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Diversion of Tourism Flows in the Asia & Pacific Region:
Lessons for COVID-19 Recovery

by Vybhavi Balasundharam and Robin Koepke

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I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

Asia and Pacific Department

Diversion of Tourism Flows in the Asia & Pacific Region: Lessons for COVID-19 Recovery

Prepared by Vybhavi Balasundharam and Robin Koepke¹

Authorized for distribution by Todd Schneider

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Abstract

The COVID-19 pandemic prompted a collapse in international tourism, severely impacting the tourism-dependent economies in the Asia & Pacific region. Once countries start reopening, tourism diversion effects could accelerate the recovery in countries that establish themselves as more attractive travel destinations than competitors. We investigate the impact of previous shocks in tourism competitor countries on visitor inflows, with a particular focus on tourism-dependent Pacific Island Countries (PICs). We find that PICs were generally resilient to external shocks and benefitted from diversion effects for certain types of shocks. For example, the share of departures from Australia to PICs increased by 12 percent during the SARS outbreak. We then derive policy implications for the post-COVID-19 revival of inbound tourism to PICs and lessons for the future.

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I. INTRODUCTION

The Asia and Pacific region is home to many economies that have a substantial tourism base. Of these, Pacific Island Countries (PICs) are among the most tourism-reliant countries in the world. Tourism is highly vulnerable to local shocks, such as natural disasters and political instability. In addition, global events like pandemics can have a severe impact on tourism even for countries that are not directly impacted by the shock. The COVID-19 pandemic has halted tourism across much of the world for over a year, even for PICs that have generally been little affected on the health front.

Many countries in the Asia and Pacific region shut their borders in the early stages of the COVID-19 pandemic. In fact, total closure to tourists was most prevalent in this region compared to the rest of the world as of mid-2021.¹ Prolonged and stringent border closures have been effective in preventing health crises in PICs, notwithstanding Fiji's COVID-19 outbreak in 2021:Q2. However, border closures have come at a severe economic cost. The COVID-19 pandemic has brought international tourism in PICs to a standstill pending widespread vaccination, measures to ensure traveler and public safety, and the reopening of borders.

The focus among some authorities has recently shifted to recovery, particularly on how to re-open borders and revive the tourism industry. Many countries are eager to establish travel bubbles with key source countries to jumpstart the rebound when the pandemic recedes. Both PICs and various Asian countries have attempted to set up such bubbles that would allow for inter-country travel with limited requirements on testing and quarantining, although progress has been slow thus far. These bubbles aim to attract both tourists who had already intended to travel to the destination countries, but also divert tourists with travel plans to competing destinations. Tourism diversion effects could accelerate their recovery if PICs can establish themselves as more attractive travel destinations than such competitor countries as Indonesia, Thailand, and other Asian tourism hubs.

Past experiences with shocks help illustrate the extent of tourism diversion potential and provide some guidance to better prepare for an eventual recovery from the COVID-19 crisis. Lessons from previous episodes could also help PICs become more resilient and cope with shocks more effectively in the future.²

To this end, this paper uses monthly outbound travel data from Australia, the second biggest tourism spender country in the region and the primary source country for South Pacific Countries (Fiji, Vanuatu, Samoa, New Zealand and Tonga) to quantify tourism diversion effects on PICs.³

¹ According to UNWTO Travel Restrictions 9th Report, of the 69 destinations where borders are completely closed to tourists, 30 are in Asia and the Pacific.

² For example, while there has been a five-fold increase in terror related deaths since 2000, the hotel industry is becoming more resilient to shocks from terrorism, as the time taken for destinations to recover from these shocks has significantly decreased (Misrahi, 2016).

³ This approach is particularly useful for countries with limited data availability and a concentrated tourism base, as is the case for PICs. Using this single dataset also facilitates identification of diversion from relevant competitor markets.

Exploiting data on different external shocks between 1991–2016 in competitor markets, we capture the large spillovers to PICs. First, we document the resilience of tourism to PICs to large external shocks like the September 11 attacks and the SARS epidemic. Second, we show that external shocks can result in substantial diversion of tourism into unaffected PICs. However, the size of tourism diversion depends on the type of shock, the region where the shock occurs and state of competitor markets. These results suggest that travel bubbles between large source markets like Australia and New Zealand with the PICs could boost tourism recovery in the PICs, and these gains could be amplified by diversion effects. Finally, we illustrate the temporary nature of this diversion channel, highlighting the importance of timely policies to boost diversion gains and make temporary gains permanent.

Our paper contributes to several strands of literature. First, there is a large literature that studies the interaction between different macroeconomic variables and tourism, including recent work by Kumar et al. (2020) that focuses specifically on PICs. Among these studies, tourist income and relative prices are the dominant factors in driving demand.⁴ Specifically, some studies have used the same comprehensive Australian outbound tourism data used in this paper to identify factors that affect long-run tourism demand. For example, Seetaram (2010) shows that income is the most important determinant of departures from Australia and that international crisis events occurring in years 2002 and 2003 adversely affected departures from Australia. Our paper focuses on the impact of these crisis events on PICs through the Australian demand channel. Understanding how demand responds to shocks would be helpful for these countries, given their relatively concentrated tourist base and limited capacity to manage risks.

Recently, the literature has focused on understanding the impact of crisis events on inbound tourism flows (Wang, 2009; Edmonds and Mak, 2006; Lean and Smyth, 2009; Russy and Smith, 2013 etc.). Specifically, there is a nascent but growing literature focusing on tourism diversion effects, whereby tourists shift from more affected destinations to less affected destinations.⁵ A closely related paper by Bonham et al. (2006) finds evidence of diversion of mainland U.S. travel from foreign travel to Hawaii that more than compensated for the declines in international visitors following the 9/11 terrorist attacks. Edmonds and Mak (2006) similarly show significant substitution of domestic travel for overseas travel by the Japanese after 9/11. Chang et al. (2011) specifically look at how shocks to international tourism demand volatility could affect the volatility in the tourism demand of neighbouring countries in the ASEAN region which are very similar and geographically connected. To the best of our knowledge, this is one of the first papers to look at the international diversion of tourists between regions, rather than within a small region. We also contribute to the literature by exploring how the spillovers vary with the type of shock and region of shock

⁴ Other factors include third-country price effects, seasonality, political instability, natural disasters, epidemics, marketing effectiveness, safety, and tourism-oriented policies. Kumar et al. (2020) and Nguyen (2020) provides a comprehensive literature review of these factors.

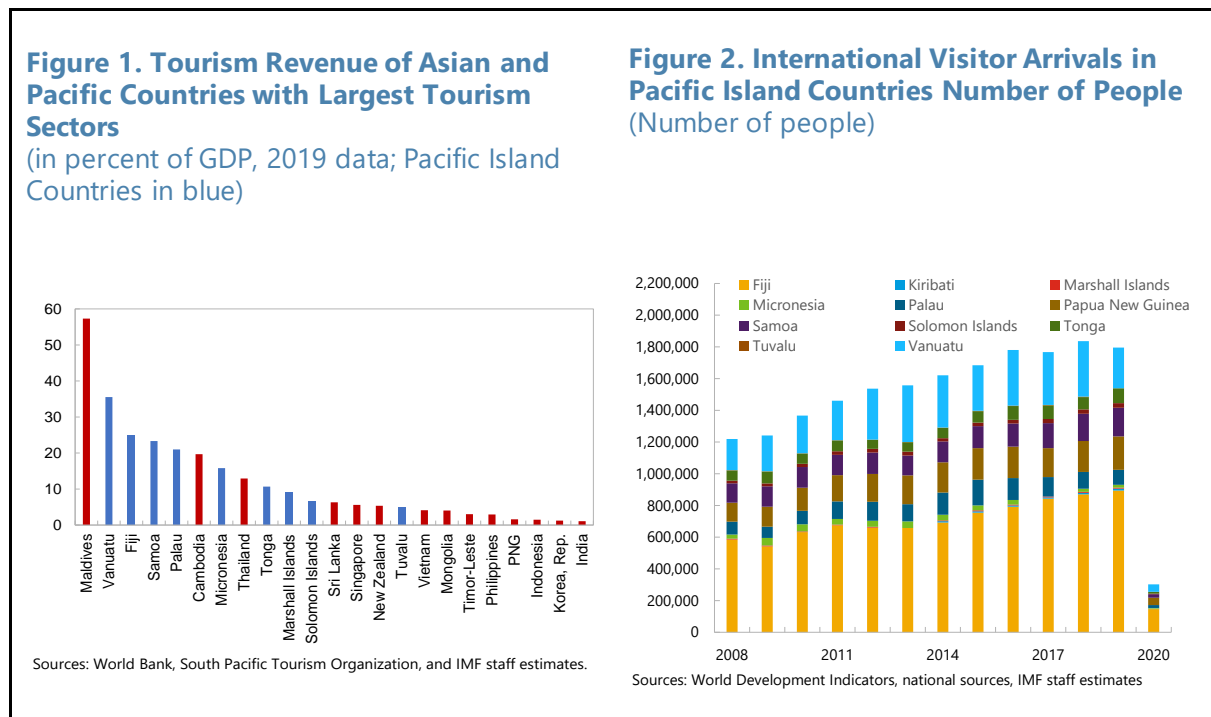
⁵ There are two strands in the diversion literature, one that looks at the impact of transient shocks and another that focuses on structural changes. Examples of the latter include Gallego et al. (2015) who look at the tourism diversion from joining the European Union, Forsyth et al. (2014) who study the impact of Australia's departure tax on domestic tourism diversion, and Acevedo et al. (2017) who study the impact of US-Cuba tourism link for the rest of the Caribbean.

This paper is structured as follows. Section II discusses recent trends in international tourism to PICs and lays out a conceptual framework for thinking about tourism diversion effects. Section III presents the data and methodology, highlighting stylized facts in the data. Section IV presents the main findings. Section V discusses the applicability and implications of these findings for the recovery from the COVID-19 pandemic. Finally, Section VI concludes and discusses potential avenues for future research.

II. RECENT DEVELOPMENTS AND CONCEPTUAL FRAMEWORK

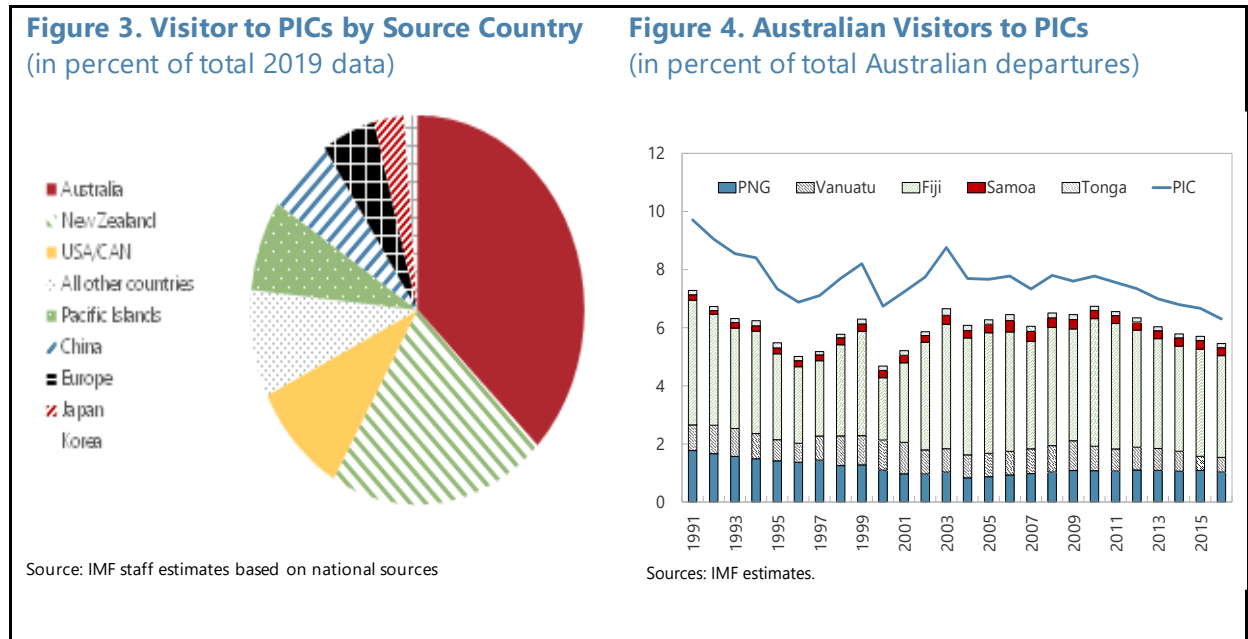
A. Recent Tourism Development in PICs

Tourism is a critical engine of growth and employment in most PICs and several Asian countries. The tourism contribution to GDP ranges between 10 and 40 percent in Fiji, Palau, Samoa and Vanuatu, exceeded only by the Maldives (Figure 1). Visitor arrivals in PICs grew rapidly in the two decades preceding the pandemic, nearly tripling from 686,000 in 2000 to 1,870,000 in 2019 (Figure 2).



With the onset of the COVID-19 pandemic, foreign visitor arrivals to PICs came to a sudden stop in March 2020. For 2020 as a whole, arrivals in PICs were down 84 percent, with little variation across countries. Economic activity was severely disrupted, with (unweighted) average real GDP growth of -4.5 percent in 2020. In tourism-dependent PICs like Fiji and Palau, the sudden evaporation of tourism is estimated to have led to severe GDP contractions in 2020 (see also the discussion in Arslanalp et al, forthcoming).

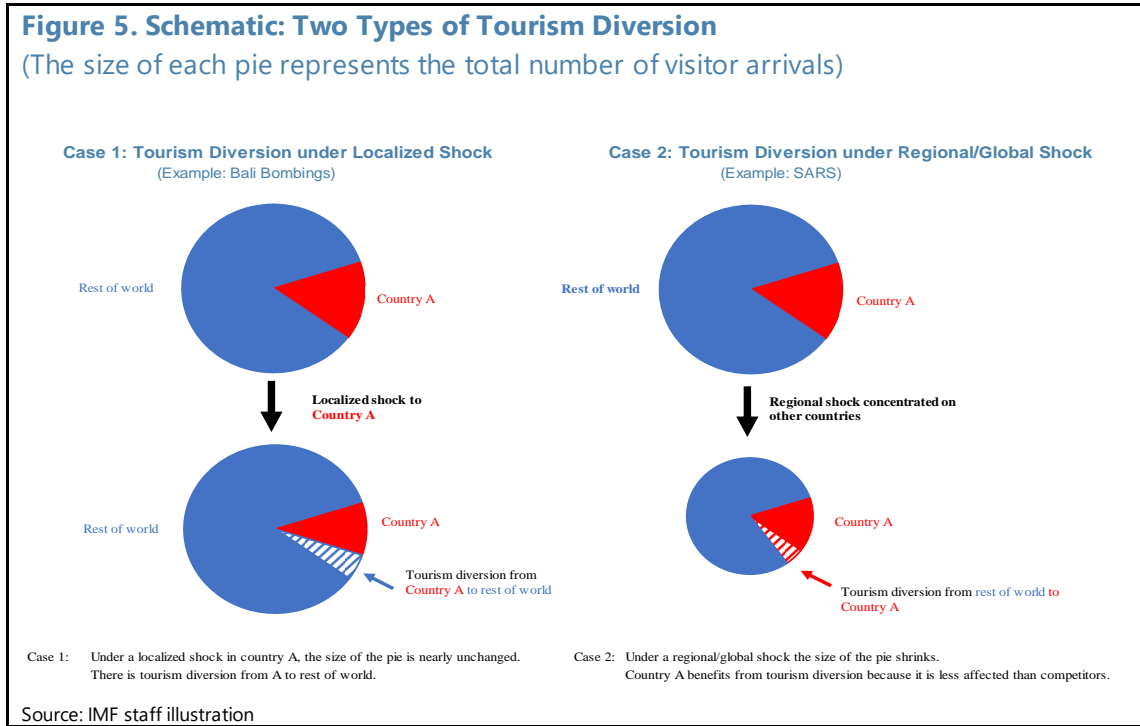
The main source country for visitors to PICs is Australia (37 percent of arrivals in 2019), followed by New Zealand (21 percent). Other notable source countries include the U.S., China, and Japan. In contrast to Australia's dominance as a source country of visitors, PICs only account for a small portion of Australia's outbound travel. In 2016, only 6 percent of Australian departures went to PICs, down from a peak of 9 percent in 2003. This suggests that there is significant scope for PICs to attract additional visitors from the Australian market, highlighting the potential for diversion effects to benefit PICs.



B. Conceptual Framework for Tourism Diversion

To provide an intuitive sense for the tourism diversion effects under investigation in the empirical analysis, it is useful to consider two stylized types of shocks (Figure 5 below). In the first case, a tourism-oriented country is hit by a localized shock that reduces prospective visitors' willingness to travel *to that particular country*, but leaves their overall willingness to travel mostly unchanged. In this example, some visitors that would have travelled to the affected country visit other countries instead, particularly competing tourism destinations in the same geographic region. In other words, there is tourism diversion from the country hit by the localized shock to other countries in the region.

Two real-world examples of such a localized shock are the Bali bombings of 2002 and 2005, which reduced travel to Indonesia while boosting visitor flows to other countries in the Asia & Pacific region. Both episodes are considered further in the empirical analysis.



In the second stylized example, a regional or global shock affects prospective visitors' willingness to travel to several or many countries. In this case, there is an overall reduction in regional/global travel ("tourism destruction"). Some countries are more affected by the shock than others, with less-affected countries increasing their share of visitor arrivals at the expense of more affected countries. The more affected countries suffer a sharp reduction in visitor arrivals. By contrast, for the less affected countries, the net effect depends on the magnitude of tourism destruction relative to tourism diversion. A real-world example of a regional shock is the 2004 SARS epidemic, which reduced travel to many Asian countries, while having varied impacts on other countries in the region, as discussed in the next section.

The key takeaway from the two stylized examples is that under certain conditions, tourism recipient countries may benefit from an adverse shock affecting the tourism sector, so long as tourism flows to competitor countries are (much) more affected than those to the domestic tourism market.

III. DATA AND METHODOLOGY

A. Model

To capture the demand for tourism from Australia, we use the following model:

$$\ln TA_{it} = \alpha + \beta_0 \ln income_t + \beta_1 \ln price_{it} + \beta_2 \ln exchange_t + \beta_3 \ln oil_t + \beta_4 \ln TA_{t-1} + \beta_5 D_t + \mu_t + \varepsilon_t \quad (1)$$

Where TA_t refers to monthly tourism departures from Australia to destination country i . The lag of tourism departures is incorporated as a control variable to capture habit persistence and

“word-of-mouth effects” whereby a significant share of travelers rely on information from friends and family. Tourism demand is typically found to be a function of the income level in the origin countries, so quarterly Australian real GDP is included. In addition, to control for prices that influence outbound departures, we include the monthly CPI index of the destination country as a fraction of the Australian CPI index and the exchange rate of the destination country against the Australian dollar.⁶ We also include the oil price, measured by the monthly average of the Brent spot price. D_t refers to a set of dummy variables that capture shocks to international tourism demand. This includes external shocks that do not directly impact the country and internal shocks that directly impact tourism demand. Each of the shocks are coded as 1 for three months to account for persistent effects. See the next section for details on these dummies. We also include monthly dummies to control for seasonal trends (μ_t). The coefficient of interest β_5 measures the elasticity of departures to different shocks.

To control for long-run trends and solve the small-sample problem, we use the autoregressive distributed lag model (ARDL) developed by Pesaran et al. (2001). An ARDL representation of Eq (1) is as follows:

$$\Delta \ln TA_{it} = \alpha + \sum_{k=1}^{m_1} \beta_{0k} \Delta \ln income_{t-k} + \sum_{k=1}^{m_2} \beta_{1k} \Delta \ln price_{i,t-k} + \sum_{k=1}^{m_3} \beta_{2k} \Delta \ln exchange_{i,t-k} + \sum_{k=1}^{m_4} \beta_{3k} \Delta \ln oil_{t-k} + \sum_{k=1}^{m_5} \beta_{4k} \Delta \ln TA_{t-k} + \sum_{k=1}^{m_6} \beta_{5k} D_t + \gamma_1 \ln income_{t-1} + \gamma_2 \ln price_{t-1} + \gamma_3 \ln exchange_{t-1} + \mu_t + \varepsilon_t \quad (2)$$

Here, the γ parameters capture long-term relationships while β parameters capture the short-term dynamics of the model. Our parameter of interest is β_5 , which captures the impact of external shocks.

We use Im, Pesaran, and Shin (IPS) unit root tests to check the stationarity of variables. All data are confirmed to be stationary in first difference. The lag order of the ARDL regressions were selected using the Bayesian Information Criterion (BIC) with the maximum lag length set to 4.

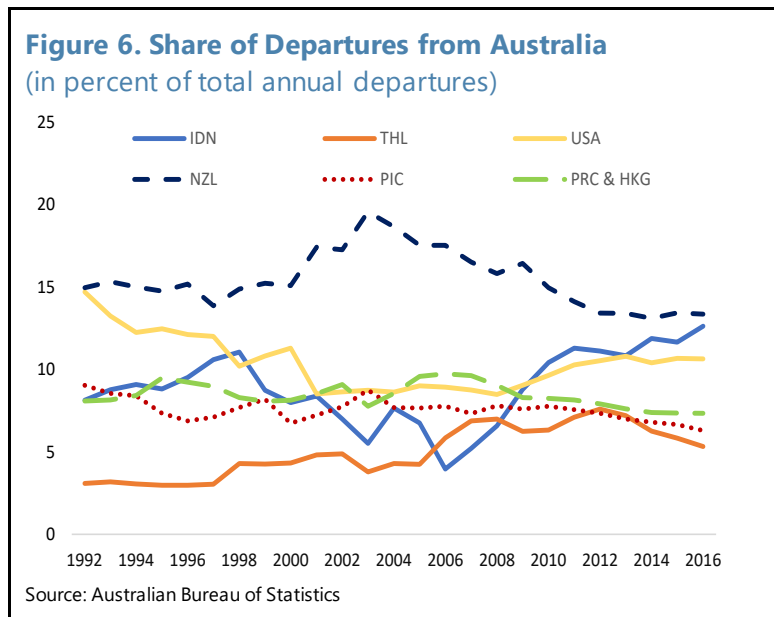
B. Data

We use the monthly Australian outbound tourism data by destination country from 1991 – 2016.

Identifying the shocks

We focus on disruptive events that affected main destination countries for Australian travelers. When visiting other countries, the majority of Australians travelled to New Zealand (13.4 percent), Indonesia (12.6 percent), the United States (10.6 percent), China and Hong Kong SAR (7.3 percent), the United Kingdom (5.9 percent), Thailand (5.3 percent) in 2016. Note that PICs account for 6.3 percent of departures from Australia, with around 55 percent of these departures to Fiji.

⁶ Data on real GDP (local currency), CPI and nominal exchange rates are from the International Monetary Fund’s World Economic Outlook Database.



For each of the external shocks, we create a dummy that equals 1 for three months following the event and 0 otherwise. The first major disruptive event in this time period was the September 11, 2001 terrorist attacks that affected tourism in the United States and around the world. For this event, we use a disaster dummy that equals 1 for September to December 2001 and 0 otherwise. The second major event was the Bali bombings in Indonesia, a popular tourism destination for Australians. The 2002 Bali bombings occurred on October 12 and led to significant disruptions in the country over the following years. We focus on two events for Indonesia. The first is the 2002 bombing itself, coded as a dummy that equals 1 between October 2002 and January 2003. The second is the Bali bombings on October 1, 2005, which led to a significant fall in tourism from Australia, due in part to the closure of an airline as a result of declining revenues. The third event is the 2004 Indian Ocean tsunami on December 26, which devastated popular tourist destinations in Thailand. Here, the disaster dummy equals 1 from December 2004 to March 2005. Finally, we include a dummy for the SARS epidemic during the peak of its wave between April and June 2003.⁷

Looking at the trends in departures in Figure 6, we see that there were sharp falls in the share of departures to affected countries around the time of recorded shocks, followed by upticks. For example, the share of departures to the U.S. fell by 27 percent in 2001, in line with the September 11 terrorist attacks. Following the attack, the U.S. went to war with Afghanistan and later Iraq, resulting in an extended period of uncertainty. Tourism to the U.S. only began to recover after the Global Financial Crisis (GFC) in 2008. Similarly, the Bali bombing in 2002 and the SARS epidemic during 2003 resulted in a significant fall in the share of departures to affected countries. In the case of Indonesia, a continued succession of attacks including another

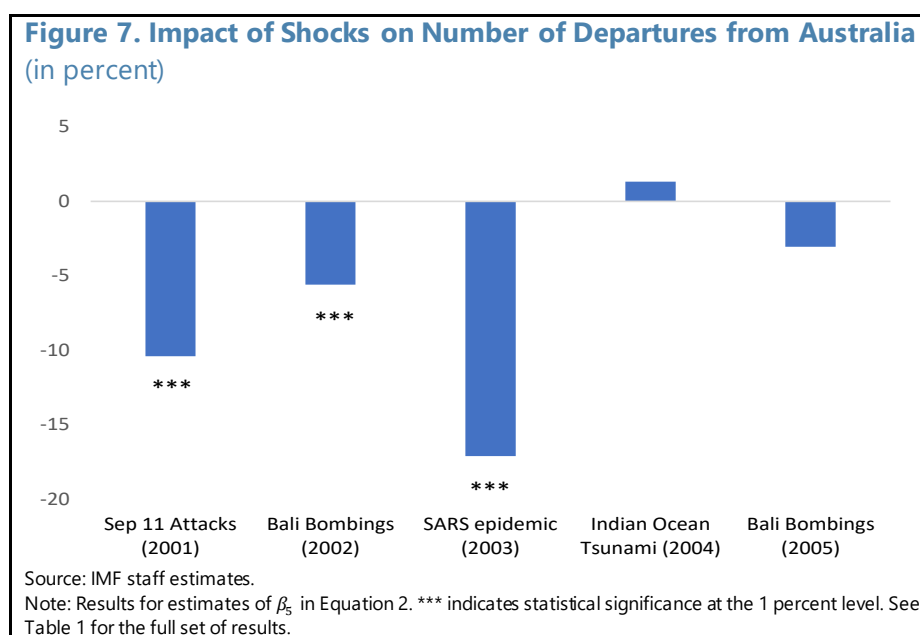
⁷ For regressions looking at the diversion into PICs, we also include internal shocks that directly impacted tourism demand. This includes the coup in Fiji in 2001, Tropical Cyclone Evan in 2012 and Tropical Cyclone Pam in 2015.

major series of bombings in October 2005 seems to have deterred tourism from Australia through 2006.

In Figure 6, we also observe apparent diversion effects during these major disruptive events. Between 2001 and 2003, we see a strong upward trend in the shares of departures to New Zealand and PICs from Australia. The disruption in Indonesia between 2004 – 2006 was accompanied by a substantial upward tick in the share of departures to Thailand. Finally, we see that as the shares of departures to Indonesia and the United States increased after 2006, the shares of departures to New Zealand and PICs fell, suggesting that these destinations are potential substitutes.

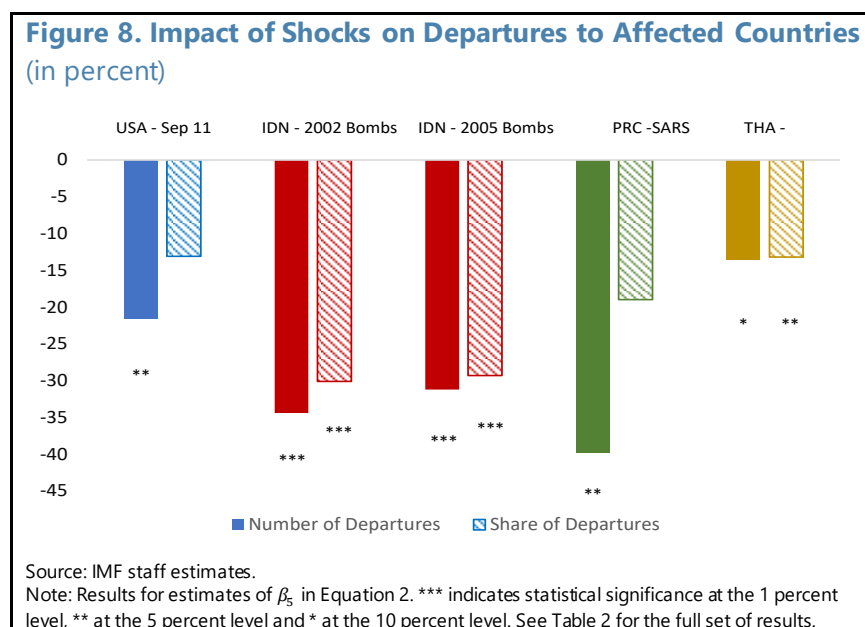
IV. RESULTS

Impact of large shocks on aggregate departures: Table 1 in Annex I and Figure 7 below present the results of different shocks on total departures from Australia. We confirm that aggregate Australian departures are vulnerable to global shocks such as the September 11 attacks and the SARS epidemic which amplified risk aversion to travel across the world. Both of these shocks resulted in total departures falling by over 10 percent during the affected months. However, we find that localized shocks that affected popular tourist destinations like the Bali Bombings and Indian Ocean Tsunami had a significantly smaller impact on total departures, suggesting that Australians diverted to other destinations that were not impacted by the shock. Also, consistent with the literature, we find that factors such as oil prices and exchange rate that affect travel costs and local economic conditions have a significant impact on total departures.



Impact of large shocks on affected destinations: Table 2 in Annex I and Figure 8 present the results of different shocks on departures to affected destinations. We confirm that all shocks resulted in significant drops in the number of departures from Australia to the affected destinations. The impact was largest for the Bali bombings and the SARS epidemic, two shocks which related mainly to personal safety concerns and focused on the Asia and Pacific region where Australia is situated. Looking at the share of departures, we see that for the two global

shocks, the shares to the United States and China fell by significantly less compared to departures, consistent with the previous result whereby total departures from Australia fell for these shocks.⁸ In addition, the fall in total departures reported in Figure 7 is above the levels that could just be attributed to the fall in travel in affected destinations itself. For example, departures to the United States fell by about 20 percent after the September 11 attacks, and they only account for around 10 percent of total departures. Given that total Australian departures fell by around 10 percent, only a fifth of the fall could be attributed to the decline in departures to the United States itself. This confirms that the September 11 attacks deterred travel in general. Finally, for more localized shocks, given the insignificant difference between number of departures and the shares to Indonesia and Thailand, this indicates the strong diversion of departures to countries not directly impacted by the shocks.



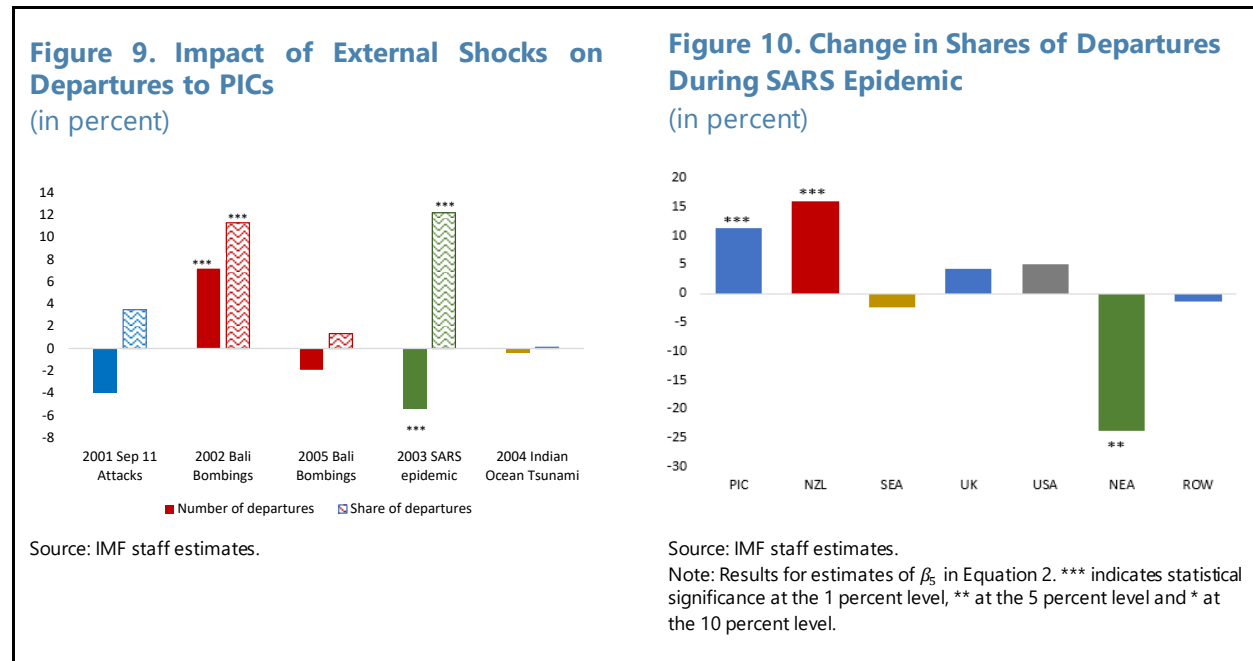
Impact of external shocks on PICs and New Zealand: Given that we find evidence of diversion for some of the large shocks, we look at the impact of these external shocks on neighboring countries to Australia that are generally popular vacation destinations – New Zealand and PICs. As shown in Table 3 in Annex I, countries in the region are generally insulated from external shocks, although the effects vary by the type of shock. For example, following the September 11 attacks, we observe that the number of departures to PICs remained stable whereas it fell by around 8 percent for New Zealand. Similarly, following the Bali bombings, we observe a 7 percent increase in departures to PICs. These results suggest that PICs are considered relatively safe against security threats such as terrorism, more so than New Zealand. Contrarily, during the SARS epidemic, we find no impact in departures to New Zealand but a small decline to PICs, which has a significantly weaker health infrastructure.

Looking at the share of departures in Figure 9, we find that the share of departures from Australia to PICs increases following large external shocks. The 2002 Bali bombings resulted in

⁸ Note this is a purely mechanical effect whereby as the denominator of total departures falls, the share falls by less.

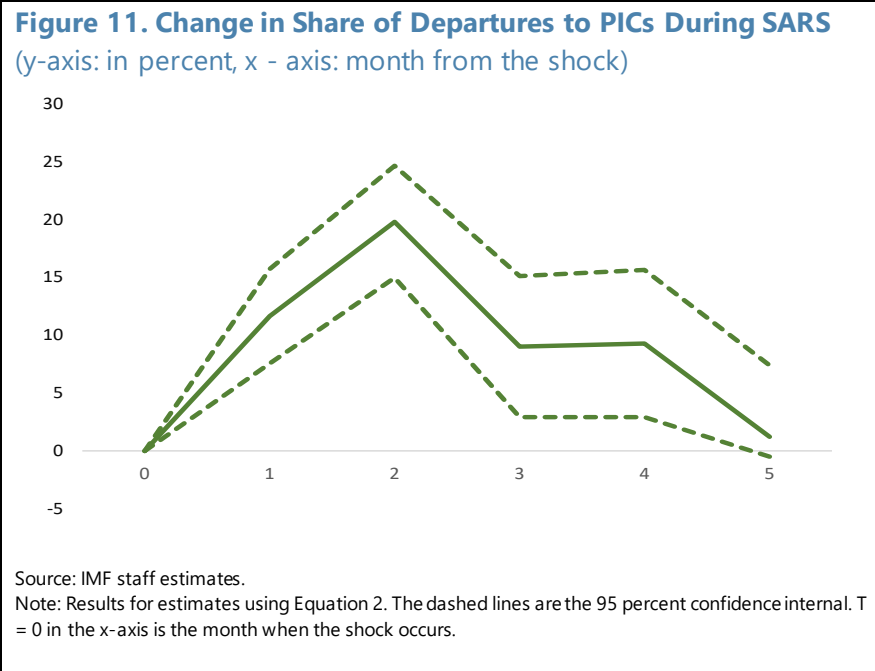
both an absolute increase in the number of departures and the share of departures to PICs, in contrast to New Zealand which had no gains.⁹ Following the SARS epidemic, both PICs and New Zealand benefitted from a strong diversion of tourism. These results indicate that Australians consider PICs as a safe alternative for travel when they perceive risks in other popular destinations.

In fact, of all the regions in the world, only PICs and New Zealand gained in shares during the SARS epidemic, whereas even regions not directly impacted by the epidemic did not (i.e. outside North East Asia). While overall tourism demand fell slightly (as measured by the number of departures), both PICs and New Zealand benefitted from strong diversions effects that supported their tourism market. New Zealand gained a larger share from the SARS epidemic compared to PICs, consistent with its strong health infrastructure. Overall, our results indicate that proximity, familiarity, safety and infrastructure can all drive the magnitude of diversion effects following large shocks.



Transient gains from SARS epidemic: The SARS epidemic's major impact on affected regions lasted for three months between March and May 2003. In Figure 11, we find that the diversion gains for PICs were also short lived, slightly lagging the peak of the epidemic in China and then declining as the epidemic waned. These results suggest that future diversion effects from similar shocks are likely to be temporary as well.

⁹ We find the 2005 Bali bombings did not have a significant impact for PICs contrary to the 2002 Bali Bombings, despite the similar impact on departures to Indonesia. In the Table 5 in Annex I, we show that following the 2002 Bali bombings, there was a general aversion to travel to the region, with even Thailand being negatively impacted. However, with the 2005 Bali bombings, there is no significant fall in departures to the region and Thailand benefits from a large increase in departures from Australia. This suggests that while 2002 Bali bombings resulted in diversion to PICs, the 2005 Bali bombings drove diversion within the South East Asia, potentially as people became more familiar with the region and the region became better prepared to.



Heterogeneity of gains across the PICs: From Table 4 in Annex I, we see that most of the diversion gains observed in PICs are driven by changes in departures to Fiji. While this result in part reflects Fiji’s larger and more advanced tourism market, it is worth noting that the impacts on other PICs like Vanuatu, Samoa and Tonga generally have the expected signs (although the results are not statistically significant).¹⁰ The differential impact between Fiji and other PICs was observed in the 2000s when access to information on tourist destinations was limited and smaller PICs were less accessible. With rising popularity of smaller PICs in recent years and the advent of social media, the smaller PICs could capture more of the diversionary tourism flows now. Apart from popularity, the results suggest that accessibility of the destination country would impact how travelers respond to shocks, and highlights the need for stronger, more reliable, and frequent airlinks and a well- developed tourism market to boost the gains from travel bubbles for the smaller PICs.

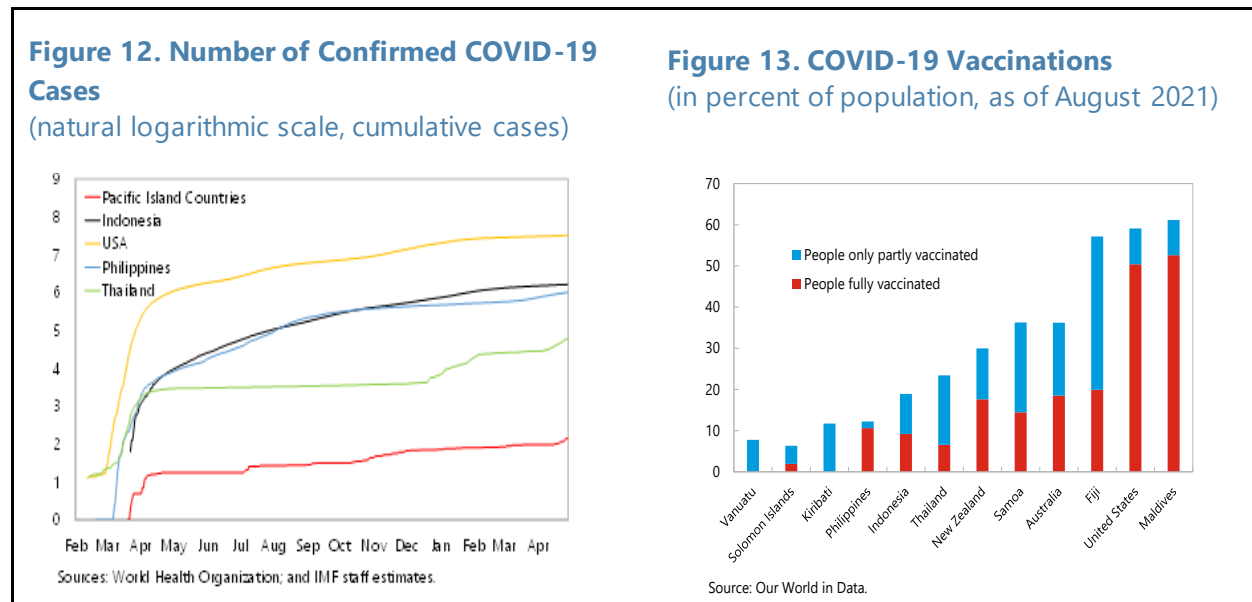
V. DISCUSSION AND POLICY IMPLICATIONS

The nature of the COVID-19 shock on tourism is similar to the shocks considered in the empirical analysis in that the pandemic was a sudden exogenous shock affecting many tourism-dependent economies, like the regional and global shocks in the empirical analysis. It is worth highlighting, however, that the pandemic also features important differences from previous shocks. The pandemic is a more severe, far-reaching and long-lasting shock than all prior shocks

¹⁰ Consistent with the evidence on impact of domestic shocks on tourism, we find that natural disasters and political instability have significant negative impact on tourism in PICs. Also, we observe tourism diversion within the region itself in response to these shocks. For example, there was a large increase in arrivals from Australia in Samoa during the 2001 Fiji Coup. Similarly, Fiji had noticeable gains in arrivals from Australia after the Tropical Cyclone Pam which severely impacted Vanuatu.

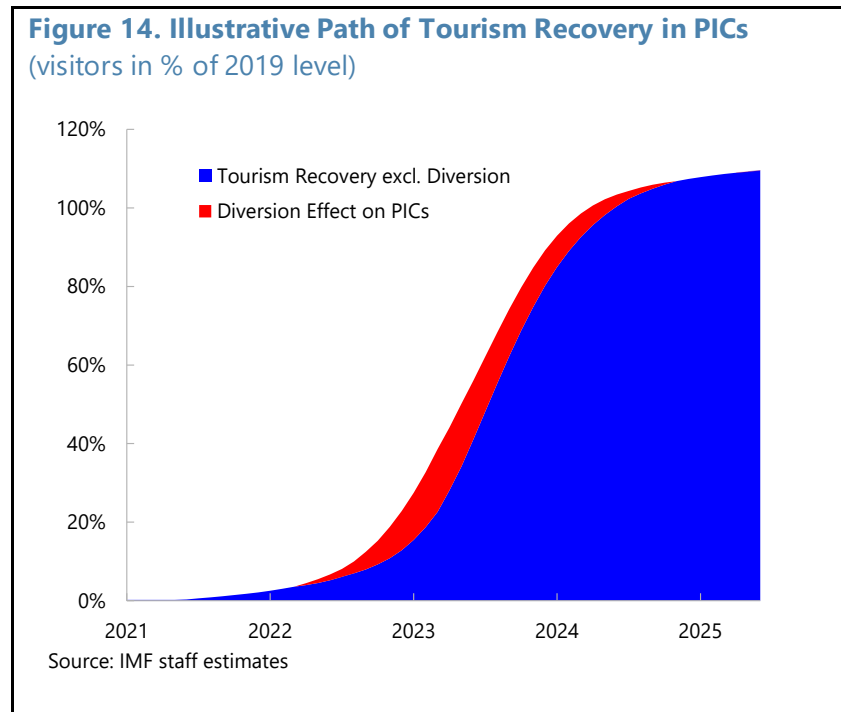
considered in this paper. It is also one of the few shocks where the supply of tourism services played a key role, due to travel and other restrictions imposed by destination countries. Looking ahead, supply constraints may continue to play an important role due to the severe adverse effects on airlines (including national airlines of tourism-oriented countries) and cruise ship operators, workforce scarring and bankruptcies.¹¹ Finally, compared to all previous shocks, there are now de facto departure restrictions in Australia and New Zealand that prevent tourists from arriving in PICs. For the time being, this limits the scope of policy measures that PIC authorities could contemplate to take advantage of any diversion effects that might otherwise benefit their tourism sectors.

Despite the exceptional features of the COVID-19 shock, we believe that the empirical results presented above offer important lessons for the recovery from the pandemic. The results highlight the importance of the *relative* safety of tourism destinations. For the COVID-19 recovery, health considerations will likely be a key differentiating factor for prospective travelers. When choosing a travel destination, visitors will likely take into consideration the quality of health infrastructure, the degree of ongoing community transmission of COVID-19, vaccine coverage, and quarantine requirements. Tourism-oriented Pacific Island Countries could benefit from this focus on health aspects, given that they have generally been highly successful in keeping the virus out of their countries (Figure 12). However, as this recent outbreak in Fiji illustrates, COVID-19 is likely a perennial global problem whose impact can only be reduced with stronger health infrastructure and high vaccine coverage, both of which are lagging in the PICs (Figure 13). Overall, evidence from previous episodes like the SARS epidemic suggests that a safe travel bubble between Australia and PICs could drive a strong recovery in tourism to the PICs, as long as the COVID-19 pandemic remains effectively contained in recipient countries, majority of their population is fully vaccinated and their health infrastructure is sufficiently strengthened.



¹¹ See Bala sundharam et al. (2021) for an overview of air connectivity and impact of the COVID-19 crisis on national airlines in the PICs.

The empirical analysis also points to several important policy implications. First, policymakers should anticipate that there will be temporary diversion effects that will boost or hold back the recovery in visitor arrivals to their countries. Figure 14 shows a stylized illustration of what the dynamic path of diversion effects could look like during the COVID-19 recovery, with PICs initially benefitting from a faster recovery on the back of diversion gains, but then experiencing a sharper slowdown as diversion effects fade out. In order to understand whether the pace of recovery is affected by such temporary diversion effects, policymakers should monitor their own tourism recovery and how it compares to competitors. This will allow them to calibrate cyclical policy support in line with expected path of tourism recovery. The size and length of the diversion gains would heavily depend on the regulatory environment - for example, if Australia enabled outbound tourism flows to the PICs through travel bubbles but not to other competitor destinations in Asia, and this unequal outbound access to different tourism markets remains in place for many months, the impact would be more consequential.



Second, policymakers should consider implementing policies to boost temporary diversion gains or mitigate losses. A key ingredient to a swift tourism recovery will be a timely and comprehensive vaccine rollout. Supporting policies to promote public health, reduce risk of current and future public health emergencies, boost health infrastructure, and protocols to ensure safe entry and exit could improve traveler confidence.¹² Policymakers could also pursue targeted

¹² One of the critical factors that have delayed the possibility of travel bubbles between PICs and Australia and New Zealand is the weak health infrastructure in PICs and concerns that visitors could spread the virus locally.

promotions to attract particularly visitors looking to safely resume travel.¹³ They could also provide support for returning visitors, such as in the form of loyalty programs.

Third, policymakers should consider policy measures to help turn temporary gains in visitor arrivals into permanent gains. This could involve investments to boost capacity in growing subsectors. For example, policymakers could support a shift to eco-sustainable tourism services with lower density and higher value-added, which could help reduce health risks associated with mass travel and foster a greener recovery (IMF 2021). Policymakers should also leverage the accelerating digitization in tourism services, including a higher use of automation, contact-less payments and services, and real-time information provision, to diversify their tourism base. Moreover, policymakers could help facilitate a reallocation from cruise travel to non-cruise tourism, given that cruise tourism will likely take more time to recover. Many of these structural reforms would require considerable public investment. Given the resource constraints in PICs, governments could actively look at identifying and strengthening public-private partnerships.

¹³ Maldives launched an effective digital media marketing campaign to increase engagement with tourists and establish itself as a leading travel destination during the COVID-19 pandemic. It is one of the few countries in the Asia and Pacific region to have opened its borders to tourism and had around half a million visitors in the first half of 2021 (compared to 0.86million visitors in the first half of 2019).

VI. CONCLUSION

Understanding how tourism flows respond to different types of shocks can help improve economic planning and risk management. In this paper, we show that some regions, like the PICs, have often remained insulated from even the large global shocks such as the September 11 attacks and the SARS epidemic. In fact, they have benefitted from some shocks that mainly affected competitor countries in the region, resulting in strong but temporary diversion gains for PICs. The temporary nature of diversion is another important feature highlighted in our results.

These results have important policy implications for countries as they reopen borders following the COVID-19 crisis, particularly for PICs that can be attractive destinations for tourists looking to safely travel in the post COVID era. We argue that policymakers should take into account diversion effects in their monitoring of tourism flows, which can help them calibrate cyclical policy support. We also discuss measures policymakers could employ to have diversion effects work in the favor, including by making them more long-lasting.

Apart from a country's own initiatives, regional cooperation in tourism development among small states like PICs could position them to benefit from tourism diversion effects. This would alleviate the lack of economies of scale and help address the supply side constraints more effectively while bolstering demand through improvements in regional infrastructure and targeted promotions. Development partners also have a critical role to play here, providing technical assistance, enabling safe travel corridors by accelerating vaccinations and information sharing, and supporting other appropriate policy actions for a speedy recovery. Finally, countries should take the lessons learnt from this crisis to improve their risk management, including by updating their institutional frameworks such as security and health protocols, adopting insurance instruments, building contingent reserve funds and diversifying their economic base away from the tourism industry.

There are several promising avenues for future research. When countries start opening up their borders and setting up safe travel bubbles with source markets, this would offer a credible identification for empirical analysis on the determinants of tourism flows, including diversion effects. Studying the pace of recovery and the diversion effects would be an important exercise to compare the COVID-19 pandemic with previous shocks. In addition, countries are likely to take different approaches to promote the tourism recovery, thereby enabling a study on the effectiveness of policies and the optimal policy mix. Another promising approach could be to set up a structural demand and supply model and calibrate it to some of the estimates in the literature, including the estimates presented here, to predict the pace of recovery and study the impact of different policy measures.

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Annex I. Detailed Estimation Results

Table 1. Determinants of Australia's departures in the short run (1991–2016)

	(1)	(2)	(3)
	$\Delta \ln(\text{departures})_t$	$\Delta \ln(\text{departures})_t$	$\Delta \ln(\text{departures})_t$
Sep 11 attacks	-0.0438** (0.0193)	-0.0643*** (0.0132)	-0.104*** (0.0181)
2002 Bali bombings	-0.00946 (0.0150)	-0.0493*** (0.0149)	-0.0559*** (0.0158)
SARS epidemic	-0.0484 (0.0318)	-0.142*** (0.0207)	-0.171*** (0.0231)
Indian Ocean tsunami	0.00883 (0.0183)	-0.0108 (0.0138)	0.0131 (0.0126)
2005 Bali bombings	-0.00655 (0.0296)	-0.0304 (0.0260)	-0.0306 (0.0206)
$\ln(\text{Aus GDP})_{t-1}$		0.699*** (0.0854)	0.461*** (0.0836)
$\ln(\text{oil prices})_{t-1}$		-0.0265** (0.0119)	-0.0149 (0.0120)
$\ln(\text{departures})_{t-1}$		-0.352*** (0.0401)	-0.235*** (0.0417)
$\ln(\text{exchange rate})_{t-1}$		0.158*** (0.0289)	0.106*** (0.0259)
$\Delta \ln(\text{exchange rate})_{t-1}$			0.0527 (0.0349)
$\Delta \ln(\text{Aus GDP})_{t-1}$			-1.735 (1.059)
$\Delta \ln(\text{oil prices})_{t-1}$			-0.0347 (0.0361)
$\Delta \ln(\text{departures})_{t-2}$			-0.567*** (0.0601)
$\Delta \ln(\text{departures})_{t-3}$			-0.347*** (0.0556)
SARS epidemic $_{t-2}$			-0.0615** (0.0251)
SARS epidemic $_{t-3}$			0.112*** (0.0197)
Monthly FE	Yes	Yes	Yes
Observations	311	311	309
R-squared	0.922	0.924	0.954

Note: Results from Equation 2. ***/**/* indicate statistical significance at the 1%, 5% and 10% level, respectively. Standard errors in parentheses (). Exchange rate is the exchange rate of USD against AUD. All shock events are coded as dummies.

Table 2: Impact of shocks on departures to affected countries

VARIABLES	USA		IDN		IDN		PRC		THN	
	Departures	Share	Departures	Share	Departures	Share	Departures	Share	Departures	Share
Sep 11 attacks	-0.216** (0.0964)	-0.131 (0.0956)								
2002 Bali bomb			-0.344*** (0.0694)	-0.301*** (0.0580)						
2005 Bali bomb					-0.312*** (0.0872)	-0.293*** (0.0789)				
SARS epidemic							-0.398** (0.157)	-0.190 (0.156)		
IO Tsunami									-0.135* (0.0752)	-0.132* (0.0730)
Observations	308	308	308	308	308	308	308	308	308	308
R-squared	0.883	0.603	0.721	0.691	0.697	0.659	0.865	0.664	0.730	0.736

Note: Results from Equation 2. All regressions include monthly fixed effects and controls for exchange rate, relative CPI, Australian GDP and oil prices. The outcome variables are change in log of departures to specific destinations and share of departures to these destinations. ***/**/* indicate statistical significance at the 1%, 5% and 10% level, respectively. Standard errors in parentheses ().

Table 3. Impact of shocks on departures to PICs and New Zealand

VARIABLES	PICs + NZL		NZL		PICs	
	Departures	Share	Departures	Share	Departures	Share
Sep 11 attacks	-0.0835*** (0.0144)	0.0188 (0.0167)	-0.0790*** (0.0167)	0.0227 (0.0230)	-0.0401 (0.0284)	0.0348 (0.0267)
2002 Bali bomb	-0.0374*** (0.0113)	0.0140 (0.0180)	-0.0633*** (0.0151)	-0.00160 (0.0303)	0.0718*** (0.0218)	0.113*** (0.0157)
2005 Bali bomb	-0.0290 (0.0197)	0.0144 (0.0165)	-0.0134 (0.0164)	0.0210 (0.0149)	-0.0192 (0.0277)	0.0133 (0.0196)
SARS epidemic	-0.0415** (0.0185)	0.137*** (0.0265)	-0.0155 (0.0236)	0.159*** (0.0351)	-0.0547*** (0.0210)	0.122*** (0.0197)
IO tsunami	0.0467*** (0.0132)	0.0465*** (0.0171)	0.0793*** (0.0214)	0.0482* (0.0263)	-0.00463 (0.0166)	0.00126 (0.0211)
2001 Fiji Coup	-0.154*** (0.0311)	-0.103*** (0.0176)			-0.237*** (0.0955)	-0.186** (0.0858)
TC Pam	-0.0336** (0.0161)	-0.0283** (0.0121)			0.0154 (0.0279)	0.00644 (0.0285)
TC Evan	-0.0144 (0.0300)	0.00666 (0.0137)			-0.0764*** (0.0225)	-0.0553*** (0.0149)
GFC	-0.0272 (0.0184)	0.00404 (0.0137)	-0.0263 (0.0214)	0.0114 (0.0162)	-0.0219 (0.0202)	0.00625 (0.0184)
Observations	308	308	308	308	309	309
R-squared	0.943	0.840	0.934	0.870	0.881	0.685

Note: Results from Equation 2. All regressions include monthly fixed effects and controls for exchange rate (for PICs, we use the USD – AUD ER as majority have fixed exchange rate pegs with a significant weight to USD), Australian GDP, oil prices and dummies for local shocks. The outcome variables are change in log of departures to specific destinations and share of departures to these destinations. ***/**/* indicate statistical significance at the 1%, 5% and 10% level, respectively. Standard errors in parentheses ().

Table 4. Impact of shocks on departures across PICs

VARIABLES	<i>Vanuatu</i>		<i>Fiji</i>		<i>Samoa</i>		<i>Tonga</i>	
	Departures	Share	Departures	Share	Departures	Share	Departures	Share
Sep 11 attacks	-0.0676 (0.0663)	0.0550 (0.0741)	-0.00730 (0.0521)	0.0915** (0.0359)	-0.336 (0.294)	-0.103 (0.278)	-0.270 (0.280)	-0.0206 (0.296)
2002 Bali bomb	0.0999 (0.244)	0.161 (0.223)	0.0874*** (0.0312)	0.141*** (0.0291)	-0.258 (0.170)	-0.101 (0.136)	-0.525** (0.250)	-0.339 (0.207)
SARS	-0.0938** (0.0388)	0.0966** (0.0449)	-0.0136 (0.0402)	0.129*** (0.0475)	-0.248 (0.306)	0.124 (0.330)	-0.0493 (0.272)	0.272 (0.265)
IO Tsunami	-0.00993 (0.0422)	-0.00686 (0.0411)	0.0296 (0.0380)	0.0387 (0.0460)	-0.136 (0.136)	-0.101 (0.140)	-0.397* (0.230)	-0.333 (0.232)
2005 Bali bomb	-0.0383 (0.0466)	0.0203 (0.0579)	-0.0132 (0.0339)	0.0314 (0.0277)	-0.00889 (0.0864)	0.0775 (0.102)	0.0327 (0.136)	0.211* (0.120)
GFC	-0.000109 (0.0339)	0.0470 (0.0370)	-0.0329 (0.0316)	0.00298 (0.0261)	-0.0380 (0.0593)	0.0738 (0.0653)	-0.102 (0.112)	0.0170 (0.117)
2001 Fiji Coup	0.00216 (0.0819)	0.0495 (0.0727)	-0.916*** (0.270)	-0.848*** (0.268)	0.175* (0.0981)	0.257*** (0.0873)	-0.398** (0.188)	-0.291 (0.186)
TC Pam	-0.472** (0.184)	-0.489*** (0.183)	0.0630** (0.0255)	0.0387 (0.0261)	-0.0177 (0.165)	-0.0686 (0.171)	-0.00501 (0.117)	-0.0850 (0.121)
TC Evan	-0.0440 (0.0901)	-0.0399 (0.0846)	-0.113* (0.0610)	-0.105* (0.0564)	-0.324*** (0.0721)	-0.339*** (0.0849)	-0.0714 (0.183)	-0.0669 (0.192)
Observations	308	308	308	308	303	303	298	298
R-squared	0.701	0.601	0.801	0.635	0.739	0.621	0.724	0.615

Note: Results from Equation 2. All regressions include monthly fixed effects and controls for Australian GDP and oil prices. The outcome variables are change in log of departures to specific destinations and share of departures to these destinations. ***/**/* indicate statistical significance at the 1%, 5% and 10% level, respectively. Standard errors in parentheses ().

Table 5. Impact of Bali Bombings on departures to South East Asia

VARIABLES	<i>THAILAND</i>		<i>SOUTH EAST ASIA</i>	
	Departures	Share of Departures	Departures	Share of Departures
2002 Bali bomb	-0.172** (0.0766)	-0.107 (0.0727)	-0.150*** (0.0451)	-0.104*** (0.0318)
2005 Bali bomb	0.0984*** (0.0350)	0.114* (0.0649)	-0.0577 (0.0390)	-0.0382** (0.0185)
Observations	308	308	308	308
R-squared	0.744	0.744	0.842	0.791

Note: Results from Equation 2. All regressions include monthly fixed effects and controls for Australian GDP and oil prices. The outcome variables are change in log of departures to specific destinations and share of departures to these destinations. ***/**/* indicate statistical significance at the 1%, 5% and 10% level, respectively. Standard errors in parentheses ().