AUSTRALIAN NATIONAL UNIVERSITY

International and Development Economics

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Sweet land or Sweat land: Two proposals for facilitating access to land and adjustment to eroding EU sugar preferences in Fiji.[*]

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8 November 2004

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The resolution of problems with lease renewals in Fiji, particularly in the sugarcane districts, has ramifications for private investment and growth in the entire economy. The impending withdrawal of subsidies to sugar as world trade is liberalised has increased the urgency of finding solutions to these problems. This paper draws on game theory to characterise the problems facing the Fiji sugar industry. The incentives for land and ethnic politics are identified. Separate proposals are put forward to facilitate secure access to land and to minimise adjustment costs from the erosion of preferences under the Sugar Protocol. The rationalisation forced upon the sugar industry, if managed well, could induce land reforms that could improve the investment climate and the prospects for growth, whilst minimising pains of adjustment.

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1. Introduction

The stresses facing the Fijian sugar industry from the expiry of land leases for many smallholder farmers and the erosion of trade preferences in the EU have been raised by several commentators (see Reddy and Yanagida, 1998; Levantis, Jotzo, and Tulpule, 2003; Prasad and Narayan, 2004). Tenants knew some thirty years in advance of the exact date when their leases were going to expire, but were shocked when eviction notices did eventuate. The withdrawal of subsidies to sugar from the EU was imminent since 1986 when agriculture was first brought within the ambit of GATT and particularly since December 1994 following the commitment by the EU to limit the value of export subsidies (and the volume of subsidised sugar exports from the EU) at the conclusion of the Uruguay round.

Preferential access for Fiji sugar into the United Kingdom and subsequently into the EU (after UK joined the EEC in 1974) has existed since the industry was first established in 1879 with Indian labour. Some 60,000 workers, brought in under the indenture scheme from India that lasted to 1916, subsequently formed the smallholder sector growing sugarcane on land leased from the indigenous population. Preferential access into the EU is provided for under the Sugar Protocol that took effect on 28 February 1975. The Protocol states that:

"the [European] Community undertakes for an indefinite period to purchase and import, at guaranteed prices, specific quantities of cane sugar, raw or white, which originate in the ACP states and which these States undertake to deliver to it" *Article 1 of the ACP/EU Sugar Protocol*

Prices, according to the Protocol, is to be negotiated annually though in practice the price paid to the ACP (African, Caribbean, and Pacific) states is equal to that paid to EU producers. In its 1995 review of the sugar policy, the EU had clearly stated its intention to comply with its Uruguay Round commitments of "substantial progressive reductions in agricultural support and protection"[1]. The impetus for withdrawal of EU sugar-subsidies, moreover, may have

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[1] This was Punta del Este Declaration of ministers of trade made in September 1986 (quoted from http://www.acpsugar.org/eusugar1995review.htm, accessed on 18 October 2004).

been hastened by disputes registered by Australia, Brazil and Thailand with the WTO.[2] The Cotonou Agreement lapses at the end of 2007, at which time the EU subsidies in the form of preferential prices for sugar imports will fall further.

I argue here that the tenants were shocked on non-renewal of their leases because of expectations that leases would be renewed. The political leadership was responsible for raising these expectations. Landowners, in contrast, have unrealistically high expectations of the profitability of sugarcane farming, thus have been lured into sugar cane farming with consequent eviction of tenants. Communal politics in the presence of rents in the form of sugar-subsidies have encouraged inter-ethnic rent-dissipating competition. Electoral support in an ethnically segmented population has been maximised through creation of discontent on the sharing of sugar proceeds between the growers (majority of whom are ethnic Indians) and landowners (majority of whom are indigenous). The availability of rents and opaque property rights provide fertile grounds for socially unproductive rent-seeking activity (see Bhagwati, 1982 on 'directly unproductive profit seeking activities'). The loss of preferences to sugar (and greater transparency in decision-making), therefore, will reduce rent seeking.

This paper draws on a simple game theoretic framework to analyse the problems faced by the smallholder sugarcane-growing sector. The model's predictions are consistent with the facts, thus allowing me to draw policy recommendations for facilitating access to land and easing adjustment to declining preferences. To conclude: the challenges of facilitating secure access to land should be considered separately from the challenges of facilitating adjustment to the withdrawal of subsidies to Fijian sugar. To achieve the former, the Native Land Trust Board (NLTB) should be 'unbundled' into two separate components: a regulator of the market for

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[2] These are registered as DS265, DS266, and DS286, respectively. The WTO is reported to have ruled against the subsidies and the EU has announced its intentions to appeal this decision (reported by *Economic News*, http://economy.news.designerz.com/wto-rules-against-eu-sugar-subsidies-bloc-to-appeal.html accessed on 18 November 2004).

secure access to land and a competitive component responsible for land-intermediation. Adjustments to the withdrawal of sugar subsidies could be facilitated by 'decoupling' the subsidy implicit in locally produced sugar and using this as redundancy payments to farmers (and mill-workers) choosing to opt out of the industry. An illustrative example is used to show that such a process could increase the incomes of the farmers whilst reducing inefficiencies within the industry.

2. A synopsis of the sugar sector

Sugar is a large sector of the Fiji economy, contributing some 7 percent of GDP, 22 percent of total exports, and providing the livelihoods of nearly a quarter of the total population (Prasad and Narayan, 2004).[3] Exports into the EU receive prices that are from 2 to 4 times the world market price.[4] There is little doubt that the preferences will fall over time, possibly in a stepwise fashion. The first of these reductions, of 30 percent, is due to occur at the end of 2007; the complete erosion of the subsidy could happen within a decade. The abolition of the preferential price arrangement is imminent given EU's commitment to abiding by the WTO-process. The lapse of the subsidy, unless if prepared for well in advance, will create serious pains of adjustment that are likely to flow to the rest of the economy. The incentives for managing the adjustment process are strong. The Economic Partnership Arrangements of the EU, moreover, contain measure to support adjustments to liberal trade as per WTO-commitments (European Commission, 2002).

The smallholder sector, which supplies all of the sugarcane, comprises some 21,000 farmers with supply-contracts to the Fiji Sugar Corporation. The average farm size is 4.6 hectares producing around 160 tons of sugarcane (data from *Fiji Post*, 2002 and Kingi, 2004). All of

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[3] The industry provides employment to around 51,000 people.
[4] As of 2004, the price paid for ACP exports of sugar to the EU was 600 Euros per ton, while the world market price was 250 Euros. The total value of transfers via the subsidy, assuming that the EU agreed quota of 165,348 and the 19,181 tons sold under the Special Preferential Sugar (SPS) (with the latter sold at a price that is 85 percent of the guaranteed quota-price under the) quota is satisfied, will amount to nearly 64 million Euros.

the farms are rain fed and in a good year, total sugarcane production is approximately 4 million tons. The sugarcane is manually harvested by some 14,000 cutters who operate in small gangs, with the cane being transported to one of the four sugar mills operated by the Fiji Sugar Corporation (FSC). Approximately equal quantities of cane is transported via the rail system operated by the FSC and on privately operated motor trucks (lorries); the latter have been increasing as sugarcane cultivation has expanded into areas without rail transport. The mills are 68 percent owned by the government, and employ around 3,000 workers—some only during the half-yearly harvesting season. Depending on milling efficiency and the volume of throughput, total sugar production has ranged from 264,000 (in 1975) to 517,000 tons (in 1994) (annual production data is given in table 1).[5] Most of the sugar produced is exported and some 80 percent of the exports are sold to the EU at a preferential price under the Sugar Protocol. The price paid to the grower for the cane is determined by a formula that takes into account the average price received for the sugar produced.

Seventy four percent of the farms are operated by Indo-Fijians with the vast majority of the farms on leased land. Leases have been expiring since 1997 with some 1500 having expired in 2001 (see table 2). The majority of the farms with expired leases have been taken over by the landowners, although a few are in the process of having their leases renewed. The area under sugarcane cultivation has been falling. In an attempt to stem this decline in sugarcane production, the government has been providing a grant of $10,000 to each landowner taking up sugarcane farming. Many of the new landowner farmers have high expectations of the returns from sugarcane farming. Farmers enticed into the industry with public-handouts will likely resist the withdrawal of subsidies when they do eventuate, and thus could become a

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[5] By international standards, Fiji is a high cost producer. Cane output in Fiji of around 50 tons per hectare compares unfavourably with Australian production at 120 tons per hectare. The Prime Minister, moreover, has stated that cane yield per hector in Fiji is the second lowest and sugar yield the worst amongst the 20 African, Caribean, and Pacific (ACP) sugar-producing states (*FijiSUN*, October 6). The cost of producing a ton of sugar at the four mills, according to the Prime Minister, in Fiji dollars are 340, 320, 230, and 160 at the Penang, Lautoka, Labasa, and Rarawai mills, respectively.

strong lobby for domestic subsidies when the externally funded price support is withdrawn. Such subsidies would create their own set of political interests and ensuing problems.

3. Incentives for land (& ethnic) politics

Indigenous Fijians own some 87 percent of total land; the State holds another 6 percent, with the remainder being held under freehold title (Prasad, 2004). The NLTB, established by the Native Land Trust Ordinance of 1940, has the authority to administer all land held in native title "for the benefit of Fijian Owners".[6] The NLTB makes general policies regarding administration of native land, approval of leases, collection and distribution of proceeds from rental of land, and in building landlord-tenant relations. The NLTB, at its inception, had been remarkably successful in facilitating access to under-utilised land. Ratu Sir Lala Sukuna, the architect of the scheme, had convinced landowners to release land for farming for the benefit of the nation as well as to farmers and the landowners. He argued to the 1936 Council of Chiefs that "it is our duty to use our influence, our power, to open up waste *Matagali* land for agricultural purposes; whether they be taken up by Europeans, Indians, or Fijians" (quoted in Ward, 1995: 243). The scheme delivered gains from exchange and was based on trust between the lessees and lessors.[7] NLTB has a monopoly, granted via legislation, on issue and administration of leases.[8] This position has lent itself to abuse over time. Ward (1995: 247) for example suggested that the NLTB effectively dispossesses the owners of their land, while Vesikula (2002) noted that the distribution of rental income is a cause of considerable conflict within the landowning clan.

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[6] Information on the NLTB sourced from http://www.nltb.com.fj/history.html, accessed on 17/09/2004.

[7] Such cooperation was possible under a statesman like Ratu Sir Lala Sukuna and perhaps assisted via a strong colonial regime that under-wrote all formal contracts. Ratu Sir Lala Sukuna had no illusions about the challenges facing land intermediation, pointing out to the chiefs in his address to the Council of Chiefs in 1933 that: "We regard the Indian desire for more permanent tenancy as a natural and legitimate consequence of an agricultural community settling in any country. But how was this desire to be reconciled with the need to protect the interests of present and future Fijian landowners?" (as quoted in NLTB, 2004).

[8] Land rents are set at a maximum of 6 percent of unimproved capital value; the NLTB retains 25 percent of the rental proceeds to cover administrative costs, the holder(s) of the three upper-most chiefly title within the traditional hierarchy take another 22.5 percent, leaving the remaining 52.5 percent to be shared by the rest of the *mataqali* (Ward, 1995: 221).

The incentives for rent-seeking behaviour by the NLTB intensified over time as preference accorded to sugar increased and increasing population raised the pressure on land. Political competition intensified following independence in 1970, thus land ownership offered itself as a convenient mechanism for mobilisation of the electorate. Similar incentives for mobilisation of ethnic Indian voters were generated as a defensive response to the above. The trust of landowners within NLTB also eroded over time as the institution itself became increasingly politicised. Informal (*vakavanua*) arrangements emerged as the administrative burden and distrust of NLTB grew, but such arrangements have been unpopular for long-term crops such as sugarcane. The lack of legislative legitimacy has made enforceability of contracts a problem. However, the *vakavanua* arrangements have been popular, particularly in the Sigatoka valley, for short-term (seasonal) cash crops such maize, rice and tobacco.

The sugar industry encompasses institutionalised groupings of landowners, growers, the miller, and the government. The Sugar Industry Act of 1984 created the Sugar Commission of Fiji (charged with the responsibility for coordination between sections of the industry), the Sugar Industry Tribunal (to settle industrial disputes), the Sugar Cane Growers Council (as the representative of the growers), and Mill Area Committees (to organise harvesting). The Fiji Sugar Corporation, the trade unions, the Fiji Sugar Marketing Company, and the Sugar Cane Research Station add yet another layer of organisational complexity. Each of the three post-independence constitutions, moreover, allocates the majority of the seats in the National Parliament (that is, the House of Representatives) on communal lines; the 1997 Constitution, for example, in the 71 member parliament has 23 and 19 seats, respectively, reserved for indigenous Fijians and ethnic Indians. One seat is reserved for Rotumans (that is, inhabitants of the island of Rotuma or registered as such) and another three reserved for people not belonging to the communal groupings identified above. The landowners-tenant divide serves as a convenient instrument for mobilisation of voters for political support at national elections.

The smallholder sector that produces sugarcane can be characterised as a perfectly competitive industry. It has minimal barriers to entry and exit. Rising population without job opportunities in the rest of the economy over the past three decades has led to the smallholder sector being the holding sector for the under-employed. Supply of unskilled labour has not been a problem. The competitive nature of the smallholder sector implies that all rents to the growers are dissipated. First, the rent component of income for profitable farms such as those on alluvial plains close to the mills is capitalised; second, rising prices for sugarcane has led to an expansion of area under cultivation (see Figure 1) – mainly onto marginal land and/or to land further away from the mills so that rents have been lost to rising costs of production and/or transportation; and third, inefficiencies both in farming and milling. The simple correlation between the (current) price of cane and the area under cultivation over the 1971 to 1997 period (that is, before the lease renewals became a problem) is equal to 0.78. Subsidies have thus been dissipated by expansion of sugarcane growing onto marginal land and/or into areas remote from the mills.

Several surveys confirm that the majority of the farms make poor returns, with many continually in debt (Rao, 2003). Milling inefficiency, represented by the ratio of tons of cane used to produce a ton of sugar, also increased with the price of sugar (see Figure 2).[9] The elasticity of tons of cane used to produce a ton of sugar to the price for sugar for the 1971 to 2002 period is 0.1. This estimate that is robust to inclusion of area under cultivation to include the potential drop in cane quality with expansion of area under cultivation (see Appendix tables A1 to A3).[10] The dissipation of subsidies in these ways, moreover, is not

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[9] Part of the rise in *tcts* is attributed to planting of varieties such as *Mana* that has low pure obtainable cane sugar and increased burning of cane during harvest; these in turn are due to cane being grown on marginal land with weeds being a major problem. Burning of cane increases at the end of the season when farmers rush to clear the standing crop from the fields.

[10] The estimate here is of a long-run elasticity; the short time series disallows use of an error correction form (ECM) to decipher short and long-run elasticities. The diagnostics do not suggest serious problems with the preferred model, however.

peculiar to the Fiji sugar industry but is a common phenomenon across industries and

countries (see Horstman and Markusen, 1986; Vousden, 1993; Chand, 1999).

Figure 1: Expansion in area of sugarcane cultivation and price of cane (1971-2002)
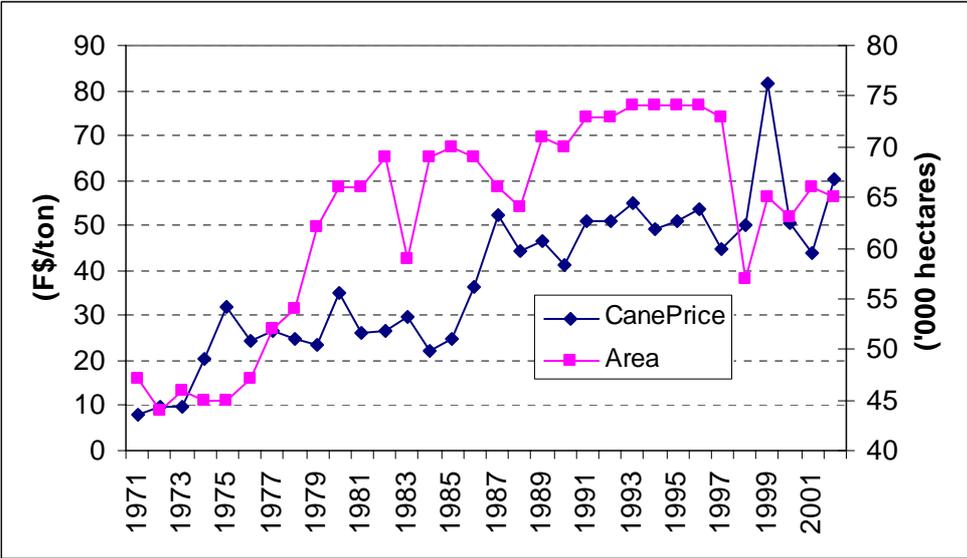
Data Source: *Current Economic Statistics Bulletin*, Fiji Bureau of Statistics, (June 2003 & January, 1990)

Figure 2: Milling efficiency and sugar price (1971-2002)
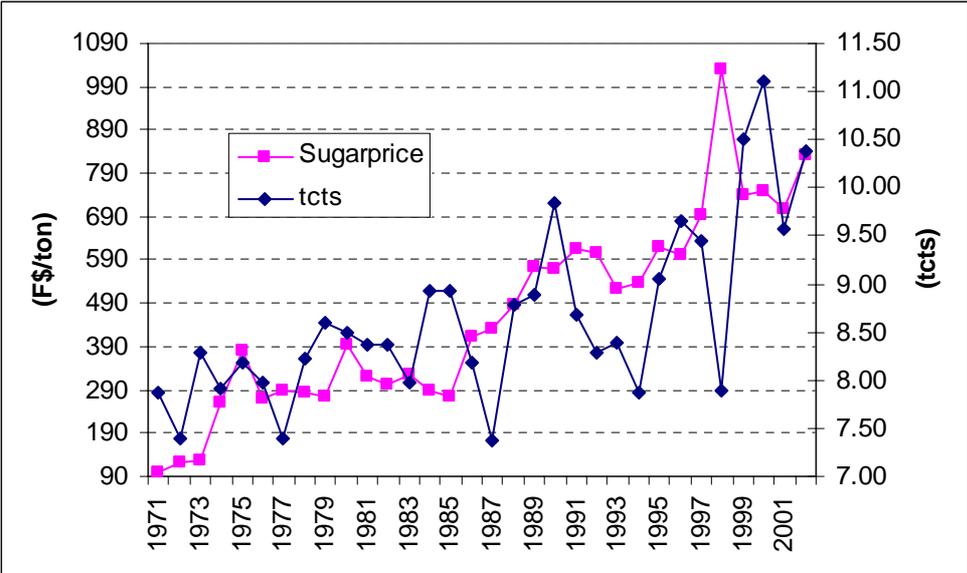
Data Source: *Current Economic Statistics Bulletin*, Fiji Bureau of Statistics, (June 2003 & January, 1990)

If rent-dissipation is indeed the case, then the withdrawal of the subsidy to sugar should see a shrinkage in area under sugarcane production - possibly to those close to the mills and onto alluvial plains suitable for mechanised cultivation and harvesting, but without a significant loss of income to those growers over the longer-term. The short-term pains from such a shock are likely to be large and disproportionately felt by marginal land and land distant from the mills. How these costs could be minimised is discussed in section 4 below.

Landowners have been led to believe that the returns they have received are an unfairly low share of rents from sugarcane farming. Kurer (2001: 1) notes that "[t]here is hardly a more universal complaint among Fijian landowners that they receive unfairly low rents from their land". Such a perception has been common in village discussions, particularly around the kava bowl. It was given legitimacy via Davies and Gallimore (1999) when this study was publicised widely in the popular press. The conclusion that if 'just and fair' rents had been paid over the previous 30 years then each Fijian household would have received an additional accumulated total of approximately F$15,000 was particularly noted. The 'exploitation' of landowners gained currency in the lead-up to the coup of 2000 when some indigenous Fijian political leadership pursued it.

Kurer (2001) in his detailed study confirms the competitive nature of the industry. He shows that the average farmer earns an annual cash income, inclusive of the costs of labour, of F$862; this is in sharp contrast to the estimate of F$8,000 by Davies and Gallimore (1999).[11] Many commentators have repeatedly pointed out the low productivity of the sector, the prevalence of inefficient farming practices, and the unrealistic expectations landowners have of rewards from sugarcane farming (see Forsyth, 1995; Kurer, 2001; Rao, 2001). Why then have indigenous leaders pursued the view of high returns from sugar cane farming? There are

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[11] Davies and Gallimore reach this figure by multiplying the average price of cane of F$50 by the average farm production of 160 tons, ignoring the costs of all inputs (including land rents, harvest and transportation costs, etc).

strong political incentives for such misinformation. Land serves as an extremely convenient instrument for mobilising the electorate on ethnic lines. It forms the basis for ethnic politics; a process reinforced by the electoral system where the majority of the parliamentary seats are allocated on ethnic lines.

The NLTB presents the landowners as a united front, thus providing a strong incentive for tenants to unite in an adversarial environment. The Growers Union, thus, earns its legitimacy only as a defender of the interests of the tenants, the majority of whom are ethnic Indians. This can be thought of as a capitalist (landowner) and labour (tenant) divide, but reinforced by an electoral system that allocates seats in parliament on the basis of ethnicity. In this context, aspiring leaders have an incentive to play up the landowner-tenant divide to maximise their support in national elections. Not surprisingly, land issues with divisive politics surface regularly during political strife. The system of incentives explains the prevalence of ethnically based politics, which is in essence a landowner-tenant struggle: a struggle given impetus via subsidies through the sugar protocol of the EU. The above describes the deep causes of ethnically based competition in Fiji. The Westminster form of government with its adversarial politics and an ethically based electoral system reinforce this divide.[12] Rents have been dissipated in 'wars of attrition' between the two ethnic groups, leading to an outcome akin to that of a Prisoner's dilemma game as shown next.

4. The Analytical Framework

For tractability, assume that the NLTB has sole authority to make land available for sugarcane farming. Furthermore, let the Growers' Union be the sole representative of the smallholder sugarcane-growing sector. Rents are provided through subsidies to sugarcane production. We now have a duopoly that competes over the subsidy. Let the date of expiry of land leases

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[12] The 1997 constitution was an attempt to bridge this gap through electoral engineering, but the outcomes of the 1999 elections is evidence that this was unsuccessful.

be an endogenous outcome of political competition. More specifically, let the probability of lease renewal depend on the parliamentary process. The structure of incentives is one leading to reinforcing cleavage formation. The above characterises a duopolistic non-cooperative (Nash) game between the two ethnic groups. This game is depicted in the pay-off matrix given in Table 3 below.

The payoffs are hypothetical and only indicative of the relative magnitudes. The two players are the Growers' Union and the NLTB, with the pay-offs to each given in parenthesis. As an example, if the two players choose to cooperate by equally sharing the rents, then each gets a payoff of 3 as shown in the third row of column 3. If, on the other hand, the Growers choose to cooperate while the NLTB decides to compete, then all rents (net of dissipation of 2 units) accrues to the latter. The payoff in the bottom left cell is for the converse case, while the pay-offs are nil for each when both compete, as all rents are lost to dissipation. Note that in this game the joint pay-off of 6 (= 3+3) is maximised when both players co-operate while non-cooperation leads to the worst possible outcome.

Table 3: Pay-off Matrix for tenant-owner game

		NLTB (on behalf of Landowners)	
		Co-operate	Compete
Growers' Union (on behalf of tenants)	Co-operate	(3,3)	(0, 4)
	Compete	(4, 0)	(0,0)

The Nash-outcome, given by the bottom far right-hand cell with a nil payoff to both players, is discussed next. A rent-seeking monopoly claims the presence of rents to justify its own existence. The monopoly, however, has the incentive to retain all rents given the competitive nature of its franchisees. The political leadership that draws support from an ethnically based electorate has the same incentive in maintaining the monopoly. One would therefore expect

the NLTB to be highly politicised, legitimising its existence in a competitive framework as an agency for extracting rents from the competing party. The above presupposes the existence of rents to begin with and the NLTB has an incentive to exaggerate the existence of high profits earned by the ethnic-Indian farmers. The above explains why a study such as Davies and Gallimore (1999), supporting the presence of rents, would be popular amongst the indigenous (landowner) leadership while those challenging such a view, as did Kurer (2001), would largely be ignored.

The Growers' Union, as the representative of the tenants, has the incentive to convince tenants that lease-renewals is a function of the political process. That is, the Union loses its legitimacy should lease-renewals become independent of the political process. The Growers' Union is funded via levies (in contrast to the NLTB), and thus its existence depends on continuing political support. Such support, moreover, is critical for parliamentary seats allocated within the sugarcane growing districts on communal votes; the politicisation of the industry on the part of the Indians is thus least surprising. The presence of the NLTB, opaque rules and political bargaining on lease renewals, and a communal voting-system provide the necessary preconditions for the duopolistic competition depicted in table 3 above.

The game theoretic framework used above makes a number of simplifying assumptions. This highly stylised representation of the land and sugar issues in Fiji, however, generates a number of predictions that are consistent with reality. The analysis, for example, provides the basis for ethnically based and highly divisive politics in the country. Of note is the fact that changing the electoral rules to induce cross-cutting cleavages, as was attempted under the 1997 Constitution, was unsuccessful in ameliorating the ethnically divisive politics; possibly

because it failed to address the deep roots of such competition.[13] In many respects, the competition between the landowners (capitalists) and tenants (labour) in Fiji is not too dissimilar to those seen elsewhere. The game theoretic framework used above, importantly, enables us to suggest remedies both in terms of improving access to land and in facilitating adjustment to the loss of subsidies. One clear implication from the above analysis is that sugar-subsidies have encouraged rent-seeking behaviour, thus the erosion of trade preferences will reduce such socially harmful competition.

5. Improving access to communally owned land

An efficiently operating market allowing access to land on the basis of a transparent and enforceable system of rules is critical for investment and growth in the broader economy (see de Soto, 2000 and World Bank, 2003). The market for land requires regulation. This is so for three reasons: first, due to the high costs and large economies of scale of the institutional infrastructure needed to establish and maintain land rights; second, to allow for common standards and maintenance of records to enable impersonal exchange of land rights; and third, to minimise costs of enforcement of property rights (see World Bank, 2003). An efficiently operating market facilitating access to land induces (long-term) investment, whereas a failing market can be a barrier to growth of the entire economic system. The costs of land conflicts, moreover, are disproportionately borne by the poor (World Bank, 2003: xv) and have the potential to escalate into civil wars as demonstrated by the recent experience of Solomon Islands. Such 'externalities' justify public sector participation in securing property rights to land. We draw on the long-established systems for financial intermediation to think about facilitating secure, possibly long-term, access to communally owned land. It may be instructive to think of land as a fixed deposit, but with one major difference; land has spatial identity.

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[13] The 1997 Constitution can be seen as an attempt at imbedding the above game within a super-game with pay-offs to force the cooperative outcome; with the benefit of hindsight of the 1999 elections, this proved not to be the case.

Accepting the need for a regulator to facilitate access to communally owned land, we consider how the existing system could be reformed. One sensible path to follow would be to unbundle the relevant components of NLTB into a Land Regulatory Authority (LRA) and a component responsible for intermediation of land between landowners and tenants. The component responsible for intermediation could be outsourced to the competitive private sector. The regulator would serve an analogous function to a Central Bank regarding supervision of the private sector intermediaries and in providing the regulatory framework for the efficient operation of the land-access market. More specifically, the role of the regulator would be in formulating rules regarding the operation of the market that facilitates access to land. The regulator would have to operate strictly at arms length from lessees and lessors. Regulation would include the facility to register land by any individual or group of individuals and in making available the use of such an asset for any length of time. [14]

Traditional landowners, for example, could be allowed to register their land either individually or jointly (via the *i-tokatoka* or *matagali*). [15] The existing parts of NLTB currently providing land-intermediation services could be broken up, possibly by provinces, and handed over to the provincial authorities. Land, much like fixed deposits, could then be made available for use for any period of time, subject to the prevailing regulations. The intermediary with appropriate regulatory supervision would have to guarantee that the leased land would revert back to the owner on the expiry of the lease. Payments for using the land would be a matter to be determined between the landowner and the tenant. Contracts would have to be drawn up, within the broad guidelines set by the regulator, and registered with the LRA such that a central repository of information on property rights is created and

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[14] The UCV is maximised with a perpetual lease. That is, the UCV for a piece of land that generates rent (super-normal profit) of one unit each year equals $1/r[1-e^{-rT}]$, where r and T are the discount rate and the length of the lease, respectively.

[15] The hierarchy of the indigenous social groupings has as its apex the *vanua* with the following breakdown as one progresses down the pyramid: *yavusa*; *mataqali*; and, *tokatoka*. This characterisation was made uniform via the colonial authorities in preparation for land registrations in 1896 (see Ward, 1995: 202).

maintained. The pay-off matrix between the tenant and the landowner would now look very different. Both will now be induced to cooperate in using any under-utilised resource for mutual gain. The intermediation services, moreover, are similar to that provided by real estate agents in respect of rental accommodation for housing within the major urban centres. Payments for such use could be made as a lump sum, over time, as a combination of the two, or even with a financial instrument that matches the demands of the individual clients.

A system of the kind proposed above has several advantages over the existing system. First, it devolves decision making on access to communally owned land to the individual owners and investors, but within a regulated system. Second, it permits leases of whatever length to be traded on the market with a price determined via forces of supply and demand. Third, it brings in competition over land-intermediation, thus encouraging mutually beneficial exchange between landowners and investors, as opposed to the prisoner's dilemma outcome of table 3 above. As an example, a landowner may act strategically in giving secure long-term access to a small parcel of their land in order to raise the value of the surrounding land. Such a scheme has been used relatively successfully in availing land for a major tourist development on Denerau Island. The system proposed above, moreover, will also erode incentives for ethnically based politics in Fiji. We next consider reforms to the smallholder sugarcane sector given impending withdrawal of EU subsidies.

6. Facilitating adjustment to erosion of sugar subsidies from the EU

Each smallholder producing sugarcane has a supply-contract with the FSC in the form of a Farm Basic Allotment (FBA); as of 2002, the aggregate FBA stood at 4.08 million tons of sugar cane. As the first step in preparation for restructure of the sugar industry, the FBA should be assigned a property right. The value of the FBA can be deduced under the following assumptions. Let's assume that the preferences will fall in two steps: first, by 30 percent in 2007; and second, be removed altogether by the end of 2014. Under the above

assumptions, we can calculate the value of subsidy implicit in each ton of sugar. Imagine a situation where the subsidy implicit in sugar exports is paid lump sum as aid from the EU. The funds could then be used to purchase the FBA of individual farmers, thus creating a market for the asset created via the trade preference.

Let's use an illustrative case to demonstrate how such a market would work in practice. Assume that under current levels of subsidy, sugarcane is priced at F$50 per ton. The assumptions regarding stepwise erosion of subsidies implies that this price will fall to F$35 per ton from 2008, and decline to the subsidy-free price of F$17 per ton by the beginning of 2015. Assuming a discount rate of 5 percent, the net present value of subsidies implicit in each ton of FBA for the life of the Sugar Protocol is F$180. Thus, on the basis of these assumptions, each ton of FBA as of the beginning of 2005 is worth F$180. Of this, $10.80 would accrue to landowners as their share of the proceeds on the assumption that land rents amount to 6 percent of the capitalised value of the subsidies.

A voluntary restructure of the industry could be induced via the purchase of the FBAs from smallholders funded by a lump-sum transfer of aid (decoupled from sugar production) from the EU. Farmers would have the following options: selling their FBA and exiting the industry; selling their FBA but remaining in the industry and selling their cane at the subsidy-free price; or remaining in the industry and enjoying the preferential price until it expires. These decisions could be left to the individual farmer, but they would be provided with full information on future sugar prices and the rationale for the purchase of the FBAs.

We can calculate the financial incentives facing farmers for each of the options listed above. Using the cash flow calculations provided in table 4 of Kurer (2001), the average farmer producing 160 tons of sugarcane would have the option of cashing his/her FBA for $27,072 (that is, 160 tons x $169.20 per ton), followed by the option of remaining in the industry and

facing the subsidy-free price of $17 per ton, or exiting the industry altogether.[16] If this farmer invests this lump sum with the Fiji National Provident Fund, his/her cash income at an annual return of 7 percent would amount to $1,895; should he decide to invest the amount in 15-year government bonds, the return at 5 percent would amount to an annual income of $1,354; and, a fixed deposit with the commercial banks with a return of 3 percent would yield an annual income of $813. The annual income from investing the sugar-rents in these ways range from 234 percent to 100 percent of the annual cash income of $862 earned by the farmer as reported in Kurer (2001).[17] The financial incentives facing the farmer clearly favour selling the FBA and as soon as practical; the latter given the fact that the value of the FBA diminishes over time. The landowner, moreover, will continue to be paid land-rents; this will now be based on the revised UCV that in turn will depend on how efficiently the land is used. Demands for improved efficiency in land use will induce rationalisation within the smallholder sector. The revised UCV, however, will at least equal the old UCV less the capitalised value of rents, thus landowners cannot lose financially from the sale of the FBA.

Let's address some of the potential difficulties associated with the above strategy. First, will this mean the decimation of the industry? Probably not, as the farms on the alluvial plains close to the mills will still find it profitable to grow sugarcane at the subsidy-free price. Even if it does mean a substantial reduction of the industry, as in a worst-case scenario, this should not be of concern since the income earned from the land can remain healthy (that is, "sweet") without relying on sugar. Next, will the EU pay the aid implicit in the sugar protocol as a lump sum? Once again, this is an issue for negotiation between the authorities, but such a request would be consistent with the WTO agenda and the EU Economic Partnership Agreements that encourage assistance with adjustment. If the EU is willing to provide aid via

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[16] These payments would accrue to farms with leases up to 2014; leases expiring earlier than 2014 would have the payments to the stakeholders mimic what happens implicitly under the current system.
[17] Kurer (2001) in arriving at this figure does not include transportation costs and those attributed to supply of domestic labour; land rents and debt-servicing costs are factored in his calculations, however.

trade, then it is hard to argue against continuing with the transfer as a one-off, lump sum payment to facilitate adjustment. If the EU is unwilling to oblige, a request for assistance could be made to the international agencies.

How about the workers in the industry who will be made redundant? Given that the rents from preferential access to the EU are divided between the manufacturer and the grower according to a set formula, a similar scheme to that for the grower can be devised for workers made redundant as the industry is forced to rationalise. What would be the political ramifications of paying out large sums of money to a select group of farmers? This could be tricky, but there is precedence in the government providing taxpayer-funded grants to farmers exiting the industry as well as landowners commencing sugarcane farming.[18] The challenge for the leaders, and policymakers, would be to fully explain the logic for such a transfer as it is akin to making a fully-funded redundancy payout to farmers opting out of subsidised production for good.

7. Conclusions

The expiry of land leases on which sugar cane has been grown has brought to a head the challenges of facilitating secure long term access to land. Doing so is particularly critical as a healthy market for secure and long-term access to land has implications for investment and growth of production in the broader economy. The impending erosion of preferences to sugar exports to the EU as world trade is liberalised has increased the urgency for deciding on policies relating to adjustments to such a large shock. Much of the popular discussion has tried to address the issues regarding facilitating long-term access to land in the same breath as meeting the adjustment challenges posed by the erosion of sugar subsidies. This paper argues that these two, albeit related, are separate issues deserving their own distinct solutions. The

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[18] The Peoples Coalition Government provided $28,000 rehabilitation grants to displaced farmers, while the SDL Government has been providing $10,000 grants to landowners entering the industry.

issue of facilitating long-term secure access to land is a long-term challenge; the resolution of which necessitates building upon the success of the existing mechanisms, the Native Land Trust Board arrangements in particular. The issue of facilitating adjustment to the erosion of preferential access to sugar into the EU is a short-term challenge and one that is likely to be painful due to the forced rationalisation; but one way or another this problem will be resolved in the next 14 years or so.

By subsidising resettlement of landowners on sugarcane farms vacated by tenants on the expiry of leases, policymakers have encouraged entry into a declining industry. This will exacerbate the pains of adjustment as EU subsidies delivered through the payment of preferential prices for Fijian sugar exports are withdrawn. There is the distinct possibility that the newly settled growers will undergo an unnecessary round of adjustment pains as the price of sugarcane falls. The prospective erosion of subsidies paid for sugar sold to the EU is already placing severe demands on efficiency and productivity, both in growing the sugarcane and in milling the crop. Placing these demands on new growers is only likely to lead to even greater distress.

This paper suggests interventions to facilitate long-term and secure access to communally owned land. We argue for the creation of a regulatory agency charged with the responsibility of providing arms-length supervision of a market driven process that allows landowners to make their land available to investors. The model followed here is akin to that of financial intermediation where banks take fixed deposits, which is on-lent to investors for use on agreed terms and prices and under conditions of certainty. Such a system is likely to induce cooperation between the owners of land and those with the capital to make the most productive use of the asset. Private sector intermediaries make the market while the regulator ensures prudential supervision to avoid problems in the market spilling over to the rest of the

economy. Achieving the above is a long-term challenge and one likely to impact on the rate of investment and growth of the economy.

Facilitating adjustment to the loss of preferential access into the EU, in contrast, is a short-term challenge. The Fijian economy would have to adjust, possibly very painfully, if nothing is done to ease such pains as the preferential price is reduced. The solution proposed here is relatively clean in terms of economic efficiency, though the political expediency of such a solution is hard to gauge. We propose that the aid implicit in sugar subsidies from the EU be 'decoupled from production' and provided lump sum. This amount could then be used to purchase the sugarcane supply-contracts (that is, the farm based allotments) from the smallholder sector. Using an illustrative example, we show that farmers, in all likelihood, will happily sell their farm based allotments on purely financially considerations. A similar mechanism could be used to rationalise the milling sector by paying off workers made redundant from the rationalisation of the industry. This proposal facilitates rapid adjustment, the participation of the stakeholders is totally voluntary, and the proposal is fully funded and consistent with WTO rules. This proposal has applicability beyond Fiji, particularly for adjustment in industries supported by preferential access into foreign country markets.

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Table 1: Sugar Production Statistics, 1971-2002.

Year	No of Contracts	Area Harvested ('000 ha)	Production (000 t)	Sugar Production (000 t)
1971	15548	47	2545	323
1972	15612	44	2238	303
1973	16533	46	2496	301
1974	16546	45	2151	272
1975	17264	45	2160	264
1976	17667	47	2283	286
1977	18395	52	2674	362
1978	18456	54	2853	347
1979	19152	62	4063	473
1980	19700	66	3360	396
1981	21000	66	3931	470
1982	21574	69	4075	487
1983	21880	59	2203	276
1984	22130	69	4290	480
1985	22159	70	3042	341
1986	22182	69	4109	502
1987	22255	66	2960	401
1988	22127	64	3185	363
1989	21771	71	4099	461
1990	21334	70	4016	408
1991	24479	73	3380	389
1992	23334	73	3533	426
1993	23454	74	3704	442
1994	23264	74	4064	517
1995	22449	74	4110	454
1996	22304	74	4380	454
1997	22100	73	3280	347
1998	22146	57	2098	266
1999	22178	65	3958	377
2000	22179	63	3786	341
2001	21882	66	2805	293
2002	21246	65	3423	330

Source: *Current Economic Statistics Bulletin*, Fiji Bureau of Statistics, (June 2003 & January, 1990)

Table 2: Expiry of sugarcane farm leases in Fiji, 1997-2005

Year of expiry	Indo-Fijian leases		All cane leases	25
	No.	Area (ha)	No.	Area (ha)
1997	27	232	27	232
1998	120	1,398	128	1,463
1999	158	1,708	170	1,962
2000	1,133	8,217	1,218	8,838
2001	1,494	7,861	1,542	8,337
2002	310	2,670	322	2,912
2003	435	2,945	465	3,240
2004	216	2,250	231	2,390
2005	228	2,297	245	2,490

Source: Reddy and Naidu, 2001: 34.

Appendix

Table A1: Basic statistics on variables modelled; sample period, 1971 to 2002

Variable(s)	Sugar price (Current $F)	Cane price (Current $F)	Area ('000 hectares)	TCTS (ratio)
Maximum	1031.0	81.79	74	11.1
Minimum	97	7.95	44	7.38
Mean	460.78	37.74	62.78	8.65
Coefficient Of Variation (%)	48	44	16	11

Table A2: Correlation Matrix of Variables

	Sugar Price	Cane Price	Area	TCTS
Sugar Price	1.000			
Cane Price	0.85985	1.000		
Area	0.5234	0.6291	1.000	
TCTS	0.58234	0.55984	0.42913	1.000

Table A2: Model estimates for milling efficiency to sugar price (dependent variable: log *tcts*).

Variable	Model 1	Model 2	Model 3	Model 4
Constant	1.54** (9.41)	1.47** (9.22)	1.27** (3.33)	2.09** (4.03)
Log(Sugar price)	0.10** (3.75)		0.083** (2.28)	
Log (Sugar price$_{t-1}$)		0.11** (4.31)		0.19 (0.31)

Log (Area)			0.092 (0.78)	-0.34 (-0.73)
Time trend	No	No	No	Yes
# of obs.	32	31	32	31
Adj. R-squared	0.30	0.37	0.29	0.40
DW-statistic	1.68	1.51	1.56	1.78

Notes: t-ratios are given in parenthesis; ** denotes the coefficient estimate is statistically significant at 5 percent level of significance; and tcts is tons of cane to ton of sugar. Given the small number of observations, care has to be taken in interpreting the results above. The errors generated from each of the models were diagnosed for problems of misspecification, autocorrelation, joint-significance of parameter estimates, etc. The plot of error terms from Model 1, the preferred model, is give below.

Figure A1: Plot of residuals and two standard error bands from Model 1.