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POLICY RESEARCH WORKING PAPER

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# Research on Land Markets in South Asia

## What Have We Learned?

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What have we learned about land markets in South Asia — about land reform, land fragmentation, share-cropping, security of tenure, farm size, land rights, transaction costs, bargaining power, policy distortions, and market imperfections (including those associated with gender)?

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## Summary findings

Faruqee and Carey review the literature on land markets in South Asia to clarify what's known and to highlight unresolved issues. They report that:

- We have a good understanding of why sharecropping persists and why it can be superior to other standard agricultural contracts. We have less understanding of what determines the relative efficiency of sharecropping in different environments and why other apparently superior contractual relationships are rare.
- Insecure rights to land adversely affect production and investment incentives in areas outside of South Asia, but in South Asia strong evidence linking investment and rights to production is scarce.
- An inverse relationship between farm size and output per unit area is a recurrent feature in data from South Asia, apparently related to land-labor interactions.
- Although small farms seem to be more efficient than large ones, small farmers have trouble raising their profitability and enlarging their holding, largely because of credit constraints but also because of poverty and policy that discriminates against them.

- Misguided land reform in the past has made tenancy unattractive to landowners, so large capital-intensive farms have developed. Political economic analysis is needed to explain the failure of past land reform, as well as distortions in agricultural input and output markets in South Asia.

- Land fragmentation (as distinguished from farm size) has caused productivity losses. Those losses have not been quantified and the reasons fragmentation persists are poorly understood.
  - Transaction costs are a significant impediment to functioning land markets. In South Asia, transfers of land rights are complicated by lack of explicit title to land, and by informal and customary rights.
  - One pressing research problem is gender discrimination, an important factor in land market imperfections — especially (within the household) the separation of land management and its control.
- Research needs include more systematic regional comparisons, the use of more panel data, and an investigation of how agricultural productivity is affected by gender problems and land fragmentation.

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**Research on Land Markets in South Asia:  
What Have We Learned?**

Rashid Faruqee and Kevin Carey

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## Land Markets in South Asia: What Have We Learned?

### Section I: Introduction

Our goal in this paper is to distill the vast literature on land markets in South Asia into what we see as the key lessons, and the major unresolved issues. Our focus on the land market arises because the land market is central to three desirable policy goals in agriculture: improving the efficiency of the agriculture sector, raising the return to agricultural labor, and facilitating exit of those who will be more productive elsewhere in the economy from the agriculture sector. Access to land is highly correlated with poverty throughout South Asia. A review of the experience throughout Asia leads Quibria and Srinivasan (1993) to conclude that:

In summary, it would appear that among those who cultivate land, poverty arises more from an unequal distribution of operational holdings rather than from lack of access to new technology, irrigation, fertilizers, etc. on the part of small farmers and tenants. (page 52)

The return to labor in agriculture has to be increased since a significant proportion of the rural poor are agricultural laborers or small peasants, a large proportion of whose incomes is derived from supply of family labor to their own farms or to the local labor market. Small peasants and the landless require the means to move up the economic ladder, and land is essential to this mobility. In the Pakistan Integrated Household Survey of 1991, 56 per cent of agricultural laborers were classified as poor, while 44 per cent of tenants were thus classified. These groups combined accounted for 29 per cent of all rural poor in Pakistan. In India, agricultural labor households accounted for nearly 46 per cent of all rural households below the poverty line in 1988, while forming a 31 per cent share of all rural households. These households accounted for 60 per cent of total unemployed person-days.<sup>1</sup>

On the other hand, over time labor has to be shifted away from agricultural to more productive non-agricultural occupations. Poverty reduction and labor mobility require skill accumulation, and efficient entry and exit from agriculture requires an active and efficient land market. Skill accumulation in turn means that incomes from cultivation and agricultural labor have to grow and the crucial role of a well-functioning land market in this dynamic process can hardly be overemphasized. In effect, the land market should solve a land-labor matching problem, coupling the labor of landless laborers and tenants with land that they can operate to generate remunerative economic opportunities.

The importance of the land market is often stressed in cross-country comparisons of economic performance. Land reform and/or a pre-existing equitable land distribution are seen as key ingredients of dynamic agricultural sectors and in turn of the overall success of the high-performing Asian economies.<sup>2</sup> On a within-region basis, there also appears to be an association between land distribution and efficiency. It has been suggested that the difference in performance between Punjab, Pakistan and Punjab, India can be ascribed to differences in barriers to access to land, with more equitable land distribution indicating easier access to land in India (Sims, 1988). Gaynor and Putterman (1993) use evidence from China's decollectivization to show that more

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<sup>1</sup> See Quibria (1994), Chapter 2.

<sup>2</sup> See World Bank (1993).

egalitarian land redistribution was associated with higher productivity. Of course, this does not imply that land redistribution is a pre-condition for improved agricultural performance; land distribution is perhaps best interpreted as a proxy for access to land.

It is worthwhile briefly discussing what a theory based on well-functioning markets would say about the significance of access to land. The demand for agricultural land is relatively straightforward, and should depend principally on land quality and the local (not individual) endowment of complementary inputs to agricultural production: labor, managerial services, draft power, and water, to name the most important. In the presence of markets for these services, agricultural transactions would be simple to characterize. Someone would rent the required services on appropriate spot markets and combine them with land to produce agricultural output. In a competitive market with constant returns to scale, no particular significance would attach to land-ownership or the size of an operated holding. Factor proportions and marginal productivities would be equalized and there should be no relationship between individual factor endowments and efficiency.

We have good reason to believe that the allocation of land does not take this form in practice. While one can quarrel with the details of any individual study, there is a surfeit of evidence pointing to systematic variations in efficiency of land use across contract types, allocations of rights, size and composition of holding, and gender. These outcomes in turn can be collectively traced to a list of sources such as missing markets, transactions costs, asymmetric information, politico-economic and sociological influences. In our discussion, we attempt to impose some structure on these outcomes and sources; this is organized around (an of course somewhat arbitrary) division into eight broad topics.

## **Section II: Outcomes and Source of Imperfections**

*(1) We have a good understanding of why sharecropping persists and why it can be superior to other standard agricultural contracts. We have less understanding of the determinants of the relative efficiency of sharecropping in different environments, and of why other apparently superior contractual forms are rarely observed.*

For any plot of land, we can think of three ways the plot can be operated: owner-operation with family or hired labor, lease, or sharecropping. Many studies find an efficiency loss in sharecropping relative to owner-operated plots [Shaban (1987), and Binswanger, Deininger, and Feder (1993)]. This likely arises from the classic inefficiency of the share contract (with imperfect monitoring) versus the fixed rental contract or full ownership. The apparent inefficiency of share tenancy was a major motivating force behind land reforms all over Asia (Otsuka, 1993). However, the use of sharecropping can be rationalized from the perspective of a principal-agent model, where the principal (the land-owner) can observe the output but not the labor supply of the tenant. In this case, fixed wage employment would not provide the agent with any work incentives, while fixed-rent lease would result in the agent absorbing all the risk. The type of contract that actually emerges would depend on the tradeoff between the need to provide incentives and share risk, and the possibilities are summarized in Table 1.

**Table 1: Optimal Contract By Type of Environment**

Ability to Monitor and Enforce Effort?	Risk Sharing?	
	Yes	No
Yes	Fixed Wage	Fixed Wage
No	Sharecropping	Lease

Note: These results apply for the standard formulation of the principal-agent problem with a risk neutral principal and a risk-averse or risk neutral agent; for an exposition that delivers these results, see Mas-Colell, Whinston, and Green (1995).

It is important to note that we use the term sharecropping in the broadest sense to mean any scheme which makes the agent's compensation a function of output; this clearly encompasses far more than the linear 50:50 sharing rule which is usually observed. In addition, a principal agent model will not necessarily deliver the result that "too little" effort is supplied in the sharecropping case; the concept of efficiency that applies in these models also differs greatly from its usual empirical counterpart.

In practice however, this framework is too simplistic to explain features of agricultural markets; a more appealing general framework is outlined in Eswaran and Kotwal (1985) from which we borrow in this section. Two problems in particular with the analysis can be highlighted. First, the ability to supervise is rarely of the "yes or no" form presented above; typically the principal does have the ability to supervise, but with some cost. Second, some evidence shows that risk-sharing *per se* (as opposed to access to financial markets) has little influence on contracts in practice, and provides little rationale for the 50:50 contract (or the limited range of standardized share contracts) that is usually observed.<sup>3</sup> An additional possibility is that the sharecropping contract is chosen not because it is the best contract, but because of legal constraints on a more efficient contract. We discuss this further below.

Contractual structure in agriculture is determined by the interplay between two offsetting forces: family farmers are more able to monitor and supervise labor supply, while land owners have better access to financial markets and may also have better managerial skills. One important source of managerial skills arises from land-owners' knowledge of, and access to, the agricultural subsidy regime, price policies, and support services (research and extension) of the government. South Asian countries have had elaborate agricultural intervention policies in the past that are now being dismantled; this may be an important source of changes in endowments and dynamics in the framework we outline.

Tenants possess a supervision advantage, while landlords have a managerial skills advantage. Both therefore are subject to moral hazard, because they will underprovide their non-marketed skill in any arrangement that does not face them with appropriate incentives: fixed wage employment will cause underprovision of labor supervision, while fixed-rent lease will cause underprovision of management. Eswaran and Kotwal propose that the optimal solution to this problem may be a partnership between the landlord and tenant in which each share the proceeds from the land. However, this partnership, according to them, suffers from the Marshallian efficiency loss, so the actual outcome depends on the relative endowment of supervision and managerial skills as well as the costs of the sharecropping contract. The likely outcomes in this

<sup>3</sup> Sharma and Dreze (1990) argue that the 50:50 shares are not as puzzling as many people think. Hurwicz and Shapiro provide a model in which 50:50 sharing is optimal.

case are summarized in Table 2. The general principle is that the supplier of whichever input is particularly important be made the residual claimant, so that when management is relatively important, we should see the fixed wage contract, and when supervision is relatively important we should see the fixed rental contract. Sharecropping emerges when there is a need to make both parties residual claimants, particularly when relative endowments of *both* types of skill are low.

**Table 2: Optimal Contract By Relative Efficiency of Landlord and Tenant**

Tenant's Relative Managerial Skills	Landlord's Relative Supervision Skills	
	Low	High
High	Lease	Fixed Wage or Lease
Low	Sharecropping	Fixed Wage

Source: Eswaran and Kotwal (1985)

The implications of this analysis for the relative efficiency of different types of contract are again not clear-cut. Since the sharecropping contract allows a better combination of management and supervision than other contracts under certain circumstances, it may actually be more efficient than the other contractual forms. This can explain why there have been different findings on the efficiency on contracts from different regions. It would be extremely useful if variations in the relative efficiency of sharecropping across regions could be linked more closely to variations in the characteristics of those regions. It is possible that, depending on the environment, investment in land by the owner (as well as work effort) can be constrained by the type of contract governing the operation of the land; for instance a landlord may be reluctant to adopt an innovation on sharecropped land (Stiglitz, 1986), because it may adversely affect the labor supply decision of the sharecropper, from the landlord's perspective.

Agricultural policy reforms have changed the comparative advantages of landlords and tenants, and will have predictable influences on contract choice according to this model. Policy distortions (subsidies, support prices) made sharecropping more attractive; as these distortions are removed, sharecropping should diminish in importance.

Eswaran and Kotwal show that a sharing contract can be optimal within a broad parameter range. However, they assume that the share contract is linear and based only on the output from the plot in question. Even if one accepts that the linear contract has obvious convenience, one can still wonder why the contract is not linked to other variables that would provide sharper incentives for the tenant. For instance, tenants could receive additional payment for production in excess of average output on the landlord's plots or in the village as whole. In financial and legal firms, the compensation of each partner is based on total firm output, with bonuses for exceptional performance. However, since tenancy contracts tend to be renewed annually, a comparison with output on other plots is surely implicit on the decision whether or not to renew the contract. This of itself does not improve the efficiency of the sharecropping contract; for if output was higher on fixed-rent plots, it would be hard to see why the share contract was adopted in the first place; while a comparison with other sharecropping contracts may eliminate inefficiency due a poor quality tenant, it need not eliminate the Marshallian inefficiency inherent in the contract.

Bell, Raha, and Srinivasan (1995) find that matching behavior by landlords and tenants mitigates, but by no means eliminates, the agency problems in sharecropping contracts. This is indicative of a more general principle that informal or implicit arrangements may significantly alter



the nature of the observed contract. This in turn suggests a role for regional factors in the performance of the sharecropping contract. Indeed, this exercise is undertaken in a limited, qualitative sense by Bell *et al* (1994) in a comparison of the efficiency of sharecropping in Bihar and Punjab, India's poorest and richest states. They find that the sharecropping contract performed no worse (relatively) in Bihar than in Punjab; it clearly would be useful to expand this comparison to cover more regions, allowing a more systematic investigation.

It should be noted that the fixed-rent contract which is normally thought of as "efficient" is not without problems either. An important practical consideration in lease contracts is the question of whether the rent is due in advance or can be paid in arrears.<sup>4</sup> If the rent is due in arrears, then the tenant is effectively leveraged, opening the way for the imperfections that leverage can entail. To establish this point, it is necessary to clarify the precise details of the contract in states of the world where the tenant can't pay the agreed-upon rent. If the landlord becomes the residual claimant in this case, the tenant faces distorted incentives on two fronts. First, if the tenant has some choice over the riskiness of production processes, he has an incentive to choose more risky projects, because he reaps the gains when the process is successful while the landlord bears the loss when the project fails. Second, (and perhaps more plausible in the South Asian context), if the tenant knows that exogenous conditions are going to make it difficult for him to meet the rental payment, effort will be undersupplied in such situations. If bad weather or pests mean that crop output will be low, and most of the output is going to landlord in the form of rent anyway, then the tenant faces poor incentives in this case. The "inefficient" sharecropping contract offers better incentives to the tenant in both cases. This suggests that in the presence of default risk and constraints on payment in advance, sharecropping may be more likely to occur. Shetty (1988) presents a model of limited liability of tenants where sharecropping does indeed emerge as a solution to these problems.

*(2) Theory and evidence from elsewhere suggests that insecure rights to land adversely affects production and investment incentives. However, strong evidence linking rights to production and investment is scarce for South Asia despite significant regional variation within the sub-continent.*

There is a reasonable belief that insecure title to land or lack of security of tenure will affect production and investment incentives. Investment in the land will almost certainly not be efficient when title is insecure; an additional problem is the diversion of resources into legal disputes about a plot of land. However, operational differences arising from tenure status may be quite small: even tenants who lack security of tenure may have good reason to believe that they will retain their plot for a substantial period of time, due to an ongoing relationship with the owner or informal rights as a member of a community. Thus *de jure* differences in tenure status may have little *de facto* significance. Communal land rights systems also often function quite well in providing effective security of tenure without having a formal system of land titles.

Empirical work on tenure and efficiency has been plagued by a basic identification problem. The nature of this problem is nicely stated by Carter and Olinto (1996):

...the property rights regime under which an individual is observed to work is itself an endogenous variable, chosen by the individual who must invest real resources

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<sup>4</sup> The most common type of arrears contract specifies that the rent is payable in kind *after* a given harvest.

to secure and maintain the legally recognized property rights to the land. The property rights regime is thus likely to be systematically related to a number of productivity relevant characteristics which are notoriously hard to measure.

Regardless of the interpretation of the evidence, governments have often been tempted to regulate the land rental market, with the goal of providing security of tenure for tenants or eliminating share tenancy. When not carefully designed, these policies have had the perverse effects outlined below, but there have also been successes. At the same time, carefully designed empirical studies have improved our understanding of the links between tenure and efficiency.

While a static productivity differential can be difficult to interpret, there is evidence that an improvement in land rights is associated with greater efficiency. Lin (1992) shows that the dominant source of output growth in Chinese agriculture during 1978-1984 was the change from collective-team large farms to individual household-based farming (despite the often small size of household plots). Feder *et al* (1988) demonstrated a link between title ownership on the one hand, and access to credit and land improvements on the other. Strong evidence for the South Asian case is provided by Banerjee and Ghatak (1996). Using district-level data, they show that a program of voluntary tenant registration, with registration giving the tenant certain rights, had dramatic effects on productivity in West Bengal from the late 1970s onwards.

The evidence that land rights may affect investment incentives is more speculative, though there are abundant theoretical reasons to believe that this is the case. Besley (1994) presents three reasons why insecure land rights should affect investment incentives: fear of expropriation, credit access and collateral (the key mechanism in the Feder *et al* study), and lack of trading opportunities. Besley presents evidence that land rights are positively related to investment in two samples from Ghana. Lack of trading opportunities deserves further discussion given our focus on the land market. The idea here is that improved land rights make it easier to sell or rent land; since investment in land raises the value of land upon sale or rental, a farmer with better land rights and anticipating the possibility of sale or rental will be more likely to invest in improvements to land. This argument would apply equally well to the functioning of the land market given land rights. A farmer anticipating the possibility of having to dispose of land is more likely to undertake value-enhancing investments in land if the land market will appropriately reward him for these investments upon disposal. Besley calls this the "gains from trade" view, and such gains are a clear consequence of a well-functioning land-market.

As we noted earlier, evidence of the influence of land rights on investment is scarce in the South Asian case; without such evidence we cannot weight the relative importance of land rights and wealth in constraining investment. Besley (1994) notes an additional possibility: that land rights may be endogenous. Farmers may invest in land over which they have insecure title, in order to solidify their claim. If this is the case, farmers may find it difficult to make such investments if their incomes are low, weakening their claim to title. Such behavior is particularly likely under community ownership of land. Since community ownership usually comes with inability to transfer, this might be seen as reducing investment. However, within-community allocation mechanisms may be sufficient for most purposes.

Recent studies in Latin America have provided some evidence on the relative importance of the different channels linking rights to productivity. These studies focus on land-titling programs which of course is not the only kind of land rights policy that could be considered. Panel data evidence from Honduras (Lopez, 1996) and Paraguay (Carter and Olinto, 1996) suggests that by

reducing the fear of expropriation, titling programs have strong effects on land-specific investments. Titling programs also appear to reduce credit constraints, but this effect is more selective. Farmers who are on the margin of access to credit within the existing structure of capital market imperfections are helped by gaining title to their land, but the more severely constrained farmers are not.

It is important that investment be interpreted broadly to include the notion of sustainability; to the extent that ongoing deterioration in the quality of a field can be traced to private actions (as opposed to externalities such as drainage), this should be considered as disinvestment in the field. South Asian agriculture is experiencing an array of environmental problems and we have little evidence on the role that the allocation of land rights plays in these problems.

*(3) The existence of an inverse relationship between farm size and output per unit area is a recurrent feature in data from South Asia. The source of this relationship appears to lie in land-labor interactions.*

The most common view of the difference between small and large farms is the “inverse relationship” between farm size and productivity: that yields on small farms are higher than yields on large farms, giving a negative relationship between land size and productivity. While there are well known problems with using yield as a measure of efficiency, the relationship is also typically found in cross-sectional comparisons of net profitability. Even this approach does not directly get at the question of economic efficiency; Binswanger (1994) finds a *direct* efficiency relationship between size and performance because he uses a net profitability measure that takes account of the different production techniques chosen by small and large farmers. Since large farmers can diversify risk more easily than small farmers, they are less risk averse and come closer to maximizing expected net profitability than small farmers. Despite this, levels of risk in the farmers’ environment in Binswanger’s sample were rarely if ever sufficiently high that large farmers actually outperformed small farmers. This is consistent with the relationship usually found in the data.

The key to the size-efficiency relationship is generally believed to lie in hired labor, though Benjamin (1995) presents indirect evidence pointing to mismeasured land quality. In the absence of perfect monitoring, hired labor will have an incentive to “shirk”, i.e. reduce work effort. The employer cannot respond to this by reducing the wage, either because of a low wage would reduce effort through nutritional or morale considerations, or because the worker has an outside opportunity (usually migration) which sets a minimum reservation wage which the employer must provide. Thus farmers will prefer to rely on family labor, which can be supervised at low cost. Small family farms will thus be most efficient.

If this was the sole consideration determining farm size, the market solution is likely to be an operational size holding which can be cultivated by the family. Nevertheless, family labor supply will be unlikely to meet farm labor demand at all times of the year, notably harvest time. Thus casual or seasonal labor will be required at such times. The flexibility of the rural labor supply will therefore be an important influence on the efficiency of the agriculture sector. If the outside opportunities of rural laborers are sufficiently remunerative, such labor may be difficult to find. Cultural factors can further constrain rural labor supply by requiring that women can only work on their own family farms. The prevalence of peak labor shortages and gender restrictions should therefore influence the farm size adjustment decisions of households. An active land

market is essential in facilitating this size adjustment, and the outcome we would expect to see would be moderate size family farms – sufficiently profitable to induce family members to remain on the land, but not so large as to create a large reliance on inadequately supervised wage labor.

It seems unlikely that South Asia, with its large numbers of extremely small farms can be meeting this benchmark. Thailand, by contrast, seems to deal with the peak labor shortage issue in a more efficient fashion. One study (World Bank, 1983) estimated that virtually all of the seasonal increase in employment in Thailand's agriculture sector was accounted for by unpaid family workers, who enter and exit the labor force in conjunction with labor requirements in agriculture. Thus rural labor supply in Thailand is closely matched to the demand for agricultural labor – a match that is facilitated when land is operated on an appropriately adjusted family farm basis.

*(4) Despite their greater apparent efficiency, small farmers face great difficulty in raising their profitability or expanding their holding size. Credit constraints appear to be the biggest single obstacle but a discriminatory policy regime and poverty have also played a major role.*

If smallholders are more efficient than farmers with large holdings in most circumstances, the question then is: why does the land market not re-allocate land to farmers with smaller holdings? We can also ask why marginal farms continue to exist throughout South Asia: one would expect a marginal farmer to either expand his plot or exit the agriculture sector completely. It is often stated that smallholders face a daunting array of problems; from inadequate farm size, access to inputs and services etc. Each of these claims requires careful scrutiny. For instance, while small land size is typically mentioned as a constraint on productivity, it cannot be assumed that small farms are intrinsically not viable. The case of China provides a compelling counterexample to the view that small farms *per se* constrain the performance of agriculture.<sup>5</sup>

The leading constraint faced by smallholders is access to financial markets. The evidence from South Asia indicates while there was a vast expansion in institutional credit provision to agriculture, little of this credit reached smallholders and most disbursement is concentrated on very large farms.<sup>6</sup> This is typically attributed to difficulties in collateralizing holdings with insecure title (transfer rights), or smallholders' inability to appropriate the rents from rationed credit. It is smallholders' lack of access to financial markets that underlies their greater degree of risk aversion in Binswanger's study. Binswanger finds that the inability of smallholders to diversify risk is manifested in the choice of non-profit maximizing portfolios; in this sense, smallholders are less efficient than farmers with large holdings. An increase in the assets of smallholders (e.g. land) would enhance their ability to absorb risk, and would improve their efficiency. This argument has been used to support the case for land reform but of course other policies (such as improved credit market access) could have a similar impact.

Smallholders would likely face difficulties in access to credit even in a credit market operating without institutional or government failure. Lenders will face high transactions costs in dealing with smallholders, and lenders will be generally reluctant to lend to marginal farmers because of seasonality and cross-section correlation in default risk. In practice, smallholders will need to self-finance projects or at least take substantial equity participation in the project; since

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<sup>5</sup> See Binswanger (1994) and Lin (1992).

<sup>6</sup> For India, see Binswanger and Khandker, 1993. For Pakistan, see Malik.

there is no guarantee that the most able farmers will have such equity available, an inefficiency will emerge. Credit market imperfections can be overcome by interlinked transactions. Bell and Srinivasan (1989) find that interlinked transactions are an important characteristic of agriculture even in commercialized Punjab, where the "feudal" view of such transactions is presumably least tenable. In particular, transactions between a farmer and the trader or commission agent to whom he sells his product were very common. Such arrangements may provide farmers with working capital or a reduction in risk; the nature and extent of these transactions warrants further study.

Lack of access to credit can be compounded by other imperfections. The agricultural land market may fail the basic test of an efficient market: that the price of land equal the discounted value of future agricultural profits. When this condition fails, the ability of smallholders to purchase land is called into question. Such farmers will need to access the credit market to finance land purchases, since they usually lack farm savings. They are thus relying on the future agricultural profits to pay back any loans they take out to finance land purchase. However, this strategy is undercut if some policy distortion makes the land more valuable to a large farmer than the debt-service burden that a small farmer running the land could sustain. The policy distortion becomes capitalized into the price of land, putting it beyond the reach of the smallholder. A related problem is that different farmers may discount profits at different rates, because credit market imperfections result in each facing different interest rates.

Within the realm of credit constraints, one can ask whether low assets and tenure insecurity or low agricultural prices have presented a greater impediment to investment. The case of China shows that generating increased agricultural incomes through higher output prices can itself be an important spur to growth, suggesting a link between *income* and investment. Economic theory in fact suggests that increasing incomes could greatly improve access to credit. This is because in credit-rationed environments, the wealth of potential borrowers is a key determinant of access to credit. As price policy reforms make it easier for small farmers to self-finance projects, the collateral constraint on farmers diminishes in importance. The question in this case is whether smallholders are better helped by providing them with more assets or security of tenure (via a land reform), or with higher incomes.<sup>7</sup>

It goes without saying that since small farmers are often poor farmers, they face constraints on many different fronts. In the Pakistan Integrated Household Survey of 1991, even amongst rural households classified as owner-cultivators, there was a poverty headcount of 30 per cent. In India for 1988, 32 per cent of all poor rural households were self-employed in agricultural occupations. This poverty is presumably associated with low levels of on-farm investment even in the presence of ownership rights. While of course we cannot say from a single cross-section whether the rural poor are chronically impoverished, the PIHS did find that the poor had significantly lower levels of education than other groups, suggesting that poverty tends to be highly persistent across time. The fact that the poverty measure is based on consumption (rather than income) also suggests that the households classified as poor in 1991 are highly likely to be classified as poor in other years as well. Thus small cultivators contain a large group of the permanently poor. This may imply that relatively straightforward poverty reducing policies (such as raising income) may be particularly effective in raising on-farm investment. Conversely, a

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<sup>7</sup> The question of agricultural incomes is particularly relevant since agricultural incomes are often squeezed in the short-term by economy-wide liberalization. In particular, input prices tend to rise and the real exchange rate appreciates, hurting the export-dependent agriculture sector. The impact of a land reform on investment incentives could thus be greatly diluted, at least in the short-run.

program of agricultural liberalization that reduces agricultural income, if only in the short-term, could severely constrain the investment response of smallholders.

A related area which ties together land and labor interactions as well as constraints faced by smallholders is that of land and demographic interactions. South Asia is generally characterized by large family size amongst smallholders and the landless.<sup>8</sup> This partly reflects the decision of resource-poor farmers with little access to financial markets to use family labor supply as the best route to increased income. However, large family size constrains human capital accumulation per head within the family, and so may damage the family's chances of rising out of poverty. In addition, inheritance problems are compounded, underlying the land fragmentation problem discussed below. Over the longer-term, we expect both family size and land-holdings to adjust in response to these and other influences.

A related question concerns the competitiveness of different types of farm in the liberalized environment. Shearer *et al* (1990) point out that the type of farm that has tended to emerge in the liberalized agricultural sectors of Latin America is the capitalized family farm; large enough to overcome capital market constraints but small enough to have efficient labor supervision. These farms tend to have high capital-land and capital-labor ratios and thus absorb little outside labor. Whether this reflects the truly efficient outcome or the continued existence of distortions that favor large farms is not clear.

A related point is that the traditional interpretation of the inverse relationship as reflecting a supervision constraint can be misleading in the presence of other constraints and imperfections. A particularly striking illustration of this possibility is provided by Kevane (1996). The key to his study is that he has data where wealth and landownership are not strongly correlated, so that he can disentangle the effect of wealth on agricultural production. He presents a model featuring imperfections in land rental markets, credit markets, insurance<sup>9</sup>, and labor markets, and shows that there is a possibility of a positive relationship between wealth or size and yields even when a supervision constraint alone would favor small farms. The mechanism is as follows: wealthier farmers have less need to engage in off-farm labor, so the amount of labor available for agricultural production is higher. However, because of rental market imperfections, they are unable to fully match this labor with additional land, so that labor input per unit land rises for wealthier farmers. He finds that the predicted positive relationship between wealth and productivity is indeed present in a village in Sudan.

Another example of how wealth can confound seemingly straightforward empirical implications comes from a study of institutional factors and agricultural productivity in two Chinese provinces. Yao (1996) treats tenure insecurity as an additional source of risk to farmers, so its impact on productivity depends on the ability of farmers to bear additional risk. This in turn varies with wealth, which suggests that the relationship between tenure insecurity and productivity and productivity will be weaker in wealthier areas. This finding is confirmed.

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<sup>8</sup> Lanjouw and Ravallion (1995) caution that the poverty-household size relationship cannot be properly interpreted without taking account of economies of size in consumption. With a plausible accounting for economies of size, the size-poverty relationship actually disappears for a household sample in Pakistan.

<sup>9</sup> The effect of insurance market imperfections is that farmers maximize expected utility with a risk averse utility function rather than expected profits.

This analysis suggests that we should be asking what it is about the set of imperfections faced by South Asian farmers that produces the inverse relationship and how various wealth variables (including size) interact with this set of imperfections. Given South Asia's enormous regional diversity, it might be possible to undertake a systematic evaluation of whether the size/wealth-efficiency relationship varies across regions in a manner consistent with the economic environment in those regions.

Finally, it is important to consider the other option available to small and marginal farmers besides expansion: exit from the sector. One would expect that marginal farmers facing persistent poverty by remaining in agriculture might choose to sell their remaining holdings and/or curtail agricultural labor in favor of activities in the rural non-farm sector, the urban sector, or abroad. Transactions costs (discussed below) may present important constraints on such decisions. The opportunities available in other sectors also play a role in this decision. South Asian countries are characterized by industrial sectors with low labor-absorption with consequent lack of urban employment opportunities, and have not experienced the striking transformation from agricultural to industrial economies seen in East Asia. The relative importance of outside opportunities, opportunities within agriculture, and land market constraints in the decision whether or not to exit agriculture is not empirically established.

*(5) Past misguided land reforms have made tenancy unattractive to landowners, leading to the development of large capital-intensive farms. A political economy approach is essential for understanding the failure of land reform efforts and distortions in agricultural input and output markets in South Asia.*

An important constraint on land-abundant households leasing their land to smallholders is actual or anticipated legal problems. It is widely believed that, fearful of land-to-the-tiller reforms, large land-owners have resorted to self-cultivation, perhaps with ill-secured sharecroppers on some land. Self-cultivation has been facilitated by incentives to mechanize provided by machinery and credit subsidies (See Binswanger *et al* 1993). This development is clearly of concern from an equity perspective. It is also of concern from an efficiency perspective, if small farm tenants are efficient users of land as the evidence indicates. Thus land reforms have worsened the position of those they were designed to protect. In addition, since the reforms took the form of "land to the tiller", those not tilling land i.e. landless laborers, were not helped by the reforms. By discouraging tenancy, the landless actually lost a means of upward mobility in the agriculture sector. Table 3 reviews the land reform record in various countries. The general point is that land reform efforts have had limited success, and the most frequently cited successful cases (Korea and Taiwan) had favorable initial conditions. Land redistribution has typically not been effective, and tenancy reform was often poorly designed.

**Table 3: Land Regulation in Various Countries**

Country	Key Provisions	Exemptions	Impact
Philippines	abolish share tenancy rent controls land ceilings	owner cultivated areas landlords could retain 7 ha	decline in share tenancy and emergence of leases Increased evictions Increased permanent labor
India	ownership ceilings prohibitions on tenancy rent controls	owner cultivated areas sub-division amongst relatives.	evictions increased permanent labor Varied by province (some success in West Bengal)
Sri Lanka	Landlord restricted to 25% in share tenancy		Decline in share tenancy and increase in concealed 50:50 arrangements
Bangladesh	ownership ceilings 5 year security of tenure Fixed-rent tenancy prohibited		High incidence of share tenancy
Pakistan	Maximum and minimum holding sizes Resumption of land above maximum by tenants regulation of tenancy contracts	Exemption for ownership of machinery	increased self-cultivation (particularly in Punjab) Enforcement of ceilings ineffective. Some improvement in conditions of tenants.
Thailand	Focus on establishing title to land land ceilings land purchases		slow progress in land redistribution

Source: Otsuka



A related effect of land reforms is that where tenancy has persisted, it has tended to be share tenancy rather than fixed rent tenancy. In cases where legal restrictions make eviction difficult, this creates a bias towards wage contract: it may be easier to fire a farm worker for poor performance than it is to evict a tenant for the same reason. Many employment contracts may in fact be share tenancy relationships (e.g. where the laborer is paid in kind from crop output). In addition, landlords may rotate sharecroppers to a different plot each year, to prevent them from establishing rights to a particular plot of land. The sharecropper faces very poor incentives under such an arrangement, and this is a case where the inefficiency of sharecropping is likely to be manifested. In these cases, sharecropping is practiced because the efficient fixed rent contract is not available. This may well underlie the empirical findings relating to the relative efficiency of sharecropping and owner cultivation. Repeated relationships can mitigate moral hazard problems in agricultural contracts. Legal restrictions may also have interfered with this role.

The apparent failure of past land reforms is indicative of the fact that large-scale land redistributions are often politically infeasible. This is not to say that all legal reforms in the land market have been a failure. Banerjee and Ghatak (1996) find that Operation Barga, a program of voluntary registration by tenants in West Bengal, has significantly improved agricultural efficiency. Registered tenants are given basic security of tenure; this could in principle worsen moral hazard problems, but Banerjee and Ghatak find that the dominant effect is empowerment – improvement in bargaining power – of the tenant. This empowerment is associated with greater efficiency. This indicates that limited, but well-designed, legal reforms can have a beneficial impact. It would be useful to establish whether other apparently modest reforms have had a similar impact.

South Asia features an asymmetry between small and large farmers in the political as well as the economic sphere. Indeed, it is access to political power that has upset the functioning of key markets (notably land and water) in South Asia, and markets cannot be studied in isolation from these political considerations. This is reflected in infrastructure provision (notably water), and access to inputs, subsidies, and support services. The interaction here is complicated, because land is a source of political power, and political power provides to means to enhance the return from land (as well as block attempts to reform the land market). The advantages which large farms enjoyed in the pre-reform agriculture sector could persist and translate into more pronounced land concentration in the post reform era. The likely dynamics of the post-reform land market thus merit special attention.

Policy distortions or market imperfections can create a bias towards large farms, allowing them to persist as such, despite their inefficiency. Several examples can be cited here. First, price policy or farm subsidies may favor larger farmers. Second, concentrated land ownership may reduce the amount of land available for sale at any time. A feature of Pakistan more so than other South Asian countries is highly concentrated land ownership and an associated “feudal” social structure. Large inefficient farms persist because their owners have little interest in profit-maximization. Land is instead held for political power or prestige, and, if sold at all, is sold in large parcels to other large landowners.

(6) *Land fragmentation, as distinguished from farm size, is a source of productivity loss, but these losses have not been quantified, and reasons for the persistence of fragmentation are poorly understood.*

It seems clear in principle that land fragmentation would lower productivity by raising transport costs between fields, and preventing the realization of economies of scale. Additionally, the hedges or other boundaries between plots may result in a significant loss of arable land. However, Binswanger (1994) cautions that the influence of fragmentation on productivity can be overstated. For instance, in the China example, average farm size is half a hectare, fragmented into an average of 9 plots. In addition, land fragmentation may be an insurance mechanism similar to the practice of growing several different crops. This argument was made by McCloskey (1976) in his discussion of fragmentation in English open fields and is also considered by Townsend (1994). The insurance example would indicate not that there is an imperfection in the land market *per se*, but that imperfections in other markets (specifically, lack of insurance markets) impact the land market. The inability to smooth consumption across time leads to income-smoothing instead (Morduch, 1995), with fragmentation as one income-smoothing mechanism.

However, it is doubtful that all land fragmentation is for insurance reasons. Inheritance rules and legal issues are also extremely important. Inheritance rules often call for equal division of land between heirs;<sup>10</sup> land can become further subdivided with each generation, and family disputes may tie up plots for years. It may be difficult to consolidate a farm within a family because one sibling lacks the means to buy out the others. Family members may be reluctant to come to an informal arrangement consolidating land use, for fear of losing their rights to the land, and a formal rental transaction may be limited by legal reasons. Consolidation by sale to someone outside the family is complicated by the right of pre-emption or right of first refusal which family members enjoy on inherited land. Equally important, transaction costs may inhibit the transfer of small plots, even when all parties would be willing to carry out the transaction. Finally, for reasons already outlined, land markets may be extremely thin. An offer to sell land may result in a large fall in the price of land; the opposite holds with an offer to buy.

Once we acknowledge the presence of transaction costs, then the past history of land distribution becomes relevant for understanding the current situation. There are a variety of reasons why a history of community land-ownership may have resulted in fragmented plots which has not been undone even if land rights are now allocated individually (Heston and Kumar, 1983). Plots of community land may have been fragmented for reasons of "fairness". Furthermore, if there were externalities arising from the size of community land, then plots may have been fragmented to increase their private cost of withdrawing from the community land system

Thus we have at least three distinct hypotheses explaining why land fragmentation persists – insurance reasons, legal disputes, and transactions costs – and little evidence with which to distinguish them. At the same time, it should be borne in mind that farmers may be using a variations in the package of rights associated with land to undue many of the negative consequences of fragmentation. Rights of way can reduce transport costs; space conserving boundaries may be agreed upon, and water allocations may be jointly determined by neighboring plots. The costs of fragmentation, regardless of its source, are also poorly understood.

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<sup>10</sup> It is not obvious that a fairness criterion would in fact call for an equal division. If fairness means equalizing expected utility, this can be achieved by different combinations of expected return and risk (and whatever other moments are relevant), which can correspond to different holding sizes.

*(7) Transaction costs are a significant impediment to the functioning of land markets. Transfers of land rights are complicated in South Asian land markets by lack of explicit title to land, and informal and customary rights.*

This hypothesis can be seen as either an independent hypothesis or as a byproduct of the others, which are indicative of substantial barriers to access to land in South Asia. However, recent evidence does point to some dynamism in South Asian land markets. Recent trends in Pakistan and India indicate that middle-sized farms are taking in land from those at each end of the distribution.

Transaction costs can be seen as inhibiting the demand for, or the supply of, land. By transactions costs, we include any cost directly associated with the purchase or sale of land, such as valuation and conveyancy fees, stamp duties, and costs of meeting legal requirements (transport costs, obtaining copies of forms etc). High transaction costs in the land market impede land from being acquired by its most efficient user unless initial conditions resulted in the most efficient user already operating the land. An important example here is the non-existence of formal title to land or lack of certainty regarding who has title to land, complicating land transfers. Disputes over land are particularly prevalent in the case of inherited land. Difficulties can also arise with land holdings that exist in a legal gray area, notably holdings below some legal minimum size threshold. If transaction costs are fixed costs, then they may inhibit the transfers of small plots. This may be part of the explanation for the persistence of land fragmentation.

As already mentioned, a thin land market may impose significant transaction costs on putative buyers or sellers. A variety of market imperfections may mean that an offer to buy or sell land results in a significant change in the price of land, rendering observed market prices meaningless for many farmers. Farmers may be reluctant to reveal their valuation of a potential purchase or sale for fear of adversely affecting their bargaining position. Finally, it may be that land sales are complicated by the package of rights that comes with the land; these include rights-of-way, post-harvest grazing rights, and water rights. The purchase or sale of land will then necessarily involve additional "stake-holders" in the transaction, raising costs and making the transaction more difficult to complete. When rights come in this form, it is important to establish what is the minimum bundle of rights necessary for efficient agricultural production, and how easily is this bundle transferred.

Informal rights should not necessarily be seen as an impediment to a well-functioning land market. Indeed, a potential problem relating to land rights in the liberalized environment is that the customary rights on which farmers depend may be eroded. South Asian agriculture has a considerable array of customary rights (many of which protect smaller farmers), which are not always recognized in common law. These customary rights include rights of passage, water rotation rights and access to water channels, and grazing rights. These rights provide favorable production and investment incentives, and a legal reform that fails to account for these rights could be very disruptive.

*(8) Land market imperfections have an important gender dimension. Particularly important is the separation of management of land from control of land within the household. A greater understanding of these issues is a pressing research problem.*

Our focus until now has been on the access of households to land. However, there is growing recognition of the intra-household inequality and the need to pay attention to decision-making at the individual level. Specifically, women often face worse circumstances than men within the same household, and women and men may make different decisions. It is well-known that day-to-day agricultural decisions are often made by women, and that women have a crucial role in land management. However, women often lack formal rights to the land they manage. Autonomy in decision-making does not translate into control over resources. For efficiency reasons alone, therefore, we need to focus on gender. In addition, poverty may be associated with women more so than men within a household, or with female-headed households, so for poverty-alleviation purposes, understanding the role of women is important. A closely related issue is wage-discrimination against women in the market for hired labor; once gender is playing some role in resource allocation in the household, understanding women's income sources is vital.

There is very little extant research examining how intra-household decision making affects production activity, and we view it as one of the major goals of the study to begin work in this area. In particular, there is a need for information on the equity and efficiency of intra-household allocations, their impact on productivity and growth, and the scope for gender-targeted policy interventions. The success of gender-targeted credit interventions in Bangladesh and Indonesia shows that the payoff from well-designed policies in this area can be considerable. In addition, given the small but persuasive evidence that an improvement in land rights is associated with improved efficiency, the gender aspect of land rights deserves considerable attention.

It is already apparent why we would expect stronger land rights to be associated with higher productivity. Secure land rights provide appropriate incentives for production and investment decisions. They also improve access to credit and other services. Within the household, there is an additional dimension: land rights affect bargaining power which affects the allocation of resources. Evidence that the gender dimension of land rights is important for efficiency has been presented by Udry. Using a detailed panel from Burkina Faso, Udry finds that plots controlled by women have significantly lower yields than those controlled by men for the same crop and year. This effect remains even after controlling for land quality, measurement error, and risk management behavior.

In a sample from Burkina Faso, Udry (1995) estimates that the effect of a female cultivator is to reduce yields by over 30 percent of the average yield. As he notes, this violates the basic equalization of marginal productivities that should govern Pareto-efficient intra-household allocations. The households in his sample should reallocate labor and fertilizer from men to women, or reallocate land from women to men. Udry finds that the differential is attributable to significantly higher use of labor and fertilizer inputs on plots controlled by men. Land rights appear to lie at the root of this under-utilization. Given the role of women in making natural resource investments, the gender dimension of land rights may have an important role in land degradation. We see it as very important that these effects be quantified.

Women face a number of key constraints in agricultural production. They may not have access to equipment or support services (such as research and extension). Household duties or male-controlled plots may have prior claim on their labor. The credit constraints we have already mentioned may apply with particular severity to women. Bargaining power is important, but most difficult to quantify. Women with improved bargaining power may be in a better position to make socially efficient investments, for a given level of total household resources.

Disentangling the effects of gender on efficiency is important for effective policy design. If credit is the major problem, then credit constraints should be tackled directly. If title is the problem, then a titling program may be necessary. If bargaining power is the problem, then legal enforcement of rights may have to be considered.

## Conclusion

We conclude with a discussion of research directions suggested by this review. It is arguable that the significant regional variation in South Asia has not been exploited by researchers to the fullest extent. Carefully designed research could well find crucial identifying variation in income, wealth, institutions, policies, demographic and sociological factors that would allow us to make inroads on many unsettled questions. Where cross-regional comparisons are not possible, panel data is clearly essential so that identification issues are less severe. A second direction relates to a group of issues where research has barely begun. Intra-household allocations and land fragmentation are the top priorities in this group.

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