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The tourist boom in Bali:
Is it harming prospects for long-term economic growth?

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Abstract

Tourism now dominates the regional economy of Bali, and its direct economic benefits are demonstrably large. However, Bali's tourism focused development strategy has been criticized for some of its social, cultural and environmental effects, and for potentially hampering sustainable long-term growth through 'Dutch disease' effects of tourism boom on other more dynamic tradable sectors, particularly manufacturing. In this paper, we discuss the economic effects of tourism on overall growth, structural change, employment and wages, household and spatial distributional effects, and potential for technological change and longer-term growth. We show that tourism has promoted a complex web of interactions with other industries, and contributed to rapid structural change, skills development and the widespread dissemination and application of information technology. We contend that the application of the conventional Dutch disease model can be misleading in assessing the economic impact of tourist growth in Bali. It is important to recognize that (a) Bali is a regional economy within the much larger national economy of Indonesia, with high levels of integration in both factor (including labour) and product markets, and (b) tourism is a very dynamic export industry, operating in a highly competitive and rapidly changing international market, and requiring increasingly sophisticated managerial and entrepreneurial skills. While many of the negative socio-cultural and environmental effects are serious and must be addressed through appropriate regulatory regimes, they are not very different from effects seen in other economies undergoing rapid growth. Our overall assessment is that tourism, based on Bali's natural, cultural and economic endowments, is a viable alternative to labour-intensive industrialization and demonstrates that 'services based growth strategy' can be quite appropriate in some circumstances.

Key words: Bali, Indonesia, growth, structural change, tourism, Dutch Disease

JEL Codes: F15, J62, 014, 015, 018

THE TOURIST BOOM IN BALI: IS IT HARMING PROSPECTS FOR LONG TERM ECONOMIC DEVELOPMENT?[1]

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I. INTRODUCTION

The tourist industry dominates the Balinese economy, having grown dramatically in the past three decades. Accounting for indirect effects, it made up more than half of the region's GDP by 2018. Foreign tourist arrivals had increased from less than 250,000 per year in mid-1980s to almost six million in 2017. Domestic tourism has also boomed, estimates placing the numbers at close to 10 million arrivals in the same year. Bali's average per capita income has increased very substantially during this period having kept pace with other provinces, despite sharp slumps after the Asian Financial Crisis (AFC) when regional per capita income fell to just over 80% of the national average. Real wages, educational and skill levels have also been at least comparable if not better than in other comparable regions of the country.[2]

Despite these demonstrable economic benefits, the focus on tourism as a development strategy for Bali has had many critics. There has been strong condemnation of the harmful effects of tourism on Balinese culture and the environment, especially after tourist numbers accelerated from the late 1980s, and then again after the terrorist attacks and global crisis in the 2000s (Picard and Vickers 2017).[3] In regard to economic effects too tourism has its doubters. Some have focused on the negative effects – the 'Dutch Disease' (D-D) effects - of an expanding tourist sector on other, culturally embedded and potentially more dynamic sectors. As Jayasuriya and Nehen (1989) noted, signs of such effects were already visible in the mid-1980s and it would not be surprising if they had become much stronger in the subsequent three decades. The observed changes in the structure of the Balinese economy are consistent with such an outcome: by 2017, agriculture had shrunk to under 15% of regional GDP (RGDP) and manufacturing – widely considered the driver of long term economic development - that had shown signs of growth in the early 1980s, accounted for only around 6%.[4] Further Vickers 2012 (Chapter 5), points to negative distributional outcomes: benefits from tourism tended to flow mainly to migrants from other Indonesian islands, and the entry of larger business ventures from the late 1980s increased inequality. Bendesa and Aksari (2017) argue that land transfers away from agriculture to tourist related sectors adversely affected the

[1] This paper represents research in progress. Please do not quote.
[2] See Hill and Vidyatama (2014: 74) for data from 1975 through to 2011 and BPS (2019) for data 2010 to 2018.
[3] See also Nordhold (2008) and Vickers (2012)
[4] See Jayasuriya and Nehen (1989: 346) for the industry composition in 1980s.

culturally important *subak* system, which is fundamental for management of irrigation and for maintaining Bali's high level of productivity in rice farming. These seemingly provide grounds for claiming that 'development' through tourism may hamper Bali's longer-term prospects for transformation to a more advanced industrial, economy, despite the sector's positive effects on incomes and employment.

In this paper we will argue otherwise. While environmental and cultural effects are a major concern, and tourism growth may have had quite large negative effects on manufacturing and agriculture, we suggest that the positive, dynamic features of tourism have been undervalued in discussions of the economic transformation of Bali. Modern tourism in the 21st century has productivity-raising features that the characterisations of 'services sectors' in many standard economic models -- including the basic D-D models -- fail to capture. It is contended in this paper that tourism can be a dynamic labour-intensive export industry contributing to skills development, and to the spread of information technology, in addition to developing a complex web of interactions with other industries. It is also maintained that the distributional effects are complex, especially since Bali is part of the larger Indonesian economy. This allows the tourist industry to expand by engaging skilled and unskilled migrant workers from elsewhere in Indonesia, without significantly raising domestic labour costs.

The paper is divided into five main sections. The second section explains the D-D model framework and discusses our methodology. The third and fourth sections present the basic data on tourism developments and then trace the growth of tourism and associated structural change in output and employment. A fifth section deals with migration, price and wage effects related to the tourist boom, fleshing out the impact of close relations between Bali and the rest of Indonesia. The final section concludes, noting some of the limitations of the study.

II. FRAMEWORK, APPROACH AND DATA ISSUES

To set the ball rolling, this section introduces the main ideas behind the Dutch Disease (D-D) model, which serves as an organizing framework for discussing the benefits and costs of rapid expansion in tourism in Bali in recent years. It also introduces the main data that are analysed in the paper and our approach to comparing and contrasting aspects of structural change in Bali with that in other regions in Indonesia.

The Dutch Disease Model as an Organizing Framework

While tourism has brought many economic benefits, a sustained rapid expansion in this sector can also have its downsides. The literature on the macroeconomic impacts of a booming sector

has taught us that a rapid, and often unexpected, rise in exports in one sector can impede other exports, and may even slow economic development in the longer term. Following the DD literature in international economics, the influence of a tourist boom on the economy can be considered similar to the effects of a booming export sector. The benefits are mostly enjoyed in the form of increased growth and foreign exchange earnings in a highly competitive industry. But a sustained rapid expansion of one sector can expose the other sectors of the economy to negative cost, exchange rate and structural effects.

The basic D-D model identifies three sectors: a booming export sector, a second export sector and a non-tradable 'services' sector in a small open economy (Corden and Neary, 1982). Rapid expansion of the booming sector initially draws resources away from the other two sectors, increases costs of both, and raises the prices of non-tradables (i.e. appreciates the real exchange rate). These processes adversely affect the competitiveness of other export sectors – whose prices are fixed by world markets - and can contribute to de-industrialization.[5] The literature refers to "direct" and "indirect" de-industrialization effects arising from (i) the absorption of factors into the booming sector and (ii) also the absorption of factors into the non-tradables sector because it too requires more resources to increase supply to meet the increased demand as a result of higher incomes.[6]

Why adopt this framework as an organizing principle for this paper on the effects of tourism? First, as noted, foreign tourism has close similarities to other export industries. Second, the *direct* de-industrialization effect can be expected to be quite large in the case of a tourism boom. The sector is typically connected with many other sectors of the economy, drawing resources out of more established or potentially dynamic tradable industries. The conjecture that a booming sector can be harmful for longer term economic growth is typically attributed to de-industrialization resulting from a boom in a natural resource sector.[7] In this case, it could be argued that a boom in tourism pulls resources away from export-oriented *manufacturing*, which has historically been the driving force behind technological upgrading

[5] The mechanism through which the appreciation of the real exchange rate (relative price of tradables to non-tradables) occurs depends on the nature of the exchange rate regime. If the nominal exchange rate is fixed, then the domestic price of tradables is exogenously given, and the real appreciation occurs through a rise in the price of non-tradables. If the exchange rate is floating, adjustment occurs through a fall in the domestic price of tradables. Though the Indonesia has a floating exchange rate regime, for analytical purposes, Bali can be treated as having a fixed exchange rate regime because Bali's exports are a very small fraction of the larger, internationally oriented Indonesian economy, and unlikely to exert a significant influence on the country's exchange rate.

[6] Typically, the **direct** de-industrialization effect is small if the booming sector is a capital-intensive activity in natural resources.

[7] See Sachs and Warner (2001) and the subsequent large literature on the so-called 'resource curse'. The Dutch-Disease model has been applied to help describe the slow growth in manufacturing exports in Indonesia and during various resource boom episodes, especially the oil boom of the 1970s and early 1980s in Indonesia, and to a lesser extent, during the more recent commodity price boom in the first decade of the 2000s (Taguchi and Khinsamone, 2018).

and structural change, especially in East Asia (Sachs and Warner, 2001; McMillan and Rodrik, 2011).

In the Bali case, we examine the impact of the growth of tourism on tradable manufacturing and also on agriculture.[8] In the wake of the digital and internet revolutions, arguments made regarding the benefits from structural change and productivity increases in manufacturing can also be applied to many modern services, and specifically to tourism. Technical change has been rapid in recent years, and the services sector is no longer just a place of refuge for low skilled workers and public sector employees, bearing in mind new activities in logistics, communications, finance and tourism (Lee and McKibbon, 2014; World Bank, 2012a, 2019). In Indonesia, as in in other Asia-Pacific countries, connectivity and new processes are critical to productivity growth. This applies both within services and also to tradable industries that depend on high productivity services (Findlay and Pangestu, 2016; Pangestu and Dewi, 2017).

Two further qualifications are needed when looking at impact of tourism on structural change in Bali through a D-D lens.[9] As suggested, the industry has both tradable and non-tradable industry characteristics; the neat dichotomy used in some of the D-D literature does not apply in the real world, since the demand for tourist services in a small economy like Bali arises primarily from external tourists. In the case of Bali, this is reflected in the fact that the industry caters overwhelmingly to tourists from foreign countries and the rest of Indonesia. Second, because Bali is a small economy in the Indonesian context, D-D effects of tourism growth in Bali on the rest of Indonesia are likely to be minor. Tourism in Bali accounted for approximately five percent of total foreign exchange earnings in 2017-18 and around two percent of Indonesian GDP.[10]

Given open commodity and factor markets across Indonesia -- and especially between Bali and the nearby large, and industrialized economy of Java -- we would expect inter-regional factor movements and commodity trade to have responded quickly to demand shifts arising from its tourist boom, thereby subduing the backwash effects from tourism growth on prices and wages in Bali. This paper discusses how these inter-regional relationships may have affected outcomes in the Balinese economy in recent years.

[8] Up to the 2000s, agriculture was the major industry, and was renowned for its high level of productivity in the national context (Jayasuriya and Nehan, 1989; Bendesa and Aksari, 2017).
[9] For an analysis of the DD effects of tourism on the wider economy, with an application to Spain, see Inchausti-Sintes (2015) and references therein.
[10] Thus, the boom in tourism numbers is likely to have had a small net impact on the exchange rate, after controlling for other factors.

Dealing with Heterogeneity

The paper mostly refers to the influence of tourism in Bali in aggregate terms. Nonetheless, the authors are mindful that the tourist industry is heterogeneous in terms of scale of businesses (number of hotel rooms, value added and number of hotel employees), the characteristics of tourists (foreign and domestic, and country of origin within the foreign category), and location (varying within the tourism hub areas in the southern part of Bali, as well as in those areas where tourism is less developed).

Thus, tourism in Bali caters to a wide variety of consumers – including younger people looking for a beach and surfing experiences, people fascinated by scenic encounters and travellers with a more creative and philosophical bent attracted by special cultural, religious and artistic engagements (Vickers, 2012). Each in turn brings with it a different package of tourist services: from the five-star hotels in secluded environments like Nusa Dua to the bungalow experience in artistically dense Ubud area, and the backpacker and student friendly environments around Kuta and some of the surfing beach areas like Canggu.

Meeting these diverse set of demands requires special skill sets, organization and institutional arrangements. Although much of the data presented in this paper are aggregate, it focuses on following groups in particular:

- Tourists who stay in starred rather than non-starred hotels (which means mostly foreign tourists, although a considerable share of domestic tourists also stay in starred hotels).
- Tourists who mostly stay in the main tourism districts in southern Bali (Denpasar, Badung, Gianyar and Tabanan, or the the *Sarbagita* region, including the tourist hubs of Ubud, Kuta and Sanur).

Approach and Main Data Sources

In the discussion of the impact of tourism, a distinction is made between static and dynamic gains. The static gains refer to the influence that the increased number of tourists have on value added and employment in the industry. The dynamic gains relate to the productivity improvements of tourist activities proxied by value added per worker and the change in human capital of employees relative to other sectors.

Many discussions on Bali and Bali tourism treat Bali as an independent entity and not as a province of Indonesia.[11] We believe this is a flawed approach for an assessment of the effects of economic transformation. What happens in Bali is intimately bound up with its links with the rest of Indonesia, including national economic policies. Thus in the paper, we compare

[11] Thus common questions among the foreign community are: "How far is Indonesia from Bali?" Or in talking to a Balinese about an Indonesian from outside Bali, a foreign tourist might ask, "Is she from Indonesia?"

Bali selectively with several other provinces, and with Indonesia as a whole. One objective is to help identify unique aspects of structural change associated with tourism in Bali, separating them from processes of change that are common across provinces in Indonesia.[12] For example, similarities can be expected to be associated with a common macroeconomic environment, and open capital, labour and commodity markets across the country. In an effort to identify these effects, neighbouring West Nusa Tenggara (NTB) and East Java, and Yogyakarta have been chosen for selected coverage in this study, to help highlight some of the special features of the Balinese economy.[13]

The approach is empirical and mostly descriptive rather than econometric, informed by theories of economic transformation in a country that has experienced recent, rapid, transition from lower to middle income status. The main body of data analysed in the paper comes from official publications from the national statistics office (Statistics Indonesia or BPS) collected in national surveys and censuses, and in some cases from administrative data. A second set of sources are regional statistics, both from the provincial statistics office (BPS) and from other provincial government agencies. These data are supplemented with information obtained from periodic discussions with provincial government officials in tourism, planning (Bapeda) and the regional investment coordinating board (BKPMD) from November 2018 through to December 2019. .[14]

III. BALI'S TOURISM BOOMS

Bali has long been a target of tourism with numbers rising from several hundred thousand in the 1990s to over a million in the early 2000s and then, a decade after the Bali bombings of 2002 and 2005, rising steeply to close to four million by 2015 (**Figure 3.1**). From the mid-2000s, an increasing share of foreign tourists to Indonesia visited Bali, rising to close to 40% of the national total by 2018. Putting this in perspective, Bali accounted for less than two percent of the national population and less than half a percent of Indonesia's land area (**Figure 3.2)**.

[12] See especially Hill (2014) for a comprehensive survey of regional economic developments across Indonesia through to the end of the first decade of the 2000s.

[13] Yogyakarta is a smaller province in population and land area, like Bali, and has a significant tourist industry in a mainly services-based economy. West Nusa Tenggara is a neighbouring province, with a slightly smaller population than Bali (four million), while neighbouring East Java has a population of just under 40 million, the second largest in the country.

[14] While the authors are impressed by the array of data on Balinese development and tourism, we are also aware of some of the pitfalls in using secondary data and have sought to check with other sources, where possible, and to adjust for what appear to be anomalies in some of the data.

Figure 3.1. No. of Foreign Tourists to Bali and the Rest of Indonesia (m.)

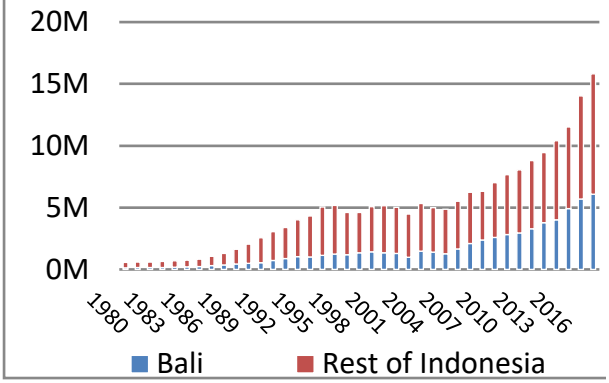


Figure 3.2: Growth in Tourist to Bali & Indonesia, and Bali's Share (RHS), 1980-18

Over the years, the composition of foreign tourists by country of origin has changed, with implications for the impact on the local economy. From the 1990s through to 2005, Japan was the major country of origin for overseas tourists to Bali but was overtaken by Australia in 2009-10 and then China, and India by shortly after. According to the country of origin, Australia and the People's Republic of China (PRC) have become the main tourist contributors to Bali since 2010. Chinese tourist visits began entering the top five of Bali's tourist country origin from 2006. By 2017, the number of Chinese tourists exceeded 1.3 million as the largest single country of origin followed closely by Australia, and then a big drop in numbers to India 260 thousand, Japan 250 thousand, United Kingdom 240 thousand and USA 190 thousand **(Table 3.1)**.

In the past few years the fastest growing countries of origin have been in China and India, followed perhaps surprisingly by European countries (Britain), and the USA rather than other Asian countries. Bali is not dependent on any one country, or only a few countries, for the majority of its tourists. Around 40-50% have continued to come from a range of countries, which helps provide stability if there are disruptions in in the flow from one country or region.

Table 3.1: Number, Annual Growth and Share of Tourist Numbers, Selected Countries 2000-2018

Country of Origin	Number of Tourists by Country of Origin	Growth in the Number of Tourists (% p.a.)		Share of all Bali Tourists (%)		
	2018 (000)	2000-10	2010-18	2000	2010	2018
China*	1356	46	28	0	8	22
Australia	1169	10	7	16	25	19
India	354	21	27	0	2	6
UK	271	-1	13	8	4	4
Japan	262	-4	1	26	10	4
USA	237	-1	15	6	3	4
Other	2422	7	8	44	50	40
Total	6070	6	11	100	100	100

*China data for 2001 and 2017

Sources: Bali Province in Figures 2000-2013, Statistic Indonesia, bali.bps.go.id

Since 2004 the Central Statistics Agency (BPS) has recorded the number of domestic tourist arrivals to Bali, the number recorded has been almost twice that of foreign tourists[15]. However, data on guests at starred hotels (total of all stars) 2000-2017, shows that the number of domestic guests was less than half the number of foreign guests, indicating that many domestic guests stayed in non-starred hotels or other accommodation such as guesthouses **(Figure 3.3)**. However, these domestic tourists were quite significant in supporting Balinese economy, especially during the Bali bombing period in the early 2000s, when the number of foreign tourist visits declined. The improvement of Indonesian economy after the AFC in 1997/1998, and the emergence of low-cost airlines linked to Bali, which began around 2000s, also played a role in increasing domestic tourist visits to Bali[16].

The rapid growth of tourists, both foreign and domestic, to Bali correlates with the rapid growth in construction of hotels, both starred and non-starred **(Table 3.2)**. In the year 2000 there were 113 star-rated hotels with just over 17000 rooms, rising quite slowly in the first decade of the 2000s. The same pattern also applies to non-starred hotels. However, between 2015 and 2017, the number of registered starred hotels reportedly grew by 96%, and non-starred hotels even by a higher 140%. One explanation for this big increase was the end of the moratorium on hotel construction in 2017, especially in the southern region of Bali.[17]

[15] Data sources for domestic tourists come from a survey by the Bali Government Tourism Office which was also published by BPS on https://bali.bps.go.id/statictable/2018/02/09/29/kunjungan-wisatawan-domestik-ke-bali-per-bulan-2004-2018.html.

[16] Most of domestic tourists visit Bali by air transport. Some low cost carrier (LCC) airlines in the decade of the 2000s were Citilink, Lion Air, Malindo Air Air Asia, Jetstar Asia.

[17] Some sources state that many new hotels were built during the moratorium period, 2010-2016 because potential investors already had licenses before 2010. The opening of these new hotels thus peaked in 2017. https://www.voaindonesia.com/a/bali-gagal-terapkan-moratorium-pembangunan-hotel/1839071.html

Source: BPS – Statistik Indonesia, bali.bps.go.id

Table 3.2: Number and Growth of Hotels and Rooms in Starred and Non-starred Hotels in Bali 2000-2017

Year	Starred Hotel				Non-Starred Hotel			
	Number (Unit)	Growth (%)	Num. of rooms (Unit)	Growth (%)	Number (Unit)	Growth (%)	Num. of rooms (Unit)	Growth (%)
2000	113		17027		1255		19529	
2005	146	29%	20110	18%	1477	18%	21822	12%
2010	155	6%	21133	5%	1536	4%	21931	0%
2015	281	81%	31596	50%	1798	17%	28717	31%
2017	551	96%	66277	110%	4323	140%	58617	104%

Sources: Bali Province in Figures 2000-2018

The construction of hotels in Bali is mostly located in coastal areas, hills or mountains that have exotic natural scenery or beach fronts. The hotel locations are spread –- though unevenly -- throughout Bali, serving different market segments. Most of these locations are less suitable for agriculture, especially rice farming. However, as a result of economic agglomeration, the southern region has been the choice location for the construction of hotels, after initial investments concentrated there in the 1970s and 1980s. This is especially true of the starred hotels, over the past two decades, despite regulatory and other efforts by the government to relocate hotels to other parts of the island.

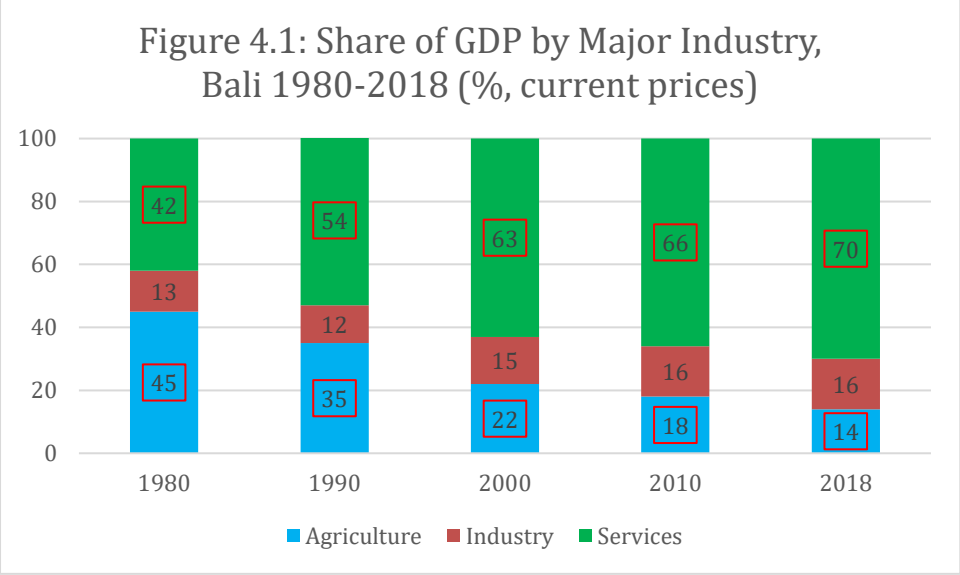
IV. STRUCTURAL CHANGE

Rapid tourism growth in Bali has been associated with the transformation of the economy and employment away from agriculture and in favour of services. It was most marked in the decade before the Asian Financial Crisis, although structural change was also rapid in the second decade of the 2000s. We focus on developments in services, but also examine changes in tradable goods industries, with particular reference to the D-D effects discussed above.

From Agriculture to Services

As with advanced European countries before them, the early transformation of the East Asian economies in the 20th and early 21st centuries had been associated with a shift from agriculture to industry and then later to services, as countries gained middle income status (World Bank, 1993; Asian Development Bank, 2020). In the early stages, in the 1970s to the 1990s, Indonesia was no exception. However, new service industries have increasingly become one of the main foundations of productivity growth, creating better jobs for people moving out of agriculture (Pangestu and Findlay, 2016). Tourism is one of those industries experiencing rapid growth in output and productivity in the 21st century.

Economic development in Bali took a different course to the rest of Indonesia from the 1980s through to the turn of the century. The industrial sector was never large. The last two decades of the 20th century marked a significant increase of the share of value-added in services in Bali, followed by a levelling off as these sectors began to dominate the economy (60% of RGDP by 2000; **Figure 4.1**). This was counter-balanced by first a sharp decline and later a slower fall in the share of agriculture in RGDP. The latter's share fell from 45% in 1980 to less than half or 22% in 2000. At the same time, industry's share of RGDP rose only very slightly (from 13 to 15% in 1980-2000).[18]



Statistik Indonesia, National Accounts, various years

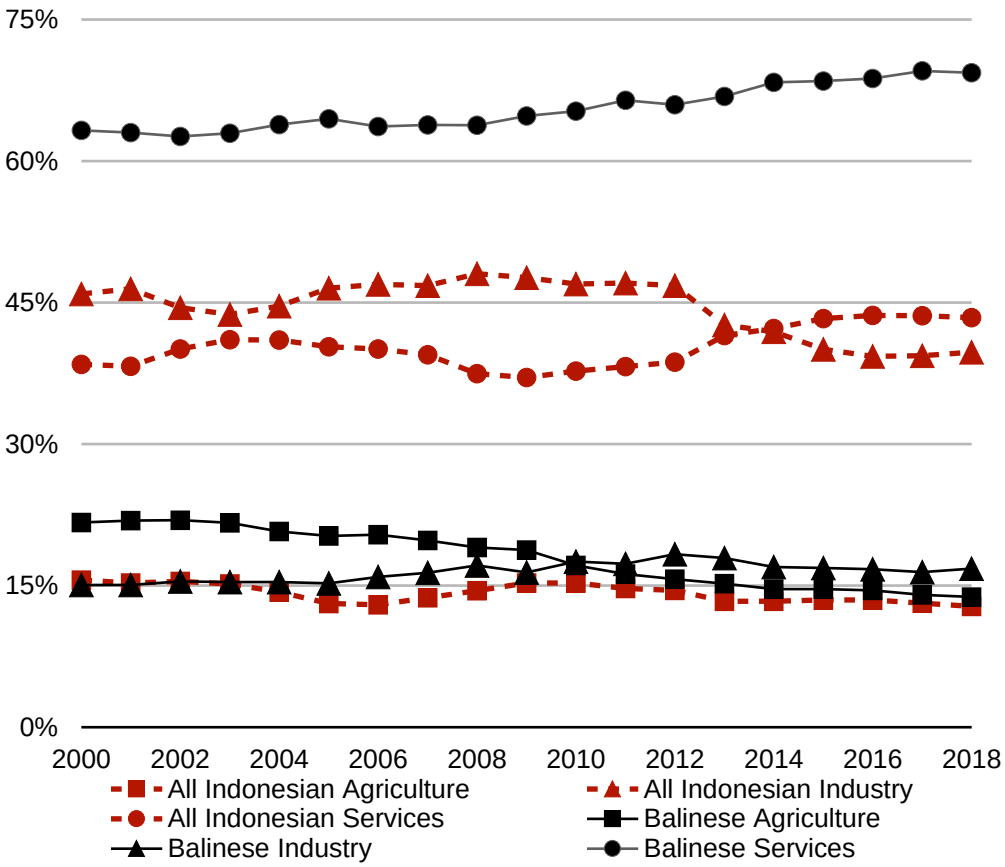
[18] The classifications follow the World Bank and ADB categories: Industry is defined to include mining, manufacturing, utilities and waste disposal and construction. Services covers all other sectors (trade, hotels and restaurants, transport and communications, finance and business, and all government, social and private services.

From the year 2000, the share of services in RGDP continued to rise from 63 to 70 percent through to 2018, although at a slower rate than during the previous two decades –.At the same time, the agricultural share continued to decline to a mere 14% by 2018. Meanwhile, while it too grew, the relative size of the industrial sector was almost stagnant, again rising only marginally from 15% to 17% in 2000-2018, a rise mainly contributed by the construction sector rather than manufacturing.

Figure 4.2 demonstrates Bali's different pattern of growth to much of the rest of Indonesia in the 2000s. For Indonesia as a whole, the industrial sector rather than services continued to dominate GDP through to the middle of second decade of the 2000s (**Figure 4.2**). Only then was the industry share finally surpassed by the services.

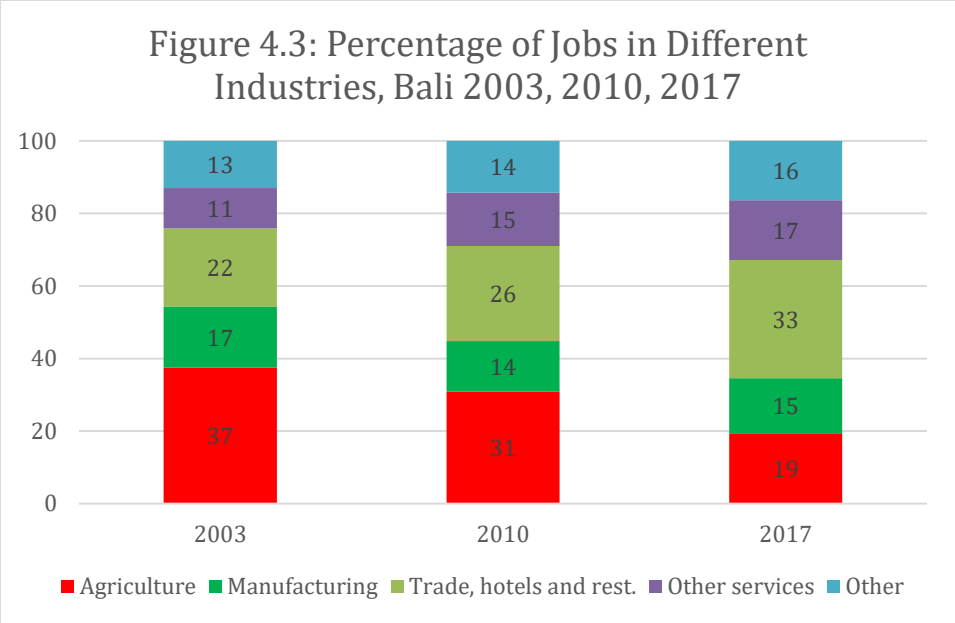
Not surprisingly, these changes are reflected in changing work patterns in Bali.[19] A large decline in the agricultural share of the workforce accelerated from around 2010 (**Figure 4.3)**. From 2010-2017, the share of agricultural workers fell steeply from over 30 to just under 20% of all employment, well below the percentage of workers employed in the tourist-oriented trade, restaurants and hotels industry.

Figure 4.2: Share of All Indonesian GDP and Bali RGDP in Current Prices by Main Industry Sectors 2000-2018 (Percent)



Sources: BPS – Statistik Indonesia, bali.bps.go.id, and bps.go.id

[19] Employment data are for the 2000s, specifically from 2003 to 2017 covering the period of slower growth and recovery of tourism after the Bali bombings through to the global crisis in 2010 and the post-resources boom period in Indonesia through to 2017, a time when tourism accelerated in Bali.



Source: National Labour Force Survey, August Round 2003, 2010, and 2017

The minor role of the industrial sector in Bali's output and employment structure might at first glance cast doubt on future prospects for Bali's economic development. It will be shown, however, that the services driven by the tourism industry in Bali turns out to have dynamic features not considered in earlier development models, or in some D-D discussions. First, we look briefly at the main drivers of economic change in agriculture and industry. Then the discussion focuses on services, demonstrating how these activities have been influenced by the growth of tourism (*indirect effects*) and linkages with tourist related activities (*direct effects*), as well as identifying some of the dynamic dimensions of tourism development.

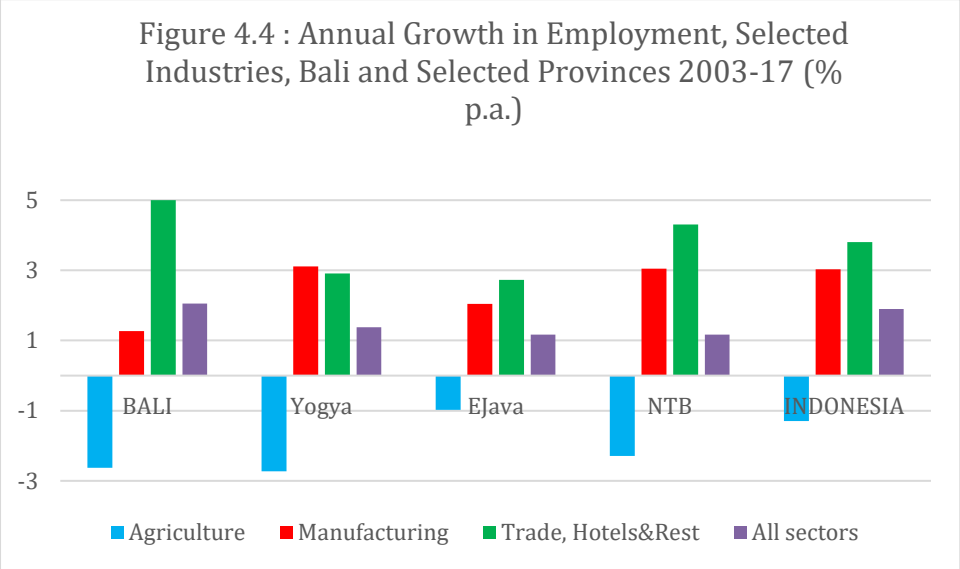
Agriculture

People who were born into farming families in the 1980s had entered working age by the 2000s and had witnessed the rapid growth of Bali tourism for more than a decade. Like in the rest of Indonesia, better education relative to their parents and limited opportunities for work or business in the countryside meant that many young Balinese did not return to agriculture or only did so on a part-time basis.[20] At the same time, the recovery of Indonesian economy following the AFC in 1997/1998 created an increasingly attractive property business in Bali in the 2000s.[21] The growth of Bali's population through migration and numbers of Jakarta-based businessman coming to Bali –- either to develop their businesses or just to buy a house or land in Bali as an asset, often for 'prestige' -- appears to have been associated with a flourishing of the property business in Bali. For some Balinese landholders, sale of property offered better prospects than continuing in farming.

Looking more carefully at the data on employment in agriculture, it is noteworthy that *absolute numbers* engaged in agriculture also began to fall steeply for the first time from around 2010, whereas they had increased during the previous decade when the tourism industry struggled.[22] Employment in agriculture fell by an astonishing five percent per annum from 2010.. This is one indication of a quite strong direct D-D effects of resources being drawn out of agriculture as a result of a booming tourism sector. Except for Yogyakarta,

[20] Suryahadi et al. (2018) develop a similar argument for employment trends in the rest of Indonesia in the 2000s.
[21] See the discussion of the industrial sector below for further details.
[22] The National Labour Force Survey records just over 400,000 people employed in the sector, only two-thirds the number less than a decade earlier.

where the service industry had also grown rapidly, this change in Bali surpassed, by a considerable margin, the share of job losses in agriculture experienced by other neighbouring provinces and the rate of movement out of agriculture for all Indonesia (**Figure 4.4**).



Source: National Labour Force Survey, August Round 2003 and 2017

The welfare effects of these developments in agriculture are complex and beyond the scope of this paper. Suffice to say that there were clearly winners and losers among lower income sections of the community.. Three points are worth making.

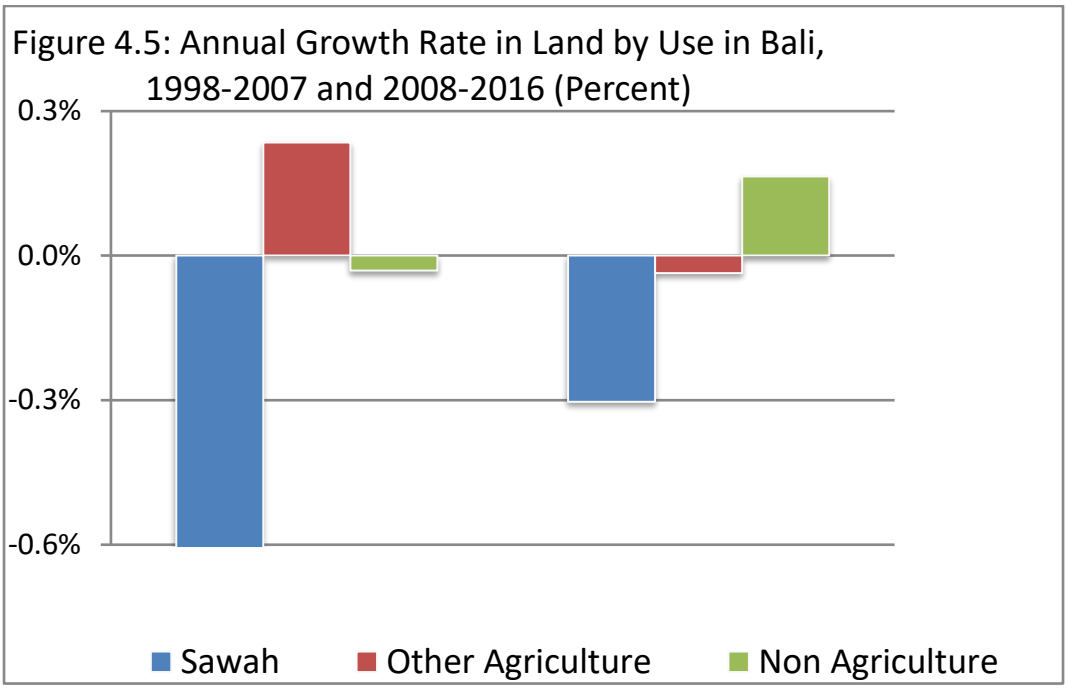
First, there is some debate about how much the supply of fertile agricultural land and the traditional organization of irrigation (*subak*) in Bali has been threatened by housing developments and the sale of agricultural land to developers associated with the tourism business.[23] Certainly the decline in *sawah* (wet rice fields) area was quite rapid, especially in the period 2001-2007 (more than 0.6% per year), although this process slowed in the subsequent period through to 2016 **(Figure 4.5)**. Water shortages associated with the demands of the tourist industry have had an impact on irrigation systems and especially the *subak* organization of irrigation, although there is limited data on how widespread these effects have been.[24] Bendesa and Aksari (2017) have also lamented the effects of the impact of falling employment in agriculture – and especially in the rice agriculture – on social and cultural as well as economic life in Bali.

Second, regional effects are likely to be especially important in regard to employment trends and their welfare consequences. It seems clear that the conversion of rice fields has been faster in those areas adjacent to the rapidly growing *urban centres*, especially in the south. Conversion of land usage and rising land prices appear to have had similar negative effects on the welfare of some lower income groups deprived of their principal source of livelihood, as they have had in rapidly industrializing areas of Java.[25]

[23] Here the traditional agriculture system (subak) has been threatened by housing development (property business) (Aini, 2016.) The boom in accommodation business in Bali, like villas, shops, hotels, etc. has also offered investment opportunities in construction sector (Azkia, 2017).

[24] For example, Cole (2012) strongly criticized the effects of tourism on water supply for consumption and production purposes in the tourist-intensive areas of Bali, based on a case-study approach; this study conducted a decade ago continues to be cited in the local media as evidence of these effects. See below for further discussion of these effects.

[25] However, even close to urban areas not all the effects have been negative. There is some evidence which suggests that tourism has provided incentives for a more modern and water-efficient agriculture through a shift towards higher value agricultural products.



Statistik Indonesia, Bali Province (year?), *Land Area According to Its Uses in Bali Provinces 2000-2017*.

In contrast, these backwash effects seem to have been much weaker in *upland* areas of Bali further from the main urban centres. Here there have been more concerted efforts to preserve the traditional system of irrigation, and the accompanying social organization and cultural and religious practices. [26]The people and the government of Bali have also responded to the threat to traditional agriculture by promoting "*Desa Wisata*" (Tourist Villages), integrated with eco-tourism. By 2017, there were 126 Tourist Villages in Bali, promoting the idea of sustainable development (Pickel-Chevalier, Bendesa and Darma Putra; 2019).

Finally, and often neglected in the discussion of agricultural developments in Bali, falling employment associated with rapid economic change is not unexpected. Low productivity in agriculture has been associated with high levels of poverty throughout Indonesia, and especially in land-scarce Java-Bali through to and into the 21st century (Jayasuriya and Nehen, 1989; Suryahadi et al., 2018). Given conditions in Bali today, it will be astonishing to some that in the 1970s and 1980s many Balinese were landless or near landless migrants to other land abundant regions in Indonesia (especially in Sulawesi). They came from poor rural backgrounds and sought a new future by working small plots of land allocated to them under Indonesia's transmigration scheme (Hardjono, 1986).

Small farm size and low productivity in agriculture have also been suggested as the significant factors accounting for the fall in agricultural employment (Bendesa and Aksari, 2017: 84-87). However many Balinese appear to have been fortunate enough to be able to adjust to low earnings by taking on non-farm wage jobs associated with the tourist boom. This is likely to have happened first through commuting and temporary migration to the cities, and later more permanent rural-urban migration.[27] It seems reasonable to

The number of small, unregistered enterprises fell by 17% 2003-2013, while the number of legal entities increased by 13%, reportedly mainly consisting of standardized products for the tourists as well as export markets (see (BPS, 2019b).

[26] For example Jatiluwih area in Tabanan has been designated as a World Culture Heritage (WCH) area by UNESCO, and there are concerted efforts to preserve the *subak* system of farming and the associated cultural heritage.

[27] The 2015 Intercensal Survey (SUPAS) records Bali as having one of the highest rates of commuting (close to 6%) of all persons aged five and above in Indonesia. Among the workforce, rates of commuting were also much higher than the national figure (9.5%, versus 6% in all Indonesia). See BPS (2015 and 2016)

conclude that diversified rural employment in Bali, can partly be attributed to employment opportunities patterns in tourism and related activities.[28]

Thus, there has been a positive side to the shift of people out of agriculture. Real labour productivity (output per worker) in agriculture rose quite steeply as people moved out of this sector and there was increasing commercialization. According to data from the national accounts and labour force survey (August 2017 round), real productivity almost doubled over the seven year period 2010-2017 -- an annual increase of around eight percent -- much faster than the regional (Bali) average for all sectors; it was also well above the national figure for productivity growth in agriculture (2.6% per annum).[29] Most Balinese farmers and workers almost certainly benefited economically in this latest period of tourism expansion, even if village ties became more tenuous.

Industry

As indicated above, from the 1980s the industrial sector has never played a major role in the Balinese economy and the industry's percentage of RGDP has remained well below 20% of the total. Most of the increase in the share of the RGDP in favour of industry came from growth of the construction sector, which accounted for five percent of total value added in RGDP in 2000, increasing to nine percent in 2018; the manufacturing share only increased marginally to six percent of RGDP in the same year.

The demand for consumer and industrial goods is mostly supplied by neighbouring East Java, one of the major manufacturing hubs in the country. Many textiles and various handicrafts for the tourist industry are imported from the East Java region and also from Yogyakarta. Only the food and beverage processing industry still flourishes in Bali, including some the large beverage companies such as Bintang Beer, Coca Cola, Teh Botol Sosro and Aqua. Consistent with its share in RGDP, manufacturing has only accounted for a small share of total jobs in Bali, compared with neighbouring regions (see Figure 4.4 above). Manufacturing had provided 10-15% of all jobs in Bali in the 1980s and 1990s, a share which was much lower than in most of the Java provinces where the figure was 20% or more.[30] During the 2000s, the growth of manufacturing jobs was disappointing, expanding at an annual rate of a little over one percent per annum in Bali, well below the national rate of jobs growth as well as that experienced by other comparator provinces (see Figure 4.5). Like in agriculture, D-D effects would seem to have affected manufacturing employment in Bali.

Further, unlike in the rest of Indonesia, output per worker was low in manufacturing in Bali, relative to most other sectors at the beginning of the 2000s, and had even fallen well below productivity in agriculture by 2017. This suggests the influence of two sets of factors: direct links between the tourist industry and small-scale and cottage industries; and, second, cost disadvantages for some manufacturing establishments. The latter might be attributed to D-D forces pushing up the price of land and other non-tradable commodities and services in Bali.

[28] According to data from the 2013 Agricultural Census, the share of income among farming households originating from non-agricultural wage employment (35%) was slightly *higher* than that from farming activities (34%) –- the balance mainly coming from non-agricultural businesses and transfers. In contrast, farming accounted for almost half of all income of agricultural households for Indonesia as a whole, double their earnings from non-agricultural businesses.

[29] Expressed in 2010 prices, real value added per worker in agriculture rose from Rp. 24 to 43 million a year and was significantly higher than in all Indonesia (Rp. 23 million) by 2017.

[30] See Hill, 1989: 14-15; Manning and Purnagunawan, 2014: 355

Services

We now turn to services that began to dominate the Balinese economy from the early tourist booms in the 1980s, rising to nearly 70% of total RGDP by 2018 (see Figure 4.1). The conventional story of such a transformation in the Indonesian context has been expansion of government-dominated services, and the informal sector (Manning, 1998; World Bank, 2010). While this might have been the case in Bali in the early years during and after the oil boom in the 1970s and 1980s, the picture changed quite profoundly as tourism began to recover in Bali in the first decade of the 2000s. Unlike the enclave nature of industries associated with D-D development, tourist growth encouraged the expansion of a range of both labour- and skill-intensive service industries, the latter associated with higher levels of education and engagement in the digital economy. These changes are captured in data for the period 2010-18. **Table 4.1** breaks the services sector into its main sub-sectors: hotels, other accommodation and restaurants, cafes and bars, transport, trade and information and communications. All of these activities grew faster than total RGDP in this period and together accounted for over one-third of all RGDP and half of total services.

As tourism flourished, Bali had surely made a significant transition towards a very different kind of services-based economy by the end of the second decade of this century.

- In 1980, hotels and restaurants, accounted for less the five percent of Bali's RGDP and transport and communications just over nine percent (Jayasuriya and Nehen, 1989: 331-48). Nearly 40 years later, together these two industries made up 35% of regional product.

- In 1980, public administration and defence contributed 20% to the total value of all **services** in Bali, whereas four decades later the share was less than 10%.

We now look at employment and productivity in more detail, and then turn to education and skills, including the now quite widespread internet engagement of people working in tourist-related industries. A final section looks briefly at local economy impacts and some issues related to the problematic area of the environment.

Jobs and Productivity. Parallel with the development of services in the 2000s has been the growth in *jobs and productivity* connected to tourism in Bali -– in hotels, restaurants and petty trade, in particular. Trade, restaurants and hotels now accounted for one-third of all jobs in 2017 , nearly three times that in manufacturing and twice the share in agriculture, reversing the situation a decade or so earlier. Growth was well above the national average and twice as fast as in comparator provinces, except for neighbouring NTB, where tourism was starting from a much smaller base (see Figure 4.5 above).

Output per worker and levels of human capital were higher in the rapidly growing industries associated with tourism. **Figure 4.6** shows these patterns. Transport and communications, and hotels and restaurants, which both grew rapidly in the 2010s, both recorded high value-added per worker compared with most other service industries, and (as we have seen) also with agriculture and manufacturing.[31] Value adder per worker in the two industry groups shown in Figure 4.6 were considerably higher in Bali in 2017 than all of Indonesia. This implies that these activities were more skill-intensive in Bali than in regions where tourism was less

[31] The level of productivity was a standout in information and communications --more than *five times* the value of any other services industry, except for real estate in 2017.

developed. For example, value-added per worker in tourist-oriented activities was more than twice that in the rest of Indonesia.[32]

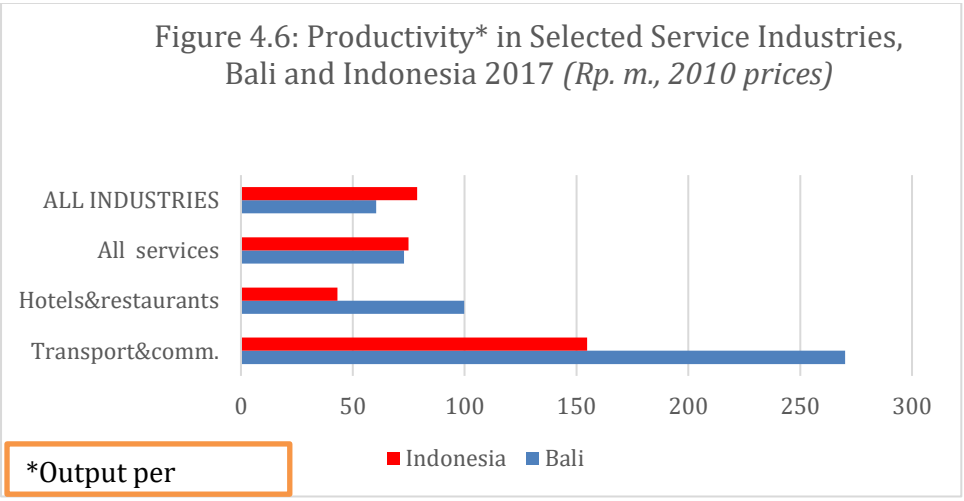
Table 4.1: Share and Growth of Value Added in Various Service Activities in Bali, 2010-2018 (%)

Services	% of RGDP					Growth 2010-18
	2010	2012	2014	2016	2018	(% p.a.)
Accommodation/Hotels	*10.5*	*10.9*	*11.2*	*10.8*	*11.0*	*6.8*
Cafes, bars and restaurants	*8.6*	*8.4*	*8.4*	*8.9*	*9.3*	*7.2*
Transport and wharehousing	*7.4*	*7.5*	*7.4*	*7.4*	*7.4*	*6.2*
Wholesale and retail trade	*6.6*	*6.5*	*6.7*	*6.9*	*7.2*	*7.3*
Information and communications	*6.3*	*6.5*	*6.4*	*6.8*	*7.1*	*7.7*
Real estate	4.9	4.7	4.8	4.7	4.6	5.5
Finance and insurance	3.9	4.0	4.2	4.3	4.0	6.5
Automotive dealers&repair	2.1	2.0	2.1	2.1	2.0	6.0
Business services	1.1	1.0	1.1	1.1	1.1	6.1
Other services*	13.9	14.4	14.9	15.4	15.2	7.3
SUB-TOTAL SERVICES	65.3	65.9	67.2	68.4	68.9	6.9
GRDP	100	100	100	100	100	6.2

Note: Data are in 2010 prices.
* Includes Social services, government, community and personal services.

Source: Statistik Indonesia, *RGDP by Industry, 2010-2018*, Bali Province

Figure 4.6: Productivity* in Selected Service Industries, Bali and Indonesia 2017 *(Rp. m., 2010 prices)*



Source: Statistik Indonesia, *RGDP by Industry 2017*, Bali Province and Indonesia, and National Labour Force Survey, August 2017.

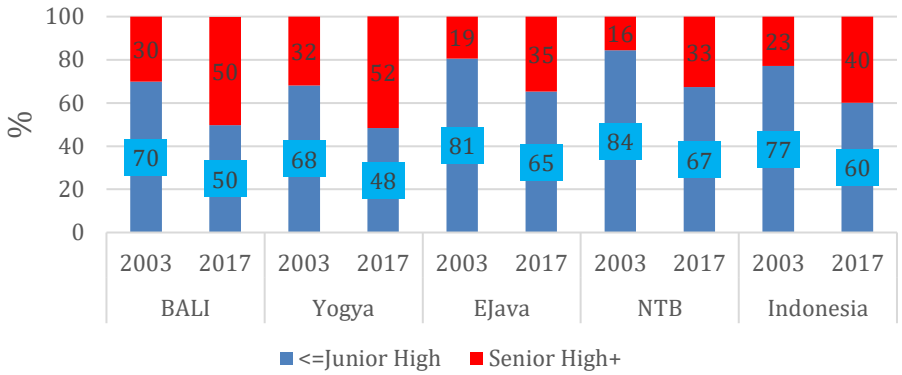
Education and Skills

Improved levels of schooling among the young graduates underpinned some of these changes. Not only did many Balinese move out of agriculture into tourist-related activities. The education level of those working in non-agricultural work also changed significantly, partly in response to the growing technical complexity of

[32]The difference in productivity was much smaller between Bali and the rest of Indonesia in most other service activities that had few direct connections with tourism (eg., public administration, health, education and private services).

tourism linkages, especially in communications and information technology. While improvements in the education of the employed persons was taking place Indonesia-wide, Bali has been well ahead of the national average (Suryadarma and Jones, 2013). For example, the share of senior high and tertiary educated workers reached 50% in Bali compared with 40% nationwide in 2017.[33] While the university city of Yogyakarta experienced similar improvements to those in Bali, progress in other provinces was slower (Figure 4.7).

Figure 4.7: Level of Completed Schooling of Employed Persons, Bali and Selected Provinces, 2003-2017 (%)



Source: National Labour Force Survey, August Round 2003, and 2017

The promotion of knowledge and skills associated tourism has important externalities and has been supported by educational institutions at multiple levels: in universities and colleges, and in vocational schools at the secondary level in Bali. In 2017-18, there were four tertiary institutions all offering courses specializing in tourism, with a total of close to 6000 students (Table 4.2). At the secondary level, tourism majors are the most in demand by some one hundred thousand students studying in vocational schools. (Table 4.3).[34]

Table 4.2. Tourism-related Higher Education Institutions and Student Numbers in Bali 2017-2018 and 2018-2019

No.	Institution Name	Initials (Indonesian)	Category	Number of Students	
				2017-2018	2018-2019
1	The Advanced School of International Tourism	STPBI	Private	1,411	2,041
2	The Triatma Advanced School of Tourism	STPTJ	Private	1,272	872
3	The Denpasar Academy of Tourism	APD	Private	751	1,002
4	The Nusa Dua Advanced School of Tourism	STPNDB	Public	2,478	2,724
	TOTAL			5,912	6639

Source: Education Department, Bali Province 2018.

[33] The improvement has been experienced by both males and females. Gains in Bali were greatest among females, although (for employed persons) the share of senior high graduates and above was still higher among males in 2017 (55 versus 44 percent).
[34] One externality has been access to well-paying jobs for Balinese working on cruise ships abroad, helping raise living standards at home. Wages were around 800 dollars per month, almost four times the minimum wage at home. See https://bali.tribunnews.com/2018/04/10/tki-asal-bali-yang-bekerja-di-kapal-pesiar-diistimewakan-gajinya-paling-rendah-800-dollar?page=3

Table 4.3: Number of Vocational Schools and Number of Students by Area of Expertise 2018

No	Areas of Expertise	Number of schools	Number of Students	Student share
1	Technology and Engineering	35	8,692	9%
2	Information and Communication Technology	66	10,631	11%
3	Health and Social Work	50	4,343	4%
4	Business and Management	45	13,22	14%
5	Tourism	120	58,957	60%
6	Art and Creative Industry	24	1,672	2%
	TOTAL	**340**	**97,515**	100%

Source: Education Department, Bali Province 2018.

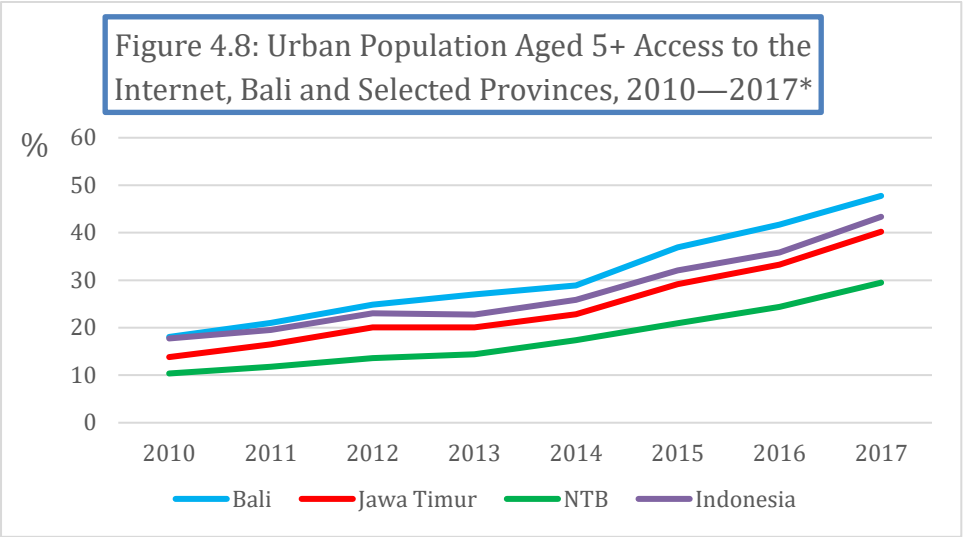
The Internet and Digital Economy

The Balinese population has adjusted quickly to the global demand for digital and IT-friendly skills brought to the fore by the boom in tourism. This includes access to the internet and its usage for booking accommodation and travel, on-line orders of food and for financial and insurance services, as well as taking advantage of on-line travel services, such as **Gojek** and **GoCar.**

In regard to the internet, the percentage of population aged 5 years and over who had accessed the internet in the last 3 months in Bali was higher than the national figure over the years 2010 to 2017, and also compared to neighbouring provinces, East Java and NTB. Data for urban areas are shown in **Figure 4.8**.[35] The accommodation and food services activities sub-sector, the largest sub-sector in Bali services, had a share of internet users of more than 23% in 2018. It uses the internet technology intensively, as does the finance and insurance sub-sector (**Table 4.4**).[36]

We were informed that the large majority of hotels in Bali use this technology in their daily operations; from the front office to the back office, they are all connected through complex ICT systems. From the 2010s, hotel marketing methods in Bali, both in starred and non-starred hotels, began to join leading e-commerce sites such as *Agoda* and *Traveloka*. Not only hotel businesses, but also smaller guesthouse operators can be accessed easily via 'room-sharing' platforms such as *Airyrooms* or *Airbnb*.

[35] As might be expected usage of the internet was much less intensive in rural areas but here too Bali was ahead of other provinces, rising from less than 10% usage in 2010 to just under 25% in 2017; Indonesian usage was recorded at 20% in 2017.
[36] See Bps (2019c).



* Accessed in the past three months.
Source: Statistik Indonesia, Percentage of the Population that Accessed the Internet 2010-18 by Province and Urban-Rural Classification (see https://www.bps.go.id/subject/2/komunikasi.html#subjekViewTab3)

Table 4.4: Population Aged 10 and Above Who Accessed the Internet for Accommodation&Food, and Finance&Insurance in Bali and Selected Provinces, 2017 (*%, previous 3 months*)

Region	ACCOMMODATION AND FOOD SERVICE ACTIVITIES		FINANCE AND INSURANCE SERVICES	
	Urban	Rural	Urban	Rural
BALI	***22.41***	***12.98***	***5.22***	***6.27***
DKI Jakarta	6.44	-	6.33	-
Yogyakarta	9.73	4.77	3.70	1.03
East Java	5.43	2.44	3.90	2.16
NTB*	7.20	3.10	5.01	1.93
Indonesia	**5.59**	**2.79**	**4.32**	**1.69**

Source: BPS – Statistik Indonesia, National Socio-Economic Survey (SUSENAS), 2017.

Bali's quick response to ICT in the financial and insurance sub-sector was demonstrated during the boom of Chinese tourists to Bali, especially in 2017-2018. Balinese responded to this boom by applying the *We Chat Pay* and *Ali Pay* electronic money payment systems. This payment system is helpful in simplifying the transactions process between Chinese tourists and local employees.[37]

Transportation has also become easier in Bali after the entry of *GoJek* and *GoCar*. Besides serving consumers in general, these bodies have also facilitated tourists as transportation service providers, as well as boosting sales of food and beverages. Thus, not surprisingly, research indicates that *GoJek* made a significant contribution to the Denpasar economy in 2017 and 2018.[38].

[37] Although Bank Indonesia (BI) strongly criticized the implementation of this payment system, as it did the Bitcoin payment system that appeared earlier. Later, several national Fintechs also began to enter Bali including, OVO, Go-Pay, and Dana.
[38] A study by the University of Indonesia estimated that Gojek's contribution to the Denpasar economy amounted to Rp1.9 trillion, or about six percent of Denpasar's RGDP at current prices in 2018 (Sukarelawanto, 2019).

Links to the Local Economy and Environment

The boom in the tourism industry has also provided incentives for local Balinese entrepreneurs to develop business strategies for souvenir outlets using modern management. Since the 1980s Bali is famous for its traditional art market, Sukawati located in the district of Gianyar, which is one of the legendary art markets in Bali. Before the era of modern souvenir outlets, such as Khrisna souvenirs, which have dominated the souvenir outlets industry recently, the Sukawati market and other traditional art markets were the choice of tourists for souvenirs. Since around 2006, modern souvenir outlets have sprung up with the concept of modern management that works together with transport drivers or tour guides. This is not new; art shops around Ubud and Celuk have long collaborated in business. However, the success of a souvenir outlets business like Khrisna is related to scale and affordable prices for mass-produced products.[39] At the same time, the government has sought to anticipate concerns about the future of the traditional art markets, which are unable to compete with modern souvenir outlets, by conducting various market revitalization programs.[40]

Among associated negative effects of tourism, environmental degradation, is highlighted by increasing water scarcity (see above), but also extends to degradation of heavily used tourist locations such as coastal and marine environments. For example, excessive water use in tourist facilities has been blamed for falling levels of ground water and reduced water availability for local consumers. Though rigorous analysis of these issues is sparse, anecdotal evidence suggests that rapid growth in tourism is likely to be placing considerable pressure on the natural resource base and environmental assets.

Of course, such problems –- negative externalities -- are not associated only with growth of tourism; economic growth through industrialisation has historically been associated with high levels of environmental degradation. The challenge is to formulate and effectively enforce an appropriate regulatory regime that can conserve natural resources such as water and other environmental assets while enabling Bali to benefit from the growth of the tourist industry. This is an issue that requires urgent policy attention particularly because the sustainability of the tourist industry itself is critically dependant on Bali's natural beauty and pristine environment.

While some of these negative influences on the environment have received attention, it is also important to recognize some of the positive external effects of tourism. For example, it has stimulated creativity and fostered a range of skills in Bali –- from the internationally well-known artists who have taught western painting in Ubud to young musicians who have participated in the national and even the world music industry in Kuta (Vickers, 2012).[41] Balinese 'contemporary' culinary skills have also increased with tourism. On-line food order platforms suggest that much of the food served by restaurants around Denpasar are 'contemporary' types of food.[42]

[39] Krisna is owned by Ajik Krisna, a new entrepreneur from Bali. Krisna has around 2000 employees and 8 outlets based in Bali (Tumanggor, 2019).

[40] One initiative has been to start renovating the buildings of Sukawati art market (Gunarta, 2019).

[41] Superman Is Dead (SID), Dialog Dini Hari (DDH), and Joe Alexander are some Bali-based musicians who have successfully entered the national and international industry.

[42] See the *Go-Food* web-site. Go-Food is a part of Go-Jek, a ride sharing digital platform for food orders; this shows that at least the six most famous foods served by restaurants around Denpasar are contemporary types of food (Reisha, 2019).

V. CONNECTIONS WITH THE REST OF INDONESIA: MIGRATION, WAGES AND PRICES

Situated between Java and the eastern Indonesian islands, Bali is strategically located for economic interaction with other regions of the country. This geography is one likely explanation for the absence of a stronger D-D effects from the tourist boom. We argue that links with rest of Indonesia have helped to keep the Balinese tourist industry competitive in the Asia-Pacific region and contributed to more jobs for both Balinese and other Indonesians. The section focuses on migration into Bali from the rest of Indonesia, which accelerated in the 2000s. This leads to a comparison of wage levels and trends between Bali, and other provinces, an examination of price and wage movements in Bali relative to the rest of Indonesia and a simple test of co-integration of wages between Bali, West Nusa Tenggara (NTB) and East Java.

Migration from the Rest of Indonesia

How much has development of the tourist industry depended on the supply of labour and skills from elsewhere in Indonesia? Over the past four decades, Bali has progressively transformed from a 'net-outmigration' province in which more people moved out to other provinces than settled in Bali, to one where the reverse applied: increasingly from the mid-1980s net migration was positive; more people took up jobs and residence in Bali than left the province. The flourishing tourist industry has been interlinked with the in-migration of more and more Indonesians from outside Bali, attracted by job opportunities and higher wages.

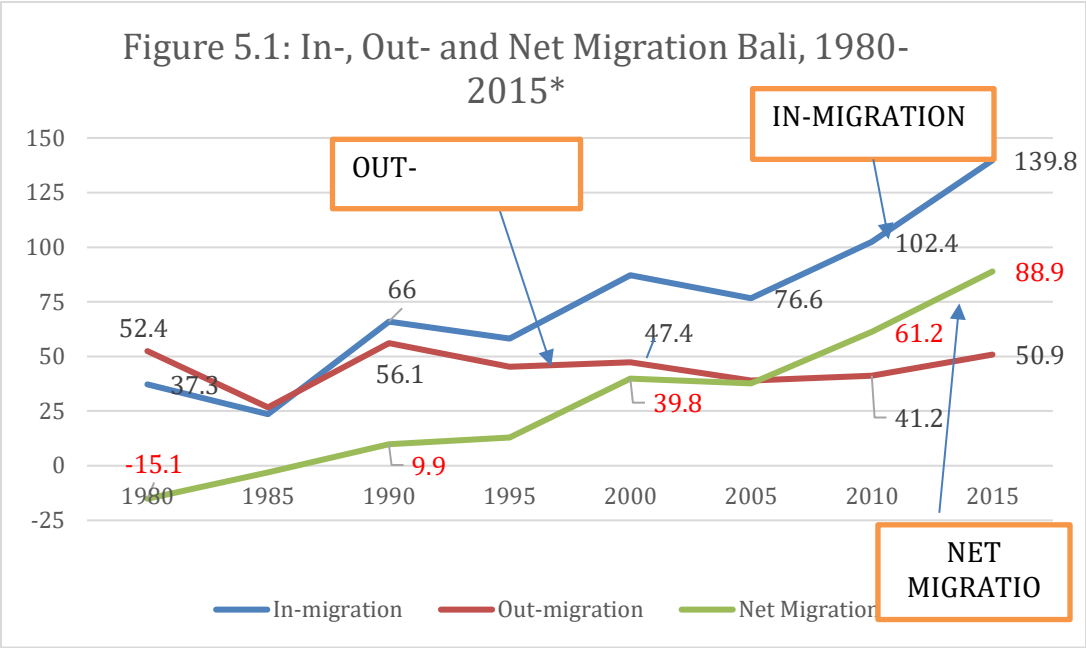
Figure 5.1 tells the main story. It shows data on **recent** migration into and out of Bali –- people who had moved across provincial boundaries for stays of six months or more in the previous five years.[43] *Net migration* became positive in the 1990s.[44] The number of people settling in the island over the previous five years rose continuously from around 30-40 thousand in the 1980s to 140 thousand people in 2015, with minor glitches before the Asian Financial Crisis and in the early 2000s. In contrast, the number of people who moved to live outside the province, or returned to their previous place of residence in the previous five years, was more or less stable, amounting to 40-50 thousand people 1980-2015.

Overall, the number of **net** (recent) migrants was thus close to 90,000 in 2015. This was more than twice the number in 2000, or a net (recent) migration rate of around 2.5% of the total population of slightly under four million in the same year. After the Bali bombings in the 2000s Bali had become a significant destination area for people from the rest of Indonesia –- although the numbers were still quite small in absolute terms compared with other attractive provinces for work in Indonesia.[45]

[43] The figures are calculated from data from the censuses and intercensal surveys undertaken from 1980. It is reported that Many people come to Bali for shorter periods, depending on seasonal demands for labour in agriculture, construction and tourism. However, they are not officially classified as migrants.

[44] Data on recent migration focuses on the *flow* of migrants. The net *stock* of migrants ('lifetime'-migration) was negative until the year 2000 -- more Balinese-born people lived outside Bali, than the number of Indonesians born in other provinces resided in Bali. But the net lifetime-migration rate also turned positive after 2000.

[45] By national standards, the rate of net migration into Bali has been quite high in recent years. However, some resource rich provinces recorded net-migration rates in the range of 5-10% of their mostly smaller populations in 2010 (Muhidin, 2014: 328-332).



Sources: Statistik Indonesia, Population Censuses 1980, 1990, 2000 and 2010 and Intercensal Population Survey (SUPAS) 1985,1995, 2005 and 2015.

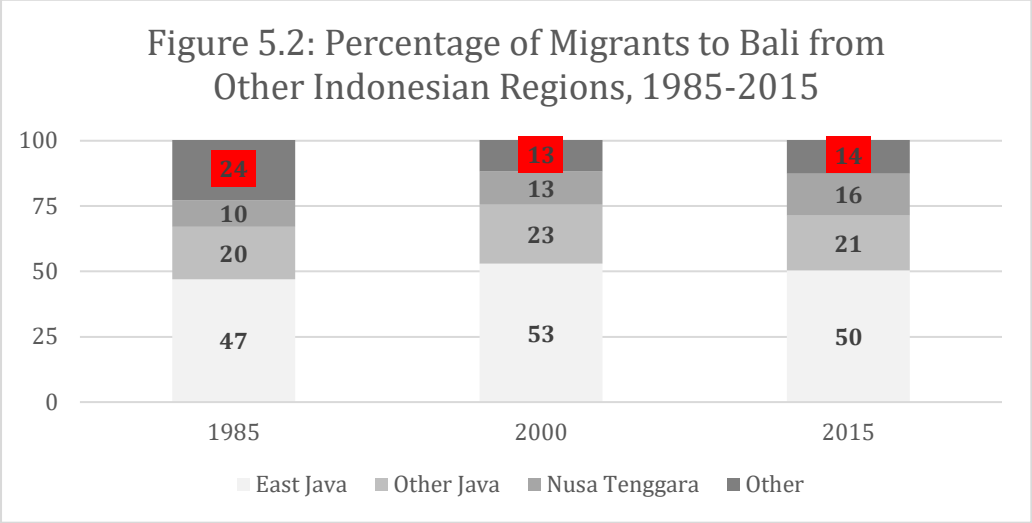
Thus the total migrant population is not insignificant. Approximately 10% of the total population of Bali in 2015 –- just over 425 thousand -- were born elsewhere in Indonesia but were currently resident in Bali.[46] Unexpectedly, and seemingly related to these migration trends, population growth rates in Bali are reported to have almost doubled to over two percent per annum in the first decade of the 2000s,.[47]

Not unlike many societies exposed to an unexpected increased in-migration, this has almost certainly contributed to heightened debate about the impact of newcomers on a range of issues: security, social cohesion and job opportunities among the Balinese around the time of the Bali bombing in 2002. Together with perceived foreign threats to cultural identity, the uncertainty created by in-migration led to the emergence of the *ajeg* Bali movement, a public campaign which aimed to rekindle ethnic identity in Bali in the early to mid 2000s (Picard, 2005; Nordholt, 2008).

Characteristics of Migrants

Several dimensions of the movements of other Indonesians to Bali are relevant to our story of economic transformation related to the tourist booms. First, region of origin of migrants has been dominated by people from the neighbouring and most populous province of East Java (population of close to 40 million in 2015), which contributed over half of all recent migrants over the past several decades (**Figure 5.2** and Annex Table 5.1). Outside East Java, another 20 percent of migrants into Bali came from other Java provinces, while the two neighbouring Nusa Tenggara provinces accounted for a further 16 percent in 2015. Although the absolute number of migrants from each of these regions has increased over time, the share of total migrants to Bali from each has not changed much over the past 30 years, except for a slight rise in the eastern Indonesia component from 10 to 16 percent 1985-2015.

[46] The average rate of 'lifetime' in-migration across all provinces of Indonesia was slightly higher at 11.5% in 2010 (Muhidin, 2014: 324); it was more than double that rate in resource rich provinces like East Kalimantan or Riau Islands.
[47] This was after fertility had fallen steeply from the 1980s (Streatfield, 1986). There is less certainty about population growth rates 2010-2015, but it seems they may have fallen somewhat, compared with the intercensal period 2000-2010.



Source: Statistik Indonesia, Census 2000 and SUPAS 1985 and 2015.

Each of the three streams appear to possess slightly different characteristics. By far the largest share of migrants from East Java most likely came from a wide range of backgrounds, comprising many skilled workers and professionals as well as less skilled blue collar workers from poorer districts close to Bali.[48] Most migrants from the poorer, Eastern Indonesia provinces of West and East Nusa Tenggara (NTB and NTT), were likely to be unskilled workers and are known to be mainly engaged in occupations such as sand-digging and other construction related jobs. Third, a significant proportion of migrants from other regions of Java, especially Jakarta, West Java and Yogyakarta were more likely to be better educated professionals associated with government, education or business interests, including Balinese return-migrants.

According the 2010 census, the main demographic and socio-economic characteristics -- age and sex, education and employment – of recent migrants differed from the 'non-migrant' (or the Bali resident population) in three main respects.[49] (**Table 5.1**). Recent migrants were mostly male (55%) and on average were much younger than non-migrants: for example, nearly half were aged 20-29, compared with 15% of the mainly Balinese, non-migrant population. Second, migrants tended to be better educated: just under half had a senior high or tertiary level of schooling compared with only a little over one third of the non-migrants. And -- especially related to the higher level of schooling among migrants -- a much higher proportion were employees (74%) and worked in formal sector jobs in. Very few longer-term migrants were employed in agriculture (3%) and a small percentage in the informal sector (24%). In contrast, one-third of mostly Balinese non-migrants worked in agriculture, and just under 60% in informal jobs, respectively in 2010).[50]

Some further clues regarding migrant traits can be gleaned from information on where the migrants mostly settled in Bali. Migrants were a significant share of the population both in the main tourist as well as less touristy districts, according to questions on ethnicity in the 2010 Census. Three regions stood out for their

[48] Besides recent migrants counted in the census, it is widely reported that significant numbers of seasonal migrant workers come from poorer districts close to Banyuwangi on the tip of Java to work in nearby districts of Jembrana, Tabanan and Bulelang, sometimes for several months a year during periods of peak labour demand in agriculture. (reference?)
[49] See especially Sudibia et al. (2012) for a comparison of the characteristics of recent migrants and non-migrants in Bali in 2010.
[50] To put in perspective, the socio-demographic characteristics of internal migrants to Bali are similar to mainly economic migrants to many thriving economic hubs across the globe (Martin, Abellla and Kuptsch, 2006).

high proportion of Javanese residents in their population: poorer Jembrana in the West, bordering East Java (11%), and relatively well-off Badung (15%) and Denpasar (26%) in the southern central region.[51] While agriculture stands out in Jembrana, Badung is the heart of tourist activities; Denpasar, on the other hand, is the main centre for trade, business and finance, and education. Media reports point to a heavy involvement of more educated Javanese from all parts of the island in 'modern 'sector' activities that feed into the tourist trade in the capital city of the province.[52]

To sum up, one important development over the past 10-20 years has been a significant rise in the share of other Indonesians employed in Bali. Besides signalling new opportunities, such a large increase in quite a short period of time is bound to cause some social and economic dislocation. However, aggregate data suggest that these disruptive effects were probably not large. For example, unemployment rates have continued to decline in Bali and have been below those in other regions (**Figure 5.3**). Based on these figures and on employment data discussed above, we tentatively conclude that this migration from other provinces has mostly been complementary to economic activities in Bali in general, and contributed to the transformation of the economy described in Section 4 of this paper.

Table 5.1: Main Socio-demographic Characteristics of Recent Migrants to Bali and Non-migrants, Bali, 2010 (Percentages)

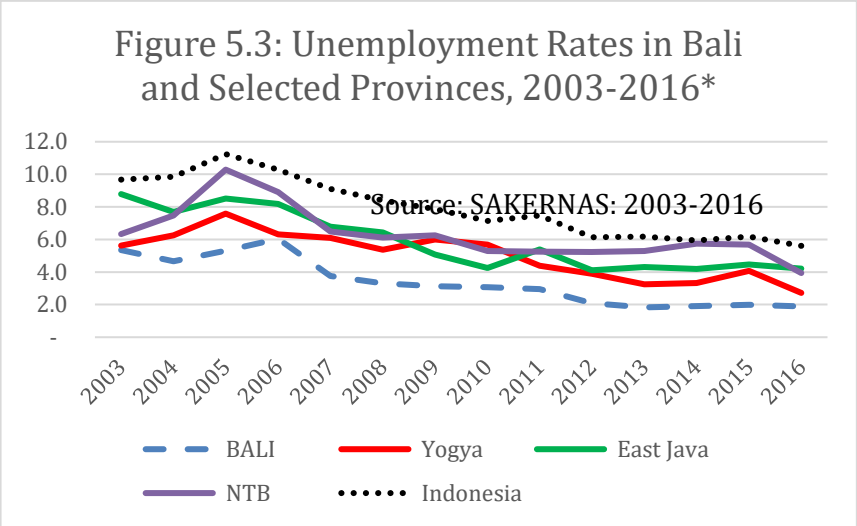
Characteristics		**Migrants**	**Non-Migrants**
Sex	Male	55	
	Female	45	
		100	
Age[1]	<20	18	27
	20-29	**47**	15
	30-49	30	37
	50+	5	**21**
		100	100
Marital status[2]	Single	42	30
Completed schooling[1]	<=Primary	28	56
	Junior high	24	14
	Senior high	**36**	23
	Tertiary	**12**	7
		100	100
Status of employment[3]	Informal[5]	24	**59**
	Employee	**74**	38
	Employer	2	3
		100	100
Main industry of employment[3,4]	Agriculture	3	**32**
	Manufacturing	15	11
	Construction	11	7
	Trade	**28**	**19**
	Hotels&restaurants	12	7

[51] See BPS (2015).

[52] As is the case in many big cities in Indonesia, one of the national industries where migrants work is online transportation (Gojek and Gocar). This engagement is strongly opposed by local rental companies who mainly employ Balineseworkers (Gamar, 2017)

	Social, Community& personal services	**23**	16
	Other[6]	8	8
		100	100

1. Ages five and above. 2. Ages 10 and above. 3. Ages 15 and above. 4. 5. Self-employed, self-employed with family workers and family workers. 6. 'Other' includes mining, utitities and waste disposal, transport, storage and communications, and finance and insurance.
Source: Adapted from Sudibia (2012), based on Results of the Population Census, 2010



Wage Levels and Trends: Bali and the rest of Indonesia.

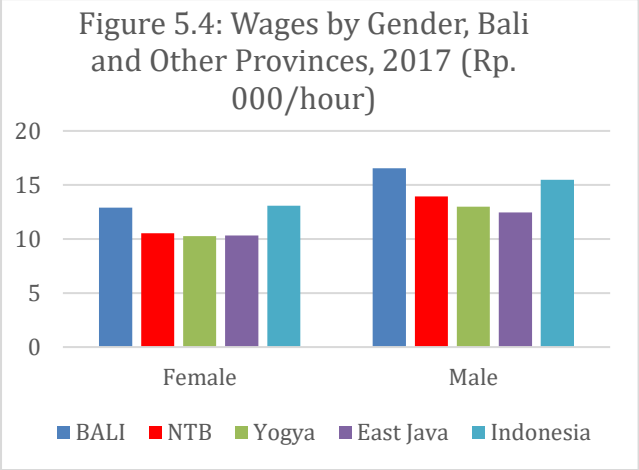
One of the Dutch disease effects highlighted in the literature is a tightening labour market, leading to wage breakouts, both directly in the booming industries and indirectly in related non-tradable industries. While this paper does not test this proposition directly, comparison between Bali and neighbouring regions indicate that quite robust growth in tourist related activities have been accompanied by more rapid wage growth than in neighbouring provinces. However, while Bali has been ahead, it has not been far ahead of other regions role in this eastern part of Indonesia. This can be attributed partly to the migration story presented above.

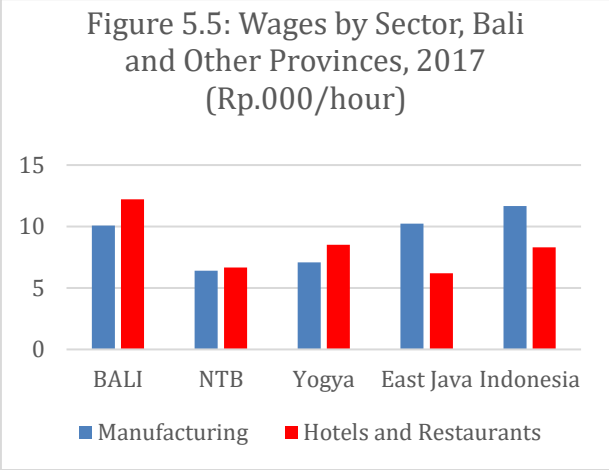
Consistent with numerous reports of non-Balinese Indonesians taking up unskilled jobs related to the tourist industry, average wages across all industries, and within the main industries were higher in Bali in 2017 than in the comparator provinces, both among females and males (**Figure 5.4**). This is understandable. As we have seen, two of these provinces (East Java and NTB) are major sources of unskilled labour to Bali and it appears that the number of unskilled migrants had been growing in recent years.[53] However, Balinese wages were on average on a par with all Indonesia, which includes the resource rich provinces in Kalimantan, Sumatra and Sulawesi as well as more industrialized West Java, Banten and Jakarta) (**see Figure 5.4**)[54]

The picture is complicated, however, by evidence of some wage and labour market segmentation. Wages in the mainly tourist-driven *hotels and restaurant* industry were considerably higher in Bali than in neighbouring provinces, and all Indonesia (**Figure 5.5)**. Hourly wages were reported as almost double those in NTB and East Java in 2017 (Rp. 12,000/hour compared with 6000/hour), and 50% higher compared with

[53] The other tourism province, Yogyakarta, is a relatively low wage province. In 2017, Yogyakarta City had a lower level of minimum wages than most districts in Java-Bali.
[54] As might be expected, males earn higher wages per hour than females in all industries, largely because of better paid jobs in in manufacturing and hotels and restaurants.

the average for all Indonesia.[55] This might be partly attributed to the concentration of employees in Bali in five star hotels that employ more educated and highly trained employees (see discussion in Section 4).[56]





Source: Statistik Indonesia, National Labour Force Survey (SAKERNAS), August Round 2017

Increases in real wages (nominal wage increases deflated by the CPI) in trade, restaurants and hotels, were also higher in Bali than wages in the same industries in nearby regions, 2005-2015. Wages growth was more than double that in East Java and about 50% faster than the national rate of growth in the period 2005-2015, although the gap was smaller with NTB (**Figure 5.6**). Nonetheless, real wage growth at just under two percent per annum was slow compared with increases in rapidly growing sectors in some other Asian countries such as China around this time (ILO, 2015). The modest increases can in Bali be attributed partly to high rates of in-migration from the rest of Indonesia in response to employment opportunities opened up by the tourist boom.

This leads to a hypothesis that employment in Bali had some unique features related to the tourist boom. Besides attracting workers from the rest of Indonesia, some labour market outcomes may be related to employment systems and spatial characteristics of the industry. In regard to the former, many jobs in the tourist industry are part-time and related to the seasonal nature of the industry and the small scale of many tourist related activities in Bali. While large corporations have been involved in delivering tourist services, the rise of domestic tourism and low cost China tourism suggests the likelihood of a multiplication of services to guests in 3-Star or lower quality hotels and guest houses. Thus low average earnings growth in the rapidly expanding trade, restaurants and hotels industries may partly be explained by a change in composition towards smaller, low-cost operators, where wages were lower than for those working in the major hotels.

Source: SAKERNAS 2005 and 2015

Many of these smaller hotels and tourist activities are located in or close to rural areas and

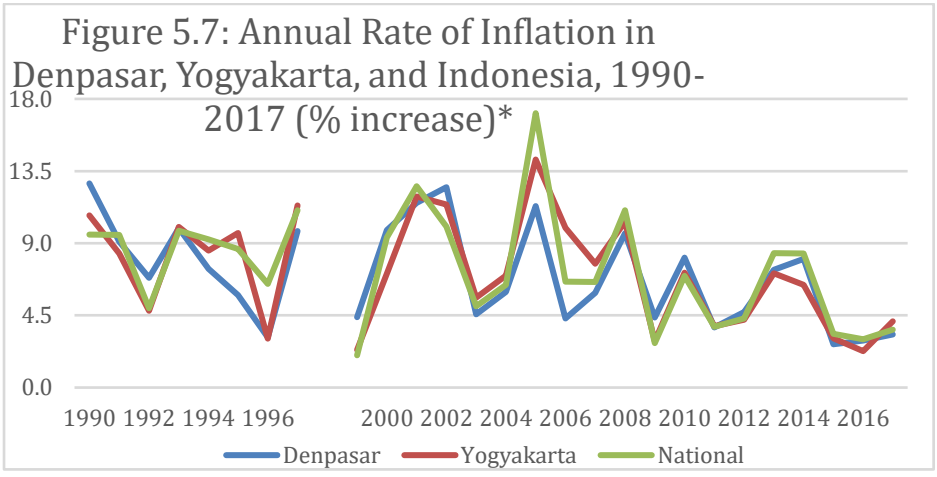
[55] The wage data thus support our findings on average levels of productivity discussed in the previous section.
[56]Casual observation suggests that wages were considerably higher in these larger establishments and that many of the senior staff were recruited from Java.

their populations engaged in both agriculture and non-agricultural activities increasingly across the island. Bendesa and Aksari (2017: 89) for example point out that there were a much higher proportion of Balinese farming households also engaged in non-farm activities in Bali (47%) compared with all Indonesia (34%) in 2013.[57] Except for those working in more skilled, permanent jobs, it seems likely that multiple jobs provided many Balinese with a reasonable standard of living by Indonesian standards, even though wages were low and growing slowly. Moreover, as noted above, many tourist activities are oriented to unique aspects of village life, traditional agriculture and associated cultural practices. A proliferation of these smaller scale businesses, would help explain the seeming contradiction in Bali between very low levels of poverty by Indonesian standards, on the one hand, yet only moderate wage levels and growth in earnings among wage workers, on the other.[58]

This brings us to some quantitative analysis of the integration of the Balinese economy with the rest of Indonesia. While this is a subject that deserves a separate analysis, a brief examination of how prices and wages have moved together and some preliminary co-integration tests suggest that the Balinese economy is indeed quite integrated with the rest of Indonesia through both goods and factor markets.

Price movements

General price movements in Bali track those in the rest of Indonesia remarkably closely. **Figure 5.7** shows the annual rate of inflation (CPI movements) from 1990-2018 in Denpasar, the city of Yogyakarta and all Indonesia.[59] The three series all fluctuate quite substantially, but mostly appear to move together before and after the Asian and global financial crises of 1997-98 and 2007-8. This occurred even though international tourism, Bali's main industry, and the Balinese economy as a whole, were more heavily affected by both events, because of their high level of exposure and direct links to the global economy.



* Data are omitted for 1998; Inflation was 5-7 times the level in other years.
Source: BPS – Statistic Indonesia, CPI Indonesia and from Denpasar and Yogyakarta Offices of Statistics.

[57] Data from the 2013 Agricultural Census.
[58] Data on poverty at district level are for 2000-2011. The capital Denpasar had the lowest incidence of poverty among close to 400 districts in the country (including in Jakarta) in 1999 and again in 2011; Badung, the centre of tourism, was ranked 11th lowest in 1999 and third lowest in 2011 (see Hill and Vidyattama, 2014: 82-87). Fast forward to 2018, the incidence of poverty in Bali still remained one of the lowest in the country.
[59] We take Yogyakarta as a comparator partly because data are more readily available for the years under investigation.

Co-Integration Analysis

As already mentioned, geographically, Bali is located between two provinces which are very different in their economic structure: East Java in the west, with a large manufacturing sector and West Nusa Tenggara (NTB) in the east with large traditional agricultural and mining sectors. Bali's integration with these two regions can be illustrated by the flow of labour. In the DD framework, this labour flow can inhibit the adverse effects of DD. The plots of data on the wages index of construction sector workers in the form of natural logs (ln) 1993q1-2016q4 for three provinces namely Bali, East Java and NTB, show trends and contain potential I (1).[60]

Table 5.2. Parameters of Cointegrating VECM

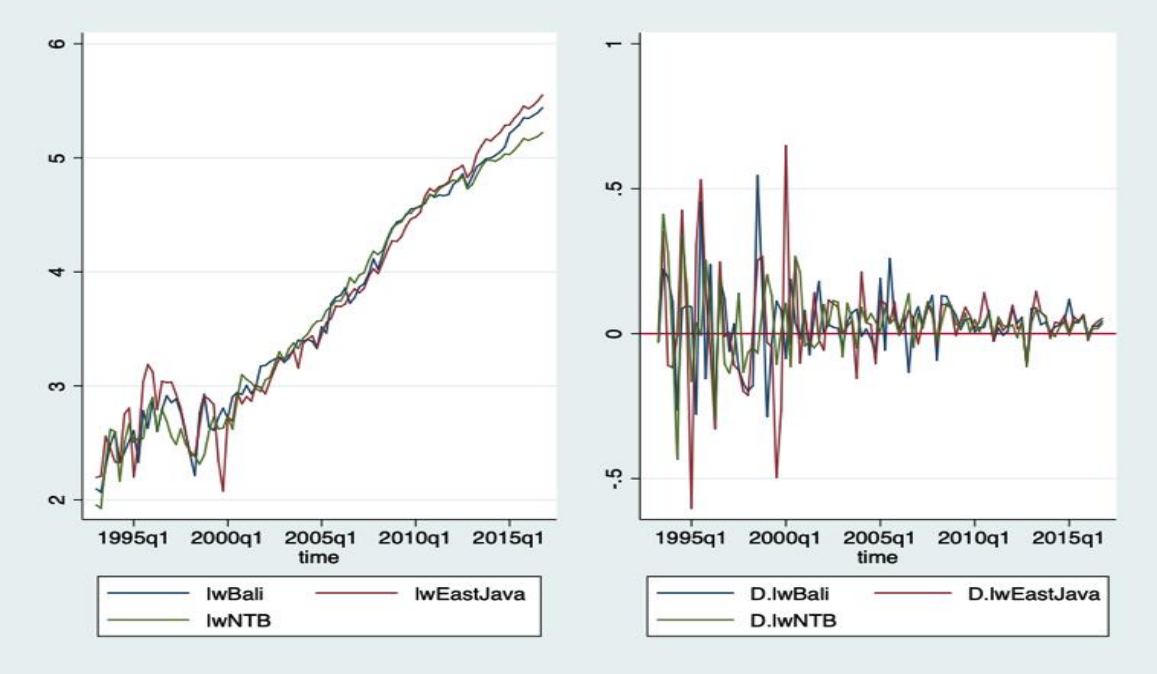
Variables	Parameters in the cointegrating equations (Beta)	The adjustment coefficients (Alpha)
ln(wage index Bali)	1	-0.778
	.	(0.177)***
ln(wage index East Java)	-0.301	-0.331
	(.0859)***	(0.217)
ln(wage index NTB)	-0.574	0.161
	(0.119)***	(0.152)
Trend	-0.005	
	(0.002)**	
Constant	-0.329	
	.	
Number of observation	92	

Standard Error in parentheses
*** alpha = 1%, ** alpha = 5%
Source: Data Analysis

The data plot show that there is a linear trend in the level but not in the first difference (Figure 5.8).

[60] First Difference stationary processes are also known as integrated processes of order 1, or I(1) processes. This means that the level of a time series is not stationary (contain a trend) but its first difference is. Cointegration analysis provides a framework for estimation, inference, and interpretation when the variables are not covariance stationary.

Figure 5.8. Data Plot at level and first Difference of ln(Wage index)



Source: Benchmark of Construction Indices, 1990-2016, BPS – Statistic Indonesia

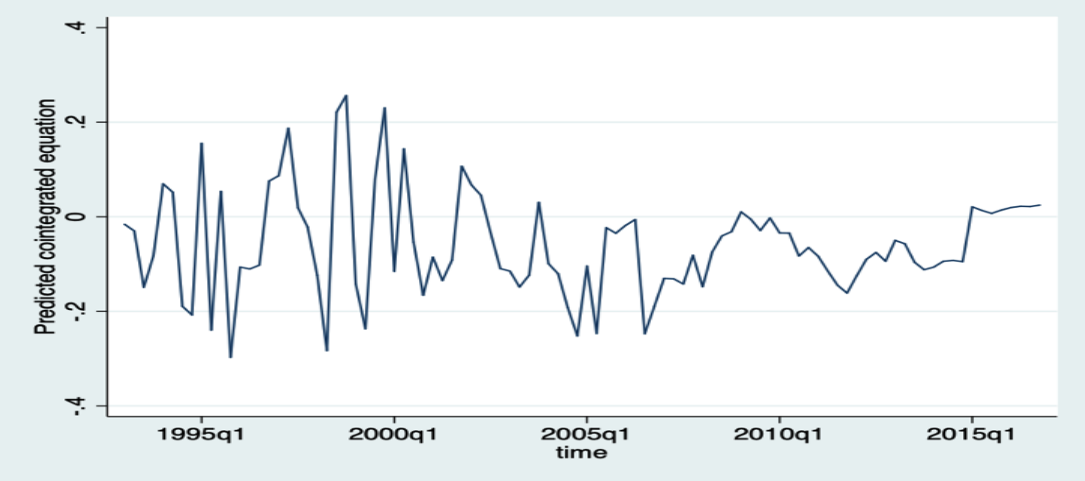
The three provinces appear to have closely integrated economies. Although the average wages of construction sector workers in the three regions may vary due to various factors, we can assume that if one region has a very high wage compared to other regions, in-migration will occur in that area and this will slow or stop the increase in wages. To demonstrate more formally, we test the existence of co-integration, which is preceded by determining the extent of the lag. This was found to be three or four quarters.[61] Following the VECM Johansen specification with a restricted trend model (see Figure 5.8), we found at least one cointegrating equation.[62] Having determined that there is a cointegrating equation for Bali, East Java and the NTB series, we estimated the parameters of a cointegrating VECM. There are two types of parameters of interest to be estimated: the parameters of cointegrating equations (beta), and the adjustment coefficients (alpha) (Table 5.2).

Overall, the output indicates that the model fits well. The beta coefficients for East Java and NTB in the cointegrating equation are statistically significant, as are the adjustment parameters for Bali (the alpha). The adjustment parameters have the correct signs and imply rapid movement toward equilibrium. When the predictions from the cointegrating equation are positive, Bali is above its equilibrium value because the coefficient for Bali in the cointegrating equation is positive.[63]

[61] Almost all methods choose four lags, except the Schwarz Bayesian information criterion (SBIC) test method that chose three lags. Three or four lags is quite reasonable because the adjustment in the level of wages in the three regions is likely to take around one year (4 quarters).
[62] This excludes linear trends in the differenced data but allows for linear trends in the cointegrating equations
[63] The estimate of the alpha coefficient on Bali is −0.778. Thus when the average wage index in Bali is too high, it quickly falls back toward the East Java and NTB level.

Inferences based on the parameters in Alpha depend crucially on the stationarity of the cointegrating equations; we can predict the cointegrating equations and graph them over time to check the specification of the model (Figure 5.10). In general, the predicted model shows the cointegrating equation is stationary. Some periods have a negative trend (the Bali wage index moves away from the equilibrium), such as during the Bali bombing period 2000-2005. If we look at the data at the level of 2000-2005, the wage index in Bali seems to be higher than equilibrium, this shows that the demand for labour in the construction sector, which is usually supplied by workers from Java (especially East Java), is increasing. However, this high demand was not followed by an increase in migration because in the period 2000-2005 there was anti-immigrant sentiment as a result of the Bali bombing tragedy.

Figure 5.10. Prediction of the Cointegrating Equations



Source: Data Analysis

However, in the following period, 2005-2010 there was a counter trend, which indicates that migrant mobility from outside of Bali, especially from East Java, had increased with the economic recovery after the Bali bombing tragedy. The second negative trend occurred in the period 2010-2013. In contrast to 2000-2005, in 2010-2013 the wage index in Bali is lower than the equilibrium. This condition might be explained the many multi-year construction projects carried out in Bali during this period.[64]

[64] These projects had employed many workers a on contract basis so that there were limited wage adjustments and hence little immediate out-migration in response. After the projects were completed, workers returned to their respective regions, and the Bali wage index returned to equilibrium.

Annex Table 5.1: Percentage of Recent Migrants to Bali from Selected Provinces and Regions in Indonesia, 1985-2015

	East Java	West Nusa Tenggara	East Nusa Tenggara	DKI Jakarta	West Java	Central Java	Sulawesi	Other	Total
2015	50	8	8	5	9	6	4	10	100
2010	58	6	6	6	6	7	2	7	100
2005	47	13	8	8	4	8	2	10	100
2000	53	7	5	9	5	8	3	10	100
1990	53	7	3	5	7	8	6	10	100
1985	47	4	6	11	2	6	12	12	100

Source: Statistik Indonesia, Census 1990, 2000 and 2010; SUPAS 1985, 1995, 2005 and 2015.

VI. CONCLUSIONS

The tourist booms in the late 20th century and second decade of this century have transformed the Balinese economy and society. Both have become much more urbanised and oriented towards services. This paper traces this transformation from the mid-1980s, with a focus on the past 20 years. To help structure the argument, the paper has adopted the Dutch-Disease (D-D) as a framework which seeks to identify both *static* and *dynamic* effects – mostly negative in the literature -- from a 'leading sector'-led pattern of economic development.

Focusing on the Balinese case, and taking into account national and some parallel regional developments, we find that the *static* effects from expansion of tourism have been quite widespread, drawing resources –- land, labour and capital –- out of tradeable goods sectors. Both agriculture and manufacturing, grew slowly during the period under investigation, suggesting likely to D-D effects. But besides potential (but still quite unknown) external diseconomies from environmental stress, especially on water supplies, tourism did not have significant negative *dynamic* effects on current and potential growth of productivity. Quite to the contrary, it is argued that the measurable effects of tourism as a leading sector have been positive for future economic growth in the province.

There has been substantial employment growth in services industries associated with tourism, especially in hotels and guesthouses, restaurants and related businesses. While noting some potentially serious backwash effects, we have focused on some of the positive aspects of the transformation of the economy and workforce in the 21st century. Improvements in skills and human capital have been significant over less than two decades and have contributed to higher value added per worker in key tourist-related industries. This non-tradable but internationally competitive industry has had dynamic interactions with a range of service industries which utilize new technology, processes and organization -- especially new internet and digital technology and systems -- to help raise productivity and living standards.

While there has been a much local concern about the effect of these trends, the paper maintains that the D-D effects on agriculture, in particular, have been complex. Especially in some parts of tourist-intensive south, research suggests that conversion of land for tourist-related activities has had a negative impact on irrigated rice agriculture and irrigation systems (the *subak*), which have special social and religious significance to local communities and amongst the Balinese. One major concern is the supply of water for irrigation and other uses. At the same time, it is contended that the transformation of work -- especially close to urban areas -- has had positive dimensions: raising productivity and providing job opportunities among communities where poverty has traditionally been quite high.

We also draw on research which shows that while agricultural jobs have contracted sharply, many Balinese appear to have kept a foothold in agriculture, while working part-time

in the new industries. And at the same time, communities and policy makers have made efforts to promote agro tourism, especially in the traditional upland *sawah* areas.

In regard to manufacturing, the effects of tourism seem to be more straightforward. The sector has not developed much compared with neighbouring Java, and productivity is low in the sprinkling of establishments currently operating in Bali. Certainly, in the past decade, it appears that the demand for unskilled and skilled manpower in tourist activities may have crowded out labour-intensive manufacturing, and close proximity has made trade with Java in consumer and producter goods a more lucrative alternative for business.

The paper also presents some data on the extent of Bali's economic integration with the rest of Indonesia, and how that might have affected and been influenced by the growth of tourism. It was found that, price and wage movements in response to changes in demand for goods and services in Bali have been muted. It is argued that this reflects close connections between labour and commodity markets in Bali and the rest of Indonesia, and especially quite high rates of net-migration into Bali, which accelerated in the 2000s. D-D effects are mainly manifested in the attraction of factors of production into the tourist related industries, rather than spiralling prices and wages. The co-integration analysis suggests that wage movements have been mitigated by integrated and flexible markets, taking the labour market as an example.

There are a number of areas of research related to economic, effects of tourism, which could be developed further, both in aggregate and also across different population sub-groups. We note three topic areas in particular. While drawing attention to their importance, we have not attempted to incorporate measures of potentially damaging longer term effects of tourism on the environment –- including the water supply -- associated with the speed of tourism developments and their concentration in the southern region of Bali. In principle, issues related to tourism (e.g. pollution and other environmental degrading effects of manufacturing industries) are not fundamentally different to those arising from growth of any industry and require appropriate regulatory interventions. We noted that this is an urgent priority, not only for preserving the environment but also for the long term survival of the tourist industry.

Second, the distribution of benefits between the Balinese and other Indonesians, both in business and more broadly in the jobs market, is not dealt with in any detail. As in-migration has increased it has been an issue of local concern, especially in years of economic downturn. More broadly, more information about the distribution of costs and benefits from the growth in tourism across the entire population is also needed. And finally, the way in which government policies have influenced the rate and pattern of tourism growth, and its effects, is an important issue not covered in this paper. Especially related to the effectiveness of public policy, is the need for more focus on the reasons for the continuing concentration of tourism

investments in congested parts of southern of Bali, despite public plans to decentralize over the past decade.[65]

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[65] Linkages with Singaraja, the second largest city in the north, has recently been announced as a priority by provincial government. The failure to implement the moratorium on hotel development in four southern districts (Denpasar, Badung, Gianyar and Tabanan) is one example of policy the failure.

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