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Patricia McGuire
Skidmore College

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**Tourism as a Development Mechanism:
Evidence from Households in Indonesia**

This thesis is submitted in partial fulfillment of the requirements for the course Senior Seminar (EC 375), during the Spring semester of 2017.

Patricia McGuire
Skidmore College
May 2, 2017



Abstract

Indonesia is one of the fastest growing tourist destinations in the world, placing it in a position to use tourism as a mechanism for development and for poverty alleviation. In order to do so effectively, the country must consider the true impacts of tourism at the household level. Many studies of tourism in Indonesia investigate the case of one island or region, often using Input-Output models to measure the expenditure that flows through different areas of the sector and the amount of inputs from tourism that either reach or do not reach the rest of the economy, ultimately measuring the strength of the tourism's multiplier effect. The multiplier effect is a theoretical model that suggests that in addition to the direct impacts of tourism, such as profits reaped by hotel chains, there are secondary and tertiary effects such as the inputs from sectors catering to new populations of hotel employees in an area. Although these Input-Output models are useful, they do not take into account larger macroeconomic variables that may be useful in explaining tourism's impacts. This study uses a regression analysis to investigate the multiplier effect, specifically of the impacts of foreign tourist arrivals by province at the household level, using net profits from household owned business as a measure of income to households. Results of the model are ambiguous and do not suggest a clear relationship between the variables of interest. Future research on this topic is needed as Indonesia continues to develop and attract growing numbers of tourists.

I. Introduction

Due to their small size and limited resources, many developing countries rely heavily on imports and exports to sustain their economies. Typically, these countries are those that have been colonized in the past, used for their natural resources, and subsequently abandoned by their colonizer, leaving them with underdeveloped economies (Frank 1989). In cases like these, the lack of developed economic infrastructure forces countries to rely on income from exported goods and services, including the tourism industry. When foreign tourists arrive in a country, the money they spend there is an input into the local economy. Mainstream development theorists and world development organizations posit that this income filters through communities, creating benefits for the population including economic growth.

In Indonesia, a developing country in which more than ten percent of the population lives in extreme poverty, defined by the World Bank as an income of less than 22.6 USD per month, tourism has the potential to be a contributor to economic growth and the subsequent alleviation of poverty. Many development organizations promote tourism as a tool for

alleviating poverty and increasing national income levels. However, the assertion that tourism has a positive impact must be closely examined. Broad assumptions about tourism can overgeneralize its impacts, and it is important that policies promoting tourism use evidence-based research as the basis for their implementation.

Indonesia is a unique case in the study of tourism. As one of the Small Island Developing States (SIDS), there is a large body of research that applies to the country in connection with other similar nations. It is categorized among other countries that rely heavily on imports and exports as well as foreign aid to sustain their economies. Tourism is common in these nations, especially because many of them are located in the global south near the equator, giving them a comparative advantage against other nations with less attractive climates. As they develop their tourism industry, Indonesia finds itself with a multitude of tourism activities.

A major part of the industry is ecotourism. Ecotourism is a type of tourism that uses principles of environmental, social, and economic sustainability to guide its practices. It places emphasis on using the environment in its natural state as a resource for recreation and educational purposes. Many ecotourism activities are related to learning about conservation and the environment of a specific area. Ecotourism can fall into different categories, and some types of ecotourism are more anthropogenic and focus on the benefits that the environment can provide to humans. Alternatively, other types of ecotourism, which are sometimes considered more sustainable, focus on the environment for the environment's sake. Ecotourism practices also focus on utilizing the resources of the local communities in an area, rather than relying on resort style accommodations. It encourages tourists to participate in local activities and to patronize businesses owned by community members. Not only is this type of tourism more beneficial for the natural environment, but it has the potential to be more sustainable for the economy as well. It preserves natural resources,

which can be a source of implicit ecosystem services for a community, or a resource to be used for profit in the future. It puts money into locally owned businesses, supposedly reducing the amount of tourism-sourced income that leaves the local area in order to reach its owners. It also considers community viewpoints and values in decisions, which should allow for more efficiently developed tourism sectors and activities. Input from local communities can help to ensure that tourism activity has benefits for all parts of the population, not just the owners of resorts (Camacho-Ruiz et al. 2015).

In Indonesia, ecotourism is popular because of the different types of natural environments Indonesia is home to. There are several natural parks that provide appealing tourist destinations for many, coastal areas that are popular for dive tourism, other marine areas that are used for conservation and recreation, forested land, biodiversity, and many other types of natural resources in Indonesia (Nuva & Samshudin 2009). Since it is also promoted as an effective mechanism to direct tourism profits into local communities, ecotourism is used by many areas within Indonesia. Some of the main principles of ecotourism are also attempted by conventional tourism industries as well, suggesting that the tourism industry in Indonesia is really an attempt to bring money into the country in an effective way (Telfer 1996). The aspects of tourism that make it so interesting to study are those that encourage income flows into local communities. In developing countries, particularly SIDS, governments and communities struggle to lower the poverty rate in an effective and sustainable way.

Tourism in Indonesia, may be an effective method for alleviating poverty. Since 1999, the poverty rate in Indonesia has been reduced by 50 percent and its GDP per capita has grown by more than 400 percent (World Bank 2016). The simultaneous rise of tourism growth and economic growth makes the case important to study; it is unclear what the

impacts of this rapid tourism growth are for communities across Indonesia. Figure 1 shows the tourist arrivals in 2014 by province across Indonesia. Although it may be promoted as a method of growing economies and alleviating poverty, literature demonstrates conflicting opinions on the strength and magnitude of this relationship. Studies that capture the effects of tourism growth across the country are essential for sound development of the tourism industry into the future.

Many studies of development either generalize characteristics of countries through macroeconomic models, or ignore larger national or international trends by focusing on one specific area in a case study. Growth models use GDP or other aggregate data, and operate under the assumption that growth is continuous. Many case studies are qualitative, or use quantitative data to draw conclusions that cannot be generalized. It is important that development literature, especially when it relates to tourism, takes into account data that is specific to the location of interest, although it cannot ignore geographic differences between areas. In Indonesia, tourism activity varies widely between provinces (Figure 1). The aim of this particular study is to apply existing theoretical models to the case of Indonesia to study the impact of tourism activity on household income within the context of regional differences within the country, rather than on macroeconomic variables that literature tends to cover.

II. Analytical Framework

This study is based on the framework of a multiplier model. Multipliers, as I will discuss further in the literature review, are used as a theoretical representation of how a new input into an economy can have a rippling effect on other features of the economy, directly and indirectly. Essentially, multipliers show how one change is multiplied into many changes. They are often measured using Input-Output models that use specific data on some inputs and outputs across sectors to draw conclusions about the economy as a whole, and to

see where inputs to tourism reach other sectors or get lost from the economy (Frechtling & Horvath 1999). Tourism multipliers attempt to show the impact of increased tourism activity on other sectors and on households within the economy. Many multipliers, such as the ones developed by Rusu (2011) and Pratt (2015) attempt to model the relationship between expenditure on tourism and the subsequent benefit for secondary services such as shops and restaurants. Although multiplier models capture the theoretical effects of tourism, including leakage of income out of the economy, they operate under broad assumptions such as full employment and homogeneous consumption functions, making them inapplicable to most real world situations.

Many studies that attempt to model the impacts of tourism do so through the use of an Input-Output (I-O), as described by Frechtling and Horvath (1999). Their study uses an I-O model to calculate inputs into an economy from different sectors, and the output that is generated. The model uses industry-specific data and relies on the assumption that those data can be generalized to fit the larger population. Although these models may be accurate in a specific community, I-O models require small-scale, accurate and specific data to draw their conclusions.

The model that I develop in this paper uses the basic assertion of a multiplier model, that tourism has a rippling effect into an economy, to estimate the effects of actual tourism activity in Indonesia. Drawing from the specific nature of the I-O models, I use a household level variable, net profits from non-farm, household-owned business, as the dependent variable. These household-owned businesses are part of several different sectors, some of which are directly related to tourism, and some of which are not. I use this variable rather than a macroeconomic variable because I am trying to measure the impacts on a household level. The net profits to household-owned business are likely to be much more sensitive to exogenous change than a country's GDP, and may capture the localized scale of tourism

impacts. The framework of my model is such in order to capture indirect impacts of tourism on these household-owned businesses which do not contain corporations or hotel chains, which are often most closely associated with tourism growth.

III. Literature Review

There is a large body of literature that exists on the topic of tourism as a development mechanism that I use as a basis for my own research. In the following section I will begin by discussing literature on growth theory and continue by examining the literature on tourism development theory and models that have been used to measure tourism's various impacts, tourism development in Indonesia, as well as literature on tourism as a method of alleviating poverty with a focus on case studies of Indonesia.

Growth Theory

Solow (1956) developed one of the first growth models that incorporate population growth and technological advancement. As in other neoclassical models, Solow measures growth as the total output of an economy. His model suggests that there are diminishing marginal returns to capital inputs, assuming positive growth rate of capital and labor and some given rate of savings. The main conclusions in his model are that an economy will continue to grow as long as there are inputs of capital and labor. Other neoclassical growth models (Koopmans (1965); Romer (1990)) measure growth the same way, by overall output in an economy. This measure of growth leaves little room to account for heterogeneity among households in the models, meaning that although the models may depict growth in an economy in a broad sense, they do not take into account differences between sectors of an economy or groups of consumers. Because of these shortcomings of many growth models, it is useful to look more closely at the different factors in an economy, such as tourism, that

contribute to growth and their impact on different groups within the economy, rather than taking overall output as a representative feature.

Tourism Development Theory & Empirical Models

In a case study of several countries in South America, Brida et al. (2012) discuss the hypothesis that tourism can lead to economic growth. Their study addresses the idea that although economic growth may be caused by tourism, a two-way relationship is also possible. Their study is a macro-level analysis using real GDP per capita and tourism, measured by the number of visitors to the country, that aims to identify if any causality exists in the relationship between economic growth and tourism and to study the elasticity of tourism in these countries. Based on several econometric tests, they find that in the case of Uruguay, real GDP and tourism have a bidirectional, causal relationship. However, their results for the other countries in the study were not significant. From these results, the authors conclude that it is possible that tourism can be promoted as a driver of economic growth, but that the strength of its causality in increasing GDP is somewhat ambiguous. They also suggest that in countries with newer tourist industries, demand for tourism is likely to be more elastic.

It is important to acknowledge that tourism may not be as much of a driver of economic growth as it is often promoted, especially in small countries where the tourism industry is newly developed. However, although the relationship may not be directly causal, tourism and economic growth often do go hand in hand.

There are several different frameworks within which researchers study tourism as it occurs in developing countries. Bertram and Watters (1985) provide the framework for what is known as the MIRAB model, a development model for SIDS that takes into account migration, remittances, aid, and bureaucracy in their definition of a country in this category.

In contrast to typical development literature, the MIRAB model eliminates the assumption that economic and social development is inherently separate from the processes of migration, remittances, aid, and bureaucracy, instead considering those aforementioned factors part of what shapes a country's development. This differentiation is important because it means that economic and social growth may have a two-way relationship with foreign aid, suggesting that these economies could rely on inputs from other nations in the long run.

Bertram and Watters emphasize the importance of considering the role of the collective community in economic development, suggesting that elements such as migration out of the country or foreign aid investments may have different impacts on individuals than on the communities of which they are a part. Countries that fit into this model experience a high degree of migration in and out of the state, receive a large amount of remittances (income from residents working in foreign countries), receive aid from other nations and development organizations, and often experience a crowding out of the private sector by the government, in that government-directed programs create disincentives for private investment in economies because of their restrictions and power over industry.

The MIRAB model applies mainly to states with a history of colonialism, which often times are nations that now rely heavily on foreign aid due to the financial loss associated with gaining political independence. Bertram and Watters present an important and unique viewpoint that states which fit into the MIRAB framework are not necessarily economies in transition. They argue that the MIRAB state, one which relies on outside aid and effort for development and income, can be a sustainable model for an economy. The authors also discuss the impact of different types of development aid on an economy and how requirements by the lender can change the makeup of an economy. This piece of literature is an important contribution to the study of SIDS, as it provides both in-country decision

makers and outside researchers with a framework through which they can view the country and more clearly understand the processes at play during development.

The MIRAB model was later used as the basis for a variant of the model known as TouRAB developed by Guthunz and Von Krosigk (1996). Instead of the migration aspect that MIRAB uses, the Guthunz and Von Krosigk highlight the importance of the movement of both domestic and foreign travelers into different regions of a country, a large part of which is a result of increasing tourism activity.

Pratt (2015) uses the MIRAB model to discuss tourism in relation to economic development in SIDS. This paper brings up an important point that many SIDS rely heavily on imports and exports since their small size prevents a self-sufficient economy from developing, something that Bertram and Watters (1985) highlight in their discussion of a MIRAB economy. Pratt seeks to provide one of the first major comparative studies of tourism across SIDS, using a multiplier analysis (discussed more in-depth by Rusu (2011)), a linkage analysis, and a static computable general equilibrium (CGE) model to calculate the impact of international tourism on economic development. The data used include several input-output tables obtained from other studies and industry data from the World Bank. Pratt finds that the tourism industry has a relatively high multiplier effect on other sectors of the economy, especially the restaurant and hospitality industry, meaning that the amount of money spent on tourism activities leads to an additional amount spent because of secondary demand for goods and services in respective industries. The linkage analysis results showed that tourism industries in the countries in question were strongly linked to other sectors of the economy, relying on goods and services produced for other purposes than tourism specifically. Finally, the CGE model found that an increase in expenditure on tourism led to an overall benefit to the SIDS observed in this study.

Although Pratt's study presents some weaknesses in that it assumes full employment and constant returns to scale in production, the overall results suggest that for SIDS, tourism is beneficial at the sectoral level. Models of economic growth often use macro-level data to study so-called benefits to a country, but this study identifies more specific ways in which economies are affected.

In developing nations, including SIDS, small changes can have rippling effects through an economy. The multiplier effect that Pratt uses in his study is explored more in depth by Rusu (2011). Rusu formulates a theoretical model that can be used to measure the secondary and tertiary effects of tourism on an economy. Multiplier effects generally measure the effects of exogenous changes on inputs into an economy. From that, the tourism multiplier measures the effects of changes in tourism expenditure on inputs into the economy in which the change in expenditure was made. Multipliers take into account leakage - the unintended loss of financial capital from an economy as a result of a transaction - as well as inputs and outputs of the economy.

Rusu's tourism multiplier takes into account the proportion of expenditure after the deduction of leakage from an area, the proportion of income spent by residents of an area on goods and services produced locally, and the proportion of the change in residents' spending habits after deduction of leakage. Essentially, it takes into account the direct impacts as well as indirect impacts. Multiplier models, however, are often somewhat inaccurate in that they must make some assumptions about an economy in order to be replicable. Rusu mentions some of his model's weaknesses, which include lack of accurate data, assumptions of supply elasticity, the use of a homogeneous consumption function, and challenges in creating a model robust enough to withstand small changes in data inputs. Another major weakness is potential inaccuracy of the leakage factor, which is a major variable included in the model.

Garrigós-Simón, Galdón-Salvador, and Gil-Pechuán (2015) discuss leakages from tourism development and create a mathematical for measuring leakages, something that is often measured inaccurately or qualitatively. Garrigós-Simón et al. define leakage as “the amount of revenue generated by tourists that does not remain in the destination economy.” In the discussion of leakages, it is valuable to keep in mind the aforementioned MIRAB framework (Bertram and Watters (1985)) and the common characteristic of a state that is overcrowded by bureaucracy and government power. These types of situations, Gorrigós-Simón et al. note, are ones that often result in high leakage potential.

In the development of their model, these authors discuss the existing body of literature on leakages, which is largely qualitative literature. They use data from interviews with hotel managers conducted in Valencia, Spain, and focus specifically on calculating leakages within the hotel sector. The model includes 15 variables, 12 of which are related to the costs incurred by the hotel when providing service to consumers, with each one holding a different weight of the total based on data gathered in interviews with hotel managers. The other three variables are on the consumer side of the hotel sector, and have to do with booking a hotel and the method of payment. The authors calculate profits from bookings with the given weightings of each variable, and are able to determine an approximate measure of leakage of revenue.

Similar to the study tourism multiplier model, this leakage model has several weaknesses in terms of inaccurate assumptions and potentially inaccurate data. Although it does provide a quantitative measure of leakage from the tourism industry, it relies on personal interviews to gather that data, which is subject to human bias.

McElroy and de Albuquerque (1998) formulate a model that can be used to measure the intensity of tourism in SIDS. They create what is called the Tourism Penetration Index (TPI), which takes into account visitor spending per capita, average daily visitor density per

every thousand people, and the number of hotel rooms per square mile. The authors use these variables to represent the economic, social, and environmental impacts of tourism. Although it is a very basic measure of defining tourism, it is one of the first major attempts to quantitatively define the impacts of tourism on a local economy.

Defining Small Island Developing States

Indonesia falls into a category of countries known as the Small Island Developing States (SIDS). Briguglio (1995) provides a framework through which the SIDS can be studied, and discusses their particular economic vulnerabilities to exogenous changes. He attempts to succinctly define the characteristics of a SID using a qualitative analysis of other literature. The common characteristics include their small size, limited natural resources and high imports, limitations on import substitutes, small domestic markets and dependence on exports, dependence on a narrow range of products, limited ability to influence domestic prices and exploit economies of scale, limited domestic market competition, and problems with public administration. Additionally, he brings up their remoteness and vulnerability to natural disasters. The author uses these characteristics to inform his calculation of a vulnerability index, which uses a nation's exposure to foreign economic conditions, its insularity and remoteness, and its proneness to natural disasters to rank countries by their vulnerability level.

Briguglio finds that SIDS are more vulnerable to exogenous shocks than other categories of countries, including non-island developing countries, island developing countries, and developed countries. However, he emphasizes that this high level of vulnerability does not necessarily indicate anything significant about a country's economic growth or performance, merely that those aspects may be more sensitive to exogenous shocks than other countries. Some weaknesses of the index developed in this study include that it is

somewhat subjective in its makeup and may not include all characteristics of a country that impact its vulnerability, and that the data it uses may not be entirely accurate, which the author acknowledges. However, the definition of SIDS and their vulnerability to exogenous shocks, regardless of where they rank in terms of other countries, is important to the study of tourism.

Pelling and Uitto (2001) go further in depth on the vulnerability of SIDS to natural disasters. They bring up the comparative advantage that many SIDS have in the tourism industry; their natural resources are largely made up of the landscape and beauty of the countries, which is a draw for tourists. They also discuss that many SIDS are not integrated into the world market, along the same lines as Briguglio's (1995) conclusion that many SIDS are remote and isolated. According to these authors, this comparative advantage is something that is at risk from natural disaster. When natural disasters occur, they impact many social aspects of a country, including food security, loss of structures, and loss of human capital in that residents of an area are forced to respond to whatever natural disaster occurs, taking time out of their daily life, often including work. In relation to the tourism industry, the authors suggest that natural disasters can increase risk for investors, making them less likely to invest in new businesses or industries in areas affected by the natural disasters.

This study, although it focuses on the ways in which SIDS may combat vulnerability to natural disasters, brings up an important point about tourism that is not mentioned in much of the literature. Although SIDS have a comparative advantage in the tourism industry, the industry can also be much more volatile and risky for investors than in other nations due to their vulnerability to natural disasters.

Tourism as a Mechanism for Poverty Alleviation

Gutierrez-Perez et al. (2014) provide a comprehensive meta-analysis of literature concerning tourism as a method of poverty alleviation, discussing studies from 1999 to 2011.

Studies were chosen for the meta-analysis based on their use of “poverty alleviation” and “tourism” in their title, abstract, or key-words. The study includes 80 articles in total, most of which were published after 2006, and includes studies done in Africa, North and South America, Asia, Australia, and Europe.

The 2014 article provides an overview of the various definitions and perspectives on poverty that exist throughout the world, and focuses on the World Bank’s definition of poverty as earning less than 1.25 USD per day. According to the authors, there are three major considerations related to global poverty that exist in literature they analyze: the fact that global development organizations and governments have largely committed to reducing poverty; that poverty brings secondary effects with it such as political instability, environmental degradation, and migratory flows of populations; and that overall global populations are growing and subsequently exacerbating poverty without alleviation actions.

The article identifies 12 categories of tourism that are acknowledged in the literature: community tourism, nature tourism, eco-tourism, cultural tourism, diaspora tourism, rural tourism, small island tourism, ethnic tourism, religious tourism, sports tourism, NGO-oriented tourism, and general tourism. An interesting point brought up in the conclusion of the article is that literature reports that tourism development is most successful when its planning involves the attitudes and perceptions of all stakeholders, especially local communities and residents, and respect for the local economic, socio-cultural, and environmental impact that comes with tourism development.

Scheyvens and Momsen (2008) discuss tourism, specifically pro-poor tourism (PPT) as a method of poverty reduction in SIDS. These authors suggest that although tourism is generally successful in generating wealth in an economy, this wealth may not reach people living in poverty, and may even serve to exacerbate existing conditions of poverty. They discuss the idea that SIDS can become dependent on the tourism industry, but note that there

can be benefits from tourism as well. A country's dependency on tourism can lead to vulnerability, socially, environmentally, and economically. The economies of many SIDS often fall victim to diseconomies of scale and are subject to drastic effects from small changes in demand for the services that they provide. This lack of stability creates a particular vulnerability to exogenous shocks to an economy, which is why the authors suggest that PPT may be valuable in creating more stability in a SIDS economy. The study is conducted as an analysis of existing literature. The authors conclude that PPT is most effective in alleviating poverty when communities have power in decision making and are able to participate effectively in planning processes. This study is valuable for identifying the conditions under which PPT in SIDS may be most successful.

In another extensive literature review, Sutawa (2012) explores tourism in Indonesia as a way of empowering local communities, including through poverty alleviation. The paper gives background on the tourism industry in Indonesia, highlighting the fact that although overall world tourism travel decreased during the Great Recession, tourism travel to Indonesia still increased by 1.4 percent. According to the author, the increase in IT development has aided in the increased draw for tourists to Indonesia. The paper focuses specifically on Bali, which has a commitment to sustainable tourism and community empowerment. Sutawa identifies some of the major issues with tourism that occur globally, including in many areas tourism is not focused on local growth, it ignores social norms of local communities, and that it does not consider environmental impacts of tourism.

Sutawa emphasizes the definition of sustainable tourism, highlighting the importance of nature in tourism. Destruction of the environment is especially detrimental to the tourism industry in Indonesia. In Indonesia, a major challenge to communities is preserving these traditions and characteristics despite tourism growth. Not only is it important for

communities themselves to preserve their character for the sake of local customs and culture, but it is also one of the major draws for many islands in Indonesia.

With the influx of tourism into its economy, much of the land in Indonesia is more urbanized than ever before. In the past, land use was primarily designated for agricultural purposes, however tourism has created more commercial and residential development. Sutawa discusses a management model for land use that incorporates human ecology and politics into the discussion of land use, which puts emphasis on community involvement in decision making, an integral part of sustainable development. Another major issue that the author identifies is water availability. With an increase in the number of tourists, the water supply is put under pressure to supply more people. Since Indonesia is a nation made up of islands, it is especially important to consider water availability because of the high risk of groundwater infiltration by saltwater and rising sea levels. The author suggests government intervention in this area to protect the islands from water deficits.

In community based tourism such as in Bali, the community involvement is very important in terms of decision making and actual tourism activities. Tourism is often promoted as a tool for development, and the author suggests that community leaders should encourage the implementation of this tool for communities, similarly to Scheyvens and Momsen (2008) in their discussion of PPT. Sutawa (2012) discusses the World Bank's four aspects of empowerment: access to information in terms of legal activities and responsibilities that communities agree to in relation to tourism, inclusion and participation in decisions in planning and implementation of tourism activities, accountability for responsibilities of developing and participating, as well as building local capacity for organization. Communities must be able to be informed, active participants in the development of a tourism sector in order for it to be developed in conjunction with the needs of the town.

The paper also discusses secondary effects of tourism. These include infrastructure improvement, utility improvement and development, improved health and sanitation, new micro industries, and more. These secondary effects can reportedly be stronger than the direct effects of tourism development. Overall, the author emphasizes the importance of stakeholder involvement in all aspects of tourism development and maintenance. It is important for communities to be able to communicate their specific needs to the developers of tourism, as well as to be part of the development process itself.

Economic Development & Tourism in Indonesia

Tourism in Indonesia falls into several different categories. As a nation made up of islands with different geographical characteristics, types of economic activity are inherently different depending on where in Indonesia they occur. Because of this, much of the literature that exists on tourism in Indonesia is made up of case studies of small islands.

Walpole and Goodwin (2000) study the effects of small scale ecotourism on revenue generation in the Komodo Island of Indonesia. The authors discuss past studies that have been done on the inequalities that can result from tourism, suggesting that the benefits often go to consumer nations rather than developing host countries, and the local benefits of tourism are often centered in urban areas, not reaching rural corners of the nations. This is related to the idea of leakages as discussed previously. The authors suggest that ecotourism can prevent some of these downfalls of traditional tourism because of its small scale and localized nature. Ecotourism uses the characteristics of individual communities to draw in tourists, rather than bringing tourist activities into the community, creating less potential for leakage.

Komodo Island, a habitat of the widely recognized Komodo dragon, is a big draw for tourists from around the world. Walpole and Goodwin use a survey-based methodology for

their study, suggesting that macroeconomic study techniques could overlook some aspects of the community that are important for their research. A survey was distributed to tourists asking about their spending habits. The survey took into account whether tourists spent money on locally owned businesses and services as opposed to outside contractors or exported activities. The authors also surveyed local employees to find out how many jobs were created by the tourism sector, taking into account gender differences among those employed. Additionally, the surveys estimated the amount of revenue that tourism generated within the community, and how it was distributed throughout different parts of the community.

This study is valuable because it delves deep into the financial economics of the tourism industry in this small community. Although it only focuses on one part of Indonesia, the sources and information gathered from the survey are important considerations for studies in other parts of the country. The study found that some foreign-owned companies are buying portions of land that are expected to become popular tourist destinations in the future. The study also found that technical training may be important to the longevity of tourism in an area, especially one that strives to employ local residents. It also suggests that tourism is most successful when it incorporates already existing local industries into the tourism, rather than trying to create packaged experiences for tourists, which is a core principle of ecotourism.

Hampton and Jeyacheya (2015) study the small island of Gili Trawangan to analyze the impact of local tourism on community development. This study also uses surveys as a tool to find out more about the community members as individuals. Gili Trawangan is an area which has experienced a sharp increase in both domestic migration and international tourism over the last two decades. The authors study land use changes in the community, finding that much of the land that had previously been used for farming was later used for tourism

development. They discuss the development of new roads on the island and some issues of local opposition, which relates to power structures in the community.

Among the authors findings are that local residents are strongly connected to their natural environment, which is a major part of the tourism industry's draw in the region. However, environmental degradation from tourism activities still occurs, and has been a source of conflict among community members. Land ownership and control over activities on the land has also created conflict. The authors speculate on the impact of financial power on land use changes in the community, suggesting that entities with more financial resources may be able to cause land use changes despite community opposition.

Hitchcock (2001) studies the impact of the Asian financial crisis of 1997 on tourism in Bali, Indonesia. In his article, the major focus is on what factors must be present for a successful tourism industry to develop in a country. He studies Bali in particular because it experienced a strong impact from the financial crisis, yet is also one of the fastest growing tourism destinations in the world. He provides a qualitative analysis that concludes that government and financial stability are major factors in determining whether tourism will be a successful industry in a region.

In summary, there are several models through which tourism development research can be framed. Both qualitative and quantitative methods have been used in past studies on tourism, and both are necessary to capture both the statistical effects of the industry as well as the effects on individual communities made up of heterogeneous consumers. In the study of tourism in Indonesia, case studies are popular because of the local differences between the nation's various island economies. However, this has resulted in a lack of comparative research in Indonesia, especially that which uses quantitative methods to measure tourism impacts. Studies that model the multiplier effect are similarly constrained by geographic boundaries, often taking into account a small geographical area. Although these methods are

accurate, they are also limited in scope. This study will address the gap in the literature and provide a cross-region analysis of the impacts of tourism at the household level in Indonesia.

IV. Methodology

In order to investigate the impact of tourism at a household level in Indonesia, this study uses a regression analysis with the net profits of non-farm, household-owned business for 2014 as the dependent variable, shown in the model as *NPB* (Model 1). This variable is measured in rupiah, the official currency of Indonesia. Data for this variable comes from the fifth wave of the Indonesian Family Life Survey (IFLS-5), a survey administered every seven years by the Rand Corporation (Table 1). The survey collects information on several household and community characteristics across 23 of Indonesia's provinces. Although it contains other variables that could be used to represent income, such as wages or welfare, my model uses the net profits variable as a measure of income at the household income because of its sensitivity. While wages, welfare, and potential other measures of income can also be accurate, they are subject to more regulations and restrictions by governing bodies than income from household-owned businesses, since a household can set its own prices and parameters for their business. Since the dataset differentiates between farm and non-farm businesses, I choose to only include the non-farm businesses for the purpose of this study. Although farms do have the potential to be affected by tourism, that impact may include a time lag aspect, which is beyond the scope of this study in its current state. Summary statistics for the dependent variable are shown in Table 2.

There are a number of variables that impact the net profits from non-farm, household owned business. The main variable of interest in the model is the foreign tourist arrivals (*FTA*) by province in 2014. This dataset was obtained from Badan Pusat Statistik, an Indonesian statistics agency that provides provincial and regional level data to the public.

Foreign tourist arrivals are measured by the number of people with a country of residence other than Indonesia entering a province in the year 2014. Because each household in the IFLS-5 dataset is associated with a specific province within Indonesia, the foreign tourist arrivals for each province can be associated with the household and therefore the net profits from non-farm, household owned business variable. This variable is expected to have a positive relationship with net profits.

Another variable that has an impact on the dependent is the number of villages in a province in which a natural disaster occurred in 2011 (*ND*). I include this variable as a control; previous literature asserts that the risk or perceived risk of natural disasters in a tourist destination may have negative impacts on the amount of tourists that arrive there (Pelling & Uitto 2011). I include natural disasters in the model as measured by number of villages by province in 2011 because this is what was available from the data source, Badan Pusat Statistik. The natural disasters fall into three categories: earthquakes, floods, and volcanic eruptions. However, for the purpose of this study, the three are grouped into one variable to negate any effect that geographic location may have on one type of natural disaster risk. Although data on natural disasters was available for 2014, I assume that the social impact of a natural disaster will be time-lagged. To account for this, I use the number of villages by province that have experienced a natural disaster from the year 2011, which is the next most recent year that data was collected. This variable is expected to have a negative relationship with net profits, which would suggest that a recent occurrence of a natural disaster in an area makes net profits from household-owned businesses to be lower, since tourism activity may decline.

The second control variable in the model is the number of hotel rooms (*RM*). This variable is also measured by Badan Pusat Statistik, and for the purpose of this study has been normalized to the population for each province as it was reported in 2014 provided by the

same agency. This variable is used as a control to account for how much tourism is already present in each province. It is assumed for the purpose of this model that the amount of hotel rooms in a province can represent the penetration of the tourism industry into the area. For this variable, I am mainly interested in capturing the positive effect it is expected to have. By controlling for the number of rooms, I hope to isolate further the impact that tourist arrivals have on net profits to household owned business, since the number of rooms may indicate differences in business-friendly policies that exist between provinces related to aspects other than their attractiveness to tourists. The number of rooms is expected to have a positive relationship with net profits to non-farm, household-owned business.

A third variable that I include in the model is the Gross Regional Domestic Product (GRDP) per capita. This variable captures the value of the regional economy, and in Indonesia is measured at the provincial level. The data for this variable comes from Badan Pusat Statistik. The GRDP per capita is used in the equation to control for other aspects of the province that may affect business profits. It is expected to have a positive relationship with net profits to non-farm, household-owned business.

In all, the main model includes the dependent variable, net profits to non-farm, household-owned business, categorized by province, which is controlled by GRDP per capita, the number of rooms per 1,000 people by province, the number of villages in the province that experienced a natural disaster in 2011, in order to investigate the impact of foreign tourist arrivals to the province. A double-log function captures this relationship most accurately (Model 1). Many of the variables in the model have different magnitudes from each other, so by using the log of each variable the model is able to capture the relative changes using percentages rather than exact increases or decreases.

I use four different versions of the model to test the relationship between the variables. The first includes only the main variable of interest, foreign tourist arrivals. The

second model includes the same variable of interest as the first model, in addition to the GRDP per capita variable as a control. The third model adds the natural disaster variable, and the fourth and most important model also includes the rooms per thousand people variable. Four different models are used in order to detect any differences in the relationships between variables when new variables enter the model.

V. Results

In the double-log model that includes all four independent variables, foreign tourist arrivals have a positive relationship with net profits from non-farm, household-owned business with a coefficient of 0.00036. Although this result is not statistically significant, it suggests that with a one percentage point increase in foreign tourist arrivals, the net profits increase by 0.00036 percent, meaning that the net profits increase at a decreasing rate. This is the shape of relationship that was expected from the model.

The log of GRDP per capita shows a significant negative relationship with the log of net profits from non-farm, household-owned business. These results suggest that net profits decrease at a decreasing rate (-0.097 percent growth rate) as GRDP per capita increases, which is not the expected relationship. Another variable that shows a significant relationship is the natural disasters variable. Results of the regression indicate that with a one percent increase in the number of villages that experienced a natural disaster in 2011, the net profits to non-farm, household-owned business decreases by 0.15 percent, meaning that they decrease at a decreasing rate, and is significant at a 99 percent level of confidence. This result does demonstrate the expected relationship.

The number of rooms per thousand people demonstrates a positive but insignificant relationship with net profits. The coefficient is 0.025, suggesting that the net profits increase

at a decreasing rate with the number of rooms per thousand people. This is the expected relationship. The complete results for the regression analysis are shown in Table 3.

The results for Models 1-3 were largely similar to those of the primary and most important model. However, in Model 2, which shows the relationship between net profits from non-farm, household-owned business and foreign tourist arrivals with GRDP per capita, there is a different result that is of interest. In all models, the GRDP is expected to have a positive relationship with the net profits variable. Although the primary model shows an unexpected relationship, , the second model showed the expected positive relationship, albeit without the inclusion of other variables that are present in the primary model. The constant of the model is significant for all the versions of the model.

In order to ensure accuracy of the results, it was necessary to perform robustness checks on the variables involved in this model. Using a test for multicollinearity, the variance inflation factors (VIFs) for each variable were found to be low, indicating that there is no multicollinearity in the model. Results of the VIF test are shown in Table 4. Additionally, the Park Test for heteroskedasticity was performed on the model, and indicated that there is no heteroskedasticity present. Results of the Park Test are shown in Table 5.

VI. Discussion

The purpose of the regression analysis in this study is to test the relationship between net profits to household-owned business and tourism activity. Specifically, I examine the impact of the number of foreign tourist arrivals by province on net profits to non-farm, household-owned businesses, using GRDP per capita by province, number villages that have experienced natural disasters by province, and number of rooms per thousand people by province as secondary control variables. Based on literature that suggests that expenditure on tourism has a ripple effect on income in an economy as discussed by Rusu (2011), I expected

the relationship between foreign tourist arrivals and net profits to be positive with diminishing marginal returns. The results of the regression analysis suggest that there may be some validity to this hypothesis, that although tourism activity does have a positive impact that reaches household-owned businesses, the additional positive impact diminishes as tourism activity increases. However, the lack of statistical significance makes the true effect ambiguous. If diminishing marginal returns to foreign tourist arrivals do exist, it may be the result of leakages from tourism activity, as discussed in the literature by Rusu (2011). When expenditure by tourists increases, it is likely that some of that expenditure is funneled out of an economy by foreign-owned corporations, corrupt governments, or other mechanisms.

The lack of statistical significance for this result may mean that method of measuring tourism is not the most effective. Since the tourism data is at the provincial level and the net profits from non-farm, household-owned business are at the household level, there may be some geographic differences in the variables. It is possible that the foreign tourist arrivals are concentrated in one particular area of a province, which may be less likely to impact businesses located far away but technically within the same province. Since the province is the most specific geographical marker the dataset includes for foreign tourist arrivals, it was not possible to include more specific relationships between which households are in proximity to which foreign tourist arrivals.

The unexpected relationship between GRDP per capita and net profits to non-farm, household-owned business suggests that perhaps there is an aspect to this relationship not captured by the model. Since the model used in this study is a double-log function, it is unable to show a relationship that is not logarithmic. It is possible that when GRDP per capita increases, the tourism industry is crowded out by other industry that caters more towards residents of an area than on foreign tourists. This relates back to the theory of causality between economic growth and tourism as discussed by Brida et al. (2012). If tourism does in

fact promote economic growth but economic growth does not promote tourism, it follows that once economic growth reaches a certain level, tourism activity may diminish because it is no longer needed to sustain or grow the economy.

This somewhat contradicts some of the theories related to SIDS that suggest that their widespread reliance on foreign aid, imports, exports, remittances, and often times tourism, may be the economic structure that leads to steady state development. If increased economic output leads to lower net profits from business, factoring in tourist arrivals, it may suggest that tourism is not a method through which economies can sustain themselves in the long run. Alternatively, this unexpected relationship could also be explained by the possibility that in provinces with higher GRDP per capita, household-owned businesses are crowded out by larger corporations or enterprises, meaning a smaller consumer base for the household-owned businesses and perhaps lower net profits.

The number of villages that had experienced a natural disaster in 2011 showed the expected relationship with net profits from non-farm, household-owned business. This suggests that in areas where there have recently been natural disasters, household-owned businesses are less likely to make a profit than in areas where there have not been as many recent natural disasters. Natural disasters are common in Indonesia, and thus an important part of any study that addresses the nation. The loss of profits may be due to loss of physical capital during a natural disaster, loss of financial capital due to rebuilding efforts, loss of human capital when time has to be spent on recovery efforts, or loss of consumer base for business. It is possible that natural disasters also have an impact on the amount of tourists who are willing to travel to an area. Although the regression analysis does not capture this relationship, it is important to note that many of the household-owned businesses in the model seem to be affected by the presence of natural disasters. If tourism is to be considered

a sustainable mechanism of economic growth, potential mitigation or adaptation mechanisms should be addressed in other studies on the topic.

The relationship between the numbers of rooms per thousand people by province had the expected relationship to net profits from non-farm, household-owned business, but was not significant. This variable is similar to the foreign tourist arrivals variable, but it relates more to the province's openness to tourism and the actual supply of tourism-related industry, rather than the actual amount of tourists coming in. It was expected to have a positive relationship with net profits because even if there are not tourists arriving in the area and staying in the rooms, the rooms themselves create need for more businesses in that they employ workers for both construction and operation of any facilities. This is similar to the idea of the multiplier effect of tourism, but is controlled more closely by the provinces themselves, rather than the decisions of tourists to come to the area.

In all of the models tested, the constant was shown to be significant. This result is somewhat problematic for analyzing the data because the constant's significance indicates some level of omitted variable bias in the model. There are several possibilities for variables that be included in the model to remediate this bias. Since the dependent variable is at the household level and all the independent variables are measured at the provincial level, it is likely that there is some determinant of the net profits variable that is left out of the model. Although the variables that are included to have a general impact on the net profits variable, the magnitude and significance of those relationships may not be as accurate as they could be with the inclusion of some household level variables as controls. The data that may make this relationship more clear is difficult to acquire, however. The determinants of profits are mainly capital and labor, but the dataset does not include the exact data on capital and labor for household-owned businesses. Still, there may be other variables that could act as a proxy for capital and labor in this type of model.

It may also make the model more accurate to include information about tourism activity in more concentrated geographic areas than provinces. Some provinces are large and span across several islands. However, the limited nature of ports through which tourists can arrive in a country makes it difficult to track exactly where tourism activity occurs. The number of rooms in an area attempts to capture some measure of where tourists stay when they enter the country, but this variable is also at the provincial level. Municipal level data may improve the accuracy of the model.

VII. Conclusions

The purpose of this study was to investigate the impact of tourism at the household level, using net profits from non-farm, household-owned business as the household variable to represent a form of income. However, the results of the model show more about the relationship between natural disasters and net profits to business, which does not necessarily relate directly to the tourism industry. Literature supports the idea that natural disasters have an impact on businesses, because they can destroy capital. It would be valuable to investigate this relationship further. It is plausible that household-owned businesses may experience a different impact than larger corporations in the event of a natural disaster. As economies develop, it is important for decision-makers to be aware of the different potential impacts an event could have on facets of an economy, especially in a SIDS like Indonesia where regions experience drastically different impacts from exogenous shocks and economies are susceptible to rapid change.

Future research should also consider using a different household-level dependent variable to measure the impacts of tourism. Net profits from non-farm, household-owned business does provide a somewhat sensitive measure of a form of household income, but it only applies to those households that own businesses.

Finally, this model does not take into account any cultural features of an area that may make it more or less conducive to tourism activity. Literature suggests that tourism in Indonesia is reliant on the participation of local communities, and if local culture makes communities unreceptive to participating in tourism activity, tourism may inherently have less of an effect in those areas. Even if culture is not captured in the model through its own variable or data, it is important to consider this in the result. Out of context of local culture, even significant quantitative results can be meaningless.

Given its shortcomings, this model does not provide a clear picture of the relationship between tourism and net profits to household-owned business. Despite the expected relationship and the coefficients in the model, the results were of low magnitude and not statistically significant. This indicates that more research must be done to investigate the relationship between tourism activity and household level variables. This relationship has several implications for policy. The positive impacts that tourism could bring would indicate to policymakers that their efforts should support tourism, especially types of tourism which utilize household-owned businesses like the ones this model captures. Alternatively, if tourism is found to have negative effects at the household level, it would suggest to policymakers that tourism needs more community participation.

The results of the model suggest a relationship between natural disasters and net profits to household-owned business, suggesting that policymakers should consider the vulnerability of local economies to natural disaster effects. This result is interesting because it could also fit into the framework of a multiplier model, similar to that of the tourism industry. Natural disasters have direct impacts on a community, in the physical destruction they often bring, but indirect impacts are less clear and equally important for communities and governments.

Based on the literature reviewed for this study, it is clear that policymakers should be careful in making too broad of statements or overreaching with policy that promotes tourism. At a certain point, added tourism may no longer become as beneficial as it is when there is not already a high level of tourism activity. Despite the results of this study it is still possible that there are diminishing marginal returns to tourism, which would suggest that policy at a certain point should be focused on directing resources to other types of allocations. Future research should be conducted addressing the clarity of this relationship between tourism activity and income variables at the household level, in order to investigate and define whether tourism can be an effective mechanism for alleviating poverty and promoting economic growth.

VIII. Models

$$(1) \quad \ln(NPB_i) = \beta_0 + \beta_1 \ln(FTA_i) + \varepsilon_i$$

$$(2) \quad \ln(NPB_i) = \beta_0 + \beta_1 \ln(FTA_i) + \beta_2 \ln(GRDP_i) + \varepsilon_i$$

$$(3) \quad \ln(NPB_i) = \beta_0 + \beta_1 \ln(FTA_i) + \beta_2 \ln(GRDP_i) + \beta_3 \ln(NTD_i) + \varepsilon_i$$

$$(4) \quad \ln(NPB_i) = \beta_0 + \beta_1 \ln(FTA_i) + \beta_2 \ln(GRDP_i) + \beta_3 \ln(NTD_i) + \beta_4 \ln(RM_i) + \varepsilon_i$$

IX. List of Tables

Table 1. Definitions of variables in Equations 1-3.

Variable	Definition
NPB	Net profits in non-farm, household-owned business in 2014
FTA	Foreign tourist arrivals by province in 2014
GRDP	Gross Regional Domestic Product per capita by province in 2014
NTD	Number of villages experienced natural disaster by province in 2011
RM	Number of hotel rooms per thousand people by province in 2014

Table 2. Summary statistics

	N	Mean	SD	Min.	Max.
NPB	6,332	19,700,000	47,800,000	0	1,000,000,000
FTA	6,712	561,470.9	1,215,544	2,100	5,293,500
GRDP	6,712	4,180,000,000	3,540,000,000	1,710,000,000	17,500,000,000
ND	6,712	1,672.64	1,498.97	16	4,635
RM	6,712	6.04	16.59	0.64	87.27

Table 3. Results from regression analysis of Models 1-4.

Dependent variable $\ln(NPB)$				
	(1)	(2)	(3)	(4)
ln(FTA)	0.02 (0.014)	0.009 (0.015)	0.007 (0.015)	0.00036 (0.017)
ln(GRDP)		0.106** (0.045)	-0.109** (0.051)	-0.098* (0.052)
ln(ND)			-0.171*** (0.018)	--0.158*** (0.023)
ln(RM)				0.025 (0.027)
Constant	15.489*** (0.18)	13.783*** (0.754)	18.706*** (0.919)	18.493*** (0.946)
R²	0.0003	0.0012	0.0147	0.0149
adj. R²	0.0001	0.0009	0.0142	0.0142
N	6,222	6,222	6,222	6,222

All standard errors are in parentheses

* indicates significance at 10% level of significance

** indicates significance at 5% level of significance

*** indicates significance at 1% level of significance

Table 4. VIF Test for multicollinearity

Variable	VIF	1/VIF
<i>ND</i>	1.21	0.829
<i>GRDP</i>	1.11	0.899
<i>FTA</i>	1.08	0.923
<i>RM</i>	1.06	0.939
Mean VIF	1.12	-

Table 5. Results of Park's test for heteroscedasticity. Accept hypothesis that there is homoscedasticity in the model.

Function	$\ln(e^2) = \lambda_0 + \lambda_1 \ln(\text{Population}_i)$
t	-0.37
P	0.714

X. Appendix



Figure 1. Map of Indonesia, showing the number of foreign tourist arrivals in 2014 separated by province. Darker colors indicate more foreign tourist arrivals. Data is from Badan Pusat Statistik.

XI. References

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