Seasonal Labor Mobility in the Pacific: Past Impacts, Future Prospects

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The Pacific islands have weak economic growth and limited structural change compared to the rest of developing Asia. Remoteness and low economic density are two causes. To mitigate these constraints, bilateral arrangements with Australia and New Zealand let Pacific workers seasonally migrate to access higher-paying, more dynamic labor markets. Managed circular schemes are designed to benefit employers in labor-intensive sectors like horticulture, Pacific workers with limited employment opportunities in their own countries, and the communities providing workers. Several studies show large, positive impacts, but more general development impacts have been harder to find. Likewise, clear quantitative evidence of positive impacts in host countries has been hard to obtain. In this paper, we review the main seasonal labor mobility schemes in the Pacific and provide new evidence on community-level and aggregate impacts.

I. Introduction

The island economies in the Pacific have experienced weak economic growth and limited structural change compared to the typical economy in the rest of developing Asia.[1] Remoteness from major centers of population and economic activity, and low economic density, have contributed to these poor outcomes (Gibson 2007). To mitigate the impact of these constraints, bilateral arrangements with Australia and New Zealand over the last decade have given workers from these countries an opportunity to use seasonal labor migration to access higher-paying, more dynamic and diverse labor markets. These managed circular migration schemes are designed to benefit employers in labor-intensive sectors,

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[1]Developing Asia refers to the 46 developing member economies of ADB.

the workers from the Pacific that have limited opportunities for wage-earning employment in their own countries, and the communities that send the workers.

As seen around the world, any discussion of temporary migration programs can become highly charged in public debate due to the issues of human trafficking, overstaying and other forms of illegal migration, employer exploitation of immigrants, and misunderstandings stemming from differences in cultural and legal traditions between source and host countries. Yet, labor mobility has played a key role in ensuring efficient and equitable development, particularly when youthful populations—such as in Melanesian countries like Papua New Guinea and Vanuatu—are adjacent to countries like Australia, New Zealand, and many Asian countries with aging populations. The recently introduced seasonal migration schemes recognize the need to let employers in the labor-intensive accommodation, agriculture, horticulture, and viticulture (wine) industries recruit workers from Pacific countries for several months per year, letting workers who comply with migration regulations return for future seasons. A balance between the needs of these industries for seasonal labor to help expand production and exports, and the need to provide employment opportunities for workers from the Pacific, all while preserving border integrity, is central to these schemes.

In the next section, we provide a detailed background to the development of these seasonal migration programs, discussing how they have evolved and the contrasts between the experiences of Australia and New Zealand. In section III, we analyze the impacts of the largest of these schemes, the Recognised Seasonal Employer (RSE) program in New Zealand and the corresponding Seasonal Work Program (SWP) in Australia. We then review the impacts of the RSE and of the SWP on economic development in the Pacific in section IV. Our review covers a variety of studies that differ in their degree of empirical rigor, ranging from detailed household survey data with carefully constructed counterfactuals to more aggregated, community-level, cross-sectional census data and cross-country panel analyses. Yet, even with this variation in the strength of the evidence, consistent themes emerge to suggest positive impacts of these circular, seasonal migration schemes on both the source areas and the hosts. In section V, we then examine sustainability of these programs and the opportunities and challenges that we foresee, taking account of forecast demographic changes in East and Southeast Asia, Australia and New Zealand, and the Pacific. Finally, we conclude in section VI.

II. The Origin, Development, and Evolution of These Schemes

New Zealand

New Zealand's horticultural industry has grown rapidly, with exports rising from just NZ$200 million in 1991 to NZ$3.4 billion by 2017, becoming the

country's fourth-largest goods export industry behind dairy, meat, and wood.[2] The wine industry has also grown rapidly, from NZ$300 million in exports in 2004 to NZ$1.8 billion in 2018, making it the fifth-largest goods export industry.[3] Almost 70,000 workers are needed by these industries at peak times of the year to pick and pack fruit, and prune and prepare trees and vines for the next season, with about a 6:1 ratio of workers in horticulture to those in viticulture. Labor demand has grown strongly in these industries due to expansion over the last decade, with earlier estimates of peak labor needs of only about 50,000 workers (Ramasamy et al. 2008).

Historically, employers in these industries used local casual workers, backpackers, and migrants coming through various temporary work schemes to help carry out these tasks. The industry's rapid growth, plus low unemployment and high labor force participation rates in New Zealand, meant that by the middle of the 2000s employers increasingly had trouble obtaining enough workers in peak times.[4] In addition to concerns about numbers, there were concerns over worker quality, with high rates of worker turnover resulting in few opportunities for sustained training, and poor-quality work reducing the value of exports. As an export-oriented industry, overseas codes of practice for treatment of workers also mattered to employers, as concerns about potential exploitation of a workforce largely made up of temporary and migrant workers with little bargaining power could affect market access.

In response, in 2004 the Government of New Zealand introduced ad hoc arrangements to let employers recruit migrant labor on seasonal work permits during the 2005/06 season, while forming a more comprehensive policy response, which eventually became the RSE scheme. Almost 2,000 workers were hired under such arrangements in the 2005/06 financial year, with about 80 workers from the Pacific (Gregory 2006). At the same time, governments of Pacific island countries were pressing for more openings for unskilled and low-skilled migrants in Australia and New Zealand, whose migration policies prioritized skilled migrants and thereby provided fewer opportunities for Pacific workers compared to previously. Relatedly, a major World Bank (2006) report on mobility in the Pacific noted how the small and remote countries in the region with growing youth populations would struggle to provide sufficient jobs. The report highlighted the potential gains from greater labor mobility so that Pacific workers could move to countries with greater economic density.

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[2]See http://www.hortnz.co.nz/assets/Annual-Report/HortNZ-Annual-Report-2018.pdf (accessed January 6, 2019). In 2018, the average market exchange rate was NZ$1 = $0.69. The long-run average from 2007, when the RSE began, to 2018 was NZ$1 = $0.74. For the same period, the average was A$1 = $0.86.

[3]See https://www.nzwine.com/en/news-media/statistics-reports/new-zealand-winegrowers-annual-report/ (accessed January 6, 2019).

[4]Culling and Skilling (2018) report that New Zealand's labor force participation rate rose from 65% in 2000 to 71% in 2017; the fifth-largest increase in the Organisation for Economic Co-operation and Development (OECD) during the review period.
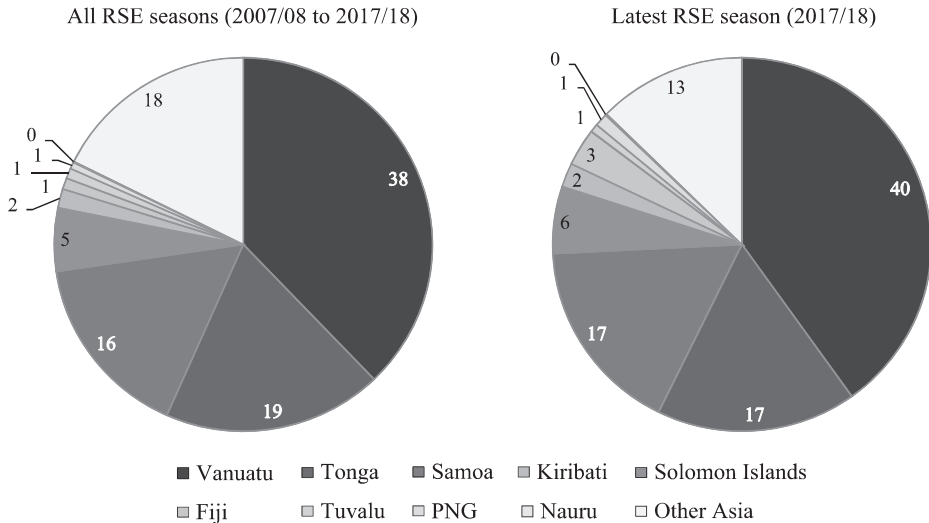
The World Bank went beyond report-writing and ran a small pilot of 45 seasonal workers under the ad hoc arrangements put in place in 2005/06 to test the recruitment of workers from Vanuatu (Luthria and Malaulau 2013). Prior to this, Vanuatu had almost no existing diaspora, with just a few hundred people born in Vanuatu recorded in the censuses of either Australia or New Zealand (compared to 51,000 Fiji-born; 38,000 Samoa-born; and 21,000 Tonga-born in the 2006 New Zealand census). The 45 workers from Vanuatu recruited for the pilot and hired by the Seasonal Solutions Cooperative Ltd. (SSCO) in Central Otago were predominately from the rural islands of Ambrym and Tanna. This pilot showed that recruitment was possible, even from a country with little experience of international migration, and helped cement ties that led to Vanuatu becoming New Zealand's largest supplier of seasonal workers. The year after the successful pilot, in 2006/07, SSCO employed 232 RSE workers from Vanuatu. Since then, the employment of workers from Vanuatu by SSCO has increased over 400%; in the latest full year of the RSE (from July 2017 to June 2018), there were 1,244 RSE workers from Vanuatu employed by SSCO, comprising 28% of the RSE workers from that country in New Zealand in that year.

The success of the pilot and experiences with the ad hoc arrangements were monitored by a working group from industry, government, and labor unions. From this, the RSE program was announced on 25 October 2006 and officially launched on 30 April 2007. From the outset, a specific objective was to encourage economic development in the Pacific. Under this program, workers are issued a visa that allows temporary migration for work in the horticulture and viticulture industries for a maximum of 7 months in any 11-month period (or 9 months for workers from Kiribati and Tuvalu, who face higher travel costs given their remote north Pacific locations), although in practice most contracts are for 6 months or less. The workers must be recruited by a recognized approved employer—one whose "Application to Recruit" was approved by authorities—who pays half of the return airfare; offers at least 240 hours of work at market wages; provides accommodation, transportation, and pastoral care; and is required to pay the costs associated with worker removal from New Zealand if workers overstay their visa and become illegal immigrants. Subject to complying with migration regulations, the workers may be reemployed in subsequent years, either with the same or a new employer.

A "New Zealanders first" principle requires employers to first lodge vacancies with the Ministry of Social Development, which provides welfare benefits and job search services for New Zealand residents, before attempting to recruit offshore. Then, preference is given to recruiting workers from Pacific Forum member countries.[5] Employers can only recruit from outside members of the Pacific

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[5]The Pacific Forum comprises 18 members: Australia, the Cook Islands, the Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Nauru, New Caledonia, New Zealand, Niue, Palau, Papua New Guinea, the Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. At the time of the RSE program's launch, Fiji was ineligible to participate as a sanction in response to a recent coup d'état.

Figure 1.   **Composition of Recognised Seasonal Employer Workers by Country of Recruitment (%)**

All RSE seasons (2007/08 to 2017/18)   Latest RSE season (2017/18)

- ■ Vanuatu   ■ Tonga   ■ Samoa   ▨ Kiribati   ▨ Solomon Islands
- □ Fiji   □ Tuvalu   □ PNG   □ Nauru   □ Other Asia

PNG = Papua New Guinea, RSE = Recognised Seasonal Employer.
Source: Author's calculations based on George Rarere. 2018. Data presented at the Ministry of Business, Innovation and Employment RSE Conference. Tauranga.

Forum if it can show (i) reasonable attempts to recruit from member countries have been unsuccessful, (ii) preestablished relationships with workers from other countries, or (iii) otherwise reasonable grounds why it is not feasible to recruit from Pacific Forum member countries.

The composition of the RSE workforce, in terms of supplying countries, is shown in Figure 1. The left-hand panel is for the total across the first 11 seasons; a season runs from July until June of the following year. The largest suppliers have been Vanuatu (38%), Tonga (19%), and Samoa (16%), along with the combined supply from Asian countries—especially Indonesia, Malaysia, and Thailand—comprising 18%. The workforce supply from these Asian sources reflects pre-RSE arrangements and is of declining importance, as seen in the panel on the right-hand side with the latest season's composition; in the most recent year, workers from Asian countries were just 13% of the total. A reduced share of workers from Asia has enabled slight increases in the 2017/18 season in the respective shares from Vanuatu to 40%; Solomon Islands to 6%; and Fiji, which was admitted to the scheme in the 2014/15 season, to 3%.

Especially in the first year of the program, many employers recruited from a "work-ready pool" of workers prescreened and selected by labor ministries in sending countries. For example, more than 5,000 Tongans registered for the work-ready pool within the first 3 months of the program (Gibson, McKenzie, and

Rohorua 2008), with local officials and community leaders prescreening candidates. Employers then indicated the number of workers needed, any requirements (such as height), and if they would prefer nominees all from a single district in order to establish a community linkage, or if they would prefer to select nominees across different districts, with the Tongan authorities then providing a shortlist that they could select from. The second method of recruitment was through agents, who were responsible for screening and selecting the workers. This process has been used most extensively in Vanuatu (and subsequently in Solomon Islands) where the government licenses agents, who are only meant to charge the employers and not the workers for their services (McKenzie, Martinez, and Winters 2008). The third method was direct recruitment by employers, which became more important once employers participated in the RSE for several years and started to develop contacts in supplying regions.

Since 2009, the RSE has also allowed employers who need workers for a peak harvest time that is shorter than the requirements of the program to join together to submit joint applications to recruit. For example, a worker may first be employed by one grower to pick apples for 2 months, then a second employer may hire them for 3 months to work on their kiwifruit orchard. This significant change increased the number of RSE workers employed, as it provided smaller and more specialized enterprises the opportunity to participate in RSE (Bailey and Bedford 2018). Relatedly, in several cases, grower cooperatives such as SSCO have registered as an RSE, and the workers can then be placed by the cooperative in several farms or orchards over the recruitment period.

When the RSE was introduced, there was an initial annual cap of 5,000 visas per year (July–June). This was raised to 8,000 in October 2008 and to 9,000 in November 2014, with small increases of between 500 and 1,000 subsequently announced over the next 4 years. Most recently, in November 2018, the cap was raised to 12,850. Figure 2 shows how actual arrivals each season compare with the cap. The Application to Recruit can be lodged anytime, and the arrivals can come throughout the year. Therefore, an annual total may be higher than what was the cap at the beginning of the year, but by the time of the newly raised cap at the end of the year, the annual total number of arrivals is below the cap. In general, the cap has been quite flexible in accommodating the threefold increase in the number of RSE workers, which was over 11,000 in the most recently completed year (July 2017–June 2018), compared to just over 4,000 workers in the program's first year. New Zealand's labor force has grown rapidly in recent years, driven by higher migration and rising participation rates, so RSE workers as a share of total employment have doubled (rather than tripled), going from 0.21% in 2007 to 0.42% by 2018.

A key feature of the RSE is that workers may return in subsequent seasons. This incentivizes workers to return home at the end of each season, and so overstaying rates have generally been less than 1% (Gibson and McKenzie 2014b).

Figure 2. **Recognised Seasonal Employer Cap and Number of Worker Arrivals Each Year**
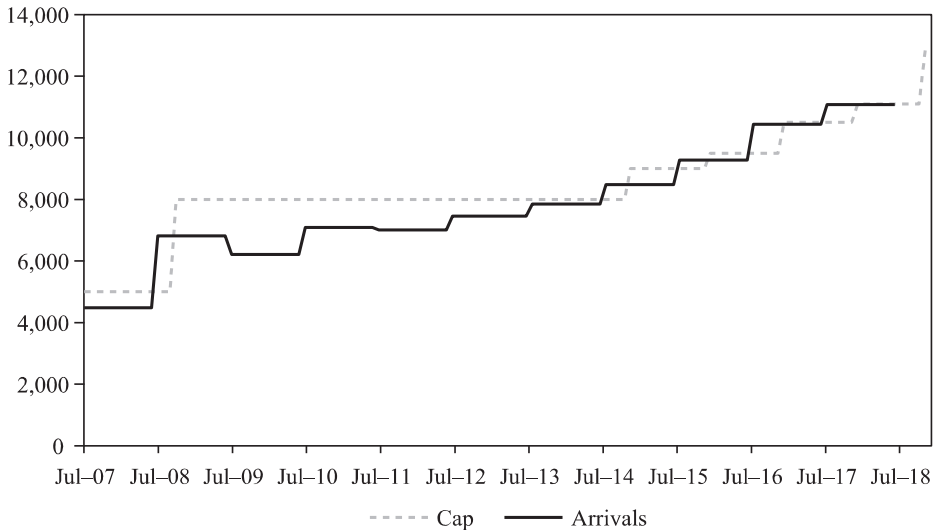
Note: An annual season begins in July and ends in June of the following calendar year.
Source: Ministry of Business, Innovation and Employment (New Zealand).

This circularity also helps employers because they can benefit in subsequent seasons from the training they give to workers in the current season. Circularity was examined by Merwood (2012) using administrative data that showed that over the first four seasons, approximately half the workers returned to work in the next season, typically for the same employer. For example, 52.2% of workers from the first year (2007/08) returned to work in the RSE the next year (2008/09), and 86.1% of these did so by returning to work for the same employer. In an update that studied the sixth RSE season (2012/13), Gibson and McKenzie (2014b) found that 31% of the RSE workers were in their first year of the program, 22% in their second year, 16% in their third, and 31% in their fourth or higher season. While it is rare in these programs for workers to continually participate for over a decade, out of the 45 workers from the pilot program, nine were still participating at the time of the World Bank pilot project's 10-year anniversary in December 2016.[6]

Australia

In 2008, Australia introduced the Pacific Seasonal Worker Pilot Scheme (PSWPS). This scheme is like the RSE, with the main differences concerning

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[6]Another way to consider the incidence of continuous participation is that out of the original 22 participants in an RSE workers' longevity study covering the period from 2007 to 2018, of which 11 had participated in the World Bank pilot, nine workers still participated in the scheme in the 2017/18 season, with seven of the nine having participated every year since 2007.

Figure 3.   **Number of Seasonal Worker Programme Visas Issued Each Season**
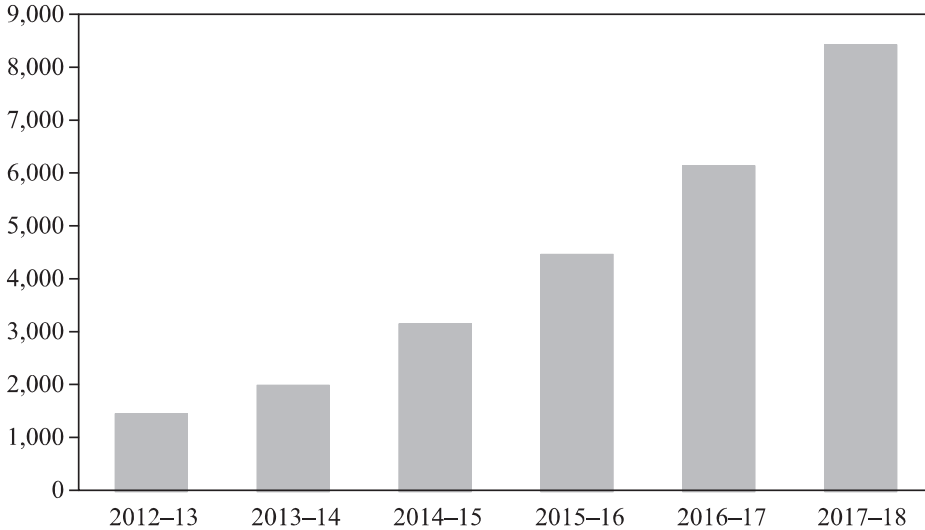
Source: Department of Education, Skills and Employment (Australia).

recruiting practices and the numbers of seasonal workers granted work visas during the pilot phase (2008–2012). During the first 2 years of the pilot, fewer than 100 Pacific workers were recruited per year. It was not until 2011 that more than 200 workers were recruited, mostly from Tonga. Gibson, McKenzie, and Rohorua (2014) characterize this difference between the two schemes as the RSE providing an opportunity for workers to earn an income, but no guarantee of making an economic surplus from participation. In contrast, the PSWPS had a higher minimum work threshold that provided more of a guarantee of making an economic surplus, but this also made Australia's pilot scheme less flexible and therefore more expensive for employers, which limited opportunities for would-be Pacific seasonal workers to be employed under this scheme.

Other reasons for the slow uptake during the pilot phase of the PSWPS are discussed by Hay and Howes (2012) and include greater availability of low-cost substitutes in Australia, such as illegal migrants and working holidaymakers. Curtain et al. (2018) also note that the RSE is more employer driven. In 2012, the pilot was renamed the Seasonal Worker Programme (SWP). Although having started slowly in numbers, it is now significantly increasing year-on-year and is becoming of comparable (absolute) scale as the RSE (Figure 3). The source of the workers is also diversifying: Tonga and Vanuatu now supply about 80% of the workers, Samoa and Timor-Leste each provide almost 10%, and some other countries have smaller shares.

As mentioned earlier, throughout the Pacific there are a number of labor mobility recruitment models, such as work-ready pools set up in supplying countries and from which employers can draw workers; direct recruitment, where employers themselves or via one of their team leaders recruit directly; and the private sector agent model. In Vanuatu, the largest sending country in the SWP, the agent model is mostly utilized, and it also seems more common in supplying Australia's SWP than for New Zealand's RSE. The two main reasons given for this are that (i) New Zealand growers prefer the direct recruitment model, where they also employ their team leaders to assist in recruitment; and (ii) the governance structure of Australia's SWP, which uses registered contractors in the recruitment process, favors the agent model. For the SWP, in most cases, workers are recruited and trained by licensed agents in Vanuatu to be ready for Australian contracting companies to place them with employers. However, previous strict recruitment practices have been relaxed for the SWP and now allow growers and other employers to recruit directly.

Australia's horticultural industry largely concentrates on the domestic market rather than relying on exports, which is in contrast to the situation for New Zealand. For example, horticulture exports in 2017/18 were just A\$2.4 billion, relative to overall agriculture and horticulture sector exports of about A\$47 billion. The National Farmers Federation has set a roadmap for Australian agriculture to become a A\$100 billion industry by 2030. An expanded labor force is necessary to achieve this target, as the National Farmers Federation reported: "Australian agriculture faces an immediate shortfall in excess of 101,000 fulltime equivalent workers" (National Farmers Federation 2018, 27). Therefore, a focus of the roadmap is on opportunities for local populations to be employed, as well as tapping into the international labor market. As it stands, there will be a strong reliance on other forms of labor such as backpackers and SWP workers to achieve the roadmap's objectives. Additional considerations in addressing future labor challenges in Australian agriculture are highlighted in a comprehensive report by Howes et al. (2019).[7]

III. Impacts on Host Countries

We start our review of the evidence on impacts on host countries with a caveat, which is that this evidence is mainly from case studies, qualitative surveys, and cross-country regressions. In contrast, at least some of the evidence on impacts in source areas is from detailed household survey data with carefully constructed counterfactuals, so there may be an apparent asymmetry in the strength of the empirical evidence. One contributing factor is that, notwithstanding the important

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[7]See https://sydney.edu.au/content/dam/corporate/documents/business-school/research/work-and-organisational-studies/towards-a-durable-future-report.pdf (accessed March 25, 2019).

role of governments in initiating these seasonal migration schemes, they are private-sector driven. Many of the employing enterprises are relatively small, with less than 30 employees, and they care about the composition of their workforce. Consequently, research designs such as the random allocation of migrant seasonal workers—to get stronger evidence on their productivity effects—would not be feasible.

New Zealand

Firms in New Zealand's horticulture and viticulture sectors note that having access to a stable and predictable workforce with lower worker turnover is a key benefit of the RSE program. For example, even early in the life of the program, employers reported productivity gains in the second year as returnee workers were able to operate at a higher quality level (New Zealand Department of Labour 2010). In annual employer surveys carried out as part of the ongoing monitoring of the RSE program, at least 99% of surveyed employers each year (since 2010) agree that participation in the program results in better quality and more productive workers, while at least 97% each year agree that the RSE program gives them a more stable seasonal workforce (Maguire and Johnson 2018). Over 80% of the surveyed employers have expanded their operations, thereby also raising demand for local workers, with 89% of the surveyed employers noting that their participation in the RSE scheme has let them employ more New Zealand workers in addition to the RSE workers.

Nevertheless, it has proven difficult for researchers to go from these qualitative employer perceptions to quantitative evidence of higher productivity and output. In part, this reflects the small size of many of the enterprises (median employment is just 30 RSE workers), with not many detailed task-specific records kept, and also the variability in returns each season due to climate and other external factors and the complex range of tasks that seasonal workers carry out. The most comprehensive evidence is from Gibson and McKenzie's (2014b) three quantitative case studies of productivity effects. The first, based on workers in a citrus orchard, showed earnings premia of 10%, 13%, and 18% for RSE workers with 1, 2, and 3 years of prior experience, respectively, compared to first year RSE workers. Relatedly, in an apple orchard in a different region, the second and third year RSE workers were 21% more productive than first year RSE workers, 49%–65% more productive than backpackers and New Zealand casual laborers, and 22%–25% more productive than other New Zealand contract workers, even when compared with New Zealand workers returning for multiple seasons. The third case study provided evidence in terms of physical productivity rather than relying on earnings to rule out earnings differences between different types of workers that may be due to assignment to different tasks or differences in bargaining power, among other factors. In terms of picking bins of mandarins during the same 7-day period in

2011, the RSE workers picked an average of 54% more fruit per day than New Zealand contract labor and 82% more per day than what backpackers and working holidaymakers picked.

These microlevel productivity effects, and the expansion in planted areas that the RSE program facilitated once growers were confident of having enough workers, also show up in the aggregate data. We use the United Nations (UN) Comtrade database to examine New Zealand's annual horticulture and viticulture exports as a share of total goods exports. We consider the period from 1993 to 2016, which reflects data availability in the UN Comtrade database and Food and Agriculture Organization statistics (used for constructing control variables). In the years since the RSE program was implemented, the export share for products from the horticulture and viticulture sectors averages 6.1% of New Zealand's total goods exports, while in the 14 years before the program, this same share averaged just 4.3%. In terms of changes in these export shares over time, there is an annual trend rate increase of 3.8% post-RSE ($p = 0.03$), while in the 14 years before the RSE was in place, the trend rate of increase was just 1.8% ($p = 0.01$).[8] Thus, a sector that was already expanding in relative terms, where this expansion was one factor contributing to labor shortages, was able to expand at twice the previous rate once the RSE program began. This change in the composition of New Zealand's exports reflects the improved comparative advantage of these labor-intensive sectors.

To see if this rise in the share of exports from industries that have benefited from the RSE program is also found with a more comprehensive econometric model, we obtained UN Comtrade export data for each Organisation for Economic Co-operation and Development (OECD) country, plus for any non-OECD country that had at least a 0.5% share of global exports for New Zealand's three main horticulture and viticulture products (kiwifruit, apples, and wine).[9] The advantage of this cross-country panel analysis is that it can deal with any overall shift in global demand toward horticulture and viticulture products (e.g., due to income effects or dietary changes), which the New Zealand-specific analysis above could not rule out. We use fixed effects for each of the 46 economies with data available and fixed effects for each year (from 1993 to 2016). The time-varying control variables are the growth rates of real gross domestic product (GDP) per capita (in United States dollars); population growth rate; and logarithms of real GDP per capita, agricultural area, and population (where the control variables are all from Food and Agriculture Organization statistics). Our treatment variable is a dummy variable, *RSE*, that equals 1 for New Zealand in the years from 2007 onward. With this econometric model, we are examining the effect of the RSE on the share of exports that come from the horticulture and viticulture sectors, allowing for changes in this share that

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[8]These time trends are from a semi-logarithmic regression, using Newey–West standard errors that are robust to heteroscedasticity and autocorrelation (using a 1-year lag).

[9]Using the 4-digit Harmonized System (HS), the categories are 0810 ("other fruit," which includes kiwifruit, the most valuable horticultural export); 0808 ("apples, pears, and quinces, fresh"); and 2204 ("wine of fresh grapes").

Table 1. **Effects of the Recognised Seasonal Employer Program on New Zealand Horticulture and Viticulture Exports**

	Share of Goods Exports from Horticulture and Viticulture Sectors			Value of Annual Exports (real $) of HS codes 0808, 0810, and 2204		
	Coefficient	Std Error	*p*-value	Coefficient	Std Error	*p*-value
RSE	0.0172	0.0059	0.004	667.05	224.71	0.003
log real GDP per capita	−0.0087	0.0035	0.013	−1157.84	133.06	0.000
log agricultural land area	0.0034	0.0076	0.661	−241.99	289.20	0.403
log population	0.0288	0.0099	0.004	−519.43	375.25	0.167
Population growth rate	−0.1755	0.1569	0.263	−10319.82	5936.34	0.082
Real GDP per capita growth rate	−0.0016	0.0130	0.901	118.72	490.81	0.809
Country fixed effects	Yes			Yes		
Year fixed effects	Yes			Yes		
p-value for F-statistic (slopes = 0)	0.0095			0.0000		

GDP = gross domestic product, HS = Harmonized System, RSE = Recognised Seasonal Employer.
Notes: Based on annual observations for a sample of 46 economies from 1993 to 2016 (n = 1,058) using United Nations Comtrade data, with control variables from Food and Agriculture Organization Statistics.
Source: Authors' calculations.

would have occurred anyway (based on the trends in this same share for the other countries and the pre-RSE trends in this share for New Zealand).

The results in Table 1 show the share of goods exports from the horticulture and wine industries is 1.7 percentage points higher for New Zealand in the period with the RSE program operating ($p = 0.004$), all else being the same. In other words, compared to the export shares for these products among other developed countries and to those shares for other (non-OECD) exporters of horticulture and viticulture products, and also allowing for factors that may affect exports (i.e., proxies for the level of, and change in, local demand through GDP, population levels, and growth rates, and for factors affecting supply such as agricultural area), in the RSE period New Zealand has had a significantly higher share of exports from the productive sectors that report that they have benefited from the higher quantity and quality of seasonal labor that the RSE program allows. To ensure that this finding of a significantly higher export share is not from the effects of any preexisting trends in place before the RSE came into effect, we also conducted in-time placebo tests where we considered the period up until 2007 (so the RSE logically could not have any effect) and tested whether variables for pseudo-treatments starting in either 2000, 2001, or 2002 showed the same effect that we saw in the table of a significantly higher share of exports coming from the horticulture and wine industries in the post-treatment period. We could find no such effects, with the equivalent coefficients to what is the 1.7 percentage point treatment effect in Table 1 averaging just 0.007 across these three additional regressions, and these coefficients always being statistically insignificant (with *p*-values averaging 0.34). Thus, even to

the extent that evidence from cross-country data may not be as convincing to some economists as is other evidence, one can reasonably infer from these results that access to migrant seasonal labor under the RSE program has helped the targeted sectors to expand.

As well as the relative effect of the RSE program helping move New Zealand's export portfolio toward horticulture and wine, the absolute effect—in terms of the rise in the real value of exports from these sectors—is also of interest. The second regression in Table 1 is for the real value of exports (in United States dollars) for the combination of three 4-digit Harmonized System headings (0808, 0810, and 2204) covering the major exports of kiwifruit, apples, and wine, respectively. The combined value of New Zealand's exports from these sectors is $670 million per year higher ($p = 0.003$) in the period with the RSE program, all else being the same. This accounts for country effects, year effects, and time-varying control variables. Back-of-the-envelope calculations show the plausibility of this estimate: the mean after-tax earnings of RSE workers reported by Gibson and McKenzie (2014a) is NZ$12,000 per season; with over 10,000 current RSE workers, that corresponds to a gross wage bill for RSE workers of about NZ$200 million (allowing for income taxes and other payroll deductions). The employers also face recruitment, transport, and pastoral care expenses, especially in the setup phase, such as constructing housing blocks for RSE workers. If the sum of the wage bill plus these labor-related costs totaled over $300 million per year, it would be expected that the value of extra exports associated with the RSE should be well over double this to enable a return to capital, land, management, and other factors of production, and also allowing for the returns to other steps in the export marketing chain beyond the growers and packers. Thus, an estimate of the increased value of exports due to the RSE program of about NZ$1 billion at current exchange rates seems reasonable.

Australia

Given the small numbers of SWP workers in Australia initially and the lack of large-scale studies in the various states and industries employing seasonal workers, gauging the contribution of SWP workers to growth in various sectors is difficult. There is some evidence for fruit picking and also anecdotal evidence provided by stakeholders. In 2017, the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) undertook a productivity study in the horticulture industry, which entailed comparing Pacific SWP workers with working holidaymakers. They found the productivity levels of SWP workers was 20% higher than those of working holidaymakers. Similar to RSE workers, returned SWP workers were noted to be 15% more productive than first time SWP workers (Zhao et al. 2018). An important difference between this report and a previous ABARES study was that it included nonwage costs for seasonal workers (Leith and

Davidson 2013), which is an important factor when growers hire Pacific seasonal workers as they tend to cost more on these dimensions than do other sources of labor.[10] Like the RSE program, the ABARES study concluded that the SWP "offers an opportunity for growers to increase their profitability" and argued for the SWP to be further promoted to employers who struggled to source labor (ABARES 2018, 28).

IV.   Economic Development Impacts in the Pacific

From Seasonal Work in New Zealand

The most complete analysis of the impacts of seasonal labor mobility on households supplying workers is from Gibson and McKenzie (2014a). These authors worked with officials at the time of the RSE program's launch to identify households with RSE workers, households with members of the work-ready pool who had not yet been selected, and randomly selected households in the same villages that had no applicants to the program. These baseline surveys took place in late 2007 and early 2008 in Tonga and Vanuatu, which would become the two largest suppliers of RSE workers, and entailed samples of about 450 households in each country. There were reinterviews 6, 12, and 24 months later to create a four-wave panel. The surveys collected detailed data on household income, diets and expenditure, labor supply, subjective well-being, and the seasonal migration experience.

To measure the impact of participating in the RSE program, Gibson and McKenzie (2014a) used propensity score matching to identify a group of households with RSE workers and a group of otherwise similar households without—in terms of characteristics that communities and employers likely paid attention to when selecting workers and characteristics that may affect the decision of whether to apply. Using either difference-in-differences estimation on prescreened samples (based on having propensity scores in the 0.1–0.9 range) or panel data estimation with fixed effects for each household gave similar results. The results in Table 2 show that, over a 2-year period, households participating in the RSE program typically earn 35% more income than other observationally similar households who did not supply RSE workers. Some of this extra income went to an increase in expenditure, especially in Vanuatu, while household savings, dwelling improvements, and bank account ownership also increased by significant margins. The subjective standard of living (based on a randomly selected adult) was found to

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[10]"Non-wage labour costs include expenses incurred by employers and opportunity costs (such as time commitments) associated with compliance and reporting on relevant regulations . . . worker reliability and the increased need of staff training when turnover is high" (ABARES 2018, 3).

Table 2.   **Household-Level Development Impacts of the Recognised Seasonal Employer Program in Tonga and Vanuatu**

	Tonga	Vanuatu
Increase in per capita income	34%–38%	35%–43%
Increase in per capita expenditure	9%–10%	28%
Increase in savings	122%	181%
Increase in subjective standard of living	0.45 sd	0.43–0.50 sd
Percentage point increase in dwelling improvements	10–11	7–8
Percentage point increase in bank account use	10–14	17–18

sd = standard deviation.
Source: Gibson, John, and David McKenzie. 2014a. "The Development Impact of a Best Practice Seasonal Worker Policy." *Review of Economics and Statistics* 96 (2): 229–43.

increase by approximately the same amount (in terms of standard deviations) as the increase in income.[11]

Gibson and McKenzie (2014a) scaled up these gains in income per participating worker by the total number of participating workers to calculate aggregate impacts of NZ$5.3 million in Tonga and NZ$9.7 million in Vanuatu in the first 2 years of the RSE program. This was equivalent to 42%–47% of the total annual bilateral aid from New Zealand to these countries and almost 50% of annual export earnings for Tonga and 25% for Vanuatu. Using a one-off survey for Samoa and administrative data on RSE average earnings by source country, the estimated impacts in Samoa (the third-largest supplier of RSE workers) over the first 2 years were about NZ$5 million. While this estimate is similar to that for Tonga, it is only half as large in relative terms given the Samoan economy is roughly twice the size of Tonga's economy.

Aggregating across participants may understate development impacts if the extra income from seasonal work increases local demand and stimulates new economic activity. There is some evidence of seasonal work earnings supporting formation of new businesses, with investments typically after workers have participated for at least three seasons. Bailey's (2014) case study of 22 RSE workers from Vanuatu revealed that 67% invested in small businesses within a 3-year period, and this rose to 71% over a 10-year period (Bailey 2018).[12] Additionally, seasonal workers provide start-up business funds for their spouses and wider family and community networks, which is often omitted from participant-level studies. In addition to business formation, and local demand effects (discussed further

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[11]A contrast with the impacts on left-behind household members of settlement migrants from Tonga to New Zealand (with selection based on a random ballot) is provided by Gibson, McKenzie, and Stillman (2011). Reported negative impacts from the loss of highly productive household members who settled in New Zealand may have been a short-run effect, as a follow-up study a decade after the settlement migrants left showed no adverse effects on the remaining family in Tonga, using the families of the unsuccessful entrants into the same migration ballots as the counterfactual (Gibson et al. 2018). Likewise, a more mature, decade-old, migration ballot program in Samoa did not show adverse consequences on the left-behind household members (Gibson, McKenzie, and Stillman 2013).

[12]Relatedly, a survey of 280 households of SWP workers showed that 9.3% used some of their repatriated earnings and remittances for small business investment (Bailey and Kautoke-Holani 2018).

below), seasonal work earnings may directly contribute to community projects. For example, Gibson and McKenzie (2014b) note that in Tonga, communities had funded the local village water supply, street lighting, a school scholarship fund, and community halls out of contributions from seasonal workers. Likewise, the New Zealand Department of Labour (2010) noted that the Lolihor Development Council—a consortium of 12 villages in North Ambrym, Vanuatu—required all returning seasonal workers to contribute approximately NZ$150 a season toward a community fund that then supports projects run by local women such as small business initiatives and crop production, as well as a scholarship fund for local children. These contributions and their use for development projects are discussed in more detail by Bailey (2014).

A survey carried out among 460 households in Tonga in 2011 provides corroborating evidence for the idea that local development benefits from seasonal work participation may spill over to households that did not send workers. This survey had 50 households that had (or currently) supplied workers to the RSE program in New Zealand, 100 households supplying workers to the PSWPS in Australia, and just over 300 households that had not supplied any workers. All three groups reported large increases in subjective evaluation of their economic living standards; a randomly selected adult (the one with the next birthday) in each household was asked to place their household on a 10-step ladder, where step 1 has the poorest people and step 10 the richest. They were also asked to report what step they felt their household was on 2 years earlier, when participation in the seasonal work schemes was much more limited. The means for each group are shown in Figure 4 (with the error bars showing the 95% confidence intervals).

Households with direct experience of participating in the RSE program report the highest subjective welfare levels, averaging 0.31 steps higher than other households (with a standard error of the difference of 0.10). At three-eighths of a standard deviation, this gap is a little smaller than that found by Gibson and McKenzie (2014a) based on surveys in 2009. However, the most notable finding is that all three groups of households, including those not supplying workers, recorded significant increases in their subjective evaluation of their economic welfare from 2 years earlier, moving from about step 3, on average, to about step 5 at the time of the survey.

Within the same survey, when the households supplying seasonal workers were asked about the most important use of the money that they had earned from working in Australia or New Zealand, two-thirds mentioned making improvements or extensions to their homes. Much of this type of activity will generate local demand for construction labor and materials. The next most common use of their earnings was for school fees, while only 3% mentioned the purchases of vehicles or durables, which are the forms of expenditure least likely to generate local demand. Similarly, when households who did not participate in seasonal work were asked about the main advantages to their community from the seasonal work programs,

Figure 4.   **Changes in Economic Welfare in Tonga**
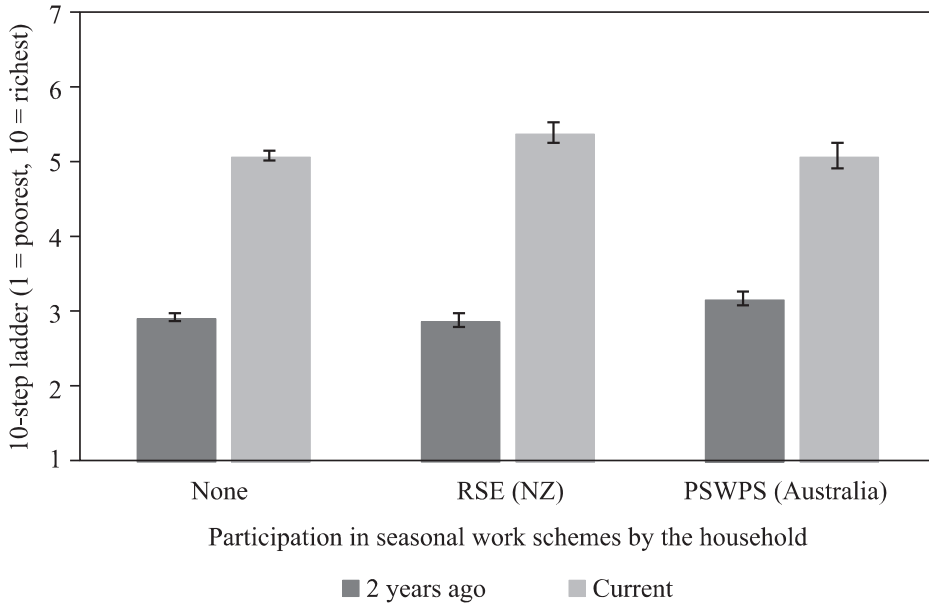
NZ = New Zealand, PSWPS = Pacific Seasonal Worker Pilot Scheme, RSE = Recognised Seasonal Employer.
Source: Authors' calculations.

housing construction was mentioned by almost two-thirds, improvements to local farming and fishing by about one-sixth, and schooling and educational advantages also by about one-sixth. Conversely, the main disadvantages that were seen by these nonparticipants tended to be noneconomic, such as fewer people for church activities, and the social impacts of extended family separations.

Some broader development impacts are also seen in 2016 census data from Vanuatu, where identification of these impacts comes from highly uneven rates of seasonal work participation across areas. Figure 5 illustrates the rate of working-age individuals who have ever participated in seasonal work in either New Zealand or Australia. (There is more than a 4:1 ratio of participating in seasonal work in New Zealand rather than Australia; Figure A.1 and A.2 in the Appendix provide maps for the participation rates separately for each country.) In some areas, almost 20% of the working-age population has participated in seasonal work, but in others, less than 1% has participated.

In Table 3, we report on regressions that relate these differing participation rates to various welfare indicators available in the census. These areas (local councils) had an average population just below 4,000 people in 2016, and so the data are quite finely grained. For some of these indicators, we also have similar data from the 2009 census and so we can examine how seasonal work participation

Figure 5. **Local Variation in Participation Rates for Seasonal Work in New Zealand or Australia (%)**
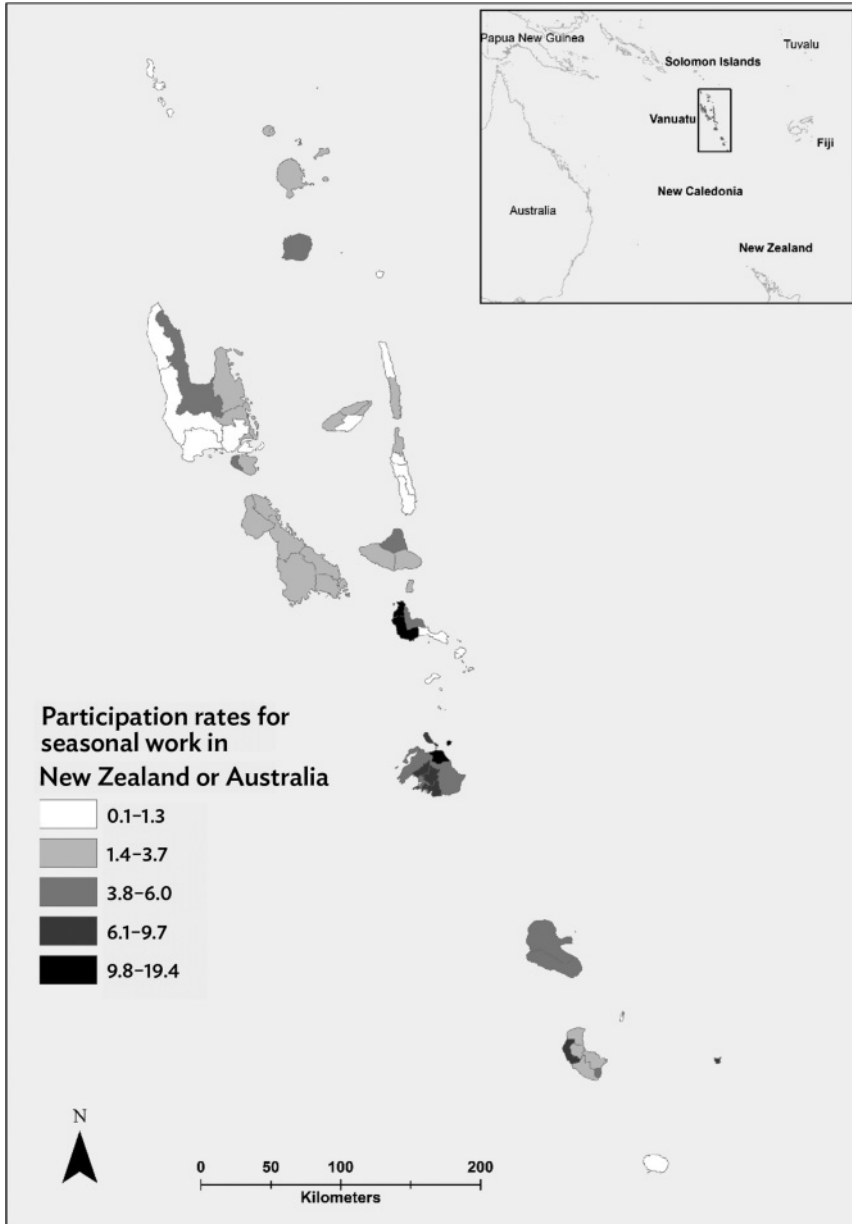
Note: This map was not produced by the cartography unit of the Asian Development Bank. The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.
Source: Authors' calculations.

Table 3. **Higher Rates of Seasonal Work Participation Associated with Improved Welfare Indicators in Vanuatu**

| Welfare Indicator (Rates for Local Council Areas) | OLS Regression Coefficients (Robust t-statistics) and R^2 | | | Beta Coefficients | | |
| | Ever Worked Seasonally in | | | Ever Worked Seasonally in | | |
	NZ	Australia	Either	NZ	Australia	Either
Iron roof on dwelling	3.262	19.904	3.520	0.40	0.55	0.47
	(3.23)***	(4.77)***	(3.80)***			
R^2	0.16	0.30	0.22			
Bush material roof on dwelling	−3.296	−20.310	−3.565	−0.39	−0.55	−0.46
	(3.14)***	(4.85)***	(3.70)***			
R^2	0.15	0.30	0.22			
Walls mainly concrete or brick	1.908	7.870	1.898	0.47	0.44	0.51
	(4.53)***	(2.55)**	(5.04)***			
R^2	0.22	0.19	0.26			
Walls mainly traditional material	−4.144	−21.946	−4.329	−0.44	−0.53	−0.50
	(3.75)***	(4.73)***	(4.36)***			
R^2	0.19	0.28	0.25			
Lighting mainly from solar panels	2.567	4.804	2.305	0.40	0.17	0.39
	(4.35)***	(1.24)	(3.92)***			
R^2	0.16	0.03	0.16			
Lighting mainly from solar lamp(s)	−3.109	−19.480	−3.377	−0.40	−0.57	−0.48
	(4.12)***	(5.03)***	(4.83)***			
R^2	0.16	0.33	0.23			
Mobile phone users	1.356	7.488	1.430	0.31	0.39	0.36
	(3.67)***	(3.25)***	(4.14)***			
R^2	0.10	0.15	0.13			
Internet users	0.605	8.489	0.959	0.16	0.53	0.26
	(1.44)	(2.80)***	(1.92)*			
R^2	0.03	0.28	0.07			
Own-business is main household income	0.931	2.673	0.876	0.21	0.14	0.22
	(1.73)*	(1.23)	(1.86)*			
	0.04	0.02	0.05			
Changes in welfare indicator between 2009 and 2016						
Iron roof on dwelling	0.965	−0.891	0.759	0.23	−0.05	0.20
	(2.01)**	(0.64)	(1.60)***			
R^2	0.05	0.00	0.04			
Walls mainly concrete or brick	1.136	0.203	0.945	0.40	0.02	0.37
	(2.81)***	(0.18)	(2.37)**			
R^2	0.17	0.00	0.14			
Lighting mainly from solar panels	2.350	4.521	2.123	0.40	0.17	0.39
	(4.33)***	(1.39)	(4.07)***			
R^2	0.16	0.03	0.16			
Own-business is main household income	0.944	2.612	0.886	0.20	0.12	0.20
	(1.59)	(1.11)	(1.70)*			
	0.04	0.02	0.04			

NZ = New Zealand, OLS = ordinary least squares.
Notes: The sample size is 66 local council areas, regressions include a constant that is not reported, and t-statistics from robust standard errors are in parentheses. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.
Source: Authors' calculations.

rates within a local council area affect temporal changes in the welfare indicator. These differenced estimates let us rule out a concern that correlations between wealth indicators and seasonal work participation rates reflect reverse causality, which would occur if workers were selected from wealthier areas.

Local areas with higher participation rates in seasonal work have higher proportions of dwellings with iron roofs and lower proportions with bush material roofs. Iron roofs have not just greater weather-tightness and life expectancy, they also help with harvesting rainwater to free up labor—typically labor completed by women—that would otherwise be needed to fetch water from streams, wells, and other sources that may be quite distant. A related trend is that dwellings are more likely to have concrete or brick walls and less likely to have traditional material walls when a higher proportion of the local working-age population has participated in seasonal work. For these effects on dwelling attributes, a standard deviation increase in local rates of participation in seasonal work leads to changes of about 0.4–0.5 standard deviations in the dwelling variables, with not much difference between the effects of seasonal work in New Zealand versus Australia.[13] In contrast, having solar panels as the main source of lighting seems to be associated only with the local participation rate for seasonal work in New Zealand but not Australia.[14] This is consistent with reports of RSE workers purchasing solar equipment in New Zealand and shipping it home in containers with their personal effects at the end of the season. In contrast, most Vanuatu SWP workers in Australia, even when working in regions near shipping ports, stated they did not get the same opportunity to ship home equipment such as solar panels and other merchandise. Many RSE workers who purchased solar equipment in New Zealand explained why they did not instead purchase solar panels and accessories locally in Vanuatu as being related to the quality of the products available locally.

There is also evidence of upgrading energy sources because local areas with high rates of seasonal work participation have much lower rates of relying on solar lamps as the main lighting source. These solar lamps are much smaller and provide inferior light to what can be obtained from solar panels. Other changes that have been observed qualitatively are that solar panels supplied by RSE workers have replaced petrol-powered generators and created a new source of business in areas

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[13]A potential complication for interpreting patterns of dwelling-related variables is that almost one-third of households in Vanuatu had dwellings destroyed by Cyclone Pam in March 2015. The destruction, and subsequent rebuilding, may affect the types of roofs and walls (and whether solar panels are used), and could be related to seasonal work participation rates if the cyclone damage reduced participation rates from some areas. In Appendix Table A.1, we repeat some of the regressions reported in Table 3 but add a control for the proportion of households in each council area that had dwellings destroyed. We find that the values for the seasonal work impacts are largely the same as in Table 3.

[14]The 2016 census asked about various sizes of solar panels. We aggregated the responses to aid comparability with the 2009 census that had a single, all-inclusive question on solar. However, among the disaggregated categories, it is whole-house 50-watt to 150-watt systems that are most positively affected by having higher participation rates in seasonal work in New Zealand.

with no supply of electricity, such as establishing a charging service for the mobile phones and other devices that have become more widespread throughout the country (Bailey 2014). Likewise, a Vanuatu journalist insisted to the second author that a flight over Epi island would show the impacts of RSE workers and their solar panels: "When you fly over Epi island it's like flying over a miniature version of Port Vila. The night sky is lit up with workers solar lighting."

The other indicators in Table 3 suggest that higher rates of seasonal work participation are associated with higher mobile phone usage and (for SWP only) Internet usage. There is also less precisely estimated evidence for an increased rate of own-account businesses as a household's main income source, consistent with the findings from Bailey and Kautoke-Holani (2018). This effect on business activity is also seen in the differenced specification at the foot of Table 3; areas with higher seasonal work participation rates saw own-account businesses become more prevalent as the most important household income source between 2009 and 2016.[15] The differenced specification also shows that the effect of RSE participation on dwelling variables (e.g., iron roof, concrete walls, and lighting mainly from solar panels) seen with the cross-sectional data is largely the same when the analysis is in terms of changes. Thus, it is not the case that RSE workers were selected from areas that had preexisting higher standards of dwellings and better sources of lighting. Instead, the patterns seen with the 2016 data most likely reflect causal impacts of RSE participation in improving dwelling quality.

From Seasonal Work in Australia

The small size of Australia's scheme over most of its lifetime—proportionately it should be more than five times larger than the New Zealand scheme given the relative size of Australia's economy and population—is shown in a calculation made by Gibson and McKenzie (2011) when evaluating benefits that Kiribati, Tonga, and Vanuatu gained from supplying workers to the pilot Australian scheme. Even though the income gains for households supplying workers to the Australian SWP scheme were the same order of magnitude as for those supplying workers to New Zealand's RSE scheme (between 30% and 40% compared with similar households not supplying workers), aggregate gains were just 3% of those for the RSE program at that time because of the very small scale of Australia's scheme. Notably, during the multiyear pilot of the Australian scheme, available spaces were undersubscribed (Hay and Howes 2012). However, substantial changes were announced in June 2015, with the SWP becoming an uncapped scheme and expanding beyond the original focus on horticulture to include the aquaculture, cane, and cotton sectors within the broader agricultural industry.

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[15]The differenced specification is only available for income sources and dwelling-related variables because questions related to mobile phones and the Internet were asked differently in 2009 and 2016.

More recently, the scheme has been further expanded to accommodation industries in specified locations (e.g., Northern Territory, Tropical North Queensland, and Western Australia).

Building on the previous work from Gibson and McKenzie (2011), the World Bank produced a report, *Maximizing the Development Impacts from Temporary Migration: Recommendations for Australia's Seasonal Worker Programme* (Doyle and Sharma 2017). This report argued that many reforms have occurred for the SWP that have allowed steady growth in seasonal worker numbers (2017), as also shown in Figure 4. Doyle and Sharma (2017, 65–66) found "the savings accrued . . . average to A\$6,650 (per worker) across the programme. . . At the aggregate level, the SWP has employed 17,230 Pacific Islanders since 2012 and delivered approximately A\$144 million in net gains to the region." Similar to our findings on the impacts on sending communities from RSE participation, there have been noticeable development impacts from SWP participation at the individual, household, and community levels.

Qualitative and quantitative research associated with these programs show that priorities for seasonal workers, their families, and communities include everyday consumables, purchasing land and building permanent material houses, home improvements, school fees, and money for the community, church, and customary needs. Investing incomes for business opportunities generally occurs after 3 years of participation and the side effects of businesses investment can then create a need to continue participating. For example, workers who obtain loans in their home countries for the purchase of land and expensive capital items—such as trucks, buses, and boats—return to Australia (and New Zealand) annually so that seasonal work earnings can support the ongoing financing needs of these business ventures (Bailey and Kautoke-Holani 2018).[16]

V. Future Prospects

The seasonal labor mobility opportunities provided by Australia and New Zealand have had positive impacts in the Pacific to date, but a key question is whether scope exists to expand these programs. One way to examine this issue is with the ratio of seasonal workers to total employment in the host countries. As noted above, RSE workers were 0.42% of total employment in New Zealand in 2018. Applying this ratio to Australia's total employment of 12.8 million, there would be 54,000 SWP workers in Australia, rather than the actual number of 8,457 in 2018. If New Zealand's experience is considered unrealistic for Australia—because the labor-intensive horticultural industry in Australia is less

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[16]Obtaining a loan prior to overseas seasonal work opportunities, and in the first few seasons of the RSE program, was difficult, but access to loans has increased over time. A study examining loans approved to seasonal and nonseasonal households would be useful.

export focused, policy making is more fragmented, and migration issues are more sensitive—then another benchmark is provided by Canada: a country of more comparable size that has an even less labor-intensive and less seasonal primary sector than Australia. The Seasonal Agricultural Worker Program in Canada has been in place for 50 years and brings about 35,000 workers per year from Mexico and the Caribbean (Canadian Agricultural Human Resource Council 2017), which is equivalent to 0.2% of total employment in Canada. If this ratio were applied to Australia, there would be 24,000 SWP workers. According to these metrics, there seems scope for seasonal labor mobility opportunities to more than double—just for Australia, New Zealand, and the Pacific—without even considering any broadening of the sectors where seasonal workers can be employed.

In terms of broadening the sectoral focus, the Government of New Zealand is exploring new industries that could employ temporary workers from Pacific island states, such as construction and fisheries. Moreover, other industries such as forestry and dairy have also been lobbying for an overseas temporary workforce similar to the RSE. The recent Pacific Trades Partnership that involved recruiting Pacific workers for the post-earthquake Canterbury rebuild has been viewed positively for its achievements thus far and has the potential for further expansion.[17]

In July 2018, Australia's Pacific Labour Scheme (PLS) commenced. Like the SWP, the PLS is open to Pacific countries and Timor-Leste. However, the key difference is that it allows visas for low-skilled workers and semi-skilled workers for a period of up to 3 years. Like the SWP, it includes work in the accommodation and tourism sectors. However, this scheme also includes work in health care—such as aged care, nonseasonal agriculture work, forestry, and fishing. The visa is for up to 3 years, which is significantly higher than the 7-month visa for the RSE program (except Kiribati and Tuvalu, which have 9-month visas) and the visa period for the SWP, which increased to 9 months in 2018. An interesting difference between the PLS and the SWP is that initial recruitment is solely conducted through Pacific government employment units. The visa for the PLS, and now the SWP, is multi-entry, giving employers and workers greater flexibility in immigration processing. Given the new longer-term visa for workers, it is only a matter of time before consideration of pathways to permanent residency for repeat workers, such as those who move upward into supervisory positions, will be highlighted in a discussion of these schemes. These pathways will be vital, especially for workers from countries suffering climate and environmental damage. Labor migration is not necessarily the answer to these problems, but it can assist in providing external finance, relieving population pressures, and creating possible connections that help to set up new transnational diaspora.

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[17]See http://www.scoop.co.nz/stories/ED1806/S00077/mbie-contracts-ara-to-assess-pacific-island-laborers.htm (accessed May 13, 2019).

Table 4. **Forecast Changes in Working-Age Populations in Asia and the Pacific**

| Economies | Working-Age Population (Ages 15–64) in Millions | | | |
	2015	2050	Absolute Change	% Change
East and Southeast Asia	**1,581.6**	**1,433.6**	**−148.0**	**−9.4%**
China, People's Republic of	1,014.8	814.9	−199.9	−19.7%
Japan	78.1	55.6	−22.5	−28.8%
Thailand	49.1	37.9	−11.2	−22.8%
Korea, Republic of	37.0	26.8	−10.2	−27.6%
Taipei,China	17.4	12.3	−5.1	−29.3%
Lao People's Democratic Republic	4.2	6.3	2.1	50.0%
Cambodia	10.0	14.5	4.5	45.0%
Viet Nam	65.7	70.6	4.9	7.5%
Malaysia	21.3	27.9	6.6	31.0%
Myanmar	35.0	42.3	7.3	20.9%
Philippines	64.3	100.3	36.0	56.0%
Indonesia	173.1	213.3	40.2	23.2%
Australasia	**18.8**	**23.5**	**4.7**	**25.0%**
Australia	15.8	20.1	4.3	27.2%
New Zealand	3.0	3.4	0.4	13.3%
Melanesia and Timor-Leste	6.5	12.2	**5.7**	**87.7%**
Fiji	0.6	0.6	0.0	0.0%
Vanuatu	0.2	0.3	0.1	50.0%
Solomon Islands	0.3	0.7	0.4	133.3%
Timor-Leste	0.7	1.5	0.8	114.3%
Papua New Guinea	4.7	9.1	4.4	93.6%

Note: Economies are listed in ascending order of their absolute change in working-age population from 2015 to 2050. Only countries in East and Southeast Asia with absolute changes exceeding 1 million are listed, but the regional total includes all countries.
Source: Authors' calculations from United Nations *World Population Prospects: The 2017 Revision* (medium variant forecasts).

There may be even more scope for seasonal work in East and Southeast Asia in the future. The next 30 years will see a large decline in the working-age population in these regions, which can be expected to impact seasonal labor-intensive activities. The working-age population (15–64 years) for Asian Development Bank member economies in East and Southeast Asia is forecast to decline by 150 million between 2015 and 2050 (Table 4).[18] The largest source of decline will be in the People's Republic of China, where the working-age population will fall by 200 million from 2015 to 2050. There will also be large declines in Japan; Thailand; the Republic of Korea; and Taipei,China. While Indonesia and the Philippines are forecast to each add about 40 million and 36 million people, respectively to their working-age population during the review period—and Myanmar, Malaysia, Viet Nam, and Cambodia between 4 and 8 million

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[18]These estimates are based on medium variant country-level estimates in the UN's *World Population Prospects: The 2017 Revision*.

each—the net effect will still be a decline that is equivalent to almost 10% of the 2015 working-age population in East and Southeast Asia. Most countries in the Pacific are too small and slow-growing to help supply this future labor deficit, but scope exists from the rapidly growing populations of the Melanesian countries and Timor-Leste. Between 2015 and 2050, these five countries are forecast to add 5.7 million people of working age: 4.4 million in Papua New Guinea, 0.8 million in Timor-Leste, 0.4 million in Solomon Islands, 0.1 million in Vanuatu, and no increase in Fiji.[19]

Moreover, a focus on national-level changes in the working-age population misses opportunities that may arise for supplying seasonal labor in rural areas. For example, even though the working-age population in Australia, New Zealand, and the Pacific will continue growing between 2015 and 2050, by over one-quarter for Australia and almost one-seventh for New Zealand, these figures disguise a great deal of heterogeneity. Internal migration trends and local population dynamics have already produced, and will continue to produce, declining working-age populations in many regions in Australia and New Zealand. For example, Jackson (2019) notes that while New Zealand's overall working-age population rose 8% from 2013 to 2018, for 29 out of 67 territorial authorities, which is the second subnational level in New Zealand, the working-age population shrank. From 2013 to 2023, it is expected that 61% of New Zealand's territorial authorities will see their working-age populations decline (Jackson 2019). In these shrinking regions, circular seasonal immigrants from the Pacific may help keep the local population maintain public services, ensure ongoing demand for housing (given that the aging local population will be moving out of private dwellings), and particularly may be able to fill gaps in the local labor force. Given that the primary sector is more important in regional economies than in cities, the comparative advantage of Pacific migrants in less-skilled work—in comparison to skill-selected immigrants with higher formal qualifications who are more likely to settle in cities—also suits the industrial profile of regional economies.

VI. Conclusions

New labor mobility programs between Pacific island countries and Australia and New Zealand have been beneficial for host countries in a number of ways. Labor from the Pacific has not only assisted in filling shortages in labor-intensive industries such as horticulture, but it has also increased productivity levels compared with what was possible with traditional sources of seasonal labor. Most community- and country-specific studies in the Pacific have shown positive development outcomes for households supplying workers, their communities, and

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[19]The potential supply from the largest two countries, Papua New Guinea and Timor-Leste, is also noted in an analysis of how migration may help close Asia's emerging labor shortages (Kang and Magoncia 2016).

their home countries, although more research is needed to examine the long-term impacts of this seasonal labor migration. While the results reported here are specific to these programs, features such as circularity, allowing smaller employers to jointly recruit, and being agnostic to whether the employer is an orchardist or a labor hire contractor, and the development of local mechanisms that enable households who do not supply migrant workers to still see some benefits, could be usefully copied in other settings.

Questions arising from these new labor migration opportunities revolve around challenges and limitations, including what newer opportunities are on the horizon and how will they fit with the management and sustainability of existing programs without limiting potential economic developments. A number of participating Pacific countries are currently asking these questions while preparing new overseas labor mobility policy frameworks. Furthermore, the Government of New Zealand is undertaking a review of the RSE program and its objectives to explore any possible unintended negative outcomes in sending countries. Like New Zealand, the newly established Pacific Labour Facility in Australia will also be working on many of these issues in consultation with all stakeholders and researchers. The viability of Pacific island countries in providing labor to meet new and increased labor demands in Australia and New Zealand will have to consider how these schemes impact the domestic availability of workers, their capacity to supply such labor, and the economic and social impacts associated with labor mobility. The sustainability of these seasonal migration programs will also depend on the political climate surrounding regional labor mobility, and the positive and constructive mutual relationships that enable employers to access these Pacific workers, and for workers to access these employment opportunities.

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Appendix

Table A.1.   **Controlling for Cyclone Pam's Destructiveness (and Rebuilding)
when Considering whether Higher Rates of Seasonal Work Participation
are Associated with Improved Housing Indicators**

| Welfare Indicator (and Covariates) | OLS Regression Coefficients (Robust *t*-statistics) and R^2 | | | Beta Coefficients | | |
| | Ever Participated in Seasonal Work in | | | Ever Participated in Seasonal Work in | | |
	NZ	Australia	Either	NZ	Australia	Either
Iron roof on dwelling						
Seasonal work participation rate	2.949	19.804	3.268	0.36	0.55	0.44
	(2.99)***	(5.11)***	(3.59)***			
Cyclone Pam damage rate	0.217	0.262	0.211			
	(2.16)**	(2.90)***	(2.13)**			
R^2	0.22	0.39	0.28			
Bush material roof on dwelling						
Seasonal work participation rate	−2.963	−20.205	−3.296	−0.35	−0.55	−0.43
	(2.89)***	(5.20)***	(3.48)***			
Cyclone Pam damage rate	−0.231	−0.276	−0.225			
	(2.21)**	(2.93)***	(2.17)**			
R^2	0.22	0.39	0.28			
Walls mainly concrete or brick						
Seasonal work participation rate	1.976	7.876	1.954	0.48	0.44	0.53
	(4.65)***	(2.50)**	(5.03)***			
Cyclone Pam damage rate	−0.047	−0.016	−0.047			
	(1.07)	(0.37)	(1.06)			
R^2	0.23	0.20	0.28			
Walls mainly traditional material						
Seasonal work participation rate	−3.826	−21.840	−4.071	−0.40	−0.53	−0.47
	(3.59)***	(5.04)***	(4.21)***			
Cyclone Pam damage rate	−0.221	−0.279	−0.216			
	(1.85)*	(2.56)**	(1.83)*			
R^2	0.24	0.35	0.30			
Lighting mainly from solar panels						
Seasonal work participation rate	2.575	4.790	2.308	0.40	0.17	0.39
	(4.28)***	(1.22)	(3.83)***			
Cyclone Pam damage rate	−0.006	0.036	−0.002			
	(0.07)	(0.40)	(0.02)			
R^2	0.16	0.03	0.16			

NZ = New Zealand, OLS = ordinary least squares.
Notes: Sample size is 66 local council areas, regressions include a constant that is not reported, and *t*-statistics are from robust standard errors in parentheses. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The Cyclone Pam damage rate is the proportion of households that had dwellings completely destroyed by the cyclone, which ranges from zero to 98% across the local councils, averaging 31%.
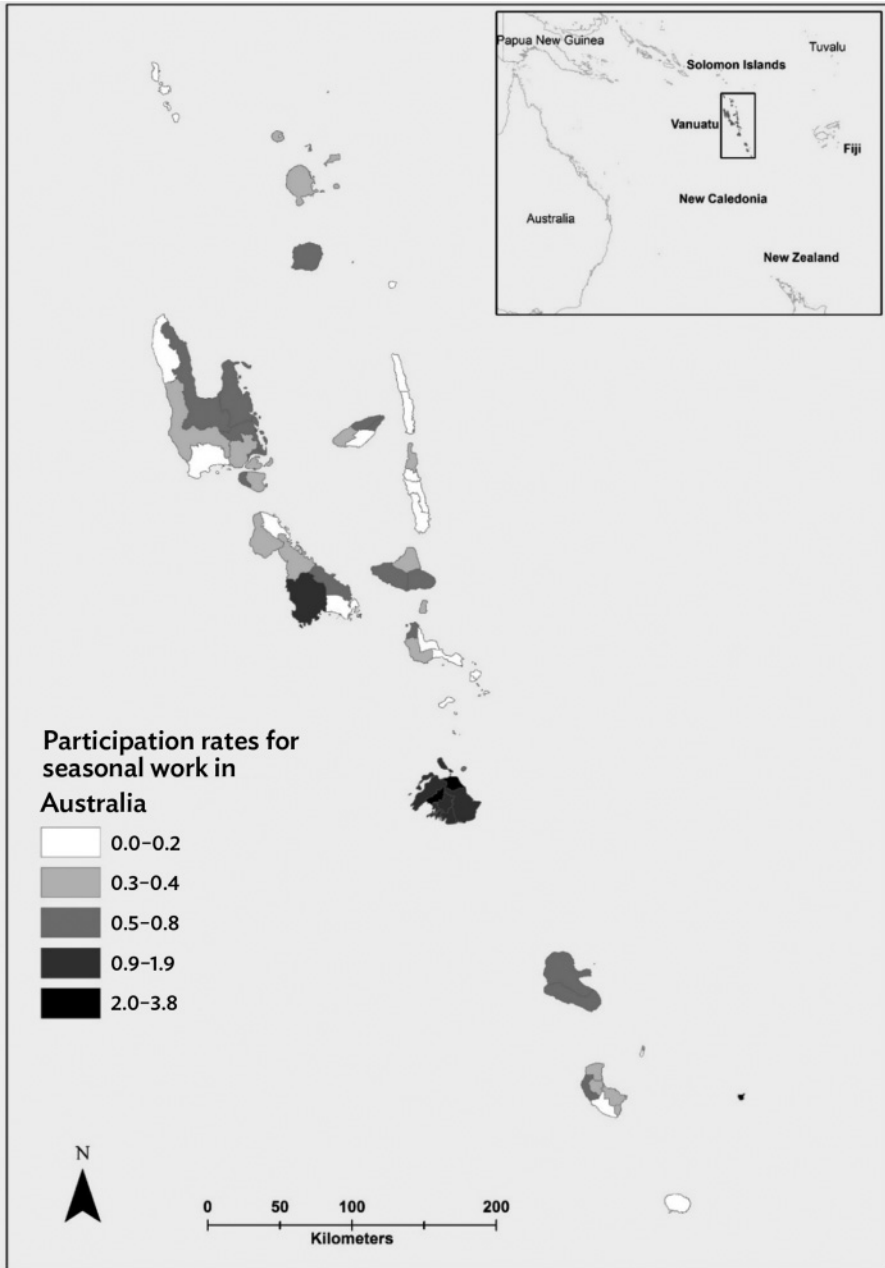Source: Authors' calculations.

Figure A.1. **Participation Rates for Seasonal Work in New Zealand (%)**
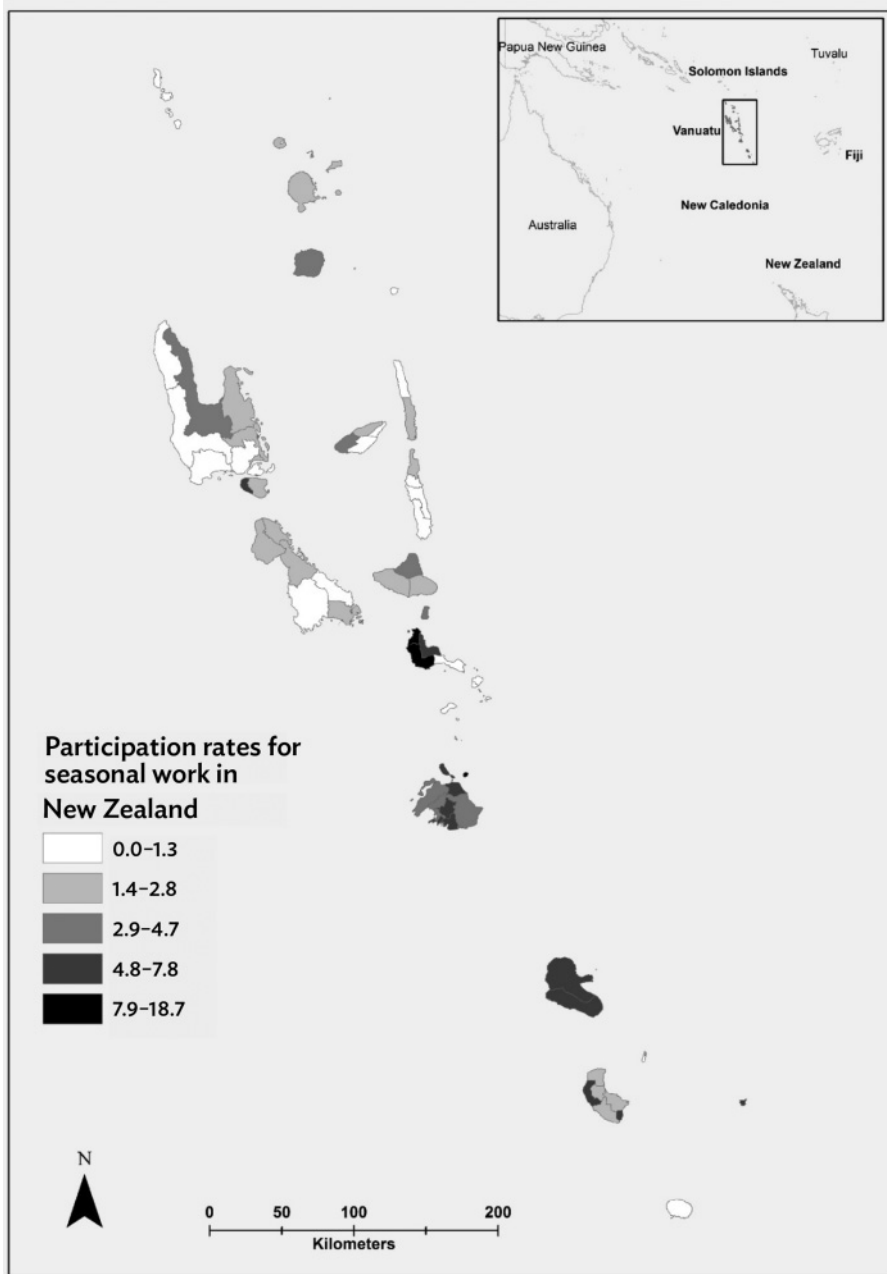
Note: This map was not produced by the cartography unit of the Asian Development Bank. The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.
Source: Authors' calculations.

Figure A.2. **Participation Rates for Seasonal Work in Australia (%)**

Note: This map was not produced by the cartography unit of the Asian Development Bank. The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.
Source: Authors' calculations.