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Caste Discrimination, Land Reforms and Land Market Performance in Nepal

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Caste Discrimination, Land Reforms and Land Market Performance in Nepal[1]

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1. Introduction

The caste system is an intricate part of the institutional structure as well as class formation, political instability and conflicts in Nepal. The most severely discriminated group in the caste system is the Dalits, the so-called "untouchables". Dalits faced religious, occupational and even, territorial discrimination. They were traditionally excluded from receiving education, using public resources, and had no rights to own land (Dahal 1995; CHRGJ 2005; Haug, Aasland and Dahal 2009). The situation of Dalits especially before 1951 can best be explained by a patron-client dependency in which landed patrons (high-caste households) provided them with access to small pieces of land and other basic requirements for subsistence living and in return to that, they are bound to provide their services to their patron. Although caste discrimination is outlawed now; it still has impacts on their lives because it restricts their access to economic resources. As a result, nearly 75 percent of Dalits in Nepal are functionally landless (Wily, Chapagain and Sharma 2008). Traditional religious justification combined with poverty and landlessness substantially contribute to social ostracism of Dalits (Banerjee and Knight 1985).

Dalits started to raise their voices against caste-based discrimination since 1940s, but the Dalits movement remained subsumed within the larger struggle for democracy until 1990 (DFID and World Bank 2006). With the establishment of democracy in 1990, Dalits movement gained momentum. Dalits organizations demand land reform and want the share of land to be in proportion to their population size and to get equal access to good quality land

[1] This is a draft version of the paper. Comments are welcome.

(UNDP 2008). Except a few proportion of Dalits of the hill region, who have improved their livelihoods by participating in remittance earning activities, majority of them remain below poverty (Hatlebakk 2008).

Despite being a democratic state after 1990, Nepal failed to establish an inclusive polity because the caste-based norms and networks were persistent in all institutions. This provided a ground for the radical movement launched by the Maoists. Among other factors, the grievances of Dalits is one of the powerful factors for the success of Maoist war in Nepal (Murshed and Gates 2005). Maoists were able to heavily recruit Dalits in their Army because of their demands such as ending caste discrimination, and radical land reforms were closely related to the grievances of the Dalits. In addition, Maoists also campaigned against the caste discrimination by punishing non-Dalits who practiced such discriminations such as preventing Dalits from entering temples, fetching water from public wells, or any kind of humiliation (CHRGJ 2005).

The Maoist war ended in 2007 and the Interim Constitution of Nepal 2007 guaranteed to remove all caste-based discriminations. However, the constitutional provision alone is not enough in the case of Dalits as they are deprived of access to economic resources such as land, education and regular employment in the past. Past inequality in the ownership of land continue to hold even today because inheritance remains the major form of land transfer from one generation to the other in Nepal. The legal practice till now is to divide the parental property (both land and non-land) equally among the male heirs. Though participation in the land market is possible, purchase of land is beyond the capacity of poor Dalits as the credit market is highly imperfect. Under this situation, land tenure reform becomes the major issue.

Past land reform measures (see section 2 for detail) did not take into account the disadvantaged position of Dalits with regard to land ownership (Hatlebakk 2008). Furthermore, many of the beneficiaries of past land redistributions were not the poor and unprivileged (Pandey 1993). The past land tenure reform measures concentrated on the land-to-the-tiller policy without giving proper attention to the consequences that might arise from it (Yadav 1999). According to this provision a formal tenant can claim the ownership rights on part of the rented land, and this helped distort the land rental market (Yadav 1999; Bhandari 2006). As a result, formal tenancy transactions decreased as landlords feared to participate in the land tenancy transactions (Yadav 1999). This provision also resulted in dual ownership of rented land, which in turn discouraged investment in land for quality improvements.

The failures of the past land reforms in redistributing land might be one of the reasons why the Maoists acquired stronger support from Dalits and landless people (Hatlebakk 2008). Inequality in land distribution along with poverty provided a basis for the rural support for Maoists. As a result, under the leadership of Maoists, landless people captured land belonging to various individuals during the war and also after the Peace Agreement (Tiejun and Kinchi 2008; Jolly 2009). Repeatedly, Maoists have issued threats to the landowners to not sell or use the land stating that the land will be distributed to landless people. This has created frequent political and social unrest in Nepal. Failures of the past land reform measures contributed to Maoists insurgency because the war began with land reform as one of the major political demands (Wily et al. 2008). Overall, the caste system and land tenure reform legislation have hindered an access to the agricultural ladder whereby landless households could become tenants and later owner-operators (Otsuka, Chuma and Hayami 1992).

Severe social discrimination primarily contributes to the social unrest and conflicts in Nepal and may accelerate political unrest. A peaceful development will require policies that facilitate a more just distribution of resources and it calls for a renewed interest in land redistribution. At the same time it is important to draw lessons from the failures of the past land tenure reform attempts. Understanding of the implications of the past "Land-to-the-tiller" policies would provide a basis for designing appropriate land tenure policies in Nepal.

In an agrarian nation like Nepal, access to land is a critical issue because it is associated with welfare and poverty. Land tenure reform measures are essential not only for social equity that minimizes political conflict and unrest, but also for enhancing agricultural productivity and thus welfare and food security. A recent study (Aryal and Holden 2009) in western part of Nepal indicated that Dalits are land-poor but they are more productive farmers compared to non-Dalits. Therefore, land redistribution towards Dalits is not only important for reducing a possible Dalits uprising as in India but also for enhancing land productivity. Land redistribution, therefore, is linked with several important issues such as equity in distribution, efficiency of production, and minimizing the possibility of political and social unrest.

On this backdrop, this chapter focuses particularly on the implications of caste discrimination and past land reforms on the land rental market performance, land productivity and land use intensity. We analyzed these issues using data from western Nepal. For the purpose of analysis, we classified all households in the study area into two broader categories: high-caste (all castes/ethnic groups except Dalits) and low-caste (only Dalits). This classification is

appropriate because none of the other groups faces social exclusion like Dalits due to the practice of the caste system. For this, this chapter draws from the recent studies by the authors in villages of western Nepal.

The rest of the paper is structured as follows. Section 2 contains a brief review of past land reform measures in Nepal and its failure, followed by the testable hypotheses in section 3. Section 4 provides the analysis of caste discrimination, and its implications for land rental market performance and land productivity. The last section presents the conclusions and recommendations.

2. Past land tenure reform measures and its failures

The first reform measures taken in the land tenure system in Nepal was the provision of private property rights in the interim constitution of Nepal in 1951. This provision made the *Birta*[2] and *Jagir*[3] land holders as the permanent owner of the land by securing private property rights. Although the primary intention of this provision was to strengthen private property rights, this resulted into a highly unequal distribution of land by institutionalizing the hierarchical relationship between landed elites and peasants (Regmi 1976; Joshi and Mason 2008). This ensued because people who had previously acquired *Birta* and *Jagir* land consisted of government officials, military officers, Brahmins and members of ruling classes (Joshi and Mason 2008). Land tenure security in such a context resulted in the highly unequal distribution of land ownership and thereby aggravated the need for agrarian reform in Nepal.

In 1951, the government also enacted the Tenancy Rights Acquisition Act. This Act had a provision that tenants would be provided with title to the land on which they paid land tax. However, this provision did not serve its original purpose because the land tax, although collected from tenants, was registered officially in the name of landlords. As a result, it had just the opposite effect than intended and gave permanent legal title of land ownership to the landlords who managed to pay the land tax (Regmi 1976). In such circumstances, the land tenancy reform measures that were implemented so far remained largely ineffective (Yadav 1999; Joshi and Mason 2008; Wily et al. 2008).

Another reform measure taken in the land tenure system in Nepal was the abolition of *Birta* tenancy in 1957 which converted all *Birta* land into *Raikar*[4]. This provision became effective

[2] Land granted by the state to individuals, usually on an inheritable basis. Such land was tax exempt.
[3] State land assigned to government employees in lieu of salaries.
[4] Land owned by the state.

when first democratically elected government of Nepal, the Nepali Congress Government, came into power in 1959.

The Land Act of 1964 was the most comprehensive of all measures taken in the land sector and even today, this occupies the central place in land reforms in Nepal (Wily et al. 2008). Initially, the Act was implemented over three consecutive years, starting from 1964, and was revised several times. The main objectives of this were to achieve more equitable land distribution and poverty reduction by redistributing land to small farmers, tenants and agricultural workers. The main components of the Land Act 1964 were:

i) Abolishing land tax collection by intermediaries (called '*Zamindari Pratha'* in Nepali).

ii) Imposing fixed ceilings on ownership landholdings, whereby a family could hold an area of 16.93 hectare in *Terai*, 4.07 hectare in the *Hills* and *Mountains*, and 2.54 hectares in Kathmandu valley.

iii) Fixing land rent as one half of the output of the main crop.

iv) Implementing compulsory saving program to provide an alternative source of credit to farmers.

v) Imposing measures to improve farming practices.

vi) Imposing a ceiling on tenancy holdings of land, whereby a family could hold an area of 2.67 ha in the Terai, 1.51 ha in the Hills and Mountains, and 1.02 ha in the Kathmandu valley.

The abolition of intermediaries was used as an instrument to reduce the feudal and semi-feudal tenure system. There was also provision to distribute land acquired through the landlord possessing land above the ceiling fixed by the Act. In addition, several supporting laws were enacted to improve the registration of land and tenants.

The Land Act 1964 was only partially implemented. As the implementation thereof took several years, many large landowners were able to circumvent the land ceiling fixed by the Act – either by selling their surplus land or distributing it among close relatives (Yadav 1999). As a result the government was not able to acquire the amount of land it expected when the program was initiated. Yadav (1999) reported that by implementing the new ceilings on land, as defined in the Land Act 1964, only 31800 hectares of land were acquired, of which only 29100 hectares were distributed among the landless and small landholders. The total land

acquired for distribution was therefore less than two percent of total agricultural land in the country (Yadav 1999; Bhandari 2006). In addition, all the redistributed land was not received by the intended beneficiaries due to corrupt land administration and the strong alliance between the landed class and bureaucracy (Regmi 1976; Bhandari 2006). While assessed in terms of actual land acquired and redistributed, the land reforms program of 1964 did not seem to be effective. However, the program was successful in abolishing the local intermediary (*Zamindars*) system for collecting land tax and as a result cultivators were no longer subjugated to these local intermediaries (Kuhnen 1971).

Another major area where the land reform program of 1964 had a lot of influence was the tenants' and tenancy regulations. Government initiated a program to identify the real tenants and grant them formal tenancy certificates. Of the 600,000 tenants, less than half were able to get registered as formal tenants due to the lack of a proper registration system (IDS 1986). After the implementation of the Land Act 1964, both the number of recorded tenants and the area under tenancy declined. Table 1 shows the proportion of tenant households as a portion of the total farm households and area under tenancy as a portion of the total area under cultivation.

Table 1 Proportion of Tenants and Area under Tenancy (in percentage)

Description	Year				
	1961	1971	1981	1991	2001
Tenant households	40.4	19.0	9.5	15.9	12.2
Area under tenancy	25.5	15.9	6.2	8.5	8.7

Source: Ministry of Land Reform and Management (2006)

In the first two decades from 1964, the percentage of formal tenant households had substantially declined from 40.4 to 9.5 percent, while it increased slightly after 1981. This decrease was largely attributable to the provision of dual ownership of rented land by both landlord and tenant if the formal tenancy was adopted. Furthermore, this provision was later interpreted to mean that the tenant would receive half the tenanted land. The land reform law not only prohibited the eviction of tenants but also restricted the landowner from selling the land under tenancy because it would be under shared ownership of the landlord and tenant. As a consequence, landlords attempted to circumvent the implementation of the land-to-the-tiller program and the share tenancy contracts of poor tenants became even more insecure than before. This gave rise to informal tenancy, as landlords would make personal agreements with their tenants to not claim tenancy rights through oral contracts (Acharya and Ekelund 1998).

Another reason for the decline in formal tenancy was that most of the tenants were illiterate and were not able to register as a formal tenant within the time provided by the government. About 560,000 tenants failed to register as formal tenants and lost any claim to their tenancy rights (Land Watch Asia 2009).

The provision of sharing the rented land between landlord and tenant increased landlords' tenure insecurity and resulted in them not being amenable to enter into formal tenancy contracts. This forced landlords to rely on short-term, informal (mostly verbal) contracts due to a fear that the tenants might claim tenancy rights. This fear has even caused the landlords to keep their land fallow or only partially cultivated and also increased disputes between landlords and tenants. Although figures are contested, it is estimated that nearly 25 percent of cultivable land is reported to be left fallow due to land ownership disputes (Land Watch Asia 2009). There are no exact records on how much land is under informal tenancy in Nepal (Yadav, 1999). Recent studies claim that numbers of informal tenants surpass the number of formal tenants (CSRC 2007; Wily et al. 2008). This has discouraged both landlords and tenants from investing in land improvements. Studies (Pandey 1993; Yadav 1999; Wily et al. 2008) show that the land reform in 1964 was largely ineffective in achieving its objectives. In essence, there was no significant improvement in land distribution and the land tenure system before 1990 as the country was under an absolute monarchy where the King was above the law; and his close relatives and ardent supporters were often the feudal landlords.

After the political change of 1990, Nepal adopted a multi-party democracy system with a constitutional monarchy and thus, the power of the king was substantially reduced. This political transformation created an opportunity to readdress land reform and in 1995 a High Level Land Reform Commission (HLRC) was formed. This commission proposed new provisions for tenancy reform with a target to abolish tenancy by handing over a share of the rented land to tenants to enhance more equitable distribution of land (Wily et al. 2008). Some of the major recommendations made by the commission in relation to land tenure were:

i) If both landlord and registered tenants are farmers, land under tenancy will be equally divided between them.

ii) If the landlord is not farming the entire land, all the land under tenancy will be handed over to the tenant. In this case, landlords will receive the market value of their share of the land. If the tenant is unable to purchase the landlord's share of the land, that can be sold to other party.

iii) Ceiling of maximum size of ownership landholding should be reduced, whereby a family can possess up to 3 hectares in *Terai*, 2 hectares in *Hills*, 4 hectares in *Mountain*, 1 hectare in Kathmandu valley (but only 0.5 ha in the urban areas of Kathmandu valley), and 1 ha in all other urban areas.

iv) The sub-division of land below a minimum farm size should not be allowed and this would apply even when transferring land to tenants.

v) Tenancy rights, including the right to receive fifty percent of rented land, would be given to any farmer who had tilled the land for three consecutive years.

vi) Tenancy rights would be inheritable.

vii) Tenancy rights would be mostly granted to marginal farmers.

For the first time, the HLRC (1995) also addressed the problem of land fragmentation. The Agriculture Perspective Plan of Nepal, initiated in 1996, also recognized agricultural land fragmentation as one of the major constraints to agricultural development and recommended taking action toward consolidating land. Although several reforms had been initiated, the governments from 1996 to 2007 were not able to implement most of the policies as the country was engulfed by the Maoist war.

After the end of Maoist war in Nepal, land tenure reform has again become a major agenda. The interim constitution of Nepal 2007 stated that the country would implement a scientific land reform. The difficult question now facing Nepal is: what really constitutes a scientific land reform?

In the interim, several non-governmental organizations, such as the Community Self-Reliance Centre (CSRC), the Informal Sector Service Centre (INSEC) and Land Watch Asia, have been working on this issue. It is surprising to see that most of them advocate the 'land-to-the-tiller' policy as a basic objective and consider tenancy transactions as inefficient and feudal. However, recent studies in India (Deininger, Jin and Nagarajan 2008; 2009) and China (Kung 2002; Deininger and Jin 2005; Jin and Deininger 2009) showed the importance of rural land rental markets and claimed that restrictions in land rental market negatively affect productivity and equity by reducing the scope for efficiency-improving rental transactions. Deininger and Jin (2005) showed that rural land rental markets are more effective in

reallocating land than administrative reallocation and thus improving land rental markets has a higher productivity-enhancing effect.

Land reform needs to be viewed from the broad perspective of agrarian reform rather than simply as a 'land-to-the-tiller' program. For a farmer, land reform may merely mean 'land-to-the-tiller' program, but for a country it refers to a fundamental institution-building instrument to strengthen the overall national economy. The success of land reform in East Asia exhibited that land reform is not a part of any political philosophy like most of the left-wing parties in Nepal consider that land reform would be successful only under the communist regime (Tiejun and Kinchi 2008). The formation of appropriate land policies to improve the efficiency of markets, enhance agricultural investment and increase productivity, necessitates a critical understanding of the specific rural market imperfections, their effects on access to land, and the way they interact with tenure security (Holden, Otsuka and Place 2009).

Often the studies on the land reform are biased against the landlord. One should be clear that not all landlords are feudal. If a household owns land area under the limit fixed by the existing land laws and used land rental market rather than cultivating itself, is the household feudal landlord or a participant of the land rental market?. For example, if a household head migrates to another country in order to earn remittance (this is common in most of the villages in Nepal now) and the family rents out its land for some time rather than cultivating due to lack of family labor, is the household a feudal landlord? These cases are increasing in rural Nepal and thus, improving the land rental market can be a better solution than relying primarily on land redistribution policies. The role of land rental market should not be undermined as a better functioning land rental market provides a poor farmer the opportunity to climb the agricultural ladder.

3. Testable hypotheses

Caste discrimination against Dalits throughout the history has created inequality in the access to and distribution of economic resources in Nepal. In past, even the state institutionalized the caste-based discrimination in several ways. Caste discrimination, though outlawed now, still has impacts on the distribution of economic resources such as land. Inequality in asset holding along with labor market discrimination, especially in regular off-farm employment, may have efficiency implications because market imperfections are the common feature in rural areas of Nepal as in other developing countries. Based on this, we propose the following testable hypotheses:

- H1: Low-caste households have lower land endowment, poor access to skilled off-farm employment, and are more likely to rent in additional land and work as agricultural laborers.
- H2: Land productivity is higher on the land operated by low-caste households as compared to high-caste households (due to discrimination causing high transaction costs and low opportunity cost of labor in the labor market).
- H3: Low-caste households are rationed in the land rental market restricting their access to land.
- H4: There is an inverse relationship between land productivity and farm size caused by caste discrimination (causing low-caste households to face high transaction costs in labor and land rental markets).
- H5: Low-caste households are too poor to invest on their land, vs.
- H6: Low-caste households depend more on agricultural production on limited land and therefore invest more per unit of land to increase their land productivity and have a higher intensity in their production.

We tested the above hypotheses using data collected from 500 households in the western hills of Nepal in 2003. For the details, we refer to the study by (Aryal 2011).

4. Caste discrimination, and its implications for land market performance and land productivity[5]

Caste status of the household was found to have impacts on several factors like land ownership, land rental market participation, labor market access and participation, and investment behavior on land conservation, intensity of cropping, and land productivity. We studied these phenomena using data from the villages of western Nepal. Table 2 presents some of the major household characteristics variables by caste.

Table 2 Major household characteristics variable by caste

Variables	High-caste	Low-caste	All sample	Test
Number of Households	382	107	489	-
Ownership land holding (in hectare)	0.64	0.17	0.53	8.83***
Operational land holding (in hectare)	0.63	0.35	0.56	5.86***
Male head dummy (%)	20	65	30	82.72***

[5] This section draws on the recent study by the authors in the villages of the western Nepal.

Literate head (%)	35	19	31	10.40***
Farm income (in Rs.)	32035	15312	28376	5.57***
Remittance income (in Rs.)	20127	3449	16478	4.41***
Total income (in Rs.)	72360	30928	63294	8.02***
Value of asset (in Rs.)	38581	15173	33459	8.29***
Agricultural wage employment (unskilled) (%)	12.3	69.8	24.94	7.16***
Non-agricultural wage employment (unskilled) (%)	34.2	25.6	32.31	3.78***
Regular salary jobs (at least one member) (%)	41.3	9.2	26.58	5.71***
At least one member earning pension (%)	26.7	5.6	22.09	3.96***

Notes:
1. Test shows the difference between high-caste and low-caste households; t-test is used for continuous variables and chi-square test for categorical variables.
2. Regular salary jobs include the jobs both in and outside the country

From Table 2, it is clear that the average ownership land holding is 0.64 hectare in the case of high-caste households while it is only 0.17 in the case of low-caste households. By participating in the land rental market, low-caste household are able to increase their operational holding to 0.35 hectare. In general, low-caste households have lower land endowment, poor access to skilled off-farm employment, and are more likely to rent in additional land and work as agricultural labor. Table 3 provides the land rental and agricultural labor market participation of the sample households by caste.

Table 3 Land rental and agricultural labor market participation of sample households

	Land Rental Market											
	High-caste HHs						Low-caste HHs					
Agricultural Labor market	Landlord		Non-Participant		Tenant		Landlord		Non-participant		Tenant	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Net seller	0	0	21	5.5	22	5.7	4	3.7	37	34.6	48	44.9
Non-participant	48	12.6	50	13.1	13	3.4	2	1.9	8	7.5	5	4.7
Net buyer	28	7.3	171	44.8	29	7.6	0	0	3	2.8	0	0
Total	76	19.9	242	63.4	64	16.8	6	5.7	48	44.9	53	49.5

From Table 3, we can see that nearly 50 percent of the low-caste households are tenants while about 83 percent hire out agricultural labor. Typically, agricultural labor market still exhibits caste-based hierarchy: low-caste households largely work as agricultural laborer. The results in Table 2 and 3 support hypothesis H1 that low-caste households have lower land endowment, poor access to skilled off-farm employment and are more likely to rent in additional land and work as agricultural labor.

On this backdrop, we assessed how caste-related land productivity differences are associated with caste-related differences in endowments and in market access (Aryal and Holden 2011b). In order to examine this, we compared the land productivity: i) on owner-operated land of low-caste households vs. owner-operated land of high caste households and ii) on the owner-operated land of high-caste households vs. rented in land of low-caste households. Results showed that low-caste households have higher land productivity in both cases as compared to high-caste households and thus, hypothesis H2 cannot be rejected. Low-caste households are found to have significantly higher land productivity on their owner-operated (28 percent higher) and sharecropped in (21 percent higher) land as compared to the owner-operated land of the high-caste households. Table 4 presents the results.

Table 4 Land productivity difference by caste

Variable	Kernel Matching	Variable	Kernel Matching
Land productivity		**Land productivity**	
Owner-operated plots- Low Caste	81834.46	Rented in plots - Low Caste	77139.9
Owner-operated plots-High Caste	63783.15	Owner-operated plots-High Caste	63783.2
Difference	18051.31	Difference	13410.7
Standard error	6601.92	Standard error	4966.3
t-statistic	2.73***		2.71***
Number of observations		**Number of observations**	
Owner-operated plots-Low Caste	99	Rented in plots-Low Caste	94
Owner-operated plots-High Caste	639	Owner-operated plots-High Caste	646

Significance levels: *: 10% level, **: 5% level, ***:1% level
Note:
1. Bootstrapped standard error based on 500 replications is reported

In addition, we did not find significant Marshallian inefficiency (measured as the land productivity difference between owner-operated and rented in land of the same household) in the case of low-caste tenants (result of propensity score matching method is reported in Table 5 below).

In order to get deeper understanding of the phenomena, we jointly assessed the association between Marshallian inefficiency, allocative inefficiency of the land rental market, and an inverse farm size productivity relationship (IR) and tried to examine how caste discrimination could influence these phenomena (Aryal and Holden 2010). For this analysis, we are inspired by the research gap identified by Otsuka (2007) (Otsuka 2007) in his review of the empirical

literatures on sharetenancy, allocative inefficiency of land rental markets, the inverse farm size- productivity relationship, and land related investment. His review revealed that most studies have focused independently on only one of these issues although they are closely related and a joint study of these would lead to deeper understanding.

Table 5 presents the results of the assessment of Marshallian inefficiency. From Table 5, it is clear that Marshallian inefficiency was significant only in the case of high-caste tenants.

Table 5 Assessment of Marshallian inefficiency (kernel matching)

Land Productivity	All households	Low-caste	High-caste
Rented in plots	56936.9	67456.6	53700.6
Owner-operated plots	65207.1	69920.8	62823.2
Difference	-8270.2	-2464.2	-9122.6
Bootstrapped std. error	4164.2	9277.1	3455.5
t-statistic	-1.98**	-0.27	-2.64***
Number of observations			
Owner-operated plots	56	20	36
Rented in plots	136	32	104

Significance levels: *: 10% level, **: 5% level, ***:1% level
Notes:
1. For Kernel matching, we reported the bootstrapped standard error with 500 replications.
2. Number of observations reduced as we included only owner-tenant households.

We got similar findings from fixed effects model even after controlling for plot quality differences and plot selection bias. The results are presented in Table 6.

Table 6 Assessment of Marshallian inefficiency (household fixed effects models)

	All households		Low-caste		High-caste	
Total value product/ha	w/o IMR	IMR	w/o IMR	IMR	w/o IMR	IMR
Tenure dummy (rent in=1)	-0.180**	-0.182**	-0.045	-0.036	-0.233**	-0.209*
	(0.08)	(0.08)	(0.20)	(0.21)	(0.11)	(0.11)
IMR (plot)		-0.018		-0.592		0.132
		(0.16)		(0.51)		(0.16)
Joint test for plot quality variables[1]	15.65***	7.40***	22.65***	16.58***	78.35***	334.60***
Constant	11.43***	11.44***	11.43***	11.30***	11.41***	11.30***
	(0.26)	(0.31)	(0.60)	(0.95)	(0.26)	(0.30)
Number of observations	217	217	52	52	165	165

Notes: Significance levels: *: 10% level, **: 5% level, ***: 1% level and all continuous variables are in logarithms. IMR refers to inverse mills ratio and we report bootstrapped standard errors for models with IMR. We re-sampled households (bootstrapped with replications 500) in order to get corrected standard errors.
1. F-test results are used in fixed effects models (without IMR) while chi-square are used in the bootstrapped models (with IMR).
2. The number of households reduced in this analysis due to the exclusion of pure tenant households. Out of 117 tenant households, this analysis includes only 71 tenant households.

We tested the inverse relationship between farm size and land productivity after controlling for the influences of the Marshallian disincentives for owner-tenants (for details on the methods to do it, see Aryal and Holden, 2010b). The results are presented in Table 7.

Table 7 Analysis of the relationship between fixed effects error component, farm size, caste dummy and labor market participation

Fixed effect error component	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Farm size	-0.535**	-0.341	-0.549**	-0.320	-0.585**	-0.276
	(0.22)	(0.22)	(0.22)	(0.23)	(0.24)	(0.24)
Low caste dummy(1)		0.319***		0.345***		0.348***
		(0.06)		(0.09)		(0.09)
Labor market participation (1=seller)			-0.046	0.047	-0.045	0.072
			(0.10)	(0.10)	(0.13)	(0.13)
Labor market participation (1=buyer)			-0.119	0.046	-0.177	0.065
			(0.09)	(0.10)	(0.13)	(0.15)
Labor buyer dummy*farm size					-0.009	-0.095
					(0.58)	(0.57)
Labor seller dummy*farm size					0.236	-0.070
					(0.40)	(0.40)
Constant	0.132**	0.005	0.185**	-0.033	0.194**	-0.046
	(0.06)	(0.07)	(0.08)	(0.11)	(0.09)	(0.12)
Number of observations	217	217	217	217	217	217
Number of groups	70	70	70	70	70	70
Chi2 statistic	5.92**	34.97***	9.10**	35.03***	10.35**	36.12***

Notes: Significance levels: *: 10% level, **: 5% level, ***: 1% level. Standard errors corrected for clustering at household level.

Table 7 shows that the IR remains and is strongly associated with caste discrimination even after controlling for Marshallian inefficiency and thus hypothesis H4 cannot be rejected. This indicates that caste discrimination and high transaction costs in land and labor markets rather than Marshallian inefficiency can be the most important explanations for the IR. Table 7 also shows that participation in the labor market did not eliminate the inverse relationship, demonstrating that participants in the labor market also faced adjustment costs (non-linear transaction costs) in this market.

We analyzed the land rental market participation of the households using double hurdle (Cragg) models. The results are shown in Table 8. A smooth adjustment in the land rental market implies that the coefficient on owned land should be close to -1 in the case of tenant while it should be close to +1 in the case of landlord in the truncated models. From Table 8,

we see that the coefficient on own land for tenants households in the truncated model is -0.126 and thus far from -1, while it is 0.765 and also significantly smaller than +1. This indicates that there are significant transaction costs limiting adjustment on both sides of the land rental market, but it is stronger on the tenant side of the market and thus, hypothesis H3 cannot be rejected. When including an interaction variable for caste and farm size, this variable became highly significant and with a positive sign showing that landless or very land-poor low-caste households face even higher transaction costs in the land rental market and access less land. This is probably related to a stronger fear that such households can claim the land they rent in in the spirit of the land-to-the-tiller policies.

Table 8 Assessment of the allocative efficiency of the land rental market

	Land rented in (Yes=1)				Land rented out (Yes=1)	
	Probit Models		Truncated models		Probit model	Truncated model
Owned land (ha)	-1.752***	-1.918***	-0.126**	-0.207***	1.213***	0.765***
	(0.23)	(0.28)	(0.05)	(0.06)	(0.16)	(0.09)
Male head dummy (1)	0.219	0.240	0.105*	0.123**	-0.234	-0.112
	(0.22)	(0.22)	(0.06)	(0.05)	(0.23)	(0.08)
Literate head dummy (1)	0.089	0.089	-0.085	-0.073	-0.077	-0.122*
	(0.21)	(0.21)	(0.05)	(0.05)	(0.18)	(0.07)
Number of adult males	0.215	0.238	0.191***	0.201***	0.139	-0.055
	(0.20)	(0.20)	(0.06)	(0.05)	(0.18)	(0.07)
Oxen holding	0.581***	0.580***	0.082***	0.084***	-0.663***	-0.137***
	(0.09)	(0.09)	(0.03)	(0.03)	(0.13)	(0.04)
Low-caste dummy (1)	0.724***	0.467	-0.154**	-0.247***	-0.397	0.369**
	(0.26)	(0.34)	(0.06)	(0.07)	(0.33)	(0.16)
Village dummy (1=Lahachok)	-0.375*	-0.352	0.064	0.077	-0.874***	0.256***
	(0.22)	(0.22)	(0.05)	(0.05)	(0.21)	(0.08)
Village dummy (1=Rivan)	-0.071	-0.038	-0.042	-0.015	-0.495**	0.308***
	(0.28)	(0.28)	(0.07)	(0.06)	(0.25)	(0.10)
Share of irrigated land	0.458**	0.539**	0.059	0.076*	-0.219***	0.006
	(0.20)	(0.21)	(0.04)	(0.04)	(0.06)	(0.02)
Caste *farm size		1.421		0.717***		
		(1.24)		(0.27)		
Number of observations	407	407	117	117	372	82
Chi2 statistic	245.7***	247.1***	73.1***	84.5***	102.5***	98.8***
Log likelihood of double hurdles	-81.35				-111.7	

Significance levels: *: 10% level, **: 5% level, ***:1% level and all continuous variables are in logarithms. Censored Tobit models for each side of the land rental market were estimated and tested against double hurdle models and the likelihood ratio tests favored the double hurdle models. The results of the censored Tobit model can be obtained from the authors upon request. We did not report (but included in estimation) the coefficients for variables like number of adult females and average distance to plot as these are not significant in all models. We did not report constants in the table to reduce the size.

We may now go back the farm size-productivity relationship and we show in Figure 1 the differences in productivity by caste and farm size. While there was no significant difference in productivity on owner-operated and rented in plots of low-caste households, rented in plots of high-caste households had significantly lower land productivity than owner-operated plots of high-caste households.

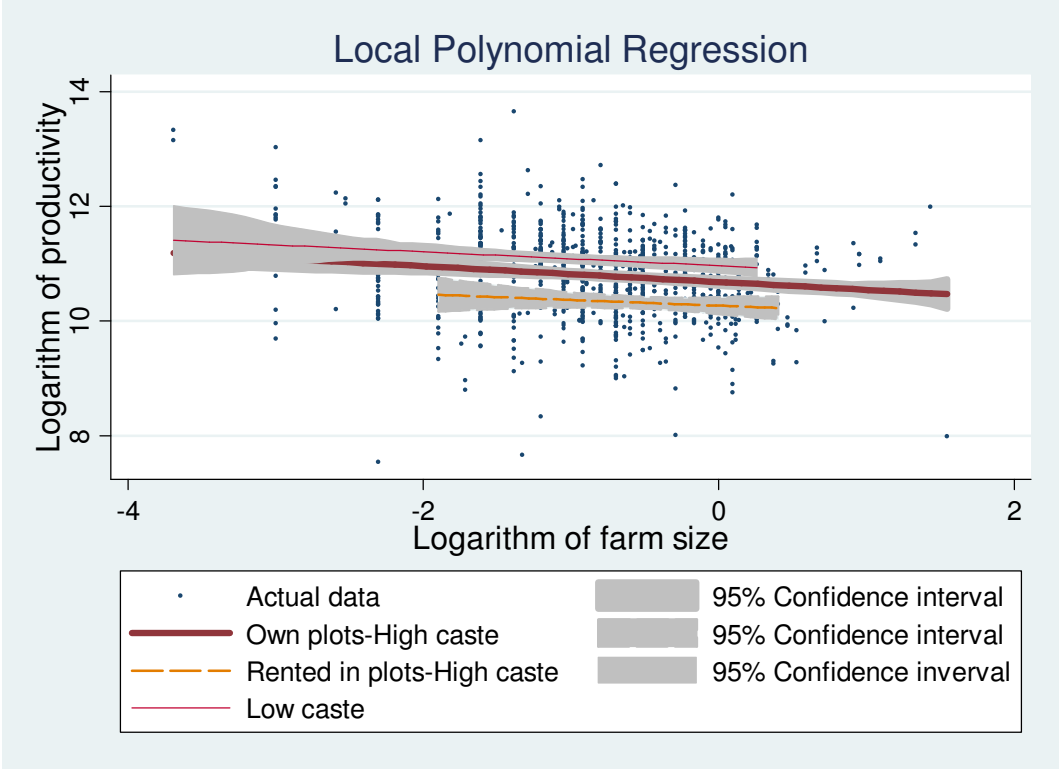

Figure 1: Analysis of the farm size productivity relationship using local polynomial regression

This leads to a query: why do many high-caste households still rent out land to other high-caste households even though low-caste tenants are more productive? The most plausible reason might be the fear of land loss due to the past land-to-the-tiller policy and this is also aggravated by the Maoists' strong favor for the same policy. Therefore, landlords want to minimize the risk of losing land by renting out to the households with lower social distance (Bhandari 2007).

Low-caste owner-tenant households had higher land productivity as compared to high-caste owner-tenant households even after controlling for farm size and other household and farm characteristics and adjustment for labor and land rental market participation. A strong and significant inverse relationship between farm size and land productivity was found for high-caste households. Low-caste households are land-poor; they apply more labor per unit of land,

and thus, they achieve higher land productivity also on rented in land due to their poorer access to off-farm employment and the transaction costs faced in the land rental market. Policies that can reduce the transaction costs in land and labor markets may reduce the level of caste discrimination and lead to more efficient resource allocation. In order to improve the efficiency of the land rental market, there is a need to remove the land-to-the-tiller policy, especially the provision that a tenant can claim the ownership right on a certain percentage of rented land. This will reduce tenure insecurity among landlords, and thus, increase tenants' access to land through the land rental market. This will also reduce conflicts between landlords and tenants. However, there is a need to redistribute land from less efficient to more efficient farmers, and this can be done peacefully by imposing a progressive land tax which would induce land sales by large land owners. Furthermore, the government should establish a land bank where a poor farmer can receive loan for purchasing land at a subsidized rate.

The findings that Marshallian inefficiency and the inverse farm size productivity relationship are stronger for high-caste households, while low-caste households are found to have higher land productivity in general, might be due to their lower opportunity cost of labor. These findings raised the question: How are these differences between low-caste and high-caste households related to differences in investments and intensity of production?

In order to answer this question, we assessed the impact of caste discrimination in resource and market access on investment and intensity of production (Aryal and Holden 2011a). In Nepal, resource poverty is one of the consequences of caste discrimination. Low-caste households are therefore land-poor and this can have direct effects on their willingness and ability to invest in their land. However, caste discrimination in the labor market and in the education system may also affect the opportunity cost of labor as well as ability to invest in human capital. Higher land scarcity combined with lower opportunity cost of time due to labor market discrimination may cause low-caste households to concentrate more of their investments on their limited land resources unless they are too poor to invest. As we linked the caste issue with poverty, the major research question is whether or not low-caste households invest more than high-caste households. We therefore studied how the investment and intensity of production differ between high-caste and low-caste households by analyzing the differences on short term investments - in terms of fertilizer and manure use- and more long term investments – in terms of terrace maintenance expenses and intensity of cropping. Table 9 summarizes the major results of the empirical analysis.

Table 9 Determinants of the probabilities and level of fertilizer, manure and conservation investment

	Fertilizer		Manure		Conservation	
	Probability	Level	Probability	Level	Probability	Level
Low-caste dummy(1)	-0.253	-0.212**	0.519**	0.028	-0.032	-0.049
	(0.17)	(0.09)	(0.23)	(0.13)	(0.16)	(0.08)
Plot size	0.033	-0.455***	0.100	-0.707***	0.368***	-0.701***
	(0.07)	(0.03)	(0.08)	(0.05)	(0.07)	(0.03)
Farm size	0.069	0.155**	0.111	-0.064	0.086	-0.043
	(0.12)	(0.07)	(0.17)	(0.09)	(0.12)	(0.06)
Male head dummy (1)	-0.108	0.020	0.093	0.561***	0.177	0.565***
	(0.11)	(0.06)	(0.15)	(0.09)	(0.11)	(0.05)
Male labor per ha	-0.041	0.104**	0.061	0.205***	0.214**	0.105**
	(0.09)	(0.05)	(0.12)	(0.07)	(0.09)	(0.04)
Female labor per ha	0.152	-0.047	0.045	0.212***	-0.195**	-0.027
	(0.10)	(0.05)	(0.13)	(0.08)	(0.10)	(0.05)
Distance to plot	0.107**	0.027	-0.411***	-0.246***	-0.140***	-0.033
	(0.05)	(0.03)	(0.06)	(0.03)	(0.05)	(0.02)
Livestock owned	-0.135***	-0.052***	0.249***	0.089***	0.094***	0.027
	(0.03)	(0.02)	(0.04)	(0.03)	(0.03)	(0.02)
Off-farm access dummy(1)	0.051	-0.085	0.004	0.062	-0.275***	0.069
	(0.11)	(0.06)	(0.14)	(0.08)	(0.10)	(0.05)
Labor market dummy (buyer)	0.304***	0.064	-0.024	0.047	-0.219**	-0.022
	(0.11)	(0.06)	(0.15)	(0.09)	(0.11)	(0.05)
Labor market dummy(seller)	0.089	-0.093	-0.037	-0.028	-0.010	0.008
	(0.13)	(0.07)	(0.18)	(0.11)	(0.13)	(0.07)
JCT (Land quality variables)	152.1***	24.8***	19.1**	15.9**	98.5***	34.5***
Number of observations	990	563	990	716	990	544
Number of groups	489	369	489	424	489	377
Chi2 statistic	205.1***	227.8***	88.9***	614.7***	144.5***	693.7***

Notes: Significance levels: *: 10% level, **: 5% level, ***:1% level. DH refers to double hurdle model. JCT refers to joint chi-square test of all land quality variables including slope dummies, soil type, soil depth, and irrigation status of the plot. All constants in the models are not shown to reduce the size of the table.

Table 9 showed that low-caste households are more likely to apply manure. The likelihoods to use fertilizer and to adopt conservation investment were not significantly different between low-caste and high-caste households. However, amount of fertilizer used was significantly lower among the low-caste households. Fertilizer use intensity was positively associated with farm size indicating that land-rich households invest in labor-saving inputs like fertilizer whereas low-caste households with relatively low opportunity cost of labor invest more in labor-intensive inputs such as manure. Hypothesis H5 that low-caste households are too poor to invest in their land cannot be rejected in the case of fertilizer use, while it is rejected in the

case of manure use. Households with access to off-farm employment were less likely to invest in land conservation. In addition, male-headed households, and households with more male labor endowment relative to ownership land holding, were found to invest more in land conservation. Low-caste households were found to have higher cropping intensity as compared to high-caste households indicating that land-poor but labor-rich households intensify their production by growing more crops per year (Aryal and Holden 2011a). These also indicate that land-poor households rely primarily on intensification when it is difficult to expand agricultural land and thus, hypothesis H6 cannot be partly rejected.

The major limitation of our study was that we were unable to analyze explicitly the effects of the Maoist war on tenure insecurity because of the high risk and inability to ask such questions as our survey took place during the Maoist war.

5. Conclusion and Recommendations

Low-caste households remain poorer than high-caste households in terms of income as well as holding of other economic assets such as land and livestock. Furthermore, due to a lack of education, family networks and the presence of caste-based discrimination, low-caste households participate less in regular off-farm employment. The initial distribution of land is not only inequitable but also biased against the low-caste households. Moreover, the effect of caste on the land productivity differential is explained by historical, socio-economic and political structure that shaped the differences in access to land and regular off-farm employment. Limited opportunities outside the farming sector have forced low-caste households to concentrate their labor on farming on their own small plots or the limited land that they rent in.

The productivity differential between high-caste and low-caste households remains significant even after the participation of households in the land rental market. An inverse farm size–productivity relationship is observed. High transactions costs in the land rental market and caste discrimination are the main identified causes of an inverse farm size–productivity relationship in the study area. This result suggests that the land rental market needs to be improved and caste-based discrimination reduced in order to enhance land productivity. In addition, this result calls for land redistribution to enhance land productivity.

Many high-caste landlords are found to have rented out land to other high-caste households in spite of the fact that low-caste tenants are more efficient. This indicates that the inefficiency of share tenancy is more likely a consequence of the Maoist war and the land-to-the-tiller

policy that they advocate rather than the inherent difficulty of enforcing contractual terms under share tenancy. The land-to-the-tiller policy and the Maoist's focus on a similar policy have created tenure insecurity among landlords, which might have also influenced the investment in land conservation and intensity of production. However, we did not test this due to data limitation.

Based on this, three major recommendations are made:

i. **Land redistribution**: Our finding of the inverse relationship between farm size and land productivity validate a need for land redistribution. This is necessary because improving the land rental market alone cannot rectify the fundamental inequity arising from the unequal distribution of land throughout history. Following changes are recommended for successful land redistribution in Nepal.

Changing ceilings of ownership land holding

If a household owns more land than the ceiling fixed by the existing law, the land over the ceiling should be taken by the government without any compensation and distributed to the landless. But if a household owns land up to the ceiling fixed by the existing law, that household should be allowed to rent out land without any fear of losing ownership of such rented land. The provision that tenants can claim ownership rights should be removed because this does not lead to the equitable distribution of land but distorts the land rental market. If a household possesses land within the provisions of the existing law but more according to the forthcoming land law, the household must be compensated at a given rate for its loss of land due to the new regulation. Before redistributing land, a complete list of landless households must be made and verified by the special committee in order to avoid the political capture of the distributed land by the cadre of major political parties. There must be transparency and accountability in the land allocation process so that the possibility of political or elite land-grabbing are fully checked.

Progressive land tax

Due to low land tax, many households own land just for social status rather than for farming. Increasing land tax may induce land sales by large landowners. Redistribution of land through market rather than administrative process without compensation could be a more peaceful approach to achieve socially desirable land distribution without sacrificing efficiency in production.

Establish a land bank

As land sales markets are very thin and credit markets are highly imperfect, it is not possible to achieve allocative efficiency through a land sales market. The introduction of a 'land bank' providing loans for land-poor households to buy land could be an option. Instead of paying 50 percent of the output to the landlord, they can pay it to the bank as a down payment on their loan.

Improve land administration system

To improve land administration, village level land authority can be set up for keeping a record of all landlords and tenants, their contract period and maintain regulations. Comprehensive computer-based land registry system should also be implemented wherever possible. Although there are data on individual land ownership, consolidated data showing land ownership by individuals in the whole country are still lacking. Without such a coordinated data system, there is the possibility that an individual can have land in different parts of the country and thus possesses more land than prescribed without the land administration having any knowledge thereof. Government should set a rule that an individual must inform the land authority of where he/she permanently resides, and about the land he/she owns in different parts of the country.

ii. **Improving the land rental market**: The change in household labor force and participation in off/farm activities, especially in remittance earning activities can change a household's ability to operate land and create a need for rental transactions. Under such a situation, restricting the land rental market leads to more fallowing or less intensive use of agricultural land. Therefore, setting clear rules for land tenancy transactions improves the efficiency of land use rather than abolishing land tenancy transactions. Nepal should learn from recent experiences in China and Vietnam, where the removal of land tenancy restrictions contributed in transferring land to more productive and land-poor farmers in a way that is more effective than what could otherwise be achieved with administrative redistribution of land (World Bank 2003). For improving land rental market following changes are necessary in present land laws:

Remove dual ownership of land

The land rental market in Nepal has been severely distorted by the implementation of the Land Act 1964, which provides for dual ownership of rented land for landlord and tenant.

This provision has increased tenure insecurity among landlords restricting the efficient functioning of the land rental market.

Remove the provision that a tenant can claim ownership rights on rented land

According to existing land law, tenants can claim half of the rented-in land if they till the land for three consecutive years under a formal contract. This made long-term land rental contracts more insecure for landlords, while short-term rental contracts provide fewer incentives for users to undertake land-related investment. In order to make long-term contracts feasible, providing a higher level of tenure security is critical.

Remove restrictions on the amount of land involved in tenancy transactions

According to the Land Act 1964, a tenant household can rent in only 2.7 ha in the Terai region, 1.5 ha in the hills and 1.02 ha in the Kathmandu valley. Such restrictions should be removed to ensure efficient functioning of the land rental market and to enhance landless households' access land.

Increasing tenure security

Past land reform measures weakened the property rights of landowners by the provision that rented land should be divided between landlord and tenant. Due to this, tenants are only interested in taking benefit through the expropriation of land under tenancy rather than taking advantage through increasing productivity and market transaction. As a result, tenants are not able to gain access to more land because landlords fear renting out land.

iii. **Reduce caste-based discrimination**: There is a need to address the sources of caste discriminations. The constitution has already abolished caste discrimination. Therefore, awareness in the society should be intensified by providing free education to the poor, especially for low-caste people. Access to education and training programs can improve their long-term income and hence enable them to buy more land. In addition, special land reforms targeting Dalits can be carried out as they are among the very poor and landless. As Dalits have become more aware of their rights recently, one cannot deny the possibility of a Dalit uprising as in India. Therefore, it is better to investigate feasible options for land reform, as was done in the case of *Kamaiya* (bonded labor) system in Nepal (Hatlebakk 2007).

Overall, land reforms need to be integrated with the overriding objective of poverty alleviation and increasing productivity rather than radicalizing it. Structure of the society

including caste discrimination, access to land and other markets, and caste-related social exclusion need to be analyzed carefully to design a policy that can address the problems associated with the land tenure system in Nepal.

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