CASH CROPS AND DISTRIBUTION

Small-Farm Sugar Production in Fiji: Employment and Distribution Aspects[1]

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The sugar industry in Fiji shows that under certain circumstances export crop production can satisfy equity criteria without sacrificing efficiency, growth, or rising real incomes. These circumstances are so particular to Fiji and its history that it seems unlikely that they could be replicated elsewhere. Nevertheless by identifying the factors contributing to this balance between usually opposing objectives, it is possible that some lessons of wider applicability to agricultural export sectors can be inferred from the Fiji experience.

The main points about the Fiji sugar industry which it is proposed to emphasise in this short paper are:

(a) The employment intensity of the industry, linked to its small-farm structure and its prohibition of mechanical cane harvesting technology.

(b) The social stability of the industry, resulting from the predominantly leasehold basis of farm tenure and the contractual system for the delivery of cane to sugar mills.

(c) The high proportion of total export revenue received by farmers and retained in the domestic economy, resulting in rising real incomes except in the current dire straits of the world sugar market.

(d) The efficiency of the industry, resulting from the effective communication of research to farmers, and the adoption of cane varieties appropriate to different soil-types in the cane zones.

(e) The influence of farmers on industry decisions, due to the existence of organised growers' unions, and their legislative recognition in policy making institutions at both local and national levels.

These points make the sugar industry in Fiji sound rather Utopian. This is not the intention. Like any activity involving the coordination of numerous small production units it has its flaws, inequities, wrong decisions, and potential crises. But success and failure are always relative in space and time, and comparatively speaking the Fiji sugar industry seems to have had more going for it than is typical of export crop sectors in developing countries.

[1] This article was written some six months before an army coup occurred in Fiji in May 1987. The constitutional crisis which followed could have a major long-term impact on the small-farm sugar economy, especially if the security of tenure of leasehold sugar farmers is placed in jeopardy. The article restricts its focus to the history and development of the sugar economy as it applied until c.1983-84.

The following paragraphs examine briefly the history, present operation, contractual basis, farm size structure, employment and income aspects of the Fiji sugar industry. Some of these aspects are explored in greater detail in Ellis (1985).

History

The Fiji sugar industry began as a plantation system based on the recruitment of indentured labour from India in the period 1879 to 1916. In common with many such export sectors worldwide, an early process of concentration led to the dominance of a single foreign enterprise, the Colonial Sugar Refining Company (CSR) of Australia.

This plantation system ran into difficulties during and after the First World War. The indenture system of labour recruitment was terminated by the British government in 1916. Indenture contracts remaining in force were cancelled in 1920. Sugar estate workers released from their indenture obligations found that they could lease land from Fijian landowners (see below) and thus take up farming rather than continuing as wage workers for the CSR. The company confronted an acute shortage of labour and a slump in world sugar prices.

The transition from the plantation to the leasehold small-farm system resulted from this crisis [Anderson 1974; Moynagh 1981]. After a period of experimentation CSR implemented an outgrower production system, based on an average farm size of 4.05 ha for its tenant farmers [Ward 1980]. The scheme was a great success, raising sugar output from its lowest level of 36,000 tons in 1923 to 94,000 tons in five years.

Several features of this transition are notable. First, it was comprehensive. The entire previous plantation area was converted to the leasehold small-farm basis. Second, a uniform farm size was observed and barriers to the concentration of holdings were included in tenancy and cane delivery contracts. Leasehold transfers, sub-letting, and the holding of more than one cane delivery contract per grower were prohibited.

Third, the same terms and conditions were offered to potential growers with access to land outside the old CSR estate area. Thus many former employees of the

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company who had taken up leasehold agriculture on adjacent land were drawn back into sugar production by the issue of cane contracts. Fourth, the cane contract gave the CSR tight managerial control over its farmers (contract area, varieties to be grown, approved cultivation practices, delivery schedules to mills and so on).

Land Tenure in Fiji

The land tenure system in Fiji requires explanation since it is unusual. Only eight per cent of the entire land area of the Fiji Islands is owned by private freehold title, a further 10 per cent being held by the state ('Crown Land'), and the remaining 82 per cent being held by indigenous Fijian clans and administered for them by a statutory authority, the Native Land Trust Board (NLTB). The origin of this tenure system in the 1880s under British colonial rule is a fascinating story in its own right [France 1969].

The majority of sugar growers are leasehold tenants either of Crown Land or NLTB land, the statutory duration of leases is 30 years, and rent levels are determined by statutory authorities, not by individual clan owners. This land tenure system ensures fairly strong security of tenure for the sugar growers. It has also acted as a brake on land concentration which tends to typify agrarian change under freehold ownership [Anderson 1974].

The Industry Now

Some 60 years after it was initiated, the small-farm system remains intact in most of its aspects. The CSR was nationalised in 1973 and its sugar milling and management functions are now carried out by a parastatal, the Fiji Sugar Corporation (FSC). The FSC is responsible for the administration of the industry, the processing of cane, and the marketing of sugar.

Sugar production occurs on the north-west side of the two largest islands in the Fiji group, Viti Levu and Vanua Levu. The production area is divided between four sugar mills, and each mill area is further divided into cane sectors with an average of about 700 growers per sector. Each sector is administered by an FSC Field Office, which coordinates all facets of production and harvesting with just five or six personnel per sector (field officer, extension workers and clerical staff).

The Fiji Sugar Corporation undertook an expansion programme in the 1970s which increased the number of growers to around 22,000 and the total area under contract to 90,000 ha. In 1982 the harvested area was 70,000 ha, cane production was just over 4 million tonnes, and sugar output was nearly 500,000 tonnes. Cane yields per hectare in recent years have been around 60 to 65 tonnes per hectare, which compares favourably with yields in countries which have estate or plantation sugar. This reflects the control over agronomic practices exercised by FSC and its predecessor, including the quick diffusion of the results of agricultural research to growers.

Sugar Cane Contract

From the inception of the small-farm system the relationship between the millers (formerly CSR, now FSC) and the growers has been regulated by a cane contract which applies to all growers, and which is normally renegotiated every 10 years. The cane contract sets out the conditions under which the millers accept cane delivery from growers, and also covers the obligations of the millers to the growers. Reflecting its origin in plantation-style management the contract is very precise about the agronomic practices, varieties of cane to be grown, harvesting practices, and delivery schedules expected of growers.

Apart from these conditions the main feature of the sugar cane contract is that it specifies the division of total income between the millers and growers. Various different formulae for this division have applied in different periods, but relevant to recent history is the outcome of an independent enquiry chaired by Lord Denning in 1969, referred to as the 'Denning Award' to the cane growers [Fiji Government 1970]. This advocated a straight split of the gross proceeds from sugar and molasses sales in the proportions of 65 per cent to growers and 35 per cent to the CSR, irrespective of fluctuations in market prices or in unit costs of sugar processing caused by variations in the volume of production.

The Denning Award was contested by the CSR [CSR 1970], and, since the company was unable to secure a reversal of its judgement, led to its decision to withdraw from the Fiji sugar industry [Moynagh 1981:231-41]. The ownership of the milling side of the industry was taken over by the Fiji Sugar Corporation in 1973. At the same time former CSR land came under government ownership, and the leasehold tenant farmers of the CSR became tenants on government land.

A subsequent renegotiation of the cane contract since FSC took control raised the growers' share in the total export proceeds to 70 per cent. Once incorporated in the contract, this proportion is mandatory and cannot be altered until the contract comes up for renewal. Thus at the present time the final growers' price for cane is based on a 70:30 split of sales proceeds.

An important aspect of the sugar cane contract is the role of growers' organisations in securing improved conditions over the years. Since early days there have been growers' unions in the sugar industry [Gillion 1977] and these have exercised considerable influence

Table 1

Structure of Sugar Cane Production in Fiji Average 1980-82

Range of contract area per grower ha.	*Distribution of growers*		*Distribution of output*	
	No.	*%*	*'000 tons*	*%*
Less than 2.0	2,582	12.3	148.6	4.0
2.0 to 3.5	3,828	18.2	453.8	12.2
3.5 to 5.0	8,014	38.1	1,499.3	40.1
5.0 to 6.5	4,891	23.2	1,024.5	27.4
6.5 to 8.0	915	4.3	270.4	7.2
8.0 to 9.5	408	1.9	134.6	3.6
9.5 to 11.0	131	0.6	53.3	1.4
More than 11.0	273	1.3	149.8	4.0
TOTALS	21,042	100.0	3,734.3	100.0

Source: Fiji Sugar Corporation

on its development (e.g. the Denning arbitration resulted from a prolonged growers' 'strike', and this was just the most recent of many such confrontations over the years).

Recent sugar industry legislation makes this influence more formal. It creates a Sugar Commission as the regulatory body of the industry, composed of six cane grower members, four FSC members, two members from labour unions in sugar processing, and an 'independent' chairman appointed by agreement between the various parties and the government [*Fiji Sugar*, June 1984].

Farm Size Structure

The farm-size structure of the industry in recent years is shown in Table 1 below. This gives the distribution of cane growers, and the distribution of total cane output, according to different ranges of contract area per grower. The contract area is the total area from which FSC agrees to purchase cane, and is the same as farm area for most farms.

The table shows that 80 per cent of growers and 80 per cent of output are associated with cane contract areas in the range of 2.0 ha to 6.5 ha. Contract areas under 2.0 ha, and indeed most of those at the lower end of the range cited, represent a policy of issuing contracts for so-called 'backyard' farms (filling in spaces between existing farms) which was followed by FSC in the 1970s. They do not represent fragmentation of existing holdings, which is prohibited in the cane contract. Nor were these contracts aimed at providing a sufficient area to make a livelihood from sugar; their purpose was to increase output by encouraging cane production as a secondary source of income for urban wage earners.

About 40 per cent of growers and output are associated with farm sizes more narrowly centred on the original CSR farm size of 4.05 ha per grower. Another 20 per cent are centred on a larger target size of 6.1 ha (15 acres) introduced by FSC in the 1970s for new land brought into cane cultivation. Less than 10 per cent of growers have contract areas above 6.5 ha and these produce about 15 per cent of total output. They comprise the few farmers who have freehold land tenure, plus a handful of larger farms operated by the FSC and other state agencies.

This farm size structure implies relatively little inequality in the output and income distribution between farmers. 85 per cent of growers produce an output of 300 tonnes of cane or less, and most of these produce in the region of 200 tonnes of cane ('backyard' farms excepted). At a cane price thought to be around F$20 per tonne this gives a gross farm income for an average grower of around F$4,000 per year (F$1 = US$ 0.90 in 1986).

Sugar Cane Employment

Table 2 provides data on estimated direct employment in sugar cane production in Fiji between 1970 and 1982. This is based on three categories of direct employment:

(i) the sugar growers themselves, the numbers of which correspond closely to the number of sugar farms, and which consist of the single member of each farm household who holds the contract for delivery of sugar to mills;

(ii) grower's family (i.e. adult members of the farm household other than the grower) engaged on the

Table 2

Direct Employment in Sugar Cane Production in Fiji 1970-1982

Year	Growers Supplying Cane	Non-Growers in Cane Harvesting[a] Family	Hired Labour	Total Direct Employment	Per Cent Fiji Labour Force
1970	15,542	5,748	7,367	28,657	20.1
1971	15,290	5,440	6,172	26,902	18.3
1972	15,364	5,298	6,371	27,033	17.8
1973	15,372	5,802	6,177	27,521	17.5
1974	15,815	4,834	5,019	25,668	15.7
1975	16,994	5,179	5,671	27,844	16.4
1976	17,130	6,065	6,450	29,645	16.8
1977	17,156	6,237	7,424	30,817	17.0
1978	19,216	6,985	7,955	34,156	18.2
1979	19,545	7,897	9,106	36,548	18.8
1980	19,898	8,600	10,700	39,198	19.5
1981	21,051	8,494	10,917	40,462	19.4
1982	22,091	8,677	11,234	42,002	19.6

[a] Calculated from annual censuses of the harvesting labour force by the Fiji Sugar Corporation

Sources: Fiji Sugar Corporation, Ellis (1985)

farm, the figures for which are estimated from an annual census on the size and composition of the cane harvesting labour force;

(iii) the number of cane cutters hired from outside the farm family (i.e. wage labour), figures for which are again available from an annual census of the harvesting labour force.

The harvest season in Fiji has a seven-month duration, and these figures represent full-time engagement in harvesting for the duration of the season.

Direct employment in sugar cane production is estimated to have increased from under 30,000 to over 40,000 persons during the period of output expansion in the 1970s. The output rise between the mid-1970s and the early 1980s was about 70 per cent while that for employment was about 50 per cent. Thus there was some increase in labour productivity, but as shown in Table 2, employment also rose sufficiently fast to maintain the proportion of cane employment in the rising Fiji labour force.

The plain data in Table 2 do not capture the diversity and flexibility of income-earning possibilities which exist in a sector composed of 22,000 family farmers. Cane harvesting in particular tends to absorb as much labour as comes forward to engage in that activity because payment is on a piecework basis. The small farm structure discourages mechanisation of cane harvesting since farms are too small for optimum machine operation and net income is not high enough to warrant any individual grower making the large capital investment required. A long standing government prohibition on the importation of mechanical harvesters reflects this absence of internal pressure for mechanisation, though external pressure is often exerted by machinery suppliers.

Studies of mechanised cane cutting elsewhere have estimated that full mechanisation (the chopper harvester) replaces labour in a ratio of 20 to 1. In terms of our figures for employment in 1982, this would mean a drop in total direct employment from 42,000 to about 25,000 persons. Of course degrees of partial mechanisation exist, but any of these would create a radical departure in the way the industry has hitherto operated, affecting not only employment but also optimum farm size, concentration of holdings, income distribution and so on. It may also be noted in this context that harvest mechanisation in cane sugar has never been shown to reduce unit costs in cane production. It is factor substitution, not technical change. Yield comparisons across countries with widely differing production structures also suggest that there are few economies of scale in cane production.

Income Trends

The fixing of the grower price in terms of the percentage share of growers in total income means that grower price fluctuates according to average prices received in external markets. Fiji is protected to

Table 3

Cane Prices, Grower Incomes, and Wage Rates of Cane Cutters: Trends in Money and Real Terms 1970-1982

Year	*Cane Price F$/tonne*	*Average Gross Income[a] F$/grower*	*Cane Cutters Wage[b] F$/tonne*	*Real Indices[c] 1970 = 100.0*		
				Cane Price	*Average Income*	*Cutters Wage*
1970	7.63	1,411	0.85	100.0	100.0	100.0
1971	7.95	1,302	0.85	97.8	86.7	93.9
1972	9.90	1,449	1.00	111.7	88.4	101.2
1973	9.76	1,587	1.10	99.0	87.1	100.2
1974	20.57	2,879	1.30	182.4	138.0	103.5
1975	31.60	4,317	3.00	247.7	183.0	211.1
1976	24.19	3,249	3.00	170.2	123.7	189.5
1977	26.74	4,174	4.00	175.9	148.4	236.1
1978	25.00	4,152	4.00	155.0	134.2	222.6
1979	23.85	5,035	4.00	137.3	156.7	206.7
1980	35.19	6,050	4.35	176.9	164.5	196.3
1981	26.24	5,185	4.35	118.6	126.8	176.5
1982	25.00	4,839	4.35	105.6	110.2	165.0

[a] Total grower income in each year divided by the number of growers in the preceding year (since new growers will not have started to produced in their first year).

[b] Refers to the wage rate for cutting green cane of a harvesting gang in the Lautoka mill area for which written records of wages back to 1970 existed.

[c] Indices in money terms (1970 = 100.0) deflated by the Consumer Price Index.

Source: Fiji Sugar Corporation, Ellis (1985)

some degree from world price instability by participation in the EEC Sugar Protocol, which gives an assured market at fixed prices for 172,000 tons of sugar (about 40 per cent of Fiji's total output).

In the decade up to 1980, growers experienced generally high and rising real income due to two successive 'booms' in the world sugar market (Table 3). The real wages of hired cane cutters also gained from these buoyant conditions.

Since 1981 the situation has not been so propitious, and all participants in the industry have experienced an erosion in living standards. As the slump in the world sugar market continues it is likely to be hired labour in cane production which suffers most. Growers can substitute family labour for hired labour as their real income falls, and they can also turn part of their production area over to subsistence food crops. This flexibility of the small-farm system is significant from the growers' viewpoint, and would not exist in a plantation system due to the specificity of fixed capital tied up in production.

Division of Gross Sugar Income

Another dimension of income distribution is the division of total export earnings between the various participants in production and processing. This aspect is quantified in Table 4 by reference to the division of the gross receipts from sugar and molasses sales in 1981. A striking feature of this division of the sugar 'cake' in Fiji is the high proportion of gross income which is returned to direct labour in production and processing. The total returns to domestic labour (items 3, 7, 8 and 9 in Table 4) amounted to F$93 mn or 61 per cent of total sales income in 1981. This amount accrued to an estimated 46,000 persons employed in the industry as growers, cane harvesters, mill workers, and FSC staff in 1981.

A further F$44 mn or 29 per cent is attributed to the non-wage costs of production and processing (items 2, 4, 10 and 11 in Table 4) which comprises both direct material inputs (fuel, fertilisers, etc.) and the cost of hired local services (mainly lorry and tractor hire for harvesting and cultivation). Net profits and financial charges accounted for F$7 mn or 5 per cent of gross

Table 4

Estimated Distribution of Gross Sugar Income, 1981

Income Category	*Distribution*	
	F$'000	*%*
A. **Gross income**	**151,380**	**100.0**
(Sugar and molasses sales)		
Less: 1. Export taxes	5,120	3.4
2. Marketing deductions[a]	1,790	1.2
B. **Income for distribution**	**144,470**	**95.4**
C. **FSC Share**	**41,310**	**27.3**
of which:		
3. Wages and salaries	17,270	11.4
4. Non-wage costs	14,450	9.5
5. Financial charges[b]	3,420	2.3
6. Profit before Tax	6,310	4.1
[6a. Profit Tax	2,310	1.5]
D. **Growers' share**	**103,160**	**68.1**
of which:		
7. Operating surplus	40,260	26.6
8. Harvesting labour	19,660	13.0
9. Other labour costs	15,720	10.4
10. Purchased inputs[c]	9,830	6.5
11. Other cash costs[d]	17,690	11.7

[a] Includes the so-called Certified Deductions made to cover the costs of the Sugar Board and agricultural research.

[b] Depreciation, financial reserves, etc.

[c] Fertilisers, weedicides, mill mud etc.

[d] Mainly hire costs for tractors and lorries used in cane harvesting, and tractors used for cultivation. This category also includes the cost of seed cane and land preparation for replanting.

Source: Fiji Sugar Corporation data

income in 1981, and a similar proportion was accounted for by export and profit taxes accruing to government.

An implication of this distribution is that the proportion of total sugar income which is retained in the domestic economy rather than leaked into imports is comparatively high for this kind of activity. The 1977 input:output table for Fiji estimated that the import content of cane production was 7.2 per cent of cane output value, and the import content of sugar production was 10.7 per cent of processing value added. Taken together these percentages would imply that only eight per cent of gross sugar value represented a direct leakage into imports on the production side. The FSC figures for the year 1981 suggest a rather higher proportion, roughly 12 per cent of the gross output value, as the direct import cost of the industry. This is still a very low leakage into imports for an oil-importing island economy lacking domestic manufacturing capacity for capital goods and major agricultural inputs.

Summary and Comparative Significance

Fiji has a small-farm sugar export industry which combines fairly equal farm incomes with high employment and efficient production by comparative international standards. This industry has existed for six decades, it has survived the many slumps and crises

in the world sugar market, and it has proved adaptable to changing circumstances. The industry is an integral part of Fiji economy and society, and has played a crucial role in social stability by providing a livelihood for half the population (the Fiji Indians) who, as descendants of immigrants, have not had ownership rights over land.

This export sector differs greatly from others observed at first hand by this writer. One contrast is with plantation production of bananas in Central America [Ellis 1983]. Although considered a very labour intensive crop, plantation bananas (including all operations up to exportation) created jobs for 85 persons per $1 mn exports in 1982. The comparative figure for Fiji sugar was 300 persons per $1 mn exports in 1982. The share of returns to labour in total export value was 35 per cent for plantation bananas and 61 per cent for Fiji sugar. The share of export value retained in the home economy was 50 per cent for plantation bananas and nearly 90 per cent for Fiji sugar.

A different set of contrasts may be made with respect to export crop production in Tanzania in the 1970s [Ellis 1982, 1984]. Export taxes in Tanzania varied for different crops from 10 per cent to 45 per cent, for Fiji sugar the export tax was two per cent. In Tanzania no effective control existed over the marketing costs of crop parastatals, and for many years these organisations regarded the producer price as a residual to be paid after they had covered their own expenditures. In Fiji the FSC is legislatively required to operate within the margin agreed in the sugar cane contract. In Tanzania the share of producers in export prices was variable and declined to an average lowest level of about 40 per cent (it was lower than this for some crops). In Fiji growers experienced a rising share of export proceeds to reach a current contractual level of 70 per cent.

Perhaps the most significant contrast in this comparison, however, was the absence of grower influence on decisions in the Tanzanian case. In Fiji this influence was exerted in the past by growers' unions, and it has recently been enshrined in legislation which gives growers equal participation with other agencies in the highest policy making body for the sugar industry. More difficult still to pin down is the independence from state interference which applies to the routine operation of the Fiji sugar industry, and which is rare for a situation in which a parastatal agency is responsible for export sector development.

Lastly the average farm size adopted for the Fiji sugar industry has played a central role in its long run stability and its employment and income effects. The original standard tenancy of 4.05 ha is not so small by the standards of some developing countries, but nor can it be characterised as a 'large farm'. In the context of cane sugar production it is a farm size which is small enough to be operated solely by family labour, but not so small as to inhibit improvements in productivity and incomes over time. Whether by accident or design, the founders of this system hit on a farm size which is just below the threshold for significant substitution of labour by capital, and this has ensured the high employment intensity of the industry in the long term.

References

Anderson, A. G., 1974, *Indo-Fijian Smallfarming: Profiles of a Peasantry*, Oxford University Press, Auckland

Colonial Sugar Refining Co., 1970, *Lord Denning's Award Concerning the Fiji Sugar Cane Contract Dispute: Observations on its Consequences and Mistakes*, Sidney

Ellis, F., 1982, 'Agricultural price policy in Tanzania', *World Development*, vol 10 no 4, pp 263-83

—1983, *Las Transnacionales del Banano en Centroamerica*, EDUCA, San Jose, Costa Rica

—1984, 'Relative agricultural prices and the urban bias model: a comparative analysis of Tanzania and Fiji', *Journal of Peasant Studies*, vol 10 no 4, July, pp 214-42

—1985, 'Employment and incomes in the Fiji sugar economy', in H. C. Brookfield, F. Ellis and R. G. Ward, *Land, Cane and Coconuts: Papers on the Rural Economy of Fiji*, Australian National University, Canberra

Fiji Government, 1970, *The Award of the Rt. Hon. Lord Denning in the Fiji Sugar Cane Contract Dispute 1969*, Parliamentary Paper No 28, Government Printer, Suva

France, P., 1969, *Charter of the Land: Custom and Colonisation in Fiji*, Oxford University Press, Melbourne

Gillion, K. L., 1977, *The Fiji Indians: Challenge to European Dominance 1920-1946*, ANU Press, Canberra

Moynagh, M., 1981, *Brown or White? A History of the Fiji Sugar Industry 1873-1973*. Pacific Research Monograph No 5, ANU, Canberra

Ward, R. G., 1980, 'Plus ca change . . . plantations, tenants, proletarians, or peasants in Fiji', in J. N. Hennings and G. J. R. Linge (eds.), *Of Space and Time*, ANU, Canberra