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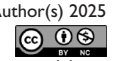

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Crops, claims and the politics of risk in India's agricultural insurance programme

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Abstract

This paper examines the dynamics of the Pradhan Mantri Faisal Bima Yojana, a state-subsidized and privately operationalized agricultural insurance programme in India. While promoters of such index-based insurance programmes maintain that it functions as a tool of income stabilization and climate adaptation for rural communities, critics argue that it facilitates the individualization of risk and erosion of social networks of support. Drawing on ethnographic research in central India, this paper instead shows that insurance produces a complex mutuality of interest that binds agriculturalists together in uneven but significant ways. In the context of increasing climatic uncertainty and declining state investment in agriculture, it is retooled into an object of political negotiation and claim-making, reshaping relations between cultivators and the state. Focusing on the specific form of index insurance, I show how it can abstract from concrete and diverse experiences of crop loss but in doing so, constructs a collective unit of risk and responsibility. Examining the constitutive tensions of the insurance form – between public and private, individual and collective – this paper draws attention to the potentiality of insurance as a fraught space of collective redress within a climate-changing Indian countryside.

Keywords

Index insurance, collective politics, financialization, agriculture, India

Introduction

On a chilly February morning, a small crowd gathers in a field of gram (chickpea) in the village of Gramkhedi in central India.[1] The crop is drying and yellow, ready for harvest. Forming loose concentric circles, the group of mostly men surround a square plot in the centre of the field marked off with white tape (Figure 1). The late winter air is thick with anticipation. As they wait and watch, the men comment on the state of the field, sparse and dry, unlikely to provide a good yield. Within the contours of the taped section, an elderly man painstakingly cuts the crop using a sickle. When the plot is bare, he gathers the crop – stalks, seeds, leaves and all – into a mesh sack. A young man in jeans grabs this bag and hooks a portable digital scale onto it. Slipping his fingers through the black nylon strap of the

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Figure 1. A crowd gathers in a field of gram (chickpea) for the crop survey.
Source: Photo by author.

scale, he extends his arm forward, holding the bag as steady as possible. As the scale beeps and the numbers settle into place, the chatter in the crowd quietens. The sickles and sticks are set aside. In their place, smartphones and GPS trackers appear. Those standing in the inner circle pull phones and notebooks from their pockets and backpacks, jotting down numbers and taking photographs of the sack, scale, and the now empty plot in the centre of the field. The rest of us standing in various corners of the field move closer, peering to catch the reading on the scale, even though we are unsure of what the numbers mean and how to interpret them.[2]

Even as the field cleared out and the men returned to their daily tasks, we had no specific answers to these questions. Yet, the significance of the sack and its weight was clear. This process of measurement is known as the crop-cutting experiment (CCE or colloquially, 'cutting'), a long-standing method of yield estimation based on a random sample of agricultural plots. At harvest time, four agricultural fields are randomly selected (within each village). Within that plot, a square sub-plot (of 5×5m) is measured and the standing crop within the sub-plot is cut, threshed, and weighed. Through a series of calculations, the weight of the crop from those sub-plots is extrapolated to estimate average area-yield in that village.[3]

The area-yield is a crucial point of quantitative information within development planning, potentially shaping everything from export policy to food procurement programmes. Under the Pradhan Mantri Fasal Bima Yojana (Prime Minister's Crop Insurance Programme, hereafter PMFBY), launched in 2016, this yield also serves as a proxy for crop loss, and consequently, for claims payouts from insurers. In simple terms, the lower the yield, the higher the potential payouts to farmers through insurance claims. The PMFBY is one of many microinsurance programmes launched across the global South in recent decades, wherein insurance claims are based not on losses on individual farms but on a predetermined index (such as rainfall, temperature or yield) which stands in for crop damage.

Known as index or parametric insurance, this type of insurance has become popular among governments and aid agencies as a cost-effective and efficient mode of addressing the socio-environmental vulnerabilities of the world's poorest populations.

The farmers of Gramkhedi – and its surrounds – were deeply concerned about their winter crop. While there had been no dramatic disaster or calamity, successive cold spells in December and January had damaged the chickpea crop, leaving the legumes shrivelled and brown. In this scenario, an insurance payout could prove significant to farmers reeling from years of poor rain and decades of mounting debt. The farmers I met that morning were sceptical about the likelihood of receiving an insurance claim at all, or one that would fully compensate for their economic losses. And yet, the crowd assembled in the field to observe the crop survey suggests that insurance – despite its many limitations – is now an object of collective concern for India's cultivators as well as its state apparatus. Millions of rupees – but also rural livelihoods – can hinge on the weight of these crop bundles. For insurers, it could mean substantial differences in profit margins and reinsurance rates. And for farmers, it could potentially mean the difference between staying afloat and drowning in debt.

Programmes such as this have elicited divergent views in scholarly and popular discourse: while economists and development experts have praised its potential to offer protection to vulnerable communities in times of distress, geographers and anthropologists have cautioned that it might reproduce inequalities and exacerbate uncertainties. Critics point to its individualizing and depoliticizing effects, potentially displacing informal social networks of risk-sharing, drawing the poor further into extractive circuits of finance, and advancing an ethos of individualized responsibility. Building on this literature, this paper asks basic but fundamental questions: how does index insurance work? Who assesses loss and how? How do farmers experience and engage with it? It locates the PMFBY within the constitutive tensions of insurance form (between public and private interest, individual and collective risk) as well as regional histories of agricultural development and policy, asking: 'How do diverse individuals, households, and collectives gain access to, construe, and share insurance as a technology of affinity?' (Johnson et al., 2023: 6).

Offering an ethnographic account of the operations of an index-based, state-funded and privately operationalized programme, this paper argues that insurance is productive of a complex mutuality of interest that binds agriculturalists together in uneven but significant ways. In the context of increasing climatic uncertainty and declining state investment in agriculture, I suggest that insurance is retooled into an object of public concern and political claim-making among agriculturalists. The paper makes three intersecting arguments. First, I show that insurance does not simply destroy and replace, but rather becomes entangled with and reshapes more traditional, informal arrangements of managing risk and bearing responsibility. Second, I suggest that the specific socio-spatiality of the index form creates and congeals broad collectives of risk-sharers. Indeed, mechanisms of risk management can create novel avenues for the formation of social solidarity. Third, the centrality of the state in administering this programme highlights the significance of political legitimacy and popular support in the making and unmaking of the programme, thus tying the disbursal of insurance claims to the articulation of political claims.

Close attention to programmes such as the PMFBY is essential considering the continued promotion of index insurance as a solution to entwined problems of climate vulnerability, poverty and indebtedness. Between 2016 and 2024, over 560 million farmers were insured under the programme. Implemented by 5 public sector and 15 private sector insurance companies, the PMFBY is now the world's third largest agricultural insurance programme in terms of premiums. Crop insurance now occupies a prime place in the central government's annual expenditure on agriculture through premium subsidies (only second to direct cash transfers to smallholders).

Sheth (2017) argues that the Indian government has, in recent decades, emphasized 'policies expanding subsidized credit circuits and insured territory', what he calls 'risk-holding' (p. 153). This focus on financial risk is a direct outcome of Green Revolution-era policies which pushed cheap

credit and input-intensive cultivation – marked by high-yielding varieties of seeds, chemical fertilizers and irrigation facilities – onto farmers, eventually resulting in widespread indebtedness and subsequent loan defaults. With rising costs of production, declining state subsidies for inputs, and stagnating market prices, agriculturalists have had to take on increasingly unpayable debts for production and social reproduction. India's ongoing agrarian crisis, epitomized by the suicides of hundreds of thousands of farmers and farmworkers, is tied to this debt-fuelled and investment-intensive regime of production. Successive governments have sought to manage the risks arising from recurring crop failures and rising debt not through investments in infrastructure, land reform or support prices but through short-term risk-management mechanisms such as insurance and loan waivers. Therefore, the expansion of agricultural insurance in India must be understood in relation to the intertwined legacies of Green Revolution policies and economic liberalization.

By grounding financial instruments within specific socio-political contexts and landscapes, this paper explores how insurance programmes and payouts become entangled within local and regional networks of patronage and welfare, forging a collective politics of risk and responsibility. As a novel and unusual site of rural and agrarian politics, cultivators (and others) pragmatically engage with this risk instrument, ranging from collective tampering with yield data to public demonstrations outside banks and government offices. Attending to the specific arrangements and processes through which insurance unfolds is necessary not simply for purposes of empirical specification, but also for the sake of political clarification – showing how insurance intersects with existing political formations as well as how it might be retooled to more progressive and equitable ends.

This paper is based on ethnographic research in the Malwa region of western Madhya Pradesh. As a predominantly agricultural region, farmers grow soybean in the monsoon season followed by wheat, gram, onions, potatoes and garlic in the winter and early summer months. The average size of operational landholdings in Madhya Pradesh is 1.4 hectares and is unevenly distributed with dominant-caste groups being the primary landowners. Over 75% of farmers are small and marginal landholders with less than 2 hectares of land. In 2018 and 2019, I followed the agricultural decisions and practices of cultivators, and conducted interviews with farmers, loss surveyors, insurance company officials and bank officers in this region. Most pertinent to this paper are the dozens of crop-cutting experiments (such as the one described in the introductory paragraph) that I observed across three consecutive agricultural seasons and three crops (soybean, wheat and gram).

My argument proceeds as follows. The first section draws on existing scholarship in history, geography and sociology to explore the fundamental tension between collective risk and individual responsibility that animates the insurance form. The next sections builds on this literature by exploring the question of politics in insurance and then outlining the unique public-private arrangements that characterize insurance. Following this, I delve into the specificities of index insurance, highlighting the abstractions on which it is premised. The final substantive section moves into villages and fields to discuss how farmers collectivize and politicize risk and responsibility, illustrating how insurance becomes an avenue for political negotiation and claim-making.

Navigating risk and responsibility

As Ewald (1991) noted, the insurance imaginary can be deployed to pursue various goals and within diverse political-economic contexts – there is no inevitability or certainty to its imperatives (cf. Collier et al., 2021). Indeed, a significant theme running through the sociology and history of insurance is the tension between the individualization and collectivization of risk and responsibility – between individual blame and social solidarity, between the singular and the aggregate, between security and freedom (Krippner, 2023). This tension partially overlaps with the dynamics of public welfare and private interest, and relatedly, between processes of politicization and depoliticization. Despite dramatic transformations in understandings of risk over the past century, these frictions continue to shape the institutions, technologies, forms and visions that constitute insurance today.

In this section, I situate my work within critical insurance studies and financial geography, fields which have puzzled over insurance as an object that combines a technical rationality with a conception of solidarity (Lehtonen and Liukko, 2015). Grappling with these dynamics and tensions enables a better understanding, and perhaps a more effective leveraging of, agricultural (and other) insurance as a terrain of politics. Specifically, I outline some of the central animating logics of insurance – from mutual aid to personal responsibility – and its theorization within the social sciences to emphasize its limits and possibilities for progressive social struggles.

The earliest forms of insurance can be traced to mutual societies and early modern guilds which provided welfare to members through old age, widowhood, burial and sickness allowances. In the 17th and 18th centuries, modern commercial insurance emerged through maritime trade wherein 'risks', as financial instruments, were bought and sold among merchants as financial compensation for the loss of property, whether owing to a 'peril of the sea' or an 'act of God' (Levy, 2012: 21). Forming social 'risk communities', these merchants sold risks on a range of 'cargo': rice, cotton, enslaved persons. In the 18th century, life insurance expanded its reach as a 'particularly capitalist form of mediating and valuing life and death', transforming life itself into a form of property (Kar, 2024: 3). As a form of economization – rendering objects, actors and processes calculable – insurance transformed the hazards of life into economic problems that could be priced and managed (Elliott, 2021).

Insurance has also been central to the formation of the modern welfare state. In late 19th century France, the idea that 'the state should underwrite the ensemble of "social risks" incurred by its citizens, ensuring the general social security of its policyholders in the event of economic loss' gained ground (Cooper, 2020: xxi). Social insurance, therefore, framed relations between citizens and the state, serving as 'a terrain of moral struggle over the contours and limitations of mutual aid, compassion, and membership' (Elliott, 2021: 25). As varied forms of public and private insurance became more commonplace, risk came to be shared socially even as individuals were made more accountable for their own risks (Kar, 2018).

More recently, scholarship has situated the concerted spread of insurance technologies within broader processes of financialization, 'a pattern of accumulation in which profits accrue primarily through financial channels' (Krippner, 2005: 174–175). Risk instruments such as weather derivatives and catastrophe bonds facilitate a process of financialization that 'reorganizes disaster management around the imperatives of financial speculation' (Grove, 2012: 140). In the context of the broader financialization of the economy as well as the intrusion of financial logics into the household, more people are encouraged to embrace risk – taking greater risks by participating in speculative markets while simultaneously spreading risk through new financial instruments (Baker and Simon, 2002). So too with farmers covered under the PMFBY. The programme aims to provide financial support and income stability to farmers in the aftermath of natural calamities, to encourage 'innovative and modern' agricultural practices, and to ensure agricultural credit flows. Crop insurance is presented as a protective shield that *enables* – rather than restricts – the insured to take on the burgeoning risks associated with commercial cultivation. Insurance therefore lies at the heart of financial logics that conceive of risk as both threat and opportunity.

The expansion of insurance – whether of life, health or property – reflects the de-mutualization of risk, a movement away from socialized support systems towards private financial forms of protection. Indeed, a prominent thread in the literature has been the gradual individualization of risk, from 19th century notions of liberal self-ownership (Levy, 2012) to the late 20th century neoliberal adage of 'personal responsibility' (Hacker, 2006). Alongside, its centrality to contemporary life reflects the shifting dynamics of welfare whereby state support does not operate through a direct transfer between citizens and government, but rather through new financial products (Kar, 2017). For example, in cases of natural disasters affecting farmers, direct state relief would entail a government payment to all registered agricultural landholders from the State Disaster Response Fund. The crop insurance model, however, not only requires farmers to pay a small premium which, for many, is an onerous expenditure; it also entails a complicated and onerous process of measuring damage and calculating claims payouts.

Figure 2. A poster advertising crop insurance with the tagline 'Come rain or storm, we are prepared'.
Source: Photo by author.

The move from disaster relief to insurance therefore signals the formation of a new kind of political subject, a calculating individual who can manage risk through self-responsibility (Collier, 2014).

Despite this, microinsurance – low-premium insurance for poor people in the global South – has been widely promoted by national governments and international development organizations as a crucial tool of risk management, income stabilization and climate adaptation for vulnerable communities (Figure 2). Among economic geographers and anthropologists, index insurance for agriculturalists and pastoralists has been castigated for their deleterious socio-economic effects (both existing and potential), including undermining social support systems, encouraging agricultural commercialization and exposure to market risks, reproducing vulnerabilities and deepening social inequalities among rural producers (Isakson, 2015; Müller et al., 2017; Taylor, 2016). Within this literature, microinsurance is generally viewed as evidence of 'deepening financial logics in development narratives, institutional functioning, programmatic interventions and stakeholder subjectivities' (Mawdsley, 2018: 194).

In many ways, programmes such as the PMFBY could be read as a straightforward instance of predatory financialization – transforming socio-environmental vulnerabilities into demarcated risks that can be quantified and managed, perpetuating an ethos of self-responsibility for risk management, and transforming agricultural producers into entrepreneurial, financial consumers. All of this is partially true. Yet, a close examination of how insurance is practically operationalized and legitimized finds the lens of financialization to be inadequate. Indeed, dominant accounts of financialization have been rightly critiqued for their tendency to 'become one sided, even teleological scripts of linear, uninterrupted, ineluctable development' (Christophers, 2015: 194). Challenging this premise, research reveals that the processes and effects of financialization are often fragmentary, partial and contradictory (Johnson, 2022; Ouma et al., 2018). As the next section demonstrates, financial instruments can unfold in unexpected ways – they might be resisted, negotiated and co-opted to multiple, surprising ends.

The politics of insurance

Ethnographic research illustrates that parametric insurance rarely unfolds according to the celebratory expectations of advocates or the anxious prognostications of detractors (Johnson, 2022; Johnson et al., 2023). In their work on index insurance for pastoralists in the drylands of East Africa, Johnson et al. (2023) note that microinsurance has neither been as detrimental as its critics feared nor as successful as its promoters hoped – its adoption has not resulted in the complete monetization of social relations or in the displacement of traditional forms of risk-sharing.[4] Rather, index insurance is 'always understood from within local moral economies and repertoires of exchange' (Johnson et al., 2023: 1944). That is, such risk instruments are always embedded in and interact with existing social relations, moral norms and political practices. Beyond insurance, Greenleaf (2024) has compellingly shown how carbon offsets – a paradigmatic form of green capitalism – do not necessarily deepen processes of commodification and privatization in the forest, but rather 'engendered an environmentally premised welfare state and an environmentally negotiated citizenship' (p. 4). From the vantage point of Brazil, Greenleaf argues that the new value accruing from forest carbon was redistributed to smallholder farmers through state benefits, in ways that produced a precarious, but meaningful, form of inclusion for marginalized communities.

These accounts suggest that it is erroneous to assume a linear movement from universal welfare to privatized risk, particularly in the global South (cf. Maurer, 1999). In my conversations with farmers in central India, I found that they neither idealize earlier forms of (paltry) state compensation nor hold back from demanding the same in the event of a disaster.[5] At the same time, they display little nostalgia for a largely imagined past in which neighbours and kin readily offered aid in the event of poor rainfall or crop disease. More crucially, although the PMFBY routes insurance through private insurers and weather agencies, it is at its core a state programme undergirded by huge government subsidies, as I discuss in detail below. Unsurprisingly then, farmers as well as bureaucrats, legislators and political leaders deploy the programme in divergent ways to advance their own interests and goals.

This brings us to the question of politics in insurance. As technocratic approaches to environment and development have exploded, scholars have emphasized their depoliticizing effects – transforming political questions of power and inequality into technical problems that can be solved through economic policies and legal reforms. Financial 'fixes' such as index insurance are regarded similarly, as technical solutions to complex problems of climate change, environmental vulnerability and social precarity. Yet, following anthropologists Bornstein and Sharma (2016), this paper eschews interpretations of technical fixes as necessarily depoliticizing but rather as representing 'an alteration in the *form* of politics' (p. 78, emphasis original). That is, political and moral contestations do not disappear but occur in new domains and through novel idioms.

Here, I draw on conceptualizations of 'politics' from science and technology studies (STS), that emphasize its contingent nature as well as the centrality of individual and collective agency (Brown,

2015). Discussing the concept of techno-politics, Winner (1980) defines politics broadly as 'arrangements of power and authority in human associations as well as the activities that take place within those arrangements' (p. 123). More narrowly, political scientist Pielke (2007) conceptualizes politics as entailing the activities of 'bargaining, negotiation, and compromise in pursuit of desired ends' (p. 22).

Within scholarship on financialization, however, politics has often been read through the prism of direct action and radical resistance. For example, discussions of urban struggles around financialization focus on activists mobilizing public data on housing code violations to campaign against the speculative dealings of banks (Fields, 2017) as well as insurgent practices such as eviction blockades and occupation of vacant housing (Garcia-Lamarca, 2017). Others have outlined how local municipalities and social movements in the US deploy eminent domain powers to seize and reprice mortgage debts in the wake of the foreclosure crisis, potentially reconfiguring financialization as 'a terrain of suburban politics' for communities of colour (Niedt and Christophers, 2016: 1108).

Contesting ideas of finance as necessarily depoliticizing and anti-public, Mizes (2023) insists that the municipal bond market in Dakar, Senegal, actually enhanced avenues for democratic engagement and political disagreement. Mizes' (2023) study identifies finance as a potential *source* – rather than obstacle – to democracy by opening 'new forms of – and forums for – political disputation to an expanded set of actors involved in the formulation of a collective problem' (p. 922). Relatedly, Tim van de Meerendonk (2024) explains how a farmers' organization in western India deploys the moral legitimacy of objective numbers and mathematical calculation to contest an insurance company's dismal payouts 'on its own terms', thereby staking political claims through quantified idioms. What these studies reveal is that the 'supposedly a-political proceduralism' of abstract finance not only masks the deeply political nature of risk, its measurement and management (van de Meerendonk, 2024: 53), it also *produces* modes of political engagement that strategically use, contest and negotiate with technical arrangements of measurement and calculation. Not only is finance always political, it is also a site of politics that can foster collective action with diverse, even contradictory goals and in ways that defy narratives of outright resistance or complete cooptation. In the specific case of insurance, the continued significance of state subsidies – even in public-private arrangements of risk sharing – makes it more amenable to collective mobilization. It is to this unique public-private configuration of insurance markets that I turn to below.

Public subsidies and private markets

Several decades on, proponents and detractors alike recognize the profound failures of microinsurance insurance products in the developing world, particularly low rates of uptake (Carter et al., 2017). Despite muted demand, governments, development organizations and policymakers have consistently aimed to shore up the supply of insurance products (Da Costa, 2013; Murphy and Ichinkhorloo, 2023). Yet, efforts to conjure market demand have achieved limited success – and profitability. In the face of 'ongoing disinterest of finance capital' as well as of potential buyers, experiments in microinsurance products rely heavily on subsidies from governments and donor organizations, without which they simply could not function (Bernards, 2022: 951).

Scholarship has shown that 'for insurance throughout history, there has been and continues to be no escaping the state' (Pearson, 2021: 1062) in its various roles as gatekeeper, regulator, facilitator and participant. Discussing the history of the US National Flood Insurance Program, Elliott (2024) maintains that the federal government engaged in a form of 'state marketcraft' by creating the conditions for the emergence and commercial viability of private insurance markets. Public subsidies for insurance are therefore justified in relation to what Christophers (2019) calls an 'allusive market', a private insurance market that will emerge, *eventually*. Similarly, Bernards (2022) emphasizes the logics of 'anticipatory marketization' which seeks to build the informational infrastructures (such as satellite data and actuarial techniques) essential to the promotion of (future) market exchange.

In a different vein, Johnson (2022) writes that microinsurance for agriculturalists does *not* actually function as 'a speculative tool for surplus extraction from smallholders or a mechanism for their financial subjectification' (p. 1224). Rather, public-private insurance programmes represent the articulation of financial risk transfer with fragmentary social safety measures. As a 'market under aid' (Aguiton, 2021), microinsurance might be better understood as a redistributive mechanism that provides smallholder farmers some semblance of social protection against increasing weather and market volatility. In other words, it points to both the limits of neoliberal projects of market-making and the necessity of (minimal) state welfare in the face of austerity. Against the backdrop of neoliberal depredations, it represents a form of 'market-mediated biopolitical rule' (Johnson, 2022: 1229) that makes surplus populations live (cf. Li, 2010).

The public-private arrangements that have been the hallmark of insurance in general and microinsurance in particular function in ways that facilitates private accumulation through the capture of public subsidies while also buttressing state legitimacy through basic protections to the poor. Given these favourable terms of engagement, insurers may not themselves ever expect or even desire the emergence of purely commercial markets for their products. Under the PMFBY, state subsidies are made on premiums rather than claims, rendering the programme far more profitable to insurance companies. Regardless of final payouts, insurers receive substantial subsidies. Simultaneously, as a state programme, governments are concerned with ensuring its functioning (to varying degrees) in the service of their political constituents.

But the history of publicly subsidized crop insurance can only be understood in relation to broader shifts in agricultural policy and its relationship with finance capital. While proposals for a rainfall-based insurance programme in India were discussed as early as 1920, these debates acquired prominence in the 1970s. This is directly connected to policies of the Green Revolution as outlined in the government's New Agricultural Strategy of the mid-1960s. This programme to intensify agricultural production and productivity revolved around heavy government subsidies for agricultural credit which would facilitate the purchase of expensive inputs such as seeds and fertilizers. While the phenomenon of agricultural debt long precedes the Green Revolution, 'cheap' credit has exacerbated indebtedness among India's farmers and farmworkers. This situation has worsened with economic liberalization and cuts to other forms of input subsidies. Against this backdrop, state governments as well as regional banks and cooperative credit societies have repeatedly 'sought ways to manage the financial risks from increasing costs of chronic crop failure and farmer defaults' (Sheth, 2017: 156). As early as 1976, economist V.M. Dandekar outlined the urgent need for crop insurance in India, writing: 'In a country where agriculture is at the mercy of the vagaries of the monsoon and other factors beyond the control of the farmer, the importance of crop insurance is not in doubt and needs no emphasis' (p. A-61).

Early pilot programmes for crop insurance were tethered to institutional credit, mandating crop insurance and limiting its accessibility to 'loanee' farmers, those with existing crop loans. In its initial phase, the PMFBY was also *mandatory* for farmers with current crop loans and voluntary for all other farmers.[6] All debtors are therefore insured. This link between credit and insurance has been a defining principle of crop insurance since its inception, with insurance serving as a form of collateral on credit (see also Kar, 2018). In one of the first reports on the feasibility of crop insurance in India, submitted by the Indian School of Political Economy in 1976, the authors noted that some element of *compulsion* was necessary in insurance schemes. The report envisioned its operation as a crop-loan insurance scheme since the 'entire agricultural credit structure is in urgent need of protection from the hazards of agriculture' (Dandekar, 1985: A46).

As staff at a major public sector bank explained to me, the routing of insurance claims through bank branches allows them to automatically deduct interest payments from claims. Insurance claims are collateral – protecting existing loans while also making farmers more creditworthy and enhancing their risk-taking capacities. For both public and private banks, insurance becomes a crucial tool to

'account for the riskiness of lending to the poor' (Kar, 2018: 168). As such, the primary driver of the Indian state's insurance push has been therefore the need to stabilize the risk of loan default within the country's debt-based agricultural production regime (Sheth, 2017).

Tying insurance to credit is significant, highlighting the entwinement of financial capital and the state. Diverse interests coalesce in index insurance as an acceptable tool for (partially) managing the financial risks of both banks and those to whom they lend. That the Indian state is effectively protecting creditors through hefty subsidies is politically justified in terms of farmer welfare and rural development. In the 2025–2026 annual budget, the central government allocated Rs. 12,242 crore ($1.43 billion) to the programme. Subsidies move from governments to insurers and reinsurers thus facilitating a process through which concessions 'are geographically displaced through socially protective infrastructures in the South, to arrive back at Northern financial institutions' (Johnson, 2022: 1234). Microinsurance could not survive without state subsidies. Similarly, the agricultural credit system could not survive without insurance. Across both, the role of the state as the 'insurer of last resort' remains in place.

In the case of the PMFBY, both central and regional governments treat the insurance programme as an extension – albeit distinct and partial – of state relief mechanisms, recognizing that the facilitation of payouts boosts support for their political party. In Madhya Pradesh, the regional government is run by the Bharatiya Janata Party (BJP), which also leads the central government which introduced the 2016 programme. It is no surprise then that the regional state apparatus is deeply invested in the programme's success, running awareness campaigns and enrolment drives, and taking credit when farmers receive big payouts. Following severe cold spells in the winter of 2018–2019, the state government even extended the deadline for taking out an insurance policy to January 15, sending representatives to villages to encourage more farmers to get their crops insured – since the yield would only be calculated during harvest, more than a month later. Noting the irony of this situation, one farmer joked that it was akin to 'getting life insurance for a person who is already dead'. Concerned with upholding their electoral base of rural dominant-caste voters, the government upended the established temporality of insurance – paying for protection against a *future* risk – by allowing for a bureaucratic extension to include coverage of risks past and present. But how do farmers themselves understand and engage with crop insurance? In the next two sections, drawing on village-level research, I first examine the specificities of the index model and then outline how the abstractions on which it is based engender a mutualization of risk and the politicization of responsibility.

Index insurance and the abstraction of risk

Index-based insurance is quite different from traditional indemnity-based insurance. Functioning akin to a weather derivative, payouts are based on a publicly verifiable index (such as rainfall, temperature or area-yield). These indices – and particular thresholds thereof – serve as a proxy for crop loss (Figure 3). As noted earlier, the PMFBY operates on the area-yield model, which is a distinct variation of the index model. If the season's yield is lower than what is known as a threshold yield (the average yield for the previous 5 years), then a payout is made. To give a simple example: if the 5-year average (threshold yield) from 1 hectare of farmland is 10 quintals of wheat, and this year's seasonal yield is calculated to be 8 quintals, the farmers will be paid for the monetary equivalent of the 2 quintals that they have lost in yield. If the seasonal yield is equal to or greater than the year's threshold, then no payout is made since no damage is presumed to have occurred.

This model is viewed favourably by the insurance industry and development planners as an objective and publicly verifiable measure of loss and one which reduces the transaction costs of individually verifying losses in each field. It is assumed to be efficient, accurate as well as actuarially sound. This framing of the area-yield – calculated through crop-cutting experiments – as a neutral and objective measure rests on a faith in technical and standardized assessments of risk and modes of yield

Figure 3. A surveyor weighs a sack of chickpea crop cut from a selected plot.
Source: Photo by author.

estimation. This is distinct from the more observational methods followed by government officials prior to issuing direct state compensation – here, crop damage is roughly estimated as a percentage figure (e.g. a loss between 25% and 50% of standing crop would entail a fixed and predetermined payment per hectare).

Two interrelated elements of index insurance are especially important to this discussion: the index itself and the unit of insurance. In the PMFBY, the index is the area-yield, or the average yield of a particular crop within a particular geographical area. This yield is assumed to index – or point towards – agricultural losses. Compared to other indices – rainfall or temperature – yield is a more grounded and expansive measure, with contracts not entirely 'decoupled from actual farms and fields' and crops not fully 'dematerialized into abstract biomass' (Schuster, 2021: 591). As the introductory section demonstrated, losses are calculated through field surveys, although these surveys are increasingly supplemented with remote sensing and satellite data to enhance the accuracy and representativeness of the sample. At the same time, it is amply evident that 'area-yield' glosses over a range of social and ecological factors that shape risk exposure and management such as soil quality in a particular field or the ability to invest in fertilizers and pesticides.

Even more significant, however, is the unit of insurance – in this case, not the individual farm or farmer but a demarcated geographical area. As the PMFBY guidelines note:

> The Scheme shall be implemented on an 'Area Approach basis' i.e., Defined Areas for each notified crop for widespread calamities with the assumption that all the insured farmers, in a Unit of Insurance, to be defined as 'Notified Area' for a crop, face similar risk exposures, incur to a large extent, identical cost of production per 3 hectare, earn comparable farm income per hectare, and experience similar extent of crop loss due to the operation of an insured peril, in the notified area.

This fundamental assumption on which the area-approach is premised flattens important socio-ecological differences and inequalities that constitute the 'notified area' (see Note 6). In India, this area is a *patwari halka* (village panchayat), a physical demarcation that correlates with administrative and political parameters of governance and with the (highly unequal) social configuration of the 'village'.[7] Thus, the insurance unit does not necessarily correspond with specific ecological boundaries or shared material conditions of production. As such, the unit of measured loss only partially overlaps with the unit of experienced loss.

As scholars have demonstrated, index insurance products are based on a series of simplifications that do not and cannot reflect specific and differentiated experiences of loss by individuals (Johnson, 2013). For example, in East Africa, a livestock insurance programme is premised on a vegetation index (as a measure of drought), thus presuming that all pastoralists have access to all the vegetation within a given area and that this vegetation is equally edible to all livestock (camels, goats, cattle, and so on) – both incorrect assumptions (Johnson et al., 2023). These assumptions are foundational to area yield-based crop insurance as well. In Malwa, a loss surveyor – who himself belongs to a local farming family – explained it in this way:

> One insurance unit can have thousands of land parcels . . . Of this, only 4 plots are chosen to calculate yield. It isn't possible for that to accurately reflect the losses faced by farmers even within that area. What if I sow early and my crop is destroyed in the cold spell, but my neighbor sows later and his crop is saved? If his plot gets picked [for the survey], then it won't reflect my loss at all.

As an administrative, political, and social unit, the 'area' in area-yield does not necessarily map onto risk-taking abilities or risk-sharing arrangements. The unit and the index abstract from the overlapping and dynamic world of risks and uncertainties faced by agriculturalists, distilling it into an observable and calculable quantity. This amalgamation of differentiated social ecologies into a singular and homogenous unit of risk demonstrates the ways in which financialization 'seeks to abstract away from history and lived experience by quantitatively grouping, representing, and differentiating assets and social relations understood to be (in)commensurable' (Fields and Raymond, 2021: 1626). Like other 'environmental intangibles' (Chiapello and Engels, 2021) such as carbon credits and biodiversity offsets, the index too is premised on an abstraction that enables an 'escape from the messy

physicality and uniqueness' of the field (Robertson, 2006: 373). In backgrounding questions of difference and inequality, and foregrounding logics of averages and aggregation, index-based insurance can compound uncertainty and heighten vulnerability for already marginalized groups (Isakson, 2015, Müller et al., 2017).

At the same time, this abstraction produces new tensions and possibilities. Ironically, despite its form and function as a financial derivative, the index *de*-individualizes risk. While scholarly and popular accounts of index insurance have castigated its disembeddedness, and rightly so, it is also critical to note that it does indeed adhere – albeit inadvertently and indirectly – to the principles of mutuality and collectivism on which the insurance form was founded. Here, risk is an intrinsically *collective* matter, the property of groups. This is not to argue that this redeems the index form or even that 'the collective' is necessarily a progressive or emancipatory formation. Rather, I suggest that paying close attention to the technical dimensions of financial forms and logics might reveal productive frictions and fissures, ones that open political possibilities. If one looks at other types of insurance – for example, health – the basis of risk assessment is generally taken to be group membership rather than individual behaviour, an aspect of insurance solidarity under threat from data-driven technologies and personalized risk pricing (McFall, 2019). Although this is referring to the assessment of risk and calculation of premium prices rather than claims payments, this social element is fundamental to any definition and operationalization of insurance.

Even with various forms of parametric insurance that seek to circumscribe and separate financialized risk from the everyday materialities of loss, the principal devices of insurance – the index and its modes of measurement from weather stations to crop-cutting experiments – are deeply material arrangements of technology, labour and nature that shape and are shaped by financial logics. Insurance payouts are premised on a long-standing state infrastructure of crop surveys that have been carried out for over a century in South Asia for varied ends. In the colonial period, these surveys were initially intended to estimate rates of revenue collection and later, to forecast the possibility of famine (see Stokes, 1959). The 'environmental market infrastructure' (Aguiton, 2021) on which insurance is built is, therefore, a longstanding political-administrative infrastructure of the state that has been historically deployed for the purpose of both extraction and welfare. As a result, yield surveys have always been closely associated with the state. This deeper history points to the embeddedness of newer financial forms and practices within colonial and postcolonial state projects of economic forecasting for taxation, pricing and food security.

Interestingly, while following insurance company representatives and surveyors to the fields, I found them attempting to represent themselves to villagers as government officials (rather than private sector actors). On probing this misrepresentation, a company manager explained that such positioning would not only lend their survey work more authority but also enable them to evade the anger that many farmers feel vis-a-vis private insurers. By claiming to be representatives of the state, managers were able to thus avoid overt conflict and perhaps elicit greater cooperation from rural residents. In doing so, they were also solidifying public imaginaries of the PMFBY as a state-funded and -led programme and reinforcing its potentiality as an avenue for political claim-making. As I discuss in the next section, index insurance is socially embedded and politically salient. Attention to both the design and the deployment of the index reveals that finance produces crucial avenues of micro-political action – from patronage to protest.

Collective risk and the politicization of redress

The house of the *patel* (traditional village headman), a tall slender moustached upper caste man, stands at the main village square. Patel*ji* is not the official village representative, but he is viewed as the de facto leader by virtue of his inherited title and caste status. While he did not host a state-recognized political position, the patel still plays an important role in village disputes and decisions, serving

as a crucial mediator between state bureaucrats and the village community. At our very first meeting, Patel*ji* extoled his contributions to the uplift of his village. To the list of achievements, he added, lowering his voice: 'I even got everyone insurance last year!' He did not elaborate in detail, and I did not probe further. Some months later, a conversation with the village *chowkidar* (guard) offered some clarity while raising more questions.

Sitting on a velvet sofa in the front room of his home, the guard recounted the previous year's events, explaining:

> That year, the [yellow mosaic] virus destroyed an entire section of the fields [in this village]. Half the village had no crop to speak of. We didn't even know what it was exactly. They [the government] called scientists from the city who came to the fields and took samples from the soil. But even they were not sure about what had happened!

When I inquired about the villagers' response, he continued:

> The patwari informed us of the selected random plot number ahead of the survey date. One of the selected plots was at one end of the village. It had a bumper soybean crop that year. We would have gotten nothing if they had cut from there . . . So we paid some women to tear off pods and cut off stalks the previous evening to lower the yield.

At first, his account seemed absurd, a clear case of insurance fraud. But what was most striking to me was that the guard explained their actions in relation to the inherent inequities of this abstract process. *We would have gotten nothing if they had cut from there*. The virus had not affected one section of the village fields which, importantly, were vast and fertile landholdings belonging to a handful of wealthy households. The inclusion of this field's bountiful harvest could skew the index upward to a higher average yield. So, he and the village headman, along with other residents, altered the very material stuff of the crop – pods and stalks – that form the basis of the village's soybean yield. If the index is a materially constituted but abstracting artefact, the actions of these farmers re-materialize it through a re-embedding within concrete geographies of loss. That is, they responded by moulding the yield numbers to more accurately reflect their grounded experiences of damage. From the guard's perspective, if they had not done so, then it is possible (but not certain) that insured farmers (including himself) would have received far less in insurance claims. While I could not verify the precise details of this account or of the specific plots that were selected for the survey, it was certainly true that all insured farmers in the village received major payouts (although it arrived nearly 1 year later). To understand this curious incident, it is necessary to return to the social dynamics of yield measurement first introduced in this paper's opening vignette. Across India, measuring and weighing of yield is carried out by an assortment of actors from the public and private sectors. Financialization at the peripheries is 'very much peopled, creating contexts in which individuals encounter, debate, and negotiate the complex web of multiple demands of economic life' (Kar, 2013: 482). Representing the local bureaucracy is either the village *patwari* (land revenue official, who maintains records of land ownership) or the *gram sewak* (agricultural extension agent) accompanied by the *chowkidar* (guard or watchman, performing duties related to law and order and land administration).[8] These village-level officials have long been involved in the task of crop surveys and yield estimation at least since the British colonial period. There are, however, a host of newer actors whose presence heightened the stakes of the survey. These included representatives from the insurance company responsible for providing insurance to farmers in the district. During my observation of these surveys, these representatives included the district-level head of the designated insurance company as well as one or more loss surveyors (otherwise known as 'claims adjusters'). The latter are part-time employees of an agency subcontracted by the insurance company to carry out these surveys (they are hired during harvest season and paid for each survey conducted) and were usually young college-educated men from

dominant-caste agricultural households in the same district. This specific composition of actors reflects the nature of the crop survey as a socially and politically embedded and historically rooted mode of yield estimation, now being drawn into the logics of financialization. This configuration of institutions, interests and obligations also reveals the 'shifting, mutually constitutive relationship' between public and private finance (August et al., 2022: 528).

Although such tampering was an isolated incident, it elucidates the social and political relations that mediate and mould understandings and experiences of claiming insurance. First, it demonstrates that long-standing networks and relations of patronage – between the headman and residents, for example – remain significant. New financial instruments do not replace existing modes of risk-sharing and redistribution in times of distress, nor do they simply co-exist alongside them. Attention to the 'lived relational experiences that complicate, adapt, and attach other meanings to financial designs in practice' highlights the embeddedness of market-based ties within social and political relations (Johnson et al., 2023: 3). The headman's proud declaration of 'giving everyone insurance' points to the way in which local village authorities and state functionaries might deploy insurance payments as a novel mechanism through which to demonstrate their commitment to the welfare of farmers. Through this, they attempt to shore up their own prestige and political authority in the village community. Instead of a neat separation between marketized and traditional insurance, or an eclipse of latter by the former, the two are deeply imbricated and enmeshed – local elites draw insurance into their networks of influence and patronage in ways that help to reinforce their authority and status within an agrarian moral economy. As a shared unit of risk as well as a crucial node of politico-administrative rule in India, dynamics of power and responsibility within the village heavily mediate calculations of and compensations for loss.

Second, the collaboration between state officials, village representatives and village residents in altering the yield figures points to the collective investment in its calculation. Since the 'average yield' impacts all insured farmers with a given insurance unit, its calculation brings them together in a fragile and fractured coalition. As a cooperative mechanism in which a group of people share risks and responsibility for losses, insurance creates what scholars have called a 'community of fate' (Elliott, 2021; Heimer, 1985). While the principle of solidarity undergirds the insurance form itself, it is especially evident with index insurance since claims are calculated and distributed *collectively* – all those insured receive the exact same monetary payouts per unit of land. Although the collective or area-based approach has been (rightly) criticized for its inattention to the diversity and specificity of risk within an insurance unit, it does present a unique 'moral opportunity' 'to cooperate with and help others' (Stone, 2022: 53) in very direct ways.

In his research with the Shetkari Sanghathna, a farmers' organization in western India, van de Meerendonk (2024) shows how activists deployed the language of quantification and transparency in their battle with a private insurance company over the calculation of insurance claims. That is, they drew upon actuarial logics, mathematical formulae and numerical data – highly technical vocabularies – to issue a critique of insurance. The case presented here is both similar and different. It is empirically distinct in that the actors in question are not activists but formal and informal village-level functionaries as well as ordinary farmers. More crucially, although my interlocutors do not specifically deploy the technical language of insurance, I want to emphasize that their contestations unfold *on* the terrain of finance, rather than outside of or against it. Certainly, their actions and justification for it pose a challenge to the supposedly objective calculation of yield. As the guard noted, at least one of the chosen fields was not reflective of the experience of many or even most village residents, making the numbers produced from it unrepresentative and therefore unfair. At the same time, the villagers did not contest the legitimacy of the insurance model but instead chose to engage with it in a pragmatic and highly compromised way.

At the same time, the alteration of yield figures – whether directly or through political pressure – is an exercise that ultimately bears diminishing returns. If average seasonal yields steadily decrease from year to year, then so will the threshold yield (average of the previous 5 years) against which each

season's yields are compared. Over time, the index – as a 5-year moving average – might itself drop so low as to further decrease insurance payouts in the long run. That is, altering the yield data in the short term to ensure a more accurate reflection of current losses might limit farmers' ability to make claims in the long term. Giving everyone insurance now, to borrow the headman's phrasing, might paradoxically compromise his ability to patronize his village residents in the future. These actions, therefore, hinge on the hope that the headman and other village leaders can shore up the requisite political support to ensure payments when the index itself falls to untenably low levels. Local officials as well as surveyors are cognizant of this high-stakes gamble. Karan, one such surveyor, cynically commented that the insurance companies may be aware of some manipulations, tolerating it in hope of the eventuality of an abysmally low index figure that will limit their payments.

Subcontracted surveyors such as Karan are in a particular bind, forced to grapple with political pressure as well as their own mixed loyalties. They often commented on the demands made from them by both the company and farmers. Another surveyor, Chirag, complained:

> In some villages, there is so much *netagiri* (politicking). I am only one person and I am afraid. I mean, who knows what could happen? Nothing ever has, but there is still fear. And farmers know that *jab ekta hai tho power bhi hai* (when there is unity, there is also power). Sometimes they will all gather in the field to intimidate you.

Here, Chirag emphasized what he perceived to be the unity of farmers during surveys, and the sense of strength they seemed to derive from their collective presence in the field, where they might substantially outnumber state officials and company representatives. My own observation of these surveys revealed a range of political actions – farmers asking probing questions, pleading with company and state officials to 'show mercy on them', and so on. As another loss surveyor explained, '*kisan active ho gaye*' (farmers have become active). They have been introduced to the way yield measurement works and follow up with their representatives about where their insurance money is. Insurance payouts have become a form of compensation to which many farmers now feel entitled and owed. The calculation of the seasonal yield itself becomes a site of political negotiation and pressure, wherein farmers hold the state responsible through varied means, ranging from mere observation of the process to asking persistent questions of surveyors, making pleas to government officials, and occasionally engaging in what Chirag described as intimidation.

In the field, insurance is no longer a mystical financial artefact but a visible materiality that can be observed, questioned and even manipulated. While the precise modes of pricing risk and calculating loss remain opaque and distant to farmers, crop surveys draw insurance concretely into their fields and lives, literally grounding its statistical fictions in the realities of crops and constituencies.

Although insurance has not attracted the same levels of attention and mobilization as other pressing farmer concerns such as Minimum Support Prices (MSP) in agricultural markets or waivers for crop loans, the issue of timely and adequate claims payouts is increasingly drawn into the political drama of demonstrations and elections. Delays or lapses in the disbursement of insurance claims can generate lively protests outside district and sub-district government offices, and occasionally at regional banks. In 2019, in the neighbouring state of Maharashtra, a prominent leader from the state's opposition party warned insurance companies to provide compensation to farmers – or face dire consequences. Some months later, his party workers ransacked the office of an insurance company on the grounds that it was unfairly rejecting the claims of farmers whose crops were destroyed by untimely rainfall (*The New Indian Express*, 2019). In the same year, farmers across the Sambalpur district in Odisha held a hunger strike outside the district collector's office to demand the payment of their insurance claims – at the time, these payments had been delayed for over 9 months (Sahu, 2019). These inordinate delays are evidence of the structural flaws and poor implementation of the programme – the lengthy process of measuring yields and assessing claims, and the disbursal of claims to farmers

– which belies its own stated goals. At the same time, these demonstrations indicate that insurance has also been incorporated into the political vocabulary of cultivators and legislators in the country.

However, the expansion of insurance as a political terrain has not led to the complete displacement of other or older forms of redress for crop loss. In Malwa, following a tumultuous monsoon season in 2019, wherein the soybean crop was damaged by heavy rain and waterlogging, anxious and angry cultivators gathered on major roads and outside government offices, waving damaged bean-less stalks uprooted from their fields. In response, the state government quickly dispatched revenue officials and extension agents to conduct site inspections and submit reports estimating the extent of loss. What farmers were demanding (at least in the short term) – and what the government ultimately delivered – was immediate monetary relief to all landholders drawn directly from state disaster funds. State functionaries I spoke with were initially reluctant to make these payments, insisting that farmers should wait for the insurance process of yield measurements and claims calculations to unfold. That they finally relented speaks not only to the efficacy of farmers' protests and petitions but also to the enduring material and political relevance of state compensation mechanisms alongside and in relation to insurance.

However, successful mobilizations around insurance are premised on their own violent exclusions – most obviously, of uninsured farmers, often small, marginal, and tenant farmers, sharecroppers, loan defaulters and agricultural workers whose losses from natural calamities tend to be obscured from this financial and political calculus. Collective mobilization – through manipulation of yields, pressure on surveyors and state officials, or street protests – can be an inordinate challenge for the most oppressed agricultural communities. The politicization of insurance is the product of specific configurations of caste, class, gender, geography and political affiliation. Even among surveyors who were generally sympathetic to farmers' struggles, not all farmers were viewed as equally deserving. For instance, coming from dominant caste agricultural households, these young men often made disparaging remarks about *adivasi* (tribal) villages in which they did work, repeated common racialized tropes about 'lazy' and 'drunken' people and unkempt fields. Since *adivasi* villages are seen as 'remote' (often in hilly areas with limited road connectivity), conducting two (out of four) surveys in these villages was seen as sufficient to determine yield and surveyors and administrators demonstrated little interest in assisting with their claims. As such, the capacity of villages and communities to mobilize the local state is highly differentiated and uneven, pointing to the limits of claims-making through insurance and beyond.

Conclusion

As the crop survey slowly unfolded that morning in Gramkhedi, more men, young and old, gathered in the field, arriving in groups of two and three, some with wide eyes filled with curiosity and worry, others with puffed chests prepared for a standoff. Initially busy supervising the survey, when the insurance company manager finally turned away from the demarcated plot, he was surprised by the size of the crowd standing around him. Perhaps in an attempt to diffuse what might have become a tense situation, the manager asked, 'Are all of you the owners of this field?' The men chuckled at his joke. Most often, other than the mandated officials and surveyors, it is only the individual owner of the selected plot who is present for the survey. The dozens of people observing that day were not the legal owners of that agricultural plot, but their collective investment in the plot's yield was not entirely dissimilar from that of its owner-cultivator.[9] If the cultivator was interested in the plot's productivity in relation to its eventual market price, his village co-residents were concerned with its yield in relation to potential insurance payouts.

As a peculiar financial instrument, index-based insurance relies on the purported objectivity and universality of statistical techniques while eliding the uneven geographies of risk; it promises security against the unpredictability of agrarian life even as it can create new forms of uncertainty and exclusion. Yet, as I have shown, it may also become an object of public contention. From the field to the

bank to the street, making an insurance claim has become inextricable from the making of political claims. Despite and through the simultaneous abstraction and embeddedness of the insurance form, insurance emerges as an uneven terrain of politics – an avenue through which contingent collectives form, demands are made, and relations of power and authority are (re)articulated. As such, it becomes a 'contested, generative zone of proliferating political struggles' (Muehlebach, 2023: 373).

In highlighting the ways in which insurance might be re-tooled by farmers, I do not want to negate or minimize the many flaws of the programme or of market-based modes of risk management. As the paper explains, the design and functioning of the PMFBY is premised on often devastating abstractions and exclusions and has been shown to primarily benefit private insurance companies and wealthy farmers at the expense of the most marginalized cultivators. Rather, what I have aimed to demonstrate is the need to closely attend to the mechanics of the programme and the ways in which farmers themselves understand and respond to it. Doing so does not mean overlooking the ways in which it functions as a technology of power and governmentality, or to suggest that this somehow redeems the violence that it enacts and inequalities it reproduces. On the contrary, by emphasizing insurance as a site of struggle and negotiation, this paper seeks to expand – not foreclose – its potentialities as a form of collective responsibility and mutual solidarity. Identifying those 'aspects of apparently "financialised" responses to socioecological problems that might be harnessed to more just, effective, and decommodified ends' (Webber et al., 2022: 935) is perhaps a humble first step towards building truly equitable and progressive infrastructures of social and ecological security for cultivators in the era of climate change.

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Notes

1. All names of villages and persons have been changed to ensure anonymity.
2. This is known as the 'wet weight'. Later, when the crop is threshed, the seed alone is weighed separately, forming the 'dry weight'.
3. Crop-cutting experiments have a long history in South Asia, initially associated with yield estimations by the colonial and post-colonial state. The evolution of this method is associated with pioneering statisticians such as P.C. Mahalanobis and P.V. Sukhatme. Unpacking the complexities of the CCE is, however, beyond the scope of this article.
4. Cultivators minimize and manage risk in both preventive and adaptive ways, including increased reliance on public food distribution systems, enroling in state food-for-work programmes, engaging in additional wage labour, migrating to cities, ritual and prayer, altering seed and crop varieties, selling off livestock, taking on

more loans and so on (Peterson, 2012). In the face of adverse events, these coping mechanisms rely on formal and informal networks of reciprocity, redistribution and mutual aid (Scott, 1976) – from patron-client transfers of goods and capital to the social obligation to provide relief to close kin and caste fellows.

5. Indeed, direct compensation from the government is generally premised on landownership, thus excluding landless cultivators from its ambit (while, in theory, crop insurance can be purchased by sharecroppers and tenant farmers).
6. The PMFBY also covers individual farm claims for 'localized calamities' such as 'hailstorm, landslide, and inundation affecting isolated farms', but a discussion of this is beyond the scope of this paper.
7. Significantly, under the PMFBY, the unit of insurance was scaled down from the tehsil (sub-district) to the panchayat (village) level, making claims calculations more precise and specific by reconfiguring the scale of yield estimations to a more micro-level.
8. The land revenue and agriculture departments are each responsible for overseeing two surveys in each insurance unit.
9. Ironically, it turned out that the owner of that plot had not himself insured his gram crop.

References

Aguiton SA (2021) A market infrastructure for environmental intangibles: The materiality and challenges of index insurance for agriculture in Senegal. *Journal of Cultural Economy* 14(5): 580–595.

August M, Cohen D, Danyluk M, et al. (2022) Reimagining geographies of public finance. *Progress in Human Geography* 46(2): 527–548.

Baker T and Simon J (eds) (2002) *Embracing Risk: The Changing Culture of Insurance and Responsibility*. Chicago, IL: University of Chicago Press.

Bernards N (2022) Waiting for the market? Microinsurance and development as anticipatory marketization. *Environment and Planning A: Economy and Space* 54(5): 949–965.

Bornstein E and Sharma A (2016) The righteous and the rightful: The technomoral politics of NGOs, social movements, and the state in India. *American Ethnologist* 43(1): 76–90.

Brown MB (2015) Politicizing science: Conceptions of politics in science and technology studies. *Social Studies of Science* 45(1): 3–30.

Carter M, de Janvry A, Sadoulet E, et al. (2017) Index insurance for developing country agriculture: A reassessment. *Annual Review of Resource Economics* 9(1): 421–438.

Chiapello E and Engels A (2021) The fabrication of environmental intangibles as a questionable response to environmental problems. *Journal of Cultural Economy* 14(5): 517–532.

Christophers B (2015) The limits to financialization. *Dialogues in Human Geography* 5(2): 183–200.

Christophers B (2019) The allusive market: Insurance of flood risk in neoliberal Britain. *Economy and Society* 48(1): 1–29.

Collier SJ (2014) Neoliberalism and natural disaster: Insurance as political technology of catastrophe. *Journal of Cultural Economy* 7(3): 273–290.

Collier SJ, Elliott R and Lehtonen TK (2021) Climate change and insurance. *Economy and Society* 50(2): 158–172.

Cooper M (2020) Risk, insurance, security: Ewald's history of the welfare state. In: Ewald F (ed.) *The Birth of Solidarity: The History of the French Welfare State*. Durham, NC: Duke University Press, pp.xiii–xxvii.

Da Costa D (2013) The 'rule of experts' in making a dynamic micro-insurance industry in India. *Journal of Peasant Studies* 40(5): 845–865.

Dandekar VM (1976) Crop insurance in India. *Economic and Political Weekly* 11(26): A61–A80.

Dandekar VM (1985) Crop insurance in India: A review, 1976–77 to 1984–85. *Economic and Political Weekly* 20(25/26): A46–A59.

Elliott R (2021) *Underwater: Loss, Flood Insurance, and the Moral Economy of Climate Change in the United States*. New York, NY: Columbia University Press.

Elliott R (2024) The state and the state-of-the-art: Prefiguring private insurance for US flood risk. *Socio-Economic Review* 22(4): 1583–1603.

Ewald F (1991) Insurance and risk. In: Burchell G, Gordon C and Miller P (eds) *The Foucault Effect: Studies in Governmentality*. Chicago: University of Chicago Press, pp.197–210.

Fields D (2017) Urban struggles with financialization. *Geography Compass* 11(11): e12334.

Fields D and Raymond EL (2021) Racialized geographies of housing financialization. *Progress in Human Geography* 45(6): 1625–1645.
García-Lamarca M (2017) From occupying plazas to recuperating housing: Insurgent practices in Spain. *International Journal of Urban and Regional Research* 41(1): 37–53.
Greenleaf ME (2024) *Forest Lost: Producing Green Capitalism in the Brazilian Amazon*. Durham, NC: Duke University Press.
Grove K (2012) Preempting the next disaster: Catastrophe insurance and the financialization of disaster management. *Security Dialogue* 43(2): 139–155.
Hacker J (2006) *The Great Risk Shift: The Assault on American Jobs, Families, Health Care and Retirement and How You Can Fight Back*. New York, NY: Oxford University Press.
Heimer C (1985) *Reactive Risk and Rational Action: Managing Moral Hazard in Insurance Contracts*. Berkeley, CA: University of California Press.
Isakson SR (2015) Derivatives for development? Small-farmer vulnerability and the financialization of climate risk management. *Journal of Agrarian Change* 15(4): 569–580.
Johnson L (2013) Index insurance and the articulation of risk-bearing subjects. *Environment and Planning A: Economy and Space* 45(11): 2663–2681.
Johnson L (2022) Rents, experiments, and the perpetual presence of concessionary weather insurance. *Annals of the American Association of Geographers* 112(5): 1224–1242.
Johnson L, Shariff Mohamed T, Scoones I, et al. (2023) Uncertainty in the drylands: Rethinking in/formal insurance from pastoral East Africa. *Environment and Planning A: Economy and Space* 55(8): 1928–1950.
Kar S (2013) Recovering debts: Microfinance loan officers and the work of 'proxy-creditors' in India. *American Ethnologist* 40(3): 480–493.
Kar S (2017) Austerity welfare: Social security in the era of finance. *Anthropology Today* 33(5): 12–15.
Kar S (2018) *Financializing Poverty: Labor and Risk in Indian Microfinance*. Stanford, CA: Stanford University Press.
Kar S (2024) Domestic values: Gendered labor and the uncanniness of critique in marketing life insurance for women. *Journal of Cultural Economy* 17(3): 314–330.
Krippner GR (2005) The financialization of the American economy. *Socio-Economic Review* 3(2): 173–208.
Krippner GR (2023) Unmasked: A history of the individualization of risk. *Sociological Theory* 41(2): 83–104.
Lehtonen T-K and Liukko J (2015) Producing solidarity, inequality and exclusion through insurance. *Res Publica* 21(2): 155–169.
Levy J (2012) *Freaks of Fortune: The Emerging World of Capitalism and Risk in America*. Cambridge: Harvard University Press.
Li TM (2010) To make live or let die? Rural dispossession and the protection of surplus populations. *Antipode* 41(s1): 66–93.
McFall L (2019) Personalizing solidarity? The role of self-tracking in health insurance pricing. *Economy and Society* 48(1): 52–76.
Maurer B (1999) Forget Locke? From proprietor to risk-bearer in new logics of finance. *Public Culture* 11(2): 365–385.
Mawdsley E (2018) 'From billions to trillions': Financing the SDGs in a world 'beyond aid'. *Dialogues in Human Geography* 8(2): 191–195.
Mizes JC (2023) Anti-public finance? The democratic effects of municipal bond markets. *International Journal of Urban and Regional Research* 47(6): 917–939.
Muehlebach A (2023) Contract as frontier device, or, the political publics of water infrastructures. *Journal of Cultural Economy* 16(3): 363–376.
Müller B, Johnson L and Kreuer D (2017) Maladaptive outcomes of climate insurance in agriculture. *Global Environmental Change* 46: 23–33.
Murphy DJ and Ichinkhorloo B (2023) Index insurance and the moral economy of pastoral risk management in Mongolia. *The Journal of Peasant Studies* 51(5): 1185–1207.
Niedt C and Christophers B (2016) Value at risk in the suburbs: Eminent domain and the geographical politics of the US foreclosure crisis. *International Journal of Urban and Regional Research* 40(6): 1094–1111.
Ouma S, Johnson L and Bigger P (2018) Rethinking the financialization of 'nature'. *Environment and Planning A: Economy and Space* 50(3): 500–511.

Pearson R (2021) Escaping from the state? Historical paths to public and private insurance. *Enterprise & Society* 22: 1037–1066.

Peterson N (2012) Developing climate adaptation: The intersection of climate research and development programmes in index insurance. *Development and Chang*e 43(2): 557–584.

Pielke RA Jr (2007) *The Honest Broker: Making Sense of Science in Policy and Politics*. Cambridge: Cambridge University Press.

Robertson MM (2006) The nature that capital can see: Science, state, and market in the commodification of ecosystem services. *Environment and Planning D: Society and Space* 24(3): 367–387.

Sahu PR (2019) Farmers on hunger strike in Sambalpur due to non-payment of crop insurance. *Down to Earth*, 22 October. Available at: https://www.downtoearth.org.in/agriculture/farmers-on-hunger-strike-in-sambalpur-due-to-non-payment-of-crop-insurance-67358 (accessed 01 September 2024).

Schuster CE (2021) Weedy finance: Weather insurance and parametric life on unstable grounds. *Cultural Anthropology* 36(4): 589–617.

Scott J (1976) *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. New Haven, CT: Yale University Press.

Sheth A (2017) *Cultivating risk: Weather insurance, technology and financialization in India*. PhD Dissertation, Department of Urban Studies and Planning, Massachusetts Institute of Technology, Cambridge, MA.

Stokes E (1959) *The English Utilitarians and India*. Oxford: Clarendon Press.

Stone D (2010) Beyond moral hazard: Insurance as moral opportunity. In: Baker T and Simon J (eds) *Embracing Risk: The Changing Culture of Insurance and Responsibility*. Chicago, IL: University of Chicago Press, pp.52–79.

Taylor M (2016) Risky ventures: Financial inclusion, risk management and the uncertain rise of index-based insurance. In: Soederberg S (ed.) *Risking Capitalism*. Bingley: Emerald Publishing Limited, pp.237–266.

The New Indian Express (2019) Shiv Sena men ransack insurance firm office in Pune demanding clearance of farmers' claims'. 6 November. Available at: https://www.newindianexpress.com/nation/2019/Nov/06/shiv-sena-men-ransack-insurance-firm-office-in-pune-demanding-clearance-of-farmers-claims-2057924.html (accessed 25 August 2024).

van de Meerendonk T (2024) We just want to know how it was calculated: Agricultural insurance and techno-moral politics in rural India. *Social Anthropology* 32(4): 51–66.

Webber S, Nelson S, Millington N, et al. (2022) Financing reparative climate infrastructures: Capital switching, repair, and decommodification. *Antipode* 54(3): 934–958.

Winner L (1980) Do artifacts have politics? *Daedelus* 109(1): 121–136.