

A Survey of the economic performance of selected markets in the Solomon Islands and Papua New Guinea.



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Introduction

Surprisingly, there appears to be little past research into the financial performance of fresh produce or specialist markets, and their impact on local, regional and national economies. The work undertaken by UNIFEM in partnership with local government and other stakeholders during 2008-10 has enabled some preliminary research to be conducted within Melanesia, and this paper presents the findings to date. The findings have important implications for governments responsible for investing in market infrastructure and managing market operations, as well as donor agencies.

While this paper is concerned with economic performance, it should be recognised that the value of markets is not limited to financial outputs alone. Clearly markets are significant in providing food security for consumers, and they have important social and cultural functions. Poor financial performance would not signify that markets have no value. However a market that does not also provide economic benefits for its participants is unlikely to be sustainable in the long term. It should also be noted that because of the way markets operate (ie located to take advantage of commercial opportunities without necessarily being supported by appropriate planned infrastructure), strong economic performance does not necessarily flow through to good amenity for vendors and their customers. However poor environmental conditions can lead to stagnation, providing an impediment to ongoing economic growth and prosperity as well as social outcomes.

The analysis presented below is based on a survey of vendors in several markets located in the Solomon Islands (Honiara) and Papua New Guinea (Port Moresby and Kundiawa). The extent of the survey is summarised as follows:

Honiara

Henderson Market (small peripheral farmers' market comprising around 30 vendors, targeted for major expansion)

Central Market (large city market with around 1,000 vendors, operating at full capacity)

Port Moresby

Nine Mile Market (medium sized market on the urban periphery, fast growing with over 300 vendors)

Gordons Market (largest city market with around 1,500 vendors, very overcrowded, targeted for upgrading and expansion)

Kundiawa

Main Market (a new market currently only occupied by around 200 vendors but with capacity to accommodate a greater number of vendors)

Second Hand Clothes Market (specialist market threatened with displacement, occupied by around 200 vendors at any one time but with a total of 300 vendors)

Informal Market (large unauthorised market on church land, occupied by around 450 vendors)

Mini-Market Area (unauthorised market adjacent to the Second Hand Clothes Market, occupied by around 300 vendors).

The overall analysis demonstrates considerable variation in economic performance, not only between different markets reflecting their size and the nature of the market catchments, but also between individual vendors in the same market reflecting access to capital, transport costs and business skills. Broad findings across locations are that the larger markets (particularly) are significant economic entities in terms of turnover and employment generation, and deserving of much greater investment and policy support than they currently receive.

Key considerations in this report applied to economic performance are the following outcomes of marketing activity :

(a) ***the performance of markets in terms of employment and income/earnings generation***, providing earnings for people who lack alternative employment (expressed as number of jobs created and associated earnings)

(b) ***the return on capital employed within the market***, ie profits after an allowance is made for a basic wage, providing funds that can be reinvested in business growth.

Key Terms

For the purposes of this research, it is important to have a common understanding of some terms that will be used, derived from conventional economic analysis.

Depreciation in asset value: the reduction in value of assets such as infrastructure or equipment that will take place over time due to wear and tear and/or obsolescence unless there is corresponding investment in maintenance and periodic asset replacement.

Direct cost of sales: those costs that vary with the quantity of goods being sold, such as cost of cooking fuel for sale of cooked foods, cost of ice for perishable foods, cost of fibre for making and selling billums. For the purposes of this survey, earnings have been treated as a semi-variable cost, and are taken to account as indirect costs of sales.

Discretionary (or disposable) earnings: that proportion of earnings which is left over from meeting basic requirements including the cost of bringing goods to sale, household food and rent, and over which there is some choice over the allocation of priorities.

Employment generation: the number of jobs created with given inputs, which could be expressed in terms of jobs created per monetary value of inputs (value of goods, investment in infrastructure), or by area (per square metre) for example.

Fixed assets (or non-current assets): the market buildings and major physical infrastructure, much of which is publicly owned: most individual vendors have minimal fixed assets.

Capital employed: in conventional terms this is equal to

(current assets – current liabilities) + fixed or non-current assets.

This calculation can be done quickly for a formal business using the closing balance on the balance sheet, or the average of the opening and closing balances. If working capital cannot be calculated, then capital employed may then be equal to the sum of short term debt plus long term debt plus owners' equity. The total of this sum is usually equal to the asset value of the enterprise.

Gross sales income: the monetary value of all goods sold less the cost of goods sold less all other direct costs of sale.

Indirect cost of sales: those costs that are fixed, and which do not directly vary with turnover, eg transport, market fees. As previously explained, wages (or a sum equivalent to a working wage) have been included in this category.

Net profits (proprietors' discretionary earnings): these are equal to the sum of the monetary value of all goods sold less direct and indirect costs.

Profit margin: discretionary earnings as a proportion of turnover.

Return on capital employed (ROCE): this is the conventional formula for assessing business performance and it can be expressed by the formula:

$$\frac{\text{earnings before interest and tax (EBIT)}}{\text{capital employed}} \times 100\%$$

Shift share comparison: this is a conceptual model for looking at which sections of the economy are getting bigger or performing better over time relative to other sections.

Turnover: the monetary value of all goods sold in a given period (often termed as income).

Survey Methodology

The main research tool was the questionnaire attached at Appendix 1. This was piloted at Honiara Central Market, and the questionnaire incorporates some adjustments made on the basis of this experience. Some comments on the responses to the various questions put to vendors are as follows.

Rates of exchange: at the time of survey US\$ = approximately SI\$8 or K2.5. However the cost of living in the Solomon Islands was much lower than that of PNG, so monetary amounts cannot be compared directly.

Turnover: vendors were asked what their takings would be on the day of survey, and then what their usual daily takings would be, with the first response being a prompt to carefully consider the second response, which was the one used in analysis. Seasonal variations were not queried as this would have complicated the responses and interpretation, and it has been assumed that seasonal fluctuations in turnover for different goods more or less balance out through the year.

Direct cost of sales: as well as the cost of goods, vendors were asked about travel costs, market fees and associated costs (eg storage), cost of managing goods for sale (ice for perishable goods, fuel and ingredients for cooked foods etc). Where vendors were primary producers, it was assumed that the cost of goods was 50% of gross sales income, which was on the high side of the costs quoted by on-sellers. Cost of sales also includes an estimate of the value of goods lost through theft or deterioration, but these appeared to be understated – many vendors claimed little or no waste even for highly perishable items. Disposal of goods by giving them away, exchanging them with other vendors or using them in household consumption was common.

Gross sales income: this was estimated on a weekly basis, using information from vendors about how many days per week they traded in the particular market under survey. Some vendors traded in other markets on particular days, but this was set aside for the purposes of the present analysis.

Indirect cost of sales: this includes semi-variable and fixed costs, the major component of which is wages. For the purposes of this analysis, basic wages are estimated as SI\$4. 5 per hour and K1.10 per hour based on the salaries of others employed to work in the market, such as cleaners and security guards. For the sake of experience, expenditure on minor capital items such as umbrellas, eskies and cooking utensils has been included as an indirect cost.

Net profits (proprietors' discretionary earnings): because vendors may trade at different markets on different days, and the range of hours worked is very great (anything from 3 to over 70 hours per week) net profits/earnings have been assessed on both a weekly and an hourly basis, using information provided by vendors on how many hours they worked in a particular market, and also adding on likely travel times.

Survey Findings

Henderson Market

This is a small market beyond the eastern boundary of Honiara city, run by farmers in the adjoining village as a co-operative venture, and catering for passing trade including the transport industry. It is located opposite the airport, and the site has been targeted for possible expansion to cater for tourists as well as local customers, as a joint venture involving the local traditional owners.

Henderson market has around 30 vendors on any one day, all of whom are also farmers. The following findings are based on a small (10%) sample of three vendors interviewed plus focus group discussion amongst groups of vendors.

Hours are irregular but the market operates at most times during the day, and a few trade into the night. The locational advantages arise from taxi and bus drivers who stop by for refreshments after taking people to the airport, and athletes who buy food after practicing on the adjacent sports grounds.

The traders walk to the market with their produce, with walking time of 30-60 minutes each way. A few people use wheelbarrows, but this is not particularly cost effective (due to frequent tyre punctures and wheel breakage). It is difficult to tell whether the volume of trade is limited by the amount that the traders can carry, the volume of surplus crops available to sell after subsistence needs have been met, or the volume purchased by consumers. However the impression from talking to vendors is that if there was more demand, they could supply more produce, and this is validated by researchers who have examined primary production around Honiara (Vinning, 2010 advice).

Most traders work 6 or 7 days per week, with a few taking their goods to Kukum Fish Market (an SDA Sunday market) on Sundays – though this trend is declining as the increased sales income on these days is largely offset by high transport costs

All traders are also involved in primary production with 1.5 equivalent full time worker producing goods for every person involved in marketing, but with a sharing of responsibilities within the family (more often women and children trading and men farming, but sometimes with these roles reversed); traders claim the hours they work are equivalent to 1.5 full time workers and this has been assumed in the model, though some of this time is spent in recreation when there are few customers present (traders sharing the supervision of stalls to take time out)

Average turnover is \$60,000 per trader per annum. Around 10% of produce brought into the market is lost through theft or deterioration (NB theft is minimal due to the police post at the airport being directly opposite the market). Transport costs are minimal but an hourly wage rate has been assumed for travel time. Other direct and indirect costs equate to another 10% of sales income (highest for those preparing cooked foods)

There are an estimated 300 customers visiting the market every market day on average, with an average expenditure of \$20 per visit, but with some customers buying large volumes to on-sell in the Central Honiara Market (in the absence of a wholesaling system) where prices are about double those at Henderson Market

There are no workers employed as cleaners or security guards, as these functions are provided by the vendors themselves working as a co-operative group, within the time for which imputed wages have been calculated (eg a once weekly group clean-up).

Currently the market's fixed assets are valued at \$100,000 with negligible asset maintenance and/or market improvements – this is mainly self built rough timber stalls but with a couple of roofed buildings and a curtained pit toilet.

The total market sales are worth \$6,000 per typical market day or \$1.8M per year. The average turnover is \$60,000 p.a. per trader, with cost of goods presumed as an equivalent of \$30,000 (if they were to be purchased wholesale), and 20% is taken up by imputed wages.

The annual return on capital employed within the market is 150% for the whole market catchment including the primary producers if each farm's infrastructure were to be valued at around \$100,000. Such a high rate of return is not a credible finding for a business and it reflects the lack of capital infrastructure rather than high earnings.

The market directly creates 30 vendor jobs with no indirect jobs in the transport industry, plus 45 full time equivalent primary producers (selling goods surplus to subsistence requirements). The level of vendors' profits are equivalent to around 90 salaries at a basic wage level (benchmarked to those of Council employees).

Honiara Central Market

This large market dominates trade in Honiara and is by far the largest market in the Solomon Islands. It is run by Honiara City Council, and operates out of a large market house. It is well managed in the main, though there are complaints from vendors about the level of fees charged and deficiencies in environmental health, including the appalling state of the toilets. The market is fenced but vendors are allowed to sleep in the market overnight, as a concession to primary producers who bring bulk goods into town and sell them over a period of several days.

Data from 118 vendors in the market was significantly skewed by four fishermen whose income was well above the norm for market vendors. These four incomes have therefore been deleted from the sample to provide more representative findings. However it should be noted that the income and earnings for fresh fish vendors were well above that of other vendors, even taking account of the extent of capital employed in fishing ventures.

The cost of goods was assumed as 50% unless otherwise stated, with the assumed costs for primary producers equating to costs of production. This may have understated production costs in the case of fishermen and poultry producers, however, and this needs to be considered in relation to the figures presented below for these trades. An assumption was made that the hours of production for cooked food vendors was equivalent to that involved in trade, with the costs of ingredients generally being stated. Making these assumptions, the average cost of goods was 44% (indicating that the 50% assumption may have overstated these costs) and the next most significant cost was travel, at 8% of the sales turnover. Market fees accounted for 6% of

turnover, and this was by far the highest monetary fee cost of all the markets assessed.

The average turnover per week for the sample of 114 vendors was \$276 for an average working week of 34 hours, but there was considerable variation between types of trade. The market is only open for six days a week, but some vendors choose to sell at the Seventh Day Adventist market (Kukum Fish Market) on Sundays. Around three quarters of those interviewed were involved in selling fresh fruit and vegetables, and the average income was slightly in excess of the average for this group. However the size of the interviewee sample was large enough to permit some analysis of average earnings for other vendors, and the following categories had earnings well in excess of those selling fruit and vegetables:

- salt fish \$4,525 per week (\$77 per hour)
- fresh fish \$4,223 per week (\$200 per hour)
- meat (dressed chickens) \$2,447 per week (\$655 per hour)
- peanuts \$1,386 per week (\$32 per hour)
- cooked food \$900 per week (30 per hour)
- craft \$867 per week (\$25 per hour)

(Note: sample sizes for other markets has not permitted this breakdown.)

The exceptionally large incomes for salt fish vendors requires explanation. Salt fish is obtained from commercial trawlers who generally barter the bicatch (which is salted in the hold) for fresh fruit and vegetables, or more recently for sexual favours – it is not available for monetary sale. This represents a considerable commercial opportunity as the monetary cost of goods is well below that of other products. There is considerable controversy over the way salt fish is obtained and traded, and there are moves to ban it altogether. It obviously provides a good income for the vendors, and a cheap source of protein for customers, but it also undermines the incomes of local fishermen who sell their fresh fish.

Men were better represented in the fresh fish and peanuts trades, both of which were relatively high income earners, but taken overall the incomes of male and female vendors was similar. The proportion of male vendors in the sample of 118 vendors interviewed was 17%.

Disposable income after accounting for purchase of goods for trade and meeting basic household needs was focused on meeting the cost of school fees (34%). Many traders managed to save some of their income (an average of 25% of disposable income), and the remaining income was spent equally on building materials and gifts to relatives. There was a considerable gender bias in the money provided to male and female relatives, with 88% of vendors giving more to male than to female relatives. Many vendors pointed out that they made regular monetary allocations for customary purposes such as weddings (bride price), funerals and other ceremonies (NB this did not emerge from the PNG surveys).

Taken as a whole, assuming an average occupation of the market by 800 vendors in 2010 and an equivalent basic wage of \$4.50 per hour, it would

appear that the market provides an income equivalent to around 4,000 basic salaries, possibly equivalent to basic wage incomes that support around 16,000 people (around 20% of the population of Honiara). The annual turnover within the market is estimated as over K10M per annum.

Almost all of the fresh fruit and vegetable vendors interviewed claimed that they were primary producers, having grown their own produce before bringing it to market. This overstates the situation, as an estimated one third of vendors buy their goods from primary producers, but the mis-stated situation probably arises from the considerable vilification of “on-sellers” (also termed “black marketeers”) by the local community. Given the assumptions made about the cost of goods, and the fact that at least a slight majority of vendors in the Central Market are primary producers, it is likely that the Central Market supports a further 2,000 equivalent jobs in primary production, supplementing subsistence production for these producers and helping to support a rural population of around 6,000.

Transport costs incurred by vendors are around \$6M per annum, and it is possible that transport of customers involves an equivalent sum. If around 25% of transport costs were involved in paying the wages of transport service staff, then the market might generate jobs for an additional 300 people at basic salary levels.

It is assumed that the capital employed in the Central Market (ie value of the site, market shelters, umbrellas, vendors’ tools and working capital) would be in the order of \$10M. If the market was operating as a business, and vendors were paid a basic wage to sell their goods, the return on capital employed is calculated as:

$$\frac{\$3\text{M net profit}}{\$10\text{M}} \times 100\% = 30\%$$

This is a very high rate of return in conventional terms, based on the data supplied and assumptions about capital employed. Even if additional provision was made for a maintenance sinking fund equivalent to 10% of capital costs per annum (assumed depreciation costs), which would achieve a sustainable asset management regime, the return would be around 20%, which is still an extraordinarily high figure. However at the level of the individual vendor the earnings are not so impressive, with many at the lower end of the earnings scale only just making ends meet.

Taken as a whole, Honiara Central Market provides a good business model for both the Council and the vendors. The current level of market fees meets the costs of salaries for market staff as well as day-to-day maintenance. These probably fall short of achieving a sustainable asset management regime because the economic returns from trade are not fully reflected in the market fees generated for management and maintenance. However the Council has additional incomes from lock up shops and other rentals associated with the market that supplement stallholders’ fees and come close to achieving the required levels of investment. This is allowing for progressive self-generated investment in market improvements without raising market fees to a level which would put the poorer performing vendors out of business..

About half of the vendors interviewed felt that their earnings had improved over the past years. The number of vendors within the market has also grown, partly as a result of the closure of other markets in the city. The combined result is that Honiara Central Market's role in the total city economy is likely to be increasing, with its total turnover reflecting a positive shift-share of economic activity.

Nine Mile Market

This is a fast growing market in a rapidly expanding suburb. Nine Mile was previously known as an unauthorised squatter settlement of various Highlander ethnic groups, but it is now evolving into a formal suburb. Its past reputation as a relatively lawless and dangerous area is no longer deserved as the various ethnic groups are well organised, with a network of church leaders and tribal leaders who co-operate in maintain peace and order.

The market is much more problematic as it is unfenced, with limited management. It was originally developed on the initiative of a local entrepreneur, and the NCDC later contributed to its development by constructing three market houses. Law and order is maintained to a limited extent by the local police officer, and the NCDC collects modest fees that fund a cleaning service. There are no set opening and closing times for the market, and it trades seven days per week. The lack of toilets presents a significant problem in terms of public health, and the fact that women vendors and their children have to use adjacent bushland exposes them to risk of sexual assault. Men who are drunk are a significant problem within the market place itself, disrupting the social and commercial function of the market, and threatening public safety. However there is no particular problem at night, as the marketplace is unoccupied at that time. This is not a market where vendors sleep overnight.

Nine Mile Market has vendors in the following categories:

- root crops (15)
- coconuts and bananas (35)
- other vegetables and fruit (65)
- peanuts (31)
- meat (10)
- fresh fish (5)
- salt fish (4)
- cooked foods (15)
- cigarettes and betel nut (109)
- firewood (11)
- mini-market/store goods (16)
- soft drinks (6)
- organisers of bingo and darts (5)

In conducting the interviews there was a lack of representation from vendors of betel nuts as many of these people had recently shifted into the market as a result of being evicted from other Port Moresby markets. As they were still under threat of punitive action by the city authorities at the time of survey, it was deemed inappropriate to question them. The volatility of the situation is reflected in the fact that around the time of survey city rangers attempted to clear betel nut sellers in a small area around government offices in Hohola, and the resulting conflict resulted in one reported death and two serious stabbings experienced by the rangers, with unreported injuries to the vendors. However some interviews were carried out with six betel nut traders at Six Mile Market, which had at the time been designated as an authorised betel nut market, so some extrapolation from the economic performance of these vendors can be made in relation to Nine Mile Market. Their levels of income appeared to be similar to the average of all vendors surveyed at Nine Mile.

The dominance of female vendors at Nine Mile was very evident amongst the interviewees, with 83% of vendors being female. If the betel nut vendors had been included this may have altered the gender distribution, though based on observation these were also predominantly female.

The average number of hours per week worked by vendors at Nine Mile was 49. Many of the vendors spent 3-5 days selling goods at Nine Mile and another couple of days at other markets, especially Gordons or Koki, but also including Waigani.

The average weekly turnover of Nine Mile vendors at Nine Mile Market was K681, equating to an hourly turnover of K14 per vendor, or a daily turnover of around K45,000 for the market as a whole.

The vast majority of vendors selling fresh fruit and vegetables were also primary producers, who did not have to purchase their goods. Their main costs were travel, accounting for around 7% of the total sales turnover. Fees at Nine Mile were the lowest of any of the markets, accounting for only 0.7% of turnover (1K per day per vendor for most types of goods). Vendors claimed very little wastage of goods, and only 7% of vendors considered theft of goods to be a significant cost, and little wastage.

Making assumptions about the equivalent cost of goods if they had been purchased wholesale, the average weekly gross sales income was calculated as K303 per vendor, or K6 per working hour. Assuming a basic wage of K1 per hour, the average net profits were K5 per hour per vendor.

After meeting the needs for purchase of goods to sell at the market and meeting basic household needs, the main ways that disposable income was applied was equally split between savings and school fees. Very little was given to male or female relatives, with virtually no gender bias as a result. Only around 2% of disposable income was spent on building materials.

Taken as a whole, it would appear that the market provides an income equivalent to around 2,000 basic salaries, possibly equivalent to basic wage incomes that support around 6,000 people. The annual turnover within the market equates to around K11M per annum.

Virtually all of the fresh fruit and vegetable vendors interviewed claimed that they were primary producers, having grown their own produce before bringing

it to market. This was a surprising result, but probably reflects the increasing production of goods within the Port Moresby environs in response to increasing transport costs, and the reduced reliance on fresh produce “imported” from the Highlands (Vinning, 2009 advice). Given the assumptions made about the cost of goods sold, and the fact that at least a slight majority of vendors at Nine Mile Market are primary producers, it is likely that Nine Mile Market supports a further 1,000 equivalent jobs in primary production, supplementing subsistence production for these producers, and possibly supporting a further 4,000 people.

Without exception, all vendors at Nine Mile considered that their earnings were increasing, and that trade had become more profitable compared with the previous year.

It is assumed that the capital employed at Nine Mile Market (ie value of the site, three old market shelters, umbrellas, vendors’ tools and working capital) would be in the order of K450,000. This is negligible in terms of its economic activity, so that the return on capital employed model simply cannot be applied. Here it is more appropriate to turn the model on its head and ask what level of capital investment can be justified by the scale of economic activity, and the net profits being made by vendors. Using the Honiara model as a benchmark, a 20% return on capital employed could be achieved with a capital investment of around K2M, and this would be an adequate sum for construction of market houses, toilets and other facilities.

Of course, capturing some of the net profits to pay for the capital investment, or even to achieve a sustainable asset management regime (in the event of donor funding for the capital costs) is a challenge. The Kundiawa experience (see below) suggests that vendors are extremely price-sensitive, and if fees are raised in isolation from other events they may simply move out of the market and trade on the streets. A co-operative model, where vendors actually make an investment in market assets as a condition of occupying them, and are then able to on-sell their share or market stall at the going rate, may be workable in a market such as Nine Mile, which has a good sense of community ownership.

Gordons Market

This was the largest of the markets assessed in PNG, with 1,404 vendors counted in the immediate market environs. The market is very overcrowded, with the actual space allocated to vendors suggesting a much smaller size, and considerable overspill, but cross validation with earlier studies confirms the actual numbers involved (eg estimated by NCDC as 1,500 vendors in 2007). The crowding has become even worse over the past couple of years as the sewerage to the toilets has broken down, and the smell is so bad that market stalls near to the toilets cannot be occupied. The overcrowding has resulted in actual or perceived danger to customers, so that many women in Port Moresby choose not to go there unless accompanied by male relatives. Although the market is fenced the gates are not secured, so that there is no control over occupancy of the market at night. Many vendors sleep with their goods overnight, often so as to secure good trading positions the following

day, and they are exposed to considerable risk due to the lack of control. The market trades seven days per week, so there is no vacant period when cleaning can take place.

There was considerable difficulty in counting vendors at Gordons Market because of the overcrowding, and a team of several people was involved in this exercise. It was estimated that Gordons Market has vendors in the following categories:

- root crops (20)
- coconuts and bananas (173)
- other fruit and vegetables (286)
- peanuts (56)
- meat (20)
- live chickens (30)
- salt fish (15)
- cooked food (25)
- cigarettes and betel nut (760)
- firewood (20)
- mini-market and store goods (30)
- soft drinks (25)

Betel nut sellers and vendors of mini-market and store goods largely occupied unauthorised stalls outside the fenced market area, which were due to be cleared in efforts to manage surrounding traffic and parking. The survey focused on the stalls inside the fenced area of the marketplace, ie 614 vendors, of whom 37 were interviewed. The proportion of male vendors was higher than that observed at most other markets, at around 20%.

The average number of hours worked by vendors was similar to that observed at Nine Mile, ie 49 hours. However the turnover was more than double at K1,651 per vendor. Travel costs were notably lower at only 3% of turnover, reflecting the fact that a much higher proportion of vendors (over half) had purchased their goods locally rather than being producers who brought goods in from outside the local area. Market fees were low at around 2K per day per vendor, and accounted for only around 0.8% of sales turnover.

Average weekly gross sales income was assessed as K709 per vendor, or K13 per working hour. Assuming a basic wage of K1 per hour, the average disposable earnings were K12 per hour per vendor, more than double those experienced at Nine Mile.

After meeting the needs for purchase of goods to sell at the market and meeting basic household needs, the main ways that disposable earnings were applied was savings (20%), with slightly less being spent on school fees (19%). Gordons Market vendors had the highest monetary amounts and proportion of discretionary income put aside as savings amongst the markets surveyed, ie an average of around K117 per vendor per week. Relatively

small amounts were reported as being given to male or female relatives (in equal proportion), or invested in building materials.

Taken as a whole, it would appear that the market provides earnings equivalent to around 11,000 basic salaries, possibly equivalent to basic wage incomes that support around 35,000 people. The annual turnover within the market equates to around K50M per annum.

Only around one third of the fresh fruit and vegetable vendors interviewed claimed that they were primary producers, having grown their own produce before bringing it to market. This partly explained the higher incomes of vendors, as their transport costs and time were considerably lower than those of primary producers living further away from the market, and their use of time was more efficient. Given the assumptions made about the cost of goods, and the fact that a clear majority of vendors in the Central Market are not primary producers, it is likely that Gordons Market directly supports a further 3,000 equivalent jobs in primary production, supplementing subsistence production for these producers. However if the primary producers who sell goods to the market vendors are included, there could be an additional indirect employment generation of around 8,000 equivalent jobs, in addition to jobs created in the transport industry.

Almost all vendors at Gordons Market felt that their earnings were improving. This is perhaps surprising given the overcrowding and deteriorating infrastructure which is off-putting for many potential customers. However it is validated by the relatively high earnings made by vendors compared with other Port Moresby markets.

Even with the current level of capital invested at Gordons Market (estimated as around K2M) the return on capital formula is not workable. There is clear under-investment in the market assets for the level of economic activity taking place. Turning the model on its head, the level of profits justify a capital investment at least four times that proposed at Nine Mile, ie around K8M, and more if the market is to accommodate some of the vendors occupying the overspill areas. Again the challenge is to capture some of the vendors' net profits in maintaining the assets, even if donor or NCDC funding is provided for market construction and improvements. Given the lack of community ownership at this market, a different financial model may need to be developed that gives vendors a stake or share in the business. Some form of investment/equity/savings bond combined with key money may be appropriate.

Kundiawa Main Market

This is a newly constructed market which provides good amenity for vendors, especially in comparison with other market sites in Kundiawa. Despite this, there appears to be a reluctance on the part of vendors to occupy the market. The problem appears to be twofold: the market is too small to accommodate the majority of fresh fruit and vegetable vendors in the town, and customers are attracted to where the critical mass of vendors are located, where they have most choice. The other factor is that the market fees are slightly higher

in the main market compared to the informal market, and this is a factor affecting vendors' choice of location.

Survey findings are based on 20 survey responses representing a 10% sample, and all were female though there are a few men involved in selling alongside their wives. Average turnover was K471 per week. Direct cost of sales was relatively high, because around half the vendors have to travel to Mount Hagen to source bulk goods, resulting in high costs of travel and time taken away from trading activity. This is an ironical situation in a small town surrounded by a highly productive rural area, but deteriorating roads and poor access to vehicular transport has made it increasingly difficult for local producers to get their goods to market. Those producers who sell in the market are often involved in sale of produce that is relatively light and easy to carry on foot, such as green leafy vegetables.

Gross sales income was an average of K160 per vendor per week for an average 48 hour week, ie an hourly gross sales income of less than K3 per hour. This is substantially less than that experienced in the Port Moresby markets or the other Kundiawa markets, and discretionary earnings after deducting the cost of tools of trade, travel, fees and equivalent wages were only K2 per hour, the lowest profit rate of any of the markets studied. Travel costs (eg to Mount Hagen to purchase wholesale goods) accounted for 13% of turnover, eating away over half of their earnings. Theft appeared to be a cause of considerable loss to vendors, at a similar level to that experienced by the mini-market vendors in Kundiawa and at a higher level than that of the other markets assessed. This creates a situation where the market fees imposed by the Town Council, while modest by comparison with markets elsewhere, create a considerable cost burden (4% of turnover, 19% of net profits).

The new market was a considerable capital investment but as yet it provides little if any economic return to the vendors or the Town Council. Achieving a sustainable model for asset management will require components which directly lead to increased vendor profits. Establishing a wholesaling component of the market, which would directly reduce cost of sales for vendors and provide an additional source of revenue for the Council (eg percentage of wholesale sales) would be one way of achieving this. Expanding the market to provide greater critical mass that will attract customers would also be appropriate, and there are plans being developed for this.

Vendors in the main market were unable to gauge any trend in economic performance as the market had only been operational for a few months at the time of survey.

The way in which vendors used their discretionary income reflected the relatively low level of earnings within this market. Two thirds of discretionary income was spent on school fees, and there was virtually no investment in building materials. Savings accounted for around 18% of discretionary income.

Kundiawa Second Hand Clothes Market

This market is occupied by around 300 vendors of whom around 200 are likely to be present at any one time. The survey had 20 participants, around 10% of those present and all female. The vendors generally travel to Goroka or Lae to buy bales of second hand clothing, and then sell as much of possible of these bales over the next 2-4 weeks. Earnings are highly correlated with speed of turnover, and a wastage factor is built into the cost of the bales. This means that prices for stock may be rapidly reduced as the stock runs low.

Vendors in this market have built their own shelters out of bamboo and tarpaulines, with wooden tables. They have also constructed a terraced network of tracks reaching each stall. This represents a greater level of capital investment than that seen with other vendor groups.

Average turnover is calculated as K810 per week with a gross sales income as an average of K360 per vendor per week for an average 66 hour week, ie an hourly income of K6 per hour, or K5 per hour discretionary earnings. This equates with the average earnings of all vendors at Nine Mile Market, and is substantially more than that of the fresh fruit and vegetable vendors in Kundiawa.

The use of discretionary earnings reflected the higher earnings of the second hand clothes vendors compared with vendors in the Main Market. While a large proportion of disposable earnings was used to pay school fees (50%), there was also a higher proportion as well as a higher amount put into savings (17%) and invested in building materials (8%).

The second hand clothes vendors were the most pessimistic of all the market participants about the way their businesses were changing, possible as a result of the threat of imminent displacement. Many claimed that there was increasing competition from formal lock up shops, and that this was reducing their profits. Increasing transport costs and difficult road conditions was also a concern, with transport accounting for around 13% of turnover, eating away around 25% of profits.

Discussions have already been held with the second hand vendors over a possible model for relocating and rebuilding their market. This is heavily based on the experience of similar vendors in Port Moresby who were displaced when the Boroko Market was burnt down, and they subsequently pooled funds to build their own market. The current proposal is that if the Town Council provides a prepared and fenced site, the vendors might form a co-operative and access loan funds that would enable them to build their own market.

Based on the survey findings, there is the financial capacity for this to occur. Total earnings from the market are around K5M per annum, and if just 10% of these were applied to repay a loan over a 10 year period, then market infrastructure worth around K2M could be afforded. In fact, it is likely that an adequate shelter and facilities could be provided with much lower level of investment. This would be offset by costs savings on the current situation where around 8% of stock is wasted as a result of exposure to weather, more than half of vendors report substantial losses due to theft, and all vendors are

paying around 7% of the direct cost of sales for overnight storage facilities and cartage to and from these facilities.

Kundiawa Informal Market

This market is a densely packed area with no infrastructure. The average turnover for vendors in this market is considerably more than that of vendors in the main market, at K550 per week compared with K471, but the gross sales income was only slightly higher at K220. This excludes the additional turnover of four betel nut vendors in this sample who earned around three times as much as the average. The increased average turnover may be partly accounted for by the longer working week (55 hours on average) as the market site is not restricted in terms of its operating hours and days. However the direct cost of sales is similar to that of the main market despite the higher turnover, with far lower travel costs. This suggests better access to local produce, perhaps with a higher proportion of vendors who are themselves primary producers. It is reported that many of the vendors in this market have families living in nearby rural areas just east of the town, whereas the Main Market vendors may lack these ethnic and family ties. Average earnings (excluding the betel nut vendors) were reported as around K6 per hour, so that the lower direct costs of sales resulted in a virtual doubling of profits.

Use of discretionary earnings involved an average of 60% being used to pay school fees, 20% put into savings, and 6% invested in building materials. When compared with other PNG markets, there was a substantial allocation of money (18%) as gifts or loans to relatives, with a very slight bias towards providing for the needs of male relatives.

Kundiawa Mini-Markets

The sample involved 16 vendors out of around 300 vendors in this market. Ten of those surveyed were selling store goods (mainly young men, some on contract to lock up shops and supermarkets), and the rest were selling textile crafts or clothing (all women). The average turnover in this market is K625 per week, with the average gross sales income being K285 per week. With a long average working week of 54 hours, these vendors claimed to be earning around K4 per hour, but some may in fact have been passing much of this on to the suppliers.

The use of discretionary earnings by the mini-market vendors involved around 50% being allocated to pay school fees, 20% put aside as savings, 18% invested in building materials, and around 21% distributed as gifts and loans with equal distribution to male and female relatives.

Taken as a whole, the Kundiawa markets involve 1,200 vendors, mainly women, and appear to generate a turnover of around K40M per annum, with net profits of almost K16M. This would provide an equivalent of around 8,000 basic salaries, capable of supporting an even greater population. Given that the total population of Kundiawa is estimated as 15,000 it can be presumed that the markets are supporting a large part of both the urban and the surrounding rural population. Nonetheless, it is apparent that with a better

developed wholesaling system, it would be capable of supporting even more people.

Comparative Analysis

Some comparisons can be made between the economic performance of the various markets assessed as follows, expressed in US\$. However there should be some caution in making direct comparisons between the Solomon Island and PNG markets, as incomes and the cost of living are substantially higher in PNG.

	Annual turnover	Annual vendor earnings	Discretionary earnings per vendor	Profit margin (earnings as % of turnover)
Henderson Market	112,500	75,000	2,500	66%
Honiara Central Market	1,375,000	375,000	3,177	27%
Nine Mile Market	4,601,251	1,607,427	4,992	34%
Gordons Market	22,321,520	9,585,680	14,747	42%
Kundiawa Main Market	1,959,360	399,360	1,997	20%
Kundiawa S-H Market	5,054,400	2,059,200	6,864	41%
Kundiawa Informal Market	5,148,000	3,088,800	6,864	60%
Kundiawa Mini-Markets	3,900,000	1,347,840	4,493	35%

This limited comparison between markets indicates the following characteristics:

- smaller informal markets with a high proportion of primary producers (Henderson, Kundiawa Informal Market) offer farmers a relatively high profit margin (even assuming a cost of sales equivalent to wholesale purchase) but much lower turnover than the larger markets, with lower levels of annual profit per vendor
- generally, the larger the market within each location, the higher the annual profits per vendor, even taking into account all the additional costs involved in centralising market activity
- the highest annual profits per vendor were seen in a large market with a significant wholesale purchase of goods (Gordons Market) possibly reflecting greater efficiency in travel costs and time.

APPENDIC 1: QUESTIONNAIRE FOR MARKET TRADERS

Question	Answers
1. Can I please write down your name? When is your next trading day (in case we need to check anything with you): What sort of goods do you sell:	..... ..... .....
2. Where do you usually live – how far away from the market? (eg travel time walking or by taxi) in what direction?	..... (time) travel by .....(mode of transport) or approximately .....km .....(direction)
3. How often do you come to this market on average, or in a typical week?	.....days per .....(week or month)
4. How long do you stay on average?	.....hours per typical day.
5. Do you go to any other markets, and if so how regularly and for how long?	.....days per week to .....market or.....months per year to .....market
6. How do you travel from your home to the market? If this is by vehicle, how much does this cost?	.....(walk, taxi, bus, boat, other) Costing .....for passenger and goods to get to the market and for the return trip
7. Did you pay for the goods you brought into the market today? If you paid for goods how much did you pay? What determines how much you bring into the market?	Yes/No \$ for .....(quantity) (eg market rules, how much you produce, how much you think you can sell, transport)
8. If you grew the goods yourselves, do you ever sell to middlemen?	Yes/No \$.....
9. What do you expect will be today's total sales takings? Is this typical – if not what are your usual takings?	\$..... \$
10. How much of your stock do you expect will be left at the end of a typical day, and what is this worth to you?	.....% of starting stock which cost me \$.....to buy, or which I would have expected to sell for \$.....

11. What do you do with these left over goods?	..... .....
12. How much of the produce you bring into the market is lost through theft or deterioration, or because it has not been sold at the end of the day?	.... % through theft% through deterioration % other wastage.....(note what)
13. What do you pay in market fees, in total (price per stall, per quantity of goods etc)?	\$..... per .....(day/week/month/year)
14. What are your tools of trade (eg umbrella, stall furniture not supplied by the market, containers, cooking utensils, eskies) and if you had to buy these all over again, how much would these cost? How often do you have to replace these items?	.....cost \$..... replaced how often ..........cost \$..... replaced how often ..........cost \$..... replaced how often ..........cost \$..... replaced how often
15. What materials do you need to buy regularly to enable you to trade (eg wrapping materials, cleaning products, cooking oil, ice)? How much do you spend on these items?.....per day/week/month	.....cost \$..... bought how often ..........cost \$..... bought how often ..........cost \$..... bought how often ..........cost \$..... bought how often
16. What do you do with the money you make from the market? NB should add up to 100%	- purchasing goods to sell in future% - purchasing household goods % - school fees% - savings..... % - building materials% - provide pocket money for male relatives (for what purpose %) - providing money for female relatives (for what purpose %) - other % on.....(what)
14. A year ago, were your earnings (total sales income) more or less than at present – by about how much?	Same..... or% more.....or less.....
15. Finally, would you be interested in being part of a group that can advise on making improvements to the way the market operates? If not, who do you think might best represent the interests of your trader type?	Yes/no ..... .....(alternative name)