Chapter 6

AGRICULTURAL LAND: INEQUALITY AND INSECURITY

Isabel Lambrecht, Ben Belton, Peixun Fang, Bart Minten, and Phyo Thandar Naing

Land is indispensable to agricultural production and, thus, a critical resource in sustaining agriculture-based livelihoods. Moreover, land as property may facilitate access to credit when used as collateral, further facilitating productive activities. Land ownership also constitutes a buffer against shocks, as it can often be rented out, mortgaged, or sold when cash needs are high.

In Myanmar, more than half of the working population is employed in agriculture or allied activities as a primary job; in rural areas, this share is as high as two-thirds (67.1 percent) (CSO, UNDP, and World Bank 2020). However, a substantial share of rural households does not own any agricultural land, and even among landowners, the distribution of land is highly unequal (Belton and Filipski 2019).

Understanding Myanmar's current state of land tenure and titling and its historical trajectory in this regard is critical to carrying out a well-grounded assessment of the country's crop production patterns and potential. Beyond this, patterns in differential access to agricultural land are important to explaining the country's rural and urban economies and employment in them, both on and off the farm. Access to agricultural land is also a determinant of household economic vulnerability and resilience.

This chapter takes a close look at agricultural land. It starts with a background on land tenure before describing the data and methodology of the quantitative analysis of land tenure patterns for farm households. Next, it discusses land ownership and landholding distribution, comparing smallholder farmers with larger-scale farmers. It then examines the interrelation of land tenure and cropping patterns. The final section offers some reflections on the impact of the recent crises on land tenure and presents conclusions.

Background on agricultural land

In the past half-century, the total area under agriculture in Myanmar has increased substantially—from an estimated 10.6 million ha in the 1960s to 12.7 million ha in the 2010s (Table 6.1). The combination of cropland expansion, increasing demand for timber products, and rapid socioeconomic development, including the construction of large-scale infrastructure, has put substantial pressure on valuable natural resources. Between 1988 and 2017, forest cover decreased by about 11.1 million ha—an annual deforestation rate of 0.87 percent (Yang et al. 2019). Myanmar has been identified as having the most acute mangrove loss among all Asian-Pacific countries—its mangrove area declined 35 percent between 1975 and 2005 and 28 percent between 2000 and 2014 (Gandhi and Jones 2019).

Despite the substantial expansion of farmland area since the 1960s, population growth has meant that agricultural land per capita nearly halved over the same period, falling from an average of 0.43 ha to 0.24 ha (FAO 2023). However, the growth of the population working in agriculture has been substantially lower than the overall population growth. Structural changes in Myanmar likely are driving lower population growth in rural areas than in urban centers. As a consequence, average agricultural land per person active in agriculture rose from 0.76 ha in the 1990s to 1.02 ha in the 2010s. The granting of large-scale land concessions for agriculture also drove this increase (Byerlee et al. 2014; Thein et al. 2018). Even though concession land is distributed highly unequally, the large areas involved result in an upward bias in the apparent agricultural land area per person active in agriculture. Detailed household data on land acquisition and cultivation suggest that, in most parts of the country, the landholdings of most farm households are shrinking. The only exception is Mon State, which has experienced high levels of out-migration, so it may be seeing some emergent consolidation of paddy land (Belton et al. 2021).

Land tenure and markets

Land policy, laws, and administration in Myanmar have been shaped by colonial and postcolonial rule, an inwardly focused socialist period, a more outwardly oriented market-based period, followed by a (neo)liberal democratic transition that ended in early 2021 (Hayward, Hirsch, and Scurrah 2021). Across these periods, several layers of revoked and active laws have accumulated, often conflicting with and contradicting one another. Therefore, the country's land laws and administration are difficult for both farmers

TABLE 6.1 Population growth and evolution of average agricultural land area

Characteristic	1961–1970	1971–1980	1981–1990	1991–2000	2001–2010	2011–2018
Annual population growth (%)	2.3	2.3	1.9	1.2	0.8	0.7
Annual rural population growth (%)	1.8	2.2	1.7	1.0	0.5	0.4
Annual agricultural population growth (%)	—	—	—	0.1	–1.1	–0.9
Agricultural land total (million hectares)	10.65	10.45	10.42	10.51	11.60	12.70
Agricultural land per capita (hectares per capita)	0.43	0.34	0.27	0.24	0.24	0.24
Agricultural land/population in agriculture (hectares per person in agriculture)	—	—	—	0.76	0.89	1.02

Source: FAO (2023); World Bank (2024).
Note: — = data not available.

and investors to navigate (Boutry et al. 2017; Mark 2016; Shivakumar and Hlaing 2015).

Under Myanmar's constitution, all land and natural resources are considered state property (Hayward, Hirsch, and Scurrah 2021). Before 2012, individuals were not legally permitted to buy or sell land, even though purchases and sales did occur in practice (Boutry et al. 2017; Mark 2016). The 2012 Farmland Law made purchases, sales, or other forms of transfers of agricultural land parcels possible, provided the owner had a land use certificate—Form 7—for the parcel. The form includes a drawing indicating the plot's boundaries and size, the holder's name, and the type of land use allowed. Before the 2012 law was passed, farmers documented their rights to a land parcel using Form 105. This document conferred land use rights, but these were not legally transferrable except through inheritance (Boutry et al. 2017). Form 105, where present, is now attached to Form 7.

Following the introduction in 2012 of the Farmland Law, a significant but hasty effort was made to register agricultural parcels. However, many of the land parcels that were granted a Form 7 through this effort already had a Form 105, whereas most land parcels without a Form 105 did not subsequently obtain a Form 7 (Boutry et al. 2017; Mark 2016). Moreover, the pressure to provide title to many parcels within a short period led to numerous errors—often to the benefit of the elite and well-connected. Farmers with legal land tenure documents were often still at risk of land confiscation. Rather than safeguarding tenure security, the process of registration and certification associated with the 2012 Farmland Law itself stirred land disputes (Boutry et al. 2017; Oberndorf 2012; Thein et al. 2018). Despite continuing

efforts, many parcels of agricultural land are yet to be registered, particularly in the upland and border states. For example, data from southern Shan show that only 20 percent of all agricultural parcels in 2018 had either Form 105 or Form 7 (Belton et al. 2021).

Accompanying the 2012 Farmland Law was the Vacant, Fallow, and Virgin (VFV) Land Management Law (2012, amended in 2018) (Mark 2016). This law enables individuals, firms, and governments to lease land designated VFV for various types of development (Vicol, Pritchard, and Htay 2018). Although sometimes portrayed otherwise, the 2012 VFV Law is a continuation of a long line of laws, including the 1991 Wastelands Law, but stretching as far back as the 1894 Land Acquisition Act, that deem all land without legal title to be "wasteland" and provide the government the legal right to reallocate it to other users (Meehan 2021; Thein et al. 2018). Provisions under such laws had provided the basis for land confiscations long before 2012—these were particularly widespread under the State Law and Order Restoration Council regime during the 1990s. However, the 2018 amendment to the VFV Law exceeded the stringency of the earlier laws by adding the provision that farmers who did not register their use of land classified as VFV would have no use rights to it and could be fined or imprisoned if they continued to farm on it (Boutry and Thant 2020).

The land certification program, in combination with the accompanying VFV Law, thus provides the legal foundation for potential land expropriations from a vast number of farmers, many of them in upland ethnic areas or areas abandoned as a result of conflict (Boutry and Thant 2020; Suhardiman, Bright, and Palmano 2021). Whereas the reforms starting in 2011 offered prospects of land restitution or compensation for rural households affected by land confiscation, this has been a complex promise to deliver on (Mark and Belton 2020). Meanwhile, even post-2011, land confiscations continued to affect rural households (Mark 2023; Thein et al. 2018).

Agricultural land in non-Bamar ethnic communities in upland areas is often managed under customary tenure systems (Hayward, Hirsch, and Scurrah 2021; Mark 2023). In the past, Myanmar policymakers mainly viewed such systems and the shifting cultivation practices often used within them as a hindrance to economic progress in rural areas (Vicol, Pritchard, and Htay 2018). Despite a greater openness during the democratic transition period, legal reforms to protect the rights of customary land and shifting cultivators remain incomplete and insufficient. Farmers who obtained their land under customary tenure systems are therefore at risk of their land not being recognized as being under legitimate land use, particularly if it is farmed

under shifting cultivation or is in a fallow period (Oberndorf 2012; Vicol, Pritchard, and Htay 2018).

Rice and land tenure

Throughout Myanmar's history, policymakers and the country's leaders have established rice-centered policies and regulations aimed at boosting national rice production. Many of these have affected land tenure practices and patterns. Between 1964 and 2003, the government applied compulsory procurement of crops, with individual household quotas based on sown area and anticipated yield. The aim was to foster rice productivity and ensure national self-sufficiency in rice. This policy was enforced most strongly in areas most conducive to rice production. However, farmers' incentives to increase productivity were low because they had to not only give a large share of their crop to the state to fulfill their quota obligation but also sell the remainder to the state at artificially low prices. This combination of marketing controls made it hard for rice producers to turn a profit (Boutry et al. 2017; Kurosaki 2008).

Farmers faced the threat of losing their land rights if they deviated from crop plans formulated by the government or failed to deliver their prescribed quota, especially for paddy cultivation (Boutry et al. 2017; Shivakumar and Hlaing 2015). Historically, farmers in the Delta agroecological zone were under the most pressure to produce paddy. This contributed to high levels of land confiscation and landlessness there (Boutry et al. 2017). The situation remained problematic when the government excluded rice from marketing liberalization in 1988. Only in 2005 was government paddy procurement abandoned and were private traders allowed to export rice (Boutry et al. 2017; Thein et al. 2018). Nevertheless, farmers in designated paddy areas were still required to grow paddy rice for at least one season of the year.

In 2016, policies were changed to allow farmers "freedom of crop choice," yet farmers are still not fully able to choose the crops they cultivate (Thein et al. 2018). The policy announced by the Ministry of Agriculture, Livestock, and Irrigation allowed freedom of seasonal crop choice. However, the Farmland Law still requires farmers to follow the use prescribed for the specific land category of their parcel. Hence, for instance, farmers operating on land categorized as "lowland" were granted the option to switch from cultivating rice to cultivating other seasonal crops, such as pulses or oilseeds, but could not lawfully convert that land to cultivate tree crops, raise livestock, or invest in fishponds. Official permission is required to change the use designated for a land parcel, such as, for example, planting perennial crops on a parcel designated lowland or paddy land or establishing fishponds on

"agricultural" land (Boutry et al. 2017; Filipski and Belton 2018; Warr 2016). Moreover, villagers and local authorities are not always aware of changes in legislation related to crop choice (Boutry et al. 2017).

Upland parts of the country less well suited to rice cultivation have maintained somewhat more diverse cropping patterns, as authorities did not exert excessive control over farmers' crop choice (Rammohan and Pritchard 2014). Nevertheless, these areas still have restrictions on certain cultivation practices, such as fallowing and shifting cultivation (Thein et al. 2018). In farming areas where rights to land are organized through customary tenure systems, farmers are plagued by inadequate recognition of their land use in the existing national land use policy (Boutry et al. 2017; Warr 2016). Moreover, many upland farmers cultivate land on a settled basis and not under shifting cultivation. In doing so, they consider the land as de facto private property but often do not possess formal land use certificates. Such farmers, too, are highly vulnerable to expropriation of their land under current agricultural land laws.

In line with the focus on encouraging rice production, government loans from the Myanmar Agricultural Development Bank (MADB), the main formal provider of credit to farmers, have favored paddy production (Okamoto, Lwin, and Fujita 2021). MADB loan sizes are substantially higher for the production of paddy than for non-paddy crops. The Ministry of Agriculture, Livestock, and Irrigation justifies this on the higher financing needs of paddy compared with many other commonly grown crops (Boutry et al. 2017; World Bank 2014). In 2012/13, about 90 percent of total lending disbursed by MADB was for paddy. Generally, formal documentation of land use rights was a prerequisite for accessing MADB loans before 2018 (Boutry et al. 2017; Okamoto, Lwin, and Fujita 2021). However, since May 2018, farmers must explicitly prove their eligibility for MADB loans by showing Form 7, with Form 105 attached, for the parcel for which they require financing to farm, in addition to a recommendation letter from a loan screening committee.

Data, methods, and definitions

We perform descriptive analyses of land tenure patterns for agricultural households using the Myanmar Living Conditions Survey 2017 (MLCS) dataset (CSO 2019). Furthermore, we apply regression models to explore the relationship between possession of land documents and parcel characteristics (land size, access to irrigation, type of crop grown, tenure status) and farm household characteristics (age and gender of household head, rural or urban residence, total land owned or operated) while also controlling for

agroecological zone (AEZ).[1] The regressions are done to analyze the interplay of different plot and farm household characteristics with whether a household has formalized their rights to the land they farm. Given the strong endogeneity between the possession of land documents and several control variables, such as type of crop grown, tenure status, land size, and others, the findings should not be interpreted as causal linkages.

We define "agricultural households" as those that had operated any agricultural land in the previous 12 months, including rented, sharecropped, or borrowed parcels. We use the term "landed households" to describe households that reported owning agricultural land and "landless households" to refer to those that did not.[2]

For each parcel owned, the MLCS questionnaire asks whether the household has a document. However, enumerators do not verify the document itself, and the questionnaire does not ask the respondent to specify the type of land document. Whereas Form 7 is the main ownership document formally recognized for agricultural parcels, respondents may have considered other types of documents, such as Form 105 (the title document that predates Form 7), tax receipts, a rental agreement, or any other document that the respondent assumes qualifies as documenting their rights to use the parcel.

A caveat in this analysis relates to a potential underrepresentation of large-scale farms and plantations, given that a population-based dataset such as MLCS likely does not capture farms that are not family-owned—which, for the most part, are large (Lowder, Skoet, and Raney 2016). Large landholdings are often planted with perennial crops, such as oil palm, rubber, or sugarcane. There may, therefore, be an underestimation in MLCS of the share of farmland under permanent crops. Moreover, fallow land may be underreported, given the troubled history of recognizing fallowed land and that fallowed land under customary tenure systems may not be considered as being owned by its former cultivators.

1 We follow the AEZ classification suggested by CSO, UNDP, and World Bank (2020): Dry (Mandalay, Magway, Naypyidaw, and Sagaing), Delta (Ayeyarwady, Bago, Mon, and Yangon), Hills and Mountains (Chin, Kachin, Kayah, Kayin, and Shan), and Coastal (Rakhine and Tanintharyi).

2 Ownership is self-reported based on the reported tenure status of the parcel. Households that access agricultural land via temporary arrangements, such as renting, sharecropping, borrowing, or other, but do not report owning land are considered landless households.

Land ownership, landholding distribution, and landlessness

Nationwide, 37 percent of households own agricultural land: 49 percent of rural and 8 percent of urban households (Table 6.2). Most landed households own one or two parcels totaling about 2.6 ha on average. A slightly greater share of households nationally cultivates land (39 percent) than owns land (37 percent). Urban agricultural households cultivate fewer parcels on average than rural households (1.3 compared with 1.7 parcels) but utilize a similar land area.

There are significant differences in land ownership patterns across different AEZs, even when focusing on the subsample of rural households (Table 6.2). In the rural Delta and the Coastal Zone, there are fewer landowning households (38 and 45 percent, respectively), but land sizes are larger at 2.9 ha and 2.6 ha, respectively. A much higher share of rural households in the Hills and Mountains owns land (64 percent), but the average area owned is the smallest (2.1 ha) across the AEZs. Within the urban sample, we find a low share of landed households in the Delta (3 percent) and the Dry Zone (8 percent), likely driven by the large cities of Yangon and Mandalay in these zones.

A majority of agricultural households (89 percent) have landholdings of 5 ha or less (Table 6.3), also called small farms (Jayne et al. 2016). Small farms cover 63 percent of all agricultural land. More than half of all agricultural households (53 percent) cultivate landholdings of 2 ha or less (Table 6.3) and, thus, are considered smallholder farmers (Lowder, Skoet, and Raney 2016). Smallholders cultivate 20 percent of Myanmar's agricultural land area. Only 3 percent of agricultural households operate agricultural land larger than 10 ha. Nevertheless, these large landholders manage 15 percent of the total land area cultivated (Table 6.3).

The Delta zone is the most unequal in land access, with the highest share of landless households and the broadest spread in land sizes among the landed. This inequality is driven in part by the Delta's unique history going back to the 1930s of recurrent high debt levels among rice cultivators, leading to land repossession. Later in the paddy quota era, land was confiscated from farmers who could not meet their quota. There was a period of unchecked land-grabbing in the 1990s and 2000s and considerable displacement of farming households in the Delta following Cyclone Nargis in 2008. Land distribution is more even in the Hills and Mountains, arguably because, in most areas there, the land border has closed only recently or is not yet closed.

Figure 6.1 shows the cumulative distribution of land area owned and operated by households in Myanmar. The bottom 60 percent of landed households

TABLE 6.2 Land ownership and cultivation, by agroecological zone and urban or rural location

Characteristic	National	Delta	Coastal Zone	Dry Zone	Hills and Mountains
Both rural and urban households					
Landed households (owning land) (%)	37	25	40	43	54
Agricultural households (cultivating land) (%)	39	27	39	44	59
Among landed households (owning land):					
Parcels owned (number)	1.62	1.49	1.37	1.81	1.58
Owned area (hectares)	2.59	2.95	2.75	2.62	2.07
Among agricultural households (cultivating land):					
Parcels operated (number)	1.64	1.51	1.39	1.84	1.59
Operated area (hectares)	2.54	2.85	2.77	2.60	2.04
Rural households					
Landed households (owning land) (%)	49	38	45	54	64
Agricultural households (cultivating land) (%)	52	42	44	55	69
Among landed households (owning land):					
Parcels owned (number)	1.65	1.50	1.38	1.83	1.63
Owned area (hectares)	2.60	2.93	2.66	2.65	2.08
Among agricultural households (cultivating land):					
Parcels operated (number)	1.66	1.52	1.40	1.86	1.63
Operated area (hectares)	2.54	2.82	2.68	2.62	2.04
Urban households					
Landed households (owning land) (%)	8*	3*	13*	8*	26*
Agricultural households (cultivating land) (%)	8*	3*	10*	7*	27*
Among landed households (owning land):					
Parcels owned (number)	1.28*	1.30	1.19	1.30*	1.27*
Owned area (hectares)	2.52	3.43	4.39*	2.02	2.06
Among agricultural households (cultivating land):					
Parcels operated (number)	1.33*	1.35	1.29	1.33*	1.33*
Operated area (hectares)	2.51	3.46	4.69*	2.15	2.01

Source: Constructed using MLCS 2017 (CSO 2019).
Note: Asterisks indicate statistically significant differences between urban and rural households: * $p < .01$.

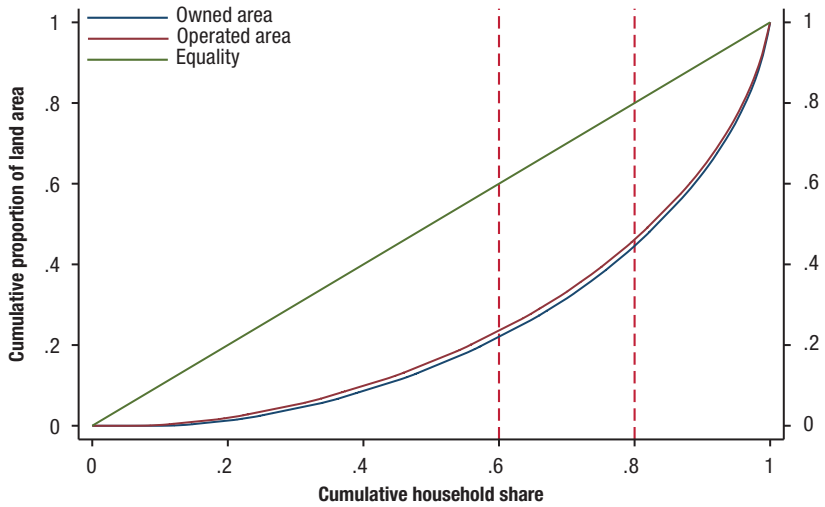
own only about 22 percent of total land, whereas the top 20 percent of landed households own about 55 percent. The Gini coefficient based on the national land distribution of cultivated farmland among households that cultivate land is 0.477. It is highest in the Delta (0.513), indicating higher inequality, and lowest in the Dry Zone. The pattern is similar when considering agricultural

TABLE 6.3 Farm size distribution, share of agricultural households and agricultural land

Farm size (hectares)	Share of agricultural households (%)	Share of total cultivated agricultural land (%)
≤1	26.8	5.6
1+ to 2	25.6	14.0
2+ to 5	36.5	43.3
5+ to 10	8.2	21.6
10+ to 15	2.3	10.8
15+ to 20	0.4	2.4
20+	0.2	2.2
Observations	5,036	5,036

Source: Constructed using MLCS 2017 (CSO 2019).

FIGURE 6.1 Cumulative distribution (Lorenz curve) of land area owned and operated



Source: Constructed using MLCS 2017 (CSO 2019).

households and the area they cultivate (Figure 6.1). Eleven percent of households that cultivate land do not own any land but rely on other tenure arrangements, such as renting or borrowing. Note that the Gini coefficients would be even larger, indicating more inequality, if the agricultural land operated by corporate entities was taken into account.

Land tenure and cropping patterns

Land tenure

Agricultural land sales and rental markets are thin in Myanmar. Most agricultural parcels are owner-operated (88 percent) and were acquired on average 21 years ago, suggesting few changes in ownership during farmers' lifetimes (Table 6.4). Only 4.7 percent of cultivated parcels are accessed through rental and 2.5 percent through sharecropping. While concerns over tenure security could discourage landholders from renting out their land, there are at least three other possible explanations. First, most land is used for low-value grain crops with low margins, thus providing little incentive to farmers to rent in land. Second, most owner-operators do not have any excess land they are willing to rent or sharecrop out. Third, there is no class of large absentee landowners who could rent or sharecrop out their land. Other arrangements to access agricultural land include borrowing or free-leasing (3.7 percent of parcels), some of which may consist of young farmers cultivating their parents' land at no cost (that is, borrowing) in anticipation of future inheritance of the land (Boutry et al. 2017). Almost no land is reported as operated under communal tenure arrangements (0.7 percent).

Owner-operated parcels are predominant in all AEZs, but there are some differences in the occurrence of alternative tenure arrangements. The Delta has the lowest share of owner-operated parcels and a moderate share of rented, sharecropped, and borrowed parcels, but barely any land obtained from communal tenure arrangements. The Dry Zone has the highest share of owner-operated parcels with few alternative arrangements. Land rentals are most common in the Coastal Zone, but sharecropping there is rare. In the Hills and Mountains, we find the largest share of borrowed or free-leased land and a significantly higher share of parcels under communal arrangements. It is more common in this zone than in the others for parcels to be allocated from communal land under customary tenure arrangements.

More than three-quarters (78 percent) of all agricultural parcels have land documents. This share is similar to that calculated by Lambrecht et al. (2023) using the nationally representative Myanmar Poverty and Living Conditions Survey 2015 dataset (World Bank 2021). Their analysis showed that 74 percent of all rural landowners' parcels had a land document. Parcels with seasonal crops are more likely to be documented (80 percent) than parcels planted with permanent crops (56 percent). This likely reflects the separate classification and certification schemes for land with seasonal and perennial

TABLE 6.4 Tenure status of agricultural parcels, by agroecological zone

Characteristic	National	Delta	Coastal Zone	Dry Zone	Hills and Mountains
Tenure status (% of parcels)[a]					
Owned	88.0	85.7	86.1	89.9	88.1
Rented	4.7	5.3	8.4	4.0	4.1
Sharecropped	2.5	3.6	1.0	2.7	1.3
Borrowed/free-leased	3.7	3.9	4.0	2.9	4.7
Communal	0.7	0.4	0.4	0.3	1.7
Other	0.4	1.1	0.1	0.1	0.1
Among all parcels owned					
Owner has land document (%)[b]	77.7	87.0	82.6	92.9	41.3
Years since household acquired parcel	21	18	18	25	18
Parcels (number)	7,814	1,561	849	2,217	3,187
Parcels owned (number)	7,074	1,413	845	2,115	2,701

Source: Constructed using MLCS 2017 (CSO 2019).

Note: [a] Excludes parcels rented out, sharecropped out, or given out for free for cultivation by other households. This is done to avoid overlap with parcels rented in, sharecropped in, or used for free.
[b] MLCS does not specify the type of land document. Hence, it may include Form 7, Form 105, a tax receipt, or any other document the respondent considers as evidence of the right of the household to use the land parcel.

crops (Boutry et al. 2017). Parcels for seasonal crops—particularly those designated for wet rice cultivation ("le" land)—have been the main focus of land registration since the British colonial period. Such parcels continue to be the most likely to have land use certificates today.

There are stark differences in the share of owned parcels with land documents across the AEZs (Table 6.4). The highest levels are found in the Dry Zone and the Delta, which are lowland areas with large areas suitable for paddy cultivation and where, historically, the reach of the state's agricultural land policies has been strongest (Belton et al. 2021). In contrast, in the Hills and Mountains, a far lower share of parcels has some type of document. The land registration and certification system is not well suited to the customary tenure systems and land use patterns, particularly shifting cultivation, prevalent in this zone (Boutry et al. 2018).

Smallholders

Table 6.5 presents descriptive comparisons of smallholder agricultural households—those cultivating up to 2 ha—with agricultural households cultivating more than 2 ha. The average area of land owned by smallholders is 0.9 ha, while they cultivate 1.0 ha on average. These levels are less than a quarter of

TABLE 6.5 Characteristics of smallholders and non-smallholders and parcels operated

Characteristic	Smallholder farm (≤2 ha)	Non-smallholder farm (>2 ha)	Statistical significance
At farm/farm household level			
Share of all farm households (%)	52	48	
Total land size owned (hectares)	0.9	4.0	***
Total land size operated (hectares)	1.0	4.3	***
Parcels owned (number)	1.2	1.8	***
Parcels operated (number)	1.4	2.0	***
Age of household head (years)	50	54	***
Has a land document for at least one parcel (%)	70	83	***
Type of crops grown			
Perennials (%)	17	13	***
Rice (%)	58	70	***
Beans/pulses (%)	34	52	***
Maize (%)	13	14	
Sesame (%)	12	20	***
Observations	2,883	2,153	
At parcel level (all parcels operated by smallholders and larger farms, respectively)			
Parcel size (hectares)	0.7	2.2	***
Parcel is owned (%)	84	92	***
Household has land document for parcel (%)[a]	69	83	***
Years since household acquired parcel[a]	18	23	***
Type of crops grown			
Perennials (%)	14	8	***
Rice (%)	45	45	
Beans/pulses (%)	28	38	***
Maize (%)	9	8	**
Sesame (%)	9	12	***
Left fallow minimum one season (%)	63	76	***
Seasons cultivated (number)	1.8	1.6	***
Irrigation source in any season			
Collected/harvested rainwater (%)	71	74	***
Government/community irrigation channel (%)	7	7	
Individual irrigation channel (%)	19	14	***
Other irrigation source (%)	4	1	***
Observations	3,814	4,414	

Source: Constructed using MLCS 2017 (CSO 2019).

Note: [a] Only for the owned parcels. * $p < .10$; ** $p < .05$; *** $p < .01$.

the average 4.0 ha owned and 4.3 ha cultivated by larger farmers. On average, smallholders cultivate 1.4 parcels, while non-smallholders cultivate 2.0 parcels. Smallholders also are less likely to own the land they cultivate and, of that which they report owning, to have documentation of their ownership.

Smallholder households have acquired their land more recently than non-smallholders and have younger household heads. This pattern may be a result of a life-cycle effect of farmers acquiring more land as they age (Boutry et al. 2017; Lambrecht, Mahrt, and Cho 2021). However, this pattern also supports the hypothesis that farm sizes are shrinking—which is different from, though does not necessarily contradict, the pattern of increased average agricultural land size per person active in agriculture discussed earlier.[3] However, the relatively small gap of only four years in the average age between heads of smallholder and non-smallholder agricultural households suggests that the life-cycle effect and shrinking farm sizes are not the only factors driving the divergence in farm size among agricultural households.

Given their smaller landholdings, it is reasonable to expect that smallholder farmers cultivate fewer crops than farmers with more land. Indeed, smallholder farmers are significantly less likely to cultivate rice, beans and pulses, and sesame than larger farmers, but they are more likely to grow perennial crops (Table 6.5). Smallholders may compensate for their smaller acreages by cultivating their land more intensively, such as by increasing productivity through irrigation during the usual cropping seasons or by expanding the number of cropping seasons through the use of irrigation. Indeed, smallholders cultivate their parcels somewhat more frequently (in terms of seasons cultivated) than non-smallholders and more often use individual irrigation channels or other sources for irrigation.

Land documents

We use probit regression analyses to explore which parcel and household characteristics are associated with land documents for parcels cultivated with seasonal crops, particularly looking at factors that are expected to affect either the landowner's or the authorities' interest or options with regard to documenting agricultural land ownership. By combining different variables into one regression analysis, we can see the association of one variable while controlling for other variables of potential influence.

3 For agricultural land size per person active in agriculture, these persons include both farmers and agricultural workers.

Table 6.6 shows four specifications of the model. Columns (1) and (2) include control variables for the different AEZs to illustrate the main regional patterns that are sustained after controlling for other characteristics. In columns (3) and (4), we control at the township level to account for smaller geographic units than the AEZs. Additionally, in columns (1) and (3), we control for the years since the parcel was acquired. In contrast, in columns (2) and (4), a dummy indicator is used instead, coded 1 if the parcel was acquired after 2012 and 0 otherwise.

Larger parcels and parcels with access to irrigation infrastructure more often have land documents. These parcels are of relatively high value, increasing owners' motivation to obtain such documents. Moreover, where government or community irrigation infrastructure is present, other infrastructure and services are often better developed and more accessible than elsewhere. Hence, the ability and motivation of authorities to provide land use certificates for parcels served by irrigation infrastructure may be relatively high.

Parcels cultivated with rice for at least one season in the past year are also more likely to have land documents than other parcels. This again aligns with government authorities' expected greater interest and reach in rice-producing areas to register land suitable for rice production. Moreover, farmers are motivated to document parcels on which they produce paddy so they can continue accessing loans from MADB. In columns (1) and (2), where we control only at the level of AEZs, cultivation of beans and pulses is also positively associated with having land documents, whereas growing maize has a negative association. However, these effects disappear when we control for a finer set of geographic units at the township level. Even when the model includes township-level controls, rice cultivation, in contrast, continues to be significantly associated with farmers having land ownership documents.

We also find that parcels that are rented out more often have land documents. Either owners with land titles feel more secure in renting, or owners who intend to rent out their land feel more obliged to obtain such documents. One might also expect that land titling efforts were more active in places with more active land markets. However, such impacts may be hidden in our analyses through our use of township-level fixed effects (specifications 3 and 4). Against our expectations, after controlling for the other variables in the regression analysis, we found that a rural landowner is no less likely than an urban landowner to have land documents.

Parcels obtained prior to 2012 (specifications 1 and 3) and parcels acquired further back in time (specifications 2 and 4) are shown in the analysis to be more likely to have land documents. That parcels obtained after 2012 less

TABLE 6.6 Characteristics associated with having land documents for parcels with seasonal crops, probit regression results, and marginal effects

	AEZ fixed effects		Township fixed effects	
Characteristic	(1)	(2)	(3)	(4)
Parcel size (hectares)	0.011**	0.011**	0.019***	0.019***
	(0.005)	(0.005)	(0.006)	(0.006)
Government/community irrigation (0/1)	0.168***	0.166***	0.250***	0.249***
	(0.059)	(0.058)	(0.097)	(0.091)
Individual irrigation (0/1)	0.060***	0.059***	0.061*	0.060*
	(0.022)	(0.022)	(0.032)	(0.031)
Planted rice (0/1)	0.090***	0.090***	0.135***	0.134***
	(0.017)	(0.017)	(0.021)	(0.020)
Planted beans/pulses (0/1)	0.038**	0.038**	0.013	0.013
	(0.016)	(0.016)	(0.021)	(0.021)
Planted maize (0/1)	−0.059**	−0.059**	−0.005	−0.005
	(0.024)	(0.024)	(0.032)	(0.030)
Planted sesame (0/1)	0.029	0.031	0.043	0.045
	(0.022)	(0.022)	(0.028)	(0.029)
Parcel rented out (0/1)	0.143***	0.141***	0.138***	0.136***
	(0.035)	(0.035)	(0.037)	(0.036)
Rural residence (0/1)	−0.011	−0.010	0.014	0.014
	(0.022)	(0.022)	(0.030)	(0.032)
Parcel acquired after 2012 (0/1)	−0.040**	NA	−0.063***	NA
	(0.017)		(0.020)	
Years since parcel was acquired	NA	0.002***	NA	0.003***
		(0.001)		(0.001)
Age of household head (years)	0.002***	0.002**	0.002***	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
Household head is female (0/1)	−0.017	−0.018	−0.016	−0.015
	(0.016)	(0.016)	(0.020)	(0.021)
Education of household head (years)	0.009***	0.009***	0.005*	0.004*
	(0.002)	(0.002)	(0.003)	(0.003)
Coastal Zone (AEZ base = Delta)	0.011	0.012	NA	NA
	(0.032)	(0.031)		
Dry (AEZ base = Delta)	0.050**	0.046**	NA	NA
	(0.022)	(0.021)		
Hills and Mountains (AEZ base = Delta)	−0.309***	−0.309***	NA	NA
	(0.042)	(0.041)		
Township controls	No	No	Yes	Yes
Observations	5,926	5,926	4,336	4,336

Source: Constructed using MLCS 2017 (CSO 2019).

Note: Standard errors are in parentheses. AEZ = agroecological zone. NA = not applicable. * $p < .10$; ** $p < .05$; *** $p < .01$.

often have documents suggests that there has not been a successful systematic continuation of land titling efforts in recent years. This also suggests that parcels with documents prior to 2012 (in particular Form 105) were more likely to have the new Form 7 required under the 2012 Farmland Law. Given that we do not know which document the owners have, it may also be that many of these older parcels had alternative documents and not the new Form 7.

Parcels owned by households with older household heads more often have land documents, even when simultaneously controlling for time since acquiring the parcel. Similarly, parcels owned by households in which the household head is more educated more often have land documents. However, there is no significant difference in land ownership document possession between male and female household heads.

The regressions in columns (1) and (2) confirm different regional patterns to documentation. Holding all else equal, parcels in the Dry Zone are 5 percent more likely to be documented than those in the Delta. This difference is much smaller than that between parcels in the Delta and parcels in the Hills and Mountains, where the latter are 31 percent less likely to be documented.

Conclusions

Like elsewhere in Southeast Asia, Myanmar's land tenure and cropping patterns are characterized by owner-cultivated small family farms (Hayami and Otsuka 1993; Rigg, Salamanca, and Thompson 2016). Half of all agricultural households are smallholders cultivating no more than 2 ha, and 89 percent operate small farms cultivating no more than 5 ha. However, although smallholder and small farms predominate in the agricultural landscape, the average farm size in Myanmar is slightly bigger than the average for South Asia, East Asia, and the Pacific (Lowder, Skoet, and Raney 2016).

Despite the importance of the agriculture sector in rural employment (Lambrecht, Mahrt, and Cho 2021), 51 percent of rural households are landless. The distribution of agricultural land is uneven, even within the subpopulation of landed households—the bottom 60 percent of landed households own only about 22 percent of total land, whereas the top 20 percent own about 55 percent. Land transfers have been officially allowed since 2012, but land sales and rental markets remain thin, with limited redistribution of land from landed to landless households. Moreover, temporary land acquisition through renting, sharecropping, borrowing, or other arrangements is

uncommon. The economic and political crisis affecting Myanmar since the military takeover is expected to increase landlessness.

Smallholders generally cultivate fewer and smaller plots than farmers with larger landholdings, are less likely to own their land, and are less likely to have land documents for the parcels they own. Although they cultivate their land more intensively than larger farmers, this is unlikely to offset the disadvantage of having less agricultural land to generate a farm income. Other researchers have argued that agricultural households progressively acquire and operate more land over their lifetime, exiting their landless or smallholder status (Boutry et al. 2017). However, this process may also result in shrinking farm sizes on average. Both of these hypotheses seem plausible but could not be confirmed in the quantitative analysis.

The above findings, as well as a more in-depth analysis of factors associated with having land documents, confirm the role that Myanmar's history of rice-centered policies has played in shaping the current state of agricultural land tenure. Even after controlling for geographic, household, and parcel characteristics, we find that parcels on which rice is cultivated are more likely to have land documents.

The fact that land documentation is incomplete and less common among parcels acquired after 2012—the year when the major push for land use certification occurred—suggests that land certification efforts are incomplete and have not been sustained. In Myanmar, as elsewhere, the current land use certification system is not a panacea for land security or augmented crop productivity. Striving toward a system of land classification and land laws in line with and respectful of local realities—especially those aligned with customary land tenure systems—could further improve tenure security, enhance land use patterns, and support higher overall welfare for rural households.

The recent crises that have affected Myanmar may have affected land tenure patterns. However, few data are available on agricultural land ownership and use patterns during the COVID-19 pandemic and since the military takeover, especially at the national level. The Myanmar Household Welfare Survey data from this period suggest that distress sales have increased in frequency. In a recall period of only one month, on average 0.4 percent of agricultural households had sold agricultural land to cope with a lack of food or money (MAPSA 2022). Moreover, rural areas may see increased landlessness due to land abandonment in response to higher input prices, conflict, or an uptick in land confiscations. We may also see a move toward land policies similar to those of the past, including a possible return to command and control over

crop choice (USDA 2021) and a renewed establishment of large-scale concessions, especially in ethnic minority areas (Frontier 2023).

References

Belton, B., A. Cho, M.J. Filipski, J. Goeb, I. Lambrecht, D. Mather, and M.T. Win. 2021. "Opportunities and Constraints for Production and Income Growth in Rural Myanmar: Inter-Regional Variations in the Composition of Agriculture, Livelihoods, and the Rural Economy." Myanmar Strategy Support Program Working Paper 7. International Food Policy Research Institute (IFPRI), Washington, DC.

Belton, B., and M.J. Filipski. 2019. "Rural Transformation in Central Myanmar: By How Much, and For Whom?" *Journal of Rural Studies* 67: 166–176.

Boutry, M., and M.D. Thant. 2020. *The Implementation of the Vacant, Fallow, and Virgin Land Law: A Case Study in Sagaing Region*. MRLG Case Study Series 3. Vientiane, Laos: Mekong Region Land Governance (MRLG).

Boutry, M., C. Allaverdian, M. Mellac, S. Huard, U.S. Thein, T.M. Win, and K.P. Sone. 2017. *Land Tenure in Rural Lowland Myanmar: From Historical Perspectives to Contemporary Realities in the Dry Zone and the Delta*. Of Lives and Land Myanmar Research Series. Yangon, Myanmar: GRET.

Boutry, M., C. Allaverdian, T.M. Win, and K.P. Sone. 2018. *Persistence and Change in Hakha Chin Land and Resource Tenure: A Study on Land Dynamics in the Periphery of Hakha*. Of Lives and Land Myanmar Research Series. Yangon, Myanmar: GRET.

Byerlee, D., D. Kyaw, U.S. Thein, and L.S. Kham. 2014. "Agribusiness Models for Inclusive Growth in Myanmar: Diagnosis and Ways Forward." MSU International Development Working Paper 133. East Lansing: Michigan State University.

CSO (Central Statistical Organization). 2019. *Myanmar Living Conditions Survey 2017—Report 02: Technical Report*. Nay Pyi Taw.

CSO, UNDP (United Nations Development Programme), and World Bank. 2020. *Myanmar Living Conditions Survey 2017: Report 04: Socio-Economic Report*. Nay Pyi Taw.

FAO (Food and Agriculture Organization of the United Nations). 2023. FAOSTAT database. Accessed 2023. www.fao.org/faostat

Filipski, M.J., and B. Belton. 2018. "Give a Man a Fishpond: Modeling the Impacts of Aquaculture in the Rural Economy." *World Development* 110: 205–223.

Frontier. 2023. "Military Land-Grabbing Gathers Pace under Cover of Conflict." *Frontier Myanmar,* April 22.

Gandhi, S., and T.G. Jones. 2019. "Identifying Mangrove Deforestation Hotspots in South Asia, Southeast Asia and Asia-Pacific." *Remote Sensing* 11 (6): 728–754.

Hayami, Y., and K. Otsuka. 1993. *The Economics of Contract Choice: An Agrarian Perspective.* Oxford, UK: Clarendon Press.

Hayward, D., P. Hirsch, and N. Scurrah. 2021. *Key Themes in Land Governance: Synopses of Research, Policy and Action in the Mekong Region.* Chiang Mai, Thailand, and Vientiane, Laos: Regional Center for Social Science and Sustainable Development and MRLG.

Jayne, T.S., J. Chamberlin, N. Sitko, et al. 2016. *Africa's Changing Farmland Ownership: The Rise of the Emergent Investor Farmer.* Feed the Future Innovation Lab for Food Security Policy Research Paper 15. East Lansing: Michigan State University.

Kurosaki, T. 2008. "Crop Choice, Farm Income, and Political Control in Myanmar." *Journal of the Asia Pacific Economy* 13 (2): 180–203.

Lambrecht, I., K. Mahrt, and A. Cho. 2021. *Women and Youth in Myanmar Agriculture.* IFPRI Discussion Paper 2071. IFPRI, Washington, DC.

Lambrecht, I., K. Mahrt, N.L.K. Synt, H.E. Win, and K.Z. Win. 2023. "Gender Gaps in Land Rights: Explaining Different Measures and Why Households Differ in Myanmar." *Agricultural Economics* 54 (5): 728–741.

Lowder, S.K., J. Skoet, and T. Raney. 2016. "The Number, Size, and Distribution of Farms, Smallholder Farms, and Family Farms Worldwide." *World Development* 87: 16–29.

MAPSA (Myanmar Agriculture Policy Support Activity). 2022. "Welfare and Vulnerability: Findings from the Second Round of the Myanmar Household Welfare Survey (April – June 2022)." Myanmar Strategy Support Program Working Paper 25. MAPSA, IFPRI, Washington, DC.

Mark, S. 2016. "Are the Odds of Justice Stacked against Them? Challenges and Opportunities for Securing Land Claims by Smallholder Farmers in Myanmar." *Critical Asian Studies* 48 (3): 443–460.

Mark, S. 2023. *Forging the Nation: Land Struggles in Myanmar's Transition Period.* Honolulu: University of Hawaii Press.

Mark, S., and B. Belton. 2020. "Breaking with the Past? The Politics of Land Restitution and the Limits to Restitutive Justice in Myanmar." *Land Use Policy* 94: 104503.

Meehan, P. 2021. "Precarity, Poverty and Poppy: Encountering Development in the Uplands of Shan State, Myanmar." *International Journal of Drug Policy* 89: 103064.

Oberndorf, R. 2012. *Legal Review of Recently Enacted Farmland Law and Vacant, Fallow and Virgin Lands Management Law Improving the Legal and Policy Frameworks Relating to Land Management in Myanmar.* Yangon, Myanmar: Land Core Group, Food Security Working Group.

Okamoto, I., H.Y. Lwin, and K. Fujita. 2021. "The Persistence of Credit–Labor Interlinked Transactions in Rural Myanmar: The Case of Kanyingu Village in Ayeyarwady Delta." *Journal of Rural Studies* 82: 468–478.

Rammohan, A., and B. Pritchard. 2014. "The Role of Landholding as a Determinant of Food and Nutrition Insecurity in Rural Myanmar." *World Development* 64: 597–608.

Rigg, J., A. Salamanca, and E.C. Thompson. 2016. "The Puzzle of East and Southeast Asia's Persistent Smallholder." *Journal of Rural Studies* 43 (1): 118–133.

Shivakumar, S., and U.S. Hlaing. 2015. *Myanmar: Land Tenure Issues and the Impact on Rural Development.* Yangon, Myanmar: FAO.

Suhardiman, D., J. Bright, and C. Palmano. 2021. "The Politics of Legal Pluralism in the Shaping of Spatial Power in Myanmar's Land Governance." *The Journal of Peasant Studies* 48 (2): 411–435.

Thein, U.S., J.C. Diepart, U.H. Moe, and C. Allaverdian. 2018. *Large-Scale Land Acquisitions for Agricultural Development in Myanmar: A Review of Past and Current Processes.* MRLG Thematic Study Series 9. Vientiane, Laos: MRLG.

USDA (United States Department of Agriculture). 2021. *Impact of Burma Military Coup on Agriculture Sector and Trade.* Foreign Agricultural Service Report BM2021-0009. Washington, DC: USDA.

Vicol, M., B. Pritchard, and Y.Y. Htay. 2018. "Rethinking the Role of Agriculture as a Driver of Social and Economic Transformation in Southeast Asia's Upland Regions: The View from Chin State, Myanmar." *Land Use Policy* 72: 451–460.

Warr, P. 2016. "Myanmar's Opening to the World Economy." In *Managing Globalization in the Asian Century: Essays in Honour of Prema-Chandra Athukorala*, eds. H. Hill and J. Menon, 333–357. Singapore: Institute of Southeast Asian Studies (ISEAS)-Yusof Ishak Institute.

World Bank. 2014. *Myanmar — Capitalizing on Rice Export Opportunities.* Washington, DC.

World Bank. 2021. "Myanmar Poverty and Living Conditions Survey 2014-2015." *Microdata Library*, Washington, DC.

World Bank. 2024. World Development Indicators database. Accessed 2023. https://databank.worldbank.org/data/source/world-development-indicators

Yang, R., Y. Luo, K. Yang, L. Hong, and X. Zhou. 2019. "Analysis of Forest Deforestation and Its Driving Factors in Myanmar from 1988 to 2017." *Sustainability* 11 (11): 3047.