Inefficiency due to tenancy protection:
a new tenure problem in Taiwan

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(Accepted 25 March 1990)

ABSTRACT

Huang, C.H., 1991. Inefficiency due to tenancy protection: a new tenure problem in Taiwan.
Agric. Econ., 5: 121–133.

Fixed-rent tenancy was traditionally regarded as equally efficient as owner-cultivators. The counter-example is, however, presented here. Specifically, tenants with fixed-rent contracts and well protected by tenancy regulations may, in the long run, turn out to be less efficient than other farmers (e.g., owner-cultivators and informal tenants), particularly when they do not heavily depend on farm revenue as major source of family income. On the other hand, tenants who are not benefited from tenancy regulations might not be less efficient than owner-cultivators. The underlying implication is tenancy reform is not a panacea for improving farming efficiency; it may result in many negative effects in the long run.

1. INTRODUCTION

The term 'land reform' is usually employed in a narrow sense as meaning changes in land tenure, especially the redistribution of land ownership. Nevertheless, tenancy reform is customarily the first step of land reform in many countries where tenancy symbolizes an exploitative means. In some countries, tenancy reform is only an independent part of their systematic land-reform programs (e.g., England), while in other countries (e.g., Japan and Taiwan) it is only a device for the implementation of the wide-sense land reform which aims at higher productivity and more equity. In both cases, tenancy reforms require the removal of exploitative interests and the adoption of measures to improve the tenant's productivity. Essentially, these measures consist of the following tenancy protections which are granted to the tenant: (a) limited rent, and (b) tenure security. It has been shown in many countries that these measures were successful in the sense that tenant's

productivity and well-being were significantly increased during the first several years following the reform through the operation of the economic incentives created by tenancy protection provided by the tenancy laws. Regardless of the long disputes about the comparative efficiency between owner-cultivator and tenant, these economic effects were certainly captured by the economy in the form of a positive social surplus which would otherwise be unobtainable.

Unfortunately, it has become more and more obvious in recent years that these favorable economic effects began to dissipate in those countries that succeeded in their land reforms. The most common phenomenon in these countries, especially in Taiwan, is that the productivity of tenants who are protected by tenancy laws enacted at the beginning of tenancy reform declines not only relative to owner-cultivator but also relative to informal tenants. [1] For this situation, previous literature provides no satisfactory explanation. [2]

The objectives of this paper are to discuss current tenure problems resulted from the tenancy protection in Taiwan and to provide empirical evidence that formal tenants are now generally less efficient than owner-cultivators and informal tenants. A brief review of tenancy reform in Taiwan is presented in Section 2. Current tenure problems encountered are discussed in Section 3. A simple model and empirical results concerning the farming inefficiency of formal tenants are respectively given in Sections 4 and 5. Implications and conclusions are made in Section 6.

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[1] Normally, all contractual arrangements in Taiwan should be established based on the stipulations of the Farm Rent Reduction to 37.5% Act (FRRA). As a matter of fact, a lot of tenure contracts, either in oral or written form, are not arranged as required by laws. Instead, they are arranged privately by landlord and tenant without resorting to the terms underlying FRRA. For convenience of comparison, the FRRA-based tenancy is referred to as formal tenancy, while others as informal tenancy. Tenants under formal tenancy are called formal tenants and those under informal tenancy are called informal tenants. In general, informal tenancy is characterized by the following: (a) the contract is usually in oral form and the arrangements are made based on mutual understanding and confidence in each other; (b) the duration of the contract is usually one year; extension is possible, depending on the willingness of both parties; (c) rent is privately negotiated, not subject to any statutory level, and is higher than the mandatory rent.

[2] Marginal analysis of Marshallian style tends to suggest that sharecroppers may be less efficient than owner-cultivators (e.g., Bardhan and Srinivasan, 1971) and that fixed-rent tenants may be as efficient as owner-cultivators. Nevertheless, some economists (e.g., Johnson, 1950; Cheung, 1969; Reid, 1973; Hsiao, 1975; etc.) argue that all systems are equally efficient.

2. TENANCY REFORM IN TAIWAN

Land reform in Taiwan can be characterized by the sequential programs listed in Table 1. We will focus on the Farm Rent Reduction to 37.5% Act (FRRA) since it is the one relevant to our concerns. FRRA was promulgated in 1949 and amended in 1983. According to this Act, farm rent was not allowed to exceed 37.5% of the total annual yield of the principal product of the main crop. For those exceeding 37.5%, the rent was to be reduced to the statutory level, while rents of less than 37.5% were not allowed to be increased.

An important characteristic with regard to this statutory level of rent deserves further explanation. Superficially, it seems that the formal tenancy is of a crop-share type because the rent is equal to 37.5% of "the total annual yield of the principal product of the main crop". Nevertheless, "the total annual yield" was appraised by the Farm Tenancy Committee based on a standard expected yield, which had remained unchanged since 1949. Therefore, the rent paid by tenants remained the same throughout the lease periods. Consequently, formal tenancy in Taiwan is essentially a kind of fixed-rent tenancy rather than a sharecropping system.

As for tenure security, it was stipulated in FRRA that the length of lease is not to be less than 6 years. However, if on the expiration of the contract, the lessee is willing to continue the lease, the contract shall be renewed, unless the lessor is allowed to take back the land for his own cultivation in accordance with the provisions of the Act.

According to FRRA, leases shall not be terminated before the expiration of the contracts, except under any one of the following conditions: (a) if the lessee dies without leaving an heir; (b) if the lessee waives his rights of

TABLE 1

Land reform programs in Taiwan

| Promulgation	Major programs		
	Rent reduction 1949	Sale of public land 1951	Land-to-the-tiller 1953
Main goals	Reducing rent Protecting tenant's rights	Promoting tenants of public land to owner-cultivators Setting an example for private land-owners Increasing farming efficiency	Promoting tenants of private land to owner-cultivators Increasing farming efficiency
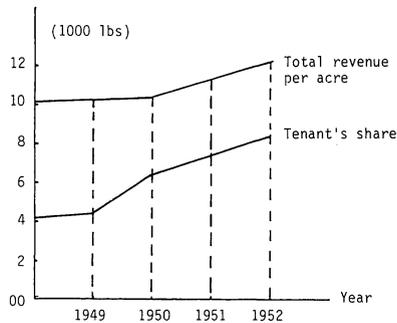
Fig. 1. Tenant's income before and after rent reduction in Taiwan. lb, pound (avdp) ≈ 0.454 kg.

cultivation; or (c) if the cumulative amount of the farm rent which the lessee has failed to pay equals two years' rent. [3] In addition, the lessor shall not take back the leased land for his own cultivation on the expiration of the period of the contract if any one of the following conditions obtains: (a) the lessor is unable to cultivate the land himself; (b) the lessor's total income is sufficient to support his family; or (c) the lessor's action in taking back the land will deprive the lessee's family of its subsistence. [4]

There were several significant economic effects observed immediately after the enforcement of FRRA. For example, farm production and tenant's incomes were increased substantially (see Fig. 1). Prices of farm land declined and, as a result, the number of tenants who bought land for their own cultivation increased. [5]

In order to meet the dramatic increase in demand for farm land from the non-agricultural sector, FRRA was amended in 1983 such that leases may be terminated if the leased land is assigned for non-agricultural uses according to relevant regulations. However, when the land is returned to the lessor on the termination of the contract, the lessor should repay to the lessee (a) the cost of "the special improvement on farm land" which has not yet lost its usefulness; [6] (b) the value of crops not yet harvested; and (c) one-third of the promulgated land price, net of tax.

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[3] Article 17 of the FRRA. In the 1983 amendment, two additional conditions are added: (a) tenants do not cultivate the leased land for more than 1 year without defendable reasons; (b) the leased land is assigned for nonagricultural uses according to relevant regulations.
[4] Article 19 of the FRRA.
[5] See Chen (1961, pp. 42–48).
[6] The "special improvement on farm land" is referred to as the improvement resulting from the increased application of labor and capital which, besides preserving the original qualities and utility of the land, increases its productivity or facilitates its cultivation.

TABLE 2

Side-effects of long-term rigid tenancy protection in Taiwan

Markets	Major side-effects
Regulated	Strengthens tenant's expectations of obtaining capital gains from the land
	Increases tenant's desire for renewing the contract
	Increases land price
	Rent is too low as compared to the unregulated rent
Unregulated (Open market)	Market is distorted
	Increase demand for leased land
	Decrease supply of leased land
	Increase rent and land price
	Increase difficulty in acquiring leaseholds

It is now clear that, in addition to the traditional provisions of tenure security, the 1983 amendment entitles the lessee to indirect ownership of the leased land in terms of the privilege of receiving part of the capital gains associated with the leased land. Unfortunately, such rigid tenure protection has generated several side-effects that were not expected at the very beginning of the implementation of FRRA. These side-effects are to be addressed in the next section.

3. CURRENT TENURE PROBLEMS

Several undesirable side-effects now taking place in Taiwan are attributable to rigid tenure protection, which were not expected in early legislation of FRRA. These effects could be classified into two groups, one prevailing in the regulated land market and the other in the unregulated market (see Table 2). These constitute the current tenure problems in Taiwan that the government has difficulty dealing with. What follows is the detailed description of some major issues.

3.1 Difficulty in acquiring leaseholds

In recent years it has been getting harder and harder for farmers to rent land for cultivation simply because no landowners want to let their land, for the following reasons:
- tenancy laws make it difficult for landlords to get back, as mentioned in Section 2;
- tax laws also deter landlords from letting land; [7]

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[7] Farm rents are regarded as "unearned income" and are therefore taxed at a higher rate than farm profits, which are counted as earned.

TABLE 3

Rents under formal and informal tenancies of rice production in Taiwan

| | Types of tenancies | | |
| | Formal tenancy | Informal tenancy | |
		Fixed-rent	Cropshare
Average rent (kg/ha) (I)	731.1	1286.2	–
Average product (kg/ha) (II)	4074.9	4177.3	4179.2
Rental rate (%) (I/II)	17.94	30.79	49.79
Landlord's share of production cost (%)	5.40	4.97	7.93
Average rental value	3.32	6.20	6.28

Sources: Calculated from a survey data collected by Huang (1979) in Taiwan.
Average rental value is equal to the ratio of rental rate to the landlord's share of production cost, reflecting the rental value per dollar of production cost incurred by the landlord.

– the regulated rent is too low as compared to that under informal tenancy (see Table 3).

This rigidity negatively influences the operation of the tenure system. It greatly reduces the effectiveness of a search for economies of scale, and becomes an obstacle to the modernization of agricultural business. Japan experienced this limitation when attempting to mobilize cultivated land in 1970, about 25 years after her tenancy reform. Taiwan is also suffering the same difficulty in enlarging farm scale due to the failure in encouraging landowners to let land, in spite of a successful land reform implemented 40 years ago. A similar problem exists in England, where the number of formal tenancies is greatly reduced by the fact that the inflexibility involved in leaseholds of long duration at fixed rents leads to a smaller economic supply of land than ever before. In fact, the prevalence of this problem reflects the inappropriateness of rigid long-term tenure protection.

3.2 Distortion of open-market rent

The open-market rent is that which equates the number of farms that owners are prepared to let and the number of tenants seeking them. [8] Theoretically speaking, it corresponds to the competitive level of rent which has the effect of squeezing out the less-efficient farmers and favoring the more-efficient.

[8] See Hallett (1960, pp. 72–73).

Government control of rent at a level lower than the competitive level is one form of market intervention. This intervention may be crucial in an economy where alternative employment other than in farming is not available and where farmers are in poor economic and social positions. However, continuing to control rents tends to hinder further improvements in agricultural business in the long run, especially when farmers are both socially and economically better off than before, because it may deter the establishment of a competitive market. Rent control tends to distort land markets in two ways. First, the controlled rent remains fixed for long periods, or is not readjusted appropriately. Therefore, the real value of rent declines over time and is often far below the open-market level. Second, the open-market rent is distorted in the sense that it cannot reflect the true value of land to the tenants and is higher than it would be without distortions. [9] This is because extra components such as scarcity value and premiums are involved in rent.

The adverse effect generated by the first distortion is that the formal tenant becomes less efficient due to underpriced tenant land and other tenancy protections. [10] The distortion of the second type is mainly a result of the shortage of land supply and the increase in demand for tenant land.

3.3 Prevalence of informal tenancy

The decline in the supply of land and the increased demand for farm enlargement and agricultural mechanization have led to the widespread appearance of informal tenancy. Since informal tenancy reflects both parties' bargaining power and free negotiation, the existence of informal tenancy reveals its usefulness as a tool for pursuing economies of scale, in addition to other advantages. In the light of the popularity of informal tenancy, one can conjecture that it will continue to exist so long as formal tenancy is retained without meaningful adjustments that could effectively promote a solution to current tenure problems. To achieve higher economic efficiency, appropriate amendments of current tenancy regulations are absolutely necessary. The efforts of England and Japan in enacting new tenancy laws demonstrate this necessity.

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[9] England is currently experiencing a rapid increase in farm rents because of the second type of distortion.

[10] The reason why and the fact that formal tenants in Taiwan are less efficient than owner-cultivators and informal tenants will be shown in the next section. Whether formal tenants in Japan and England are less efficient than other farmers is not clear. Presumably, they should not be so inefficient as those in Taiwan, because the newly enacted laws in these two countries allow for more flexibility in the arrangements of contracts.

4. INEFFICIENCY OF FORMAL TENANCY

In the previous sections we have argued that, with the passage of time and because of perpetual and rigid protection, formal tenants, even with fixed-rent contracts, not only pay less rent but are less efficient when compared to other farmers (e.g., fixed-rent informal tenants and owner-cultivators). These phenomena were not discussed at all in the literature of tenure economics, and are contradictory to the traditional viewpoints that fixed-rent tenants are as efficient as owner-cultivators. Despite the issues of the co-existence of sharecropping with other tenure contracts and its efficiency in resource allocation having attracted much attention in the literature (e.g., Cheung, 1969; Bardhan and Srinivasan, 1971; Datta et al., 1986; Otsuka and Hayami, 1988; Taslim, 1989; etc.), these are not the main concern of this paper. Instead, we will present a simple model to explain why formal tenants are less efficient than informal tenants, even though they are all with fixed-rent contracts.

Assume that a representative fixed-rent-tenant's choice problem could be expressed as follows:

$$\text{Max } Y = P F\left(L_o, L_e, A, N(L_o)\right) + khP^e A - w\left(L_o + L_e\right) - rA$$

where P is the price of output; $F(\cdot)$ the well-behaved production with the following arguments: own labor (L_o), hired labor (L_e), amount of land (A), and N, the ratio of the tenant's non-farm income to total household income (i.e., $N = w(L^* - L_o)/wL^*$, where L^* represents the tenant's labor endowment);[11] P^e tenant's expected land price; k tenant's share of the land price (recall that in Taiwan it is stipulated that $k = 1/3$ for formal tenants but $k = 0$ for informal tenants); h probability that the leased land will be sold according to the relevant regulations; w wage rate; and r rental rate such that r equals r_f for formal tenants and equals r_i for informal tenants.

It is worthwhile pointing out that r_f is exogenously determined by the government, while r_i is endogenously determined in the market. Table 3 explicitly indicates that $r_i > r_f$ in Taiwan.

The first-order conditions for the interior solution are:

$$P\left[(\partial F/\partial L_o) - (\partial F/\partial N)/L^*\right] = w \tag{1}$$

$$P(\partial F/\partial L_e) = w \tag{2}$$

$$P(\partial F/\partial A) + khP^e = r \tag{3}$$

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[11] Huang (1979) shows that the production function is concave in N such that $\partial F/\partial N > 0$ when N is small (i.e., when the tenant is more like a professional farmer) and $\partial F/\partial N < 0$ when N is larger (i.e., when the tenant is more like an amateur farmer).

On the other hand, the representative landlord is assumed to retain an amount of land for self-cultivation and to solve the following maximization problem:

$$\text{Max } y = Pf(l_o, l_e, a, n(l_o)) + r(a^* - a) - w(l_o + l_e)$$

where the lower-case letters have the same meanings as their upper cases, and a^* represents the landlord's endowment of land.

Similarly, the first-order conditions for the interior solution are:

$$P[(\partial f/\partial l_o) - (\partial f/\partial n)/l^*] = w \qquad (4)$$

$$P(\partial f/\partial l_e) = w \qquad (5)$$

$$P(\partial f/\partial a) = r \qquad (6)$$

From equations (1)–(6), the following implications could be drawn:

(1) The owner-cultivator (i.e., the landlord in our model) and the informal tenant are equally efficient since their first-order conditions are exactly the same. This is the classical result in the tenure economics literature.

(2) How much own labor and hired labor the farmer will use depends not only on the marginal productivity of labor in use but on his professionality in farming. Nevertheless, the amount of labor used is identical among all farmers since their first-order conditions of labor use are the same.

(3) The informal tenant will demand less land than the formal tenant, but generates higher marginal product of land. This is illustrated in Fig. 2. Note that the extra amount of land demanded by the formal tenant (equal to $A_i A_f$) can be broken down into $A_i A_o$ and $A_o A_f$, where the former is due to the tenure protection that the landlord has to pay the lessee one-third of the land price when it is sold, and the latter is induced by rent control at a level lower than the open market rent. Given the fact that the total amounts of labor used are the same among all farmers, such difference in the demand for land implies that the formal tenant will be less intensive in terms of the
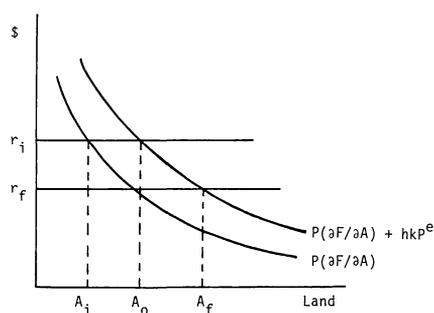

Fig. 2. Demands for land by formal and informal tenants.

uses of variable inputs (e.g., labor) on land than the informal tenant, other things being equal.

(4) The landlord will retain more land for self-cultivation under formal tenancy than under informal tenancy since the regulated rent is lower than the open-market rent. This explains why the landlord is reluctant to lease out his land formally and why informal tenancy prevails.

5. DATA SOURCES AND EMPIRICAL RESULTS

Data available for empirical analysis are very limited. The only data set useful for our analysis, which was established by Huang (1979) through a field survey, consists of information from rice producers in Taiwan on their outputs and inputs (only labor and land included). The sample sizes of owner-cultivator, formal tenant, and informal tenant (both with fixed-rent contracts) are respectively 104, 31, and 50.

To compare the farming efficiency among formal tenant, informal tenant and owner-cultivator, we apply two approaches that are simple but commonly used in the literature. The first approach uses equation (7) to test for the hypothesis that all farmers are equally efficient:

$$\text{ER}_j = b_0 + b_1 X_{1j} + b_2 X_{2j} + e_j \tag{7}$$

where ER_j is the efficiency ratio of the jth farmer, defined as the ratio of the value of the total annual outputs to that of inputs; X_{1j} and X_{2j} are dummy variables such that $X_{1j} = 1$ for informal tenants, $X_{1j} = 0$ otherwise, $X_{2j} = 1$ for formal tenants, and $X_{2j} = 0$ otherwise; and e_j is the disturbance term that satisfies all classical assumptions.

In equation (7), the coefficients b_0, b_1, and b_2 represent respectively the efficiency ratios of owner-cultivators, the difference in efficiency ratios

TABLE 4

OLS estimates of the efficiency-ratio equation

	Coefficients		
	b_0	b_1	b_2
Estimates	118.30 *	− 1.42	− 15.72 *
T-values	27.84	− 0.71	− 10.90
$R^2 = 0.854$; $N = 118$; $F = 28.14$			

Sources: Same as Table 3.
* Significant at 1% level.
Note: The fact that the rental value per dollar of expense incurred by landlords remains stable among various types of informal tenancy ($6.20 for fixed-rent contracts and $6.28 for crop-share contracts) indicates that the unregulated land market is functioning well.

TABLE 5

OLS estimates of Cobb–Douglas production functions for various types of tenure systems

	Owner-cultivator	Informal tenants	Formal tenants
c	26.75	28.06	49.46
	(40.33) [a]	(37.48) [a]	(13.24) [a]
d	0.94	0.93	0.82
	(17.73) [a]	(14.60) [a]	(6.08) [a]
R^2	0.94	0.91	0.95
AQ	4373	4302	4015
(kg/ha)	(159) [b]	(138) [b]	(155) [b]
AL	1342	1277	1125
(man-hours/ha)	(103) [b]	(98) [b]	(86) [b]

Source: Same as Table 3.
[a] Values in parentheses are t-values. [b] Values in parentheses are standard deviations.

between informal tenants and owner-cultivators, and the difference in efficiency ratios between formal tenants and owner-cultivators. The OLS estimates are reported in Table 4. It shows that the difference between informal tenants and owner-cultivators is statistically insignificant, and that the difference between formal tenants and owner-cultivators is rather significant, implying that formal tenants are less efficient than informal tenants and owner-cultivators. This supports the hypotheses presented above.

In the second approach we estimate a simple Cobb–Douglas production function (i.e., equation 8) for each of the three groups of farmers:

$$\ln(Q/A) = c + d \ln(L/A) \tag{8}$$

where Q denotes the total annual physical product, and L the total amount of labor (the sum of L_o and L_e). [12]

The OLS estimates of parameters are reported in Table 5, and so are the estimated productivity per hectare (AQ) and the estimated amount of labor per hectare (AL). The results indicate that formal tenants have lower AQ and AL than informal tenants and owner-cultivators. These are again consistent with our model.

6. CONCLUSIONS

An implicit assumption underlying some land reforms is that current tenants and their generations to come will be farmers forever. In a rapidly

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[12] The functional form of production function is selected based on Pesaran's (1974) criterion. Since the output elasticities of own and hired labor are econometrically insignificant, estimation efficiency can be obtained by integrating L_o and L_e as a single variable.

growing economy, this assumption becomes less and less appropriate. Hence, perpetual rigid tenancy protection will eventually generate several problems leading to less-intensive farming, inefficiency, and prevalence of informal tenancy.

This paper postulates that, due to rigid tenancy protection, formal tenants in the long run will be less efficient than other farmers, even though they have fixed-rent contracts. It is also argued that informal tenancy may serve as a transitory tool for enlarging farm size without creating serious social loss. These hypotheses are empirically supported by using the data from Taiwan, a country representing the most typical model of rigid tenancy protection. It implies that the economic impact of institutional arrangement such as tenancy reform on farming efficiency could change over time. In other words, tenancy reform is not a panacea; rather, it is an endless business requiring careful and continuous attention.

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