mastanbad mandal is located, groundwater aquifers are shallow, spatially irregular, and dependent on rain. With most borewells failing, farmers end up in debt. "*Borela vallane appulu" (debt is because of borewells)* - Thimmappa.

3.3 *Adavi pandulu "dummu dummu chesthayi"* – wild pigs turn everything (crops) to dust

Adavi pandulu, or wild pigs, are a significant problem for farmers in Mastanbad mandal. These pigs destroy crops, especially sorghum (both yellow and white varieties) and groundnut. They also eat vegetable crops, maize, green gram, and millets including little, finger, and foxtail millets. They trample up the rice fields and have recently been spoiling the redgram crops too ("*kandulu kuda cherputunnayi*" says Venkatamma). Farmers complain that the pigs destroy entire fields of crops and farmers cannot even get seed from their crop.

Farmers say that the pig population has increased in the last 10 to 15 years, and their numbers are continuing to increase. One explanation they give for this is that since the lakes have dried up, these barriers to mobility are gone, and the pigs cross from the forest into the fields easily. The Indian government does not allow killing of wild animals, which farmers say has also contributed to the problem.

The entire village of Gudur has stopped growing yellow sorghum because of the pigs. Some of the farmers say they want to cultivate it, but if they are the only farm with sorghum, the pigs will destroy it without fail, as they will lack safety in numbers. Many farmers have stopped cultivating groundnut due to the pigs as well. Other crops that they have either ceased or reduced cultivating are white sorghum, green gram, foxtail millet, and white safflower.

To protect their fields from the pigs, farmers in some villages keep watch through the night. Some have placed barbed wired around their fields. A few have been innovative

and trained dogs to attack the pigs, and they let the dogs eat the pigs. They still seek a solution to the pigs and ask me if there is some '*mandu*', meaning either medicine or chemical, that they can use to protect their crops from pigs.

3.4 "*Market lo chellavu*". No market for traditional crops.

Traditional and drought-tolerant crops such foxtail millet, little millet, finger millet, sorghum – white and yellow, and horse gram were a staple of farmers in this region. However, many farmers who were interviewed do not cultivate most of these crops anymore. They report that these crops were last cultivated by their *tathalu* (grandfathers) and *peddalu* (ancestors). They no longer cultivate them as there is no market demand for them, and they have a low market price as well. Yellow sorghum is still cultivated but is declining because of wild pigs.

The NGO Rythu has been working in this region and encouraging farmers to revert to traditional cropping systems. They provide farmers with subsidized and sometimes free seed for crops such as foxtail millet (korra) and little millet (sama). Some of the farmers have used this seed for a small portion of their land such as half an acre, but they suffered a loss on it due to wild pigs or rains during harvest time. As a result, farmers are not enthusiastic about cultivating these crops on a larger scale.

3.5 Why are Mastanbad farmers planting cotton?

"*digubadi ekkuva vasthundi ani*" (thinking we will get a high yield/ return) and

"…*ade aalochana thoti inka"* (with the thought of [repaying loans]) – Srinivas

"*baagupadtaamani esukunnam*" (thinking we will do better) - Narsamma

Cotton is a relatively new crop grown in this region. Farmers cultivate Bt cotton[30] not really knowing what 'Bt' is. Some of them think that is just a name, while others believe that it is irrigated cotton. But mostly, to them, they are planting *pathi* (cotton). They do not plant the refuge[31] seeds that come within the Bt cotton seed packet, assuming they will need to apply more pesticide if they do plant them. Farmers downplay their knowledge at this point and compare themselves to sheep, implying ignorance and that they do not know much. They say that if they knew what Bt cotton was, they would be better off. These responses from farmers about the lack of knowledge resonate with scholarship on 'performance for development' (Flachs, 2019a).

Even though they may not know what exactly 'Bt' cotton is, farmers in Mastanbad mandal cultivate it with the '*hope*' that they would do well and obtain a '*manchi digubadi*' (a phrase often used to justify crop choice and can refer to a good yield as well as a good return). They see other farmers in their own and neighboring districts and villages cultivating cotton and profiting and hope for the same experience[32]. Some farmers explain

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[30] Genetically modified cotton cultivar that includes the *bacillus thuringiensis* bacterium which naturally repels the cotton bollworm.

[31] Bt cotton refuge seeds: Bt cotton seed packets contain a small package of non-Bt seeds. These are genetically identical to the Bt seeds, but do not consist of the bollworm resisting i.e., the Bt producing gene. These seeds are intended to delay the development of Bt resistant insects.

[32] What neighbors cultivate does influence a farmer's crop choices, especially if the neighbor is getting a good yield and making a profit. Padmamma wants to cultivate cotton, but she says no one around her wants to. She seems to want to see one of her neighbors having success with cotton before she cultivates it herself. This is especially because she has chalka land and no borewell.

that they started cultivating cotton to do *panta marpidi* i.e., crop rotation which farmers do practice in general if they have enough land. But the main and most prominent reason they plant cotton is to repay loans. They hope to repay their loans incurred for events such as children's weddings, family health expenses, drilling borewells, with their cotton earnings. Cotton cultivation requires double the investment of the more traditionally cultivated red gram, but it is also a crop with a higher return. And so, farmers hope that the market rate will be good (like it might have been in previous years) and hope that they will get a good crop. They "hope that they will make a profit (*laabham*) and do well so their situation will improve", as Venkatamma says ("*Aasha ki. Payasa gittubadi untundani. Yaadayithe laabha padtaam ani aasha"*)

3.6 Reproductive debt driven agricultural intensification

While it is commonplace to borrow money at the beginning of the agricultural season for cultivation purposes, farmers used to be able to repay these loans with crop harvests. But with increasing input costs and a decline in agricultural productivity, farmers find it increasingly hard to repay their cultivation loans. Add to this their reproductive loans, and farmers are desperate to increase their return on agriculture. Widespread borewell drilling is one obvious indication of this push to increase agricultural productivity. Some farmers have drilled between 25 to 30 borewells in a short period of time, often with only one or none succeeding.

The farmer histories also indicate that most farmers' borewell drilling follows a major reproductive expense, such as a child's wedding, a health expense, or building a

house. They drill borewells hoping to increase their agricultural return and repay their reproductive loans. But failed borewells only add to their debt loads. To repay both their borewell loans as well as the outstanding reproductive loans, farmers try cultivating new crops that fetch a higher market price such as cotton, or maize, compared to traditional crops like sorghum, and redgram. When these crops fail, due to climactic conditions or crop disease, farmers' debt loads increase further. Clearly, reproductive debt is driving agricultural intensification in a landscape with interannual rainfall variability under changing climatic conditions,[33] which leads to a further increase in debt burdens.

4. Cascading patterns of debt

These entanglements between productive and reproductive events lead to cascading patterns of debt, including borrowing to repay previous loans. Farmers rely on and juggle different sources of debt ranging from formal to informal, described in the next chapter. In addition to using borrowed money for productive and reproductive purposes, farmers increasingly borrow to repay loans, described as repayment loans earlier in this chapter.

Eeshwar Naik explains that they borrow Rs. 10,000 from one person and use that amount to pay interest to another person they owe money to. They borrow from whomever lends them money ("*evaristhe valla daggira thechukuntam"*). They even use

[33] Described in chapter 3 under research site description

bank crop loans to repay existing loans. In 2017 they used a bank crop loan to pay interest on their borewell loans in addition to using it for their *samsaram* (household expenses).

Another farmer, Kishtappa, explains that they keep some of their crop harvests for their family's consumption. If the remaining harvest is not sufficient to repay their moneylender, they borrow from a different source and repay the older loan. This is how they live, he says. Similarly, the farmer Sandhyamma has also borrowed money from different people to repay their older loans. She did this to keep her word (on repayment).

This type of debt where farmers borrow to repay existing loans is not something that farmers like to talk about. Not many farmers report it to a stranger unless expressly prompted about it. This is seen in the household survey where only 6.3 percent of 207 respondents voluntarily reported borrowing to repay. But due to the nature of qualitative interviews and oral histories, it is possible to obtain some of this sensitive information. Farmers I interviewed and met with multiple times over several months of fieldwork have described the burden of debt and how borrowing to repay is common practice. Doing this, farmers keep their word on repayment, maintain their creditworthiness, and can access future loans.

While farmers can access formal sources of credit for production purposes, it is almost impossible to do so for reproduction. Bank loans are available for cultivation based on the amount of farmland owned. But most farmers use a bank loan for their *samsaram*, i.e., household expenses. 56 percent of farmers surveyed used a bank loan to fund their *samsaram*. Moreover, 62.3 percent of the farmers surveyed used a bank crop loan for a

reproductive purpose, which includes not only their *samsaram* but also expenses related to building a house, children's and other family members' weddings, and health.

The interplay between production and reproduction in agrarian India not only leads to an increasing debt burden, but also results in cascading patterns of debt and novel forms of financialization. Farmers are in debt to repay debt.

5. Discussion

Debt is an important component of agrarian landscapes. To answer the larger question of why farmers are in debt, I analyze life and debt histories of farmers in Mastanbad mandal and find that farmers borrow for both agricultural production as well as to reproduce their households. Classifying debt therefore as productive and reproductive debt for this analysis shows that: 1) reproductive debt is a significant part of overall debt; 2) productive and reproductive debt are intertwined in complicated ways; and 3) these entanglements lead to cascading patterns of debt, including borrowing to repay previous loans.

While borrowing money at the start of the agricultural season to invest in cultivation is not new, the significant debt undertaken by households to fund reproduction is a pressing concern. This is especially so in the context of neoliberal economies where agricultural sectors have faced a withdrawal of state support systems, and integration into world markets which all contribute to declining returns for domestic farmers (Patnaik, 2003). Added to this the inherent risk of rainfed agriculture under changing climatic

conditions, farmers report agricultural productivity has declined, and they must borrow to survive.

To quote the old farmer Thimmappa, "*appu lekunda brathikinchina*" – he raised his family without debt. But he also explains that the rains are not like when he was younger, and his family is now in debt because of his son's decision to drill borewells. While borewells allow farmers to access groundwater, increase cropping intensity, and extend the agricultural season, the status of groundwater in Mastanbad mandal is characterized as semi-critical. Very few of the drilled borewells actually strike water, and the vast number of borewells drilled by farmers with the hope of accessing groundwater leads to further depletion of an already scarce resource. This is similar to elsewhere in India (Birkenholtz, 2009) as well as more specifically in the Deccan Plateau region where agriculture is rainfed and has led to a landscape of failed borewells and debt (M. Taylor, 2013b).

Farmers drill borewells with the *hope* of accessing water. Their decision to drill these wells usually follows a substantial expense for their household reproduction, which declining agricultural returns cannot pay for. For example, Venkatappa drilled two borewells the year following his daughter's health expense for which he borrowed money. He also had outstanding loans from building his house a few years prior as well. Eeshwar Naik, Balram Naik, and Lachu Naik all drilled borewells right after they got their children married.

Just as with drilling borewells, farmers cultivate cotton with the *hope* of a good return and thereby repaying their outstanding loans. Cotton cultivation usually also follows a reproductive event or even borewell drilling. Venkatamma's family cultivated cotton for

the first time the year they got their daughter married, with the hope of repaying the wedding loan. Venkatappa, who drilled borewells following his daughter's health expenses, also cultivated cotton and cucumber for the first time that same year. He suffered a loss on both these new crops. Jangamma's family also cultivated cotton for the first time to repay wedding loans but suffered a loss on it as well. When borewells fail, there is a loss on cotton or other new crop (such as cucumber or maize) cultivated, or both misfortunes come to pass, debt increases.

Clearly productive and reproductive debt are intimately related. In the context of declining agricultural return in a rainfed landscape and groundwater overexploitation, farmers increasingly borrow to survive and reproduce themselves. Thereafter they intensify agricultural production via drilling borewells or cultivating new crops, especially cotton. When these capital-intensive choices fail, they fall deeper into debt, often having to borrow for everyday household expenses as well. Farmers such as Venkatamma resort to this kind of 'borrowing to repay' not only to maintain her family's creditworthiness but also to keep her word.

Some farmer's choices to intensify agriculture can be aspirational (A. Gupta, 2017). A shift towards capitalist agriculture can embody rural aspirations towards new possibilities and alternative better futures (Bennike et al., 2020). Indeed, some say they planted cotton "thinking they would do better in life" by getting a "*manchi digubadi*", which is a catch all script meaning good yield or good return used to justify agricultural choices (Flachs, 2019b). But on probing further, almost everyone revealed that most importantly

they *hoped* to repay their debt with cotton returns or a general increase in agricultural productivity resulting from borewell irrigation.

Borrowing to survive and repay follows larger trends in the global economy where social reproduction has become an increasingly financialized space. While much of the early scholarship on social reproduction focused on the production-reproduction binary, more recent scholarship has shown the impacts of neoliberal restructuring and economic crises on households' social reproduction. Financialization and debt are intimately linked to social reproduction (Montgomerie & Tepe-Belfrage, 2017; Roberts, 2016; Rodríguez-Rocha, 2021). An increase in austerity measures and the withdrawal of state support has led to individual households' increasing dependence on personal debt for survival and reproduction (Dowling, 2016; Roberts, 2016). This is prevalent in rural agrarian landscapes as well, and debt via financialization of social reproduction materially alters the landscape, as seen in Cambodia, where there has been a shift to increasingly capitalized broadcast agriculture with implications for local biodiversity (Green, 2020).

This is evident among smallholder agriculture in southern India too, as this chapter has shown. Farmers increasingly fund social reproduction through loans in the context of declining agricultural returns. While some of this decline can be attributed to nature of rainfed farming and the inter-annual rainfall variability in this region, it is also due in large part due to liberalization of the Indian economy in the 1990s as well as the preceding green revolution policies that entrenched farmers in debt and capitalist relations.

Mastanbad farmers all complain about the rains and declining agricultural productivity. When asked about debt, they all readily explain that their debt is due to

borewell drilling and cotton cultivation, i.e., agricultural production debt. Wedding or health debt is not the first thing they talk about. But when asked further about their life events, they reveal how these productive loans for drilling borewells, or cotton cultivation usually follow a large reproductive expense such as getting a child married or an ill-health event. Reproductive and productive debt appear to be distinct categories for the farmers, even though feminist scholarship has shown that these are intimately connected. While taxonomies and categories and the way people organize their worlds can be very context-dependent, the distinction between reproduction and production can help untangle the relationship between these. Reproductive debt drives productive debt, which thereafter results in cascading patterns of debt.

The financialization of reproduction, production, and repayment moreover has implications for farmer autonomy and precarity. As the next chapter shows, farmers borrow from a range of credit sources, both formal and informal. Informal sources continue to be important, and decades of state policy to eliminate them has only resulted in a proliferation of credit sources, each laying claim to a farmer's limited surplus.

Chapter 5: "*We get [money] from whoever gives it to us*" – The proliferation of credit and debt in rural India

More than half of agricultural households in India are indebted (NSSO, 2014), and the previous chapter has established that they borrow for production, reproduction, and repayment. They juggle expenses throughout the year. In addition to smaller everyday expenses such as those for food, farmers also require quick access to capital for larger cropping expenses at the beginning of the agricultural season, planned family events such as weddings, and emergency expenses related to health. However, farm income tends to be seasonal from post-harvest sale, as most farmers in India continue to rely on monsoon rainfall for cultivation, which results in one main growing season (*kharif*[34], or the monsoon season). Accordingly, producers receive agricultural income towards the end of this season (between October and January, depending on crop and geography) and only at the point of sale. This is true for much of the rainfed agricultural region, which is more than 50 percent of the net sown area in India and in which less than 30 percent of the cultivated area is irrigated (NRAA, 2012).

Because of this temporal mismatch between income and expenses, farm households borrow. The sources of their credit are highly variable. They borrow from both formal institutional sources as well as informal sources of credit that include moneylenders. In

[34] The agricultural growing season in India is divided into two, kharif and rabi seasons. The kharif season coincides with the southwest monsoon with crops sown June-September and harvested either October-November or December-February, depending on the crop duration. The rabi season is the winter season with the crops sown after the summer monsoon around October-November and crops are harvested the following spring or early summer.

2012-2013, informal lending made up a large part (about 40 percent) of farmers' credit sources. This is even higher for farmers in the lowest size class of land owned, i.e., those who own less than 0.01ha of land; they obtained 85 percent of their credit from informal sources (NSSO, 2014). The share of informal lenders in an agricultural household's credit portfolio went down in 2018 to about 30 percent, but this is still a remarkably high proportion (The Wire, 2021), especially in a context where the ongoing extension of modern banking and lending is a critical part of development infrastructure. This share of informal lending is likely underreported, moreover, as surveys tend to underestimate the share and importance of non-institutional credit sources (Basu, 2006; Hussain, 2018; J. H. M. Jones, 2008).

Informal credit has long bedeviled the Indian state. Historically and to the present day, state efforts to expand formal credit have been deployed as a mechanism to root out the informal moneylender from rural agrarian India. But despite this, the informal moneylender continues to be prevalent. This is because informal lending in rural areas has been viewed by state and non-governmental actors as pathological for the debtors, exploitative, and an object of policy for the expansion of formal lending. Prior to the 1950s, moneylenders were the primary source of finance for farmers (Pradhan, 2013). But since then, extensive reforms to the financial sector led to an increase in institutional credit (also known as formal credit) available to the agricultural sector. These have taken the form of rural cooperative credit banks (1950s), nationalized bank credit (1970s and 80s), and microfinance institutions and private-sector bank lending (1990s) (Basu, 2006; J. H. M. Jones, 2008). Despite an increase in the share of formal credit that farmers accessed up to

the 1990s, the All-India Rural Credit and Investment Surveys in 1991, 2002, and 2012 show that informal sources of credit are still significant. The current status of smallholding household credit sources, however, and the history of policy focus in India towards this end, with its attendant "see-saw" struggle between different creditors in the sector, is not well recorded.

In this chapter I address this gap by exploring the current state of rural credit portfolios in a critical and representative site. I also explore the emergence of institutional mechanisms to eliminate informal lending over a long historical period and conclude with a consideration of whether and how access to formal credit has, as intended, liberated the rural farmer from moneylenders. I examine what sources of credit have been historically available in rural India and the relationship between informal and formal credit. I ask: what is the long history of interplay between credit sources available to the contemporary smallholder? What does the credit profile of agrarian India look like as a more competing lending market emerges? To answer these questions, I draw on both the life and debt histories and household surveys of farmers in Mastanbad mandal in addition to literature of historical credit sources.

While modernization theorists and development project proponents would suggest that formal credit releases the farmer from the clutches of the moneylender, I find that moneylenders and informal credit sources remain an important part of a farmers' credit portfolio. Informal lending persists despite more than a century of policy seeking to eliminate it, and access to formal sources of credit have only added more credit sources to the portfolios of farmers. While formal credit is preferred by producers due to its much

lower interest rate compared to informal credit, its availability tends to be limited. Additionally, what manifests in rural agrarian areas is a contemporary debt system characterized by a proliferation of different sources of credit. This is emblematic of a *struggle*, as Gibson-Graham define it, where a number of different actors attempt to lay claim to a farmer's surplus labor[35] (Gibson-Graham, 1996) via interest payments.

Drawing on the life and debt histories as well as the surveys in the research site, Mastanbad mandal in Telangana, India, I analyze the credit portfolio available to farmers. This analysis points to the continued existence of informal moneylenders despite contemporary efforts to eliminate them, as well as to the resulting increase in credit sources and debt. To help explain this perverse outcome, I provide a brief unified history of formal and informal lending in India during pre-colonial, colonial, and post-Independence eras. The results suggest the degree to which state credit efforts, consistently and despite their best intentions, have only proliferated debt. I conclude by considering the structural conditions that drive this outcome, exploring credit in relation to surplus extraction in a capitalist economy, which depends on formal credit to accelerate circulation. Informal lending in such a system, I suggest, slows capitalist circulation, and so engenders repeated and typically fruitless policy efforts for its elimination.

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[35] Surplus labor is the labor produced in excess of what is needed for survival

1. Contemporary credit portfolio of Mastanbad farmers

The results of local debt histories are clear: informal credit sources, even with available formal credit, are an important and consistent part of life in Mastanbad mandal. There are multiple reasons for this: formal credit is accessible mainly to those who own land, and the amount of credit available is limited and not timely. As a result, informal sources are critical for farmers' livelihoods as well as coping with complex, and often expensive, life events.

This section describes the range of credit sources reported by contemporary farmers in Mastanbad mandal and what they are used for. While the nature of credit sources does fall on a continuum between formal and informal, I distinguish between these categories based on the differing roles they play in the circulation of capital (Harvey 2006). Formal sources, characterized by institutional regulation, serve to recirculate accumulated interest through relending and reinvestment, which valorizes capital. Conversely, informal sources commonly lead to the consumption of surplus (via interest) by lenders themselves as a means subsistence, which slows or impedes such recirculations. Therefore, these sources represent distinct, overlapping, and intertwined but arguably competing economic forms. A close examination of farming households reveals that producers avail themselves of both.

"*Evaristhe valla daggira thechukuntam"* – Eeshwar Naik

(We get [money] from whoever gives it to us)

1.2 Formal sources of credit

Formal sources of credit are technically available to all farmers, but availability is skewed based on land ownership or through membership in farmer savings and self-help groups. The main formal credit sources for farmers in Mastanbad mandal are banks, women's self-help groups, and NGO-facilitated farmer cooperative groups.

Banks

Almost every farmer who owns land holds a bank crop loan. This is a loan available to farmers who own agricultural land at a *paavala mithi* (quarter interest), i.e., Rs. 0.25 (approx. USD 0.0034) per month interest or 3 percent per year, according to the farmers.[36] This interest rate is far lower than that charged by moneylenders, which is typically a staggering 36 percent per year. Farmers understandably report a strong preference for borrowing from the bank, but the amount of credit available there is limited. Loan amounts from banks vary based on the amount of land owned by the borrower and by the crop against which the credit is raised. Mastanbad farmers typically borrow from the bank in or closest to their village such as the State Bank of India (SBI) branches in Mastanbad, Kondapalle, and Darsi.

Banks do offer non-crop loans, such as gold loans and livestock loans, but bank crop loans are most common. Under such loans, banks hold title to the land, known as passbook or *patta*, as a source of collateral for the crop loan. Banks can lend crop loans up to a

[36] The rates were increased by the SBI in 2017 to 7% per annum.

maximum of Rs. 100,000 (USD USD 1,538)[37] to a farmer who owns more than 5 acres of land. While the crop loan amounts vary depending on the type of crop the loan is taken against,[38] bankers in general lend a standard amount of Rs. 18,000-20,000 (USD 276-308) per acre of land owned. This loan amount is set at the discretion of the banker, and a standard amount per acre is usually used as land values are often difficult to ascertain (Bank manager, SBI Mastanbad, 2017).

Bank crop loans are issued for a duration of one year, but loan renewal is common. Most farmers renew this loan each year, paying interest owed on the loan for the year past.[39] Should a farmer want to extend their credit, repayment of principal is typically required, with approval to a higher crop loan coming within a few days. Critically, for the purpose of obtaining a higher loan amount or renewing their previous loan, farmers usually borrow money.

Farmers often borrow from informal sources, most often middlemen who sit outside the bank, to renew their formal bank loan. For a fee that ranges between Rs.1000 and 4000 (USD 15-62), these middlemen fill out the necessary paperwork for the farmers to renew or apply for a new loan. They also lend farmers the money needed to repay the interest or the principal amount to the bank. Farmers thereafter repay these intermediaries either from

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[37] 1USD = 65 Indian rupees (average conversion rate in 2017, when these data were gathered)

[38] Red gram 18,000-22,000, Paddy 27,000-30,000, Cotton 33,000-38,000, Jowar 18,000-20,000, Groundnut 27,000-34,000 – Rates in rupees given by bank manager of SBI Mastanbad in August 2017.

[39] The banker tells the farmer how much interest is owed on the loan when asked for renewal.

the new sanctioned bank loan or by borrowing from elsewhere. These middlemen are themselves essentially informal moneylenders who farmers use to access formal credit.

Farmers usually borrow a higher amount than the previous year instead of renewing the crop loan for the same amount. Indeed, some farmers renew their bank crop loan each year hoping for a loan *maafi* (loan waiver).[40] Kishtappa, a respondent from Gudur village, has been doing precisely this. He borrowed a crop loan amounting to Rs. 18,000 (USD 276) in 2011, and from renewing this loan yearly for higher and higher amounts, his 2017 bank loan amounted to Rs. 46,000 (USD 708).

While bank crop loans are intended to be used for agricultural cultivation, they are more commonly used for a host of other purposes. Typically, producers use money received through such a loan for *lagodi*, i.e., agricultural investment to cultivate crops. Producers report, however, that in many cases bankers tacitly acknowledge that loans will not be used for crop cultivation but still sanction them. Many farmers report using bank crop loans to pay off existing loans or interest on loans, paying for children's wedding expenses, to build a house, or most often, for their *samsaram* (household expenses).[41] More

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[40] Loan waivers are inherently political in India. They were first announced in 1987 in the state of Haryana. There was a second wave of loan waivers by multiple states in the country including the Central government from 2006-2014. More recently, there has been a third wave in some states from 2016-18 (Phadnis & Gupta, 2019). The Telangana Government made a commitment to waive loans up to Rs. 100,000 per farm household, to be undertaken in four phases, with Rs. 25,000 waived in each phase (https://clw.telangana.gov.in/About.aspx accessed: July 24, 2022). The loans waived are formal loans, including crop and gold loans from banks.

[41] 81.6 percent of farmers surveyed for this project reported borrowing a bank crop loan. 62.3 percent reported using a crop loan to pay for non-agricultural expenses such as health, marriage, and *samsaram* expenses. More than 50 percent of the farmers reported paying for their *samsaram* with a bank crop loan.

than 50 percent of the farmers surveyed reported using bank crop loans to pay for non-agricultural purposes. This is because the timing of the loans does not coincide with the start of the agricultural season. When received at a later time, farmers use crop loans to repay the loans taken from other sources and for other purposes.

Farmer groups

A second common source of formal credit is farmer self-help groups, namely savings and credit groups. Self-help groups are a popular developmental intervention, and women's groups especially are vehicles for social, economic, and political empowerment (Brody et al., 2017). These interventions were initially launched in India in the 1980s with a goal of reducing poverty and improving rural livelihoods via increasing access to credit (specifically microfinance). They have more recently become avenues for social mobilization and accountability, providing awareness of rights and entitlements and delivering health and nutrition outcomes (N. Kumar et al., 2019). Self-help groups in India gain access to credit through countless central, state, and parastatal government schemes (such as Indira Awas Yojana, Integrated Child Development Scheme, etc.), as well as international aid money (from foundations such as the Gates Foundation and the World Bank).

While many types of farmer groups exist, the most common in this region of Telangana are mahila sangams (women's groups), *rythu sangams* (farmer groups), and *mekala sangams* (goat groups). Most women who are married are part of *mahila sangams*. The NGO Rythu that works in this region has facilitated the setting up of a Farmers'

Cooperative in Mastanbad mandal under which there are *rythu sangams* and *mekala sangams*.

i. Mahila sangams

Mahila sangams are women's self-help and savings groups. The members of these groups contribute a monthly share (called *podupu*) of Rs. 100 (USD 1.50) each, which forms a group's savings. The group obtains an external loan[42] once every three years, which is disbursed equally among the members of the group. Each individual repays a small portion of this loan amount monthly, and the total repayment period can be between two and three years. To illustrate, a respondent group of 12 women received a loan of Rs. 300,000 (USD 4,615) between all of them from a government scheme divided equally among them. They each pay Rs. 1000 (USD 15) every month towards repayment of this loan, which carries an interest rate of 12.5 percent per year.[43] Every three years, the loan amount they receive is higher than the previous one. The leaders of the group apply for the loan and return to the bank to continue borrowing. In addition to external loans, women's group members can also take out a loan from group savings when required.

ii. NGO-facilitated farmer groups

Non-governmental organizations (NGOs) have been important actors in developmental work for decades. These are formally defined as "organizations that are

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[42] Women's self-help groups (*mahila sangams*) receive loans from state governmental schemes via the state's Department of Women Development and Child Welfare. These groups may also receive other benefits such as those provided to pregnant and lactating women, health care for sick infants, and also political information – all intended to empower rural women.

[43] This is the interest rate charged under the STREENIDHI program in Telangana that provides loans to mahila mandals. (Stree Nidhi Credit Cooperative Federation Ltd. Annual Report 2017-18).

generally formed by professionals or quasi professionals from the middle or lower-middle class, either to serve or work with the poor, or to channel financial support to community-based or grass-roots organizations (CBOs or GROs) of the poor" (S. Sen, 1999, p. 332). These organizations channel funds from national programs and international donors, and they are involved in a range of activities including social justice, women's empowerment, and income generation for marginalized groups in both rural and urban areas (Kilby, 2010).

The NGO Rythu facilitates the formation of farmer groups under a cooperative model in this region. Rythu works as a support organization and provides varying services including acting as a Resource Support Organization and Program Implementing Agency for projects funded by the National Bank for Agriculture and Rural Development (NABARD). It also coordinates partnerships with Indian and International funding programs and works with state government programs.

Rythu has helped establish farmer cooperatives in numerous mandals in Vikarabad district and facilitated the formation of *rythu sangams* (farmer groups) and *mekala sangams* (goat groups). The *rythu sangam* members can be any farmers, whereas the *mekala sangam* members are farmers who own goats. The NGO has targeted women farmers to form *mekala sangams*.

In both types of groups, farmers contribute a monthly *podupu* (share) of Rs. 1000 (USD 15). Group members can obtain a loan from the group's savings as needed. The loans

are charged an interest rate of Rs. 3 (approx. USD 0.04) per month.[44] This interest rate translates to Rs. 3 per Rs. 100 (USD 1.50) borrowed per month (3% per month), which is equal to 36% per year. When asked why the interest rate is so high, the women of a goat group say that they charge a Rs.3 interest with the understanding that this sacrifice brings more money into their common group, which is beneficial to them.

In addition to group savings, these groups also receive external loans which Rythu helps procure from various partner programs.[45] These loans usually come with an interest rate of Rs. 2 (approx. USD 0.027) per month[46] and need to be paid off in 6 months. The goat group members received a loan of Rs. 10,000 (USD 154) each in 2017. This was higher than what they received in previous years (Rs. 8,000 (USD 123) each in 2015 and 2016, and Rs. 5,000 (USD 77) in 2014).

1.2 Informal sources of credit

While formal sources such as banks carry a lower interest rate than informal credit sources, they are not the first source farmers turn to when they need to access credit or

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[44] When reporting interest rates, farmers use the amount per 100 rupees due per month. A Rs. 3 interest means Rs. 3 per Rs100 per month, which translates to 3 percent per month or 36 percent per year.

[45] The farmer cooperative groups get loans from organizations such as the National Bank for Agriculture and Rural Development (NABARD), Friends of Women's World Banking, India (FWWB) and NABARD Financial Services Ltd (NABFIN), which is a subsidiary of NABARD that provides microfinance.

[46] The interest rate on farmer group loans is much higher than that on a bank loan but lower than 36% per year interest charged by a moneylender.

when they require loans. While farmer savings groups do provide credit for such needs, farmers typically rely on a wide range of informal sources.

While usurious moneylenders might be the first to come to mind, informal sources of credit in Mastanbad in fact comprise a wide range of lenders: moneylenders (who farmers call *saahukaru* - collectively known as *saahukarlu)*, rice mill owners, traders and seed shops, and relatives. These sources can be located either within the village or outside of it. Farmers most often pay Rs. 3 (USD 0.04) *mithi* (interest) on loans taken from informal sources. If the loan is for a family health emergency, people usually lend at Rs. 2 (USD 0.03) *mithi* (i.e., 2% per month or 24% per year. Farmers report that in the previous generation, the interest rate was Rs. 2, and prior to that, it was only Re.1 (USD 0.02), which is 12% per year.

In general, if farmers have some assets (land, livestock, house), they receive access to informal credit. If farmers do not own any assets, the remaining alternatives to accessing loans include desperation strategies such as having family members work for moneylenders, including rice mill owners, or prevailing on family members working salaried jobs in a city.

Village moneylenders

Farmers usually refer to moneylenders by their caste (e.g., "*kaapollu*" or "*balijollu*." They rarely reveal the names of their lenders. Even so, village moneylenders whom producers come to substantially depend upon are reported to be larger agricultural landowners, those who might have generational wealth, or those who have other businesses. For example, farmers borrow from the village or nearby town's *kirana* shops

(small and mid-size family neighborhood retail stores) and the cook in the local village school. Such connections are variable but always socially dependent. Regardless, when lending larger sums of money, moneylenders lend based on available assets, land, or livestock.

Farmers also borrow from their neighbors and anyone they know in the village who will lend them money when needed. They tend to borrow locally when they need money for household-related expenses, such as buying new clothes for a festival or cooking special food when their daughter and son-in-law visit. For instance, Jangamma borrowed money from her neighbors to buy milk and other groceries to cook a meal over a festival season for her children who were visiting from out of town.

Rice mill owners

A further critical informal credit source for farmers is rice mill owners. Owners of rice mills live in the farmer's village and are typically the chief buyer of a farmer's paddy harvest. While owning assets such as land or livestock can help assure access to loans from mill owners, producers also obtain loans if they have family members working at a mill. In the latter scenario, the rice mill becomes the primary source of credit for a farmer ("*saavukarlu akkade, pillagadu aadne untadu, aadne thechukunnam appulu*" – his moneylenders are the rice mill, his son also works at the rice mill, he gets loans from the rice mill – Lakshman Reddy). A portion of salary is withheld by the rice mill as repayment of the loan each month. Depending on the level of trust they have with the rice mill owners, farmers can ask for their entire salary when needed.

To illustrate, Lakshman Reddy's son works in a rice mill in Kondapalle, a town near their village, for Rs.7,000 (USD 108) a month. His primary moneylender is Bheemanna, the owner of the rice mill. He has obtained loans from Bheemanna to build his house, drill borewells, and pay for his daughters' weddings and agricultural *lagodi* every June. His current outstanding loans amounting to Rs.500,000 (USD 7,692) are all owed to this moneylender. While his son's salary every month is used towards repayment of the loans, Lakshman asks to receive some of this salary when he has expenses such as his daughter's child delivery costs. In addition to repaying his loans via his son's salary, he also uses his yearly crop harvest returns. Even prior to his son working at the mill, Lakshman Reddy acquired credit from Bheemanna based on the livestock he owned as well as the trust he had.

Traders/merchants; seed and fertilizer shops

Agricultural traders are another important yet a more invisible informal credit source for farmers seeking inputs for production. These traders typically are already retail sources of agricultural inputs for producers or nodes in their sales networks, so farmers often use credit in their exchanges, repaying either in cash or most often with agricultural produce. Traders typically buy farmers' produce and pay them the difference after charging the debt that farmers owe for both inputs and interest. The rate at which the traders buy produce from farmers is typically lower than that offered in government markets and the

Minimum Support Price.[47] This class of lenders also includes wholesale shops which procure agricultural produce from farmers and seed and fertilizer shops. Livestock merchants also offer credit if farmers own livestock, allowing producers to borrow from sources located in nearby towns or in the nearest large city of Hyderabad.

While some of the seed and fertilizer shops denied that they offer inputs or sales on credit to farmers ("we sell only on a cash basis" – shop employee), farmer respondents contradict this. They report that with strong social ties, access to credit is assured.

Relatives

Farmers also borrow money from relatives, including other farmers in the community or family who might be working in a city for a wage. Producers borrow from both the husband's and wife's siblings as well as their extended family, such as a daughter's husband's relatives. For example, a Narsamma's sister, who works as a cleaning lady in Hyderabad, lent her Rs. 10,000 (USD 154) in 2017) for her household expenses and hospital costs. In some instances, relatives of farmers themselves might borrow from someone they know to lend to the producer. Lachu Naik explains that his sister borrowed the Rs. 40,000 (USD 615) that she then lent to him.

Loans from family are typically lent at an interest rate of 2 percent per month, which is lower than that charged by a moneylender. Even though these loans are not a gift,

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[47] The Indian government sets a minimum support price (MSP) for certain agricultural commodities based on the recommendations of the Commission for Agricultural Costs and Prices (CACP). This is the minimum price that farmers can obtain for their harvests. If the market price is above the MSP, farmers are free to sell at that price (Government of India, 2013)

"*icheyaali, lekunte kotlata jarguthundi*" – they typically lead to quarrels among family members if unrepaid - Lachu Naik.

1.3 The proliferation of credit… and debt

As the above sections illustrate, farmers in Mastanbad borrow from a wide range of sources, both formal and informal. Credit sources to which they have access depend not only on assets (land, livestock, house), but also on group memberships, other non-agricultural income sources, relationships, and trust. Formal sources of credit require asset ownership, especially land, or group memberships. Therefore, farmers draw on their relationships with people and the trust they have built over time and sometimes over generations to secure access to credit. In addition, having secondary income sources or working directly for a lender can also provide timely access to credit. In sum, the aggregate growth of debt, as noted in the opening, consists of an ever-multiplying number of credit sources.

Guérin et al. (2012) describe in detail such proliferating diversity of borrowing sources in rural India based on their case study in the state of Tamil Nadu. They find that farmers borrow from particular sources for specific purposes and choose loan sources based on economic and social criteria. While this is the case in Telangana as well, my research further finds that farmers not only borrow from different types of sources for their monetary needs, but they also often borrow from multiple sources for a single need.

For example, for a wedding expense of Rs. 200,000 (USD 3,077) in 2012, Lachu Naik borrowed money from five to six moneylenders. For her daughter's wedding expenses of

Rs. 300,000 (USD 4,614), Padmamma borrowed from four different moneylenders as well as from the *mahila sangam* she is a member of and sold some goats. Narsamma's family borrowed their *lagodi* (agricultural investment) amount from the goat group she is a member of, a village moneylender, her younger sister, and her son who works in Hyderabad in a petrol bunk (gas station). Informal lending thrives.

In addition, almost every farmer has a bank crop loan outstanding. Most of these crop loans have been used for their *samsaram* (household expenses) or to repay existing loans. Eeshwar Naik borrowed Rs. 130,000 (USD 2,000), Lachu Naik borrowed Rs. 80,000 (USD 1,230), and Sangappa borrowed Rs. 30,000 (USD 462) from the bank, all of which was used for their respective *samsaram* expenses. Eeshwar Naik also used the bank crop loan to pay interest on his borewell loans. Venkatappa, who also borrowed from the bank in 2012 for his *samsaram,* has been renewing the loan each year in anticipation of a loan waiver. Formal loans are a part of all producers' lives.

This dizzying portfolio reflects the reported debt profiles of all respondents in the study. The number of lenders, the number of loans, and the number of leveraged assets is large and increasing in most cases. Informal and formal credit are bundled as part of household tactics. More than this, the increasing access to formal credit through banks, agricultural loans, and NGO-sponsored lending schemes, appears to have only joined – rather than replaced – the bewildering range of informal borrowing schemes that remain a part of producers' lives. This points to the deteriorating autonomy of farmers and raises questions about the sustainability of production and livelihoods under this economic

regime. It is one thing to borrow from a bank, but it is another to borrow from a bank, a farmer group, and multiple informal sources of credit for a single event.

The surplus produced by farmers, therefore, over and above what is required for their subsistence, is increasingly claimed by multiple competing sources in the form of interest. As noted above, this interest circulates differently in formal and informal sectors, suggesting that the two sectors compete for shares of producer surplus. The push to formalize credit in rural areas appears to follow from the need to eliminate competing claims on surplus by informal actors who do not valorize capital. That push is realized especially by state efforts to formalize rural credit markets and rationalize risks for both producers and lenders, raising the question: to what degree is this wide and competing range of credit sources a novel part of the agrarian economy? This question is made more urgent by the way in which informal lending has been targeted by state authorities as not contributing to economic growth, casting formal credit as a poverty-reduction tool and a solution to persistent informal lending (M. Taylor, 2011). To what degree have state development efforts to reduce informality actually led to the reduction and concentration of lenders and forms of borrowing?

The history of informal moneylending and rationalized modern institutional lending in India suggests that this competitive interplay, as well as state efforts to adjudicate that competition, go as far back as the colonial and early post-colonial era. A brief review of the history of agrarian credit in India further reveals that this problem and these state solutions have been both persistent and potentially pernicious, leading to a path of expanding and competing credit sources, as we see in Telangana today.

2. Informal and formal credit in India: a brief history

Informal moneylending, the practice of lending money at a rate of interest (Oxford English Dictionary, n.d.-c) with the motive of making a profit, is a trans-historical and globally observed form of finance. Informal finance markets have been known by different names – unregulated, unorganized, informal credit, parallel or indigenous financial markets, or informal finance (Bouman, 1989) – and have existed all over the world. The effort to supplant them with formal institutions is almost equally as old.

2.1 Informal and formal lending in India

Historically, informal lending has been considered malicious and has been portrayed as such by poets, prophets, politicians, and playwrights including Cicero, Shelley, Shakespeare, Marx, the Prophet Mohammed, and The Bible (Adams & Fitchett, 1992, pg. 7). Religious authorities and institutions have theorized usury as a root of vice; laws from as early as the eleventh century in England banished usurers, and those convicted of usury were made outlaws (I. B. Sen, 1910). Many religions have prohibited usury in some form or another, especially the act of charging interest to members of their own faith community (Ackerman, 1981; I. B. Sen, 1910). Some of the biases against informal moneylending have also had religious, ethnic, and racial undertones such as "biases against Jews in Europe, overseas Chinese in East Asia, Indians in East Africa, Ibos in West Africa, and people from the Middle East in Latin America" (Adams & Fitchett, 1992, pg. 7). Moneylenders nevertheless have been a part of the financial infrastructure of most cultures for centuries.

In India, notably, ancient Hinduism recognized moneylending as an occupation. Rules concerning moneylending in India are not only found in the Hindu Law (given in the Goutama (600 BC) and followed by the Code of Manu), but also from the Islamic influence in the eleventh century and the British colonial period in India in the latter half of the eighteenth century (I. B. Sen, 1910). Under Hinduism, Vaishya castes were allowed to lend money, but Brahmins and Kshatriyas, the two highest castes, were prohibited from moneylending. One of the central rules that governed moneylending in Hindu Law was one that restrained the accumulation of interest; a moneylender was prohibited from demanding interest that exceeded the original principal amount. This rule, the "*damdupat*," has correlates in ancient Rome (*alterum tantum*), historic England, and elsewhere (Vesey-Fitzgerald, 1925). During Islamic rule in India, Muslims were prohibited from lending to other Muslims, but the Hindu laws on moneylending remained. Principles of the traditional *damdupat* law survived even into the colonial period, with British codes continuing to regulate interest rates on loans from all credit sources (I. B. Sen, 1910).

In the medieval, pre-colonial period of India,[48] various types of moneylending existed in both towns and villages. In the 16th century, informal lending along with an expansion of trade was encouraged under the Mughals and the Rajput kingdoms (Hardiman, 1996; J. H. M. Jones, 2008). Moneylenders provided loans to farmers, and indigenous bankers served traders, nobles, and the British colonial state (Habib, 1964; J. H. M. Jones, 2008).

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[48] Medieval period in India, as defined by Habib, lasted from the beginning of the thirteenth century until about the middle of the 18th century, which was when the British conquests in India began (Habib, 1964)

Moneylenders lent money from their own funds. As such, though many were professionals whose main occupation was moneylending, many were wealthy agriculturalists, traders, zamindars, and village heads.

Indigenous bankers in contrast were often financial intermediaries who accepted deposits or used available state or bank credit to thereafter advance credit (Habib, 1964; Schrader, 1994). They dealt in *hundis*, which functioned like bills of exchange. They were used "(1) to raise money; (2) to remit funds, and (3) to finance inland trade" (Schrader, 1994, p. 203). In general, indigenous bankers tended to have a limited clientele to whom they lent larger amounts, while moneylenders largely financed agriculture (Schrader, 1994).

Moneylending and indigenous banking in both pre-colonial and colonial India largely continued to be caste-specific and primarily associated with the Vaishya caste, but other trading communities were also involved in the moneylending profession (J. H. M. Jones, 2008). The moneylending communities identified in the 1921 colonial census included Vaishyas in the north, Jainas in the Rajputana and Bombay states, Marwaris in Rajputana and Bengal, Chettiars in the south, and Khartis and Aroras in Punjab (ibid).

2.2 Moneylenders and credit policy during British Colonial rule in India

Both moneylenders, also known as usurers, and indigenous bankers continued to be important during British colonial rule in India, but they came under further state regulation in this period. While indigenous banks funded British trade operations, informal moneylenders provided credit to rural populations (Schrader, 1994). The British in India

therefore were initially in favor of moneylenders, though this changed following the Deccan Riots of 1875, after which they sought to regulate informal moneylending with a heavier hand.

In pre-colonial times, when village community members held land jointly, peasants and their access to land were protected from seizure by moneylenders. In addition, no state institutions existed to provide protection to lenders to recover their debts. With the arrival of the British, this landscape was dramatically altered. The British not only formed private property institutions by introducing the *ryotwari system,*[49] but they also enforced contracts whereby the judicial system could help the moneylender recover debts. Under British contract laws, an individual's entire property could be liable to seizure to repay debts. This resulted in increased power for lenders and large-scale land dispossession from peasants who were unable to pay their debts (R. Kumar, 1965; Metcalf, 1962).

The agrarian unrest that resulted from this antagonistic relationship between peasants and lenders was the basis of the Deccan Riots of 1875 in Western India in the Bombay Presidency. Fearing a wider peasant revolt, the British created the Deccan Riots Commission in 1876, on whose recommendations they passed several Acts[50] to regulate

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[49] The Ryotwari system was a system of land revenue under the British colonial government in India. Under this, every ryot (farmer) who was the cultivating proprietor of land that he held paid a fixed assessment on that land, even if that land was not being cultivated or was "waste" or additional land (Dutt, 1902, pg 139).

[50] The British enacted the Deccan Agricultural Debtors' Relief Act in 1879, which enabled courts to stop the transfer of land from cultivators to lenders and to stop moneylenders from charging usurious rates of interest (Bombay District Gazetteers, 1960; M. Shah et al., 2007). This was succeeded by the Bombay Agricultural Debtors' Relief Act (XXVIII) of 1939, which was in turn

moneylenders. These included setting a limit on interest rates, stopping the transfer of land from cultivators to lenders, and providing institutional credit to farmers in drought years (Bombay District Gazetteers, 1960; J. H. M. Jones, 2008; Mohan, 2006; M. Shah et al., 2007). The British also established provincial cooperative banks in all major provinces by 1930 (M. Shah et al., 2007). But cooperatives became entangled with local political struggles and dominated by rural elite, and so they often failed to serve the rural population as intended.

To further regulate moneylenders, the British also passed the Usurious Loans Act in 1918, which applied the Hindu *damdupat* principle of not charging interest that exceeds the principal loan amount (ibid). In addition, they also passed laws (Punjab Regulation of Accounts Act 1930; Debtors Protection Act 1935) that required moneylenders to be licensed and registered and called for recording of moneylending transactions and accounts (ibid).

Despite the British Colonial government's numerous and thorough attempts, informal moneylending continued unabated. One important reason for this was the reluctance of debtors to bring moneylending to court. Complex social ties, reliance on moneylenders for credit, and varied roles of moneylenders within villages made debtors reluctant to

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amended repeatedly in the following years (ibid). Similar Acts were passed in other provinces of British India. A push to limit the power of lenders and better formalize debt had begun. In addition to regulating interest rates and land transfers, the British Colonial government provided institutional credit to farmers during drought years as early as the 1870s (Mohan, 2006). The Low Interest Loans Act was passed in 1883 and the Agriculturists Loan Act in 1884, though these were largely ineffective (M. Shah et al., 2007). The British also passed the Cooperative Credit Societies Act in India in 1904 following the success of cooperatives in Europe, revised it in 1912, and established provincial cooperative banks in all major provinces by 1930 (ibid).

jeopardize these relationships (ibid).[51] Moneylenders were not just those who lent money professionally, but they were also crop buyers, employers, and landowners. Farmers were therefore exploited not only through high rates of interest, but also through low harvest prices, low wages, and high land rents. This exploitation along with the caste system contributed to pauperization of the peasantry (ibid).

2.3 Formal agricultural credit in India post-Independence

The push to regulate moneylenders and provide formal sources of credit continued to be a policy focus in post-Independence India. In fact, the Indian Government led by Jawaharlal Nehru was committed to controlling exploitative usury through alternative institutions such as credit and marketing cooperatives. This followed the belief that informal credit was a barrier to capitalist accumulation and thereby economic growth (Hardiman, 1996).

The 1954 All India Rural Credit Survey (AIRCS) report by the Reserve Bank of India (RBI) found that more than 90 percent of rural agricultural credit needs were met by non-institutional private agencies, which included professional moneylenders (moneylending is primary occupation), agriculturist moneylenders (farming is primary occupation and moneylending is secondary), relatives, traders, and landlords (M. Shah et al., 2007). Of this informal credit, nearly 70 percent was from moneylenders, with 45 percent from

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[51] This is prevalent even today. Jangamma, a farmer I interviewed, says she has to repay her creditors. Even though her husband committed suicide and the State paid her creditors a nominal amount as part of a One-Time Compensation Scheme, Jangamma says her creditors are people she knows; how can she not repay them? She also adds that she needs to repay so she can borrow again to get her youngest son married.

professional and 25 percent from agriculturist moneylenders (Reserve Bank of India, 1955). Government and cooperatives each contributed 3 percent (ibid). Even though cooperatives had been in existence for at least 50 years, they made up only 1 percent of rural agricultural credit (ibid). The All India Rural Credit Review Committee, established in July 1966, "recommended that commercial banks should play a complementary role, along with cooperatives, in extending rural credit" (Mohan, 2006, pg 1015).

The problem of agricultural credit, according to the AIRCS 1954 report, was twofold: *inadequacy and unsuitability*. "Agricultural credit is a problem when it cannot be contained; it is also a problem when it can be had but in such a form that on the whole it does more harm than good" (Reserve Bank of India, 1955, pg. 151). The importance of rural credit to the development of agriculture and thereby the prosperity of the entire country is highlighted in the report (ibid). The report also describes various schools of thought relating to rural credit ranging from incorporating the moneylender into a system of rural credit to building a system that competes with the moneylender and extending the reach of commercial bank credit to rural agriculture (ibid). The underlying assumption reflects the emerging sense, established during the colonial era, that informal lending can and should be eliminated through the extension of formal credit in rural agricultural areas.

This goal of increasing the reach of formal institutional credit to rural agricultural areas as a poverty reduction tool and a mechanism to disrupt the rural moneylender continued in India's agricultural credit policies prior to liberalization of the economy. There was a three-pronged strategy to develop rural financial services: "(i) Expansion of institutional structure; (ii) Directed lending and (iii) Concessional or subsidized credit" (Rangarajan,

1996, pg 288). And "*the main attempt was to expand rural credit and displace the money lender*" (ibid, pg. 288, emphasis my own).

India's banking policy regarding rural areas since the AIRCS can be classified into three general phases (Ramachandran & Swaminathan, 2002). The first phase followed the nationalization of 14 major commercial banks in 1969. The concept of priority lending was introduced during this period. Agriculture and allied activities as well as small-scale and cottage industries were priority sectors, and the RBI directed commercial banks to advance 40 percent of their lending to these sectors. This was a period of "social and development banking," and the main objectives were to increase banking services in rural areas and areas without previous banking access as well as to provide credit to priority sectors and disadvantaged groups of people (Ramachandran & Swaminathan, 2002). Based on a recommendation by a working group on commercial credit, the government passed legislation to establish Regional Rural Banks in 1975.

The Regional Rural Banks came to be known as "Small Man's Bank" (Rangarajan, 1996). One of the main motivations for their creation was to address the inadequacy of rural credit coverage of small and marginal farmers. These were intended to work both as cooperative institutions that know the needs of the rural population and organized modern commercial banks while being low-cost investments (Rangarajan, 1996).

This was also the period during which green revolution technologies were introduced in the Indian countryside. The adoption of these technologies rested upon the availability of credit that would allow farmers to purchase new types of agricultural inputs, including fertilizers, pesticides, irrigation equipment, and new high yielding varieties (HYVs) of seed

(often hybrids). Just as the green revolution technologies proved to be biased towards larger farmers, so too was the availability of formal institutional credit (Ramachandran & Swaminathan, 2002).

The second phase began in the late 1970s and early 1980s (ibid). Here, the focus of government policy in relation to poverty reduction was on creating employment in the form of either state-sponsored employment programs or credit for generating self-employment opportunities for the rural and traditionally asset-poor population. During this period, the National Bank for Agriculture and Rural Development (NABARD) was set up in 1982 following the recommendations of the Committee to Review Arrangements for Institutional Credit for Agriculture and Rural Development. But prior to that, the Integrated Rural Development Programme (IRDP) was implemented. This scheme targeted asset-poor rural households, provided them with subsidized credit via commercial banks with the goal of helping them acquire income-bearing assets such as land and livestock, and promoted livelihood diversification (Ramachandran & Swaminathan, 2002; M. Taylor, 2011). The IRDP was piloted in 1978-79 and extended all over the country in 1980.

The IRDP, however, has been called "India's worst-ever development programme" (Shah et al., 2007, pg 1356). Even though it was at the center of India's anti-poverty efforts in the 1980s, it focused on hitting targets such as high credit supply while not giving any attention to the quality of credit and who it was supplied to (ibid). While it did transfer a significant amount of funds to the rural population, this program, hindered by a lack of rural public infrastructure and mis-classification of beneficiaries, suffered from corruption and elite capture (Ramachandran & Swaminathan, 2002; M. Shah et al., 2007; M. Taylor,

2011). And because there was almost no support for market access and skill formation, millions of India's poor "became bank defaulters for no fault of their own" (Shah et al., 2007, pg 1356). This led to massive losses for the commercial banks that lent money under IRDP. In addition, there was a loan waiver in 1989, and a lasting result of this is that the rural population waits for loan waivers even today instead of repaying their loans (M. Shah et al., 2007).

As a result of the IRDP and the prior social banking initiatives, rural formal credit increased in quantity but was accessed mostly by the richer farming population and in regions already developed, while "the poor still depended on the informal sector in a big way" (Shah et al., 2007, pg. 1356). Access to formal credit sources was unequally distributed based on class, caste, and even gender (Ramachandran & Swaminathan, 2002).

The share of institutional sources in rural household debt rose from 15.8 percent in 1961 to 63.2 percent in 1981, and the share of non-institutional sources in the same period decreased from 84 percent to 36.8 percent (M. Shah et al., 2007). This was due in large part to the rural credit policy of the Government. But from 1981 to 1991, the share of institutional credit only increased from 63.2 percent to 66.3 percent (J. H. M. Jones, 2008). This suggests that informal finance was still playing an important role.

The third phase of India's rural banking policy was based on liberalization post-1991, where policy was guided by the market and not by any public authority (Ramachandran & Swaminathan, 2002). With the onset of neoliberal reforms, the IRDP ended. Liberalization led to a reduction in rural banking, priority sector lending, and preferential lending to the poor (ibid). However, credit was still seen as an important poverty reduction tool through

commercialized credit, such as microfinance, rather than through subsidies and reduced interest rates (M. Taylor, 2011). NABARD played a central role in the provision of rural credit and facilitation of institutional development, and it has been a key player in the expansion of microcredit via self-help groups (SHG), which it promoted in the 1990s and 2000s (Mohan, 2006; M. Taylor, 2011). SHGs in this period were extremely popular, and women's SHGs were seen as an important tool for women's empowerment (M. Taylor, 2011). While their role in women's empowerment is debated, they continue to be an important vehicle for the rural poor to receive NABARD and other international aid agencies' sponsored credit (ibid).

The World Bank was a major proponent of using microfinance to promote rural livelihood diversification in a period when state subsidies were withdrawn (M. Taylor, 2011). In addition, due to the decline in formal bank credit to rural areas under the neoliberal reforms era, microfinance that was provided by profit-motivated venture capitalists found a footing, especially in the state of Andhra Pradesh (Young, 2010). Microfinance institutions (MFIs) were extremely popular in Andhra Pradesh in the 2000s until a crisis in 2006, followed by another in 2010, which exposed the coercive practices and usurious nature of the MFIs (M. Taylor, 2011). MFIs charged interest rates ranging from 24 to 36 percent per annum, which is also what most informal moneylenders charge. The continued demand for credit even at these high rates is a result of a broader agrarian crisis that was never solved by banking policies of the government.

A 2013 survey found that about 40 percent of agricultural households borrowed from non-institutional sources of credit (NSSO, 2014). This share of informal credit declined

slightly to about 30 percent in 2018 (The Wire, 2021). Surveys of this nature, however, tend to underestimate the relative share and importance of informal, non-institutional sources of credit (Basu, 2006; Hussain, 2018; J. H. M. Jones, 2008). This suggests that increasing formal credit to rural areas does not eliminate informal lending but instead adds a source to the credit portfolio of a rural household. This is seen to the present day.

2.4 Ongoing push for the formalization of credit

Informal lending, broadly defined, and more specifically the informal economy, has long been the target of modernization theorists from the post-WWII work of Rostow and others (Hart, 1973; Rostow, 1960) to the present (De Soto, 2000; Harriss-White, 2020). Modernization theory understood the informal economy to represent a transition in the process of economic development. Moneylenders were targeted for replacement by modern lending institutions in part for normative reasons of eliminating usurious interest rates. More critically for modernization thinkers, however, the *informality itself* removed producers from the formal grid of property and asset information systems, impairing the development of modern capitalist economies as a whole (De Soto, 2000). *Informal* transactions are hard for a statistician to quantify and impossible to track, and so they are external to national economic accounting and taxation (Elyachar, 2005). Much like their colonial forbearers, therefore, post-Independence and neoliberal-era Indian economists and policymakers promulgated diverse systems and institutions to provide new forms of credit and break the hold of informal village moneylenders on producer households and their surpluses.

3. Discussion

Informal moneylenders have always existed and continue to be an important source of credit in rural agrarian regions despite consistent efforts to eliminate them. In India, the State since colonial times has attempted to not only regulate moneylenders but also to replace them by introducing formal credit options. This effort spanned the colonial era and has continued through post-Independence India under a modernization agenda and the neoliberal era.

This push for formal credit has, somewhat contradictorily, only resulted in adding credit sources to the large number from which farmers already borrow. It is true that formal credit is favored by farmers, carries a much lower interest rate compared to informal sources, is less exploitative, and even empowers producers in many situations. But its availability even today tends to favor those who own land and/or other assets, is limited in amount, and is seldom timely. In the context of rural agrarian India, formal credit is largely used as a mechanism to repay other loans, both formal and informal, and meet household expenses. Rather than liberating the farmer from the moneylender, it contributes to the proliferation of debt sources. Not only is this a policy failure, but it also contradicts core producer values; by increasing dependence on external actors, the continuous addition of lenders contradicts the drive of smallholders to increase their *autonomy* (Chayanov, 1986; van der Ploeg, 2018)

The history of state efforts described here, moreover, reflects larger economic contradictions. By pushing into credit markets of increasing complexity, government policy

has effectively pitted one form of capital against another, fracturing the finance markets available to producers and engendering a struggle between differing lenders.

I interpret this perverse result as being emblematic of a class struggle fueled by the objective of redistribution of surplus labor. The term *class* is used here to evoke the meaning defined by Gibson-Graham: "the social process of producing and appropriating surplus labor (more commonly known as *exploitation*) and the associated process of surplus labor distribution" (1996, p. 52). Class struggles, therefore, "take place whenever there is an attempt to change the way in which surplus labor is produced, appropriated, or distributed" (Gibson-Graham, 1996, p. 59). Following this understanding, agrarian debt is a process of agrarian surplus labor redistribution. The ongoing but fruitless effort to shift from one mode of lending to another in this sense reflects a struggle, one perversely created by the state itself. Farmers in Mastanbad mandal are indebted to multiple sources of credit, each vying for a share of the farmer's surplus in the form of interest.

This only forces the emergence of still more complex credit arrangements. In perhaps the most notable example, Mastanbad mandal farmers *borrow to repay*, creating yet more actors in local finance claiming fractions of farmer surplus. Specifically, to renew their formal bank crop loans or to apply for a higher amount, farmers pay middlemen a fee for help with filling forms, often borrowing elsewhere to cover this cost. Farmers also often borrow money from these middlemen to repay a previous bank crop loa, and to get a new, higher loan sanctioned. Novel forms of informal moneylending have emerged precisely to access the very funds designed to eliminate them.

Claims on surplus by multiple competing actors is, of course, characteristic of capitalist production more generally. While surplus value is created within the production process and because of class relations, its distribution among the many individual capitalists depends on the rules of competition. Such struggles over the distribution and redistribution of surplus value ("the conversion of surplus value ito profit," as per Harvey, 2006, p. 61) have taken different forms over history, ranging from worker unions' struggles to reduce the rate of exploitation, to a shift in the sites of redistribution to the state (Gibson-Graham, 1996). In this case, in its efforts to stamp out informality, the state has spent nearly a century taking sides in such a struggle between competing sectors of lending.

The central motivation is to accelerate circulation and valorization of agrarian surplus, an effort with a long global history. Traditionally, materialist views of the credit system make a distinction between usurer's capital and interest-bearing capital (Harvey, 2006); usurer's capital is seen as the antiquated version of interest-bearing capital, and the shift of one to the other is typically assumed to represent an inevitable historical succession from informal moneylending to more formal banking and credit systems with state control. While usury helped separate small producers such as peasants and artisans from their means of production and thus aided in the creation of the capitalist and wage-labor classes, it is understood to impede the circulation of capital and thereby the accumulation of capital (Harvey, 2006). This leads to prohibitions and sanctions against usury (Harvey, 2006; Marx, 1991).

The engine for this assumed transition is the drive for further accumulation. Interest-bearing capital facilitates this accumulation (surplus value extracted in the form of interest payments to the owner of the money). Where this capital is now freed for further lending or reinvestment, especially through further lending, the speed, efficiency, and security of such transactions is paramount; formal credit allows farmers' surplus to enter into circulation and distribution networks. (Harvey, 2006; Marx, 1992). An informal moneylender has the capacity to slow or derail circulation. State efforts seek to secure this transition.

As is evident in Mastanbad, however, formal credit systems fail to displace informal ones. Instead, both types of credit coexist and result in a landscape of myriad credit sources and various kinds of microcirculations of credit within agrarian households.

The push to remove informality is thus not just a colonial, post-colonial, and modernization project rooted in views of moneylenders as evil, exploitative, and detrimental to society. It is also essential for modern forms of accumulation. And so the push for formal credit continues to this day. But due to the nature of agricultural production, as well as the conditions that underlie formal credit access, it leads to a proliferation rather than transformation of credit sources.

Furthermore, this proliferation of credit has implications for farmer precarity and autonomy. In the next chapter, I explore this relationship between debt, farmer autonomy, and precarity further by evaluating the different strategies farmers undertake to repay debt.

Chapter 6: Debt-driven agrarian lives

Farmers in Mastanbad mandal are dependent on various financial actors not only to pursue agriculture but also to survive, as the previous two chapters have explained. Dependent on others for survival, farmers live precarious lives. Increasing financialization of social reproduction results in an increase in precarity (Green & Estes, 2019, 2021), which is a condition of being other than autonomous (Butler, 2004). But autonomy is fundamental to the peasant condition (Chayanov, 1986; van der Ploeg, 2018). To better understand this contradiction, I seek to answer the question: in what ways does debt impact farmer lives, and how does it constrain farmer autonomy? In this chapter, I analyze farmer strategies to repay debt to explore the relationship between debt, farmer autonomy, and precarity. I draw on survey data collected from farmers in Mastanbad mandal and contextualize it with information from the life and debt histories. I first explain how debt relations are essentially relations of precarity and follow it with a description of the emotional burden of debt. Thereafter I examine the various strategies of Mastanbad mandal farmers to repay debt. I find that farmers are capitalizing agriculture to repay debt, which is largely reproductive debt. In addition, these strategies which begin with the goal of becoming autonomous only increase farmer precarity.

1. Debt and precarity

As Judith Butler explains, precariousness is a general condition of human life (Butler, 2004). Precarity can arise from peoples' relations to others. In this sense, "precarity is the condition of being vulnerable to others" (Tsing, 2015, p. 20). Farmers in

Mastanbad embody this type of precarity and are dependent on a range of actors from whom they borrow financial and material resources for their life and livelihoods. As Chapter 2 laid out, this dissertation explains precarity of Mastanbad farmers as a condition of social relations of dependence which have financial and emotional burdens.

Farmers find themselves dependent on multiple actors for not only their productive agricultural activities, but also for their household reproduction. Chapters 4 and 5 explained who farmers are indebted to and the kinds of productive and reproductive debt farmers undertake based on oral life and debt histories. A survey of more than 200 farmers in the region also shows similar general trends.

Farmers are in debt to get their children married. About 40 percent of farmers surveyed have had expenses for a child's wedding in the last 5 years. 41.06 percent of farmers surveyed have an outstanding debt taken for a wedding, either a child's or other family member's (which can include themselves, a brother, or a sister). 29.5 percent of them exclusively have a child's wedding loan outstanding.

Farmers are also in debt for their '*samsaram*' (household expenses). About 64 percent of farmers reported having expenses related to *samsaram* in the last five years in the survey. This is most likely underreported as almost every farmer has household-related expenses and are reluctant to share. But most notably, every single farmer who reported having *samsaram* expenses in the last five years also reported borrowing money for them.

Almost every farmer surveyed (98 percent) has had reproductive expenses in the last 5 years. These included building a house, health expenses, matrimonial expenses of children or other family members, *samsaram* expenses and children's education expenses.

76.8 percent of farmers surveyed have had productive expenses in the last 5 years. These included buying land, drilling borewells, purchasing livestock, renting agricultural land, agricultural investment, and even setting up a shop in the case of one farmer.

Every farmer surveyed reported having at least one outstanding debt, and 75.9 percent have outstanding debt to at least two actors, one of whom is a moneylender. In addition, almost every farmer surveyed (98.6 percent) has an outstanding debt to a moneylender. The survey however does not capture the nuances of the relationships with moneylenders. 'Moneylender' most often represents multiple creditors and can include not only moneylenders themselves but also seed and fertilizer shops, traders/merchants, rice mill owners, and other informal credit sources. In addition to borrowing from moneylenders, many of the farmers (76.8 percent) have a bank loan outstanding.

Even when their crop fails and agriculture is not profitable, loans must be repaid. At times, the creditor might be willing to wait for repayment until a future time when agriculture is profitable. But most often, farmers must repay at least some amount. They borrow to repay if they have access to further credit, but this only keeps them dependent on creditors. This credit dependency is a sign of precarity. In addition, the obligation to repay carries a heavy emotional burden.

2. Monetary obligation, emotional burden

The debt that farmers owe, while a monetary obligation, is even more an emotional one. They constantly worry about how and when to repay loans. As the farmer Narsamma explains, they worry what other people will think about them. They don't want to let

anyone say that they don't repay their loans. The constant worry even makes some farmers physically ill, such as Narsamma's husband who develops a fever almost every week. Narsamma and her husband Kishtappa ask: "*How do we live?*" "*How do we repay loans?*"

When moneylenders and other creditors ask farmers about loan repayment, farmers might respond saying they will repay after the current crop harvest. If the moneylender knows the farmer well and trusts them, the moneylender might be willing to wait for repayment. If not, they might make trouble for the farmer, which can include public shaming. Farmers such as Narsamma want to repay the principal first and then the interest to prevent the interest on principle from increasing. But moneylenders want them to pay the interest first and principal thereafter. Farmers try to keep repaying at least a little every year so that the interest will not get out of hand.

While almost every farmer takes out loans, not repaying those loans is considered shameful. Farmers worry about what other people in their community would think about them. They do not want anyone to say to them that they fail to repay their loans. As a result, if their agricultural return is not sufficient for debt repayment, it is common for farmers borrow a new loan to repay their old loan. "*Ikkada kadtam, akkada thestham*" (we [re]pay here, get [money] there) - Jangamma.

In most cases, the creditors are people who farmers know personally, and this places an additional emotional obligation to repay. Farmer Jangamma says that most of her family's outstanding loans are from people she knows. Even though her husband

committed suicide in 2015, and the government paid her creditors a one-time-settlement,[52] she still needs to repay them the remaining amount she owes. She asks, "*oorkuntaara amma*"? (Will they be okay with not getting their money back?). She says that they are people she knows, and she might have need to borrow from them again for herself or for her children. She has repaid whatever she could so far and has been paying interest every month. She still had an outstanding debt of Rs. 300,000 in 2017. This was after paying off about Rs. 325,000 using the proceeds of selling their land in 2014, and about Rs. 100,000 paid to their creditors by the government under the one-time settlement scheme.

Some farmers sell land as a desperation measure to repay loans, though they consider it shameful. For example, Narsamma's husband wants to sell some of their land to pay off their debts, but Narsamma would rather migrate to the city (Hyderabad) to work as wage labor, which is something no one in their family has done before, to repay their debts. Farmers also report that land has become very expensive in recent memory, and Narsamma adds that she does not want to sell land as it will be very difficult to afford new land in the future.

When asked about their outstanding loans, almost every farmer comments that they have a lot of expenses and borrowings. They are reluctant to divulge specific details. They ask, "*what do you want us to say, we have so many loans*" (Venkatamma). Some of this is

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[52] The Telangana state government has a compensation scheme for the families of farmers that commit suicide, up to Rs. 600,000. According to this scheme, the state pays the creditors of the deceased farmer a fixed amount (up to Rs. 100,000) towards a one-time settlement of all the loan amount owed. They deposit the other Rs. 500,000 in a bank account jointly held by the widow and the Mandal Revenue Officer (MRO). This deposit can be used for investment in productive activities, but not to repay loans.

because of the shame associated with not repaying loans. They say that they've tightened their household (spending) and paid off loans. "*Kattakapote malli ekkuvakadamma*?" (If we don't repay, won't the amount outstanding increase?) - Padmamma.

In contrast to the obligation farmers feel to repay loans from moneylenders and people they know in general, many farmers do not feel the same pressing obligation to repay bank loans. Farmers either renew their loans, as explained in Chapter 5, or they wait for a loan waiver from the government.[53] In addition, loans taken for reproductive purposes appear to carry a greater emotional burden than those loans taken for agricultural production. In fact, when asked about debt, farmers readily talk about their productive debt but appear reluctant to talk about reproductive loans. The next section describes the various strategies farmers in Mastanbad mandal employ to repay debt obligations and the resultant livelihood changes.

3. Debt impacts and repayment

Farmers in Mastanbad are in debt. Every farmer surveyed, and interviewed, had at least one outstanding loan in 2017. They are in debt to reproduce their household. They are

[53] As explained in Chapter 5, loan waivers are inherently political in India. They were first announced in 1987 in the state of Haryana. There was a second wave of loan waivers by multiple states in the country including the Central government from 2006-2014. More recently, there has been a third wave in some states from 2016-18 (Phadnis & Gupta, 2019). The Telangana Government made a commitment to waive loans up to Rs. 100,000 per farm household, to be undertaken in four phases, with Rs. 25,000 waived in each phase (https://clw.telangana.gov.in/About.aspx accessed: July 24, 2022). The loans waived are formal loans, including crop and gold loans from banks.

in debt to increase productivity. They are in debt to repay debt. They are in debt to multiple actors. How does this debt impact what farmers do?

During their ancestors' time, including their parents' time, most farmers say they lived without debt. The rains would arrive on time, they had a good crop, they had enough to eat, and they repaid whatever they might have borrowed with their crop harvests. But everyone complains, as the previous chapter explains, that '*kaalam ledu'* (there is no season). They use the phrase *kaalam ledu* to mean that there are either not enough rains or it rains at the wrong time. This reflects shifting climate patterns, and climate change threatens food security (Lobell et al., 2008). Increases in the frequency of extreme weather events such as droughts or floods can negatively impact agriculture (Shukla et al., 2017). Climate projections for the future in Telangana indicate an increased variation in annual rainfall (Kadiyala et al., 2021).

Farmers explain there is no '*fayda*' (benefit) in agriculture, and that their return on agriculture has decreased in recent times. While some say the earnings from agriculture are just enough to repay their investment and to eat (self-consumption), others say that returns are not even enough for their *samsaram* (household expenses). Their crops are failing due to inconsistent weather patterns, diseases, and pest attacks. Their '*lagodi*' (agricultural investment) is increasing every year, as they are using increasing amounts of pesticides and fertilizers. They hardly make a profit from agriculture if they do at all, and thereby, they are unable to repay their debts with agricultural harvests. "*Those that work as wage laborers are better off than us farmers,*" laughs Venkatamma.

As a result, and counter-intuitively, farmers are increasingly capitalizing their agricultural production; this can be seen with the shift to a capital-intensive cash crop, Bt cotton, and the drilling of borewells. For those farmers where the cotton crop succeeds and/or their borewell works and provides a reliable supply of water, debt can be alleviated. But this is rare in Mastanbad mandal. Farmers also sell any livestock they own to repay their *lagodi* loans when they have agricultural losses, and work as wage labor, but most often their debt burdens increase. This section details these and other strategies Mastanbad farmers engage in because of debt.

3.1 Capital-intensive agriculture

Mastanbad mandal farmers are cultivating cotton or drilling borewells with the 'hope' of repaying debt, as Chapter 4 explained. In addition to the oral histories, surveys of more than 200 farmers in Mastanbad and connecting patterns in quantitative measures also reveal a similar general pattern.

Cotton: Almost half of all the farmers surveyed (49.52 percent) have cultivated cotton at some point. Of these 102 farmers, most of them have started cultivating cotton since 2010, with a big spike in first time cotton cultivators taking place in 2014 and 2017 (Figure 6). This corresponds with an increase in cotton prices. In a five-year period, the minimum support price of cotton increased from an average[54] of Rs. 1,915 per quintal in

[54] Minimum support prices are listed separately for medium staple cotton and long staple cotton. The long staple cotton is Rs. 300 higher than medium staple cotton. An average is taken here.

2007-08 to Rs. 3,750 per quintal in 2012-13, which was a 95.8 percent increase. Cotton prices have continued to steadily increase since as Figure 7 shows.

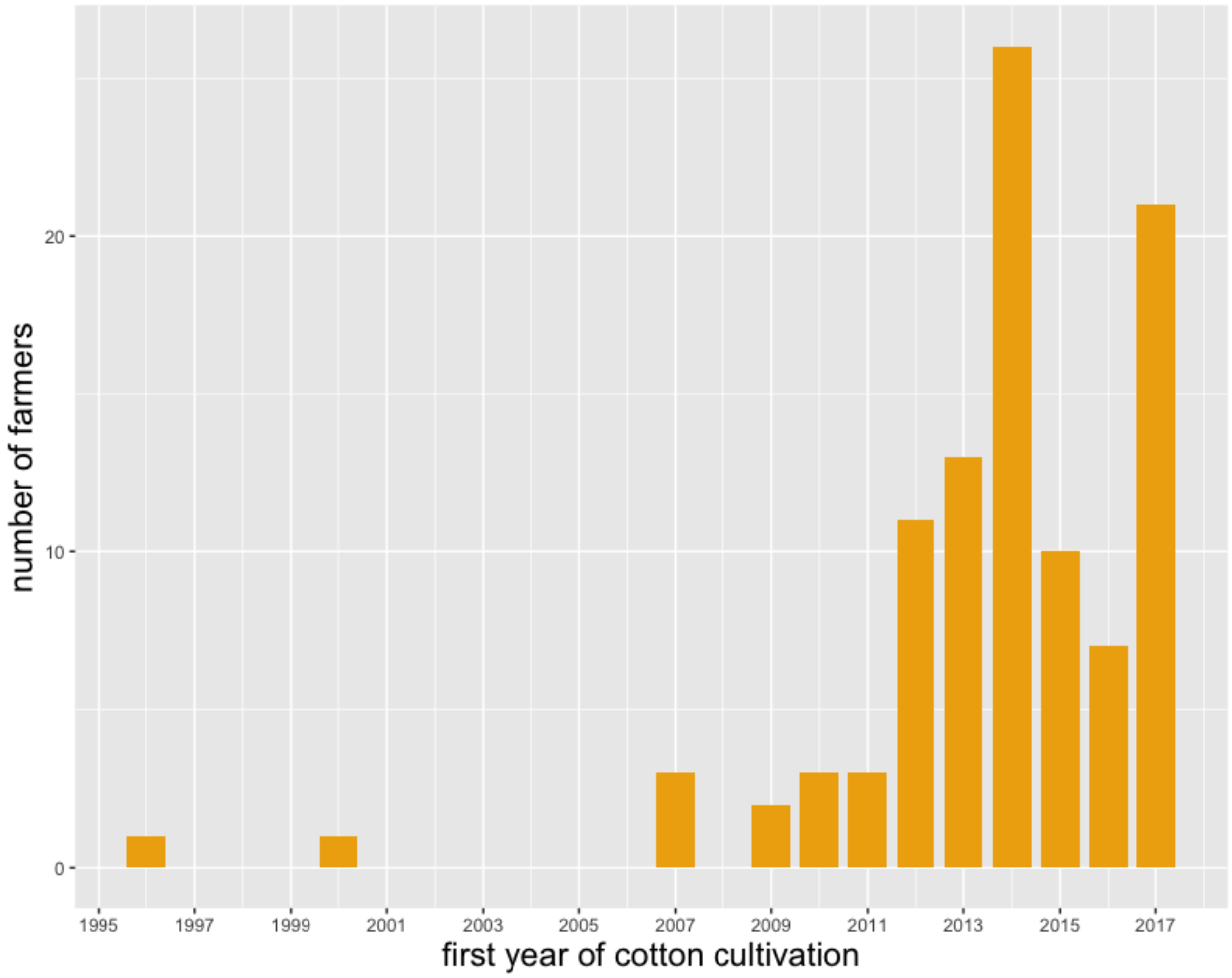

Figure 6. Number of farmers who have cultivated cotton for the very first time by year (of those surveyed in Mastanbad mandal)

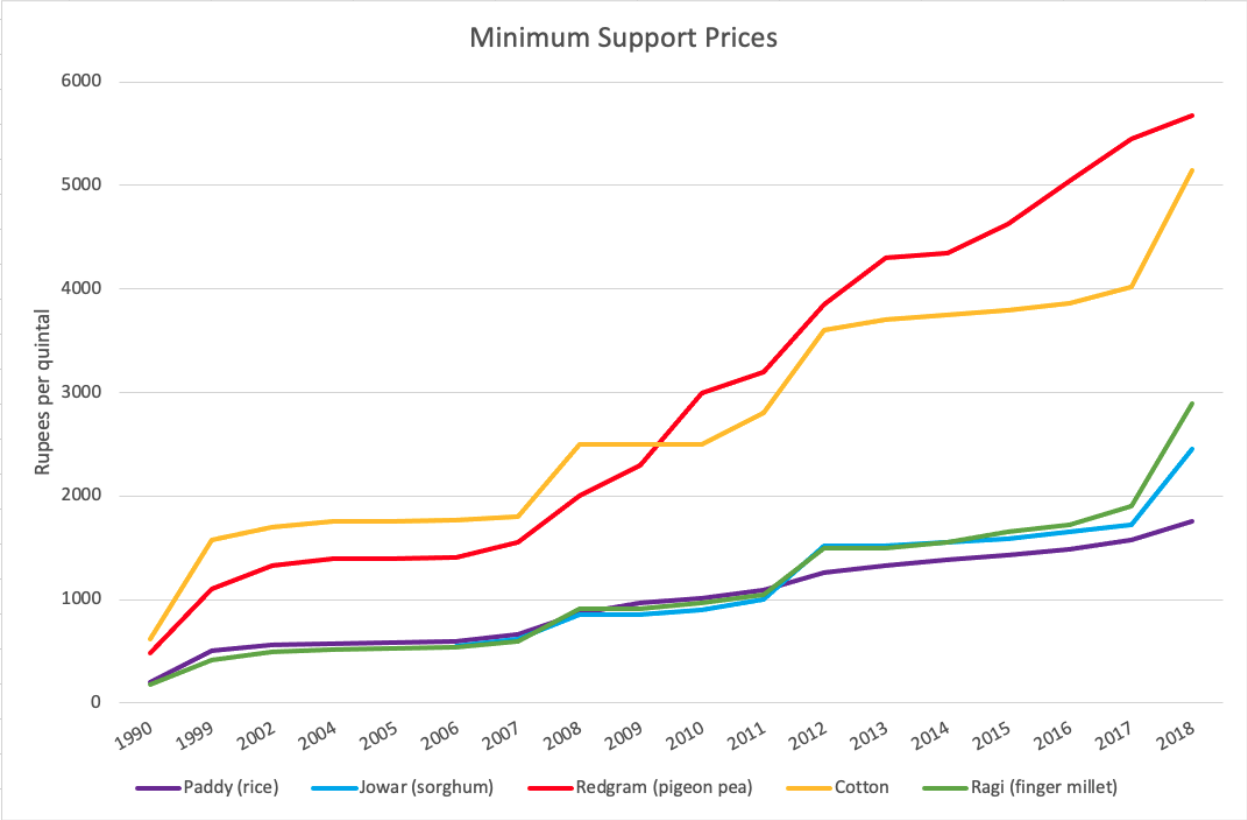

Figure 7. Minimum support prices (in rupees).[55]

Farmers in Mastanbad mandal have seen their neighbors and other farmers in different villages and in neighboring districts making a hefty profit from cotton cultivation. They too cultivate cotton, hoping to make a similar return that would enable them to repay their debts.

Cotton cultivation is more common among larger landholders in Mastanbad than those with smaller holdings. Almost 50 percent of smallholders surveyed, i.e., those that

[55] Source: https://data.gov.in/catalog/minimum-support-priceprocurement-price-crops-crop-year-basis Accessed on: May 20, 2022

cultivate between 2.48 and 4.94 acres, cultivate cotton, but the number is higher among semi-medium, medium, and large landholders (Table 4). In addition, cotton cultivation and borewell drilling are correlated (chi-squared = 5.1487, df = 1, p-value = 0.02326). As farmers interviewed explain, farmers who lack access to irrigation are apprehensive about cultivating cotton (e.g., farmer Padmamma).

Table 4 Farmers who have cultivated cotton at least once (Marginal: below 2.47)

Land size (in acres) and (number of farmers)	Number of farmers cultivating cotton	Percentage of farmers in each land size category cultivating cotton
Marginal (Below 2.47) (60)	16	26.67
Small (2.48 – 4.94) (75)	37	49.33
Semi-Medium (4.95 - 9.88) (50)	35	70
Medium (9.89 - 24.77) (21)	13	61.9
Large (24.78 and above) (1)	1	100

Borewells: 81.16 percent of farmers surveyed have drilled a borewell at some point. Farmers in Mastanbad have been increasingly drilling borewells since about the year 2000 (Figure 8). In theory, as Chapter 3 explained, borewells provide access to groundwater and thereby serve as a mechanism to increase agricultural productivity and profitability (M. Taylor, 2014). Borewells thus could serve as irrigation security to farmers during periods of low rainfall, which were seen for example in the early 2000s (see Figure 2 in Chapter 3). In general, this region has seen rainfall variability with several especially low rainfall periods since the 1980s. Given this increasing variability, farmers would want a secure source of irrigation. Investing in irrigation technologies to tide them over in drought years is not uncommon for a risk-averse farmer, who prioritizes subsistence and security

over high returns (Scott, 1976). But why the increasing interest in borewell drilling in the 2000s?

In keeping with an election promise, the Andhra Pradesh[56] state government formed by the Congress party in 2004 provided free electricity to farmers (Pingle, 2011). Borewells that used electricity to pump water became attractive.

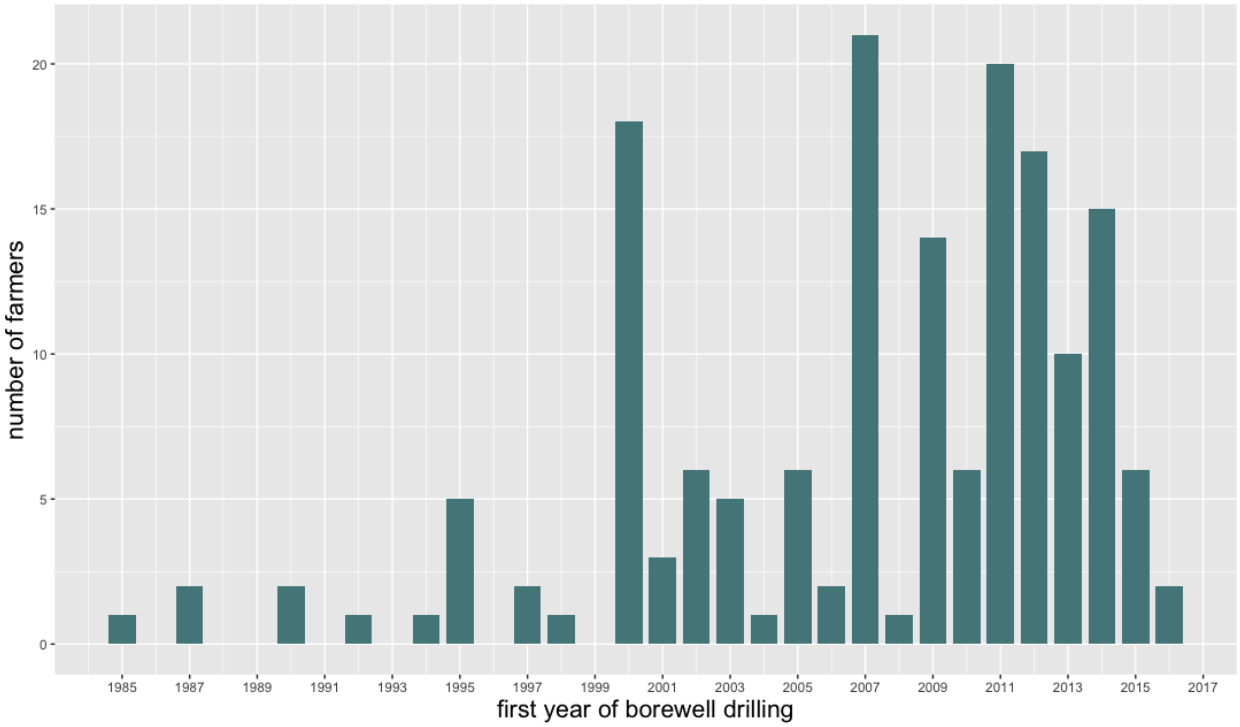

Figure 8. Number of farmers who have drilled borewells for the first time (of those surveyed in Mastanbad mandal)

[56] Telangana was a part of Andhra Pradesh in 2004.

While land size and drilling at least one borewell are correlated (Fisher's Exact test, p-value: 0.001557), farmers in Mastanbad mandal have drilled anywhere between 1 and 30 borewells as Figure 9 shows. Most farmers have drilled between one and five borewells each. However, not all these borewells work. As Figure 10 shows, many farmers have only one borewell that worked. Even for the farmers that have drilled 10 or more borewells, and up to 30, only two to four borewells at most have worked.[57] Farmers spend between Rs. 30,000 and 50,000 on average for borewell drilling and an additional Rs. 50,000 on ancillary equipment such as motors and pipes if the borewell hits water.

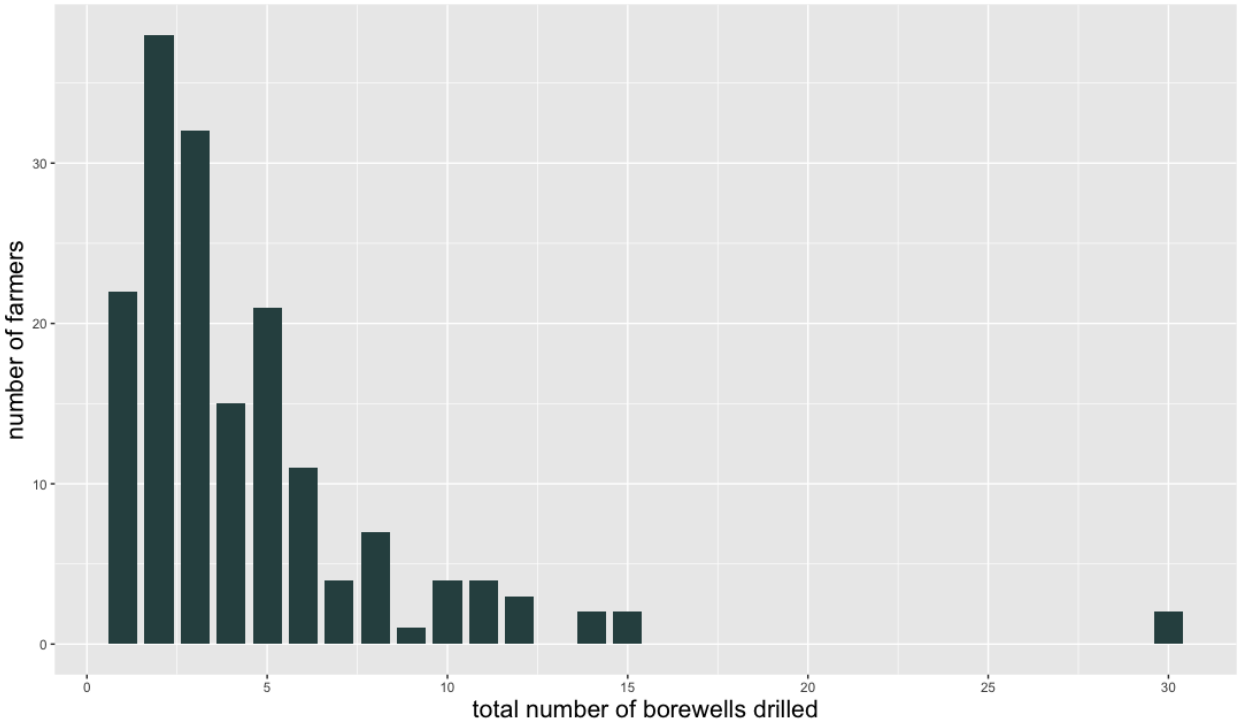

Figure 9. Distribution of number of farmers by total number of borewells drilled (of those surveyed in Mastanbad mandal)

[57] Borewells worked means that the borewells succeeded in accessing water that could be used for agricultural irrigation.

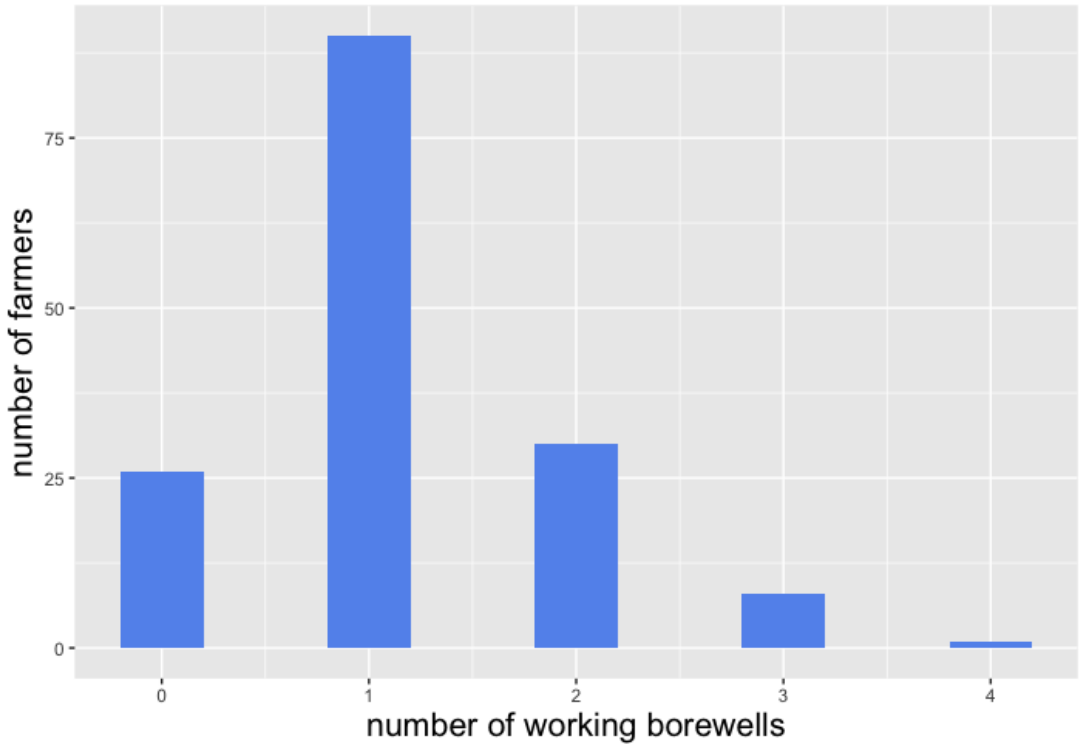

Figure 10. Distribution of number of farmers by total number of successful borewells

As the previous chapter has explained, farmers have been drilling borewells with the *hope* of achieving good agricultural harvests and repaying their loans. As Table 2 shows, on average only about one in three borewells drilled succeeds. Across all land sizes 26 farmers had none of the borewells succeed. On average, the larger landowners have a higher number of working borewells, but this is because they have the resources to drill a greater number of borewells compared to the smaller landowners. Counterintuitively, the most marginal farmers have drilled the highest number of borewells per acre (2.79). This is striking illustration of a resource-intensive gamble. It reveals the high price smallholders are willing to pay for security and autonomy. Despite the high number of borewells drilled

even by the larger landowners, most have only one working borewell. Borewell drilling success appears to be random and exceedingly rare, and therefore it is a precarious activity.

Table 5. Borewell drilling (among farmers surveyed in Mastanbad mandal)

	Borewells					
Land size	Average drilled	Avg success rate	Avg # working	Avg #failed	Zero working	Average borewells per acre
Marginal (Below 2.47) (39)	3.79	0.339	1	3.08	6	2.79
Small (62)	3.90	0.366	1.02	3.35	10	1.10
Semi-medium (46)	4.24.57	0.299	1.02	3.73	10	0.767
Medium (20)	6.3	0.449	2.05	5.38	0	0.497
Large (1)	30	0.0667	2	28	0	1.2

One key reason for this low borewell success rate is the groundwater landscape of the Deccan Plateau region, in which Mastanbad mandal is located. As explained in the research site description in Chapter 3, the hydrogeology in this region is characterized by hard rock formations (Banded Gneiss Granite and some Basalt) and shallow groundwater aquifers that collect unevenly in different spaces such as fissures and joints. These tend to be shallow reservoirs of water that depend on rainwater for their recharge (Central Ground Water Board, 2021; Government of Telangana, 2021; SGWD & CGWB, 2012). This results in a landscape of failed borewells that do not hit water due to the spatial unevenness of groundwater availability, as well as wells drying up due to consequent drought years. The proliferation of borewells has resulted in a decline in collective forms of

water management such as tank irrigation, also known as 'minor irrigation.' It has also led to a saturation of borewells that has in turn caused diminishing groundwater returns per borewell. While the government has tried regulating borewell drilling through acts such as the 2002 Andhra Pradesh Land Water and Trees Act, these regulations suffered from poor enforcement. Furthermore, the promise of free electricity, which makes borewell drilling possible and more affordable for many, is something that politicians are reluctant to risk their popularity by removing (M. Taylor, 2014).

Despite the very low success rate, farmers have been drilling multiple borewells with the hope that at least one of them succeeds. Borewell drilling is therefore a desperation strategy that contributes to increasing debt.

3.2 Migration, for wage labor employment

Migration is a common mechanism of repaying debt. Migration is correlated with debt levels[58] among the farmers surveyed (chi-squared = 5.82, p-value = 0.05448). Migration to repay debt usually takes two forms: seasonal migration in the off season (dry season/summer) to big cities, commonly Hyderabad but also Mumbai, and permanent migration by either selling off their land in the village or by leasing it out.

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[58] The debt level variable groups the simple debt index (total outstanding debt divided by agricultural wealth, which includes land and livestock values) into low, medium, and high based on the interquartile range. Low debt are those observations that are less than the 1st quartile of the debt index variable; Medium debt are the observations that are between the 1st and 3rd quartile; and High debt are those that are greater than the 3rd quartile. This debt level is correlated with migration. The migration variable indicated if a farmer migrated to a city to work as wage labor.

About 66 percent of the farmers surveyed have at least one household member who migrates to a city, usually Hyderabad, to work as wage labor. The most common reason for migration is to repay loans. Of the 137 farmers surveyed that migrate, 86.13 percent of them do so to repay loans. Other reasons for migration include to pay for children's education (6.6 percent), to work a salaried job (7.3 percent), summer season labor work (6.6 percent), and for livestock grazing (0.7 percent).

Wage labor in a city like Hyderabad most frequently is work on construction sites, which is often dangerous work. It can also include working in factories. For example, Srinivas and his mother have worked in a biscuit packaging factory and other plastic packaging factories. Others, usually women, work as domestic labor, where they typically clean houses or cook. While wage labor only fetched around Rs. 2,000 (USD 31) per month back in the late 1990s, in 2017 it could fetch between Rs. 5000 and 10,000 (USD 77-150) per month.

Migration might look different across farmer households. Women in a household may migrate immediately after a big expense for which they borrowed a loan. For instance, Padmamma and her second daughter went to Hyderabad for wage labor work within fifteen days of purchasing one acre of land for Rs. 150,000 in 2010. They worked in the city for about three to four years to pay off the loans taken for their land purchase. Her husband remained in the village with their youngest daughter, who was in school at that time. During that time, Padmamma's family continued agriculture during the rainy season every year. Padmamma and her daughter would go back to the village to help with their farm

fields for about a few days every month. They would help with sowing, weeding (*kalupu),* and pesticide application during these visits.

In other instances, when both the husband and wife migrate to the city for wage labor, they leave their school-age children in the village with the grandparents. This is because everything in the city is expensive, including schooling. Farmers such as Jangamma complain that in the city they are forced to buy everything including "*pappu*" (lentils) to eat.

Some farmers migrate to the city during the dry-season, usually January to May, to work as wage labor and earn some income to repay their loans. In these cases, they usually come back to the village in June in time for the monsoon rains and sowing season, as do Srinivas and his mother. In other instances, the sons in the family who have finished with schooling might live in the city to work as wage labor or a salaried job and send monthly remittances back to their family in the village, which would be used most often for loan repayment and *samsaram* expenses. Jangamma, Padmamma, and Narsamma's sons send home money from the city. In some other cases, while the husband and wife are working in the city, they might still cultivate their agricultural land in the village by hiring labor. In one such instance, Sangappa and his wife were working in the state of Maharashtra for a year in 2015 to pay off their daughter's wedding loan while their elder son supervised hired labor to cultivate their fields.

While migration to earn extra income to repay loans is very common in agricultural communities, not all farmers want to migrate. Some farmers like Kishtappa do not migrate, as they do not have anyone else in his family who would work his agricultural land while in

the city. Other farmers such as Lakshman Reddy say that they would rather borrow some money from a *saavukaru* (moneylender) to live than go to the city for wage labor work. "***Our family is here, our land is here, and so we don't want to leave***", says Lakshman Reddy. Other farmers explain how those that go to the city for wage labor have no community. In the village, their community members check up on them if they do not seem to be doing well. But in the city, they might be dead for days in a room before someone even finds them, farmers say. Older farmers like Thimmappa say that agriculture is their "*jeevadharam*" (life's way), and no one in their family has gone to the city. Thimmappa explains that they survive by working the land and growing food to eat and with livestock. He does not want to work for someone else.

3.3 Wage labor (*kuli pani*) in the village

Agricultural wage labor:

In instances when no member of the household goes to the city to work as wage labor, as was the case with Kishtappa's family, they supplement their agricultural income by working as agricultural wage labor on other farmers' fields. In agricultural fields in general, women do *kalupu* (weeding) and harvesting, while the men plough, spray pesticides, build *kuppalu* in the *vari chenu* (paddy field), make *anchulu* (edges), and harvest redgram.

While men earn Rs. 200 (USD 3) per day for agricultural wage labor, women only earn Rs. 100 (USD 1.50) per day. But this rate increases for women depending on the type of work. Transplanting paddy seedlings fetches at least Rs. 200 per day for women and can

be as high as Rs. 250 to 300 (USD 4-5) if they commit to completing work on a fixed field area. Harvesting cotton is labor-intensive, and women usually must start such work early in the morning, and so the rate is Rs. 200, explains Narsamma. While small farmers pay Rs. 200 per day for cotton harvesting, farmers with large cotton harvests pay between four and six rupees (USD 0.06-0.09) per kilogram of cotton harvested.

Labor reciprocity (called *antu*) is a key feature of agricultural labor in the villages. Women work on each other's agricultural fields, and they get paid for the work they do on others' fields. They work on their field one week and on another farmer's field the next week. This way, work gets done on their fields, and some of their debt gets repaid ("*ikkada maa pani ayithadi, akkada appu muduthadi annattu*" says Narsamma)

Mastry work:

Some farmers, especially those who belong to the scheduled caste (SC) community, do *mastry* work, which is essentially construction related work in both their own and in neighboring villages. This is especially true for those who have school-age children like farmer Venkatappa, who stays in the village and does not migrate to the city for wage labor employment. Usually there will be a team of *mastrys* in the SC community who will be called for work such as cementing. This work pays Rs. 500 (USD 8) per day. When there is no *mastry* work, these farmers do other daily wage work on agricultural fields.

MGNREGA 100 days work:

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) provides 100 days of guaranteed employment to volunteering adult members of a rural household every financial year. This employment involves public works using unskilled wage labor

such as digging man-made canals, dams, and farm ponds, renovation of traditional water bodies, afforestation, laying roads, filling ditches, rural sanitation related works, etc. The Act, notified in September 2005, has reported the creation of 3,000,000 such works every year. However, it has been bogged down with issues such as the creation of ghost assets[59] (Ministry of Rural Development, India, 2016).

Farm households in Mastanbad mandal take advantage of MGNREGA. While both men and women avail of this employment, it is mostly the women who do it for however long they can. For example, Padmamma explains that she and her daughter do 100 days of work in the summer, but her husband does not. Earnings from this work help meet *samsaram* expenses and to repay debts. Under this scheme, those who work receive Rs. 100 to 120 (USD 1.50-2) per day.

However, farmers complain of corruption with this scheme. Both Padmamma and Narsamma explain that those in charge do not assign them work for all 100 days, which the farmers want to work. Instead, farmers are given about 50 days' work and associated pay. The supervisors or other officials take the money earmarked for the other 50 days. "*Naduma sagham thintaaru, ayipoyindi mee pani antaaru*" (in between they eat half the money, and say your work is over) – Narsamma explains the corruption.

[59] i.e., missing assets.

3.4 Selling vegetables in the *angadi* (weekly market)

Some of the women who are too old to do the back-breaking work required for agricultural labor get creative to earn income. Farmers like Jangamma, who shares an acre of land with her late husband's brother and is unable to cultivate it, sells vegetables in the *angadi*. An *angadi* is a weekly market held in most villages and towns. Local farmers as well as those from elsewhere and traders sell vegetables and other household essentials.

Women like Jangamma buy a crate of vegetables from traders, who bring fresh produce in small trucks from other districts and even the neighboring state of Karnataka, and then sell it all day long in the *angadi*. The traders sell produce such as tomatoes, gourds, *brinjal* (eggplant), etc., to the women in cartons weighing 20 kilograms. The women make a very marginal profit of Rs. 50-100 (USD 1-1.5) on each carton that they then sell. Some women work multiple *angadis* in a week. Jangamma tries to do this four days a week in different villages: Tirupur on Sunday, Rampet on Wednesday, Kondapalle on Thursday, and Amlur on Friday. To get to Tirupur, Rampet, or Amlur, she will have to take an auto rickshaw or bus and spends about Rs. 10 to 15 (USD 0.15-0.23) each way. Kondapalle is the closest to her village Gudur (which doesn't have its own *angadi*), and she can walk there. When I met her in Kondapalle once, she bought a 20 kg carton of brinjal for Rs. 350 (USD 5). She sold the brinjals for Rs. 20 (USD 0.30) per kilogram. The quantity of vegetables she can buy and thereafter sell depends on how much cash she has on hand, and sometimes how much she can borrow from someone she knows in the village. On good weeks, she can earn up to Rs. 300-400 (USD 5-6) a week by selling produce in the *angadi*.

3.5 Remittances

Remittances from family members working salaried jobs or wage labor in cities are another source of debt repayment. Famers might have a son or brother working in the city. Eeshwar Naik's son who works in Mumbai city sends home Rs. 5000-10,000 (USD 77-150) every five to six months. Similarly, Balram Naik's elder son who lives in Hyderabad sends home Rs. 1000-3000 (USD 15-46) every month. Padmamma's son works as an office boy in Hyderabad and sends home Rs. 5000-6000 (USD 77-92) monthly. Narsamma's son who works in a gas station in Hyderabad also sends money home monthly. When Narsamma and her husband need a bigger sum for agricultural expenses, their son helps them out. He sent them Rs. 10,000 (USD 1,538) in 2017 to buy pesticides for their redgram crop.

3.6 Land sale

As a last resort, farmers tend to sell their agricultural land to repay loans. 20.8 percent of farmers surveyed have sold land. Of the 43 farmers who sold land, 18 of them (42 percent) sold it to repay loans (see Table 3). The farmers interviewed explain that selling land is considered shameful by many of them. It also means a loss of security. Of the farmers interviewed, those who sold land did so to repay loans like Jangamma and Srinivas, had no money in hand like Jangamma, or did to pay for reproductive expenses such as building a house or getting a daughter married like Lakshman Reddy.

Despite its prevalence, farmers consider it shameful to sell land and view it as a loss of security. Narsamma's husband wants to sell his deceased brother's share of land to repay their outstanding loans, while Narsamma would rather migrate to the city to work as wage

labor and thereby repay loans, and at the same time hire labor to help cultivate their agricultural lands in the village. Narsamma would rather not sell land since it would be hard for her children to buy land in the future, as land prices have only been increasing in recent memory. She also explains that it is shameful to say that they have sold land to repay loans.

Table 6. Reasons for selling agricultural land

Reason for selling land	Number of farmers
Loan repayment	18
Samsaram (household)	8
Marriage of child	8
Family health expenses	7
Pay for borewell drilling	4
Other (to build house, road work, for job)	3
Marriage of other family member	2
Buy land	2

3.7 Farmer suicide

Much has been said about farmer suicides in India. They are often associated with cultivation of genetically modified Bt cotton (Shiva, 2008), but recent work has shown that it is *the structural conditions under which Bt cotton is cultivated* that are responsible for farmer suicide (Gruère & Sengupta, 2011). Farmer suicides are a symptom of the agrarian crisis in India, which in turn is a result of green revolution technologies, intensive cash-

cropping by smallholders, cultivation in unsuitable areas with less than reliable irrigation, and neoliberal policies that have led to increasing farmer indebtedness (Gruère & Sengupta, 2011; A. Gupta, 2017; M. Taylor, 2014).

While this dissertation is not about farmer suicide, it is ever-present in the agricultural landscape in rural Telangana. Some farmers mention it, saying debt is such a massive burden in agricultural communities that farmers are committing suicide. Two key aspects of farmer suicide are psychological and financial (Sridhar, 2006). While it can be hard to know what goes on inside one's head, it is possible to understand the financial. As this dissertation has explained, farmers in Mastanbad live their lives in debt. In a capitalist mode of production, debt is a mechanism of surplus extraction (Harvey, 2006; Marx, 1992). And debt, in extreme situations, leads to suicide. Jangamma's husband committed suicide in 2015, when he found himself unable to repay their debt even after selling their land.

4. Discussion

Autonomy, which means not being dependent upon or regulated by another (Oxford English Dictionary, n.d.-a), is fundamental to peasant lives. It is the opposite of precarity, which is the ontological condition of being vulnerable to others (Tsing, 2015) and being "other than 'autonomous'" (Butler, 2004, p. 27). Farmers in Mastanbad mandal, in debt to multiple actors for their household social reproduction as well as agricultural production, embody this meaning of precarity and are not autonomous.

Debt is not just a financial burden, but it carries an emotional one as well. Farmers do not want to be in debt to someone. This state of not being autonomous weighs heavily

on them, is a constant worry, and even impacts their physical wellbeing. Narsamma's husband frequently falls ill worrying about debt. To overcome this precarity of being indebted, and therefore dependent on others, farmers in Mastanbad scramble to repay debt.

Farmers in Mastanbad mandal borrow to repay. They borrow from a new source to repay an old loan. Not only does this make them dependent on a new actor, which is a sign of increasing precarity, but it also results in a transactional burden. Farmers need to keep track of who they borrowed from and what they owe. Most farmers I spoke to were illiterate. Their children, if educated, help keep track of these transactions. Otherwise, farmers say they ask the moneylender or someone else the know to write down their loan amounts on a piece of paper, which is a sign of dependency and loss of autonomy. In addition, farmers know their creditors, and this adds another layer to their precarity via the emotional burden of debt.

Another widespread strategy of debt repayment is capitalization of agriculture via drilling borewells for irrigation or cultivating a new crop such as cotton with the *hope* of good harvests and returns. Hope appears to be a strange side effect of debt and precarity. With the *hope* of doing better in life and repaying loans, farmers enter further debt to drill borewells or cultivate cotton. This again increases precarity and further reduces autonomy. And when borewells fail or there is a loss on the cotton crop, debt increases.

Migrating to cities for wage labor work is another important mechanism to repay debt. Farmers in Mastanbad mandal migrate to the nearest city Hyderabad, or in some cases further away to Mumbai, to earn money by doing wage labor. Most often this

temporary, informal, and uncertain work involves labor in construction sites, which by nature is dangerous work. Safety standards are usually non-existent. In the quest for autonomy, farmers engage in this increasingly precarious, physically unsafe, temporary, and uncertain work. Those who migrate also do not have community support as in the village and remain alone in times of ill-health or other distress.

But not all farmers migrate to the city. Instead, they work as wage labor in the villages, either performing agricultural labor or even any construction-related work. In the non-agricultural season they partake in the MGNREGA 100 days work, which however is fraught with corruption. Others rely on remittances from a family member, who is most often a male child with a salaried job in a city. When all else fails, farmers resort to selling land to repay debt.

While selling land is an option available to farmers to repay debt, most avoid it and only do this as a last resort. This ties into the literature on agrarian political economy, which notes that retention of land is key to autonomy (Friedmann, 1978; van der Ploeg, 2018). Farmers would rather engage in other income-generating activities ('pluriactivity') to repay debt while also staying on their land. Farmers like Narsamma explain how land values in recent memory have only gone up. She wants to keep their land so their children can cultivate it if they choose to do so in the future. While her husband wants to sell a portion of their land to repay debt, Narsamma would rather go to the city to work as wage labor, which is something none of her family has done before. Farmers are willing to undertake precarious, unknown, uncertain, and unsafe work to maintain at least some

degree of autonomy. In extreme circumstances, when they are unable to pay off their debts by selling land, farmers such as Jangamma's husband commit suicide as a last resort.

Immiseration and an emotional burden are attendant in a farmer's struggle for autonomy and reduction of precarity, which are intimately connected via financialization of social reproduction and debt. Based on farmer explanations, the conclusion chapter lays out some concrete measures that would make their lives less precarious.

Chapter 7: Conclusion

In November 2020, during one of the many iterations of the Covid-19 lockdowns in Madison, Wisconsin, I was analyzing the life and debt histories of farmers in Mastanbad mandal. As I was doing this, I read news of the farmer protests in India organized against the farm bills passed by the Indian government. These bills would essentially privatize agricultural markets, take away any kind of government price supports for the farmers' harvests, and entrap farmers within exploitative relationships with middlemen and other private businesses. As I read this news, increasingly angry, I could not help but wonder if any of the lawmakers had ever spoken to a farmer. Did they ever ask a farmer what they needed, what problems they faced, how they lived their lives? Staring me in the face were quotes from farmers: "*We prefer to sell in the government market, but the government pays us after two months at a minimum. We cannot afford to wait that long for payment as interest payments on our loans will increase, and so we sell our harvest to private traders at a lower price … It will be good for the farmers* [to sell in government markets]" - Venkatamma.[60] Selling to private traders at a lower price than government markets will give farmers a lower return on their agricultural investments, leaving them unable to make loan repayments and further cascading them into debt.

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[60] Other farmers have elaborated on Venkatamma's point. "If the government pays immediately when crop is sold to them, it will definitely benefit the farmers," says Srinivas. He elaborates further that they can then repay moneylenders, and the total interest they must pay will also reduce. When they get inputs on credit, such as from Podur market traders, they face two types of loss. One is a loss because of interest to be paid, and the other loss is because they do not get a good price on their crop from the traders available to them.

The agrarian crisis in India is characterized by rising indebtedness in farming communities. More than 50 percent of agricultural households in the country are indebted (NSSO, 2014). The states of Andhra Pradesh and Telangana, which were one consolidated state prior to 2014, have some of the highest agricultural debt levels. The percentage of indebted agricultural households in these states are as high as 93.2 and 91.7 percent respectively (NSSO, 2014). Despite decades of state policy to eliminate informal moneylending through the provision of formal credit in rural areas, informal lending continues to be widespread. This dissertation therefore asked: Why are farmers in debt? Why has rural credit policy failed to eliminate exploitative informal credit? And, in what ways does debt impact farmers lives and livelihoods?

To answer these questions, I conducted fieldwork over a period of nine months: a little over two months in 2015 followed by seven months in 2017. Using a mixed methods approach, I gathered qualitative life and debt histories of 14 farmers and 207 quantitative household surveys across 5 villages in Mastanbad mandal. In addition, I conducted semi-structured interviews with farmers, seed and fertilizer shop dealers, a banker, and an informal moneylender.

My findings are laid out in Chapters 4, 5, and 6 of this dissertation. These findings have shown that theoretically debt, via financialization of social reproduction, results in an increase in precarity and therefore a loss of autonomy. In Chapter 4, I find that farmers are in significant amounts of reproductive debt in addition to productive debt. As a result, farmers increasingly capitalize agriculture, hoping for a good return to repay debt with. But they find themselves in cascading patterns of debt. Unable to repay debt with declining

agricultural returns, farmers borrow new loans to repay old debt. Not only are they dependent on creditors to cover the costs of cultivating their lands, health expenses, and children's weddings, they are further dependent on them to repay these loans.

Dependent on others for survival, these farmers live precarious lives. In Chapter 5, examining contemporary as well as historical sources of credit, I find that despite several decades of state policy to eliminate informal lending, the rural credit landscape in Mastanbad mandal is characterized by a proliferation of credit sources, both formal and informal. Farmers borrow from multiple creditors, often for a single event, which only increases their precarity and dependence on others. Furthermore, the proliferation of credit has resulted in a struggle over farmers' surplus via interest payments to creditors.

Thereafter, I analyze farmers' debt repayment strategies in Chapter 6. I find that in their quest for autonomy and to overcome not only the financial burden of debt, but also its emotional burden, Mastanbad mandal farmers enter increasingly precarious relationships. They not only borrow new loans to repay old loans, but they also borrow to capitalize agriculture by way of drilling borewells and cultivating cotton for the first time. Many of them also work as wage labor in unsafe conditions in cities. When all else fails to repay debt farmers sell land, which is a sign of a loss of autonomy. And when even selling land is not enough, they take their own lives.

In sum: smallholders aim to live autonomous lives. The findings of my research highlight the contradiction that in their quest for autonomy, farmers end up even more precarious. Declining agricultural returns in a neoliberal economy in India have led to the increasing financialization of the social reproduction sphere. This is similar to other

locations such as rural Cambodia (Green, 2020). Across the globe, farmers borrow to practice agriculture, to survive, and to repay. Dependent on multiple actors, they embody precarity, the ontological condition of being dependent on others (Butler, 2009). To overcome precarity and recover some semblance of autonomy, which is not being dependent on others and therefore is the opposite of precarity, farmers enter even more precarious relationships. They undertake more debt to intensify agriculture. When that intensification fails to generate the expected agricultural return, not only do they fall deeper in debt, but they also bear the emotional burden of debt which can have negative consequences on their bodies. The experience of farmer precarity and autonomy are dialectically linked, and intimately connected to each other.

The findings of this dissertation have several practical implications:

- First, it is critical to provide farmers with more timely access to formal credit that coincides with the agricultural season. This would prevent producers from being forced to buy inputs on credit from private actors such as traders.
- Second, implementing a communal groundwater management system developed in consultation with smallholders would help reduce the indiscriminate drilling of expensive borewells.
- Third, set minimum prices for agriculture such that farmers are guaranteed to always make a profit that is enough to pay for their agricultural and day-to-day expenses. Towards this, ensuring a minimum support price for agricultural produce, assuring farmers are paid immediately, and improving market access are key.

- Finally, and perhaps most importantly, because the central drivers of informal loan-taking are *reproductive* in nature, investment into infrastructure that eliminates household costs for producers is essential. More fully subsidized rural health care especially would eliminate the sudden and often disastrous costs that drive informal lending and initiate a cascading spiral of borrowing.

In any case, the expectation that modern banking in rural India would reduce farmer misery, dependency, and precarity seems premature at best and pointless at worst. Only by better supporting farm families and communities through direct aid is there hope to eliminate the timeless role of the moneylender in rural life. At the same time, it is important to note that direct aid by itself does not address the agrarian debt crisis. This can be seen in some of the state policies in India aimed at providing direct aid.

Most notable among direct aid programs in India are crop loan waivers, under which the outstanding crop loans of farmers are waived, and the free electricity provided to farmers. The Telangana state government in 2018 announced a waiver of crop loans that were sanctioned or renewed on or after April 1, 2014, and that were outstanding as of December 11, 2018. The crop loan waiver scheme announcement mentions that "the Government of Telangana is convinced that unless this [indebtedness] cycle is broken with crop loan waiver, farmers will remain trapped in perpetual indebtedness" (Government of Telangana, n.d.). But this loan waiver scheme only covers institutional sources of credit, i.e., formal sources such as banks, but it does not cover non-institutional or informal sources of credit. As my analysis in this dissertation has shown, farmers in Mastanbad mandal borrow from a wide a variety of credit sources to fund their agricultural production as well as

household reproduction, and not all of them are formal. While 81.6 percent of farmers surveyed had a crop loan outstanding, 98.5 percent of farmers surveyed have an outstanding loan with a moneylender. The amount of crop loan sanctioned by a bank is limited by the land acreage owned by a farmer. In contrast, loans taken from a moneylender usually can be much higher. While the loan waiver scheme of the Telangana government will undoubtedly help some farmers reduce the amount of debt they owe, it is in no way a silver bullet solution as the government seems to hope it is.

However, what would make a difference to farmers is the *timely provision of credit,* especially crop loans. Bank crop loans in Mastanbad mandal are usually sanctioned at a much later time than they are required in the cultivation season. Farmers need these loans at the beginning of the agricultural season, usually in June. Without access to crop loans at the time, farmers rely on purchasing inputs either on credit from traders or by borrowing money from various informal sources.

Several states in India, such as Andhra Pradesh, Tamil Nadu, Telangana, and Punjab, provide the other popular type of direct aid to farmers: free or subsidized electricity (Fosli et al., 2021). Provision of free electricity to farmers in India is a tactic of populist politics to obtain electoral votes. In the state of Andhra Pradesh, of which Telangana was a part until 2014, the Telegu Desam Party (TDP) announced the first of this sort of populist agenda in 1984. The TDP won the election based on the promise of slab-rate electricity for agriculture, which was based on the horsepower of irrigation pump sets (Fosli et al., 2021). Following this, the Congress party promised free electricity to the farmers during the 2004 election campaign and subsequently came to power (Fosli et al., 2021; Pingle, 2011). The

provision of free electricity to the agriculture sector continues in Telangana under the current state government led by the Telangana Rashtra Samithi (TRS) party.

Free or subsidized electricity to the agricultural sector has led to overexploitation of groundwater (Kondepati, 2011; Palanisami, 2001). In the Deccan Plateau region, where Mastanbad mandal is located, groundwater availability is uneven and dependent on shallow aquifers (Madhnure & Lavanya, 2021; SGWD & CGWB, 2012; M. Taylor, 2013b). The Congress government policy of seven hours of free electricity to farmers in Andhra Pradesh in 2004 followed three years of drought in the Telangana region of the state (Fosli et al., 2021). Widespread borewell drilling followed, and farmers undertook debt to drill them. The competitive drilling resulted in a "race to the bottom of the water table" (M. Taylor, 2013b, p. 692) and the exploitation of groundwater. My research in Mastanbad mandal reveals the same pattern of widespread borewell drilling, in which hardly any strike water, resulting in a landscape of increased debt and precarity.

Rather than providing blanket free electricity to the agricultural sector, it would be beneficial for the state to promote *communal groundwater management systems*. There have been projects like the World Bank's Andhra Pradesh Drought Adaptation Initiative (APDAI) launched in 2006. This pilot program provided subsidies for borewell drilling to smallholders to collectively drill and share borewells among themselves provided they follow certain rules such as not drilling any new borewells for the next 10 years. A farmer I spoke to who was part of this program explained that not all farmers were convinced to join it. Furthermore, those who did join still drilled their own borewells after the APDAI program ended. Therefore, it is not only important to implement programs for collective

management of groundwater, but also to design these programs in consultation with the farmers themselves to ensure their long-term sustainability.

The state can also help address other underlying causes of farmer indebtedness. Smallholders are in debt to fund social reproduction, as they borrow for health expenses and children's wedding expenses. Their agricultural returns are at times not even sufficient to pay for everyday consumption expenses. What can be done to make agriculture profitable? Some would argue that capitalization of agriculture and the cultivation of high-return crops such as cotton would help increase agricultural profitability for farmers. But as seen with the green revolution and in Mastanbad mandal as part of this research, capitalization of agriculture does not always work, and in the case of smallholders, it often leads to more debt.

However, improving market access and returns on agricultural harvest can have immediate material impacts on farmer lives. As the farmers in Mastanbad mandal explain, selling in government markets at a minimum support price that covers their agricultural investment and provides some profit would go a long way. But this would work only if they were paid immediately. At the time of this research in 2017, it took two months for farmers to receive payment on their harvest sold in government markets. Farmers are unable to wait that long, as the interest on their loans increase, and so they sell to private traders at a lower price. Therefore, what is needed is *provision of a minimum support price that ensures a good agricultural return to farmers combined with immediate payment*.

Tackling reproductive debt can be complicated. Weddings are culturally important, and you cannot tell a farmer to not spend money on them. Life events such as these are

celebrated with their community, and they help build support networks and a form of moral economy. When in need of immediate cash to feed their family, farmers rely on neighbors for relief. Making agriculture more profitable would help pay for such events. The other big reproductive expense of farmers, health, is an area that state policy can most effectively help.

When they are ill, farmers in Mastanbad mandal first consult the registered medical practitioner (RMP) who resides in their village or a neighboring one. RMPs usually have limited medical knowledge and refer the farmers to a private hospital who gives the RMP a "cut," which is a payment for bringing them a patient. Private hospital services are expensive compared to a government hospital, which is free. Farmers pay not only the hospital fees but also the RMP. Every health event becomes an expensive debt event. The preference for private or government hospitals among farmers tends to be mixed and is usually based on their own or their acquaintances' experiences with these healthcare systems. There are those who believe the quality of government hospitals is poor because it is "free," and those who only go to government hospitals as they are more trustworthy. Either way, what will materially help farmers is the *provision of good quality, subsidized healthcare in rural areas*.

In Telangana, there is a state sponsored health insurance scheme called *Aarogyasri*. This scheme was started in 2007 by the chief minister of Andhra Pradesh at the time, Y. S. Rajasekhar Reddy. The goal of this scheme was to provide quality health care to those below the poverty line (Vikaspedia, n.d.). While this scheme, like most government schemes in India, comes with its own problems including corruption, most farmers I spoke

to in Mastanbad mandal did not know about it. In 2018 the Central government in India launched a nationwide health insurance scheme known as the Pradhan Mantri Jan Arogya Yojana (PMJAY) that covers up to Rs. 500,000 (USD7,692) per family. It is critical that those that need such insurance, such as farmers in Mastanbad mandal, are made aware of it.

More than half of the agricultural households in India are in debt, and the level of debt is only increasing. There was a 57 percent increase in debt levels from 2013 to 2018 (MOSPI, 2021). If these numbers were not enough to signify the depth of the agrarian crisis in India, one only needs to look at the thousands of farmers marching to Delhi at the height of the COVID-19 pandemic in November 2020 and staying there for a year until the Indian government's 'farm laws' were finally repealed. It is imperative that the government enacts policies made in consultation with farmers, especially smallholders, based on what their problems really are.

Talking and writing about debt is depressing. Many of the farmers I spoke to were reluctant to talk about it or give specific details. Despite this, many of them, especially women, spent many hours with me in their homes and in their agricultural fields discussing intimate details about debt. Most would ask what they would get in return. As a graduate student in the environmental social sciences, there was not much I could do financially to help them. But I owe it to them to share their stories.

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Appendices

Appendix I. Soil classes of India.

Adapted from :(Bhattacharyya et al., 2013, p. 1309)

Major soils (traditional name)	**Soil orders (US soil taxonomy)**
Alluvial	Inceptisols, Entisols, Alfisols, Aridisols
Coastal alluvial	Aridisols, Inceptisols, Entisols
Red	Alfisols, Ultisols, Entisols, Inceptisols, Mollisols, Aridisols
Laterites	Alfisols, Ultisols, Inceptisols
Brown forest	Mollisols, Inceptisols
Hill	Inceptisols, Entisols
Terai	Mollisols, Entisols
Mountain meadow	Mollisols
Sub-montane	Alfisols
Black	Vertisols, Mollisols, Inceptisols, Entisols, Aridisols
Desert	Aridisols, nceptisols, Entisols

Appendix II. Survey instrument

ID # _____

Date:
Interviewer name:

Respondent name:	M/F Age:	Head of the household:	Relationship of respondent to head of household:	
Mandal name:	Village name:		Caste:	Caste category: SC/ ST/ BC/ OC

1.) Family Size : How many people are in your household? _____(Total number)

	Age<15 (Male)	Age 15-60 (Male)	Age >60 (Male)	Age<15 (Female)	Age 15-60 (Female)	Age >60 (Female)
Household size (#)						
How many are not permanent residents? (#)						
Reason for absence:						
How many are educated?						

Reason: 1= Employment; 2= Education; 3= Other

2.) Livelihood sources/ Income sources (What are sources – then proportions)
a. What are your sources of income? What proportion of your income comes from these various sources?

Source of Income	Agriculture	Wage labor	Livestock	Timber	Salary or Pension	Remittance (send money home?)	Other
Proportion of annual cash income							
Start year							
Stopped year							
Trend (10 years)							

Trend (last 10 years): 1 = Decreased greatly; 2 = Decreased somewhat; 3 = Remained the same; 4 = Increased somewhat; 5 = Increased greatly [trend of income from each activity]

3.) Major expenditures in the last 5 years: In the last 5 years, what were some of your biggest expenses?

Purpose	Amount	Source of money	Date (month,year)	If borrowed, did you repay?
Building house				
Buying land				
Health				
Marriage of boy child				
Marriage of girl child				
Borewell				
Buying livestock				
Rent land				
Other:				

Did you repay: 0=no, 1=yes, 2=partly, 3=paying only interest

*** 4.) Borewell history:**

a. How many borewells have you drilled? Total_____ Working_____ Failed_____

b. When did you drill your first borewell?

c. When did you drill your latest borewell?

d. What is the maximum number of borewells you put in a year? _____ When? _____(year)

e. What is the average cost per borewell? _____

f. Where do you get the money for borewells:

Source		
Amount		
Interest rate		

*** 5.) Debt history:**

a. How many loans do you have outstanding (not repaid)? Please list them:

Loan amount	Purpose (for which you took loan)	Source (from where did you borrow money)	Interest rate	Loan taken date (month/year)

[* This is a priority question]

6.) Land and operational holdings:

a. How much land do you (i) own? _____ (ii) rent? _____ (iii) share crop? _____

Area (acres/hectares/guntas)	In how many distinct places is this located?	Land/ soil type (red chelka/ black regadi)	"bhoomi rakam"	Owned (Yes/ No)	Operated (how is this land used)	Irrigated? (Yes/ No)	Source of irrigation	Year of first irrigation	How often do you fallow?

Bhoomi rakam: 1=madiketi, 2=erra ghalchu, 3=tella ghalchu, 4=iska nelalu, 5= other (list name)
Operated: 1= Self; 2=Rented in (kavulu); 3= Rented out; 4=sharecropping (paaleki); 5=sharecropping out; 5=fallow
Source: 1=Borewells; 2= Dugwells; 3= cheruvu; 4= baavi; 5= other (name)
Fallow: 0=never, 1=6 months/year, 2=once in 2 years, 3=only if there are no rains, 4=other (write when)

b. **Have you sold land in the last 10 years? Yes/No c) If Yes:**

Acres sold	Land/ soil type	When sold? (month/year)	Sale price	Why sold?

Why sold: 1=to repay loan, 2=for samsaram, 3=to pay for borewell, 4=to pay for livestock, 5= marriage of child, 6=other (write)

7.) Crop history:

a. What crops have you planted this year? (2017 kharif)

Crop name	Acres	Owned/ rented/ sharecrop?	Land/ soil type	Irrigated? (Yes/No)	Source of irrigation

b. What crops did you plant in the last one year? 2016 (kharif) – 2017 (rabi)

Crop name	Kharif / Rabi	Acres	Land/ soil type	Irrigated? (Yes/No)	Source of irrigation	Yield last year (how much panta?)	Market price (per quintal)

Source: 1=Borewells; 2= Dugwells (baavi); 3= cheruvu; 5= Canal; 6= other (name)

c. Cotton:

(i) Have you ever grown cotton? Yes/ No. If yes, when did you first grow it? _____ (year)

(ii) Is it seed (crossing pathi) or lint (commercial pathi)? (circle)

(iii) What is the seed brand name (if known)?

(iv) Where did you buy that seed?

(v) Do you know what Bt cotton is? Yes/ No

d. Crops grown in the last 20 years: (ask for crops grown now, crops they stopped growing-in their lifetime)

Crop name	First grown	Last grown	If stopped, why?	Source of seeds	Trend (10 years)
Red gram					
Paddy (rice)					
Cotton					
Pacha jonna					
Maize					
Green gram (pesara)					
Groundnut (palli)					
Sama					
Thydulu					
Korra					
Bebbarlu (alasandhulu)					
Ulavalu					
Tella jonna					
Nuvvu					
Cucumber (kheera)					
Other:					

Reason for stopping: 1=no rain, 2=no bore water, 3=wild pigs, 4=market price (return/ digubadi), 5=other

Source of seed: 1=self saved, 2=other farmers (naagu); 3=trader (shop); 4=Community Seed Bank; 5=govt; 6=other

Trend: 1=Decreased greatly; 2=Decreased somewhat; 3=Remained the same; 4=Increased somewhat; 5=Increased greatly

8.) Livestock: What livestock do you own? (write number of livestock)

	Now	10 yrs ago	Sold? (#)	When sold (month/ year)	Why sold?
Cows					
Oxen					
Buffaloes					
Goats					
Sheep					
Poultry					
Other:					

Why sold: 1=to repay loan, 2=for samsaram, 3=to pay for borewell, 4=to pay for livestock, 5= marriage of child, 6=other (write)

9.) Migration history: [for wage labor or job]

a. Do any of your family members migrate for employment? Yes/No

b. If yes, who migrates? How many male _____, female _____

c. How often do they migrate per year? Circle one: One month | 3 months | 6 months| 1 year (permanent)

d. What is the main reason for migration? (Why did they migrate or leave the village?)

_____

[Reasons: 1=to repay loan, 2=livestock grazing, 3=child's education, 4=summer month wage labor (seasonal), 5=salary job (yearly), 6=other (write)]

e. Have all the working adults in the family ever migrated to the city, and rented or sold land in the village?

Yes/ No

f. If yes, when? _____ (year)