at Home & Away

EXPANDING JOB OPPORTUNITIES FOR PACIFIC ISLANDERS THROUGH LABOUR MOBILITY

Annexes A-I

The World Bank 2006

Contents

Annex A. Population Projections for Pacific Islands

COOK ISLANDS POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	14,000	13,411	12,775	11,969	11,076	9,859
Growth %		-0.86	-0.97	-1.30	-1.66	-2.22
II	14,000	13,411	12,625	11,489	9,985	8,015
Growth %		-0.86	-1.21	-1.88	-2.81	-4.40
III	14,000	13,347	12,591	11,617	10,474	9,099
Growth %		-0.96	-1.17	-1.61	-2.07	-2.81
IV	14,000	13,347	12,441	11,138	9,446	7,266
Growth %		-0.96	-1.41	-2.21	-3.29	-5.25
V	14,000	14,161	14,730	15,304	15,893	16,402
Growth %		0.23	0.79	0.76	0.75	0.63
VI	14,000	14, 097	14,543	14,937	15,315	15,567
Growth %		0.14	0.62	0.54	0.50	0.33

Assumptions:

Scenario I
Mortality – continuation of recent trend (gradual increase in life expectancy)
Fertility – continuation of recent trend in Total Fertility Rate (TFR) (gradual decline)
Migration – constant recent net level.

Scenario II
Mortality – continuation of recent trend
Fertility – continuation of recent trend in TFR
Migration – Acceleration of recent net level

Scenario III
Mortality – continuation of recent trend
Fertility – accelerated rate of decline in TFR
Migration – constant recent net level

Scenario IV
Mortality – continuation of recent trend
Fertility – accelerated rate of decline in TFR
Migration – acceleration of recent net level

Scenario V
Mortality – continuation of recent trend
Fertility – continuation of recent trend in TFR
Migration – sharp decline

Scenario VI.
Mortality – continuation of recent trend
Fertility – accelerated rate of decline in TFR
Migration – sharp decline

SAMOA POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	182,750	189,321	198,283	207,730	217,571	227,560
Growth %		0.71	0.93	0.93	0.93	0.90
II	182,750	189,321	196,786	202,809	206,595	207,303
Growth %		0.71	0.77	0.60	0.37	0.07
III	182,750	187,860	193,818	198,667	202,170	203,570
Growth %		0.55	0.62	0.50	0.35	0.14
IV	182,750	187,860	192,318	193,793	191,420	184,014
Growth %		0.55	0.47	0.15	-0.25	-0.79
V	182,750	196,821	218,421	243,900	273,241	305,222
Growth %		1.48	2.08	2.21	2.77	2.21
VI	182,750	195,360	213,790	234,043	255,732	277,005
Growth %		1.33	1.80	1.81	1.77	1.60

Notes. Scenario assumptions are the same as for Cook Islands.

TONGA POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	98,322	100,360	102,977	104,979	106,342	107,341
Growth %		0.41	0.51	0.39	0.26	0.19
II	98,322	100,360	102,229	102,578	101,177	98,154
Growth %		0.41	0.37	0.07	-0.27	-0.61
III	98,322	99,849	101,541	102,251	101,905	100,569
Growth %		0.31	0.34	0.14	-0.07	-0.26
IV	98,322	99,849	100,791	99,849	96,759	91,458
Growth %		0.31	0.19	-0.19	-0.63	-1.13
V	98,322	104,110	112,804	121,825	130,927	140,057
Growth %		1.14	1.60	1.54	1.44	1.35
VI	98,322	103,599	111,345	118,987	126,209	132,698
Growth %		1.05	1.44	1.33	1.18	1.00

*Notes***:** Scenario assumptions are the same as for Cook Islands.

FIJI POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	836,002	883,351	930,235	972,701	1,011,521	1,048,797
Growth %		1.10	1.03	0.89	0.78	0.72
II	836,002	883,351	927,738	964,721	994,394	1,018,295
Growth %		1.10	0.98	0.78	0.61	0.48
III	836,002	878,506	916,719	946,550	968,135	982,357
Growth %		0.99	0.85	0.64	0.45	0.29
IV	836,002	878,506	914,219	938,587	951,131	952,263
Growth %		0.99	0.80	0.53	0.27	0.02

Assumptions:

Scenario I
Mortality – continuation of recent trend (gradual increase in life expectancy)
Fertility – continuation of recent trend in Total Fertility Rate (TFR) (gradual decline)
Migration – constant recent net level

Scenario II
Mortality – continuation of recent trend
Fertility – continuation of recent trend in TFR
Migration – Acceleration of recent net level

Scenario III
Mortality – continuation of recent trend
Fertility – accelerated rate of decline in TFR
Migration – constant recent net level

Scenario IV
Mortality – continuation of recent trend
Fertility – accelerated rate of decline in TFR
Migration – acceleration of recent net level

F.S.M. POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	112,711	124,722	138,251	152,142	165,856	179,885
Growth %		2.03	2.06	1.91	1.73	1.62
II	112,711	124,722	137,902	151,010	163,393	175,457
Growth %		2.03	2.01	1.82	1.58	1.42
III	112,711	123,555	134,868	145,461	154,584	162,089
Growth %		1.84	1.75	1.51	1.22	0.95
IV	112,711	123,555	134,518	144,335	152,156	157,771
Growth %		1.84	1.70	1.41	1.06	0.72

Notes. Scenario assumptions are the same as for Fiji Islands.

KIRIBATI POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	93,101	104,041	116,376	130,237	144,891	160,779
Growth %		2.22	2.24	2.25	2.13	2.08
II	93,101	104,041	116,326	130,076	144,538	160,144
Growth %		2.22	2.23	2.23	2.11	2.05
III	93,101	103,140	113,720	124,787	135,391	145,544
Growth %		2.05	1.95	1.86	1.63	1.45
IV	93,101	103,140	113,670	124,626	135,044	144,925
Growth %		2.05	1.94	1.84	1.61	1.41

Notes. Scenario assumptions are the same as for Fiji Islands.

MARSHALL ISLANDS POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	55,370	63,949	72,981	81,981	91,168	100,978
Growth %		2.88	2.64	2.33	2.12	2.04
II	55,370	63,949	72,831	81,494	90,107	99,069
Growth %		2.88	2.60	2.25	2.01	1.90
III	55,370	63,293	71,144	78,338	84,790	90,620
Growth %		2.67	2.34	1.93	1.58	1.33
IV	55,370	63,293	70,994	77,854	83,744	88,761
Growth %		2.67	2.30	1.84	1.46	1.16

Notes. Scenario assumptions are the same as for Fiji Islands.

NAURU POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	10,100	10,712	11,320	11,868	12,349	12,729
Growth %		1.18	1.10	0.95	0.79	0.61
II	10,100	10,712	11,270	11,708	12,006	12,118
Growth %		1.18	1.02	0.76	0.50	0.19
III	10,100	10,662	11,177	11,585	11,881	12,014
Growth %		1.08	0.94	0.72	0.50	0.22
IV	10,100	10,662	11,127	11,425	11,539	11,409
Growth %		1.08	0.85	0.53	0.20	-0.23

Notes. Scenario assumptions are the same as for Fiji Islands.

FRENCH POLYNESIA POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	250,500	271,839	293,678	315,171	334,971	352,904
Growth %		1.63	1.55	1.41	1.22	1.04
II	250,500	271,839	294,027	316,228	337,088	356,479
Growth %		1.63	1.57	1.46	1.28	1.12
III	250,500	271,419	292,344	312,522	330,582	346,162
Growth %		1.60	1.49	1.33	1.12	0.92
IV	250,500	271,419	292,694	313,580	332,700	349,729
Growth %		1.60	1.51	1.38	1.18	1.00

Notes. Scenario assumptions are the same as for Fiji Islands.

NEW CALEDONIA POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	236,943	256,141	274,773	292,979	310,107	325,897
Growth %		1.56	1.40	1.28	1.14	0.99
II	236,943	256,141	275,272	294,781	313,090	331,023
Growth %		1.56	1.44	1.37	1.21	1.11
III	236,943	255,810	273,703	291,015	306,135	319,807
Growth %		1.53	1.35	1.23	1.01	0.87
IV	236,943	255,810	274,203	292,541	309,219	325,010
Growth %		1.53	1.39	1.29	1.11	1.00

Notes. Scenario assumptions are the same as for Fiji Islands.

PAPUA NEW GUINEA POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	5,695,301	6,385,519	7,138,421	7,957,487	8,841,443	9,807,414
Growth%		2.29	2.23	2.17	2.11	2.07
II	5,695,301	6,385,519	7,138,321	7,957,165	8,840,744	9,806,154
Growth%		2.29	2.23	2.17	2.11	2.07
III	5,695,301	6,333,256	6,985,622	7,647,753	8,303,863	8,945,339
Growth%		2.12	1.96	1.81	1.65	1.49
IV	5,695,301	6,333,256	6,985,522	7,647,433	8,303,172	8,944,107
Growth%		2.12	1.96	1.81	1.65	1.49

*Notes***.** Scenario assumptions are the same as for Fiji Islands.

SOLOMON ISLANDS POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	460,104	522,424	588,759	657,537	729,791	806,544
Growth %		2.54	2.39	2.21	2.09	2.00
II	460,104	522,424	588,709	657,376	729,442	805,919
Growth %		2.54	2.39	2.21	2.08	1.99
III	460,104	517,994	575,921	631,355	683,709	732,230
Growth %		2.37	2.12	1.84	1.59	1.37
IV	460,104	517,994	575,871	631,195	683,365	731,621
Growth %		2.37	2.12	1.83	1.59	1.36

Notes. Scenario assumptions are the same as for Fiji Islands.

TUVALU POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	9,639	10,104	10,629	11,258	12,009	12,747
Growth %		0.94	1.01	1.15	1.29	1.19
II	9,639	10,104	10,604	11,178	11,834	12,431
Growth %		0.94	0.97	1.05	1.14	0.98
III	9,639	10,069	10,515	11,012	11,579	12,085
Growth %		0.87	0.87	0.92	1.01	0.86
IV	9,639	10,069	10,490	10,931	11,405	11,772
Growth %		0.87	0.82	0.82	0.85	0.63

Notes. Scenario assumptions are the same as for Fiji Islands.

VANUATU POPULATION PROJECTIONS

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	215,836	246,299	281,179	319,973	363,173	409,460
Growth %		2.64	2.65	2.58	2.53	2.40
II	215,836	246,299	281,159	319,908	363,030	409,203
Growth %		2.64	2.65	2.58	2.53	2.39
III	215,836	243,945	274,382	306,270	339,328	371,210
Growth %		2.45	2.35	2.20	2.05	1.80
IV	215,836	243,945	274,362	306,206	339,188	370,959
Growth %		2.45	2.35	2.20	2.05	1.79

Notes. Scenario assumptions are the same as for Fiji Islands.

Annex B. Population Projections for Timor Leste

Data and Assumptions

The population size of 1,019,252 is larger than the 2004 census count of 924,642. However, the census data do not include age and sex structure. The US data were thus the only usable data available. It should be noted that the age structure in 2004 is consistent with the out-migration of both males and females at ages 20-29, but particularly females, with partial return at 30+. The age group 25-29 is particularly small.[1] In the absence of expertise concerning likely trends in demographic indicators, the assumptions made are for illustrative purposes only.

Mortality was estimated using data on infant morality from the 2003 Timor Leste Demographic and Health Survey and the West model life table (Coale and Demeny 1983). There was one mortality assumption. Life expectancy was assumed to increase at a medium rate. The assumed values are shown in Table B1.

Table B1. Assumed life expectancy by sex, 2004-2029

	2004-09	2009-14	2014-19	2019-24	2024-29
Male	62.9	64.9	66.7	68.2	69.4
Female	66.6	68.6	70.4	71.9	73.1

Fertility rates were also taken from the 2003 Timor Leste Demographic and Health Survey. A very high total fertility rate (TFR) of 7.7 was recorded in the 36 months prior to the survey, and an even higher rate of 8.3 in the 12 months prior to the survey. Four TFR assumptions were made and these are shown in Table B2. The first was of gradual decline from a TFR of 7.77 in 2004 to a TFR of 5 in 2029. The second was of accelerated decline from a TFR of 7.77 in 2004 to a TFR of 3 in 2029. The pattern of fertility was assumed to change over time. For the gradual decline, the pattern was assumed to be equivalent to the average of the intermediate and late patterns of the United Nations (1998), while for the accelerated decline the pattern in 2029 was assumed to be the late UN pattern. These age patterns are shown in Figure A1. The very high TFR is responsible for the very high birth rate and population growth rate, and for large increases (doubling) in the size of the age group 0-4 in the first five years of the projections based on these two assumptions (see the following Scenarios 1-4).

The third and fourth assumptions are based on the belief that the high level of fertility currently being experienced is a temporary response to the end of hostilities and Independence. In both assumptions, the TFR is 7 in 2004 with the same age pattern as recorded for the TFR of 7.77. In the third assumption, TFR is assumed to decline rapidly to 5 in 2009 with a steady decline to 3 in 2029. In the fourth assumption, the rapid decline is to 4.5 in 2009 followed by a steady decline to the replacement level of

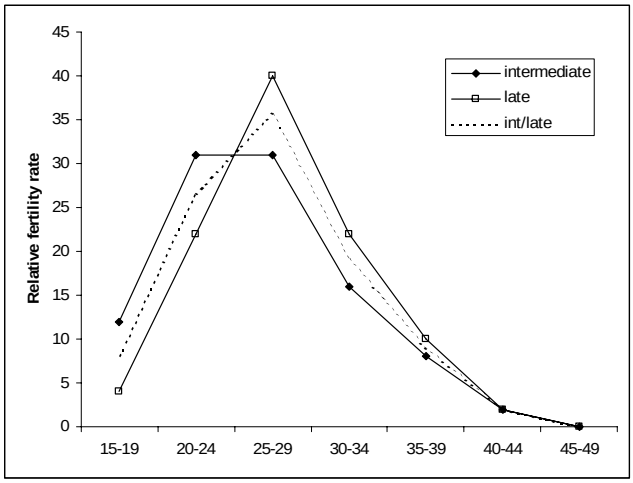
[1] The population data were taken from the US Census Bureau International Data Base (<http://www.census.gov/ipc/www/idbnew.html>).

2.1 in 2029. In both cases, the late pattern of childbearing is assumed in 2029, and interpolation of age-specific rates is with respect to TFR.

Table B2. Assumed total fertility rates for gradual and accelerated declines, 2004-2029

	2004	2009	2014	2019	2024	2029
Gradual decline	7.77	7.22	6.66	6.11	5.55	5.00
Accelerated decline	7.77	6.82	5.86	4.91	3.95	3.00
Temporary high & decline to 3	7.00	5.00	4.50	4.00	3.50	3.00
Temporary high & decline to 2.1	7.00	4.50	3.90	3.30	2.70	2.10

Figure B1 Age patterns of assumed fertility



Source. United Nations (1998)

Two migration assumptions were also made. In the absence of any data on migration, these assumptions were relatively simple. The first was of no migration. This enables the effects of natural increase to be seen. The second migration assumption took note of the relatively small age groups at ages 20-29 in the population distribution. Such an effect could be partly due to the temporary migration of young people for overseas studies, but it would appear from the age structure that some is permanent. It was assumed that the temporary migration for overseas studies will continue but that permanent migration will cease. On this assumption, a model was developed which allows for migration of a few years duration at ages 15 to 34. This model, which is expressed in terms of numbers of migrants per five-year period, is shown in Annex Table B3. Equal numbers of males and females were assumed.

Table B3 Assumed quinquennial age-specific migration for Timor Leste

	Out	In	Net
15-19	-10000		-10000
20-24	-30000	20000	-10000
25-29	-10000	20000	10000
30-34		10000	10000
Total	-50000	50000	0

Note: These numbers are assumed to be equally divided between the sexes. Migration is assumed to be zero at other ages.

The combination of the one mortality assumption and four fertility and two migration assumptions results in eight population projections. Table B4 details the assumptions for each scenario and provides the projections resulting from these assumptions.

Table B4 Timor Leste population projections

Scenario	*2004*	*2009*	*2014*	*2019*	*2024*	*2029*
I	1,019,252	1,261,895	1,533,428	1,823,466	2,124,951	2,410,267
Growth %		4.27	3.90	3.46	3.06	2.52
II	1,019,252	1,261,895	1,531,055	1,811,217	2,093,229	2,353,903
Growth %		4.27	3.87	3.36	2.89	2.35
III	1,019,252	1,252,597	1,493,461	1,727,796	1,939,492	2,081,908
Growth %		4.12	3.52	2.92	2.31	1.42
IV	1,019,252	1,252,597	1,491,847	1,719,182	1,917,118	2,043,142
Growth %		4.12	3.50	2.84	2.18	1.27
V	1,019,252	1,204,958	1,381,290	1,563,603	1,738,179	1,862,252
Growth %		3.35	2.73	2.48	2.12	1.38
VI	1,019,252	1,204,958	1,379,498	1,554,591	1,715,586	1,823,485
Growth %		3.35	2.71	2.39	1.97	1.22
VII	1,019,252	1,194,626	1,345,394	1,492,776	1,623,161	1,693,904
Growth %		3.18	2.38	2.08	1.67	0.85
VIII	1,019,252	1,194,626	1,344,000	1,485,849	1,606,025	1,665,064
Growth %		3.18	2.36	2.01	1.56	0.72

Assumptions:

Scenario I.
Mortality—gradual decline
Fertility—gradual decline from TFR 7.77 to 5
No Migration

Scenario II
Mortality— gradual decline;
Fertility—TFR declining from 7.77 to 5;
Net Migration—constant 1,000 per year

Scenario III
Mortality—gradual decline;
Fertility—accelerated decline from TFR 7.77 to 3
No Migration

Scenario IV
Mortality—gradual decline;
Fertility —accelerated decline from TFR 7.77 to 3
Net Migration—constant 1,000 per year

Scenario V
Mortality— gradual decline;
Fertility—TFR of 7, declining to 3;
No Migration

Scenario VI
Mortality—gradual decline;
Fertility—TFR of 7, declining to 3;
Net Migration 1,000 per year

Scenario VII
Mortality—gradual decline;
Fertility—TFR of 7, declining to 2.1;
No Migration

Scenario VIII
Mortality—gradual decline;
Fertility—TFR of 7, declining to 2.1;
Net Migration—1,000 per year

With the TFR at 7.7 in 2004 and declining to 5 or to 3 by 2029, the population is projected to at least double by 2029. As argued above, the recent TFR is very likely to be temporary: a "catching up" in family formation following the loss of life associated with the gaining of independence and the changed circumstances resulting from independence. The important factor determining the population growth over the next 25 years will be how quickly the fertility rate will decline. Our guess is that the TFR will be lower than 5 by 2029, without there being a major set-back in the country's development. However, whether the TFR will decline to 3 by 2029 is questionable. It is quite unlikely that the TFR will decline to the replacement rate (2.1) by 2029. Still, even under this assumption the population increases by over 600,000. These illustrative figures show the tremendous challenge facing Timor Leste.

Annex C. The Survey: Survey Instrument, Sampling and Fieldwork

In order to study the impact of migration and remittances on income, saving and social protection, a cross-sectional household survey was carried out in Fiji and Tonga during the first half of 2005.[1]

Prior to the survey fieldwork, a thorough "cultural screening" of the questionnaire was implemented. Individual interviews and a focus group with Pacific Islanders living in Brisbane, as well as structured discussions of the instrument with the local teams were carried out to ensure that the survey format and content were appropriate and relevant to the particular cultural settings in both Fiji and Tonga.

The Questionnaire

The survey instrument consists of a pre-coded questionnaire with 13 sections and 110 questions. The first section gathers general information about household members, such as age, education, gender an employment status and adopts the local definition of household (those who eat from the same pot), which takes into account the diversity of living arrangements in the South Pacific.[2] Data about events that might indicate the household need of extra-cash during the year, such as illness, pregnancy and social ceremonies, including weddings and funerals are collected in section two. Section three and four gather information about return-migrants and household migration intentions. Section five identifies those household members over 15 years who are currently living overseas; their main demographic characteristics and the extent to which they have been in contact with the family and sent remittances home during the last year.[3] Bearing in mind that anecdotal information and previous studies (Brown, 1998a) point to demand-driven remittances, section six contains questions about requests for remittances. Section seven asks detailed information about remittances, including cash, in-kind, paid bills and trips. In this regard it should be pointed out that information about remittances was collected from all households, including those without migrants. In effect, as discussed in the following sections, contrary to the common view, migrants remit to households other than their own and households without migrants benefit directly from international remittances. Section eight asks households about their annual income and includes a minimum required income question, that is, the cash income required by the household 'to just get by'. Information about farm, fishing and business activities is included in section nine, while section ten and eleven collect data regarding assets and housing characteristics. The last two sections collect information about savings, loans and internal transfers, with specific reference to church donations, which are an important household expenditure item in both countries.

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[1] The fieldwork including the training of enumerators and data entry was undertaken under the supervision of Eliana Jimenez.

[2] For example the household living arrangement in Tonga might involve female and male members living in separate buildings but "eating from the same pot".

[3] Both the focus groups and the local teams advised us not to collect information in regard to migrants' income or type of work, since it would be highly unlikely for the local household to be aware of this information.

Sampling and Survey Administration

The questionnaire was initially designed in English and translated into Tongan and Fijian languages. All Tongan households were interviewed in the Tongan language. On the other hand, due to the widespread proficiency in English, all Fiji households were interviewed in English. However, anticipating that some of the rural Indigenous-Fijians living in remote areas might be less fluent in English, a Fijian translation of the questionnaire was used by interviewers as a back-up, to clarify the meaning of specific questions, if required.

The surveys were implemented simultaneously in Fiji and Tonga in the period April to June 2005. The Tongan survey was delivered directly by the Department of Statistics of Tonga, under the supervision of the Senior Statistician, Mr Feleti Ka Wolfgram, who coordinated and oversaw the field-work of three regional supervisors and 11 interviewers.

Due to the survey timing, which coincided with the enumeration exercise for the national Census 2006-2007, the officers from the Bureau of Statistics of Fiji could not be directly involved in the survey implementation, but provided all the logistic assistance required by the survey team during the sampling and field-work. The Fiji survey was thus carried out by ten interviewers under the supervision of Ms. Edna Lal, a locally contracted consultant. At the time of the fieldwork, the Fiji Islands Bureau of Statistics (BoS) was in the process of updating the sample frame to be used in the Census of Population and Housing, due in 2006-2007. For administrative purposes, the main island Viti Levu is divided into two provinces, Central and Western. At this stage BoS had not yet integrated the sample frames for the two provinces. This required that the sampling was done at the provincial level, but appropriate measures were taken to ensure randomness of the overall sample. One BoS office in Central province and two in Western were in charge of administering the sample frame process in their respective district. Each office selects the enumeration areas, enumerates all households within each area, and oversees the compilation of the lists.

The three BoS offices initially provided access to the list of enumeration areas available in the sample frame and their respective size, which made possible the selection of our Primary Sampling Units (enumeration areas), based on Probability Proportional to Size. Once the enumeration areas for Viti Levu were selected, the BoS officers in collaboration with the survey team chose the households to be included in the survey sample, at a fixed rate in each enumeration area. This commonly used procedure for selecting enumeration areas on the basis of Probability Proportional to Size and choosing households at a fixed rate leads to a random sample since each household in the sample frame has the same probability of being selected. On the other hand, it should be noted that, as reported by the Department of Statistics from Tonga, a similar procedure was followed when drawing the Tongan survey sample.

The survey teams from both countries participated actively in the preparatory field-work, which included fine-tuning the questionnaire, reviewing the translation to Fijian and Tongan language, two weeks of training for supervisors, one week of training for enumerators and a pilot test. Given the larger scale and longer duration of the diaspora, the complex household living arrangements in the Pacific and the importance of the extended family and community ties, one of the thorniest issues faced by the questionnaire design was the definition of a migrant household. Migrant households are defined here as those that have at least one household member over 15 years of age living overseas. However, following our definition of a household as those who eat from the same pot, migrants who have stayed overseas for more than six months would not be classified as household members. Thus, after the pilot tests and several discussions with the local teams and key informants, it was concluded that, for the purpose of the survey, households would be required to identify as a migrant household member those who were living with the household before migrating or who would be likely to come and live with the household in case of returning. The latter would include for example a second-generation born overseas.

The interview was conducted with the person claiming main responsibility for supporting the household, but in most cases other members of the household also contributed to answering the questions, and separate roster was compiled for each household member. As would be expected, in approximately 80% of the households the declared household head was male.

After the pilot tests, where each enumerator and supervisor interviewed on average five households, final changes to the questionnaires were introduced and additional coaching to interviewers was provided. During the pilot tests, it was observed that households were initially reluctant to answer some questions, in particular those relating to income. To improve the survey response rate households were reassured at the beginning of the interview that the information would be held on a confidential basis and would not be used for taxation purposes. This resulted in only two sampled households refusing to answer the questionnaire in Fiji, and none in Tonga.

The local teams spent three weeks interviewing the selected households, with most of the interviews carried out during weekends or non-working hours in weekdays. Though, in most of the cases the respondent was the household head or his/her partner, other household members were present during the interview, which took on average 40 to 50 minutes. During the fieldwork, following international best-practice, every day each interviewer delivered the completed questionnaires to the respective supervisor, who reviewed them immediately and if inconsistencies or missing answers were found households were contacted again. The data-entry was done locally by a group of six data-entry operators and one supervisor in Fiji and two data-entry operators and one supervisor in Tonga.

Annex D. Summary of the remittances and income regressions

Methodology

One of the most important methodological issues posed by the study of migration and remittances is that of endogeneity bias, which might arise due to several factors such as self-selection of migrants, reverse causation and omitted variables[1]. In the presence of endogeneity the OLS coefficients will be biased. They will reflect both the net impact of the explanatory variable as well as the endogeneity bias. Recent migration literature has dealt with the endogeneity issue in different ways. In order to isolate the net impact of the endogenous variable, some researchers take advantage of natural experiments, such as Yang and Martinez (2006), in their study of remittances, poverty and inequality in the Philippines. They "exploit a unique natural experiment", the major exchange rate changes during the Asian crises, that provides them with a strong instrument that isolates the net impact of remittance flows. However the availability of natural experiments is uncommon and most studies rely on instrumental variable (IV) techniques, using as an instrument a variable that is correlated with the endogenous regressor, but uncorrelated with the dependent variable. In this regard, it should be noted that the choice of a good instrument is highly dependent on the population characteristics, the unit of observation and the variables in the dataset.

In their study of the impact of international migration and remittances on poverty indicators in developing countries, Adams and Page (2005) use distance to the remittance sending area, government stability and education to instrument remittances. Using panel data, Chami et al (2005) study the impact of remittances on gross domestic product (GDP) and instrument remittances with lagged output variables that are assumed to be exogenous to the remittances regression. De la Briere *et al* (2002) study remittance determinants in the Dominican Republic and instrument household income using several variables including ownership of a business and land, which are found to be exogenous to remittances. Other studies use historical variables to instrument the endogenous regressor. For example, McKenzie (2006) uses historical migration networks to instrument migration prevalence in his study of migration and inequality in Mexico. A similar approach is followed by Lopez-Cordoba (2004), who analyses the impact of remittances and migration on schooling, health and poverty in Mexico. Lopez-Cordoba instruments remittances using distance of the municipality to the US-Mexican border and historic migration rates to the US.

[1] Several examples can illustrate the potential endogeneity bias in migration and remittances studies, as follows: a) Self-selection: Should migrants be positively (negatively) selected in regard to education, they will tend to come from the upper (lower) end of the income distribution. b) Reverse causation: The relationship between income and remittances might be bi-directional. A higher income might cause remittances since migrants are positively self-selected, while remittances might increase income due to the insurance or liquidity-constraint effects. c) Omitted variable: The more emotionally attached a migrant is to her family, the more remittances she will send, but also the more involved she will be in the family affairs, and the more influence she will have on family attitudes towards savings and children's education. This family attachment cannot be observed and so we are not sure if the positive correlation between remittances and children's education is due to the former having a positive impact on the latter, or if this correlation reflects the fact that both variables are positively affected by the omitted variable of family attachment.

Finally, some researchers construct instruments that are correlated to the endogenous regressor, but uncorrelated to the outcome variable. One of the first studies using constructed variables to address the endogeneity of income was Ravallion and Dearden (1988). They use predicted consumption as an instrument for actual consumption. A similar approach was followed by Taylor, Rozelle and de Brauw (2003) in their analysis of the impact of internal remittances on income in China, where they used the predicted rather than the actual number of migrants for each household, where the variable for the predicted number of migrants satisfied the condition of being exogenous to the income equations.

The statistical analysis in this study builds on the previous literature to deal with the selectivity and potential endogeneity bias of migration and remittances in relation to the variables of interest as discussed in Sections 3.3 to 3.5 of this report and in the corresponding annexes. In modelling the relationships between remittances and household income, the subject of Annex D, an endogeneity problem arises from the likelihood of migration and remittances being jointly determined with income from various other, non-remittances sources. Selectivity bias could also be a problem as not all households have migrants. To control for endogeneity, instruments are needed that identify both migration and remittances. Furthermore, remittances and household income may be subject to the same exogenous shocks which could result in contemporaneous correlation across the estimated income and remittances equations. To resolve these issues this analysis follows closely the approach of Taylor, Rozelle and de Brauw (2003). Their model, drawing on what has become known as the 'new economics of labour migration', is based on the hypothesis that both migration and remittances can affect (non-remittance) household income from all sources, and that remittances and migration are endogenously determined with income sources. A two-stage methodology is followed, where, in the first stage, a variable for the predicted number of migrants in each household is generated to control for selectivity. This variable is then used in the second-stage remittances and income equations.

The functional form of the first-stage, migration equation must also take into account that some households could have no migrants and while others could have more than one migrant. A count data model is therefore estimated, using a negative binomial functional form as a predictor of migration.[2] This model also ensures non-negative predictions, which a linear model could not. To identify the predicted migration equation a community-level 'migration network' variable is used. This is chosen because of the important role of migration networks at the local community level in the migrant-sending country that serve to enhance migration opportunities and propensities for potential migrants by, for example, reducing migration costs and providing information to the potential migrant. As the dataset used in this analysis did not include separate community-level observations as in the study of Taylor, Rozelle and de Brauw (2003) it was necessary to construct this network variable from the household data. The mean length of absence of the households' migrant members from the local community was computed, omitting the household observation in each instance. The equation was estimated where the standard errors were calculated taking

[2] Taylor, Rozelle and de Brauw (2003) use a Poisson model which was also estimated in this study. However, a Pearson test statistic (see Table D2) shows that a negative binomial model is preferred to a Poisson model due to over-dispersion in the data.

into account the possible clustering effect of the presence of households from the same community but not across communities and the standard errors reported are the "robust" Hubert/White adjusted estimates.[3] The test statistics for the migration equation given in Table D3 show strong overall goodness of fit for both countries and the coefficients on the identifier, (mean migrants' length of absence in village/district) has the expected sign and is statistically significant.

In the second stage, in estimating remittances and income, it is hypothesized that migration and remittances could have different effects on income from each main source. To test this two sets of results are reported; first, remittances and total income (excluding remittances) are estimated, and, in the second equation the interrelationships between remittances and income from three separate sources are estimated: *Farm Income*; *Business Income*; and *Wage Income*. To control for endogeneity in these equations the predicted number of migrants derived from the migration equation described above is used as the instrument for the observed number of migrants. Then, a three-stage least squares (3SLS) procedure is used to estimate, simultaneously, the remittances and income equations to allow for the possibility of contemporaneous correlation in the error terms across remittances and income and the possibility of effects from unobserved common shocks.

The equations include a number of other exogenous variables to control for household demographic, human and physical capital characteristics. The descriptive statistics for all variables are reported in Table D2, the test statistics for the first stage migration equations in Table D3, and the results for the 3SLS equations are shown in Tables D4 (total income) and D5 (income source). The network variable (Mean length of migrants' stay per household in the community) was omitted from the 3SLS equations as an identifier. The description of all variables is in Table D1. Test statistics for endogeneity in the 3SLS regressions are shown in Table D6.

As it is also possible that other variables in the equation are endogenous such as those identifying the number of household members intending to migrate, and, the average level of education of the household's migrant members, further tests were undertaken. All equations were re-estimated with both of these variables also identified as endogenous, there were no significant changes in the results reported here.

[3] The number of clusters in each country is relatively small and there may be some loss of efficiency in using the clustering procedure in this case (Bertrand et al, 2004). However, the effects of using a small number of clusters are not well understood.

Table D1 Remittances and Income Equations: Variable Names and Definitions

Variable	*Definition*
Remittances	US$ received by HH in all forms, cash and in-kind
Business Income	HH Cash income in US$
Farm Income	HH Cash income in US$
Wage Income	HH Cash income in US$
No of Migrants (predicted)	Predicted number of migrants in household
Household Characteristics:	
Young dependents	Number of HH members < 14 years of age
Household Size	Total number 'eating from same pot'
Household Head Experience	Age – years education – 6 years
Household Head Education:	
Primary	Dummy variable = 1 if primary, otherwise 0.
Secondary	Omitted category
Tertiary	Dummy variable = 1 if >12 years edu. otherwise 0.
Wealth Index	Created using PCA from list of assets held*
Location - Capital	HH living in capital city
Av Education migrants	Migrants' average years education for HH
Av Length of Stay migrants	Migrants' average length of absence in years
Destination:	
US migrants	Dummy for migrant in USA = 1, otherwise 0
AUS/NZ migrants	Omitted category
Other Country migrants	Dummy for other countries, incl. Middle east =1
Wedding	Dummy for HH member married in 2004 =1
Loans 2003	Dummy for having borrowed in 2003 = 1
Intending to migrate	Number in HH intending to migrate in near future
Agricultural land/capita	Area of land per HH member (Acres)
Business duration	Years of business operation
Indian	Dummy for Indo-Fijian ethnicity = 1, otherwise 0
Village/District characteristics	
Mean length of migrants' stay per HH in district	Total length of migrant(s) stay (years) divided by no of migrant(s) expressed as average per HH in community (omitting current observation)

* See Section 3.5 in Part I, Main Report, for a detailed discussion of how the wealth index was created using principal components analysis.

Table D2 Migration and remittances effects on income sources: Descriptive statistics

Variable	*Sample means (Standard deviations)*	
	Fiji	*Tonga*
Remittances	411.75 (1693.75)	2178.35 (3608.46)
Business Income	788.41 (4510.46)	330.75 (2389.45)
Farm Income	605.22 (3891.52)	469.06 (1787.72)
Wage Income	4782.03 (6145.88)	2735.68 (4058.87)
No of Migrants (predicted)	0.65 (0.51)	1.28 (1.18)
Household Characteristics:		
Young dependents	1.16 (1.32)	1.74 (1.73)
Household Size	4.70 (2.29)	5.45 (2.92)
Household Head Experience	30.90 (15.22)	33.00 (15.32)
Household Head Education:		
Primary	0.16 (0.37)	0.05 (0.22)
Tertiary	0.14 (0.34)	0.09 (0.29)
Wealth Index	0.00 (2.93)	0.00 (2.45)
Location – Capital	0.21 (0.40)	0.51 (0.50)
Av Education migrants	4.11 (6.03)	7.70 (6.60)
Av Length of Stay migrants	3.08 (6.06)	5.70 (6.60)
US migrants	0.09 (0.28)	0.26 (0.44)
Other Country migrants	0.08 (0.27)	0.05 (0.22)
Aus/NZ migrants	0.28 (0.53)	0.52 (0.63)
Wedding	0.06 (0.23)	0.04 (0.19)
Loans 2003	0.21 (0.41)	0.27 (0.45)
Intending to migrate (No)	1.46 (1.44)	0.89 (1.30)
Agricultural land per capita	0.47 (1.16)	0.46 (0.80)
Business duration	4.29 (9.82)	1.86 (4.72)
Indian	0.47 (0.50)	
Village/District characteristic		
Mean length of migrants' stay for village/district	5.86 (4.95)	14.58 (7.94)

Table D3 First stage migration equation test statistics Negative binomial results (p-values in brackets) [+]

	Fiji	*Tonga*
Mean length of migrants' stay for village/district	0.08 (0.00)	0.04 (0.00)
Wald Chi-sq (df = 8, 7)	86.99 (0.00)	42.44 (0.00)
Pearson Ch-sq (df = 404, 492)[*]	647.12 (0.00)	769.25 (0.00)
No. of Observations	413	500

[+] Estimated allowing for correlation of errors of households within district and robustness correction.
* Test for over-dispersion.

Table D4 Three stage least squares estimates migration and remittances effects on total household income excluding remittances (p-values in brackets)

	Fiji		*Tonga*	
	Remittances	***Income*$^{+}$**	***Remittances***	***Income*$^{+}$**
No of Migrants (predicted)	525.91 (0.59)	1801.24 (0.86)	1830.97 (0.00)	-4254.84 (0.61)
Remittances		-1.74 (0.08)		1.30 (0.04)
***Household characteristics*:**				
Household size	25.41(0.56)	536.27 (0.11)	62.06 (0.37)	-137.47 (0.77)
Household head experience		14.87 (0.82)		59.54 (0.70)
Household head education:				
Primary	-344.99 (0.15)	-1030.62 (0.62)	35.00 (0.96)	-1363.19 (0.71)
Tertiary	-265.01 (0.29)	2211.96 (0.14)	365.96 (0.55)	6042.32 (0.00)
Wealth index	-23.63 (0.83)	1318.42 (0.23)	-79.02 (0.56)	1099.30 (0.38)
Location - Capital	762.18 (0.02)	2811.90 (0.24)	-321.38 (0.39)	3465.88 (0.00)
Av educ. migrants	59.03 (0.01)	-26.52 (0.91)	185.48 (0.00)	-242.27 (0.14)
Av length of stay migrants	-31.27 (0.08)	-83.38 (0.34)	-149.56 (0.00)	150.38 (0.55)
Destination country**				
US migrants	327.42 (0.15)		281.59 (0.18)	
Other country migrants	1708.12 (0.00)		1827.96 (0.02)	
Wedding	1160.65 (0.00)		3318.68 (0.00)	
Loans (2003)	-495.16 (0.03)		395.47 (0.28)	
Intending to migrate (No)	-69.66 (0.26)	161.21 (0.58)	475.24 (0.00)	-560.01 (0.33)
Agricultural land per capita		224.33 (0.55)		981.37 (0.11)
Business duration		63.49 (0.17)		605.20 (0.00)
Indian	-661.78 (0.01)	-453.38 (0.35)		
Observations	409		500	

+ Excluding remittances and subsistence income.

* Omitted category, Household Head education level is secondary.

** Omitted category, migrants in Australia, New Zealand.

*** Some observations lost due to incomplete data for some variables.

Table D5 Three stage least squares estimates migration and remittances effects on income sources (p-values in brackets)

Part A: Fiji	*Remittances*	*Farm income*	*Business income*	*Wage income*
No. of migrants (predicted)	371.53	12.75	-237.21	-3313.58
	(0.69)	(0.96)	(0.93)	(0.58)
Remittances		-0.17	0.16	-2.09
		(0.11)	(0.72)	(0.00)
***Household characteristics*:**				
Household size	23.63	35.85	-29.45	337.78
	(0.59)	(0.22)	(0.80)	(0.12)
Household head wxperience		9.19		54.94
		(0.08)		(0.02)
Household head education*				
Primary	-343.83	-35.08	-433.05	-946.60
	(0.15)	(0.87)	(0.52)	(0.49)
Tertiary	-266.70	84.08	-132.97	2342.09
	(0.29)	(0.67)	(0.84)	(0.03)
Wealth index	-4.50		295.35	1518.97
	(0.97)		(0.33)	(0.02)
Location - Capital	753.33		-117.24	1568.85
	(0.02)		(0.89)	(0.31)
Av education migrants	61.15	0.77	-45.93	97.79
	(0.01)	(0.97)	(0.56)	(0.49)
Av length of stay migrants	-30.84	7.67	-41.69	-49.53
	(0.08)	(0.58)	(0.39)	(0.45)
Destination country**				
US migrants	364.29			
	(0.08)			
Other country migrants	1622.34			
	(0.00)			
Wedding	1116.98			
	(0.00)			
Loans (2003)	-488.96			
	(0.02)			
Intending to migrate (No)	-68.70	-26.90	25.50	326.97
	(0.27)	(0.56)	(0.88)	(0.15)
Agricultural land per capita		455.69		
		(0.00)		
Business duration			80.71	
			(0.00)	
Indian	-648.24	-213.11	314.09	-752.88
	(0.01)	(0.23)	(0.66)	(0.51)
Observations***	409			

* Omitted category, Household Head education level is secondary.

** Omitted category, migrants in Australia, New Zealand.

*** Some observations lost due to incomplete data for some variables.

Table D5 (cont.)

Part B: Tonga	*Remittances*	*Farm Income*	*Business Income*	*Wage Income*
No. of Migrants (predicted)	1959.76	482.53	841.86	-2844.32
	(0.00)	(0.05)	(0.06)	(0.39)
Remittances		-0.08	0.69	-0.09
		(0.35)	(0.00)	(0.70)
Household characteristics:				
Household size	71.69	105.12	-53.40	22.60
	(0.30)	(0.00)	(0.22)	(0.90)
Household head experience		-4.59		48.80
		(0.51)		(0.43)
Household head education*				
Primary	-41.23	611.71	-396.61	-1142.07
	(0.96)	(0.11)	(0.42)	(0.44)
Tertiary	412.88	-199.37	778.46	2769.28
	(0.50)	(0.43)	(0.04)	(0.00)
Wealth index	-111.92		2.12	872.42
	(0.40)		(0.98)	(0.08)
Location - Capital	-232.40		326.20	1377.32
	(0.52)		(0.16)	(0.00)
Av education migrants	191.97	25.81	-96.59	-6.44
	(0.00)	(0.30)	(0.00)	(0.92)
Av length of stay migrants	-149.93	-26.52	34.22	38.46
	(0.00)	(0.20)	(0.27)	(0.70)
Destination country**				
US migrants	87.38			
	(0.63)			
Other country migrants	1930.02			
	(0.00)			
Wedding (2004)	3852.67			
	(0.00)			
Loans (2003)	44.51			
	(0.89)			
Intending to migrate	497.74	45.25	-409.05	-9.45
	(0.00)	(0.53)	(0.00)	(0.97)
Agricultural land per capita		1080.81		
		(0.00)		
Business duration			41.70	
			(0.03)	
Observations	500			

*Omitted category, Household Head education level is secondary.
** Omitted category, migrants in Australia, New Zealand.

To test that the instruments used are exogenous the Hausman-Wu test is employed. The test is conducted by taking the residuals from each remittance and source income equation and regressing them on all exogenous variables in the system and the first derivatives of the negative binomial estimator. The chi-squared distributed statistic is N x R^2 where N is the number of observations and R^2 is the goodness of fit of that regression. The test statistics suggest there is no correlation between the exogenous instruments and the residuals of the individual equations.

Table D6 Endogeneity tests Hausman – Wu: Chi-squared values

	Remittances	***Farm income***	***Business income***	***Wage income***
Fiji (22 df)	4.91	29.04	2.86	12.02
Tonga (22 df)	15.01	12.50	19.43	18.21
	Remittances	**Income**		
Fiji (22 df)	4.91	6.01		
Tonga (22 df)	15.01	15.10		

The results from the 3SLS regressions in relation to the effects of number of migrants and remittances on household income are discussed at some length in Section 3 of this report. The effects of the other control variables on remittances and income warrant a brief mention. The variables that have the most significant effects on remittances are: (i) location in the capital city, which has a strong positive effect in both samples; (ii) the mean level of education of the household's migrants, which is positive; the mean length of absence of the household's migrants, which has a negative coefficient suggesting remittance decay over time, although it would be necessary to investigate this further and to explore possible cohort effects; (iii) having migrant(s) in the US or in countries other than Australia and New Zealand affects remittances positively, most likely capturing higher migrant earnings in the US and, in the case of Fiji, in the Gulf; (iv) if the household celebrated a wedding this had a very strong and highly significant impact on remittances in both countries; (v) in Fiji, if the household had borrowed during 2003 (Loans 2003), this was negatively related to remittances received in 2004, suggesting either that migrants are disinclined to remit to households in debt, or loans act as a substitute for remittances as a source of household finance; (vi) if household member(s) are intending to migrate in the near future this impacts positively on remittances received in Tonga, suggesting that present migrants' remittances could facilitate further household members to migrate, possibly through sponsoring effects;[4] and, (vii) in Fiji, Indo-Fijian households receive less remittances, which is consistent with the findings from the descriptive analysis in Section 3.2 of Part 1, Main Report, and most likely associated with cultural and social differences.

In the income equations: first, farm income is positively related to area of farm land held as expected; in Fiji farm earnings are also positively related to household head's years experience, this may reflect the more industry oriented approach to farming in

[4] See Brown and Poirine (2005) for evidence of this in Tonga and Samoa.

Fiji as opposed to the more widespread small scale subsistence and commercial farming in Tonga . Second, business income in both countries is positively related to the age (duration) of the household's business activities; in Tonga it is positively related household head's education (Tertiary) but negatively related to the average education level of the household's migrant members, and to the numbers in the household intending to migrate. Thus, while remittances increase business income, the presence of family members intending to migrate adversely affects business income. The latter may have less commitment to the family business activities and may even draw on family resources that would otherwise be committed to the business. This would be consistent with hypothesis examined in the next section that migration-oriented communities invest more in the human capital of their potential migrant members. Finally, in relation to wage income: wage income is positively related to tertiary education and to wealth in both countries; in Tonga it is also positively related to living in the capital city; in Fiji it is positively related to household head's work experience.

Annex E. Summary of the remittances and saving regressions

Annex E presents descriptive statistics (see Table E1) and discusses the full regression results for the analysis of the relationship between remittances and savings. The primary aim of this analysis is to determine the effect of remittances on household saving.

Table E1 Remittances and saving: Descriptive statistics

		Sample Means (Standard Deviations)	
		Fiji (n=418)	**Tonga (n=500)**
Total Remittances		552.74 (1819.54)	2729.55 (4070.88)
Saving		2168.89 (5868.58)	1269.64(3583.54)
Urban		0.50 (0.50)	0.50 (0.50)
Indian		0.39 (0.49)	
Value of assets (2003)		24309.38 (36633.43)	15001.73 (21651.49)
Household Head Education:			
	Primary	0.15 (0.36)	0.05 (0.22)
	Tertiary	0.15 (0.35)	0.09 (0.29)

To control for possible endogeneity remittances were instrumented using two variables; a dummy variable indicating whether or not the household was in regular (ie. monthly) contact with overseas migrants, and, a dummy indicating whether or not the main method of contact was by either personal visit or telephone call. As use of weak instruments could cause serious bias to the results, there is a need to undertake appropriate tests. As noted by Angrist (2001), a good instrument is correlated with the endogenous regressor (instrument relevance), but uncorrelated with the outcome variable (instrument orthogonality). The first-stage, F-statistic tests assess the former, while the overidentification tests assess the latter. The relevance of the instruments was tested using the F-statistic of the excluded instruments. A rule of thumb is usually that an F-statistic below 10 is cause of concern (Baum *et al* 2003). In both cases the values are substantially greater than 10 indicating that the instruments are relevant.[1]

In regard to the instrument orthogonality, as pointed out by Deaton (1997), when several instruments are used, overidentification tests can also be applied to evaluate the instruments' validity. Because there is more than one instrument the Sargan overidentification test was used to assess whether the instruments were correlated with the error process. As can be seen from the tests statistics (Table E2) the instruments' orthogonality could not be rejected. Having satisfied these conditions the instrumented equations were then used to perform tests for endogeneity of the remittances variable; for the OLS specifications using the Wu-Hausman and Durbin-Wu-Hausman tests and, for the Tobit specifications, a Smith-Blundell test of

[1] In the first stage regression both instruments were statistically significant with p-values, for Fiji of 0.001 and 0.022 respectively, and for Tonga of 0.000, and 0.008 respectively.

exogeneity. As can be see in Table E2, in both the Fiji and Tongan equations all test statistics indicate that the remittances variable is not endogenous, implying no need to instrument the remittances variable in the savings equations.

Table E2 IV and endogeneity test statistics: Remittances and saving

Test		*Fiji*	*Tonga*
1st Stage Equation excluded instruments (F-test).*		24.53	28.30
Sargan statistic for overidentification of instruments (p-value)		0.2137	0.5796
Endogeneity of remittances (p-values):	Wu-Hausman	0.3705	0.5006
	Durbin-Wu-Hausman	0.3656	0.4971
	Smith-Blundell test (Tobit)	0.8309	0.2283

* A rule of thumb is usually that a F-statistic below 10 is cause of concern (Baum *et al* 2003).

The OLS and Tobit regressions were estimated with saving as the dependent variable and remittances as an explanatory variable. The other control variables included in the equations were those shown in Table E1. To these variables one additional interaction term was introduced. In view of the indication from the descriptive statistics discussed in Section 3.3 that the strong association between remittances and saving did not appear to hold for households in the highest income quintile, remittances were interacted with a dummy variable for households in the highest income quintile in each country. As also noted previously, the savings question in the survey relates to gross saving, not saving net of borrowing as no reliable estimates of the latter could be derived from the survey data. The saving data are therefore censored at zero which would justify estimating a Tobit model. In this report the results of both OLS and Tobit models are reported as shown in Table E3

The coefficients on the remittance variable indicate that remittances are a much stronger determinant of saving in Fiji than in Tonga. The coefficient on the remittances variable in the OLS equation is 0.73 in Fiji and 0.04 in Tonga. The interaction term for remittances and high income households is, as expected, negative in all equations, but is only statistically significant in the case of Tonga. The value of the negative coefficient on the interaction term for Tonga is greater than the positive coefficient on remittances, indicating that for the households in the highest income quintile, remittances could have a net negative impact on saving. The reason why this might be so is not clear from the results. One possible explanation is that high income households in receipt of remittances also make greater contributions both to other poorer households within Tonga, and, to community-level events such as weddings, funerals and other major, customary expenses, especially those relating to church-based activities. This would have the effect of reducing their discretionary, disposable household income. There is some evidence of this, as noted in the discussion of income distribution in Section 3.5. It was found that households in the highest income quintile in Fiji and Tonga make net income transfers to other poorer households, implying that net disposable household income from all sources including remittances and internal transfers to other households is reduced (See Table 3.23). When donations and obligations to community-level organisations and events are also

factored-in it is most likely that mean disposable household income for the top income quintile in Tonga will also be less than mean income before taking remittances and inter-household transfers into account. It is also worth noting that although the results indicate that remittances reduce the saving of the richest households, the overall net effect of these redistributive obligations and inter-household transfers could be positive given the positive relationship between remittances and saving in all other income quintiles. These findings indicate a need to explore the possible interrelationships between international transfers (ie. remittances) and internal transfers among households within the remittance-receiving countries and the extent to which remittances are effectively redistributed among other, migrant and non-migrant households.

Other variables of interest that impact on saving, in the Tobit equations, are: (i) the value of household assets in the previous year which is positively correlated with the level of saving in the current year; (ii) in Fiji, urban households save significantly more than households in non-urban areas, the raw means for saving in urban and non-urban areas are $3,177.06 and $624.44 respectively, noting that the raw figures for saving in Tonga are $861.51 (urban) and $525.32 (non-urban); (iii) in Tonga, households in the outer-islands save more than those on the main island - the difference applies to main island non-urban households; (iv) in both countries households in which the head has tertiary education save significantly more (than those with secondary education) – moreover, in Fiji, where the household head has only primary education saving is significantly less in the Tobit specification.

Table E3 Saving and remittances - OLS and Tobit estimates
(p-values in brackets)

Dep. variable – Savings	***Fiji (n=407)***[+]		***Tonga (n=500)***	
	OLS	***Tobit***	***OLS***	***Tobit***
Remittances	0.734	0.805	0.0438	0.1501
	(0.000)	(0.0.000)	(0.371)	(0.035)
Remittances*Highest Income	-0.391	-0.090	-0.125	-0.1987
	(0.441)	(0.882)	(0.068)	(0.043)
Urban	1135.499	1991.160	549.343	1456.857
	(0.032)	(0.003)	(0.145)	(0.014)
Outer-Islands	-	-	390.759	1598.419
			(0.371)	(0.019)
Household Head Education[#]:				
Primary	-464.175	-2098.151	532.148	150.235
	(0.516)	(0.032)	(0.446)	(0.890)
Tertiary	1077.766	1774.273	1697.468	2987.881
	(0.147)	(0.050)	(0.001)	(0.000)
Value of assets 2003	0.066	0.080	0.0518	0.0656
	(0.000)	(0.000)	(0.000)	(0.000)
Indo-Fijian	-588.601	-209.755	-	-
	(0.255)	(0.75)		
Adj. R^2	0.265		0.112	
(p-value)	(0.00)	(0.00)*	(0.00)	(0.00)*

+ Some observations lost due to incomplete data for some variables.
# Omitted category Household Head Education = Secondary.
* p-value prob. > Chi-sq.

Annex F. Summary of the remittances and education regressions

In this section the relationships between migration, remittances and educational attainment are analysed taking into account the possible endogeneity of the relationships using appropriate instrumental variables.[1] In the first equation, the level of remittances (in all forms) is used as the primary regressor with *EXTRA EDUCATION* as the dependent variable. It is conceivable that the Tongan data overestimate years of secondary education due to possible ambiguities in the translated version of the survey question. For this reason the Tongan data are not used in these econometric estimations. Remittances rather than number or presence of migrants is used as the regressor as it was found earlier (see Section 3,2) that many households without migrants had received remittances. Furthermore, it is hypothesized that at this, optional level of education, for which there are both direct educational costs as well as other opportunity costs, remittances can alleviate the household's budget constraint, allowing the children to acquire more years of education before entering the labour force. In this equation remittances were instrumented using the same variables as in the savings equations discussed in Section 3.3 and Annex E: a dummy variable indicating whether or not the household was in regular (ie. monthly) contact with overseas migrants, and, a dummy variable indicating whether or not the main method of contact was by either personal visit or telephone call. Both were found to be relevant and valid according to the test statistics (upper section Table F1).[2]

In the second model in which the effect of migration on attainment of tertiary qualifications is analysed for both countries, two alternative principal regressors were tested; remittances and a variable to capture the 'migration orientation'. The latter was chosen to test the hypothesis that the accumulation of human capital at this level is migration-induced rather than credit constrained.

Table F1 IV and endogeneity test statistics: Remittances, migration, and education

Test	*Fiji*	*Tonga*
Remittances:		
1st Stage Equation excluded instruments (F-test)*	10.90	
Sargan statistic for overidentification of instruments (p-value)	0.155	
Wald test for endogeneity of remittances (p-value)	0.042	
Migration Intentions:		
1st Stage Equation excluded instruments (F-test)*	90.50	55.31
Wald test for endogeneity of remittances (p-value)	0.005	0.118

* A rule of thumb is that an F-statistic value below 10 is cause of concern (Baum et al, 2003).

In this equation a community-level 'migration-orientation' variable was created from the household dataset to act as an instrument. It measures the mean number of

[1] The procedures followed in this section are essentially the same as those used for estimating the remittances and saving equations. See Annex E for details.

[2] In the first stage regression both instruments were statistically significant with p-values, of 0.002 and 0.078, respectively.

households at the community level in which one or more members had expressed an intention to migrate in the near future.[3] In deriving this instrumental variable for each household, the observation for the household in question was omitted. The migration-orientation instrument used in the tertiary equation was found to be both relevant and valid according to the test statistics in the lower panel of Table F1.[4]

Further endogeneity tests showed that remittances were not exogenous in the EXTRA EDUCATION equation. The model was accordingly estimated using an instrumental variable (IV) probit model. Endogeneity tests showed that for the Fiji sample migration-orientation was endogenous in the tertiary education equation, requiring estimation using an instrumental-variable probit model. With Tonga, on the other hand, the tests suggested that there was no endogeneity, so the model was estimated using a probit model.

All equations reported here were estimated where the standard errors were calculated taking into account a possible correlation of errors across members from the same household and the standard errors reported are the 'robust' Hubert/White-adjusted estimates. The descriptive statistics are reported in Table F2 and the full regression results are reported in TablesF3 and F4.

Table F2 Descriptive Statistics for Education and Migration Regressions:

Fiji and Tonga, Means (SD)

Variable Name	***Fiji Extra Education (n=160)***	***Fiji Tertiary (n= 1144)***	***Tonga Tertiary (n=1379)***
Extra Education (dummy)	0.7625		
	(0.427)		
Tertiary		0.1608	0.1066
(dummy)		(0.3675)	(0.3087)
Remittances of Household	549.0922		
(US$, all forms)	(1220.73)		
Age (years)	15.575	40.0298	43.5029
	(1.136)	(13.84)	(16.295)
Female Gender (dummy)	0.500	0.5004	0.5236
	(0.502)	(0.500)	(0.500)
Urban resident	0.3938	0.4851	0.5308
(dummy)	(0.4901)	(0.500)	(0.499)
Children Dependents	0.1843		
(HH no.)	(0.175)		
Household Size (no.)		5.5149	6.5185
		(2.67)	(3.173)
Indo-Fijian	0.356	0.4580	
(dummy)	(0.480)	(0.498)	
Wealth Index	-0.2942	0.2068	0.3967
	(3.059)	(2.88)	(2.211)
Monthly Contact	0.1688		
(HH dummy)	(0.3757)		
Contact in person or phone	0.2875		
(HH dummy)	(0.454)		
Migration Intent		0.6757	0.4568
(HH dummy)		(0.468)	(0.498)

[3] The questionnaire asked the household head "Are you or another household member aged over 15, planning to go and live overseas during the next couple of years?" If answered in the affirmative the number of household members intending to migrate was recorded.

[4] In the first-stage regression the instrument was statistically significant with p-values, for Fiji of 0.013 and for Tonga of 0.000.

Table F3 Schooling and Remittances IV Probit Results: Fiji
(p-values in brackets)

	Extra Education
Remittances (instrumented)	0.0003 (0.08)
Indo-Fijian	0.8956 (0.01)
Age	0.2691 (0.01)
Gender (Female)	0.3285 (0.17)
Wealth	-0.0388 (0.50)
Urban household	0.4215 (0.10)
Ratio of Kids to Household Size	-0.0201 (0.979)
Average Adult Education in HH	0.0944 (0.10)
Observations*	158
Wald Chi-sq (p-value)	36.69 (0.00)

* Two observations lost due to missing variables in dataset.

In Table F3 it is observed that the coefficient on the remittances variable is positive and statistically significant. This indicates that remittances influence whether a student will acquire education beyond the eight years provided by the government. Due to the small sub-sample size for those aged 14 to 17 years, it was not possible to re-estimate the Extra-Education equations by ethnicity. A dummy variable for Indo-Fijian ethnicity was therefore included in the regression. This was positive and statistically significant, as was the variable controlling for urban-based. Wealth, controlling for all other factors, was not statistically significant.

Table F4 Tertiary Education and Migration Probit Results: Fiji and Tonga
(p-values in brackets)

	Fiji (IV probit)	*Tonga (probit)*
Migration Intent	2.546	-0.09
	(0.00)	(0.43)
Indo-Fijian	-0.3377	
	(0.02)	
Age	-0.279	-0.0092
	(0.00)	(0.00)
Gender (female)	-0.1567	-0.0162
	(0.07)	(0.87)
Household size	-0.0760	-0.0848
	(0.01)	(0.00)
Urban household	-0.0170	0.1721
	(0.91)	(0.17)
Wealth index	0.1675	0.2954
	(0.00)	(0.00)
Wald Ch-sq	111.26	48.76
	(0.00)	(0.00)
Observations*	1121	1376

* Observations lost due to missing variables in dataset

The results in Table F4 indicate that in Fiji there is a positive and statistically significant relationship between the household's migration-orientation and the probability that individuals within the household have acquired tertiary level education. For Tonga, on the other hand, there is no statistically significant relationship between migration-intention and acquiring tertiary education. Almost all other control variables in the Fiji equation (and some in the Tongan equation) are also statistically significant: age, has a negative coefficient in both equations, probably reflecting a cohort effect ie. the lower likelihood of older generations having studied beyond secondary level; females are less likely to have tertiary qualification reflecting the gender bias found in many developing countries, although it is interesting to observe that this variable was not statistically significant in Tonga; household size, in both countries, also reduces an individual's probability of acquiring tertiary education whereas the wealth index has a positive effect (these results indicate the importance of resources for the acquisition of tertiary education). Finally, in Fiji, Indo-Fijian households appear less likely to have tertiary educated individuals. This most probably reflects the pattern of migration of highly skilled individuals in this ethnic group.

Annex G. Design and methodology of survey of growers' seasonal labour needs and attitudes to foreign workers

To assess the labour needs and attitudes of horticultural producers in the Swan Hill Mildura region, 2054 detailed surveys were distributed to growers in the Swan Hill and Mildura regions via three different mail outs in mid 2005:

1. The Murray Development Citrus board mailed out 402 surveys to individual citrus growers in individually addressed envelopes.
2. The Swan Hill office of the Victorian Department of Primary Industries distributed 371 surveys to a diverse range of horticultural growers as an insert to a regular newsletter mail out.
3. A total of 1281 surveys were distributed as an insert into to the regular grape-growers newsletter The Vine. Of these, 851 surveys were sent to members of the Australian Dried Fruits Association and 430 surveys were sent to members of the Australian Table Grape Association.

The surveys contained a total of 37 questions in a multiple choice format. Questions were asked about growers' current use of seasonal labour, whether or not they experienced difficulty in attracting sufficient labour and whether or not they would consider using offshore labour if a seasonal labour scheme was introduced. Growers were asked to provide detailed responses (for example specifying the current number of seasonal employees engaged for each month of the year) with additional space for respondents to add their own comments. The survey was anonymous, and confidentiality assured, although growers were invited to provide contact details (which many chose to do). The surveys were mailed back to the Institute for Social Research in a pre paid envelope and the data has been analysed using SPSS to produce frequency tables and graphs.

Ethics approval was granted for this project, the main issues were confidentiality, particularly in relation to commercial data and questions regarding employment of illegal immigrants. A cover letter was provided before the survey explaining the nature of the project and assuring participants that all answers are confidential. Strict anonymity was assured.

There were 176 surveys returned with useable responses; the response rate of about 9% fell slightly short of the anticipated rate of 10%). The different manner in which the surveys were distributed appears to have influenced the rate of return. For example, there was a strong response rate (of around 20%) from citrus growers, who received the survey in an individually addressed envelope. There was a much lower response rate from dried fruits, table grape growers, and members of the DPI-Swan Hill mailing list, who received the survey inserted into a regular newsletter. (This was done in order to reduce the cost of the survey, which was carried out on a limited budget but in retrospect it was a false economy.) The relatively low response could be taken to suggest that labour shortages are not as serious as has been reported anecdotally; however another (and in our view more likely interpretation) is that many

growers may not open or read the newsletters that they receive from their industry association or government departments. Nonetheless, despite the rather low return rate, we believe that the responses achieved provide a reasonable snap-shot of the horticultural industry in the region.

Survey participants were asked to identify the size of their landholding, the ownership structure of their farming enterprise, and the major crops grown. This information was gathered to enable the sample to be checked against the general characteristics of horticultural production in the survey areas in order to ensure that the sample was reasonably representative.

More than half the respondents were from small landholdings of less than 20 hectares. The most common enterprise size reported was less than ten hectares (28.4%), followed by ten to nineteen hectares (25.3%). Only 9.9% reported that their enterprise was larger than 100 hectares. The vast majority (95%) of respondents described their operations as a family farm, or as a family farm with a company structure, while only 5% operated as private or public companies. These farm sizes and farm types correspond to the general pattern of farming in Australia, whereby the majority of enterprises are small family farms, but the bulk of agricultural output comes from relatively few large-scale corporate entities.

Many horticultural producers grow more than one type of crop. For the purposes of this research, growers were classified according to their largest crop type. The largest number of responses within the sample came from citrus growers (32.1%), followed by dried vine fruits (21.6%), wine grapes (18.5%), stone fruit (9.9%), table grapes (8.0%) and vegetables (5.6%).

Annex H. Calculating Australia's horticultural employment potential

Method 1. Calculating seasonal employment potential using survey results and number of horticultural enterprises

The survey of horticultural producers in the Swan Hill/Mildura region involved a total mail out of 2000 questionnaires for which 176 useable responses were received. Approximately 70% of respondents expressed an interest in employing offshore workers to fulfil seasonal labour needs at least in some years, with 20% expressing a desire to employ offshore seasonal workers in every season. Growers who expressed an interest in the scheme were then asked to estimate the number of overseas workers that they would be likely to employ and the months in which employment would be offered. If we take the data from the 20% of growers who expressed a desire to employ offshore workers in every year, then we find that the peak number of workers required by these enterprises would be 224 in February, an average of 6.58 workers per enterprise. The lowest number of workers required would be 148 in June, an average of 4.35 workers per enterprise. If we assume that this 20% sample is representative of horticultural growers Australia wide, then we can extrapolate the employment potential for the horticultural industry as a whole:

Number of horticultural enterprises in Australia in 2003[a]	= 18,468
Assume 20% interested in employing offshore seasonal labour every year	= 3694
x 6.58 (average number of workers desired per enterprise in peak season as per survey results)	= 24,303[b]
x 4.35 (average number of workers desire per enterprise in low season as per survey results)	= 16,067[c]

[a] Australian Farm Sector Demography, Australian Farm Institute, Research Report 2005, p. 13.

[b] Peak season employment potential

[c] Low season employment potential

Method 2. Calculating employment potential by comparison with the operation of the Canadian Seasonal Agricultural Workers Program in Ontario

The Canadian seasonal agricultural workers scheme is well established in the province of Ontario, where it has been operating for almost four decades. While the scheme is now expanding into other provinces, such as British Colombia, it is anticipated that the numbers of offshore seasonal workers employed in Ontario each year will grow slowly if at all. In this sense the scheme in Ontario can be regarded as 'mature' and employment statistics for Ontario's horticultural industry can be used to provide a broad-brush indication as to the long term employment potential of Australia's horticultural sector for offshore workers.

In 2004, the total number of vacancies filled by offshore workers in Ontario (excluding tobacco and food processing) was 12,733 and the average length of stay for an offshore worker was four months.[1]

Total cash receipts (net government support payments) for horticultural production in Ontario in 2004 was CND$2.031 billion (includes cash receipts for potatoes,

[1] FARMS 2005 employer information booklet, p. 35.

greenhouse vegetables, other vegetables, apples, other fruit trees, strawberries and grapes, floriculture and nursery but excludes tobacco).[2]

This compares to the gross value of Australian horticulture (excluding wine grape production) of AUD $6.749 billion.[3]

Canadian and Australian dollars are roughly at parity and both countries operate relatively open economies in terms of horticultural trade so that prices of horticultural goods in both jurisdictions should reflect international prices. Given this, the total value of the Australian industry is more than three times the size of the industry in Ontario.

Thus, if an offshore program were allowed to develop in Australia in the same way as it has in Ontario, it seems reasonable to estimate that the Australian industry has the long term potential to employ at least three times the number of seasonal workers as Ontario – that is, in excess of 38,000 workers for an average period of four months.

This can be taken as a conservative estimate for the following reasons:

1. The Australian horticultural statistics used for this calculation exclude Australia's massive wine grape industry. While wine grapes are mechanically harvested and so do not require the labour input of table grapes or dried fruit, vineyards nevertheless require manual labour, particularly for pruning and thinning.

2. The ABS estimate for the net value of horticultural production of AUD $6.749 billion is conservative, when compared to the Horticulture Australia estimate of $9.65 billion

3. It could be anticipated that the provision of offshore labour could fuel the expansion of the horticultural industry in Australia.

[2] Statistics Canada, Catalogue no. 21-011, Farm cash receipts, May 2005, p.32.
[3] The Australian Horticulture Statistics Handbook 2004, p.8.

Annex I. Modelling potential income and costs for seasonal workers

Model 1 – High Tax model (as per current tax regime)

Assumptions: Employers pay all work cover, payroll and associated costs of employment (as with the employment of Australian workers). Employers pay cost of all transport to and from the worksite. Workers taxed at 29% with no tax free threshold, plus 1.5% Medicare levy, plus 1% Medicare levy surcharge (applicable for those who do not hold private medical insurance). Workers are paid at the award rate of $15.38 per hour (including 25% casual loading) as applicable under the federal horticultural award as at July 2005.[1] Workers pay for backpacker-style accommodation. All estimates in AUD$.

Table I1 Estimate of workers' fixed costs:

Description	***Basis of estimate***	***Estimated amount (AUD$)***
Domestic travel to international airport in country of origin	Estimate only	150
International return airfare	Qantas discount economy fare Nadi/Melbourne/Nadi including taxes and charges	1,000
Domestic travel Melbourne Mildura	V/Line off peak saver return economy fare	92
Pre-departure medical health check	Estimate only	50
incidental fees (eg passport application fee, travel to medical, travel to submit application, purchase of travel goods, clothes etc)	Estimate only	200
Australian visa fees	Based on current working holiday maker visa fees	180
Total fixed costs		**1,672**

[1] see http://www.wagenet.gov.au/WageNet/Search/view.asp?docid=257156&query=(HORTICULTURAL%20INDUSTRY)&page=24&quickview=Y

Table I2 Estimate of workers' weekly living expenses

Description	*Basis of estimate*	*Estimated amount*
Accommodation (shared room in backpacker style facilities)	Average of quoted weekly rates at Nyah West Hotel backpackers, Red Cliffs backpackers, Northaven backpackers, Juicy Grape backpackers (Sunnycliffs), Red Cliff caravan park	$115
Food and other living expenses (eg phone home, entertainment)	Estimate only ($25 per day)	$175
Estimated weekly living costs		**$290**

Table I3 Estimate of workers net weekly income after outgoings:

Model 1 (existing 29% tax rate; no tax free threshold)		
Hourly rate	$15.38	
Hours per week	40	50
Gross income	$615.20	$769.00
Tax @ 29%	$178.41	$223.01
Medicare levy @ 2.5%	$15.38	$19.23
Outgoings (estimated weekly expenses)	$290.00	$290.00
Net income (after deductions and outgoings) = weekly savings potential	$131.41	$236.77

Savings Scenario 1:
(40 hours/week @ 29% tax, growers recoup all fixed costs)

Hours per week	40		
Savings after outgoings	$131		
share of fixed costs recouped from workers' wages	100%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$788	$1,708	$3,417
Less 100% of fixed costs	$1,672	$1,672	$1,672
Cumulative savings at end of contract	-$884	$36	$1,745

Savings Scenario 2:
(40 hours/week @ 29% tax, growers recoup 50% of fixed costs)

Hours per week	40		
Savings after outgoings	$131		
share of fixed costs recouped from workers' wages	50%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$788	$1,708	$3,417
Less 50% of fixed costs	$836	$836	$836
Cumulative savings at end of contract	-$48	$872	$2,581

Savings Scenario 3:
(40 hours/ week @ 29% tax, growers pay all fixed costs)

Hours per week	40		
Savings after outgoings	$131		
share of fixed costs recouped from workers' wages	0%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$788	$1,708	$3,417
no fixed costs (growers pay)	$0	$0	$0
Cumulative savings at end of contract	$788	$1,708	$3,417

Savings Scenario 4:
(50 hours/ week @ 29% tax, growers recoup all fixed costs)

Hours per week	50		
Savings after outgoings	$237		
share of fixed costs recouped from workers' wages	100%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$1,421	$3,078	$6,156
Less 100% of fixed costs	$1,672	$1,672	$1,672
Cumulative savings at end of contract	-$251	$1,406	$4,484

Savings Scenario 5:
(50 hours/ week @ 29% tax, growers recoup 50% of fixed costs)

Hours per week	50		
Savings after outgoings	$237		
share of fixed costs recouped from workers' wages	50%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$1,421	$3,078	$6,156
Less 50% of fixed costs	$836	$836	$836
Cumulative savings at end of contract	$585	$2,242	$5,320

Savings Scenario 6:
(50 hours/ week @ 29% tax, growers pay all fixed costs)

Hours per week	50		
Savings after outgoings	$237		
share of fixed costs recouped from workers' wages	0%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$1,421	$3,078	$6,156
no fixed costs (growers pay)	$0	$0	$0
Cumulative savings at end of contract	$1,421	$3,078	$6,156

Model 2 – Low Tax model

Assumptions: As for Model 1, except that offshore seasonal workers are entitled to the same 13% concessional tax rate applied to Australian residents who engage in seasonal work in horticulture.

Estimate of workers' net weekly income after outgoings:

Model 2: Concessional 13% seasonal tax rate; no tax free threshold		
Hourly rate	15.38	
Tax	13%	
Medicare levy	2.5%	
Hours per week	40	50
Gross income	$615.20	$769.00
Tax @ 13%	$79.98	$99.97
Medicare levy @ 2.5%	$15.38	$19.23
Outgoings	$290.00	$290.00
Residual income after deductions and outgoings (= savings potential)	$229.84	$359.81

Savings Scenario 7:
(40 hours/ week @ 13% tax, workers pay all fixed costs)

Hours per week	40		
Savings after outgoings	$230		
Share of fixed costs recouped from workers' wages	100%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$1,379	$2,988	$5,976
Less 100% of fixed costs	$1,672	$1,672	$1,672
Cumulative savings at end of contract	-$293	$1,316	$4,304

Savings Scenario 8:
(40 hours/ week @ 13% tax, growers recoup 50% of fixed costs)

Hours per week	40		
Savings after outgoings	$230		
Share of fixed costs recouped from workers' wages	50%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$1,379	$2,988	$5,976
Less 100% of fixed costs	$836	$836	$836
Cumulative savings at end of contract	$543	$2,152	$5,140

Scenario 9:
(40 hours per week @ 13% tax, growers pay all fixed costs

Hours per week	40		
Savings after outgoings	$ 230		
Share of fixed costs recouped from workers' wages	0%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$1,379	$2,988	$5,976
Less 100% of fixed costs	$0	$0	$0
Cumulative savings at end of contract	$1,379	$2,988	$5,976

Savings Scenario 10:
(50 hours/ week @ 13% tax, workers pay all fixed costs)

Hours per week	50		
Savings after outgoings	$360		
Share of fixed costs recouped from workers' wages	100%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$2,159	$4,677	$9,355
Less 100% of fixed costs	$1,672	$1,672	$1,672
Cumulative savings at end of contract	$487	$3,005	$7,683

Savings Scenario 11:
(50 hours/ week @ 13% tax, growers recoup 50% of fixed costs)

Hours per week	50		
Savings after outgoings	$360		
Share of fixed costs recouped from workers' wages	50%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$2,159	$4,677	$9,355
Less 100% of fixed costs	$836	$836	$836
Cumulative savings at end of contract	$1,323	$3,841	$8,519

Savings Scenario 12:
(50 hours per week @ 13% tax, growers pay all fixed costs)

Hours per week	50		
Savings after outgoings	$360		
Share of fixed costs recouped from workers' wages	0%		
Length of employment	6 weeks	13 weeks	26 weeks
Savings after outgoings	$2,159	$4,677	$9,355
Less 100% of fixed costs	$0	$0	$0
Cumulative savings at end of contract	$2,159	$4,677	$9,355

Summary of savings potential for off-shore seasonal workers

Scenario	*Weekly hours #*	*Tax rate %*	*Workers share of fixed costs %*	*AUD$*		
				6 weeks	*13 weeks*	*26 weeks*
1	40	29	100	(884)	36	1,745
2	40	29	50	(48)	872	2,581
3	40	29	0	788	1,708	3,417
4	50	29	100	(251)	1,406	4,484
5	50	29	50	585	2,242	5,320
6	50	29	0	1,421	3,078	6,156
7	40	13	100	(293)	1,316	4,304
8	40	13	50	543	2,152	5,140
9	40	13	0	1,379	2,988	5,976
10	50	13	100	487	3,005	7,683
11	50	13	50	1,323	3,841	8,519
12	50	13	0	2,159	4,677	9,355

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