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The Economic Impacts of Migrant Maids in Malaysia

A thesis
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Of the requirements for the degree of
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by

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Abstract

Demand for migrant maids by households in Malaysia has increased rapidly as more married women choose to participate in the workforce. Simple comparisons of households with maids and those without suggest that hiring maids raises female labour force participation rates of their employers by 26 percentage points. But such comparisons are not of like with like because households that employ maids differ in many ways from those who do not. When propensity score matching (PSM) methods are used to estimate the treatment effect of having a foreign maid the rise in female labour force participation is estimated to be only 18 percentage points in 1993/94. Moreover, this treatment effect appears to have fallen to only 13 percentage points by 2004/05. This decline is not apparent when simpler but potentially biased methods are used to estimate treatment effects. The small impact of hiring maids suggests financial losses to the host households and higher leisure time for Malaysian women.

Another side effect of hiring migrant maids may be that human capital formation is negatively influenced, since these foreign maids have lower education levels than the mothers of the children they are employed to look after. This is a feature in many households in Malaysia where the inputs into children's human capital formation include maids and private tutors, in addition to the more typical inputs of parents and teachers. Previous studies of these atypical inputs from other Asian countries ignore the cumulative nature of learning by just examining contemporaneous impacts of maids, private tutoring and maternal employment. In this thesis, especially collected retrospective data are used to examine impacts on academic performance of Malaysian children in Year 6 (ages

12 to 13). The results suggest children from households that have ever had a foreign maid have higher Year 6 results, with maid impacts having a long lag. Private tutoring in the three years prior to Year 6 has significant positive impacts on academic results but earlier tutoring is associated with poorer results. When effects at various quantiles are studied, the positive impact of maids and private tutoring is most apparent for students below the median.

Hiring foreign maids in Malaysia also has impacts on the maids themselves and their families in their country of origin (which is predominantly Indonesia). To examine the effect of this temporary emigration to Malaysia on income levels of the emigrant and the migrant-sending households a survey of Indonesian maids and factory workers in Malaysia was conducted by the author of this thesis. Data from this survey were then combined with data from three rounds of the Indonesian Family Life Survey (IFLS) to estimate that these young women may gain an additional US\$80 to US\$130 per month compared to earnings had they stayed in Indonesia. The decision to remit depends on duration and earnings in Malaysia more than on household characteristics in Indonesia. The main use of remittances is to accumulate fixed assets in Indonesia. Fixed effects models of household expenditure and assets using three rounds of IFLS data also confirm that the main impact of migration and remittances is on assets rather than consumption, and is more apparent for urban households than for rural households.

Notes

Note on publications

A number of papers have been produced from this thesis. The papers are as follows:

Conference Posters

- “The economic impact of foreign domestic workers in Malaysia: Estimates from induced labour market activity” Presented at *Markets and Models: Policy Frontiers in the AWH Phillips Tradition*, Wellington, New Zealand; 9-11 July, 2008 (with John Gibson).

Conference Papers

- “The Impacts of Temporary Emigration of Lower-Skilled Females on Sending Households in Indonesia”, 51st New Zealand Association of Economists Annual Conference, University of Auckland, New Zealand, July 2010 (with John Gibson).
- “The Impacts of Temporary Emigration of Lower-Skilled Females on Sending Households in Indonesia”, Sixth Australasian Development Economics Workshop, University of Western Sydney, Australia, June 2010 (with John Gibson).
- “The Impacts of Foreign Maids, Private Tutoring and Maternal Employment on Children’s Academic Performance”, 13th Annual Waikato Management School Student Research Conference, University of Waikato, New Zealand, October 2009.
- “The Impacts of Foreign Maids on Female Labour Force Participation in Malaysia”, 12th Annual Waikato Management School Student Research Conference, University of Waikato, New Zealand, October 2008.

Others

- ** Chapter Three is written based on the paper Tan, P.-L and Gibson, J. (2010), “The Impacts of Foreign Maids on Female Labour Force Participation in Malaysia”, which is currently submitted to a journal for possible publication.
- ** Chapter Four is written based on the paper Tan, P.-L and Gibson, J. (2010), “The Impacts of Foreign Maids, Private Tutoring and Maternal Employment on Children’s Academic Performance”, which is currently submitted to a journal for possible publication.
- ** Chapter Five is written based on the paper Tan, P.-L and Gibson, J. (2010), “The Impacts of Temporary Emigration of Lower-Skilled Females on Sending Households in Indonesia”, which is currently submitted to a journal for possible publication.

** I hereby declare that my contribution to each of the jointly submitted papers is approximately 80 percent and includes all of the literature review, data collection and manipulation, empirical estimation and interpretation and the nature of my co-author’s contribution is approximately 20 percent and is only in the nature of critique, discussion, revision and positioning within the literature.

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“The LORD bless you and keep you; the LORD make his face shine upon you and be gracious to you; the LORD turn his face toward you and give you peace.” Numbers 6:24-26. AMEN

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October, 2010*

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Glossary, Abbreviations and Acronyms

ATT: Average treatment effect of the treated

ASEAN: Association of Southeast Asian Nations

FE: Fixed Effect model

FLFPR: Female labour force participation rate

GDP: Gross domestic product

HES: Household Expenditure Survey

IFLS: Indonesia family life survey

IV: Instrumental variables

LFPR: Labour force participation rate

LFS: Labour force survey

Maid: female domestic worker

NEP: New Economic Plan

NELM: New Economics of Labour Migration

OLS: Ordinary least square

PCA: Principal Components Analysis

PSM: Propensity score matching

PDL: Almon Polynomial Distributed Lags

RM: currency of Malaysia (Ringgit Malaysia), US\$1=RM3.34

Rupiah: currency of Indonesia, US\$1=Rupiah9,291.00

Tuition: private class outside school hours

UNFPA: United Nations Population Fund

Year 1 to year 6 students: Students at primary one to six

CHAPTER 1 - INTRODUCTION

1.1 Introduction

In the last few decades, international migration has transformed the demography of both the sending and receiving countries. The United Nations reported that three per cent of the world's population are migrants (UNFPA, 2006). The number of international migrants has increased from 155 million in 1990 to 191 million in 2005, and it is expected to rise significantly over the next few decades as the ageing population in high-income countries rises (United Nations, 2006). International migration is indeed a world-wide phenomenon.

Migration flow used to be mainly South-North in direction in that highly skilled migrants from developing countries would migrate to developed countries. However, in the last thirty years, more than 50 per cent of international migrants are moving from South to South, i.e. from one developing country to a richer developing country nearby. For example, migrants move from Indonesia to Malaysia and Singapore, or from Laos, Cambodia and Myanmar to Thailand (International Organization for Migration, 2003). These migrants are usually lower-skilled workers who are in high demand in the more affluent developing countries.

Migration of lower-skilled workers is usually temporary in nature. These workers will work in foreign countries for a limited time before returning to their home countries. Temporary migration is viewed as a flexible solution to labour shortages because it does not have any public ramifications of permanent settlement of immigrants for the host countries. At the same time, the sending countries are less

concerned about brain drain as temporary migrants usually return with new skills and savings to help develop their home countries.

Another important feature of current international migration trends is the huge movement of women who, as the principal breadwinners, are migrating independently of their family. The World Bank (2006, p. 28) reported that in 2005, almost half of the world's migrants were women. They often migrate for different reasons, use different routes and experience different outcomes compared to their male counterparts. They usually work in gender segregated and unregulated economic sectors such as domestic work, the entertainment and sex industries. These women are vulnerable to abuses since they are not protected by labour legislation or policy (International Organization for Migration, 2003).

In a developing country like Malaysia, there were about 1.91 million temporary lower-skilled migrant workers in 2006, representing 17 per cent of the total Malaysian labour force of 11.7 million (Ministry of Finance, 2007). Nevertheless, the data are thought to be inadequate as irregular migrants make up another 1.5 to 2 million people. Thus migrant workers may actually comprise 22 to 27 per cent of Malaysia's labour force (Kanapathy, 2006; Kassim, 2006). At the same time, the official data showed some 320,000 female migrants employed as domestic workers or household maids in 2006 which is about 2.7 percent of Malaysia's labour force (Ministry of Finance, 2007).

This significant growth of lower-skilled migrant workers has led to many studies and public discourses on the economic, cultural and social impacts of migration on the sending and receiving countries. However, little is known about the economic impact of lower-skilled migrants, especially female workers, on both the receiving and sending countries. This thesis seeks to empirically study the economic

impact of temporary lower-skilled female migrant workers, to see if their presence in the host countries and absence from their home countries are justifiable.

1.2 Problem statement

One of the most important migration trends in Asia is the increasing number of young women migrating to rapidly growing economies like Singapore, Hong Kong and Malaysia to work as domestic helpers or maids (Wickramasekera, 2002). This international movement of young women also reflects the deliberate policies of the host countries to increase their female citizens' participation in the labour force by importing domestic services.

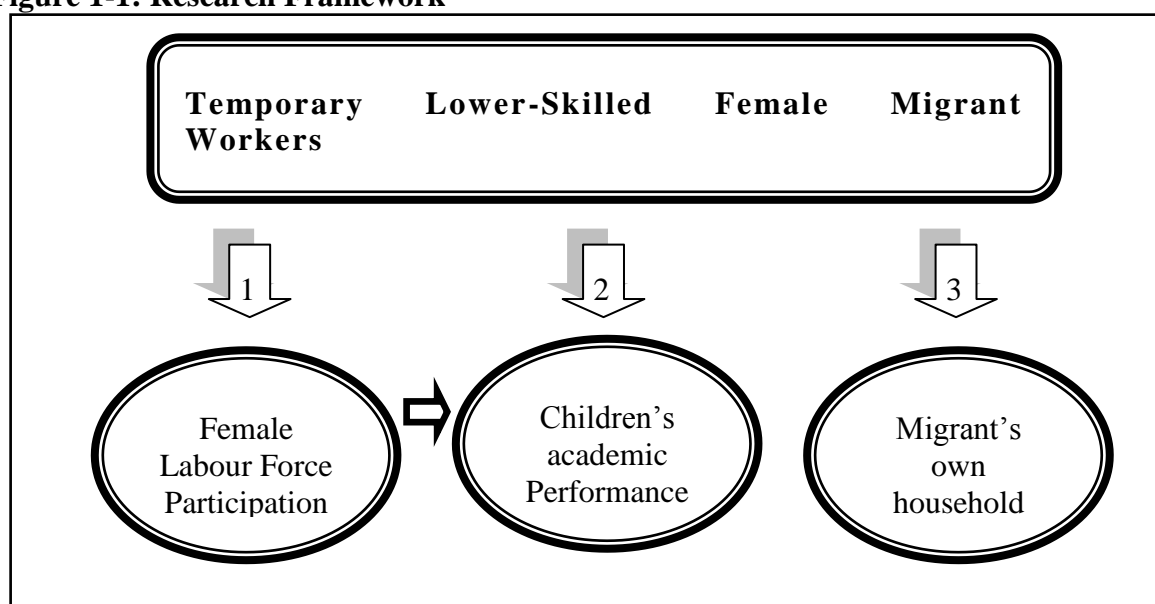
The growing reliance on foreign maids to perform domestic services indicates two things. First, women in countries like Malaysia have become more educated and so they are more likely to pursue a career instead of staying at home as housewives. Second, unlike men, working women in Asia are also expected to play their household production roles. In particular, working women are expected to care for their family and do domestic chores. Therefore, foreign maids are employed as a solution to release women from their household duties, thereby giving them more time to focus on their career. According to Cortes and Tessada (2009), the temporary migration of foreign maids has lowered the cost of household services and thus enabled more women, especially highly skilled women in the host countries, to work longer hours and become more successful in their career. However, the impact of this migration of foreign maids on the female labour force participation in the host countries is yet to be understood.

On the other hand, as more Malaysian mothers join the paid labour market while leaving their children under the supervision and care of foreign maids, there

are concerns that the children's human capital formation could be negatively influenced by the foreign maids who have lower education levels than the mothers of these children. Some fear that children will grow up to be less independent as most of the household chores are done by the foreign maids.

Finally, temporary lower-skilled female migrant workers like foreign maids come with the hope to boost their own household income and eventually their socio-economic status. They believe that temporary migration would increase their income and hence their financial capabilities to address the basic needs of their family and bring about other improvements. However, with a monthly salary of US\$100 to US\$150, whether they will achieve their dream is debatable

Figure 1-1: Research Framework



In summary, it is important to empirically determine the economic impact of the temporary lower-skilled female workers such as foreign maids on the female labour force participation in the host countries, and how they affect the development of the children under their care. It is equally important to ascertain the economic effects of

the temporary migration programme on the migrant workers and their own households (Figure 1-1).

1.3 Objectives

This thesis has three objectives listed below:

- i) To estimate the contribution of foreign maids to female labour force participation in the host countries.
- ii) To determine the impact of foreign maids on academic performance of children under their care.
- iii) To investigate the impact of a temporary migration program on lower-skilled female migrant workers and their own households.

1.4 Research Questions

The research questions can be summarized as follows:

- i) What is the probability of women in host countries working as a result of employing foreign maids?
- ii) What is the net economic contribution to the host economy as a result of employing foreign maids?
- iii) What is the difference in academic achievement between children in households with and without foreign domestic workers?
- iv) What is the difference in academic achievement between children with and without a mother working full time?
- v) What are the income gains for temporary lower-skilled female migrant workers?
- vi) What is the impact of a temporary migration program on lower-skilled female migrants' own households?

1.5 Research Methods

Different sets of data and econometric methods are used to achieve the three objectives of this thesis. Firstly, to evaluate the foreign domestic workers' economic contribution to Malaysia in terms of the higher female labour force participation, I use two sets of data from the Household Expenditure Survey (HES) conducted by the Department of Statistics Malaysia. This survey was first conducted in 1994, and

the most recent one was done in 2004. Approximately 14,000 randomly selected households were surveyed in each wave. Demographic information on all persons living in the selected household including information on their expenditure and income is collected in this survey.

Secondly, to compare the academic development of children from households with and without foreign female domestic workers, a field survey was carried out to capture the necessary information. 1600 school children aged 12 to 13 years old who have just sat for their first public examination were interviewed to assess their education level. This assessment result is used as a proxy variable to measure their academic achievement.

Finally, to investigate the impact of the foreign female domestic workers' remittances on their home countries, a non-random survey of 200 maids was carried out to obtain information on demographic background (education level, age, family size, location, etc), as well as current and past employment information (years of working, type of job, etc). Information on remittances such as frequency of remittance, amount and purpose of remittances is also collected. The non-random sampling is selected as most maids are confined by their employers at home and forbidden to communicate with any outsider. Furthermore, it is next to impossible to obtain a sampling frame from the Immigration Department of Malaysia as this information is classified as highly confidential (Kanapathy, 2006; Kassim, 2006). Apart from the field survey, three latest waves of panel data from the Indonesian Family Life Survey conducted by RAND Corporation are used to create a no-emigration counterfactual income and to determine the impact of migration on household expenditure and assets.

The detailed research and econometric methods applied in this thesis to achieve each objectives are presented in Chapter Three, Four and Five respectively.

1.6 Significance of Research/Contribution to Knowledge

Much research has been done on the impact of migration on the wages and employment of the host country. However, its contribution to the economic efficiency of the labour market of the host country such as labour force participation among natives, especially mothers, as a result of migrant labour availability (World Bank, 2006) remains unclear. Therefore, this study aims to provide an empirical model that can measure the contribution of foreign domestic workers in allowing the participation of more local female labourers in the host country.

The findings are relevant for both Malaysia and Indonesia since there are at least 0.3 million Indonesian maids working in Malaysia. These Indonesian women are negatively perceived by the Malaysian public, as maids have been accused of abusing the children and the elderly under their care, while stories of maid abuse have been widely reported (Ariffin, 2001; Chin, 1997, 2005). As such both governments have been periodically restricting and relaxing migration policies on the hiring of Indonesian maids. Yet despite these headlines there has been little formal study of this important bilateral migration flow. This study seeks to fill the void.

Much has been debated on the impact of maternal works on children's growth and there is no consensus on the conclusion (Blau & Grossberg, 1992; Brooks-Gunn, Han, & Waldfogel, 2002; Burchinal & Rossman, 1961; Leibowitz, 1977). Meanwhile, rapid growth in household wealth and rising female labour force participation in developing countries like Malaysia are creating a demand for foreign

maids (who work as live-in maid) and locally-born private tutors as additional inputs into the children's human capital formation. Hence, this study will contribute to the literature not only in terms of the impact of *maternal works* but also the impact of foreign maids and private tutors on the children's academic performance.

Finally, the emigration of young women from developing countries to work temporarily as caregivers, maids and other unskilled occupations in richer countries is on the rise. This phenomenon is driven by growing international wage gaps, rising demand for services, and divergent trends in youth and elderly populations in both the developed and developing countries. Nevertheless, the effect of emigration on the income levels of the migrant-sending households is unclear. In this thesis, evidence of the impact of temporary migration on the emigrants themselves and their sending households in Indonesia will be presented.

In summary, many stakeholders in a host country like Malaysia will agree that the host country needs migrants to fuel its economy, but it should be done in a way that maximizes the economic benefits and minimizes the negative effects in the long run. This thesis seeks to provide input to the government of the host country on policy formulation concerning migrant workers, so as to maximise the economic benefits of such policy while minimising its negative impact on the economy and society.

1.7 Arrangement of the Thesis

Chapter 2 reviews the literature on international migrations. This chapter begins with a brief discussion of the theories of international migration flows, followed by a discussion on the contemporary trends in international migrations. It ends with an analysis of the potential gains of international migration.

Chapter 3 presents the findings of the impact of foreign maids on the female labour force participation in Malaysia. It uses the Household Expenditure Survey Data for 1993/1994 and 2004/2005 to determine the average treatment effect of having foreign maids in order to allow native women to join the paid labour market.

Chapter 4 discusses the findings of the impact of foreign maids on child growth. It is based on a primary survey of 1,600 Year 7 students (who are 12-13 years old) from eight secondary schools in two Malaysian states: Selangor and the Federal Territory of Kuala Lumpur. The analysis also shows the impact of maternal works and attending private tutoring classes on child growth.

The findings in Chapter 5 focuses on the impact of temporary migration programme on lower-skilled female migrant workers and their own households. The analyses will ascertain the pecuniary gains of working as lower-skilled female migrant workers in Malaysia. It also uses the Indonesian Family Life Survey Data (IFLS) by Rand Corporation as a comparison to determine the economic impact of international migration on the households in the sending countries.

Chapter 6 presents the conclusion, recommendations and limitation of this research to highlight the need for further research in this area.

CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

International migration has the potential to create substantial economic gains for both the sending and receiving countries. One of the most direct impacts of international migration is remittances. According to the World Bank, remittances by international migrants through official channels reached a record high of US\$328 billion in 2008 (Ratha, Mohapatra, & Xu, 2008). As a more stable and consistent source of income compared to other capital in-flows, remittances have alleviated poverty and assisted in the micro and macro development of the sending countries (Acosta, Calderón, Fajnzylber, & Lopez, 2008; Adams Jr & Page, 2005; De Haas, 2006; Ratha et al., 2008).

In spite of the huge potential gains of international migration, current international migrants consist of only three per cent of the world's population. Although many migration theories attempt to explain the motivation for migration, no single existing theory of international migration is comprehensive enough to explain the flows of migration. According to Borjas (1989), theories of migration must provide information on the flows, quantum and type of migration; describe how migrants assimilate as well as the factors that make this assimilation successful; and provide information on the resulting changes to the economic condition in both the sending and host countries. However, this is not an easy task because international migration trends have been changing and the impact of international migration is unique to the respective sending and receiving countries.

In the early 1900s, international migration flows were dominated by the movement of skilled male migrants from developing countries to developed countries in North America and Western Europe. Current international migration flows, however, are dominated by the movement of lower-skilled migrant workers from developing countries to other richer developing countries, like from Indonesia to Malaysia and Singapore.

Moreover, half of the current international migrants are women who migrate independently of their families (World Bank, 2006, p. 28). These female migrants usually work in gender segregated and unregulated sectors of the economy such as domestic work, the entertainment and sex industries. Unprotected by existing labour legislation and policy, they are thus exposed to abuses (International Organization for Migration, 2003).

Another important trend of current international migration is that immigrants are admitted to the host countries for a limited time only. They are not allowed to settle down permanently (Ruhs, 2006). Temporary migration is preferred as a flexible solution to labour shortages in the host countries because it creates no permanent negative impact on the latter (Abella, 2006). Meanwhile, the sending countries are less concerned about the long-term consequences of immigration like brain drain as well. Temporary migrants usually return with new skills and savings to help develop their home countries.

Apart from the ever changing trends, migration theorists also encountered the challenges of determining the social and economic impacts that are unique to the sending and receiving countries. For example, remittances from migration will not alleviate poverty in some sending countries if the poorest are unable to

migrate because of high migration costs. Migration may also increase poverty in some sending countries when skilful and productive workers leave their home. Moreover, when many young people migrate overseas, the physical, social and financial support available to their children or elderly parents who are left behind may be undermined (Lucas, 2005).

In addition, to some host countries, the economic benefits of permanent international migration may be trivial, transient and unsubstantial compared to the permanent demographic and environmental damages caused by migrants (Coleman & Rowthorn, 2004). Migrant workers may harm native workers by depressing the natives' wages and job opportunities. International migration may also increase the burden on public expenditure for some host countries. However, the burden on public expenditure may be limited because temporary lower skilled migrants are usually not allowed to bring their families with them, while highly skilled migrants workers will contribute to the fiscal revenue of the host countries (Lucas, 2005).

In short, no single existing international migration theory is able to explain the movement of international migrants because of the ever-changing international migration trends and the unique impact of international migration on different sending countries, host countries and types of migrants. Therefore, this chapter will explore some existing international migration theories to explain the movement of some one million Indonesian lower-skilled migrants to Malaysia, in particular some three hundred and twenty thousand lower-skilled female migrants from Indonesia working as maids in Malaysia (Ministry of Finance, 2007).

This chapter will begin with a brief explanation of selected theories of international migration related to the movement of lower skilled migrant workers. This is followed by a discussion on the history of migration and a brief account of paid domestic workers in Malaysia.

2.2 International Migration Theories

Neoclassical economics

According to neoclassical principles, the labour market is the primary mechanism to induce international migration where workers move from low wage regions to higher wage regions until this wage differential diminishes (Massey, Neil, & Paul, 2001). Apart from positive expected income differences in both the sending and receiving countries, potential migrants will also consider all the migration costs and inherent risks which are unique to each migrant although these individuals may come from the same country of origin.

The neo-classical economic theory states that governments will be able to control migration by regulating the labour market in either or both the sending and host countries, and by influencing the expected earnings in the sending or receiving countries such as lowering the possibility of finding employment or increasing the cost of migration, or even increasing employment opportunities and wages in the sending country (Massey et al., 2001).

According to the neo-classical economic theory, the main reason for the huge migration of lower-skilled migrants from Indonesia to Malaysia is the large wage gap between the two countries. The gross domestic product (GDP) per

capita for Indonesia is only US\$3,900 compared to US\$15,400 for Malaysia.¹ Furthermore, the geographical and cultural proximity of the two countries reduces the intangible costs and inherent risks of migration.

The New Economics of Labour Migration

The New Economics of Labour Migration theory (NELM) states that migration is not the decision of an individual but a collective decision by each migrant and other related people, such as their family members, to minimize the risks of market failures in the absence of insurance and public safety nets in the developing countries (Stark & Bloom, 1985). NELM posits that international migration is a way to diversify risks even in the absence of wage differentials.

NELM suggests that governments of the sending countries can influence migration by providing relevant insurance and safety nets to minimise the risks of market failures. The economic policy of the sending countries may also encourage migration of a particular social group. For example, the poor will migrate if the income distribution policy only favours the rich, and vice versa.

This theory is consistent with the motivations of Indonesian migrants who are sent out to increase the sending households' income, especially those who are from poor families in the rural areas. This is because lower-skilled migrants to Malaysia are more likely to remit their earnings back home for household expenditure (refer to Chapter Five).

¹ Retrieved from <https://www.cia.gov/library/publications/the-world-factbook/geos/id.html> on 12/07/2010

Dual Labour Market Theory

The dual labour market theory states that migration is caused by the “unavoidable” demand for migrant workers by the receiving countries (Piore, 1979 as cited in Massey et al., 2001). In developed or richer developing countries, lower-skilled jobs are poorly paid and thus despised by the locals. An increase of lower-skilled wages will lead to an increase of wages in other skill levels, resulting in structural inflation. To avoid structural inflation, it is necessary to employ cheaper labour from abroad to take over the lower skilled positions without increasing the wages. Furthermore, the stigma attached to lowly paid jobs has deterred native workers from continuing to work as unskilled workers. Hence, migrant workers who are willing to take on any jobs regardless of the stigma are needed for the lower-skilled jobs in the receiving countries.

The demand for migrant workers is also induced by the existence of bifurcated labour markets of the capital-intensive primary sector and labour-intensive secondary sector. In the capital-intensive primary sector, workers tend to be knowledgeable, experienced and secure under worker unions, or highly professionalised. On the other hand, in the labour-intensive secondary sector, workers hold unstable, unskilled jobs which can be laid off easily with little cost. Therefore, in developed countries, native workers will strive to work in the capital-intensive primary sectors. This will in turn create a shortage in the labour-intensive secondary sectors to be filled by migrant workers. Moreover, the demography in developed countries is changing as more educated women are likely to hold capital-intensive primary jobs. This has led to shortages of labour supply in the labour-intensive secondary work and created a demand for immigrants.

In Malaysia, immigration policy allows some one million lower-skilled migrants from Indonesia to hold lower-skilled jobs in mainly labour intensive industries (Ministry of Finance, 2007). At the same time, the immigration policy also aims to increase the participation of the more educated Malaysian women in the labour force by importing foreign maids.

The Roy Model

This model argues that workers sort themselves among employment opportunities and make their migration decision by comparing earnings in the source country and the host country. A worker will migrate when the earnings in the receiving country exceed earnings in the source country net of moving costs. A positive selection happens when skilled workers migrate if their earnings in the receiving countries exceed their earnings in the source country. Likewise a negative selection happens when lower-skilled workers migrate if their earnings in their home country are less than in the receiving country. In short, the Roy model stipulated that all migrants will self select depending on the earnings in both the sending and receiving countries (Borjas, 2005).

In the context of Malaysia, almost all the migrants from Indonesia are lower skilled workers. They leave Indonesia because the earnings in Malaysia exceed earnings in their home country. Hence, this immigrant flow is negatively selected. The governments of Malaysia and Indonesia can influence the flow of Indonesian workers to Malaysia by influencing the implicit and explicit costs of migration or the wages.

World System Theory

The world system theory posits that dynamic changes in the market structure and advancement in the telecommunications and the transport systems have promoted international migration. The creation of a global economy system has encouraged many people, especially lower skilled workers from developing countries, to seek better jobs overseas (Massey, Neil, & Paul, 2001).

This theory also states that governments of the sending and receiving countries can influence the flow of international migration through certain rules and regulations. However, their influence will be curtailed by the dynamic changes in the structure of the world market. This is apparent in the case of Indonesia's female workers. Since July 2009, the government of Indonesia has banned Indonesian women from working as maids in Malaysia because of the poor working conditions there. But this has not stopped the flow of Indonesian women to Malaysia as more and more of them are entering Malaysia illegally to work.

Summary

Individuals make the migration decision based on their best available option, given all the migration constraints in both the sending and receiving countries. Nevertheless, host governments can influence the flow of migration by changing the immigration rules to attract or discourage international migrants (Borjas, 1989).

In the case of Indonesian migrants, lower-skilled migrants from Indonesia are attracted to Malaysia due to the huge wage differences (as explained by the neo-classical economy theory) as well as the need to provide financially for their

own families (as explained by the new economics of labour migration). However, the flow of lower-skilled Indonesian migrants is also due to the labour market changes in Malaysia which have created a huge demand for lower-skilled workers to work in their labour-intensive and service industries.

2.3 International Migration and Paid Domestic Workers in Malaysia

The presence of paid foreign domestic workers in Malaysia can be traced back to as early as the 18th century when Britain expanded her political and economic influence in Malaya (now Malaysia and Singapore). Migrant workers in Malaya were mainly from India and China brought in by the British to develop the mining and plantation industries in the peninsula. They arrived in large numbers and were treated like slaves for the sole purpose of fuelling world economic growth. However, over the years, the early migrant workers slowly assimilated and became part of the community (Kaur, 2007).

Apart from these migrant workers, paid domestic workers who were usually male migrants from India (known as Kling) and China (known as Hylam boys) were also brought in to work in the European and rich Chinese homes as cooks and gardeners. In the 1930s, female migrants from China were brought in to replace male domestic workers because the latter became more demanding in terms of pay and rest days (Chin, 2005, p. 264). These women were known as either 'mui tsai' or 'amah'.

'Mui Tsai's were usually young girls "given away" by their parents or "sold" by Chinese secret societies to wealthy Chinese employers to work as domestic workers. They were usually treated as part of their employer's family and never returned to their own family. On the other hand, amahs were single

celibate women from Kwangtung region in China who emigrated to Hong Kong, Singapore and Malaya in the early 1930's to escape the socio-economic problems in China. Amahs had a well-established network in Malaya to help them settle down and find a suitable employer. They usually undertook a range of household chores including care for the young and elderly. Amahs were highly efficient and loyal to their employers, and were thus greatly appreciated and valued (Gaw, 1988).

Besides the foreign domestic workers from China who served the expatriates and rich local families, local women, usually wives or daughters of urban working class men, also worked as casual domestic workers for the middle class Indian and Chinese women (Kaur, 2007).

Immediately after Malaya became independent in 1957, laws and regulations were imposed to control the flow of migration, resulting in many migrants from China and India becoming citizens of Malaysia. During the next three decades, international migration to Malaysia began to slow down. Nevertheless, many amahs remained as live-in domestic workers till late 1970s (Gaw, 1988).

In 1970, Malaysia introduced the National Economic Plan with the aim to eradicate poverty and bring about income equity through rapid economic growth in the manufacturing sectors. During this period, local domestic workers began to find work in the many newly established factories. International migration started to pick up as well but the number of international migrants was insignificant. They did not have any socio-economic impact on Malaysia because most of the

international migrants were irregular, i.e. without proper documentation (Kassim, 2006).

In the early 1980s, the Malaysian government began to introduce new policies and regulations to regulate the increasing number of irregular migrant workers (Pillai, 1999). However, these policies and regulations, introduced by the government through the 1980s, 1990s and early 2000s, were ineffective in controlling the flow of irregular international migrants. The government of Malaysia was unprepared to cope with the huge number of migrant workers. Furthermore, the deportation and repatriation of irregular migrants have adverse effects on the Malaysian economy (Abubakar, 2002; Forbes, 2006; Kejser, 2006). For example, the 2002 mass deportations of irregular workers resulted in labour shortages in the construction and plantation sectors, prompting the Malaysian government to reverse the policy and recruit more foreign workers. The number of legal foreign workers (from Indonesia and other countries) reached about 1.9 million in 2007, representing twenty per cent of Malaysia's labour force (Ministry of Finance, 2007).

At the same time, the rapid economic growth of Malaysia that began in the late 1980s had exhausted the existing labour force which was predominantly male, thereby increasing the pressure for more local women to participate in the workforce. The demand for a local female labour force was also spurred by the spread of women's education; female literacy rate grew from 64.7 per cent in 1980 to 88.1 per cent in 2004 (Ministry of Women Family and Community Development, 2007).

Although Malaysian women are expected to participate in the labour force, they are required to perform their reproductive roles as well. One way to resolve this dilemma is to have somebody else takes over the non-economic roles. This is what created a high demand for foreign domestic workers over the last two decades.

The influx of foreign maids to Malaysia began in the mid 1980's. Some 4000 work permits were issued and the number of foreign maids swelled to 311,000 by 2006 (refer to Figure 2-1 and Table 2-1).² The majority of these maids are from Indonesia because of her geographical and cultural proximity to Malaysia. Moreover, Indonesian maids are the lowest paid maids compared to maids from other countries (Chin, 2005). Indonesian maids are only paid about USD105 compared to Filipino maids who are paid at least USD400 per month (The Star, 2010).

Classified as informal workers, foreign maids are not covered by the Malaysian labour law: Employment Act 1955. Foreign maids do not enjoy working benefits such as a set working time, termination benefits, sick leave, rest days, public holidays, maternity leave, overtime and other benefits that a normal employee is entitled to. This has resulted in foreign domestic workers being exposed to physical, verbal and sexual abuse by their employers. Furthermore, foreign maids usually work 16 to 18 hours a day and live in substandard conditions. Even their passports are held by their employers. The unfavourable working conditions cause some of these foreign maids to run away from their employers, hurt the children or elderly under their care, or even attempt suicide. In

² Employments of foreign maids are regulated by Department of Immigration Malaysia (refer to Appendix 2.1 for details of the regulations).

2000, there were some 30,122 maids who ran away from their employers because of heavy workload and physical or mental abuse (Ariffin, 2001).

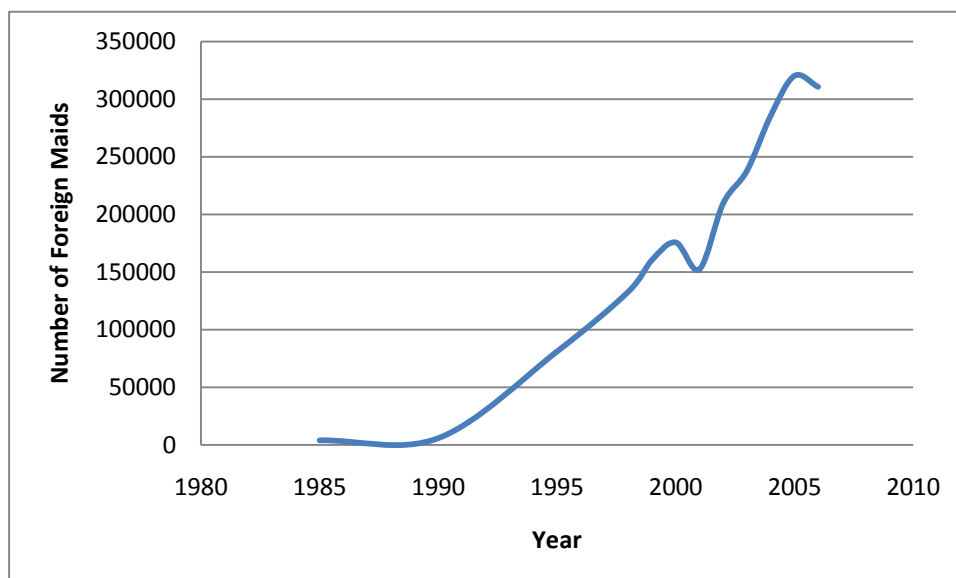
Table 2-1: Number of Foreign Female Maids by Country of Origin and Year

Year	Country of Origin						Total
	Indonesia (%)		Philippines (%)		Others (%)		
1985	na		na		na		3935
1990	na		na		na		5838
1995	na		na		na		81,000
1998	118,964	(90)	12,692	(10)	1,136	(1)	132,792
1999	149,044	(93)	10,192	(6)	1,153	(1)	160,389
2000	164,517	(94)	9,945	(6)	1,218	(1)	175,680
2001	145,592	(96)	5,679	(4)	1,145	(1)	152,416
2002	200,924	(96)	6,515	(3)	2,034	(1)	209,473
2003	228,561	(96)	6,410	(3)	2,728	(1)	237,699
2004	274,955	(96)	7,459	(3)	3,027	(1)	285,441
2005	306,724	(96)	8,911	(3)	4,536	(1)	320,171
2006	294,115	(95)	10,184	(3)	6,362	(1)	310,661

Sources:

- a. 1985, 1990 and 1995 data are based on Chin (2005, p. 268).
- b. 1998 onwards are based on various issues of Malaysia Immigration Department, Yearly Report from 1999 to 2007.
- c. na – not available.

Figure 2-1: Number of Foreign Female Maids from 1985 to 2006



Meanwhile, both the Malaysian and Indonesian governments tried to introduce some measures to increase the protection for foreign maids but the problems persist. Continuous incidences of maid abuse have forced the

Indonesian government to react by temporarily freezing the flow of Indonesian maids to Malaysia. The most recent temporary ban of Indonesian maids to Malaysia was imposed since June 2009 (The Star, 2009). This ban will stop Malaysians from enjoying cheap domestic services that will free mothers from the mundane household chores and go to work, and/or increasing mothers' leisure time. For Indonesia, the ban will reduce remittances, which may aggravate problems of unemployment and poverty. Therefore, the two governments should come out with enforceable solutions to ensure that the flow of foreign maids into Malaysia will continue to benefit both countries.

The import of foreign domestic workers which began almost 200 years ago in colonial Malaya has bloomed once again in the last few decades as Malaysia embarked on modernisation and the creation of new middle class families which depended on foreign maids. Therefore, it is imperative for the Malaysian government to come out with better policies to ensure the continuous flow of foreign maids if foreign maids are needed economically, or to reduce Malaysia's dependence on foreign maids if their presence is not economically justifiable.

2.4 Conclusion

Lower-skilled female migrant workers from Indonesia choose to migrate temporarily to Malaysia because of the huge wage gap between the sending and receiving countries. At the same time, the flow of lower-skilled migrant workers is also encouraged by the Indonesian government to reduce the pressures of unemployment and poverty in Indonesia. Nevertheless, sending countries like Indonesia are struggling to ensure that their citizens working overseas are accorded protective rights and safety.

As for host countries like Malaysia that are experiencing structural changes in their labour market, they are seeking lower-skilled temporary migrant workers to fuel their economy growth on the one hand. On the other hand, host countries are also turning to technology to reduce their dependency on migrant workers, although this may be impossible in the service industry (Lucas, 2005).

In conclusion, international migration of lower-skilled workers, especially those working in the service industry, will be a permanent feature in the global labour market because of the pull and push factors in both the sending and receiving countries. However, what is more important is how policy makers manage the international migration flows to benefit all the stakeholders by balancing between the benefits and costs of international migration of lower-skilled workers.

Appendix 2-1: Rules on Employing Foreign Domestic Workers by Immigration Department Malaysia

Maids can be sourced from the following countries:

Indonesia, Thailand, Cambodia, the Philippines, Sri Lanka, India, Nepal, Vietnam and Laos

Procedures and conditions:-

1. Application must be submitted by the employer or through employment agencies registered with Immigration Department.
2. Employer must be married with children aged below 15 years old, or employer with parents that require attention and special care.
3. One household is allowed to employ only one foreign domestic helper.
4. The applicant / employer must have a monthly minimum income of not less than RM5,000 to employ domestic helper from the Philippines, Sri Lanka, India and Nepal. To employ domestic helper from Indonesia, Thailand, Cambodia, Vietnam and Laos, the applicant's monthly minimum income must not be less than RM3,000.
5. Domestic helpers must undergo medical check-up at clinics registered with FOMEMA within one month from the date of arrival. The domestic helper will not be allowed to work and will be sent back if her employer fails to comply with the condition.
6. Muslim employer must employ Muslim domestic helper only. Non-Muslim employer is allowed to employ a Muslim domestic helper but the employer has to respect the beliefs and practices of the Muslim domestic helper.
7. Salary must be paid through the maid's bank account.
8. Employer must report to Immigration Department on the death or absconded case of the helper.
9. Only female domestic helpers aged between 21 to 45 years old can be employed.
10. Domestic helper must enter Malaysia with a Visa and a Reference.
11. Domestic helpers are not allowed to get married while working in Malaysia.
12. Domestic helpers are not allowed to change employment, sector or employer.

Source: Immigration Department Malaysia. Retrieved 17 Feb, 2010, from <http://www.imi.gov.my/index.php/en/services/employer/373-pra>

CHAPTER 3 - THE IMPACT OF FOREIGN DOMESTIC WORKERS ON FEMALE LABOUR FORCE PARTICIPATION IN MALAYSIA

3.1 Introduction

One of the most important migration trends in Asia is the increasing number of young women migrating to rapidly growing countries like Singapore, Hong Kong and Malaysia to work as domestic workers or maids (Wickramasekera, 2002). This international movement of young women also reflects deliberate policies of host countries wanting to raise labour force participation of their own, more educated, women, by importing domestic services. For example, in Malaysia, the official data recognize some 320,000 foreign workers working as domestic workers or maids (henceforth, “maids”) under a policy which aims to allow more Malaysian mothers to work in the paid labour market (Ministry of Finance, 2007).

This growing reliance on importing maids to perform domestic services reflects two factors. First, women in countries such as Malaysia have become more educated and so they are more likely to join the labour force and pursue a career rather than staying at home solely as a housewife. But second, working women in Asia also are expected to play their household production roles at home, unlike men. In particular, working women are still expected to care for their family and undertake household chores. Therefore, foreign maids are employed as a way to release women from childcare and chores, leaving them more time to pursue their career. According to Cortes and Tessada (2009), temporary migration of foreign maids has lowered the cost of household services

and thus enabled more women, especially highly skilled women, to work longer and become successful in their career.

But the impact of foreign maids on the female labour force participation of women in the host countries remains unclear. Past studies from the Asian region show mixed effects of maids on the female labour force participation of their employers. For example, one study in Hong Kong showed that their presence increased married women's labour force participation by 22 percentage points (Suen, 1994). However, further study in Hong Kong by Chan (2006) found that the effect of maids varies according to household income and women's educational attainment and may range from 16 to 73 percent. Conversely, in Singapore a study by Guha (2007) showed that increasing the use of maids does not necessarily increase the labour force participation of females from their employing households.³

These mixed results may be due to an imperfect treatment of sample selection issues in the existing literature. Simple comparisons of women in households with and without maids may mislead if the two groups differ systematically. Sample selectivity arises because it is a choice of the household whether to employ a maid, and factors correlated with this choice may also be correlated with women's labour force participation, leading to biased estimates if this correlation is not accounted for (Heckman, 1979). This selection problem may matter especially in Malaysia where there are rules for hiring foreign maids which stipulate that employers must not only be financially able but also must

³ In addition to these positive studies, a normative study suggests that admitting seven percent more foreign maids into Singapore could potentially increase welfare among natives by as much as a 1.1 percent increase in GDP (Kremer & Watt, 2009).

prove a need, such as having young children or elderly residents at home. Hence, not all households without maids will be similar to households with foreign maids. Therefore, econometric estimators that use all non-maid households to form a counterfactual may not provide robust estimates of the impact of maids on female labour force participation.

The aim of this chapter is to investigate the impact of foreign maids on the female labour force participation rate in Malaysia. In contrast to previous research in this area, a matching technique is used since the econometric techniques of previous studies may have some biases. This study uses Household Expenditure Survey (HES) data collected by the Department of Statistics, Malaysia roughly every ten years. I compare estimates using the 1993/94 HES with those from the 2004/05 HES. The matching results suggest that the average treatment effect of foreign maids on the female labour force participation rate has fallen from 0.18 in 1993/94 to 0.13 in 2004/05. Thus, the probability that women who have maids at home will join the labour force has decreased over the decade studied. This decrease would not be observed if I use Probit models, which is the (potentially biased) method relied upon in the existing literature.

These findings should be of broad interest, given that relatively few studies examine the impact of migrant maids on female labour force participation in the host countries. These findings are especially relevant for Malaysia and Indonesia since there are at least 0.3 million Indonesian maids working in Malaysia. These Indonesian women are negatively perceived by the Malaysian public, where maids has been accused of abusing children and elderly under their care, while at the same time stories of maids being abused have been widely reported (Ariffin, 2001; Chin, 1997, 2005). Consequently, both governments

periodically restrict and relax migration policies for Indonesian maids. Yet despite these headlines there has been little formal study of this important bilateral migration flow. The chapter aims to fill this gap.

The structure of this chapter is as follows: In section 3.2, a brief background on foreign maids in Malaysia is provided and the data used in the study are described. This is followed by section 3.3 which discuss the methodology. Section 3.4 discusses the empirical results, and discussions and conclusions are in Section 3.5.

3.2 Background

3.2.1 Foreign Maids in Malaysia

Malaysia is one of the most developed countries in South East Asia and ranked third in real GDP per capita amongst ASEAN members (International Labour Organization., 2007). Over the last 25 years, annual GDP growth has averaged 5-6 percent and Malaysia aims to be a developed country by the year 2020. This vision has spurred the country to raise productivity and the labour force participation rate, especially for females. Moreover, the female adult literacy rate increased from 64.7 percent in 1980 to 94.7 percent in 2004 and women's share of gross enrolment in public universities increased from 36 percent in 1980 to 60 percent in 2006 (Ministry of Women Family and Community Development, 2007). Under the Ninth Malaysian Plan, from 2006 to 2010, education development is one of the main thrusts to empower Malaysians with knowledge that will increase their productivity and output. Hence, there should be a continuation of the rapid increase in the educational attainment of women which should allow more women to join the labour force in future.

But Malaysian women also must perform household production roles, such as childcare and household duties, even if they choose to join the labour force. The balance between household production and contributing to economic growth is worsened by the fall in average family size over the last two decades from 5.2 in 1980 to 4.7 in 1994, in part due to the rise of a nuclear family structure in place of extended families (Ministry of Women Family and Community Development, 2007).⁴ Hence, there is less scope for grandparents to relieve working mothers of some of their household production tasks. One way to cope with these competing demands is to have someone else take over non-economic roles.

Although there are formal and informal child care services in Malaysia, these are not widely used. The informal service is baby-sitting service which is run by a housewife or older women. The cost of taking care of one child is usually as much as the cost of hiring one foreign maid. The formal child care service is legally established institution such as kindergarten and child care center which usually only care for children for specified hours and children are usually expected to be sent and pick up at a fixed time. The cost of these formal child care institutions is usually lower than informal child care service but parents are expected to pick up and sent their children on time. The inflexibility of this arrangement may not be practical for working parents. Furthermore, both formal and informal child care services will still require tiring working mothers to carry out the household chores themselves. Thus many Malaysians choose to hire foreign maids, with this trend increasing over the last two decades.

⁴ The percentage of nuclear family-households has increased from 55 percent in 1980 to 65 percent in 2000. Conversely, the percentage of extended family households has reduced from about 30 percent in 1980 to 20 percent in 2000 (Ministry of Women, Family and Community Development Malaysia, 2010).

At the same time, the large gap in wages between Malaysia and its neighbours such as Indonesia and Philippines has attracted migrants from these countries. There were about 1.8 million foreign workers in Malaysia by the end of 2006 (Ministry of Finance, 2007). These migrants are mostly unskilled and occupy position refused by the locals, especially in agriculture, construction and services such as domestic services (Kanapathy, 2006; Wickramasekera, 2002).⁵

Consequently, the employment of foreign maids by Malaysian households, which began in the early 1980s, has increased rapidly from 4000 initially to some 320,000 by the end of 2005 (Ministry of Finance, 2007). Most of these maids are from Indonesia because of the many similarities between the two countries such as language and religion. Yet, despite these many similarities with the locals, foreign maids are believed to create new social problems such as abuse of children and elders and even committing petty crimes. As such foreign maids are viewed negatively by the public but still are considered a necessary evil to sustain a modern family life (Chin, 1997).⁶ Only a handful who are capable and helpful are highly valued by their employers (Ooi, 2007). Nevertheless, at least from the economic point of view, their presence in the household should allow up to 320,000 more married Malaysian women to participate in the workforce. Since

⁵ These jobs such as cleaner, petrol pump attendant, gardener, construction worker, etc are refused by the locals because they are lowly paid and are usually viewed as dirty, demanding and dangerous (3Ds) (Wickramasekera, 2002).

⁶ "The state, from time to time, has specifically expressed its fear of overdependence on and the perceived social and economic ills generated by the presence of large numbers of foreign maids in Singapore. The stance adopted that foreign maids (along with other types of foreign contract workers) constitute a *'necessary evil,'* a "boon" in the short term given the tight labor market (likely to continue when the economy is buoyant and fertility rates are on the decline), but possibly a "bane" producing potentially negative effects in the long term, has been a consistent one over the last decade (e.g., The Straits Times, May 4, 1996). The balance of this article chronicles the perceived impacts of the "foreign maid dilemma" on the Singapore economy and society as embedded in public discourse (as sieved through press reports) as well as through individual accounts of Singapore employers (based on the field research of the authors)" (Yeoh, Huang & Gonzalez, 1999, p. 119).

female education has risen so rapidly in Malaysia, the mothers released into the workforce should raise overall economic efficiency with less educated migrant workers carrying out unskilled household duties while more educated Malaysian women undertake skilled tasks in the labour market.

But despite the scope for foreign migrants to release more Malaysian women into the labour force, the female labour force participation rate has remain stuck just below 50 percent for the last 25 years. The Malaysian female labour force participation rate is growing relatively slow from 44.0 in 1980 to 47.8 in 1990 and to 47.3 in 2004. This is mainly due to the high economic growth rates of the 1980s and 1990s and also the increase of women education. However this female labour force participation rate has remained below 50 percent for the last 25 years due to huge decline in the participation rate after the age of 24 where women begin their marriage and start their active reproductive life (Ahmad, 1998). Hence, to enable more women to participate in the labour force, there is a need to reduce the combined burden of work, children, and household duties (Ministry of Women, Family and Community Development, 2007).

Therefore, the presence of foreign maids may or may not have had a positive impact on Malaysian women's decision to work. In the later case, it may not be economically efficient to allow foreign maids into Malaysia unless the objective of such a policy is to increase leisure time of Malaysian women.⁷

⁷ The deliberate policy by government of Malaysia to allow more of Malaysian's women to join the labour force by importing foreign maids is not an official and formal policy but rather an informal policy. However, in the official report on Malaysia's Gender Gap Index, it is clearly stated that more Malaysian women are willing to join the work force if their household duties and child care burden can be reduced (Ministry of Women Family and Community Development, 2007).

Therefore a thorough investigation is needed to measure the impact of foreign maids on female labour force participation in Malaysia.

3.2.2 Data Description

This study uses Household Expenditure Survey (HES) data collected by the Department of Statistics, Malaysia roughly every ten years. HES is a random sampling based on the previous census information and therefore does represent the nation. The first survey was done in 1993/94 and the second survey in 2004/05. The HES surveys not only capture the expenditure of households but also their demography and economic activities of each member. This feature makes HES data suitable for estimating the change in the probability of women joining the labour force in response to their household employing a foreign maid.

The 1993/94 and 2004/05 surveys collected information from 14,627 and 11,227 households respectively.⁸ However for the purpose of this study, the sample is restricted to households with women in the working age (16 to 64 years old) and currently not studying. As such a total of 10,722 and 8,869 households for 1993/94 and 2004/05 respectively were selected. In this study we focus on female foreign maids who work and live in the household of their employer. Under this definition there are some 184 and 206 sampled households with foreign maids in 1993/94 and 2004/05 respectively. These represented 1.3 percent and 1.8 percent of all households in these years.⁹

⁸ A stratified multistage sample design based on enumeration blocks (EBs) is used in HES survey. A total of 2457 EBs were randomly selected from about 54,000 EBs created in Malaysia 2000 Census, which is about five percent of total EBs in 2000 census (Department of Statistics, 2004).

⁹ How does this estimate of 1.8 percent of households compare with the figure reported earlier of 320,000 maids? The labour force in Malaysia is approximately 12 million, so 320,000 migrant maids are equivalent to 2.7 percent. To go from the 1.8 percent of households to the 2.7 percent of the labour force, note that the households with maids are larger than average, and in fact the 206

3.3 Methodology

Households with foreign maids may have different characteristics to other households. This is especially true in Malaysia where rules stipulate that to hire a foreign maid; employers must not only be financially able but must also prove a need, such as having young children or elderly at home. Therefore in order to have the most valid estimates of the impact of maids on female labour force participation, it is necessary to restrict comparisons to households with similar characteristics who employ and who do not employ foreign maids.

Although regression models such as ordinary least squares (OLS) and Probits can control for the differences in average characteristics when studying outcomes for households with and without maids these regression methods may be less successful at dealing with the sample selection problem when subjects in non-experimental studies cannot be randomly assigned to “treatment” and “control” groups (Heckman, 1979). Such problems are relevant to attempts to measure the impact on labour force participation of women in households with maids since only financially able households who meet the immigration requirements are meant to employ foreign maids. Such a group are likely to be a non-random sample.

Obviously it is impossible to observe both outcomes (employing a foreign maid and not employing a foreign maid) for the same household at the same time. Likewise taking the mean outcome of households without maids as a counterfactual for what households with maids would be like absent their maid is

households that is in the 2004/05 HES with foreign maids contain 2.75 percent of the total individuals in the survey.

not satisfactory since the two groups of households may be quite different. However the matching approach is one possible solution to the selection problem. Intuitively, this approach attempts to find a group of non-participants (households without maids) who are similar to the participants (households with maids) in all relevant pre-treatment characteristics, under the assumption of conditional independence (Rosenbaum & Rubin, 1983). This assumption requires that any differences in covariates between the control and treatment groups are independent of the treatment, and hence the differences in the outcomes are assumed to be only as a result of being given the treatment.¹⁰

Validation studies suggest that matching, and in particular, Propensity Score Matching (PSM), can produce results close to experimental benchmarks if used appropriately (However, PSM does not provide a solution that can estimate every treatment effect under all circumstances) (Dehijia & Wahba, 2002).

Using PSM to estimate the impact of foreign maids on female labour force participation requires first estimating a Probit equation for the probability of a household having a foreign maid. The resulting household propensity score is then attached to all working age women in the household. Comparisons are then restricted to individuals from treatment and control group households who have similar values of these propensity scores (this is the “common support” condition). A comparison of the two matched samples (households with maids and those without but having a similar probability of having a maid) then give an estimate of the “average treatment effect on the treated” (ATT). In this case the

¹⁰ In addition to this conditional independence assumption, which is also known as “unconfoundedness”, a “balancing property” is required, where, conditional on the propensity score, the treated and controlled groups are on the average observational identical (Becker & Ichino, 2002, p.2)

ATT is an estimate of the likelihood that women in households with foreign maids would have participated in the labour force if they did not have a maid. Thus, PSM offers a way of structuring non-experimental data to look like experimental data, where for every subject in the “treated” group, the researcher finds comparable subjects in the “control” group.¹¹

The available matching approaches include matching each treated observation, i to the nearest neighbour(s) from the control group, kernel matching where a weighted average of the j control group neighbours is taken with weights proportional to the closeness of propensity scores for i and j , and radius matching where control group observations are used if their propensity scores are within a radius r of the propensity score for treated observation i (Caliendo & Kopeinig, 2008). In this chapter, both kernel matching and radius matching are used, and comparing the two may indicate if these are robust estimates of treatment effects.

In the first step, a Probit model is used to estimate the odds of each household hiring a foreign maid. The covariates are the number of school children, toddlers, babies, and elderly in the household, the number of working age women, and total household income. The household composition variable captures individual labour supply determinants because maids are hired by households, not by individuals. Hence, it is appropriate to aggregate individual characteristics to household level. Only variables that influence simultaneously the participation decision and the outcome variable should be included (Caliendo

¹¹ One of the most important underlying assumptions in propensity score matching is selection on observables or conditional independence. Hence, PSM should only be applied if this assumption holds (Caliendo & Kopeinig, 2008). Since there are very clear rules governing which households can hire foreign maids in Malaysia, and these rules all can be represented by observable variables, the assumption of selection on observable may be less troubling in this setting than in many others.

& Kopeinig, 2007). Therefore the only household characteristics that influence the decision to hire maids and decision to join the labour force are included. Variables such as women age and women's educational level which only affect women's labour force participation are not included. Furthermore, to fulfil the balancing property to ensure that the treated and controlled groups on the average are identical, I use five different sets of covariates (Model 1 to 5).

The propensity scores from this Probit are used to restrict the comparison of control and treatment groups to those households with similar probabilities of being treated (i.e. having a maid). This is the imposition of the "common support" condition, and in the estimates reported below typically results in matched control group samples with only 90 percent of the original non-maid households (that is, some non-maid households provide a poor counterfactual). In the next step, Kernel and radius matching is used to obtain the estimates of the average treatment effect. Kernel matching uses the weighted averages of all the individuals in the control group to create the counterfactual outcome, while radius matching uses the weighted average of all individuals in the control group within the radii of 0.05.

**Figure 3-1: Propensity Scores for Households With and Without Maids–
Malaysia 1993/94**

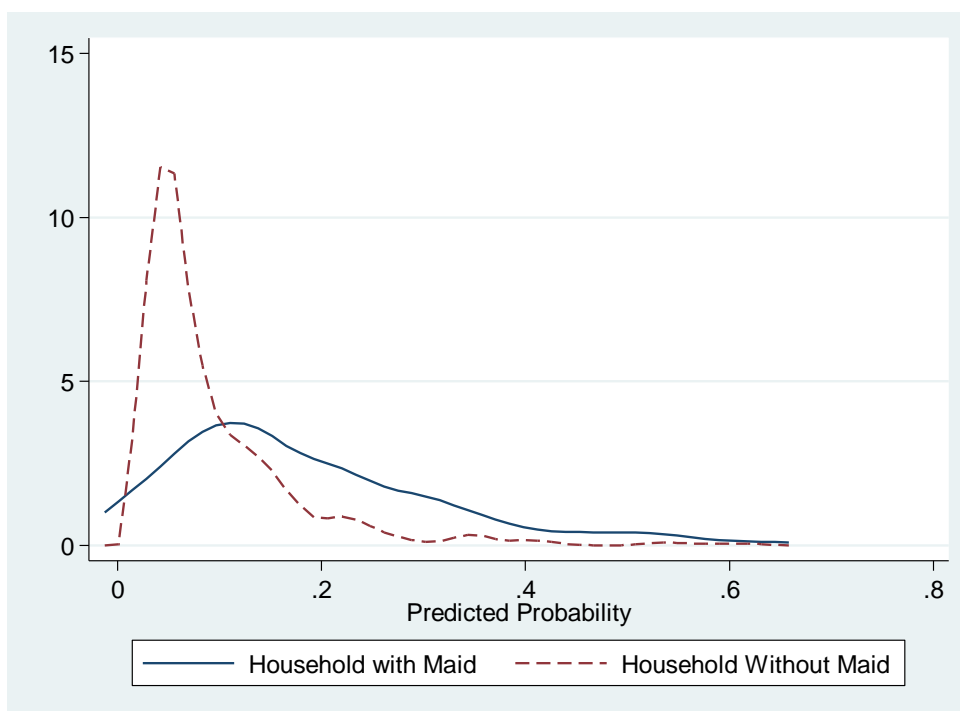


Figure 3-1 (refer to Figure A3-1) displays the propensity scores (probabilities) coming from the Probit model of whether households employ a foreign maid or not. The propensity scores for households with maids in 1993/94 range from 0.00 to 0.56 with a mean of 0.09. On the other hand, the propensity scores for other households without maids have a mean of 0.01, suggesting differences in the two groups, on average. Other unreported density graphs for 2004/05 and for different regions within Malaysia also show similar patterns of some households without maids having much lower propensity scores, making members of these households less plausible counterfactuals for women in the households that do hire a foreign maid (refer Figure A.3-1 to Figure A.3-12 in Appendix 3-1 for other graphs).

In addition to the propensity scores from the full sample, another set of propensity scores are estimated, restricting the sample to households with monthly total income above RM3000.¹² This follows from an institutional feature that should create a discontinuity. The Malaysian immigration authorities stipulate that only households with monthly income of more than RM3000 may hire foreign maids. While there appears to be some violation of this requirement, with one-seventh of sampled households with maids having income below this level, the requirement does lower the probability of households below the threshold having a maid so use of this extra information can help form a more convincing counterfactual group.

In addition to the propensity score matching estimates, we also use Probit regressions to estimate the treatment effect of maids on women's work status. In previous studies in this literature the Probit regression is the main tool used to study the effect of maids on women's likelihood of joining the labour force (Chan, 2006; Suen, 1994). Since the Probit model does not have a method for restricting comparisons to the common support region and may suffer from selectivity bias, its results may not be the same as those from PSM. Therefore, comparing the two sets of results may be informative about possible biases in previous results reported in the literature.

¹² This is equivalent to USD1154 (USD1=RM2.60) in 1993/1994 and USD790 (USD1=RM3.80) in 2004/2005.

3.4 Results

3.4.1 Descriptive Statistics

Table 3-1 reports descriptive statistics for both 1993/94 and 2004/05, for Malaysia and the two main sub-areas, West Malaysia and East Malaysia.¹³ There are two distinct parts of Malaysia, separated from each other by the South China Sea, West Malaysia and East Malaysia (refer to Figure 3.1). West Malaysia, containing 40 percent of Malaysia's land area, and East Malaysia, on the island of Borneo, has 60 percent of Malaysia's land area. The total population of Malaysia is about 28 million where some 20 million are living in West Malaysia. Malaysian economic activity is mainly concentrated in West Malaysia. According to official data, the value of gross output in Malaysia in 2004 is about RM602 billion and 81.5 percent of the total gross output is produced in West Malaysia (Department of Statistics, 2004). The number of migrant workers in West and East Malaysia differs significantly. In West Malaysia, there are some 1.1 million officially registered migrant workers but there are only about 188 thousand officially registered migrant workers in East Malaysia. Hence, it is important to separate the regions to obtain meaningful analysis of migrant workers in Malaysia (Kanapathy, 2004).

¹³ Geographically, Malaysia is divided by South China Sea into two main regions namely East and West Malaysia. There is a vast difference in economic structure and growth rate in these regions. Therefore, a sub-samples analysis dividing into these two separate regions will create a better common support to generate more accurate estimates.



Figure 3-1: Map of Malaysia

(Source: Retrieved from http://en.wikipedia.org/wiki/File:Location_Malaysia_ASEAN.svg on 14/05/2011)

Descriptive statistics are also presented for the sample of households with income above RM3000 for reasons explained in the previous section. In the full sample, the percentage of women in the labour force has decreased from 48 percent in 1993/94 to 43 percent in 2004/05. The decrease is more substantial in East Malaysia, down eight percentage points from 45 percent in 1993/94 to 37 percent in 2004/05. Female labour force participation rates are higher amongst richer households, but here again there is a decline over time, from 60 percent in 1993/94 to 56 percent in 2004/05. The trend is observed most in East Malaysia where the percentage of women in households with monthly income above

RM3000 who are in the labour force has decreased from 57 percent in 1993/94 to 47 percent in 2004/05. Despite declining participation rates, for women with jobs nominal incomes have increased faster between the two surveys than have overall household incomes.

Average total household income in 2004/05 for all regions is just over RM3000 which is the stipulated minimum income required to employ foreign maids. Hence average Malaysian families can afford to employ foreign maids. Nevertheless, the probability of a household hiring a foreign maid in Malaysia was just 0.02 for both periods. This stable average hides the fact that the probability of hiring foreign maids in West Malaysia increased slightly from 0.01 in 1993/94 to 0.02 in 2004/05 but the probability of hiring foreign maids in East Malaysia decreased from 0.04 in 1993/94 to 0.03 in 2004/05. The decline in the probability of hiring foreign maids is especially apparent for high income (\geq RM3000 per month) households in East Malaysia.

Table 3-1 also shows other descriptive statistics for selected characteristics for both periods and both sub-areas. First, the average number of women of working age (16 to 64 years old) per household in Malaysia has decreased from 1.4 in 1993/94 to 1.3 in 2004/05, especially in West Malaysia. Second, the average household size in Malaysia has decreased from 5.1 in 1993/94 to 4.9 in 2004/05 and the number of children aged below 12 decreased from 0.4 in 1993/94 to about 0.3 in 2004/05. Meanwhile, the average number of the almost-elderly, aged from 56 to 64 has remained around 0.22 and the average number of the elderly (aged 64 and above) in each household remains at 0.17 in both 1993/94 and 2004/05. In summary, the households' demography has changed significantly from 1993/94 to 2004/05 and also differs according to regions and income.

Therefore empirical analysis needs to account for these changes when estimating the changing impacts of foreign maids.

3.4.2 Raw Comparisons

Simple comparisons of households with maids and other households suggests that employing foreign maids is associated with a 26 percentage points in 1993/94 and by 24 percentage points in 2004/05 higher female labour force participation rates in 1993/94 and 2004/05 respectively (Table 3-2). However, women in households with maids differ significantly, in terms of demography and average income, from women in households without maids. Specifically, they have more young children, fewer older children and fewer elderly. Moreover, households with maids also have larger average household size but fewer women in the labour force compared to other households.

The differences between households with maids and without maids are smaller when the sample is restricted to households with total income of more than RM3000. First, there is a smaller apparent increase in female labour force participation from having a foreign maid, of 16 and 13 percentage points for 1993/94 and 2004/05. The average household size for households with maids is only 0.6 more than households without maids compared to a difference of more than 0.8 in the full sample. Households with maids and without maids also are not significantly different in terms of the number of elderly and number of children aged seven to twelve years old.

Table 3-3 and 3-4 contain similar comparisons of the characteristics of households with and without foreign maids for the sub samples from the two different regions in Malaysia. The impact of foreign maids appears larger in West Malaysia, especially in 2004/05. However, there are also many differences in

household characteristics between those with and those without maids, so multivariate analysis is required to estimate the effect of foreign maids. Moreover, the use of the restricted sample and smaller regions may narrow the differences between households with and without maids leading to more observations in the common support, potentially giving a more robust estimate of the average treatment effect.

3.4.3 Propensity Score Matching Estimates

The estimated average treatment effect on the treated (ATT) obtained via Propensity Score Matching (PSM) is shown in Table 3-5. Five different groups of covariates (number of members in various demographic groups, dummy variables for household types, monthly incomes and their interactions) are used to obtain the propensity scores, to see if the ATT estimates are robust.¹⁴ Results are reported for each year, for each of the two main regions of Malaysia and also separately for the restricted sample with total income of RM3000 per month or higher.

Foreign maids have positive impacts on female labour force participation, although this impact appears to have fallen over the period. In the full sample, and when using only demographic variables for matching, the estimated ATT is between 0.24-0.26 in 1993/94 and 0.18-0.24 in 2004/05. It is notable that the estimated ATT falls sharply, by about 0.06 in 2004/05, once monthly household income is introduced as one of the matching covariates (Models 4 and 5).

In the regional results, the ATT for West Malaysia is between 0.24-0.27 in 1993/94 and 0.22-0.29 in 2004/05. There is a much smaller decrease over time in

¹⁴ Full details on the covariates are listed at the footnote of Table 5. The selected sets of covariates for each model all follow the balancing property required for credible PSM estimates.

the ATT in West Malaysia than in East Malaysia (using Model 5, the ATT declines by 0.01 in West Malaysia and by 0.22 in East Malaysia). All these declines in the ATT, for Malaysia and for each region, are significant at the one percent level (columns 2 and 6, Table 3-6). The falling treatment effect of foreign maids on the female labour force participation rate in Malaysia suggests that maids may, increasingly, be adding to Malaysian women's leisure time rather than enabling them to either join or rejoin the labour force.

The results in the last panel of Table 3-5 come from the restricted sample with total monthly income exceeding RM3000 (the stipulated requirement for hiring maids). A better common support should result from this sample since it rules out lower income households who, legally, should have no chance of obtaining the treatment (Caliendo & Kopeinig, 2008).¹⁵ Consequently, the estimated ATT on this sample is more robust, in the sense of varying less with the choice of covariates, and is lower than the ATT from the full sample. Foreign maids are estimated to have increased the likelihood of labour force participation by their female employers in these richer households by about 0.18 in 1993/94 and by only 0.13 in 2004/05. This decline in the average treatment effect is most apparent in East Malaysia.

3.4.4 Probit Model

Table 3-7 reports marginal effects from Probit models of women's labour force participation. According to the estimates, having a maid increased the probability of women participating by 0.18 in 1993/94 and by 0.14 in 2004/05. When the

¹⁵ Furthermore, I have also excluded a few households with propensity score of 1 (households that definitely have maids) because there will be no comparable households in the control group. These households has monthly income above RM23,000.

analysis is restricted to women in households with total monthly income exceeding RM3000, the impact of maids on the probability of participating is 0.16 in both years. This result contrasts with the finding of a declining treatment effect in the PSM estimates, with the comparison between the two sets of results reported in Table 3-6. The different trends with the two approaches may occur because unlike the PSM results, the Probit estimates use all non-maid households (whether good counterfactuals or not) and have no mechanism for dealing with sample selection issues.

The other covariates in the Probit models show some interest patterns which are not highlighted in the PSM results (because the covariates are just used to form the propensity scores prior to the matching and for reasons of brevity are not reported here). There is a higher female labour force participation rate in West Malaysia, with this pattern becoming stronger in the second survey. Women with higher education are more likely to participate, as are those who are unmarried, and (in the full sample) come from richer households. Once attention is restricted to households with incomes above RM3000 per month, there is a negative effect of family income on participation in the earlier period and no effect in the later period. The participation rates are lower with more young children in the household.

3.5 Discussion and Conclusions

The most plausible propensity score matching estimates of the average treatment effect is that foreign maids increased the likelihood of labour force participation by working age Malaysian females in their employing households, by 0.18 in 1993/94 and 0.13 in 2004/05. These estimates come from matching on family

demographics and household income, and from using the sample legally able to hire foreign maids. The estimated treatment effects are somewhat higher if households whose income is too low to legally hire a maid are included – a finding which makes sense since the incentive to ignore the immigration rules would most likely be greatest for households where the impact of the maid was largest.

The ostensible aim of allowing migrant maids to work in Malaysia is to raise the participation rate of Malaysian women, by effectively outsourcing household production activities to these lower cost foreigners (Ministry of Finance, 2007). The treatment effects on female labour force participation that are reported above are a key input into an assessment of the net financial benefits of this policy. These benefits depend on whether the value of additional production generated by Malaysian women joining or rejoining the labour force exceeds the cost of hiring foreign maids. Under the assumption that labour markets are competitive, wages should equal the value of extra production, so the net financial benefit to Malaysia from using foreign maids, B should be:

$$\mathbf{B} = \mathbf{a} \times \mathbf{w} - \mathbf{m} \quad (3.1)$$

where: a = ATT of foreign maids on likelihood of female labour force participation

w = average monthly labour market income of Malaysian women with maids

m = average monthly cost of hiring a foreign maid

The cost of hiring a maid, m is estimated to be RM750 per month. The three components of this cost are the monthly salary, which averages RM400 in a survey of over 100 Indonesian maids carried out by the first author (Tan and Gibson, 2010), costs for food and lodging of RM300 (estimated by the authors),

and average monthly administrative fees of RM53 that are reported by Chin (2005, p.279). The Malaysian CPI increased only 13 percent from 2005 to 2010, so deflating these costs back to the timing of the last HES would reduce them only modestly, to approximately RM650 per month.

According to the HES estimates in Table 3-1, the average monthly income for Malaysian women in the labour force and with a maid in their household was about RM1850 in 2004/05. The PSM results for 2004/05 suggest that having a maid raises the likelihood of a Malaysian women being in the labour force by just 0.13. Therefore the expected gross financial benefit from the maid is RM240 per month (that is, 0.13×1850) for the average household that employs a foreign maid (and meets the requirements, specifically having monthly income greater than RM3000).

Subtracting the costs, it appears that the net financial benefit is: $B = 240 - 650 \approx -400$. In other words, for the average Malaysia household employing a foreign maid in 2004/05, there appears to have been a net financial loss of RM400 per month. This follows from the impact of maids on female labour force participation being rather low, so that the expected increase in family labour earnings is much less than the family outlays on the maid. Aggregating across all 300,000 foreign maids, this is equivalent to a cost of RM1.5 billion per year.

Although hiring foreign maids may not increase aggregate production in the economy, it presumably increases the leisure time for women. Moreover, the value of this additional leisure must be worth at least RM400 per month per household or otherwise it would not be a welfare maximising choice of households to hire foreign maids. It is possible that by reducing the need for

Malaysian housewives to engage in 'hard' housework such as cleaning and cooking, maids allow mothers more time to specialize in caring for their children (Chan, 2006). This extra parental input could perhaps create better future human capital but it would be difficult to place a value on this. Thus based on the calculations reported here, it is not clear that the policy of importing foreign maids is helping to maximise net production in the Malaysian economy, even if it is leading to increased leisure for some women.

Moreover, it is notable that in both the matching estimates and the Probit regression results, the likelihood of women going to work as a result of having maids has declined between 1993/94 and 2004/05. This may reflect the ongoing increase in average incomes in Malaysia, which should increase the demand for leisure (as a normal good), which would then see more of the impact of maids on women's leisure rather than on labour force participation. Such an effect is at odds with the publicised aim of the policy allowing foreign maids to be hired. It would take further analysis, using time use surveys, to measure this impact on leisure and to fully account for the welfare effects of foreign maids in Malaysia. That remains a topic for future research.

Table 3-1: Households' Characteristics by Region and Year 1993/94 & 2004/05

	MALAYSIA		WEST MALAYSIA		EAST MALAYSIA	
	1993/ 1994	2004/ 2005	1993/ 1994	2004/ 2005	1993/ 1994	2004/ 2005
FULL SAMPLE #						
Probability of women working	0.478 (0.500)	0.434 (0.496)	0.486 (0.500)	0.453 (0.498)	0.447 (0.497)	0.366 (0.482)
Average monthly nominal income for working women	703 (1019)	1238 (1271)	684 (1033)	1217 (1294)	794 (941)	1332 (1159)
Average total monthly household income	2249 (3217)	3051 (3486)	2153 (2762)	2988 (3525)	2720 (4839)	3313 (3305)
Probability of household hiring foreign maid	0.017 (0.130)	0.023 (0.150)	0.012 (0.109)	0.021 (0.142)	0.042 (0.201)	0.034 (0.182)
Average household size%	5.114 (2.203)	4.921 (2.040)	5.073 (2.167)	4.86 (1.981)	5.33 (2.363)	5.172 (2.252)
Number of women in labour force (16 to 64 years old)	1.389 (0.717)	1.328 (0.653)	1.370 (0.697)	1.299 (0.615)	1.484 (0.800)	1.451 (0.779)
Number of children aged 0 to 2	0.402 (0.623)	0.302 (0.536)	0.393 (0.614)	0.29 (0.525)	0.445 (0.663)	0.35 (0.575)
Number of children aged 3 to 6	0.543 (0.752)	0.467 (0.689)	0.537 (0.746)	0.46 (0.687)	0.567 (0.781)	0.498 (0.695)
Number of children aged 7 to 12	0.791 (0.992)	0.743 (0.930)	0.792 (0.992)	0.746 (0.932)	0.787 (0.995)	0.729 (0.925)
Number of children aged 13 to 18	0.573 (0.876)	0.618 (0.869)	0.58 (0.876)	0.624 (0.873)	0.543 (0.877)	0.592 (0.854)
Number of children aged 18 & above	0.547 (0.988)	0.495 (0.874)	0.539 (0.969)	0.496 (0.874)	0.585 (1.074)	0.494 (0.875)
Number of elderly aged 56 to 64	0.222 (0.495)	0.244 (0.520)	0.231 (0.500)	0.258 (0.532)	0.186 (0.464)	0.185 (0.465)
Number of elderly aged 65 & Above	0.167 (0.430)	0.166 (0.426)	0.165 (0.426)	0.177 (0.436)	0.177 (0.448)	0.121 (0.379)
Sample Size (Number of Households)	10722	8869	8902	7149	1820	1720
RESTRICTED SAMPLE @						
Probability of women working	0.596 (0.491)	0.560 (0.496)	0.605 (0.489)	0.591 (0.492)	0.570 (0.500)	0.473 (0.499)
Average monthly nominal income for working women	1261 (1661)	1852 (1595)	1265 (1784)	1869 (1668)	1252 (1195)	1796 (1305)
Average total monthly household income	5106 (2681)	5483 (2943)	5061 (2701)	5461 (2990)	5255 (2611)	5555 (2788)
Probability of household hiring foreign maid	0.067 (0.250)	0.061 (0.240)	0.052 (0.221)	0.057 (0.232)	0.116 (0.320)	0.074 (0.262)
Sample Size (Number of Households)	2155	2909	1645	2218	510	691

Note: Standard deviation in parentheses

Sample is limited to only households with female aged 16 to 64 (excluding students).

@ Sample is further restricted to only households with total monthly income of RM3000 and above

% Maid is excluded from the household size.

Table 3-2: Households & Individuals Characteristics by Presence of Foreign Maid in Malaysia for Year 1993/1994 & 2004/2005

MALAYSIA	FULL SAMPLE						RESTRICTED SAMPLE @@					
	1993/1994			2004/2005			1993/1994			2004/2005		
	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means
Characteristics of Individual Female Aged 16 to 64 @												
Probability of women working	0.735	0.474	0.000	0.671	0.429	0.000	0.749	0.586	0.000	0.686	0.553	0.000
Average monthly nominal income for working women	1908	672	0.000	3142	1173	0.000	1801	1170	0.000	2976	1741	0.000
Age	34.58	36.00	0.028	38.87	37.76	0.090	34.70	35.67	0.164	38.71	37.41	0.072
Characteristics of Households with Female Aged 16 to 64												
Average household size	5.940	5.100	0.000	5.684	4.903	0.000	6.014	5.424	0.000	5.826	5.273	0.004
Number of women in working aged group (16-64 years old)@	1.293	1.391	0.039	1.223	1.331	0.014	1.299	1.573	0.000	1.236	1.436	0.000
Number of children aged 0 to 2	0.652	0.397	0.000	0.505	0.297	0.000	0.667	0.374	0.000	0.478	0.321	0.001
Number of children aged 3 to 6	0.652	0.541	0.044	0.748	0.461	0.000	0.639	0.483	0.014	0.775	0.464	0.000
Number of children aged 7 to 12	0.745	0.792	0.481	0.864	0.740	0.091	0.778	0.722	0.486	0.910	0.774	0.097
Number of children aged 13 to 18	0.330	0.586	0.000	0.351	0.628	0.000	0.319	0.566	0.000	0.376	0.647	0.000
Number of children aged 18 & above	0.236	0.563	0.000	0.190	0.503	0.000	0.285	0.782	0.000	0.197	0.604	0.000
Number of elderly aged 56 to 64	0.065	0.226	0.000	0.170	0.246	0.018	0.049	0.203	0.000	0.163	0.208	0.178
Number of elderly aged 64 & above	0.141	0.168	0.368	0.170	0.166	0.896	0.162	0.162	0.902	0.174	0.133	0.249
Sample Size – Number of women with maids #	238	14656		252	11525		187	3162	3349	220	3922	4142

Notes:

@ Excluding those who are currently studying.

There are fewer households than individual women.

@@ Sample is further restricted to only households with total monthly income of RM3000 and above

Table 3-3: Households & Individuals Characteristics by Presence of Foreign Maid in West Malaysia for Year 1993/1994 & 2004/2005

WEST MALAYSIA	FULL SAMPLE						RESTRICTED SAMPLE @@					
	1993/1994			2004/2005			1993/1994			2004/2005		
	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means
Characteristics of Individual Female Aged 16 to 64 @												
Probability of women working	0.750	0.483	0.000	0.739	0.447	0.000	0.755	0.596	0.000	0.745	0.582	0.000
Average monthly nominal income for working women	2098	670	0.000	3431	1151	0.000	1928	1170	0.000	3158	1744	0.000
Age	35.48	36.35	0.316	39.47	38.36	0.170	35.06	35.89	0.358	39.45	37.61	0.037
Characteristics of Households with Female Aged 16 to 64												
Average household size	5.860	5.064	0.000	5.462	4.847	0.000	5.976	5.353	0.003	5.599	5.208	0.020
Number of women in working aged group (16-64 years old)@	1.271	1.371	0.102	1.122	1.302	0.000	1.294	1.537	0.000	1.142	1.394	0.000
Number of children aged 0 to 2	0.570	0.391	0.011	0.490	0.286	0.000	0.552	0.366	0.018	0.465	0.317	0.008
Number of children aged 3 to 6	0.645	0.536	0.115	0.776	0.454	0.000	0.647	0.474	0.023	0.811	0.470	0.000
Number of children aged 7 to 12	0.757	0.793	0.670	0.789	0.746	0.586	0.812	0.724	0.376	0.835	0.787	0.593
Number of children aged 13 to 18	0.307	0.592	0.000	0.326	0.630	0.000	0.365	0.556	0.044	0.339	0.653	0.000
Number of children aged 18 & above	0.201	0.554	0.000	0.181	0.505	0.000	0.188	0.749	0.000	0.173	0.589	0.000
Number of elderly aged 56 to 64	0.084	0.233	0.000	0.177	0.260	0.034	0.047	0.203	0.000	0.165	0.203	0.342
Number of elderly aged 64 & above	0.131	0.166	0.295	0.163	0.177	0.718	0.141	0.154	0.737	0.173	0.132	0.337
Sample Size – Number of women with maids #	136	12058		165	9118		110	2398		152	2940	

Notes:

@ Excluding those who are currently studying.

There are fewer households than individual women.

@@ Sample is further restricted to only households with total monthly income of RM3000 and above

Table 3-4: Households & Individuals Characteristics by Presence of Foreign Maid in East Malaysia for Year 1993/1994 & 2004/2005

EAST MALAYSIA	FULL SAMPLE						RESTRICTED SAMPLE @@					
	1993/1994			2004/2005			1993/1994			2004/2005		
	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means	With Maid	Without Maid	<i>p</i> -value for unequal means
Characteristics of Individual Female Aged 16 to 64 @												
Probability of women working	0.716	0.436	0.000	0.540	0.360	0.001	0.740	0.555	0.001	0.573	0.467	0.077
Average monthly nominal income for working women	1643	740	0.000	2391	1274	0.000	1614	1167	0.004	2519	1732	0.001
Age	33.37	34.38	0.300	37.72	35.47	0.047	34.17	34.97	0.478	37.28	36.85	0.730
Characteristics of Households with Female Aged 16 to 64												
Average household size	6.052	5.283	0.001	6.237	5.134	0.017	6.068	5.672	0.172	6.392	5.484	0.085
Number of women in working aged group (16-64 years old)@	1.325	1.491	0.030	1.475	1.450	0.848	1.305	1.694	0.000	1.471	1.573	0.473
Number of children aged 0 to 2	0.766	0.431	0.000	0.542	0.343	0.024	0.831	0.400	0.000	0.510	0.338	0.070
Number of children aged 3 to 6	0.662	0.565	0.290	0.678	0.492	0.058	0.627	0.514	0.312	0.686	0.445	0.032
Number of children aged 7 to 12	0.727	0.789	0.583	1.051	0.718	0.038	0.729	0.712	0.903	1.098	0.731	0.043
Number of children aged 13 to 18	0.330	0.586	0.000	0.351	0.628	0.000	0.254	0.599	0.000	0.376	0.647	0.000
Number of children aged 18 & above	0.236	0.563	0.000	0.190	0.503	0.000	0.424	0.900	0.001	0.197	0.604	0.000
Number of elderly aged 56 to 64	0.039	0.193	0.000	0.153	0.187	0.532	0.051	0.204	0.000	0.157	0.223	0.287
Number of elderly aged 64 & above	0.156	0.178	0.675	0.186	0.119	0.241	0.204	0.188	0.834	0.176	0.138	0.538
Sample Size – No of female	102	2598		87	2407		77	764		75	1007	

Notes:

@ Excluding those who are currently studying.

There are fewer households than individual women.

@@ Sample is further restricted to only households with total monthly income of RM3000 and above

Table 3-5: Average Treatment Effect of Foreign Maids on Female Labour Force Participation in Malaysia, West Malaysia and East Malaysia for 1993/1994 & 2004/2005 Using Full & Restricted Sample

	Full Sample						Restricted Sample@@					
	Malaysia		West Malaysia		East Malaysia		Malaysia		West Malaysia		East Malaysia	
	1994/ 1995	2004/ 2005	1994/ 1995	2004/ 2005	1994/ 1995	2004/ 2005	1994/ 1995	2004/ 2005	1994/ 1995	2004/ 2005	1994/ 1995	2004/ 2005
Model 1	0.260 (0.031)**	0.241 (0.030)**	0.266 (0.039)**	0.292 (0.035)**	0.280 (0.046)**	0.181 (0.062)**	0.164 (0.033)**	0.133 (0.030)**	0.159 (0.045)**	0.163 (0.037)**	0.190 (0.056)**	0.107 (0.057)+
Model 2	0.260 (0.032)**	0.241 (0.028)**	0.266 (0.037)**	0.290 (0.038)**	0.278 (0.039)**	0.181 (0.054)**	0.156 (0.034)**	0.133 (0.030)**	0.148 (0.041)**	0.162 (0.037)**	0.174 (0.055)**	0.106 (0.062)+
Model 3	0.261 (0.034)**	0.241 (0.031)**	0.266 (0.038)	0.290 (0.035)**	0.270 (0.046)**	0.183 (0.052)**	0.156 (0.035)**	0.130 (0.036)**	0.150 (0.043)**	0.161 (0.034)**	0.182 (0.057)**	0.103 (0.053)*
Model 4	0.239 (0.029)**	0.176 (0.029)**	0.247 (0.042)**	0.221 (0.040)**	0.253 (0.040)**	0.091 (0.057)+	0.175 (0.031)**	0.127 (0.032)**	0.174 (0.045)**	0.161 (0.038)	0.180 (0.054)**	0.074 (0.069)
Model 5	0.244 (0.029)**	0.175 (0.029)**	0.241 (0.039)**	0.225 (0.032)**	0.258 (0.052)**	0.043 (0.065)	0.182 (0.031)**	0.129 (0.033)**	0.184 (0.041)**	0.163 (0.038)**	0.209 (0.058)**	0.058 (0.071)

Notes: Bootstrapped Standard Error in parentheses; + significant at 10%; * significant at 5%; ** significant at 1%.

For Full Sample

N=238 treated in 1993/4 and from N=13447 to 14656 control group members (varying across the models because the common support changes with different covariates).

N=252 treated in 2004/05 and from N=7526 to 11525 control group members.

Covariates for Model 1 are number of children aged 0-2, number of children aged 3-6, dummy for household with primary school children.

Covariates for Model 2 are Model 1 plus dummies for household with elderly aged 56 to 64 and household with elderly aged 65 and above.

Covariates for Model 3 are Model 2 plus dummies for household with secondary children and household with married children.

Covariates for Model 4 are Model 3 plus number of women in working aged group and log total monthly household income

For Restricted Sample:

N=187 treated in 1993/94 and from 2784 to 3164 control group members, while in 2004/05 there are N=220 treated and from 3737 to 3922 control group members.

Covariates for Model 1 are household with children aged 0-2, aged 3-6 and 7-12

Covariates for Model 2 are household with elderly aged 56 to 64 and household with elderly aged 65 and above.

Covariates for Model 3 are covariates from Model 1 and Model 2

Covariates for Model 4 are covariates from Model 3 and log total monthly household income.

Model 5

Covariates for Model 5 in both full and restricted samples are total number of children below 12, log total monthly household income and interaction between these two covariates. The covariates for all five models, applied to all samples and time periods are balanced between the treatment and control groups (that is, within blocks defined by the propensity scores, the covariates have equal means for treatment and control groups).

@@Sample is further restricted to only households with total monthly income of RM3000 and above

Table 3-6: Average Treatment Effect of Foreign Maids on Female Work Status in Malaysia

	Full Sample			Restricted Sample@@			
	Mean Difference	Probit - Model	PSM – Kernel Matching (Model 5)	Mean Difference	Probit Model	PSM – Kernel Matching (Model 5)	PSM – Radius Matching (0.05 radii)
Malaysia							
1993/1994	0.261	0.181 (0.037)**	0.244 (0.029)**	0.163	0.155 (0.036)**	0.182 (0.031)**	0.157 (0.033)**
2004/2005	0.242	0.144 (0.043)**	0.176 (0.029)**	0.133	0.158 (0.039)**	0.129 (0.033)**	0.128 (0.028)**
Difference #	-0.019 (0.009)*	-0.037 (0.003)**	-0.068 (0.002)**	-0.03 (0.004)**	0.003 (0.002)	-0.053 (0.002)**	
West Malaysia							
1993/1994	0.267	0.180 (0.037)**	0.241 (0.039)**	0.159	0.164 (0.040)**	0.184 (0.041)**	0.146 (0.046)**
2004/2005	0.292	0.144 (0.043)**	0.225 (0.032)**	0.163	0.160 (0.040)**	0.163 (0.038)**	0.157 (0.038)**
Difference #	0.025 (0.011)*	-0.036 (0.003)**	-0.016 (0.002)**	0.004 (0.005)	-0.004 (0.002)*	-0.021 (0.003)**	
East Malaysia							
1993/1994	0.280	0.169 (0.033)**	0.258 (0.052)**	0.185	0.168 (0.041)**	0.209 (0.058)**	0.183 (0.055)**
2004/2005	0.180	0.143 (0.044)**	0.043 (0.065)	0.106	0.169 (0.043)**	0.058 (0.071)	0.105 (0.061)+
Difference #	-0.100 (0.016)**	-0.026 (0.003)**	-0.215 (0.004)**	-0.079 (0.007)**	0.001 (0.003)	-0.151 (0.004)**	

Notes:

Robust standard errors in parentheses for Probit Model

Bootstrapped Standard errors based on 100 replications appear in parentheses for PSM Models

+ Significant at 10%; * significant at 5%; ** significant at 1%

Average treatment effects for PSM Model are based on Model 4 in Table 6.

Difference = 2004/2005 – 1993/1994 and bootstrapped standard errors based on 500 replications.

@@Sample is further restricted to only households with total monthly income of RM3000 and above

Table 3-7: Marginal Effect of Foreign Maids on Women Working Status in Malaysia for Year 1993/94 and 2004/2005 Using Probit Model

	Full Sample		Restricted Sample@@	
	1993/1994	2004/2005	1993/1994	2004/2005
Maid	0.181 (0.037)**	0.144 (0.043)**	0.155 (0.036)**	0.158 (0.039)**
Region (West Malaysia =1)	0.052 (0.012)**	0.082 (0.016)**	0.028 (0.022)	0.066 (0.028)*
Household Characteristics				
Number of children aged 0 to 2	-0.111 (0.008)**	-0.108 (0.015)**	-0.058 (0.015)**	-0.096 (0.025)**
Number of children aged 3 to 6	-0.049 (0.006)**	-0.058 (0.012)**	-0.035 (0.014)*	-0.041 (0.019)*
Number of children aged 7 to 12	-0.003 (0.005)	-0.026 (0.009)**	-0.012 (0.011)	-0.035 (0.016)*
Number of children aged 13 to 18	-0.005 (0.005)	-0.000 (0.008)	-0.002 (0.011)	-0.022 (0.015)
Number of children aged Above 18	-0.018 (0.005)**	-0.017 (0.009)*	-0.006 (0.008)	0.013 (0.013)
Number of elderly aged 56 to 64	0.010 (0.010)	0.016 (0.016)	0.009 (0.021)	0.008 (0.027)
Number of elderly aged above 64	0.025 (0.011)*	0.042 (0.017)*	0.041 (0.022)+	0.026 (0.031)
Ethnic Group for Head of Household (Malay)	0.050 (0.016)**	0.047 (0.025)+	0.118 (0.032)**	0.095 (0.042)*
Ethnic Group for Head of Household (Chinese)	0.007 (0.016)	-0.087 (0.041)*	0.132 (0.032)**	-0.083 (0.060)
Number of women in working aged group (16-64 years old)@	0.022 (0.007)**	-0.020 (0.012)+	0.020 (0.011)+	-0.029 (0.017)+
Log Total Household Income	0.060 (0.007)**	0.133 (0.013)**	-0.105 (0.026)**	-0.027 (0.035)
Individual Characteristics				
Marital Status (Never Married)	0.145 (0.023)**	-0.031 (0.040)	0.132 (0.053)*	0.073 (0.081)
Marital Status (Currently Married)	-0.155 (0.018)**	-0.234 (0.031)**	-0.103 (0.048)*	-0.098 (0.069)
Level of Education – Tertiary	0.299 (0.018)**	0.235 (0.027)**	0.333 (0.021)**	-0.349 (0.044)**
Level of Education – Secondary	0.087 (0.011)**	0.016 (0.019)	0.161 (0.022)**	-0.233 (0.032)**
Age	0.043 (0.003)**	0.048 (0.005)**	0.049 (0.007)**	0.067 (0.010)**
Age2	-0.001 (0.000)**	-0.001 (0.000)**	-0.001 (0.000)**	-0.001 (0.000)**
Observations	14894	11781	3352	4145
Wald Chi Square	1815.37	751.18	512.9	302.6
Probability > Chi Square	0.000	0.000	0.000	0.000
Predicted Probability	0.484	0.451	0.599	0.604
Pseudo R2	0.115	0.132	0.160	0.163

Notes: Robust standard errors in parentheses; + significant at 10%; * significant at 5%; ** significant at 1%. Control group for marital status is divorced/widow/widower/separated; Control group for education level is those with primary education and below; Control group for ethnic group is other ethnics group. @ Excluding those who are currently studying.

@@ Sample is further restricted to only households with total monthly income of RM3000 and above

Appendix 3-1: Tables and Figures for Chapter 3

Table A.3-1: Marginal Effect of Foreign Maids on Women Working Status in Malaysia for Year 1993/94 Using Probit Model (Full Sample)

MALAYSIA – 1993/1994	Model 1	Model 2	Model 3	Model 4	Model 5
Maid	0.300 (0.029)**	0.291 (0.030)**	0.207 (0.036)**	0.199 (0.035)**	0.181 (0.037)**
Number of Children Aged 0 to 2	-0.105 (0.007)**	-0.108 (0.007)**	-0.117 (0.007)**		-0.111 (0.008)**
Number of Children Aged 3 to 6	-0.042 (0.006)**	-0.044 (0.006)**	-0.047 (0.006)**		-0.049 (0.006)**
Number of Children Aged 7 to 12	0.000 (0.005)	-0.003 (0.005)	-0.001 (0.005)		-0.003 (0.005)
Number of Children Aged 13 to 18	-0.003 (0.005)	-0.009 (0.005)+	-0.015 (0.005)**		-0.005 (0.005)
Number of Children Aged Above 18	0.018 (0.003)**	0.028 (0.004)**	-0.015 (0.005)**		-0.018 (0.005)**
Region (West Malaysia =1)	0.039 (0.011)**	0.043 (0.011)**	0.066 (0.011)**	0.043 (0.011)**	0.052 (0.012)**
Number of Elder Aged 56 to 64		-0.087 (0.008)**	-0.092 (0.008)**		0.010 (0.010)
Number of Elder Above 64		-0.004 (0.010)	0.008 (0.010)		0.025 (0.011)*
Marital Status (Never Married)				0.226 (0.021)**	0.145 (0.023)**
Marital Status (Currently Married)				-0.148 (0.018)**	-0.155 (0.018)**
Level of Education – Tertiary				0.341 (0.015)**	0.299 (0.018)**
Level of Education – Secondary				0.116 (0.010)**	0.087 (0.011)**
Ethnic Group for Head of Household (Malay)				0.004 (0.015)	0.050 (0.016)**
Ethnic Group for Head of Household (Chinese)				0.015 (0.016)	0.007 (0.016)
Age				0.046 (0.003)**	0.043 (0.003)**
Age2				-0.001 (0.000)**	-0.001 (0.000)**
Number of Female in Working Aged (16 to 64)			0.063 (0.006)**		0.022 (0.007)**
Log Total Household Income			0.085 (0.006)**		0.060 (0.007)**
Observations	14894	14894	14894	14894	14894
Wald Chi Square	433.32	533.82	859.07	1533.87	1815.37
Probability > Chi Square	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.023	0.029	0.047	0.095	0.115

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-2: Marginal Effect of Foreign Maids on Women Working Status in Malaysia for Year 2004/2005 Using Probit Model (Full Sample)

MALAYSIA 2004/2005	Model 1	Model 2	Model 3	Model 4	Model 5
Maid	0.324 (0.035)**	0.325 (0.034)**	0.166 (0.043)**	0.205 (0.041)**	0.144 (0.043)**
Number of Children Aged 0 to 2	-0.087 (0.013)**	-0.090 (0.013)**	-0.105 (0.014)**		-0.108 (0.015)**
Number of Children Aged 3 to 6	-0.034 (0.011)**	-0.038 (0.011)**	-0.041 (0.011)**		-0.058 (0.012)**
Number of Children Aged 7 to 12	-0.002 (0.008)	-0.010 (0.008)	-0.016 (0.009)+		-0.026 (0.009)**
Number of Children Aged 13 to 18	0.000 (0.008)	-0.008 (0.008)	-0.009 (0.008)		-0.000 (0.008)
Number of Children Aged Above 18	-0.000 (0.007)	0.011 (0.007)+	-0.013 (0.009)		-0.017 (0.009)*
Region (West Malaysia =1)	0.080 (0.015)**	0.083 (0.015)**	0.092 (0.015)**	0.090 (0.016)**	0.082 (0.016)**
Number of Elder Aged 56 to 64		-0.116 (0.013)**	-0.109 (0.014)**		0.016 (0.016)
Number of Elder Above 64		0.006 (0.015)	0.024 (0.016)		0.042 (0.017)*
Marital Status (Never Married)				0.040 (0.037)	-0.031 (0.040)
Marital Status (Currently Married)				-0.202 (0.029)**	-0.234 (0.031)**
Level of Education – Tertiary				0.357 (0.022)**	0.235 (0.027)**
Level of Education – Secondary				0.082 (0.018)**	0.016 (0.019)
Ethnic Group for Head of Household (Malay)				-0.002 (0.025)	0.047 (0.025)+
Ethnic Group for Head of Household (Chinese)				-0.058 (0.040)	-0.087 (0.041)*
Age				0.048 (0.005)**	0.048 (0.005)**
Age2				-0.001 (0.000)**	-0.001 (0.000)**
Number of Female in Working Aged (16 to 64)			0.020 (0.010)+		-0.020 (0.012)+
Log Total Household Income			0.160 (0.011)**		0.133 (0.013)**
Observations	11781	11781	11781	11781	11781
Wald Chi Square	144.45	214.86	408.08	651.95	751.18
Probability > Chi Square	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.016	0.027	0.063	0.100	0.132

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-3: Marginal Effect of Foreign Maids on Women Working Status in Malaysia for Year 1993/94 Using Probit Model (Restricted Sample)

MALAYSIA – 1993/1994	Model 1	Model 2	Model 3	Model 4	Model 5
Maid	0.168 (0.034)**	0.153 (0.035)**	0.165 (0.035)**	0.113 (0.039)**	0.150 (0.037)**
Number of Children Aged 0 to 2	-0.052 (0.013)**	-0.051 (0.013)**	-0.057 (0.013)**		-0.060 (0.015)**
Number of Children Aged 3 to 6	-0.023 (0.012)+	-0.017 (0.013)	-0.019 (0.013)		-0.035 (0.014)*
Number of Children Aged 7 to 12	-0.009 (0.010)	-0.013 (0.010)	-0.014 (0.010)		-0.012 (0.011)
Number of Children Aged 13 to 18	-0.016 (0.010)	-0.023 (0.010)*	-0.026 (0.010)*		-0.003 (0.011)
Number of Children Aged Above 18	-0.005 (0.006)	0.004 (0.006)	-0.013 (0.008)+		-0.004 (0.008)
Region (West Malaysia =1)	0.035 (0.020)+	0.037 (0.020)+	0.038 (0.020)+	0.046 (0.021)*	0.032 (0.021)
Number of Elder Aged 56 to 64		-0.106 (0.018)**	-0.118 (0.018)**		0.009 (0.021)
Number of Elder Above 64		0.019 (0.020)	0.019 (0.020)		0.045 (0.022)*
Marital Status (Never Married)				0.197 (0.047)**	0.140 (0.052)**
Marital Status (Currently Married)				-0.087 (0.046)+	-0.099 (0.048)*
Level of Education – Tertiary				0.317 (0.020)**	0.329 (0.021)**
Level of Education – Secondary				0.152 (0.021)**	0.158 (0.022)**
Ethnic Group for Head of Household (Malay)				0.098 (0.031)**	0.120 (0.032)**
Ethnic Group for Head of Household (Chinese)				0.129 (0.031)**	0.132 (0.031)**
Age				0.047 (0.006)**	0.048 (0.007)**
Age2				-0.001 (0.000)**	-0.001 (0.000)**
Number of Female in Working Aged (16 to 64)			0.037 (0.010)**		0.018 (0.011)
Log Total Household Income			-0.028 (0.020)		-0.069 (0.022)**
Observations	3386	3386	3386	3386	3386
Wald Chi Square	48.56	84.61	100.41	508.13	514.81
Probability > Chi Square	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.011	0.020	0.024	0.150	0.160

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-4: Marginal Effect of Foreign Maids on Women Working Status in Malaysia for Year 1993/94 Using Probit Model (Restricted Sample)

MALAYSIA 2004/2005	Model 1	Model 2	Model 3	Model 4	Model 5
Maid	0.183 (0.036)**	0.180 (0.035)**	0.153 (0.039)**	0.127 (0.038)**	0.168 (0.039)**
Number of Children Aged 0 to 2	-0.079 (0.020)**	-0.077 (0.021)**	-0.075 (0.021)**		-0.095 (0.025)**
Number of Children Aged 3 to 6	-0.010 (0.018)	-0.012 (0.017)	-0.011 (0.018)		-0.042 (0.019)*
Number of Children Aged 7 to 12	-0.004 (0.014)	-0.015 (0.014)	-0.016 (0.014)		-0.034 (0.016)*
Number of Children Aged 13 to 18	-0.021 (0.014)	-0.037 (0.014)**	-0.037 (0.015)*		-0.021 (0.015)
Number of Children Aged Above 18	-0.014 (0.010)	-0.001 (0.011)	0.002 (0.013)		0.013 (0.013)
Region (West Malaysia =1)	0.102 (0.023)**	0.096 (0.024)**	0.095 (0.024)**	0.092 (0.027)**	0.069 (0.027)*
Number of Elder Aged 56 to 64		-0.150 (0.024)**	-0.148 (0.025)**		0.005 (0.027)
Number of Elder Above 64		0.004 (0.028)	0.007 (0.028)		0.024 (0.031)
Marital Status (Never Married)				0.114 (0.072)	0.076 (0.081)
Marital Status (Currently Married)				-0.094 (0.067)	-0.097 (0.069)
Level of Education – Tertiary				0.334 (0.035)**	0.315 (0.038)**
Level of Education – Secondary				0.133 (0.038)**	0.109 (0.039)**
Ethnic Group for Head of Household (Malay)				0.065 (0.040)	0.096 (0.041)*
Ethnic Group for Head of Household (Chinese)				-0.066 (0.058)	-0.086 (0.059)
Age				0.064 (0.009)**	0.067 (0.010)**
Age2				-0.001 (0.000)**	-0.001 (0.000)**
Number of Female in Working Aged (16 to 64)			-0.006 (0.015)		-0.026 (0.017)
Log Total Household Income			0.054 (0.029)+		-0.015 (0.031)
Observations	4182	4182	4182	4182	4182
Wald Chi Square	60.61	104.21	108.63	276.67	307.72
Probability > Chi Square	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.016	0.035	0.037	0.146	0.163

Notes: Robust standard errors in parentheses+ significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-5: Probit Estimation Results to Construct Propensity Score for Malaysia (1993/1994) Using Full Sample

Malaysia – 1993/1994	Model 1 Children	Model 2 Children + Elders	Model 3 Children + Elders + Older Children	Model 4 Children + Elders + Older Children+ Economy Status	Model 5
Number of Children Aged 0 to 2	0.188 (0.045)**	0.173 (0.045)**	0.156 (0.050)**	0.208 (0.054)**	
Number of Children Aged 3 to 6	0.040 (0.040)	0.030 (0.040)	0.026 (0.043)	0.086 (0.048)+	
Household with Primary School Children	0.021 (0.066)	-0.010 (0.066)	0.067 (0.081)	0.043 (0.087)	
Household with Elderly 56 to 64		-0.408 (0.110)**	-0.410 (0.111)**	-0.276 (0.140)*	
Household with Elderly Above 64		0.023 (0.092)	0.013 (0.092)	0.056 (0.109)	
Household with Secondary School Children			-0.224 (0.090)*	-0.206 (0.104)*	
Number of Married Children			-0.017 (0.025)	-0.012 (0.029)	
Female Working Population				-0.134 (0.071)+	
Log Total Household Income				0.825 (0.048)**	
Presence of Children Below 12					0.336 (0.122)**
Log Total Household Income					0.811 (0.048)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.004 (0.003)
Constant	-2.309 (0.049)**	-2.232 (0.054)**	-2.143 (0.056)**	-8.561 (0.397)**	-8.894 (0.419)**
Observations	10722	10722	10722	10722	10722
Wald chi square	23.31	29.96	35.37	319.57	296.76
Probability > chi square	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.012	0.022	0.029	0.243	0.225

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-6: Probit Estimation Results to Construct Propensity Score for Malaysia (2004/2005) Using Full Sample

Malaysia – 2004/2005	Model 1 Children	Model 2 Children + Elders	Model 3 Children + Elders + Older Children	Model 4 Children + Elders + Older Children+ Economy Status	Model 5
Number of Children Aged 0 to 2	0.158 (0.077)*	0.153 (0.078)+	0.120 (0.074)	0.157 (0.092)+	
Number of Children Aged 3 to 6	0.206 (0.070)**	0.200 (0.071)**	0.178 (0.068)**	0.227 (0.068)**	
Household with Primary School Children	-0.068 (0.101)	-0.083 (0.102)	-0.046 (0.115)	-0.112 (0.120)	
Household with Elderly 56 to 64		-0.202 (0.108)+	-0.235 (0.113)*	0.054 (0.146)	
Household with Elderly Above 64		0.111 (0.129)	0.086 (0.117)	0.243 (0.137)+	
Household with Secondary School Children			-0.179 (0.115)	-0.175 (0.121)	
Number of Married Children			0.039 (0.064)	-0.000 (0.071)	
Female Working Population				-0.292 (0.093)**	
Log Total Household Income				0.922 (0.079)**	
Presence of Children Below 12					0.089 (0.172)
Log Total Household Income					0.871 (0.081)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.010 (0.005)*
Constant	-2.200 (0.079)**	-2.173 (0.096)**	-2.103 (0.085)**	-9.452 (0.691)**	-9.477 (0.686)**
Observations	8869	8869	8869	8869	8869
Wald chi square	26.06	34.68	35.44	193.30	129.47
Probability > chi square	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.024	0.027	0.031	0.281	0.252

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-7: Probit Estimation Results to Construct Propensity Score for West Malaysia (1993/1994) Using Full Sample

West Malaysia – 1993/1994	Model 1 Children	Model 2 Children + Elders	Model 3 Children + Elders + Older Children	Model 4 Children + Elders + Older Children+ Economy Status	Model 5
Number of Children Aged 0 to 2	0.149 (0.056)**		0.165 (0.061)**	0.237 (0.067)**	
Number of Children Aged 3 to 6	0.039 (0.048)		0.075 (0.053)	0.157 (0.058)**	
Household with Primary School Children	0.041 (0.079)		0.139 (0.093)	0.147 (0.103)	
Number of Elder Aged 56 to 64			-0.315 (0.113)**	-0.215 (0.121)+	
Number of Elder Above 64			-0.066 (0.085)	-0.055 (0.105)	
Number of Children Aged 13 to 18		-0.136 (0.067)*	-0.034 (0.070)	0.026 (0.074)	
Number of Married Children		0.017 (0.019)	-0.071 (0.029)*	-0.088 (0.032)**	
Number of female aged 16 to 64				-0.129 (0.084)	
Log Total Household Income				0.834 (0.056)**	
Presence of Children Below 12					0.333 (0.146)*
Log Total Household Income					0.825 (0.057)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.003 (0.004)
Constant	-2.369 (0.058)**	-2.233 (0.054)**	-2.193 (0.066)**	-8.693 (0.477)**	-9.067 (0.504)**
Observations	8902	8902	8902	8902	8902
Wald chi square	10.76	4.29	19.04	252.52	216.04
Probability > chi square	0.013	0.117	0.001	0.000	0.000
Pseudo R2	0.008	0.006	0.024	0.247	0.233

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-8: Probit Estimation Results to Construct Propensity Score for West Malaysia (2004/2005) Using Full Sample

West Malaysia – 2004/2005	Model 1 Children	Model 2 Children + Elders	Model 3 Children + Elders + Older Children	Model 4 Children + Elders + Older Children+ Economy Status	Model 5
Number of Children Aged 0 to 2	0.138 (0.091)		0.105 (0.088)	0.137 (0.112)	
Number of Children Aged 3 to 6	0.229 (0.080)**		0.202 (0.078)**	0.257 (0.078)**	
Household with Primary School Children	-0.089 (0.119)		-0.064 (0.134)	-0.136 (0.144)	
Number of Elder Aged 56 to 64			-0.138 (0.113)	0.147 (0.136)	
Number of Elder Above 64			0.048 (0.097)	0.201 (0.118)+	
Number of Children Aged 13 to 18		-0.170 (0.081)*	-0.123 (0.084)	-0.108 (0.093)	
Number of Married Children		0.052 (0.106)	0.024 (0.089)	-0.013 (0.102)	
Number of female aged 16 to 64				-0.408 (0.145)**	
Log Total Household Income				0.929 (0.090)**	
Presence of Children Below 12					0.118 (0.198)
Log Total Household Income					0.879 (0.092)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.008 (0.006)
Constant	-2.230 (0.090)**	-2.009 (0.062)**	-2.138 (0.100)**	-9.461 (0.799)**	-9.592 (0.775)**
Observations	7149	7149	7149	7149	7149
Wald chi square	20.92	4.47	29.85	156.69	106.34
Probability > chi square	0.000	0.107	0.000	0.000	0.000
Pseudo R2	0.027	0.011	0.033	0.296	0.259

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-9: Probit Estimation Results to Construct Propensity Score for East Malaysia (1993/1994) Using Full Sample

East Malaysia – 1993/1994	Model 1 Children	Model 2 Children + Elders	Model 3 Children + Elders + Older Children	Model 4 Children + Elders + Older Children+ Economy Status	Model 5
Number of Children Aged 0 to 2	0.281 (0.070)**		0.204 (0.082)*	0.228 (0.093)*	
Number of Children Aged 3 to 6	0.049 (0.070)		-0.010 (0.078)	-0.007 (0.088)	
Household with Primary School Children	-0.039 (0.113)		-0.147 (0.136)	-0.298 (0.159)+	
Number of Elder Aged 56 to 64			-0.516 (0.194)**	-0.470 (0.268)+	
Number of Elder Above 64			0.034 (0.125)	0.035 (0.140)	
Number of Children Aged 13 to 18		-0.193 (0.090)*	-0.137 (0.102)	-0.263 (0.137)+	
Number of Married Children		0.088 (0.028)**	0.071 (0.043)+	0.148 (0.061)*	
Number of female aged 16 to 64				-0.314 (0.099)**	
Log Total Household Income				0.840 (0.087)**	
Presence of Children Below 12					0.339 (0.194)+
Log Total Household Income					0.713 (0.083)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.005 (0.006)
Constant	-1.915 (0.084)**	-1.888 (0.085)**	-1.861 (0.098)**	-8.195 (0.698)**	-7.756 (0.701)**
Observations	1820	1820	1820	1820	1820
Wald chi square	19.85	10.69	28.56	100.48	78.19
Probability > chi square	0.000	0.005	0.000	0.000	0.000
Pseudo R2	0.028	0.014	0.046	0.235	0.175

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-10: Probit Estimation Results to Construct Propensity Score for East Malaysia (2004/2005) Using Full Sample

East Malaysia – 2004/2005	Model 1 Children	Model 2 Children + Elders	Model 3 Children + Elders + Older Children	Model 4 Children + Elders + Older Children+ Economy Status	Model 5
Number of Children Aged 0 to 2	0.221 (0.101)*		0.206 (0.106)+	0.269 (0.116)*	
Number of Children Aged 3 to 6	0.067 (0.085)		0.044 (0.087)	0.116 (0.100)	
Household with Primary School Children	0.052 (0.133)		0.109 (0.128)	0.077 (0.151)	
Number of Elder Aged 56 to 64			-0.129 (0.149)	-0.249 (0.195)	
Number of Elder Above 64			0.208 (0.146)	0.295 (0.186)	
Number of Children Aged 13 to 18		-0.187 (0.082)*	-0.163 (0.077)*	-0.192 (0.094)*	
Number of Married Children		0.058 (0.080)	0.005 (0.089)	-0.098 (0.098)	
Number of female aged 16 to 64				-0.134 (0.090)	
Log Total Household Income				1.031 (0.116)**	
Presence of Children Below 12					-0.077 (0.284)
Log Total Household Income					0.906 (0.123)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.018 (0.007)*
Constant	-1.986 (0.122)**	-1.746 (0.083)**	-1.921 (0.124)**	-10.211 (1.046)**	-9.478 (1.173)**
Observations	1720	1720	1720	1720	1720
Wald chi square	5.93	6.05	14.20	117.63	68.41
Probability > chi square	0.115	0.049	0.058	0.000	0.000
Pseudo R2	0.015	0.013	0.031	0.263	0.233

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

Table A.3-11: Probit Estimation Results to Construct Propensity Score for Malaysia (1993/1994) Using Restricted Sample @

MALAYSIA – 1993/1994	Model 1 Children	Model 2 Elders	Model 3 Children + Older Children +Elderly People	Model 4 Children + Older Children + Elders + Economy Status	Model 5
Household with Children Aged 0 to 2	0.342 (0.091)**		0.267 (0.092)**	0.286 (0.091)**	
Household with Children 3 to 6	0.250 (0.094)**		0.199 (0.099)*	0.220 (0.101)*	
Household with Children 7 to 12	0.057 (0.092)		0.051 (0.108)	0.039 (0.101)	
Household with Children Aged 13 to 18			-0.302 (0.128)*	-0.278	
Number of Married Children			0.007 (0.045)	(0.112)*	
Household with Elderly 56 to 64		-0.630 (0.163)**	-0.608 (0.170)**	0.108 (0.127)	
Household with Elderly Above 64		0.104 (0.125)	0.079 (0.125)	-0.567 (0.174)**	
Log Total Household Income				0.713 (0.096)**	
Presence of Children Below 12					0.403 (0.147)**
Log Total Household Income					0.724 (0.095)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.005 (0.004)
Constant	-1.825 (0.075)**	-1.507 (0.049)**	-1.645 (0.095)**	-7.745 (0.838)**	-8.146 (0.827)**
Observations	2157	2157	2157	2157	2157
Wald chi square	28.57	16.12	39.20	90.87	74.67
Probability > chi square	0.000	0.000	0.000	0.000	0.000
Pseudo R2	0.028	0.019	0.052	0.1031	0.08

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

@Sample is restricted to only households with total monthly income of RM3000 and above

Table A.3-12: Probit Estimation Results to Construct Propensity Score for Malaysia (2004/2005) Using Restricted Sample@

MALAYSIA 2004/2005	Model 1 Children	Model 2 Elders	Model 3 Children + Older Children +Elderly People	Model 4 Children + Older Children + Elders + Economy Status	Model 5
Household with Children Aged 0 to 2	0.201 (0.134)		0.176 (0.127)	0.210 (0.128)	
Household with Children 3 to 6	0.379 (0.129)**		0.362 (0.126)**	0.396 (0.131)**	
Household with Children 7 to 12	-0.087 (0.123)		-0.076 (0.138)	-0.057 (0.135)	
Household with Children Aged 13 to 18			-0.106 (0.137)	-0.123 (0.133)	
Number of Married Children			-0.016 (0.079)		
Household with Elderly 56 to 64		-0.216 (0.127)+	-0.189 (0.141)	0.270 (0.150)+	
Household with Elderly Above 64		0.279 (0.174)	0.301 (0.151)*	-0.132 (0.142)	
Log Total Household Income				1.053 (0.122)**	
Presence of Children Below 12					0.018 (0.176)
Log Total Household Income					1.017 (0.127)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.014 (0.004)**
Constant	-1.864 (0.110)**	-1.686 (0.065)**	-1.827 (0.103)**	-11.052 (1.039)**	-10.780 (1.082)**
Observations	2909	2909	2909	2909	2909
Wald chi square	17.00	4.41	27.21	115.56	83.12
Probability > chi square	0.001	0.110	0.000	0.000	0.000
Pseudo R2	0.029	0.007	0.037	0.177	0.158

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

@Sample is restricted to only households with total monthly income of RM3000 and above

Table A.3-13: Probit Estimation Results to Construct Propensity Score for West Malaysia (1993/1994) Using Restricted Sample @

	Model 1 Children	Model 2 Elders	Model 3 Children + Older Children +Elderly People	Model 4 Children + Older Children + Elders + Economy Status	Model 5
Household with Children Aged 0 to 2	0.253 (0.110)*		0.209 (0.108)+	0.201 (0.111)+	
Household with Children 3 to 6	0.297 (0.112)**		0.277 (0.115)*	0.263 (0.121)*	
Household with Children 7 to 12	0.087 (0.110)		0.069 (0.116)	0.068 (0.121)	
Household with Children Aged 13 to 18			-0.099	-0.230	
Household with Elderly 56 to 64		-0.591 (0.183)**	(0.081) -0.550 (0.181)**	(0.131)+ 0.088 (0.155)	
Household with Elderly Above 64		-0.009 (0.113)	-0.028 (0.115)	-0.555 (0.215)**	
Log Total Household Income				0.770 (0.112)**	
Presence of Children Below 12					0.446 (0.177)*
Log Total Household Income					0.789 (0.110)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.003 (0.005)
Constant	-1.892 (0.090)**	-1.559 (0.057)**	-1.743 (0.100)**	-8.317 (0.979)**	-8.770 (0.965)**
Observations	1647	1647	1647	1647	1647
Wald chi square	18.30	10.53	24.74	68.70	59.3
Probability > chi square	0.000	0.005	0.000	0.000	0.000
Pseudo R2	0.026	0.020	0.046	0.111	0.090

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

@Sample is restricted to only households with total monthly income of RM3000 and above

Table A.3-14: Probit Estimation Results to Construct Propensity Score for West Malaysia (2004/2005) Using Restricted Sample @

	Model 1 Children	Model 2 Elders	Model 3 Children + Older Children +Elderly People	Model 4 Children + Older Children + Elders + Economy Status	Model 5
Household with Children Aged 0 to 2	0.187 (0.158)		0.154 (0.151)	0.201 (0.154)	
Household with Children 3 to 6	0.404 (0.151)**		0.391 (0.153)*	0.424 (0.157)**	
Household with Children 7 to 12	-0.119 (0.144)		-0.105 (0.161)	-0.084 (0.160)	
Household with Children Aged 13 to 18			-0.075 (0.098)	-0.122 (0.159)	
Household with Elderly 56 to 64		-0.174 (0.114)	-0.161 (0.117)	0.308 (0.174)+	
Household with Elderly Above 64		0.266 (0.145)+	0.285 (0.141)*	-0.092 (0.165)	
Log Total Household Income				1.093 (0.135)**	
Presence of Children Below 12					-0.000 (0.201)
Log Total Household Income					1.053 (0.143)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.013 (0.005)**
Constant	-1.891 (0.128)**	-1.726 (0.075)**	-1.860 (0.128)**	-11.463 (1.157)**	-11.122 (1.219)**
Observations	2218	2218	2218	2218	2218
Wald chi square	13.93	5.06	17.19	98.30	67.19
Probability > chi square	0.003	0.080	0.009	0.000	0.000
Pseudo R2	0.031	0.009	0.042	0.194	0.170

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

@Sample is restricted to only households with total monthly income of RM3000 and above

Table A.3-15: Probit Estimation Results to Construct Propensity Score for East Malaysia (1993/1994) Using Restricted Sample @

	Model 1 Children	Model 2 Elders	Model 3 Children + Older Children +Elderly People	Model 4 Children + Older Children + Elders + Economy Status	Model 5
Household with Children Aged 0 to 2	0.612 (0.156)**		0.485 (0.169)**	0.574 (0.156)**	
Household with Children 3 to 6	-0.004 (0.165)		-0.019 (0.171)	0.036 (0.164)	
Household with Children 7 to 12	-0.017 (0.162)		-0.167 (0.178)	-0.046 (0.170)	
Household with Children Aged 13 to 18	-0.276 (0.127)*		-0.400 (0.150)**	-0.579 (0.185)**	
Number of Married Children			0.100 (0.064)		
Household with Elderly 56 to 64		-0.574 (0.235)*	-0.619 (0.244)*	0.081 (0.218)	
Household with Elderly Above 64		0.087 (0.158)	0.100 (0.163)	-0.589 (0.276)*	
Log Total Household Income				0.506 (0.176)**	
Presence of Children Below 12					0.214 (0.244)
Log Total Household Income					0.425 (0.178)*
Interact: Presence of Children Below 12 & Log Total Household Income					0.013 (0.008)+
Constant	-1.363 (0.147)**	-1.159 (0.083)**	-1.392 (0.159)**	-5.558 (1.505)**	-5.224 (1.502)**
Observations	510	510	510	510	510
Wald chi square	25.78	6.75	31.80	37.99	18.64
Probability > chi square	0.000	0.034	0.000	0.000	0.000
Pseudo R2	0.074	0.021	0.100	0.113	0.042

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

@Sample is restricted to only households with total monthly income of RM3000 and above

Table A.3-16: Probit Estimation Results to Construct Propensity Score for East Malaysia (2004/2005) Using Restricted Sample @

	Model 1 Children	Model 2 Elders	Model 3 Children + Older Children +Elderly People	Model 4 Children + Older Children + Elders + Economy Status	Model 5
Household with Children Aged 0 to 2	0.227 (0.169)		0.209 (0.176)	0.209 (0.173)	
Household with Children 3 to 6	0.223 (0.171)		0.209 (0.170)	0.260 (0.173)	
Household with Children 7 to 12	0.137 (0.157)		0.117 (0.155)	0.115 (0.161)	
Household with Children Aged 13 to 18	-0.144 (0.091)		-0.159 (0.091)+	-0.201 (0.163)	
Number of Married Children			0.027 (0.096)		
Household with Elderly 56 to 64		-0.172 (0.163)	-0.171 (0.181)	0.062 (0.237)	
Household with Elderly Above 64		0.044 (0.157)	0.040 (0.158)	-0.377 (0.228)+	
Log Total Household Income				0.978 (0.185)**	
Presence of Children Below 12					0.086 (0.271)
Log Total Household Income					0.918 (0.184)**
Interact: Presence of Children Below 12 & Log Total Household Income					0.020 (0.009)*
Constant	-1.613 (0.144)**	-1.428 (0.086)**	-1.563 (0.151)**	-10.028 (1.606)**	-9.775 (1.601)**
Observations	691	691	691	691	691
Wald chi square	11.31	1.17	11.44	36.49	39.25
Probability > chi square	0.023	0.556	0.120	0.000	0.000
Pseudo R2	0.030	0.004	0.033	0.121	0.123

Notes: Robust standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%

@Sample is restricted to only households with total monthly income of RM3000 and above

Figure A.3-1: Propensity Scores for Households with Maids and Other Households –Malaysia 1993/1994 Using Full Sample

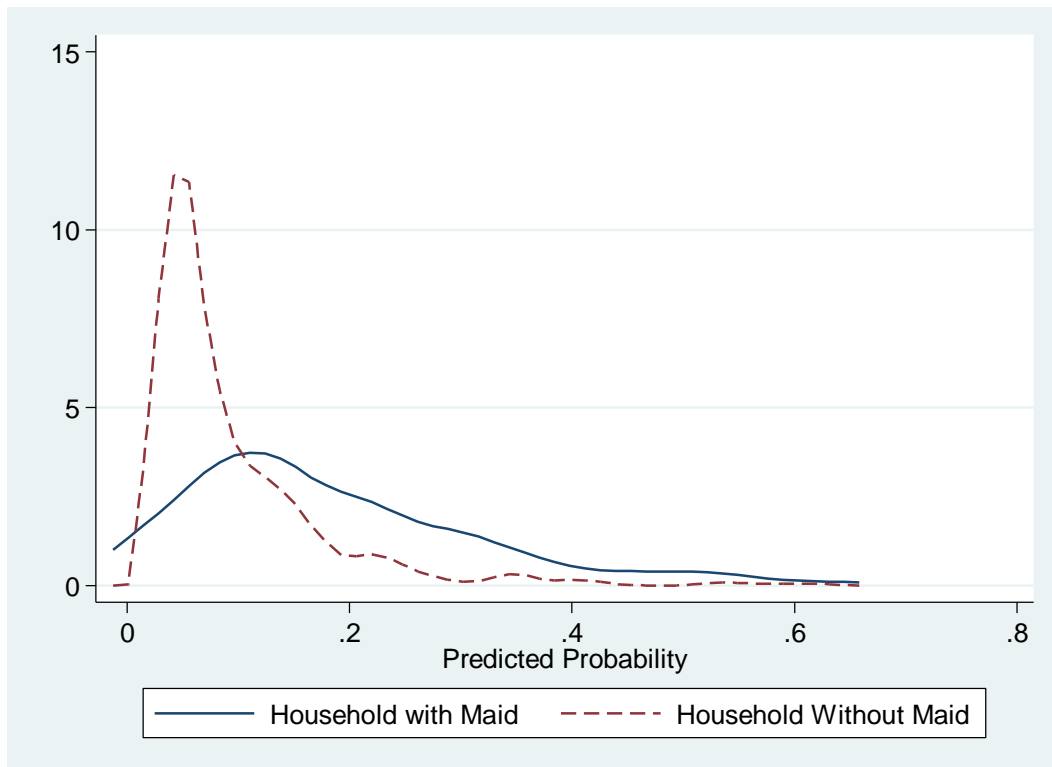


Figure A.3-2: Propensity Scores for Households with Maids and Other Households –Malaysia 2004/2005 Using Full Sample

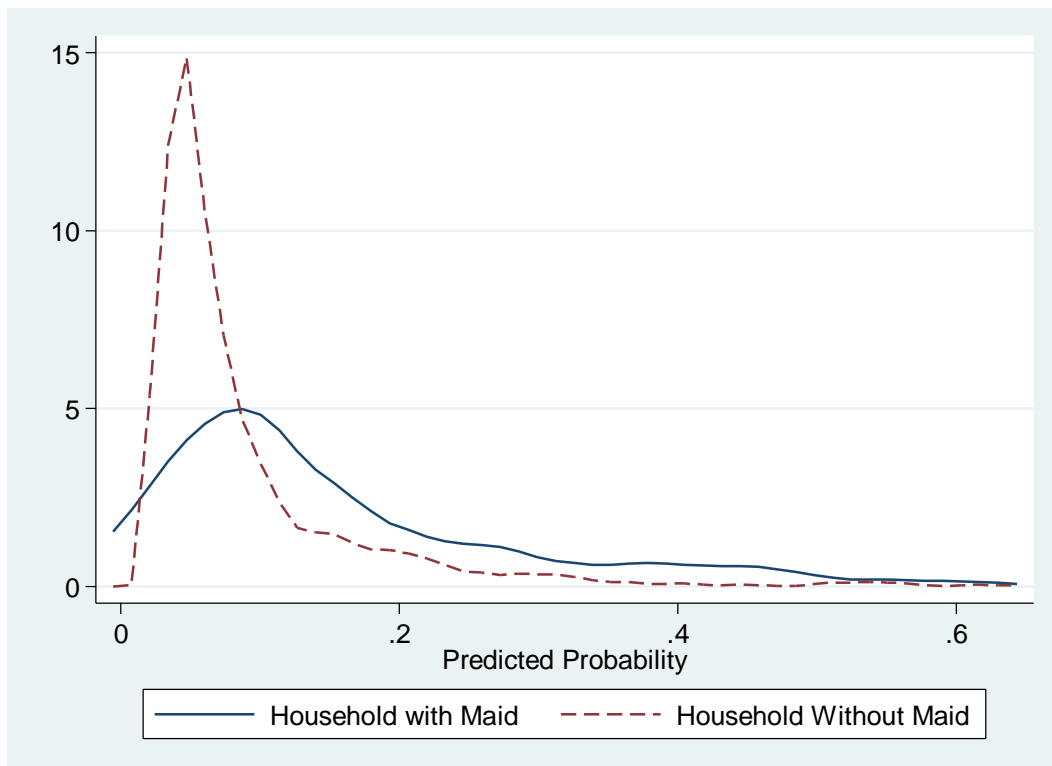


Figure A.3-3: Propensity Scores for Households with Maids and Other Households – West Malaysia 1993/94 Using Full Sample

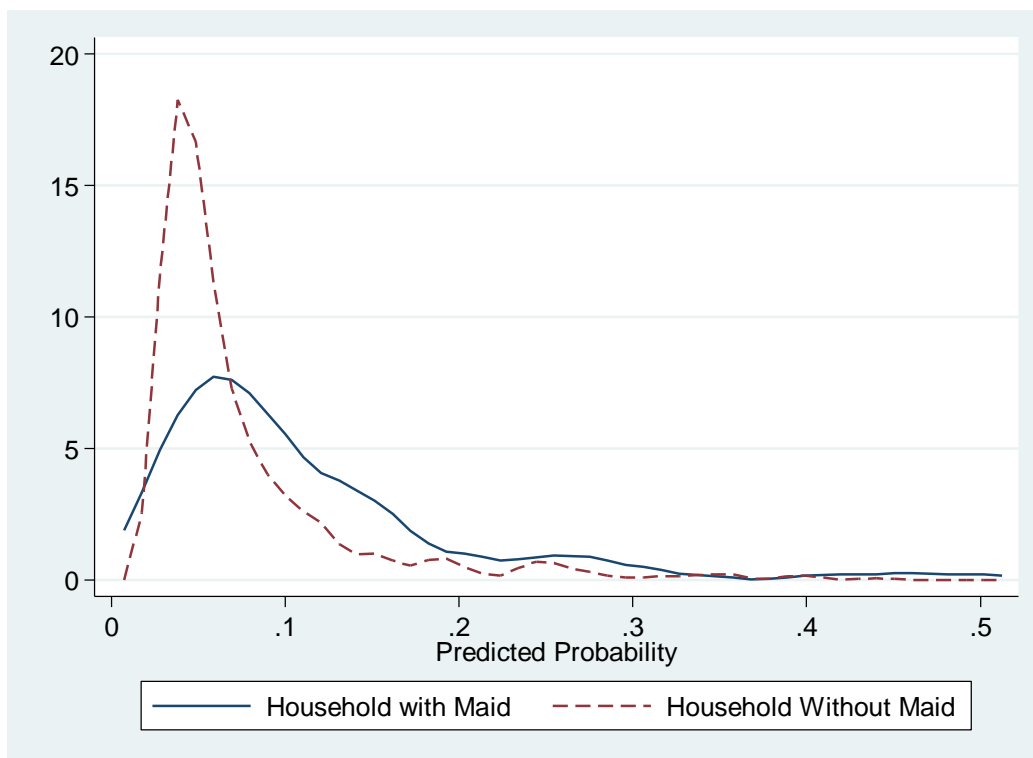


Figure A.3-4: Propensity Scores for Households with Maids and Other Households – West Malaysia 2004/2005 Using Full Sample

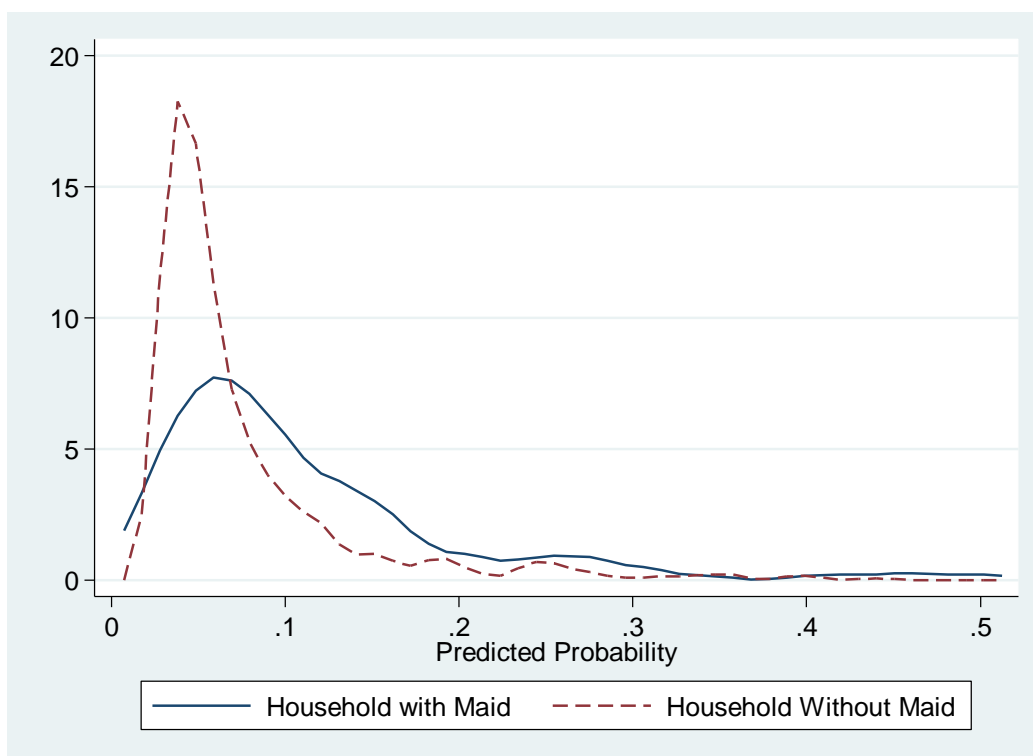


Figure A.3-5: Propensity Scores for Households with Maids and Other Households – East Malaysia 1993/1994 Using Full Sample

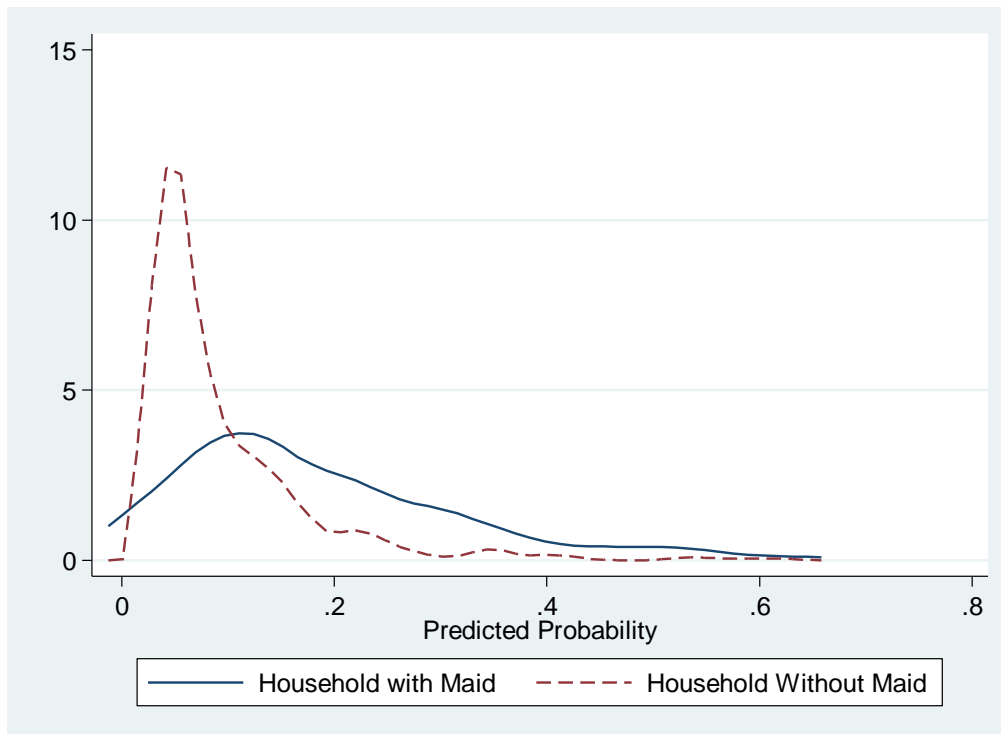


Figure A.3-6: Propensity Scores for Households with Maids and Other Households – East Malaysia 2004/2005 Using Full Sample

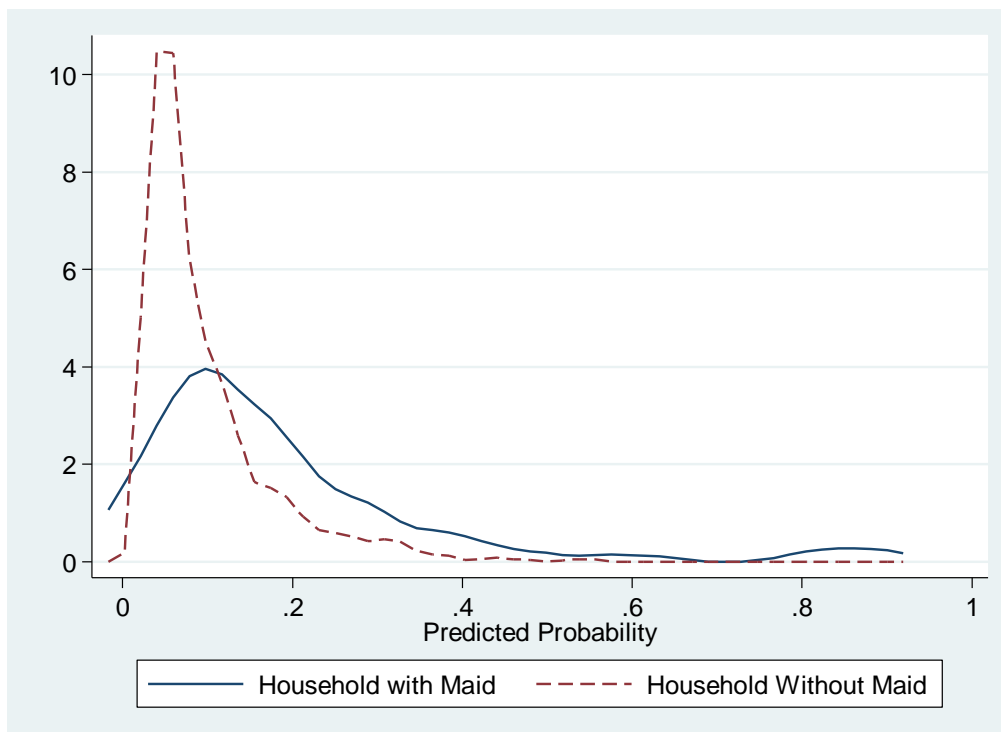


Figure A.3-7: Propensity Scores for Households with Maids and Other Households –Malaysia 1993/1994 Using Restricted Sample

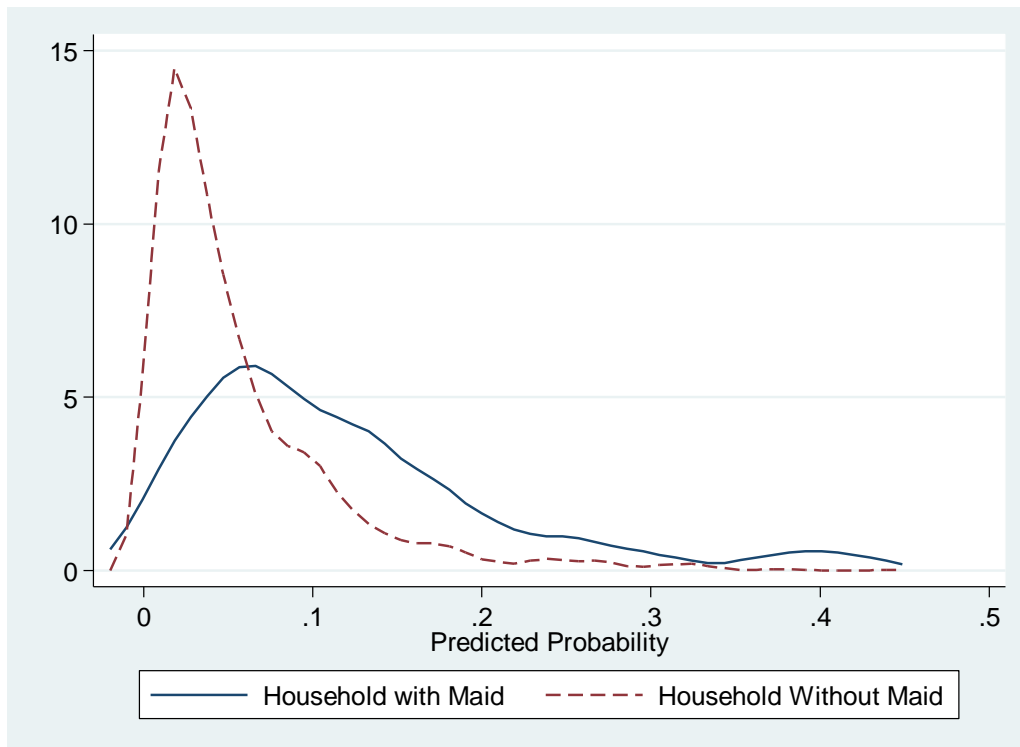


Figure A.3-8: Propensity Scores for Households with Maids and Other Households –Malaysia 2004/2005 Using Restricted Sample

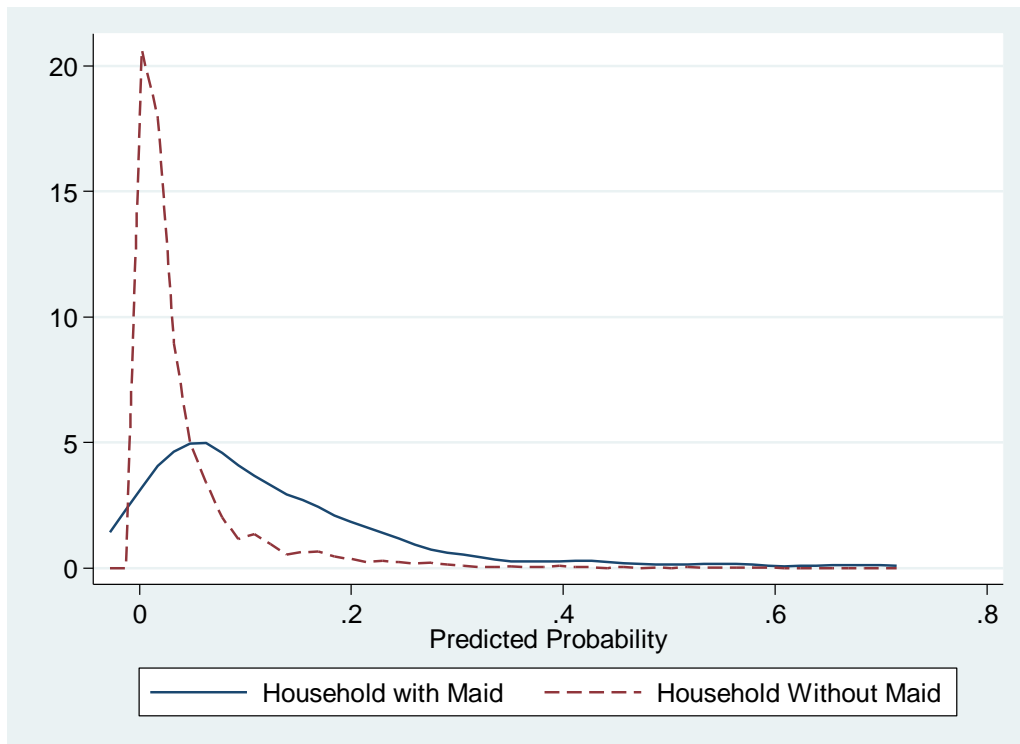


Figure A.3-9: Propensity Scores for Households with Maids and Other Households – West Malaysia 1993/94 Using Restricted Sample

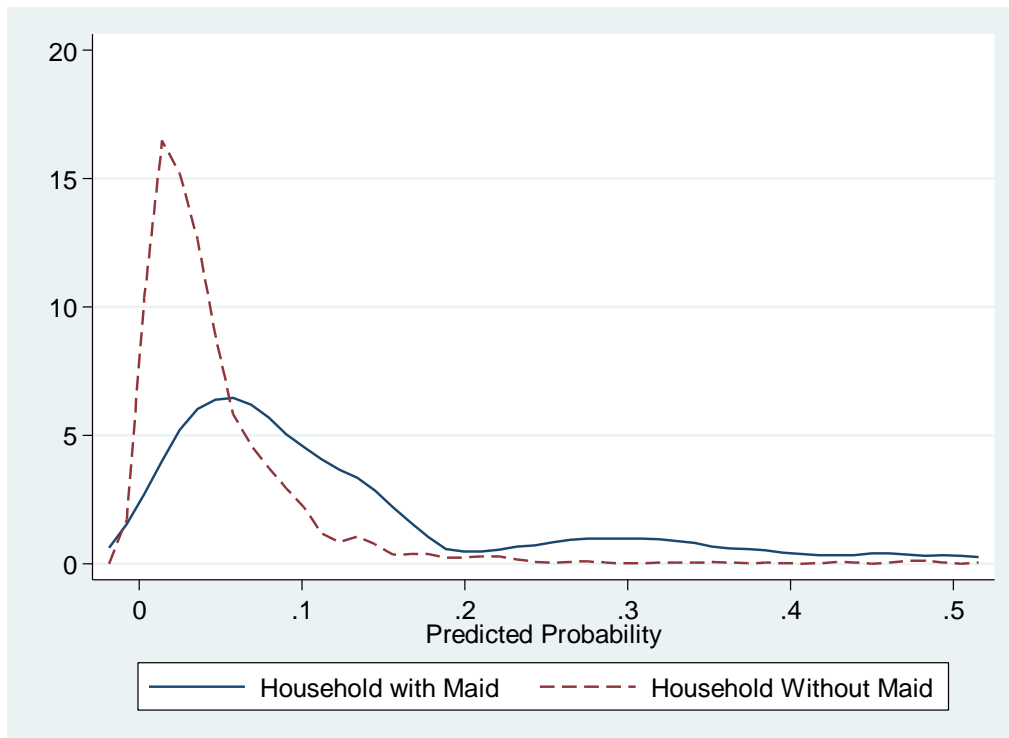


Figure A.3-10: Propensity Scores for Households with Maids and Other Households – West Malaysia 2004/2005 Using Restricted Sample

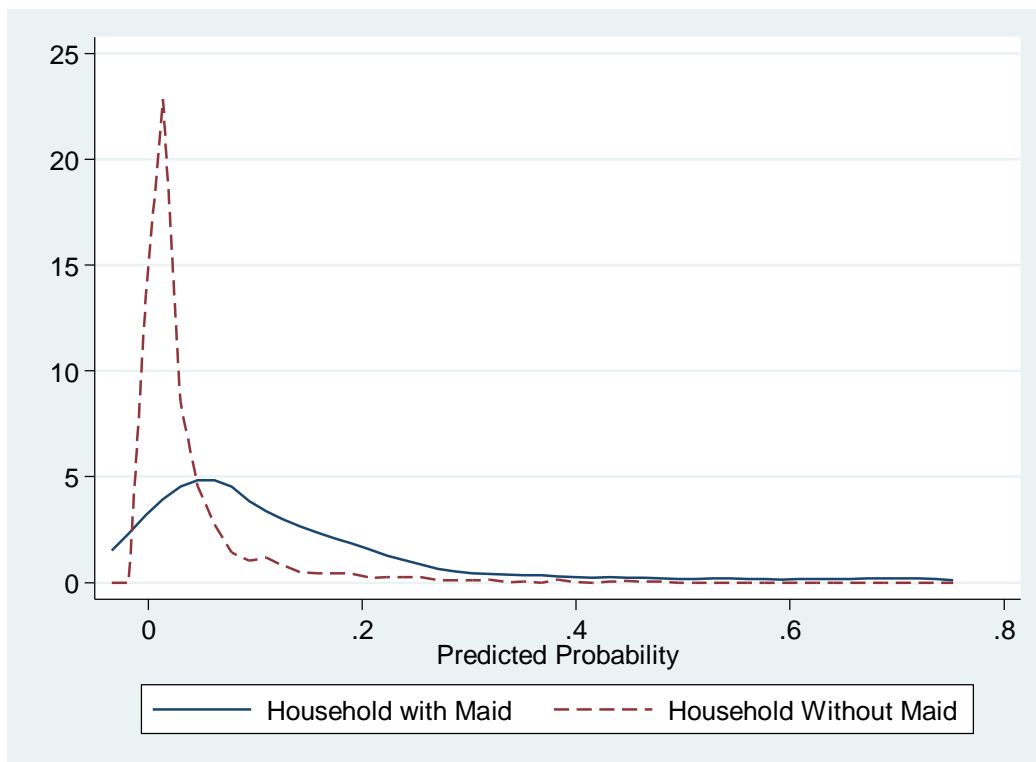


Figure A.3-11: Propensity Scores for Households with Maids and Other Households – East Malaysia 1993/1994 Using Restricted Sample

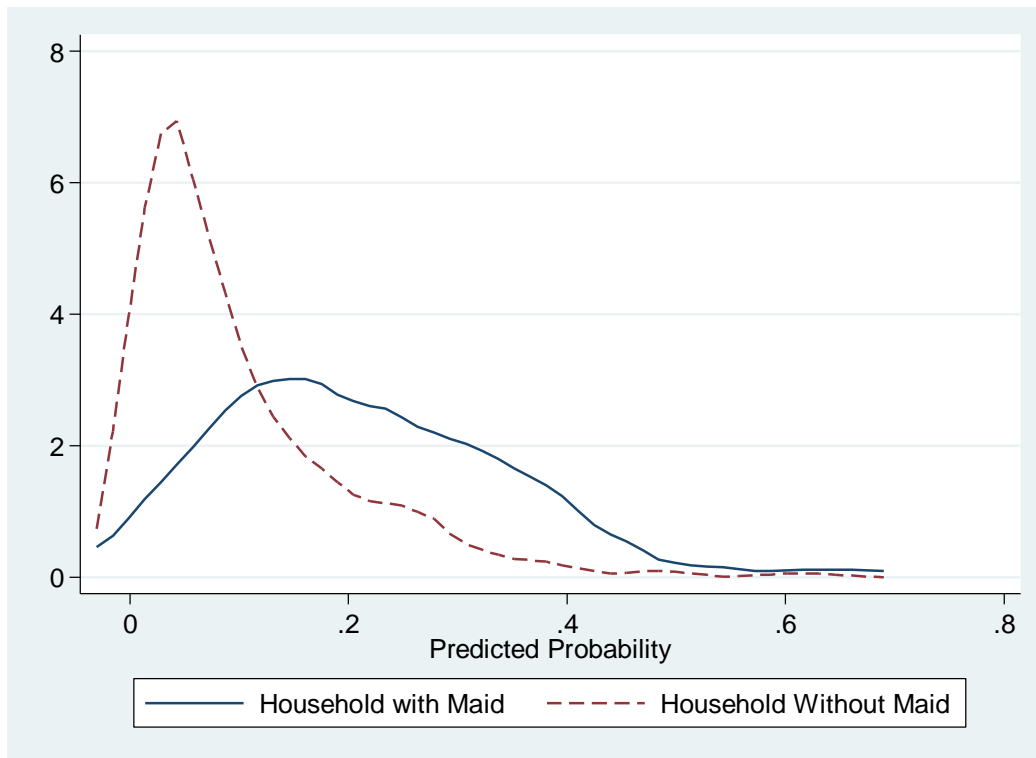
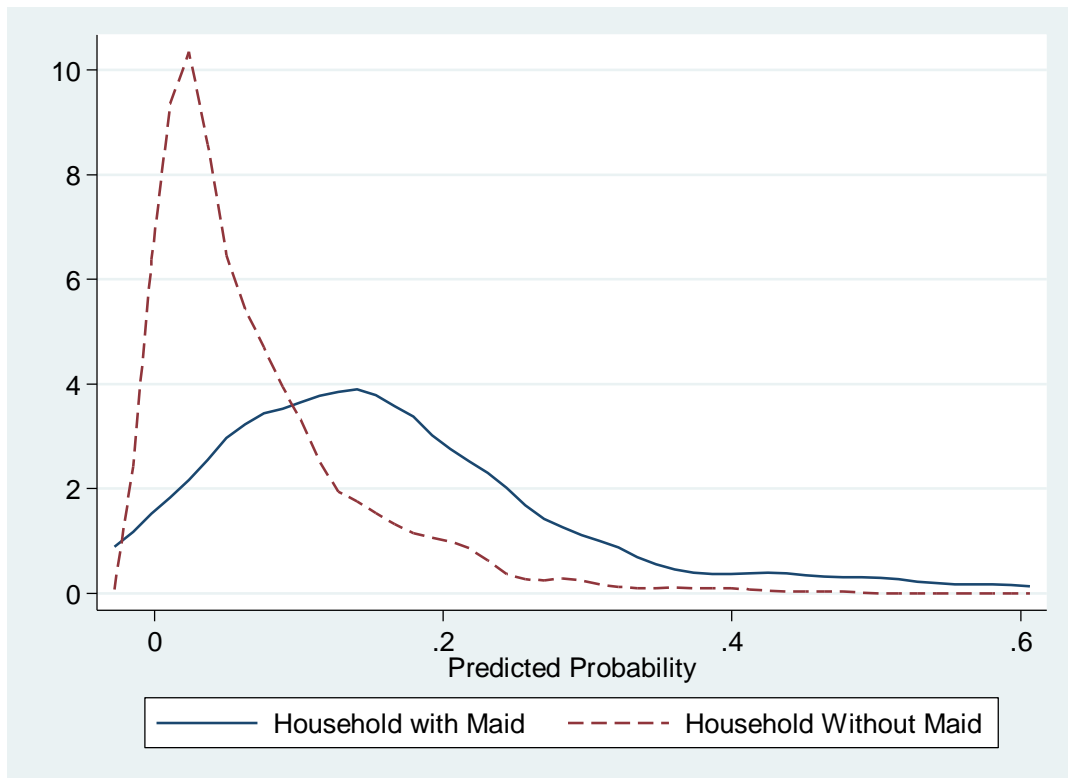


Figure A.3-12: Propensity Scores for Households with Maids and Other Households – East Malaysia 2004/2005 Using Restricted Sample



CHAPTER 4 - THE IMPACTS OF MATERNAL EMPLOYMENT, MAIDS AND PRIVATE TUTORING ON CHILDREN'S ACADEMIC PERFORMANCES

4.1 Introduction

In many rapidly growing Asian countries, the inputs into children's human capital formation include foreign migrants, who work as live-in maids and nannies, and locally-born private tutors, in addition to the more typical inputs of parents and teachers. The rapid growth in household wealth and rising female labour force participation in these countries provide a demand for these two additional inputs of maids and nannies (henceforth 'maids' for simplicity) and private tutors. The use of foreign maids also reflects the proximity to low-cost sources of female labour from poorer neighbours, such as Indonesia, and from neighbours that use labour export as a development strategy, such as the Philippines. This 'globalization of household production' may be less subject to rich country restrictions on low-skilled migration and so may be expected to grow in the future (Kremer and Watt, 2009). Indeed, some western countries also have recently introduced or expanded temporary migration schemes for low-skilled female caregivers (Cortes and Pan, 2009).

A small literature examines some of the factors that are associated with use of these two additional inputs and their impacts on student's academic performance. For example, Cheo and Quah (2005) use a sample of Grade 8 students from three schools in Singapore to test whether having a currently working mother, currently having a maid, and currently having a private tutor has any impact on the student's grades. Dang (2007) uses nationwide household survey data from

Vietnam to examine the factors that determine which students use private tutors and the impact of private tutoring on academic performance. A considerably larger literature examines academic impacts of maternal employment, in both developing countries (e.g. Desai & Jain, 1994; Gornick, Meyers, & Ross, 1998) and developed countries (e.g. Baum, 2004; Baydar & Brooks-Gunn, 1991; Hoffman, 1980).

However, these previous studies ignore the cumulative nature of learning, by just examining the contemporaneous impacts of maids and private tutoring. Since learning is a cumulative process, current inputs will affect student achievement in both current and future periods (Rockoff, 2004). Therefore, it is not possible to empirically estimate the total impact of these inputs just with data on use of the input in the same year that academic performance is observed. Instead, current achievement may depend on the entire history of lagged inputs (Todd & Wolpin, 2007), which in this case means the lagged impacts of having maids, of having been tutored and of having mothers working in earlier years.

To capture these lagged impacts I use a survey administered to Year 6 students in Malaysia (who are 12-13 years old), which asks about their use of maids and private tutors and their mother's employment in each of the previous six school years. I use both linear and polynomial distributed lag specifications of regression models to relate Year 6 academic performance to these current and lagged inputs to human capital formation. The results suggest that private tutoring in the three years prior to Year 6 has significant positive impact on academic results but earlier tutoring is associated with poorer results. Children from households that have ever had a maid have higher Year 6 results, with maid impacts having a long lag. There is little apparent impact of either current or

previous maternal employment on academic performance, except for lower scores in Malay language. Several of these effects would be missed if I followed the previous approach in the literature of just examining contemporaneous impacts.

Another feature of the analysis reported in this paper is that heterogeneity of impacts is examined. Rather than just estimate the determinants of mean academic performance, quantile regressions are also used to examine the determinants of Year 6 academic performance at the 25th, 50th, and 75th percentiles. This quantile analysis suggests that the positive impact of maids and private tutoring is most apparent for students below the median.

These findings should be of broad interest, given the relatively limited set of studies that have previously examined the impacts of maids and private tutoring on children's academic performance. The findings are especially relevant for Malaysia where the government is actively promoting and encouraging greater female participation in the labor force as part of the national vision to be a developed country by the year 2020. Although child care centers are available, many Malaysian parents prefer to employ household maids who not only care for their children but also do household chores (Chin, 2005). Official data recognize 320,000 foreigners (mainly Indonesians) working in Malaysia as maids (Ministry of Finance, 2007) although there may be more since the total number of undocumented migrants in Malaysia is estimated to be almost as high as the number of documented migrants (Kanapathy, 2006). These foreign maids are often viewed as a source of trouble to their Malaysian employers (Chin, 1997) but there has not been any systematic study of their impact on children's human capital development.

The rest of the chapter is organized as follows. The next section provides a brief review of relevant literature. Following that, I describe the survey carried out by me and discuss the econometric methodology used. The impact at the mean and various quantile of academic performance are reported in Section 4.4. The final section concludes.

4.2 Previous Literature

4.2.1 Maids

A very limited literature examines the impact of maids on children's academic performance. This may reflect the rarity of households in rich countries now having maids, unlike earlier eras when live-in maids were common. However, maids are an important and growing feature of several industrializing Asian countries. In these countries, such as Malaysia, women are encouraged to join the labour force, but they are not spared from their maternal duties at home. The Asian culture expects women to be fully responsible for childcare and household chores regardless of their working status (Chin, 2005). Therefore, hiring live-in maids from less developed countries is a common solution. Maids not only care for children's needs but also attend to household chores. This arrangement allows tired working mothers to concentrate on more valued maternal roles such as spending quality time with their children (Chan, 2006).

However, this arrangement of leaving children under the care of foreign maids is somewhat untoward, at least in Malaysia, where these foreign maids are often viewed as a source of trouble to their Malaysian employers (Chin, 1997). Therefore, it is important to determine the impact of maids on children, especially on their academic performance. While Cleo and Quah (2005) found no significant

impact of maids on children's academic results in Singapore, this finding is based only on the contemporaneous effects of having a maid and ignores lagged effects.

4.2.2 Private Tutoring

Private tutoring classes after school hours have become a major phenomenon in Asia (Cheo & Quah, 2005). Many parents believe that children who receive additional tutoring will perform better in school and stay longer in the education system (Bray & Susso, 2008). Even though private tutoring may only be needed for weaker students to catch up with peers, most parents invest heavily in private tutoring. For example, in South Korea, parents spent as much on their children's private tutoring as national fiscal expenditure on formal primary and secondary schooling (Kim & Lee, 2001). In Vietnam, Dang (2007) estimates private tutoring classes to be a household necessity rather than a luxury service. Similarly in Malaysia, some 83 percent of students had received some form of private tutoring by the time they entered upper secondary school (Bray, 1999).

Despite widespread use of private tutoring, evidence on its impacts is mixed. In Vietnam, Ha and Harphan (2005) find positive impacts of private tutoring to be minimal compared to the loss of recreation and self education time. In Singapore, Cheo and Quah (2005) find private tutoring classes may cause diminished academic returns. Bray (1999) reports mixed impacts of private tutoring classes. But a weakness in this previous literature is the reliance on cross sectional data and neglect of lagged effects, so more research is required to determine the long run impact of private tutoring.

4.2.3 Maternal Employment

Many studies have been carried out of the impact of maternal employment on children. While a plausible benefit of maternal employment comes from

increasing household incomes so that more inputs can be purchased for human capital formation, there is a potential cost of reduced child-related investment of mother's time and energy. Early research showed no association between maternal work and children's academic achievement (Burchinal & Rossman, 1961). Subsequent study, however, found impacts of maternal work after controlling for demographic characteristics and type of maternal employment (Goldberg, Prause, Lucas-Thomson, & Himself, 2008), for whether the work was fulltime or not (Baydar & Brooks-Gunn, 1991) or for the mothers' attitude towards working (Farel, 1980).

The age and gender of the child also may matter, with boys found to suffer more than girls from mothers working (Baydar & Brooks-Gunn, 1991; Han, Waldfogel, & Brooks-Gunn, 2001) and young children suffering more than older ones (Blau & Grossberg, 1992). In addition, the socioeconomic status of the family may also play an important role since additional income generated by mothers may matter more in poorer families (Baum, 2003), while the children from richer families may be more likely to be placed under care of non-family members (Ruhm, 2008).

4.2.4 Retrospective Questions

The current study design relies on a single survey, which not only collected contemporaneous data but also asked retrospective questions such as: "did your family have a maid?", "was your mother working in a job outside the home?" and "did you attend private tutoring classes" for each year of the respondent's previous six years of primary school. In recent years there has been a reappraisal of the quality of retrospective data in social science settings, due to validation possibilities provided by comparison with either administrative data or with

previous waves of longitudinal surveys.¹⁶ One study by economists, based on the Malaysian Family Life Survey, suggests that retrospective questions can elicit useful information if it is possible to isolate events that people can remember from those they forget (Smith and Thomas, 2003). These authors also conclude that for salient events, and those that are cognitively linked, retrospective questions are likely to work better. It seems plausible that for 12-13 year old students, having their mother go out to work would be a very salient event which they would remember the year of its occurrence and the same would hold for having a foreign maid since both events would be cognitively linked. Furthermore, retrospective data can provide “accurate and detailed information” when retrospective questions are asked carefully and interviewers are well trained (Campbell, 2000, p.1685).

4.3 Data and Methods

In early 2008, I designed and fielded a survey of 1,600 Year 7 students (who are 12-13 years old) at eight secondary schools in the Malaysian states of Selangor and Federal Territory Kuala Lumpur.¹⁷ These two states hold over one quarter of Malaysia’s labour force and have most of the foreign maids (Department of Statistics Malaysia, 2003). The schools were selected to represent different socio-economic groups, ethnic groups and levels of academic reputation. The surveyed students had just completed their six years of primary school, which concludes with a standardized national examination. Results from this examination enable

¹⁶ For example, de Brauw, Gibson, Kim & Liang (2008) compare three-year and six-year retrospective questions on children’s school enrolment with panel survey questions asked in the year of enrolment, against a gold standard of administrative records from the schools the children attended in Bangladesh. Despite the panel surveys asking about enrolment in the current year, which should be subject to less forgetting, there was a greater percentage of incorrect enrolment reports in the panel data than for the long-term recall in both years.

¹⁷ In Malaysia, Year 7 is known as Form 1 where students begin their first year in secondary schools after completing 6 years in primary schools.

comparison of student's academic achievement regardless of schools attended.¹⁸ Furthermore, as early adolescents, students in this age group should be competent to report on their own experiences and feelings (Capaldi & Rothbart, 1992).

A six-page questionnaire distributed to the respondents was completed in the presence of interviewers. This covered family structure, parental education, mothers' work status, durable assets, computers, internet and other learning infrastructure at home. In addition, respondents were also required to provide retrospective information for the last six years on assistance obtained for their school work (attending private tutoring classes, parental guides, sibling help etc), maternal employment status and employment of foreign maids. Finally, respondents also reported their national school examination results.¹⁹ Once we account for refusal and for missing responses to some questions, an estimation sample of $n=1231$ is available.

The academic performance of a child is assumed to be a function of the following:

$$Y = f(M, D, T, X_i) \quad (4.1)$$

where Y is academic performance, M is maternal employment status, D is the presence of maids in the household, T is attending private tutoring class or not, and the X_i are socio-demographic characteristics and other educational

¹⁸ The academic performance used in this analysis is based on their primary school final year examination results are not affected by their current secondary school performance. Furthermore, the selection of students to primary schools is determined by the Education Department systematically based on students' residence address and not on their education performance.

¹⁹ Respondents sat for the national primary school examination about five months before the interviews and results were released two months before the interviews. Thus, respondents could easily recall their examination results and many even brought along their results slips to the interviews.

resources.²⁰ The outcome of interest is academic performance, as assessed in the compulsory Year 6 examination. Students in Malaysia are required to sit at least four compulsory subjects; English language, Malay Language, Mathematics and Science. The results are given in letter grades (A to E), which are here converted to a numeric scale with one being the lowest grade and five the highest. Results for the four subjects are then combined into a single index using principal components to give a standardized dependent variable with mean zero and standard deviation of one. Since the Malay language is the official language of Malaysia and the mother tongue to a majority of Malaysians, we also separately examine results for a standardized version of the Malay language examination grades.

For the three independent variables of interest; having a foreign maid at home (D), attending private tutoring (T), and having a mother working (M), information is available for both the current year and previous five years. Information in X_i includes parental education, ethnic group, the language spoken at home, the respondent's gender and birth order position and household wealth status.²¹ We also created three indexes (using principal components) measuring whether the home environment was conducive to study, the availability of educational-related technology (computer, software and internet) and access to additional reading material.

²⁰ Paternal employment is not included as the male labour force participation is high averaging 83 percent over the 1990 to 2004. Moreover, culturally males do not interact much with their children; mothers instead have the main child-rearing responsibilities.

²¹ One-half of respondents did not know their parents' exact income, so to measure the wealth of each household information on durable assets such as the number of cars, air conditioning units, bathrooms, computers, televisions and mobile phones was used to form a principal components wealth index, following Filmer and Pritchett (2001).

Although academic performance and some of the covariates are measured at a fixed point in time, the effects of maternal employment, maids and private tutoring may only unfold over some years. Therefore, a finite distributed lag model may be appropriate to determine the long run impacts:

$$(4.2)$$

where M_6 is a dummy for whether the mother is working full time or not when the student is in Year 6, M_5 is the similar variable for Year 5 and so forth. The parameters for Equation 4.2 can be estimated with ordinary least squares (OLS) but with too many lagged values a multicollinearity problem may occur (Schmidt, 1974). To reduce the number of parameters to estimate, the Polynomial Distributed Lag (PDL) model (Almon, 1965) is used. This model posits that the coefficients on the lag variables follow a polynomial function as shown in Figure 4.1. So rather than needing to estimate six parameters (e.g., for the six years of data on having a maid) only as many parameters as are needed to estimate the polynomial (typically 2) are required. The estimates obtained will be unbiased, consistent, and more efficient than the least squares estimates (Schmidt & Waud, 1973). However, the presence or absence of a lag is not testable with the Almon lag technique, so several lag lengths were experimented with and also compared with the OLS results to ensure robustness.

The long run impacts are computed by summing up all the lag variables' coefficients (for example $\sum \gamma_i$ for the impact of maids). It may be possible that

recalling information leads to misdating when a 12-13 year old child recalls wrongly attributes the year of having a mother working or having a maid to , say, Year 2 rather than Year 3. However, by using Polynomial lag distribution, we are capturing the lag effects of total years (6 years or 3 years in some instances) which involve adding up coefficients across years. Hence, the measurement error of may be less serious in this case, since one coefficient may be overstated and one understated but when they are added together there is no net effect. The standard errors we report are generated by bootstrapping; repeatedly sampling with replacement from the original sample and then re-estimating the PDL model. Following Chernick (1999), 1000 replications are used to obtain the standard errors. The long run impacts are also divided into two periods, the earlier three years (Year 1 to Year 3) and the later three years (Year 4 to Year 6) of primary school. This split follows from the compulsory examination in Year 6 covering only the curricula of the last 3 years of primary education (Ministry of Education Malaysia, 2003). However there may still be impacts from earlier exposure to maids, tutors or maternal employment, given the cumulative nature of learning, so we compare results for these two sub-periods.

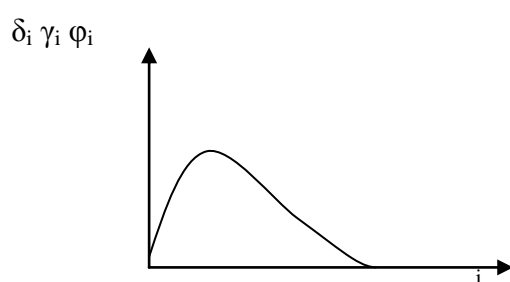


Figure 4-1: Polynomial distributed lag
(Source: Maddala, 1992, p. 425)

It is also important to determine the impacts of maids, tutors and working mothers on different academic achievers (low, medium and high). There is no

reason why the impacts would be uniform across different levels of student aptitude so we use quantile regression to examine the determinants of Year 6 academic performance at the 25th, 50th, and 75th percentiles of the standardized examination results.

4.4 Empirical Results

4.4.1 Descriptive Statistics

Almost one-half of the sample reported having a maid in the last 6 years, which was just below the proportion whose mother had ever worked fulltime in that period (Table 4-1). The households with maids were larger and richer than those without and scored higher on the three indexes for other inputs to children's human capital formation. The same patterns are apparent for households where mothers' had worked fulltime, except for there being no significant difference in household size. The exposure to private tutoring is almost universal, with 88 percent of the sample having received this at some stage over the previous six years. The respondents who had not received private tutoring came from smaller, less wealthy households with lower values of the three indexes for the study environment, for additional reading material and for possession of technology that may assist human capital formation.

When exposure to maids, private tutoring and ever having a mother work fulltime are broken down by sub-period there is a clear pattern of increasing use of private tutors as the Grade 6 examination draws nearer, which is consistent with patterns found in previous studies (Bray, 1999; Kenny & Faunce, 2004). Specifically, less than one-half of the students had ever been tutored when in Year 1 to Year 3 but nearly 90 percent of them were privately tutored in the Year 4 to

Year 6 period (Table 4-2). There are also clear ethnic differences in exposure to tutoring at an early age, with two-thirds of the Chinese students privately tutored between Year 1 and Year 3 compared with less than one-third of the Malay students and less than one-half of the Indian and other ethnic group students. But in the final three years of primary school the exposure to private tutoring is the same across all ethnic groups.

In contrast to the higher exposure to private tutoring with age, there is no difference in the incidence of having had a maid between the early primary school and later primary school years and only a small rise in the odds of mothers' working fulltime (Table 4-2).²² But there are significant ethnic, gender and parental educational differences in the likelihood of having either a maid or a working mother. Chinese children have almost double the likelihood of having a maid, especially when they were in the earlier age group. Boys are less likely to come from households with a maid since their mothers are less likely than are girls' mothers to go out to work when the child is younger. One-half of the tertiary educated mothers of younger children work fulltime, compared to only one-third of less educated mothers – consequently, the odds of having a maid are double for the children of more educated mothers. These gaps largely remain at the older ages although the incidence of fulltime work rises for all education groups.

4.4.2 Raw Differences in Academic Performance

Amongst the three main potential inputs to on human capital development considered here (maids, tutors and working mothers), exposure to foreign maids is

²² The probability of having a maid in each sub-period is lower than the probability of having a maid ever during the six years of primary school, since some students only had maids intermittently. This emphasizes the importance of a survey capturing the entire history of lagged inputs into human capital formation.

associated with the largest difference in performance in the Year 6 examinations (Table 4-3). Students who had a maid any time in Years 1 to 3 have Year 6 examination grades that are 0.6 standard deviations higher at the mean (0.5 at the median) than for students without maids in those early years. The effect of having a maid during any of Years 4 to 6 is about 0.1 standard deviations lower than the effect of having a maid at a younger age. Since these are raw effects for the standardized combined results for Year 6 examinations, without controlling for other inputs and covariates, we do not yet attach any causality to these associations.

The second largest effect comes from exposure to private tutoring, which is associated with Year 6 examination grades about 0.3 standard deviations higher than for children who were never tutored. The effect is slightly larger for tutoring in earlier years, and at the median rather than that at the mean (although the median effect for Year 4 to 6 is imprecisely estimated). These apparent effects of private tutoring are only about one-half as large as those for having had a foreign maid, which may be contrary to the common belief in Malaysia that private tutoring will definitely help students to perform better (as seen from the more than 80 percent of students in Malaysia who attend private tutoring at some stage before entering upper secondary school ((Bray, 1999)).

The difference in the mean for the index of Year 6 examination grades between students whose mother had ever worked fulltime during the previous six years and those whose mother had not is quite small, at just 0.1 standard deviations (Table 4-3). However the median is considerably higher, by 0.3 standard deviations, for students whose mothers had ever worked versus those whose mothers had not. The effects are also larger for having a mother who

worked fulltime while the student was in Years 1 to 3, compared with working when the student is in Years 4 to 6. Speculatively, it may be that both patterns occur because the additional income from working mothers that allows more educational inputs to be purchased is more productive for the early learning of children, and for children who are below average (the median of the Grade 6 examination index is below the mean). Regardless of the causes of these patterns, the differences across age groups once again suggest that studies which only consider contemporaneous inputs may be missing some of the potential lagged impacts of maternal employment on children's human capital formation.

4.4.3 Regression Estimates of Long Run Impacts on Examination Results

How does prior exposure to maids, private tutors and working mothers affect performance in the Year 6 examinations once controlling for other inputs and covariates? In Table 4-4 estimates of the long run impacts of these three potential inputs are reported, from three different regression models. The first model uses a Polynomial Distributed Lag (PDL), with a second order polynomial fitted to current values and five lags, for maids, private tutors and working mothers, and the other ten control variables enter the regression linearly. The second model uses the PDL only for the student's exposure to private tutors, with the lagged effects of maids and working mothers captured with a finite distributed lag (that is, the contemporaneous value and five lags for each of these two variables enter the model linearly). This 'hybrid' specification is based on the results of tests proposed by Johnston (1984) and Maddala (1992) to see if the restrictions to specify a finite lag model as a PDL can be accepted. These restrictions are statistically acceptable for the exposure to private tutors but are not for the exposure to maids and working mothers. The third model uses the finite

distributed lag specification for all three of the key variables (and also includes the other ten variables, entered linearly).²³ Since the estimates from the PDL should be unbiased but more efficient than the OLS estimates, the standard errors should be smallest for model 1 and largest for model 3 while the point estimates for the long-run impacts should not vary greatly.²⁴

The estimated impacts are substantially smaller than the raw differences shown in Table 4-3, since prior exposure to maids, private tutors and working mothers are all correlated with each other and also with other productive inputs into human capital formation. In fact when looking at overall impacts, it is only the experience of ever having a maid which appears to improve human capital formation, with the Year 6 examination grades being about 0.2 standard deviations higher for students who ever had a maid. For students who were ever privately tutored, the examination grades are a statistically insignificant 0.05 to 0.09 standard deviations higher. Those students whose mothers had ever worked fulltime during the course of their primary school years had Year 6 examination grades that were a statistically insignificant 0.07 standard deviations lower.

These overall effects hide substantial variability across the sub-periods. The overall statistically significant impact of maids appears to flow mainly from a significantly positive impact in the earlier years of primary school education. In contrast, a maid in the household only while the student was in Years 4 to 6 appears to have no impact on subsequent examination grades. Conversely, the overall statistically insignificant impact of private tutoring is because of an

²³ The full set of results for all coefficients in the regression models are reported in Appendix Table 1.

²⁴ To exclude the possibility of school effects, I did include school dummy variable and the results do not much differ from the current results.

averaging of two oppositely-signed effects of tutoring at young age versus tutoring in the three school years leading up to the Year 6 examination. Specifically, having attended private tutoring only during the Year 1 to 3 period of primary school causes Year 6 examination grades to be 0.2 to 0.3 standard deviations lower. In contrast, private tutoring only within Years 4 to 6 raises the examination grade by 0.3 standard deviations compared with someone who was never tutored in either period. The negative effect of earlier tutoring may be because younger children become exhausted and burdened with extra classes or because the content of what is tutored does not match well with the content of the Year 6 examination (which is not meant to cover the curricula from the first three years of primary school).²⁵ Irrespective of the cause, it does appear that the substantial investment in the private tutoring of young children (for example, two-thirds of the Chinese students were tutored in their first three years of school) may be misplaced.

Unlike the results for maids and private tutors, separately estimating by sub-periods does not change any of the inferences about the impact of mothers working fulltime. It does not matter whether the mother worked fulltime while the student was in Years 1 to 3, or in Years 4 to 6, there is no statistically significant long-run impact on examination results. Even in the short-run coefficients estimates on each of the current and lagged values of whether the mother worked that year (reported in Table A.4-1), there are no statistically significant short-run

²⁵ In Singapore, Cheo and Quah (2006) found that private tutoring may be counter-productive when children are overloaded with school works and private tutoring classes.

effects. Thus, it appears that unlike in some other settings, there is a neutral impact of maternal employment on children's academic performance in Malaysia.

The inferences would be quite different if lagged effects were ignored and the focus was just on the coefficients for variables relating to use of the input in the same year that academic performance is observed. For example, the detailed coefficients for the finite distributed lag models reported in column (3) of Appendix 1 show a statistically insignificant effect of attending private tutoring classes in Year 6, which is only one-half as large as the significant effect of being privately tutored in Year 5. The inferential situation could be even worse if data had never been collected on the lagged use of these inputs, as shown by the results in column (4) of Table A.4-1, for a model that only uses contemporaneous variables. The significant positive impact of exposure to a maid sometime in the previous six years would be missed, with the contemporaneous impact being only one-half as large as the long run impacts and statistically insignificant. For tutoring, the effect estimated just with Year 6 data is less than one-half the long run effect of Year 4 to Year 6.

Although the other covariates in the model are not the focus of attention, they do reveal some interesting patterns which are briefly described here (see Table A.4-1 for details). Examination grades are 0.7 standard deviations higher for the children of tertiary educated parents, and 0.6 standard deviations higher when the parents have secondary education, compared with the omitted group having only primary education. The examination grades are 0.4 standard deviations higher for Chinese children and 0.3 standard deviations lower for boys. The indexes for household wealth, a conducive study environment, having educational-related technology and additional reading materials are all

standardised variables, and show that a standard deviation increase in either household wealth or the conducive study environment raise examination grades by 0.1 standard deviations, and by slightly less for having access to additional reading material at home. There is a weakly significant, negative (and small, -0.04) effect of having access to educationally-relevant technology like computers, software and the internet.

4.4.4 Long Run Impacts on Malay Language Examination Grades

The results discussed above consider average examination performance across the four compulsory subjects of English, Mathematics, Science and the Malay language. It might be expected that exposure to foreign maids would have a negative effect on children's development of their Malay language skills, since the maids may be far less fluent in Malay than are mothers.²⁶ Therefore it is interesting to determine the impacts of maids, tutors and working mothers on the development of skills in Malay, which might be expected to differ from the impacts on overall academic results. Table 4-5 presents a parallel set of analyses to those in Table 4-4, but where the dependent variable restricts attention to the standardized examination grades for Malay language.

Somewhat surprisingly the long-run effect of ever being exposed to foreign maids during primary school is to improve children's Malay language skills, as assessed in the Year 6 examination. The increase in examination grades of about 0.2 standard deviations is similar to the increase shown in Table 4-4 for all-subjects examination performance. Evidently there is no language penalty from having a foreigner in the household interacting with young children. However this

²⁶ The maids are in Malaysia on temporary work permits, renewable each year but with typical durations in Malaysia of less than three years.

result may be specific to the current setting where the predominant language of the maids (Bahasa Indonesia) is closely related to the Malay language and possibly children (especially non-Malay families where Malay is a second language – 50 percent of Malaysians are non-Malay origin) with maids living in the households might teach their maids more Malay words, and through this teaching, learn more themselves.

The effect of private tutoring on Malay language skills is similar to the effect on overall examination performance, with early exposure causing worse examination results and later exposure having a positive impact. Specifically, children who received private tutoring only when they were in Years 1 to 3 have Malay language examination results that are about 0.2 standard deviations lower than never-tutored children, while those who were tutored only in Years 4 to 6 are about 0.15 standard deviations above the never-tutored children. These two offsetting effects cancel over the long-run, so there is no significant impact on Malay language skills of ever having been exposed to private tutoring during the six years of primary school.

In contrast to the statistically insignificant results for overall examination performance, there is a statistically negative impact on Malay language skills from having mothers who are out of the home working at some stage during the child's primary school years. The result is driven largely by the negative impact of the mother's absence during Years 4 to 6. This may indicate that working mothers who spend less time conversing with their children will hamper their children's performance in the Malay language.

4.4.5 Long Run Impacts at Different Quantiles

Table 4-6 contains results of the quantile regression analysis that examines long-run impacts of maids, tutors and working mothers on the Year 6 examination performance at different levels of student aptitude. Specifically, the results are for the determinants of the 25th, 50th and 75th percentile of the principal component index that combines grades from the four compulsory subjects. The results for three models are reported; the first uses a PDL for the six years of data on exposure to maids, tutors and working mothers, the second uses the PDL only for exposure to tutors, with the current and lagged values of exposure to maids and working mothers entered linearly, and the third model has the current and lagged values for all three of the main variables entered linearly. The same ten control variables used to measure socio-demographic characteristics and other educational resources are also included in the models.

The positive impact of exposure to foreign maids is apparent for students below the median and at the median but is not apparent for the higher achieving students. Similarly to the time-disaggregated impacts at the mean, it is exposure to maids in the early years of primary school where the positive impact on students in the lower part of the aptitude distribution is most apparent. If the maid was present in the household only while the student was in Years 4 to 6 there is no apparent impact on examination performance at any point in the distribution.

The impacts of private tutoring – both the negative effect of receiving it only in Years 1 to 3 and the positive effect of receiving it in Years 4 to 6 – are considerably larger at and below the median than they are at the 75th percentile. This suggests that private tutoring classes are much less effective for highly able students, but may be effective for students who need to catch up with the leading

students. Indeed, the median student may raise their examination grades by 0.3 standard deviations from receiving private tutoring in Years 4 to 6.

Maternal employment appears to have no impact on examination performance at any points in the distribution of student achievement. This lack of impact is clear in both the age-disaggregated results and when looking at the overall long-run impact.

4.5 Conclusions

A reliance on foreign women working as live-in maids and nannies is a growing feature of household life in many industrializing Asian countries. Previous study of this ‘outsourcing of household production’ has considered the impacts on native women’s labour supply (Cortes and Pan, 2009) and on native welfare (Kremer and Watt, 2009). But these calculations ignore impacts on children’s human capital development. In the Malaysian context, a significant part of the early years of children’s life in these households is spent with lower-skilled foreign women rather than with their more educated mothers, so a human capital penalty might be expected from this arrangement. However the limited literature on how foreign maids affect children’s academic performance is uninformative because it ignores the cumulative nature of learning and only examines short-run, contemporaneous impacts.

In this chapter, I have used especially collected retrospective data to estimate the long-run impacts of exposure to foreign maids on the academic performance of Malaysian children in their Year 6 national examinations. Rather than there being a human capital penalty from relying on foreign maids, there may be some small benefit, with Year 6 examination grades about 0.2 standard

deviations higher for students who ever had a maid. This positive impact occurs even for the performance in the Malay language examination. It is early exposure to foreign maids, during Years 1 to 3 of primary school that produces the positive impact, with no effect on students whose family had a foreign maid only while they were in Years 4 to 6.²⁷ Notably I would not have found this positive impact if I had followed earlier studies and restricted attention to short-run impacts using contemporaneous data. When looking across the distribution of student aptitude, I find that the positive impact of foreign maids is most apparent for students below the median and is not apparent for the higher achieving students.

Another poorly examined input into human capital formation in rapidly growing Asian countries is private tutoring classes. In some countries almost all students attend these classes and as much money is spent on them as national fiscal expenditure on formal primary and secondary schooling. Yet there is little known about the impacts of private tutoring on academic performance, again because of a reliance on looking for short-run impacts using contemporaneous data. The results reported here show that private tutoring in the last three years of primary school has significant positive impacts on Year 6 examination grades, raising them by about 0.3 standard deviations. But private tutoring just in the first three years of primary school appears counterproductive, leading to significantly lower (by 0.2 standard deviations) Year 6 examination results. Moreover, private tutoring is much more effective for students with median or below-median performance in the examinations than it is for high achieving students. This is

²⁷ This probably is due to younger children with maids being spared from doing household chores and are able to cope better with the school works. Conversely, as the older children without maids are more capable of managing their school works and household chores, they will not be worse off than their counterparts with maids.

consistent with existing research which suggests that these classes benefit students who need to catch up with their peers but may be less useful bright students (Bray, 2006). Thus there may be some grounds for moderating the parental investment into this input into children's human capital formation.

In contrast to the sparse literature on foreign maids and private tutors, many studies have examined the impact of maternal employment on children's academic performance. Almost none of the findings from the current paper can add to this literature, since maternal employment seemed to matter little to Year 6 examination results, regardless of whether it was when the student was younger or older, and regardless of where in the distribution of examination results we look for the effects. The only apparent impact was poorer performance in the Malay language examination for children whose mother had ever worked (especially during Years 4 to 6) and for whom there was neither a foreign maid in the household nor private tutoring classes as a replacement source of conversation and language training.

Therefore, in conclusion, the additional inputs to human capital formation in industrializing Asian countries of foreign maids and private tutors do appear to help children achieve better academic results. However the positive impacts depend very much on the timing of the input and on the children's abilities. Future study in this area needs to take this specificity into account, by using data that capture the entire history of lagged inputs into the cumulative learning process

and by using methods that look for impacts not only at the mean but over the entire distribution of student achievement.²⁸

²⁸ Although, all steps in collecting the retrospective data have been carefully taken to minimize the measurement error in retrospective data, the results from this chapter will need further validation in future research.

Table 4-1: Differences in Household Characteristics (at the Mean) for Variables of Interest

	Have ever had foreign maid			Have ever attended private tutoring			Mother have ever worked fulltime			Overall
	Yes	No	Difference	Yes	No	Difference	Yes	No	Difference	
Household Size	6.25 (0.063)	5.70 (0.060)	0.54 (0.088)**	5.97 (0.046)	5.71 (0.138)	0.26 (0.145)*	5.93 (0.060)	5.96 (0.065)	-0.03 (0.088)	5.94 (0.044)
Number of Children	3.30 (0.050)	3.35 (0.048)	-0.05 (0.071)	3.31 (0.036)	3.42 (0.114)	-0.10 (0.109)	3.20 (0.047)	3.47 (0.052)	-0.27 (0.070)**	3.32 (0.035)
Wealth Index	0.93 (0.055)	-0.72 (0.063)	1.66 (0.086)**	0.08 (0.075)	-0.57 (-0.579)	0.65 (0.654)**	0.32 (0.322)	-0.36 (-0.361)	0.68 (0.683)**	0.00 (0.151)
Conducive Studying Environment Index	0.38 (0.049)	-0.29 (0.047)	0.67 (0.069)**	0.04 (0.037)	-0.27 (0.110)	0.31 (0.110)**	0.14 (0.047)	-0.15 (0.052)	0.29 (0.070)**	0.00 (0.035)
Possessed Computer, Internet connection & software Index	0.23 (0.052)	-0.18 (0.045)	0.41 (0.069)**	0.05 (0.037)	-0.40 (0.098)	0.45 (0.108)**	0.12 (0.048)	-0.14 (0.050)	0.26 (0.069)**	0.00 (0.035)
Additional Reading Material Index	0.23 (0.054)	-0.18 (0.047)	0.41 (0.071)**	0.03 (0.038)	-0.26 (0.113)	0.29 (-0.076)**	0.12 (0.050)	-0.13 (0.050)	0.25 (0.071)**	0.00 (0.036)
Observations	536	695		1089	142		651	580		1231
Percentage	43.54	56.46		88.46	11.54		52.88	47.12		

Note:

i) Standard Error in parentheses. +Significant at 10%; * significant at 5%; ** significant at 1%. ii) Wealth index, conducive studying environment, possessed computer, internet connections & software and additional reading materials are calculated using Principal Component Analysis. iii) Household size includes the presence of maid.

Table 4-2: Descriptive Statistics for Other Selected Household Covariates (Mean)

	Have ever had foreign maid			Have ever attended private tutoring			Mother have ever worked fulltime			Total	
	Year 1 to Year 3	Year 4 to Year 6	Year 1 to Year 6	Year 1 to Year 3	Year 4 to Year 6	Year 1 to Year 6	Year 1 to Year 3	Year 4 to Year 6	Year 1 to Year 6	%	n
Ethnic											
Malay	27.2	29.8	35.8	28.4	85.2	87.7	36.2	46.3	51.4	41.8	514
Chinese	44.2	42.1	52.3	65.8	86.3	89.8	47.5	47.5	55.6	46.3	570
Indian & others	27.2	31.3	36.7	45.6	82.3	85.7	34.0	40.1	47.6	11.9	147
Gender											
Female	42.7	41.1	49.8	51.2	85.2	89.2	46.5	48.6	55.7	41.3	508
Male	29.7	31.8	39.1	45.4	85.5	88.0	37.5	44.4	50.9	58.7	723
Speak other than mother tongue											
No	27.8	29.7	36.5	45.1	85.4	88.2	37.5	43.5	49.4	73.4	903
Yes	55.2	52.1	62.8	55.2	85.4	89.3	51.2	53.4	62.5	26.6	328
Parents Highest Education Level											
Primary & below	28.2	31.1	35.9	45.6	83.5	87.4	33.0	37.9	42.7	8.4	103
Secondary	22.5	23.2	29.2	45.9	84.8	87.1	32.9	38.7	45.0	44.8	551
Tertiary	48.4	48.4	58.6	49.9	86.3	90.0	50.6	54.8	62.2	46.9	577
Percentage	35.1	35.7	43.5	47.8	85.4	88.5	41.2	46.1	52.9		
Observations	432	439	536	588	1051	1089	507	568	651	100	1231

Table 4-3: Number of Years of Having Maids, Attending Private Tutoring and Having Mothers Working Fulltime

No of Years	Household with Maid		Attending Private tutoring		Mothers Working Fulltime	
	Percentage	Respondents	Percentage	Respondents	Percentage	Respondents
0	56.5	695	11.5	142	47.1	580
1	10.1	124	23.0	283	11.8	145
2	3.9	48	11.0	135	3.7	46
3	3.7	45	15.4	190	3.6	44
4	4.1	50	10.6	130	2.4	30
5	3.2	40	7.5	92	2.5	31
6	18.6	229	21.0	259	28.8	355
Total	100	1231	100	1231	100	1231

Table 4-4: Differences in Standardized Examination Grade in Year 6, for Exposure to Variables of Interest

	Year 1 to 3		Year 4 to 6		Overall Year 1 to 6	
	Mean	Median	Mean	Median	Mean	Median
With Maid	0.383 (0.038)	0.608 (0.097)	0.308 (0.040)	0.527 (0.047)	0.296 (0.855)	0.495 (0.040)
Without maid	-0.207 (0.037)	0.069 (0.081)	-0.171 (0.037)	0.101 (0.029)	-0.228 (1.043)	0.057 (0.129)
Difference	0.590 (0.056)**	0.539 (0.126)**	0.479 (0.058)**	0.426 (0.055)**	0.524 (0.056)**	0.438 (0.135)**
Attended Private Tutoring Classes	0.151 (0.041)	0.495 (0.036)	0.036 (0.030)	0.495 (0.126)	0.032 (0.976)	0.495 (0.258)
Without Private Tutoring classes	-0.138 (0.039)	0.101 (0.007)	-0.211 (0.084)	0.101 (0.230)	-0.246 (1.141)	0.101 (0.128)
Difference	0.289 (0.056)**	0.394 (0.037)**	0.247 (0.081)**	0.394 (0.261)	0.279 (0.089)**	0.394 (0.288)
With fulltime working mother	0.155 (0.042)	0.495 (0.009)	0.053 (0.042)	0.495 (0.093)	0.064 (0.981)	0.495 (0.069)
Without fulltime working mother	-0.109 (0.038)	0.101 (0.042)	-0.046 (0.039)	0.182 (0.140)	-0.072 (1.017)	0.182 (0.100)
Difference	0.264 (0.057)**	0.394 (0.043)**	0.099 (0.057)+	0.313 (0.169)	0.137 (0.057)*	0.313 (0.121)*

Notes:

- $n=1231$. Standard error in () are bootstrapped (1000 replications) for medians and analytical for means. + denotes significance at 10%; * at 5%; ** at 1%.
- Standardized combined academic result in Year 6 is the first Principal Component from the examination grades for the four compulsory subjects (Science, Mathematics, English and Malay) taken by Year 6 students.
- Variables of interest, of having a maid, having a fulltime working mother or being privately tutored are based on exposure to these treatments for at least one year in Year 1 to 6 or Year 1 to 3 or Year 4 to 6.

Table 4-5: Long Run Impact on Standardized Examination Grade in Year 6

Standardized Combined Academic Result in Year 6	Model 1	Model 2	Model 3
<i>Long Run Impact of Ever Having Foreign Maid</i>			
Year 1 to Year 3	0.134 (0.070)*	0.155 (0.111)	0.158 (0.111)
Year 4 to Year 6	0.031 (0.076)	0.002 (0.112)	-0.001 (0.112)
Overall Year 1 to Year 6	0.165 (0.062) **	0.157 (0.063) **	0.157 (0.063) **
<i>Long Run Impact of Ever Attended Private Tutoring Class</i>			
Year 1 to Year 3	-0.213 (0.065) **	-0.213 (0.065) **	-0.275 (0.069) **
Year 4 to Year 6	0.300 (0.068) **	0.296 (0.069) **	0.320 (0.078) **
Overall Year 1 to Year 6	0.087 (0.083)	0.083 (0.084)	0.045 (0.090)
<i>Long Run Impact of Ever Having Full Time Working Mother</i>			
Year 1 to Year 3	0.030 (0.081)	0.042 (0.119)	0.030 (0.118)
Year 4 to Year 6	-0.100 (0.081)	-0.112 (0.123)	-0.100 (0.122)
Overall Year 1 to Year 6	-0.070 (0.055)	-0.070 (0.056)	-0.070 (0.056)
Adjusted R-squared	0.30	0.30	0.30
F Test	34.46	22.95	19.87
Probability > F	0.000	0.000	0.000

Notes:

- i) $n=1231$. Standard errors in () are bootstrapped (1000 replications). + denotes significance at 10%; * at 5%; ** at 1%.
- ii) Model 1 – PDL for having a maid, being privately tutored and mother employed fulltime, with other covariates entered linearly (full results in column 1 of Appendix 1).
- iii) Model 2 – PDL only for ever being privately tutored, and all other covariates (including five lags of having a maid and mother working fulltime) enter the models linearly (full results in column 2 of Appendix 1).
- iv) Model 3 - All variables enter linearly (full results in column 3 of Appendix 1).
- v) All specifications include speaking languages other than mother tongue at home, gender, ethnic group, parents' highest education level, wealth index, conducive studying environment index, learning technology index and additional reading materials index.

Table 4-6: Long Run Impact on Examination Results for Malay Language

Standardized Malay Language Result in Year 6	Model 1	Model 2	Model 3
<i>Long Run Impact of Ever Having Foreign Maid</i>			
Year 1 to Year 3	0.132 (0.088)	0.153 (0.130)	0.156 (0.130)
Year 4 to Year 6	0.042 (0.093)	0.003 (0.131)	0.000 (0.131)
Overall Year 1 to Year 6	0.174 (0.076)*	0.156 (0.078)*	0.156 (0.078)*
<i>Long Run Impact of Ever Attended Private Tutoring Class</i>			
Year 1 to Year 3	-0.195 (0.080)*	-0.198 (0.080) *	-0.249 (0.085) **
Year 4 to Year 6	0.158 (0.080)*	0.135 (0.079)+	0.154 (0.092)+
Overall Year 1 to Year 6	-0.037 (0.098)	-0.063 (0.099)	-0.095 (0.108)
<i>Long Run Impact of Ever Having Full Time Working Mother</i>			
Year 1 to Year 3	0.041 (0.089)	-0.054 (0.156)	-0.047 (0.155)
Year 4 to Year 6	-0.197 (0.091)*	-0.115 (0.156)	-0.122 (0.156)
Overall Year 1 to Year 6	-0.156 (0.069)*	-0.169 (0.070)*	-0.169 (0.070)*
Adjusted R-squared	0.14	0.14	0.14
F Test	13.51	9.39	8.21
Probability > F	0.000	0.000	0.000

Notes: See Table 4-4.

Table 4-7: Quantile Regression Estimates of Long-Run Impacts on Standardized Examination Grade in Year 6

	25 th	Model 1 50 th	75 th	25 th	Model 2 50 th	75 th	25 th	Model 3 50 th	75 th
<i>Long Run Impact of Ever Having Maid</i>									
Year 1 to Year 3	0.234 (0.122)+	0.124 (0.060)*	0.026 (0.041)	0.220 (0.145)	0.181 (0.111)	0.032 (0.107)	0.257 (0.141)	0.161 (0.116)	0.029 (0.102)
Year 4 to Year 6	0.022 (0.112)	0.020 (0.070)	0.013 (0.041)	-0.009 (0.144)	-0.052 (0.113)	0.01 (0.109)	-0.038 (0.140)	-0.030 (0.115)	-0.003 (0.105)
Overall Year 1 to Year 6	0.256 (0.087)**	0.144 (0.060)*	0.039 (0.038)	0.211 (0.092)*	0.129 (0.064)*	0.042 (0.044)	0.219 (0.081)**	0.131 (0.055)**	0.026 (0.036)
<i>Long Run Impact of Ever Attended Private Tutoring Class</i>									
Year 1 to Year 3	-0.228 (0.105)*	-0.195 (0.064)**	-0.057 (0.036)	-0.218 (0.101)*	-0.201 (0.067)**	-0.067 (0.041)	-0.251 (0.110)*	-0.231 (0.068)**	-0.09 (0.048)+
Year 4 to Year 6	0.324 (0.106)**	0.318 (0.081)**	0.096 (0.042)*	0.308 (0.105)**	0.303 (0.081)**	0.093 (0.043)*	0.296 (0.123)**	0.323 (0.090)**	0.097 (0.050)*
Overall Year 1 to Year 6	0.096 (0.141)	0.123 (0.085)	0.039 (0.046)	0.090 (0.139)	0.102 (0.084)	0.026 (0.051)	0.045 (0.149)	0.092 (0.090)	0.007 (0.055)
<i>Long Run Impact of Ever Have Full Time Working Mother</i>									
Year 1 to Year 3	0.054 (0.101)	0.063 (0.087)	-0.031 (0.044)	0.106 (0.172)	0.048 (0.092)	-0.065 (0.065)	0.068 (0.170)	0.009 (0.092)	-0.038 (0.062)
Year 4 to Year 6	-0.110 (0.096)	-0.111 (0.084)	-0.025 (0.049)	-0.195 (0.159)	-0.091 (0.095)	0.003 (0.064)	-0.186 (0.158)	-0.051 (0.095)	-0.018 (0.061)
Overall Year 1 to Year 6	-0.056 (0.076)	-0.048 (0.053)	-0.056 (0.033)	-0.089 (0.078)	-0.043 (0.054)	-0.062 (0.035)	-0.118 (0.096)	-0.042 (0.065)	-0.056 (0.045)

Notes: The dependent variables are the 25th percentile, median and 75th percentile of the standardized examination grade (the principal component formed from the grades for the four compulsory subjects). Other notes see Table 4-4.

Appendix 4-1: Tables for Chapter 4

Table A.4-1: Full Results for Determinants of Academic Result in Year 6

Standardized Combined Academic Result	Model 1	Model 2	Model 3	Model 4
Having a Maid in Year 6	-0.001 (0.042)	-0.043 (0.093)	-0.028 (0.094)	
Having a Maid in Year 5	0.010 (0.027)	0.058 (0.127)	0.038 (0.127)	
Having a Maid in Year 4	0.022 (0.015)	-0.013 (0.131)	-0.011 (0.131)	
Having a Maid in Year 3	0.033 (0.015)*	0.063 (0.127)	0.063 (0.127)	
Having a Maid in Year 2	0.045 (0.027)+	0.123 (0.128)	0.118 (0.128)	
Having a Maid in Year 1	0.056 (0.042)	-0.031 (0.100)	-0.023 (0.101)	
<i>Long Run Impact of Having a Maid</i>				
<i>Year 1 to Year 3</i>	<i>0.134</i> <i>(0.070)*</i>	<i>0.155</i> <i>(0.111)</i>	<i>0.158</i> <i>(0.111)</i>	
<i>Year 4 to Year 6</i>	<i>0.031</i> <i>(0.076)</i>	<i>0.002</i> <i>(0.112)</i>	<i>-0.001</i> <i>(0.112)</i>	
<i>Overall Year 1 to Year 6</i>	<i>0.165</i> <i>(0.062) **</i>	<i>0.157</i> <i>(0.063) **</i>	<i>0.157</i> <i>(0.063) **</i>	<i>0.079</i> <i>(0.059)</i>
Attended extra classes in Year 6	0.157 (0.036)**	0.155 (0.036)**	0.072 (0.067)	
Attended extra classes in Year 5	0.100 (0.024)**	0.099 (0.025)**	0.135 (0.077)+	
Attended extra classes in Year 4	0.043 (0.015)**	0.042 (0.016)**	0.113 (0.077)	
Attended extra classes in Year 3	-0.014 (0.014)	-0.014 (0.014)	-0.092 (0.076)	
Attended extra classes in Year 2	-0.071 (0.023)**	-0.071 (0.023)**	0.042 (0.087)	
Attended extra classes in Year 1	-0.128 (0.034)**	-0.128 (0.034)**	-0.225 (0.081)**	
<i>Long Run Impact of Attending Extra Classes</i>				
<i>Year 1 to Year 3</i>	<i>-0.213</i> <i>(0.065) **</i>	<i>-0.213</i> <i>(0.065) **</i>	<i>-0.275</i> <i>(0.069) **</i>	
<i>Year 4 to Year 6</i>	<i>0.300</i> <i>(0.068) **</i>	<i>0.296</i> <i>(0.069) **</i>	<i>0.320</i> <i>(0.078) **</i>	
<i>Overall Year 1 to Year 6</i>	<i>0.087</i> <i>(0.083)</i>	<i>0.083</i> <i>(0.084)</i>	<i>0.045</i> <i>(0.090)</i>	<i>0.136</i> <i>(0.061)*</i>
Mother Employed Fulltime in Year 6	-0.048 (0.041)	-0.054 (0.086)	-0.040 (0.086)	
Mother Employed Fulltime in Year 5	-0.033 (0.026)	-0.025 (0.131)	-0.049 (0.132)	
Mother Employed Fulltime in Year 4	-0.019 (0.013)	-0.033 (0.141)	-0.034 (0.141)	
Mother Employed Fulltime in Year 3	-0.004	0.107	0.127	

	(0.013)	(0.157)	(0.157)	
Mother Employed Fulltime in Year 2	0.010	-0.147	-0.158	
	(0.026)	(0.158)	(0.158)	
Mother Employed Fulltime in Year 1	0.024	0.082	0.084	
	(0.041)	(0.109)	(0.110)	
<i>Long Run Impact of Mother Employed Full Time</i>				
<i>Year 1 to Year 3</i>	<i>0.030</i>	<i>0.042</i>	<i>0.030</i>	
	<i>(0.081)</i>	<i>(0.119)</i>	<i>(0.118)</i>	
<i>Year 4 to Year 6</i>	<i>-0.100</i>	<i>-0.112</i>	<i>-0.100</i>	
	<i>(0.081)</i>	<i>(0.123)</i>	<i>(0.122)</i>	
<i>Overall Year 1 to Year 6</i>	<i>-0.070</i>	<i>-0.070</i>	<i>-0.070</i>	<i>-0.063</i>
	<i>(0.055)</i>	<i>(0.056)</i>	<i>(0.056)</i>	<i>(0.051)</i>
Speak other than mother tongue at home	0.111	0.114	0.117	0.126
	(0.062)+	(0.063)+	(0.063)+	(0.062)*
Gender – Male	-0.297	-0.291	-0.278	-0.324
	(0.050)**	(0.050)**	(0.051)**	(0.050)**
Ethnic Group –Malay	0.065	0.071	0.080	0.095
	(0.086)	(0.087)	(0.087)	(0.085)
Ethnic Group –Chinese	0.407	0.408	0.403	0.406
	(0.083)**	(0.083)**	(0.084)**	(0.083)**
Parents Highest education –Secondary	0.633	0.636	0.636	0.625
	(0.092)**	(0.092)**	(0.092)**	(0.092)**
Parents Highest education –Tertiary	0.701	0.707	0.700	0.712
	(0.094)**	(0.095)**	(0.095)**	(0.095)**
Wealth Index	0.108	0.110	0.109	0.118
	(0.019)**	(0.020)**	(0.020)**	(0.019)**
Conducive Studying Environment at home	0.096	0.096	0.099	0.094
	(0.022)**	(0.023)**	(0.023)**	(0.023)**
Possessed Computer, Software and internet connection	-0.036	-0.038	-0.039	-0.038
	(0.023)	(0.023)	(0.023)+	(0.023)+
Additional Reading materials at home	0.077	0.077	0.077	0.080
	(0.021)**	(0.021)**	(0.021)**	(0.021)**
Constant	-0.849	-0.852	-0.833	-0.791
	(0.131)**	(0.133)**	(0.134)**	(0.132)**
Adjusted R-squared	0.30	0.30	0.30	0.30
F Test	34.46	22.95	19.87	40.25
Probability > F	0.000	0.000	0.000	0.000

Notes:

- i) n=123, standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) Model 1: Using Polynomial Distributed Lags for Having Maid, Private Tutoring and Mother Employed Full Time. All other covariates enter the models linearly.
- iv) Model 2: Using Polynomial Distributed Lags for Private Tutoring only. All other covariates enter the models linearly.
- v) Model 3: All other variables enter the models linearly.
- vi) Model 4: Does not use any lagged variables

Table A.4-2: Determinants of Academic Result in Year 6: Using Polynomial Distributed Lags for Extra Classes Attended: Having a Maid and Mother Employed Full Time ³

Standardized Combined Academic Result	Model 1	Model 2	Model 3
Having a Maid in Year 6	0.034 (0.047)	0.001 (0.042)	-0.001 (0.042)
Having a Maid in Year 5	0.058 (0.030)+	0.012 (0.027)	0.010 (0.027)
Having a Maid in Year 4	0.081 (0.015)**	0.024 (0.015)	0.022 (0.015)
Having a Maid in Year 3	0.105 (0.015)**	0.035 (0.015)*	0.033 (0.015)*
Having a Maid in Year 2	0.129 (0.030)**	0.047 (0.027)+	0.045 (0.027)+
Having a Maid in Year 1	0.152 (0.047)**	0.058 (0.043)	0.056 (0.042)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.386</i> <i>(0.086) **</i>	<i>0.14</i> <i>(0.073)*</i>	<i>0.134</i> <i>(0.070)*</i>
<i>Year 4 to Year 6</i>	<i>0.173</i> <i>(0.086)</i>	<i>0.037</i> <i>(0.077)</i>	<i>0.031</i> <i>(0.076)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.559</i> <i>(0.063) **</i>	<i>0.177</i> <i>(0.064) **</i>	<i>0.165</i> <i>(0.062) **</i>
Attended extra classes in Year 6	0.181 (0.041)**	0.164 (0.036)**	0.157 (0.036)**
Attended extra classes in Year 5	0.134 (0.028)**	0.106 (0.025)**	0.100 (0.024)**
Attended extra classes in Year 4	0.088 (0.017)**	0.048 (0.015)**	0.043 (0.015)**
Attended extra classes in Year 3	0.041 (0.015)**	-0.010 (0.014)	-0.014 (0.014)
Attended extra classes in Year 2	-0.005 (0.024)	-0.068 (0.023)**	-0.071 (0.023)**
Attended extra classes in Year 1	-0.052 (0.036)	-0.126 (0.034)**	-0.128 (0.034)**
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.016</i> <i>(0.069) **</i>	<i>-0.204</i> <i>(0.066) **</i>	<i>-0.213</i> <i>(0.065) **</i>
<i>Year 4 to Year 6</i>	<i>0.403</i> <i>(0.084) **</i>	<i>0.318</i> <i>(0.069) **</i>	<i>0.300</i> <i>(0.068) **</i>
<i>Overall Year 1 to Year 6</i>	<i>0.387</i> <i>(0.092) **</i>	<i>0.114</i> <i>(0.084)</i>	<i>0.087</i> <i>(0.083)</i>
Mother Employed Fulltime in Year 6	-0.064 (0.047)	-0.050 (0.042)	-0.048 (0.041)
Mother Employed Fulltime in Year 5	-0.037 (0.029)	-0.034 (0.026)	-0.033 (0.026)
Mother Employed Fulltime in Year 4	-0.010 (0.014)	-0.018 (0.013)	-0.019 (0.013)
Mother Employed Fulltime in Year 3	0.017 (0.014)	-0.001 (0.013)	-0.004 (0.013)
Mother Employed Fulltime in Year 2	0.044 (0.029)	0.015 (0.026)	0.010 (0.026)
Mother Employed Fulltime in Year 1	0.071	0.031	0.024

	(0.047)	(0.042)	(0.041)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	<i>0.132</i>	<i>0.045</i>	<i>0.030</i>
	<i>(0.091)</i>	<i>(0.082)</i>	<i>(0.081)</i>
<i>Year 4 to Year 6</i>	<i>-0.111</i>	<i>-0.102</i>	<i>-0.100</i>
	<i>(0.092)</i>	<i>(0.085)</i>	<i>(0.081)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.021</i>	<i>-0.057</i>	<i>-0.070</i>
	<i>(0.060)</i>	<i>(0.055)</i>	<i>(0.055)</i>
Speak other than mother tongue at home		0.145	0.111
		(0.063)*	(0.062)+
Gender – Male		-0.287	-0.297
		(0.050)**	(0.050)**
Ethnic Group – Malay #		0.006	0.065
		(0.087)	(0.086)
Ethnic Group – Chinese #		0.383	0.407
		(0.084)**	(0.083)**
Parents Highest education –Secondary		0.672	0.633
		(0.093)**	(0.092)**
Parents Highest education –Tertiary		0.787	0.701
		(0.094)**	(0.094)**
Wealth Index		0.127	0.108
		(0.018)**	(0.019)**
Conducive Studying Environment at home			0.096
			(0.022)**
Possessed Computer, Software and internet connection			-0.036
			(0.023)
Additional Reading materials at home			0.077
			(0.021)**
Constant	-0.441	-0.908	-0.849
	(0.058)**	(0.133)**	(0.131)**
Observations	1231	1231	1231
Adjusted R-squared	0.10	0.28	0.30
F Test	23.16	38.37	34.46
Probability > F	0.000	0.000	0.000

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates enter the models linearly.

Table A.4-3: Determinants of Academic Result in Year 6: Using Polynomial Distributed Lags for Extra Classes Attended ³

Standardized Academic Result	Model 1	Model 2	Model 3
Having a Maid in Year 6	0.089 (0.105)	-0.017 (0.094)	-0.043 (0.093)
Having a Maid in Year 5	0.107 (0.143)	0.019 (0.128)	0.058 (0.127)
Having a Maid in Year 4	-0.136 (0.147)	-0.000 (0.132)	-0.013 (0.131)
Having a Maid in Year 3	0.244 (0.143)+	0.088 (0.128)	0.063 (0.127)
Having a Maid in Year 2	0.065 (0.145)	0.103 (0.130)	0.123 (0.128)
Having a Maid in Year 1	0.190 (0.111)+	-0.024 (0.102)	-0.031 (0.100)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.499</i> <i>(0.131) **</i>	<i>0.167</i> <i>(0.113)</i>	<i>0.155</i> <i>(0.111)</i>
<i>Year 4 to Year 6</i>	<i>0.060</i> <i>(0.131)</i>	<i>0.002</i> <i>(0.113)</i>	<i>0.002</i> <i>(0.112)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.559</i> <i>(0.064) **</i>	<i>0.169</i> <i>(0.065) **</i>	<i>0.157</i> <i>(0.063) **</i>
Attended extra classes in Year 6	0.184 (0.041)**	0.162 (0.037)**	0.155 (0.036)**
Attended extra classes in Year 5	0.137 (0.028)**	0.105 (0.025)**	0.099 (0.025)**
Attended extra classes in Year 4	0.090 (0.017)**	0.047 (0.016)**	0.042 (0.016)**
Attended extra classes in Year 3	0.042 (0.015)**	-0.010 (0.015)	-0.014 (0.014)
Attended extra classes in Year 2	-0.005 (0.024)	-0.067 (0.023)**	-0.071 (0.023)**
Attended extra classes in Year 1	-0.052 (0.037)	-0.125 (0.034)**	-0.128 (0.034)**
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.015</i> <i>(0.069)</i>	<i>-0.202</i> <i>(0.066) **</i>	<i>-0.213</i> <i>(0.065) **</i>
<i>Year 4 to Year 6</i>	<i>0.411</i> <i>(0.086) **</i>	<i>0.314</i> <i>(0.070) **</i>	<i>0.296</i> <i>(0.069) **</i>
<i>Overall Year 1 to Year 6</i>	<i>0.396</i> <i>(0.093) **</i>	<i>0.112</i> <i>(0.085)</i>	<i>0.083</i> <i>(0.084)</i>
Mother Employed Fulltime in Year 6	-0.014 (0.097)	-0.059 (0.087)	-0.054 (0.086)
Mother Employed Fulltime in Year 5	-0.007 (0.148)	-0.035 (0.133)	-0.025 (0.131)
Mother Employed Fulltime in Year 4	-0.097 (0.159)	-0.016 (0.142)	-0.033 (0.141)
Mother Employed Fulltime in Year 3	0.111 (0.177)	0.116 (0.159)	0.107 (0.157)

Mother Employed Fulltime in Year 2	-0.265 (0.178)	-0.162 (0.160)	-0.147 (0.158)
Mother Employed Fulltime in Year 1	0.309 (0.123)*	0.098 (0.111)	0.082 (0.109)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	<i>0.155</i> <i>(0.123)</i>	<i>0.052</i> <i>(0.122)</i>	<i>0.042</i> <i>(0.119)</i>
<i>Year 4 to Year 6</i>	<i>-0.118</i> <i>(0.127)</i>	<i>-0.11</i> <i>(0.125)</i>	<i>-0.112</i> <i>(0.123)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.037</i> <i>(0.061)</i>	<i>-0.058</i> <i>(0.057)</i>	<i>-0.070</i> <i>(0.056)</i>
Speak other than mother tongue at home		0.147 (0.063)*	0.114 (0.063)+
Gender – Male		-0.281 (0.051)**	-0.291 (0.050)**
Ethnic Group – Malay #		0.013 (0.087)	0.071 (0.087)
Ethnic Group – Chinese #		0.386 (0.084)**	0.408 (0.083)**
Parents Highest education –Secondary		0.674 (0.093)**	0.636 (0.092)**
Parents Highest education –Tertiary		0.793 (0.095)**	0.707 (0.095)**
Wealth Index		0.127 (0.019)**	0.110 (0.020)**
Conducive Studying Environment at home			0.096 (0.023)**
Possessed Computer, Software and internet connection			-0.038 (0.023)
Additional Reading materials at home			0.077 (0.021)**
Constant	-0.466 (0.061)**	-0.915 (0.134)**	-0.852 (0.133)**
Observations	1231	1231	1231
Adjusted R-squared	0.10	0.28	0.30
F Test	10.48	23.74	22.95
Probability > F	0.000	0.000	0.000

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates enter the models linearly.

Table A.4-4: Determinants of Academic Result in Year 6: All Variables Entered Linearly³

Standardized Academic Result	Model 1	Model 2	Model 3
Having a Maid in Year 6	0.118 (0.105)	-0.003 (0.095)	-0.028 (0.094)
Having a Maid in Year 5	0.064 (0.143)	0.000 (0.129)	0.038 (0.127)
Having a Maid in Year 4	-0.135 (0.147)	0.002 (0.132)	-0.011 (0.131)
Having a Maid in Year 3	0.243 (0.143)+	0.088 (0.128)	0.063 (0.127)
Having a Maid in Year 2	0.055 (0.145)	0.098 (0.130)	0.118 (0.128)
Having a Maid in Year 1	0.201 (0.111)+	-0.016 (0.102)	-0.023 (0.101)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.499</i> <i>(0.130) **</i>	<i>0.170</i> <i>(0.113)</i>	<i>0.158</i> <i>(0.111)</i>
<i>Year 4 to Year 6</i>	<i>0.047</i> <i>(0.130)</i>	<i>-0.001</i> <i>(0.113)</i>	<i>-0.001</i> <i>(0.112)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.546</i> <i>(0.064) **</i>	<i>0.169</i> <i>(0.065) **</i>	<i>0.157</i> <i>(0.063) **</i>
Attended extra classes in Year 6	0.012 (0.075)	0.092 (0.068)	0.072 (0.067)
Attended extra classes in Year 5	0.220 (0.087)*	0.144 (0.079)+	0.135 (0.077)+
Attended extra classes in Year 4	0.200 (0.087)*	0.103 (0.078)	0.113 (0.077)
Attended extra classes in Year 3	-0.060 (0.085)	-0.091 (0.077)	-0.092 (0.076)
Attended extra classes in Year 2	0.182 (0.097)+	0.046 (0.088)	0.042 (0.087)
Attended extra classes in Year 1	-0.247 (0.091)**	-0.212 (0.082)*	-0.225 (0.081)**
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.125</i> <i>(0.078)</i>	<i>-0.257</i> <i>(0.071) **</i>	<i>-0.275</i> <i>(0.069) **</i>
<i>Year 4 to Year 6</i>	<i>0.432</i> <i>(0.095) **</i>	<i>0.339</i> <i>(0.078) **</i>	<i>0.320</i> <i>(0.078) **</i>
<i>Overall Year 1 to Year 6</i>	<i>0.307</i> <i>(0.101) **</i>	<i>0.082</i> <i>(0.091)</i>	<i>0.045</i> <i>(0.090)</i>
Mother Employed Fulltime in Year 6	0.017 (0.097)	-0.046 (0.088)	-0.040 (0.086)
Mother Employed Fulltime in Year 5	-0.057 (0.149)	-0.056 (0.134)	-0.049 (0.132)
Mother Employed Fulltime in Year 4	-0.094 (0.159)	-0.016 (0.143)	-0.034 (0.141)
Mother Employed Fulltime in Year 3	0.140 (0.177)	0.133 (0.160)	0.127 (0.157)

Mother Employed Fulltime in Year 2	-0.280 (0.178)	-0.170 (0.160)	-0.158 (0.158)
Mother Employed Fulltime in Year 1	0.305 (0.123)*	0.097 (0.111)	0.084 (0.110)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	<i>0.132</i> <i>(0.120)</i>	<i>0.045</i> <i>(0.120)</i>	<i>0.030</i> <i>(0.118)</i>
<i>Year 4 to Year 6</i>	<i>-0.111</i> <i>(0.124)</i>	<i>-0.102</i> <i>(0.124)</i>	<i>-0.100</i> <i>(0.122)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.021</i> <i>(0.061)</i>	<i>-0.057</i> <i>(0.057)</i>	<i>-0.070</i> <i>(0.056)</i>
Speak other than mother tongue at home		0.151 (0.064)*	0.117 (0.063)+
Gender – Male		-0.270 (0.051)**	-0.278 (0.051)**
Ethnic Group – Malay #		0.021 (0.088)	0.080 (0.087)
Ethnic Group – Chinese #		0.383 (0.084)**	0.403 (0.084)**
Parents Highest education –Secondary		0.674 (0.094)**	0.636 (0.092)**
Parents Highest education –Tertiary		0.786 (0.095)**	0.700 (0.095)**
Wealth Index		0.127 (0.019)**	0.109 (0.020)**
Conducive Studying Environment at home			0.099 (0.023)**
Possessed Computer, Software and internet connection			-0.039 (0.023)+
Additional Reading materials at home			0.077 (0.021)**
Constant	-0.403 (0.065)**	-0.900 (0.135)**	-0.833 (0.134)**
Observations	1231	1231	1231
Adjusted R-squared	0.10	0.28	0.30
F Test	8.99	20.11	19.87
Probability > F	0.000	0.000	0.000

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates enter the models linearly.

Table A.4-5: Determinants of Malay Language Result in Year 6: Using Polynomial Distributed Lags for Extra Classes Attended: Having a Maid and Mother Employed Full Time ³

Standardized Malay Language Result	Model 1	Model 2	Model 3
Having a Maid in Year 6	0.014 (0.049)	0.009 (0.046)	0.004 (0.046)
Having a Maid in Year 5	0.029 (0.031)	0.018 (0.030)	0.014 (0.030)
Having a Maid in Year 4	0.045 (0.016)**	0.027 (0.016)+	0.024 (0.016)
Having a Maid in Year 3	0.060 (0.016)**	0.036 (0.016)*	0.034 (0.016)*
Having a Maid in Year 2	0.075 (0.031)*	0.045 (0.030)	0.044 (0.030)
Having a Maid in Year 1	0.090 (0.049)+	0.054 (0.047)	0.054 (0.047)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.225</i> <i>(0.098)*</i>	<i>0.135</i> <i>(0.090)</i>	<i>0.132</i> <i>(0.088)</i>
<i>Year 4 to Year 6</i>	<i>0.088</i> <i>(0.096)</i>	<i>0.054</i> <i>(0.093)</i>	<i>0.042</i> <i>(0.093)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.313</i> <i>(0.068)**</i>	<i>0.189</i> <i>(0.077)*</i>	<i>0.174</i> <i>(0.076)*</i>
Attended extra classes in Year 6	0.133 (0.042)**	0.094 (0.040)*	0.092 (0.040)*
Attended extra classes in Year 5	0.064 (0.029)*	0.054 (0.027)*	0.053 (0.027)+
Attended extra classes in Year 4	-0.005 (0.017)	0.015 (0.017)	0.013 (0.017)
Attended extra classes in Year 3	-0.074 (0.015)**	-0.025 (0.016)	-0.026 (0.016)
Attended extra classes in Year 2	-0.143 (0.025)**	-0.065 (0.025)**	-0.065 (0.025)**
Attended extra classes in Year 1	-0.212 (0.038)**	-0.104 (0.038)**	-0.104 (0.038)**
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.429</i> <i>(0.078) **</i>	<i>-0.194</i> <i>(0.081)*</i>	<i>-0.195</i> <i>(0.080)*</i>
<i>Year 4 to Year 6</i>	<i>0.192</i> <i>(0.084)*</i>	<i>0.163</i> <i>(0.080)*</i>	<i>0.158</i> <i>(0.080)*</i>
<i>Overall Year 1 to Year 6</i>	<i>-0.237</i> <i>(0.098)*</i>	<i>-0.031</i> <i>(0.098)</i>	<i>-0.037</i> <i>(0.098)</i>
Mother Employed Fulltime in Year 6	-0.077 (0.048)	-0.092 (0.046)*	-0.092 (0.046)*
Mother Employed Fulltime in Year 5	-0.052 (0.030)+	-0.066 (0.029)*	-0.066 (0.029)*
Mother Employed Fulltime in Year 4	-0.027 (0.015)+	-0.039 (0.014)**	-0.039 (0.014)**
Mother Employed Fulltime in Year 3	-0.003	-0.012	-0.013

	(0.015)	(0.014)	(0.014)
Mother Employed Fulltime in Year 2	0.022	0.014	0.014
	(0.030)	(0.029)	(0.029)
Mother Employed Fulltime in Year 1	0.046	0.041	0.040
	(0.048)	(0.046)	(0.046)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	<i>0.065</i>	<i>0.043</i>	<i>0.041</i>
	<i>(0.094)</i>	<i>(0.089)</i>	<i>(0.089)</i>
<i>Year 4 to Year 6</i>	<i>-0.156</i>	<i>-0.197</i>	<i>-0.197</i>
	<i>(0.096)</i>	<i>(0.092)*</i>	<i>(0.091)*</i>
<i>Overall Year 1 to Year 6</i>	<i>-0.091</i>	<i>-0.154</i>	<i>-0.156</i>
	<i>(0.071)</i>	<i>(0.068)*</i>	<i>(0.069)*</i>
Speak other than mother tongue at home		0.245	0.228
		(0.069)**	(0.069)**
Gender – Male		-0.329	-0.336
		(0.055)**	(0.055)**
Ethnic Group – Malay #		0.670	0.706
		(0.095)**	(0.095)**
Ethnic Group – Chinese #		0.146	0.153
		(0.092)	(0.092)+
Parents Highest education –Secondary		0.477	0.455
		(0.102)**	(0.102)**
Parents Highest education –Tertiary		0.510	0.461
		(0.104)**	(0.105)**
Wealth Index		0.019	0.012
		(0.020)	(0.022)
Conducive Studying Environment at home			0.069
			(0.025)**
Possessed Computer, Software and internet connection			-0.041
			(0.026)
Additional Reading materials at home			0.035
			(0.024)
Constant	-0.061	-0.721	-0.689
	(0.060)	(0.146)**	(0.146)**
Observations	1231	1231	1231
Adjusted R-squared	0.03	0.13	0.14
F Test	8.21	15.59	13.51
Probability > F	0.000	0.000	0.000

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates enter the models linearly.

Table A.4-6: Determinants of Malay Language Result in Year 6: Using Polynomial Distributed Lags for Extra Classes Attended ³

Standardized Malay Language Result	Model 1	Model 2	Model 3
Having a Maid in Year 6	-0.158 (0.109)	-0.166 (0.104)	-0.189 (0.104)+
Having a Maid in Year 5	0.203 (0.148)	0.142 (0.141)	0.171 (0.140)
Having a Maid in Year 4	-0.014 (0.152)	0.038 (0.145)	0.021 (0.145)
Having a Maid in Year 3	0.313 (0.148)*	0.237 (0.141)+	0.230 (0.140)
Having a Maid in Year 2	-0.108 (0.149)	-0.048 (0.142)	-0.039 (0.142)
Having a Maid in Year 1	0.067 (0.115)	-0.035 (0.112)	-0.038 (0.111)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.272</i> <i>(0.145)*</i>	<i>0.154</i> <i>(0.129)</i>	<i>0.153</i> <i>(0.130)</i>
<i>Year 4 to Year 6</i>	<i>0.031</i> <i>(0.141)</i>	<i>0.014</i> <i>(0.128)</i>	<i>0.003</i> <i>(0.131)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.303</i> <i>(0.069)**</i>	<i>0.168</i> <i>(0.079)*</i>	<i>0.156</i> <i>(0.078)*</i>
Attended extra classes in Year 6	0.122 (0.042)**	0.085 (0.040)*	0.082 (0.040)*
Attended extra classes in Year 5	0.056 (0.029)+	0.047 (0.027)+	0.045 (0.027)+
Attended extra classes in Year 4	-0.011 (0.018)	0.010 (0.017)	0.008 (0.017)
Attended extra classes in Year 3	-0.077 (0.015)**	-0.028 (0.016)+	-0.029 (0.016)+
Attended extra classes in Year 2	-0.144 (0.025)**	-0.065 (0.025)**	-0.066 (0.025)**
Attended extra classes in Year 1	-0.210 (0.038)**	-0.103 (0.038)**	-0.103 (0.038)**
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.431</i> <i>(0.078) *</i>	<i>-0.196</i> <i>(0.081) *</i>	<i>-0.198</i> <i>(0.080) *</i>
<i>Year 4 to Year 6</i>	<i>0.167</i> <i>(0.085)*</i>	<i>0.142</i> <i>(0.080)+</i>	<i>0.135</i> <i>(0.079)+</i>
<i>Overall Year 1 to Year 6</i>	<i>-0.264</i> <i>(0.099) **</i>	<i>-0.054</i> <i>(0.099)</i>	<i>-0.063</i> <i>(0.099)</i>
Mother Employed Fulltime in Year 6	-0.183 (0.100)+	-0.155 (0.095)	-0.153 (0.095)
Mother Employed Fulltime in Year 5	0.054 (0.153)	-0.071 (0.146)	-0.062 (0.145)
Mother Employed Fulltime in Year 4	0.069 (0.164)	0.117 (0.156)	0.100 (0.156)
Mother Employed Fulltime in Year 3	-0.053 (0.183)	-0.028 (0.174)	-0.028 (0.174)

Mother Employed Fulltime in Year 2	-0.053 (0.184)	-0.087 (0.175)	-0.076 (0.175)
Mother Employed Fulltime in Year 1	0.060 (0.127)	0.056 (0.121)	0.050 (0.121)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	-0.046 (0.152)	-0.059 (0.156)	-0.054 (0.156)
<i>Year 4 to Year 6</i>	-0.060 (0.152)	-0.109 (0.157)	-0.115 (0.156)
<i>Overall Year 1 to Year 6</i>	-0.106 (0.072)	-0.168 (0.070)*	-0.169 (0.070)*
Speak other than mother tongue at home		0.251 (0.069)**	0.233 (0.070)**
Gender – Male		-0.319 (0.056)**	-0.325 (0.056)**
Ethnic Group – Malay #		0.665 (0.096)**	0.700 (0.096)**
Ethnic Group – Chinese #		0.139 (0.092)	0.143 (0.092)
Parents Highest education –Secondary		0.489 (0.102)**	0.467 (0.102)**
Parents Highest education –Tertiary		0.517 (0.104)**	0.468 (0.105)**
Wealth Index		0.025 (0.021)	0.018 (0.022)
Conducive Studying Environment at home			0.073 (0.025)**
Possessed Computer, Software and internet connection			-0.041 (0.026)
Additional Reading materials at home			0.032 (0.024)
Constant	-0.026 (0.063)	-0.698 (0.147)**	-0.663 (0.147)**
Observations	1231	1231	1231
Adjusted R-squared	0.04	0.13	0.14
F Test	4.21	10.07	9.39
Probability > F	0.000	0.000	0.000

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates including having a maid and mother employed full time enter the models linearly.

Table A.4-7: Determinants of Malay Language Result in Year 6: All Variables Entered Linearly³

Standardized Malay Language Result	Model 1	Model 2	Model 3
Having a Maid in Year 6	-0.143 (0.109)	-0.153 (0.104)	-0.176 (0.104)+
Having a Maid in Year 5	0.179 (0.148)	0.123 (0.141)	0.152 (0.141)
Having a Maid in Year 4	-0.010 (0.153)	0.042 (0.145)	0.024 (0.145)
Having a Maid in Year 3	0.312 (0.148)*	0.239 (0.141)+	0.232 (0.141)+
Having a Maid in Year 2	-0.119 (0.150)	-0.060 (0.143)	-0.050 (0.142)
Having a Maid in Year 1	0.078 (0.116)	-0.022 (0.112)	-0.026 (0.112)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.271</i> <i>(0.145)+</i>	<i>0.157</i> <i>(0.129)</i>	<i>0.156</i> <i>(0.130)</i>
<i>Year 4 to Year 6</i>	<i>0.026</i> <i>(0.141)</i>	<i>0.012</i> <i>(0.128)</i>	<i>0.000</i> <i>(0.131)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.297</i> <i>(0.070)**</i>	<i>0.169</i> <i>(0.079)*</i>	<i>0.156</i> <i>(0.078)*</i>
Attended extra classes in Year 6	0.045 (0.078)	0.025 (0.075)	0.015 (0.075)
Attended extra classes in Year 5	0.144 (0.090)	0.094 (0.086)	0.089 (0.086)
Attended extra classes in Year 4	0.004 (0.090)	0.039 (0.086)	0.050 (0.086)
Attended extra classes in Year 3	-0.195 (0.088)*	-0.110 (0.084)	-0.111 (0.084)
Attended extra classes in Year 2	0.010 (0.101)	0.083 (0.097)	0.085 (0.096)
Attended extra classes in Year 1	-0.306 (0.094)**	-0.215 (0.090)*	-0.223 (0.090)*
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.491</i> <i>(0.086) **</i>	<i>-0.242</i> <i>(0.086) **</i>	<i>-0.249</i> <i>(0.085) **</i>
<i>Year 4 to Year 6</i>	<i>0.193</i> <i>(0.099)**</i>	<i>0.158</i> <i>(0.092)+</i>	<i>0.154</i> <i>(0.092)+</i>
<i>Overall Year 1 to Year 6</i>	<i>-0.298</i> <i>(0.109) **</i>	<i>-0.084</i> <i>(0.108)</i>	<i>-0.095</i> <i>(0.108)</i>
Mother Employed Fulltime in Year 6	-0.171 (0.101)+	-0.145 (0.096)	-0.142 (0.096)
Mother Employed Fulltime in Year 5	0.032 (0.155)	-0.087 (0.147)	-0.081 (0.147)
Mother Employed Fulltime in Year 4	0.074 (0.165)	0.119 (0.156)	0.101 (0.156)
Mother Employed Fulltime in Year 3	-0.038 (0.184)	-0.014 (0.175)	-0.012 (0.174)

Mother Employed Fulltime in Year 2	-0.049 (0.185)	-0.091 (0.176)	-0.083 (0.175)
Mother Employed Fulltime in Year 1	0.045 (0.128)	0.053 (0.122)	0.048 (0.122)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	-0.042 (0.151)	-0.052 (0.154)	-0.047 (0.155)
<i>Year 4 to Year 6</i>	-0.065 (0.152)	-0.113 (0.156)	-0.122 (0.156)
<i>Overall Year 1 to Year 6</i>	-0.107 (0.072)	-0.165 (0.070)*	-0.169 (0.070)*
Speak other than mother tongue at home		0.257 (0.070)**	0.238 (0.070)**
Gender – Male		-0.306 (0.056)**	-0.312 (0.056)**
Ethnic Group – Malay #		0.676 (0.096)**	0.712 (0.096)**
Ethnic Group – Chinese #		0.139 (0.093)	0.142 (0.093)
Parents Highest education –Secondary		0.487 (0.103)**	0.466 (0.102)**
Parents Highest education –Tertiary		0.509 (0.104)**	0.459 (0.105)**
Wealth Index		0.024 (0.021)	0.017 (0.022)
Conducive Studying Environment at home			0.074 (0.025)**
Possessed Computer, Software and internet connection			-0.042 (0.026)
Additional Reading materials at home			0.032 (0.024)
Constant	-0.002 (0.067)	-0.690 (0.148)**	-0.652 (0.148)**
Observations	1231	1231	1231
Adjusted R-squared	0.04	0.14	0.14
F Test	3.54	8.61	8.21
Probability > F	0.000	0.000	0.000

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others.
- iii) ³All other covariates including attended extra classes, having a maid and mother employed full time enter the models linearly.

Table A.4-8: Quantile Regression Estimates of the Determinants of Standardized Academic Result in Year 6: Using Polynomial Distributed Lags for Extra Classes Attended; Having a Maid and Mother Employed Full Time³

Standardized Academic Result	25th	50th	75th
Having a Maid in Year 6	-0.016 (0.058)	-0.005 (0.037)	0.003 (0.022)
Having a Maid in Year 5	0.007 (0.036)	0.007 (0.024)	0.004 (0.014)
Having a Maid in Year 4	0.031 (0.017)+	0.018 (0.013)	0.006 (0.007)
Having a Maid in Year 3	0.054 (0.019)**	0.030 (0.011)**	0.007 (0.007)
Having a Maid in Year 2	0.078 (0.039)*	0.041 (0.021)+	0.009 (0.014)
Having a Maid in Year 1	0.102 (0.061)+	0.053 (0.034)	0.010 (0.022)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	0.234 (0.122)+	0.124 (0.060)*	0.026 (0.041)
<i>Year 4 to Year 6</i>	0.022 (0.112)	0.020 (0.070)	0.013 (0.041)
<i>Overall Year 1 to Year 6</i>	0.256 (0.087)**	0.144 (0.060)*	0.039 (0.038)
Attended extra classes in Year 6	0.169 (0.049)**	0.163 (0.039)**	0.049 (0.019)**
Attended extra classes in Year 5	0.108 (0.035)**	0.106 (0.027)**	0.032 (0.013)*
Attended extra classes in Year 4	0.047 (0.025)+	0.049 (0.017)**	0.015 (0.009)+
Attended extra classes in Year 3	-0.015 (0.024)	-0.008 (0.014)	-0.002 (0.009)
Attended extra classes in Year 2	-0.076 (0.033)*	-0.065 (0.021)**	-0.019 (0.013)
Attended extra classes in Year 1	-0.137 (0.047)**	-0.122 (0.032)**	-0.036 (0.018)*
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	-0.228 (0.105)*	-0.195 (0.064)**	-0.057 (0.036)
<i>Year 4 to Year 6</i>	0.324 (0.106)**	0.318 (0.081)**	0.096 (0.042)*
<i>Overall Year 1 to Year 6</i>	0.096 (0.141)	0.123 (0.085)	0.039 (0.046)
Mother Employed Fulltime in Year 6	-0.055 (0.051)	-0.056 (0.043)	-0.008 (0.025)
Mother Employed Fulltime in Year 5	-0.037 (0.032)	-0.037 (0.027)	-0.008 (0.016)
Mother Employed Fulltime in Year 4	-0.018 (0.016)	-0.018 (0.012)	-0.009 (0.007)

Mother Employed Fulltime in Year 3	-0.000 (0.017)	0.002 (0.013)	-0.010 (0.007)
Mother Employed Fulltime in Year 2	0.018 (0.033)	0.021 (0.028)	-0.010 (0.015)
Mother Employed Fulltime in Year 1	0.036 (0.052)	0.040 (0.045)	-0.011 (0.024)
<hr/>			
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	0.054 (0.101)	0.063 (0.087)	-0.031 (0.044)
<i>Year 4 to Year 6</i>	-0.110 (0.096)	-0.111 (0.084)	-0.025 (0.049)
<i>Overall Year 1 to Year 6</i>	-0.056 (0.076)	-0.048 (0.053)	-0.056 (0.033)
<hr/>			
Speak other than mother tongue at home	0.112 (0.081)	-0.003 (0.055)	-0.021 (0.034)
Gender – Male	-0.320 (0.071)**	-0.229 (0.048)**	-0.115 (0.033)**
Ethnic Group – Malay #	0.308 (0.182)+	-0.203 (0.117)+	-0.209 (0.069)**
Ethnic Group – Chinese #	0.693 (0.195)**	0.284 (0.103)**	0.080 (0.060)
Parents Highest education –Secondary	0.709 (0.145)**	0.630 (0.114)**	0.565 (0.113)**
Parents Highest education –Tertiary	0.729 (0.140)**	0.712 (0.113)**	0.605 (0.113)**
Wealth Index	0.133 (0.030)**	0.119 (0.026)**	0.055 (0.015)**
Conducive Studying Environment at home	0.117 (0.034)**	0.093 (0.026)**	0.055 (0.017)**
Possessed Computer, Software and internet connection	-0.039 (0.030)	-0.030 (0.023)	-0.032 (0.013)*
Additional Reading materials at home	0.114 (0.027)**	0.062 (0.019)**	0.041 (0.012)**
Constant	-1.554 (0.245)**	-0.592 (0.152)**	0.165 (0.127)
<hr/>			
Observations	1231	1231	1231

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates enter the models linearly.

Table A.4-9: Quantile Regression Estimates of the Determinants of Standardized Academic Result in Year 6: Using Polynomial Distributed Lags for Extra Classes Attended ³

Standardized Academic Result	25th	50th	75th
Having a Maid in Year 6	-0.158 (0.141)	0.041 (0.089)	0.041 (0.055)
Having a Maid in Year 5	0.208 (0.222)	-0.013 (0.081)	-0.054 (0.079)
Having a Maid in Year 4	-0.059 (0.235)	-0.080 (0.107)	0.023 (0.072)
Having a Maid in Year 3	0.089 (0.179)	0.086 (0.123)	0.041 (0.068)
Having a Maid in Year 2	0.123 (0.147)	0.078 (0.131)	-0.024 (0.070)
Having a Maid in Year 1	0.008 (0.127)	0.017 (0.084)	0.015 (0.050)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.220</i> <i>(0.145)</i>	<i>0.181</i> <i>(0.111)</i>	<i>0.032</i> <i>(0.107)</i>
<i>Year 4 to Year 6</i>	<i>-0.009</i> <i>(0.144)</i>	<i>-0.052</i> <i>(0.113)</i>	<i>0.01</i> <i>(0.109)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.211</i> <i>(0.092)*</i>	<i>0.129</i> <i>(0.064)*</i>	<i>0.042</i> <i>(0.044)</i>
Attended extra classes in Year 6	0.161 (0.051)**	0.157 (0.039)**	0.049 (0.020)*
Attended extra classes in Year 5	0.103 (0.037)**	0.101 (0.027)**	0.031 (0.014)*
Attended extra classes in Year 4	0.044 (0.025)+	0.045 (0.017)*	0.013 (0.010)
Attended extra classes in Year 3	-0.014 (0.023)	-0.011 (0.015)	-0.005 (0.009)
Attended extra classes in Year 2	-0.073 (0.032)*	-0.067 (0.022)**	-0.022 (0.013)+
Attended extra classes in Year 1	-0.131 (0.046)**	-0.123 (0.033)**	-0.040 (0.019)*
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.218</i> <i>(0.101)*</i>	<i>-0.201</i> <i>(0.067)**</i>	<i>-0.067</i> <i>(0.041)</i>
<i>Year 4 to Year 6</i>	<i>0.308</i> <i>(0.105)**</i>	<i>0.303</i> <i>(0.081)**</i>	<i>0.093</i> <i>(0.043)*</i>
<i>Overall Year 1 to Year 6</i>	<i>0.090</i> <i>(0.139)</i>	<i>0.102</i> <i>(0.084)</i>	<i>0.026</i> <i>(0.051)</i>
Mother Employed Fulltime in Year 6	-0.060 (0.123)	-0.292 (0.110)**	-0.070 (0.113)
Mother Employed Fulltime in Year 5	-0.150 (0.196)	0.177 (0.172)	0.015 (0.137)
Mother Employed Fulltime in Year 4	0.015 (0.146)	0.024 (0.130)	0.058 (0.124)
Mother Employed Fulltime in Year 3	0.274	0.137	-0.012

	(0.194)	(0.131)	(0.128)
Mother Employed Fulltime in Year 2	-0.116	-0.214	-0.010
	(0.163)	(0.147)	(0.093)
Mother Employed Fulltime in Year 1	-0.052	0.125	-0.043
	(0.134)	(0.103)	(0.062)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	<i>0.106</i>	<i>0.048</i>	<i>-0.065</i>
	<i>(0.172)</i>	<i>(0.092)</i>	<i>(0.065)</i>
<i>Year 4 to Year 6</i>	<i>-0.195</i>	<i>-0.091</i>	<i>0.003</i>
	<i>(0.159)</i>	<i>(0.095)</i>	<i>(0.064)</i>
<i>Overall Year 1 to Year 6</i>	<i>-0.089</i>	<i>-0.043</i>	<i>-0.062</i>
	<i>(0.078)</i>	<i>(0.054)</i>	<i>(0.035)</i>
Speak other than mother tongue at home	0.128	0.009	-0.029
	(0.087)	(0.060)	(0.038)
Gender – Male	-0.363	-0.216	-0.118
	(0.073)**	(0.046)**	(0.034)**
Ethnic Group – Malay #	0.289	-0.188	-0.220
	(0.190)	(0.131)	(0.081)**
Ethnic Group – Chinese #	0.692	0.302	0.076
	(0.192)**	(0.115)**	(0.071)
Parents Highest education –Secondary	0.680	0.580	0.573
	(0.145)**	(0.115)**	(0.107)**
Parents Highest education –Tertiary	0.709	0.662	0.622
	(0.142)**	(0.119)**	(0.110)**
Wealth Index	0.135	0.111	0.056
	(0.030)**	(0.027)**	(0.016)**
Conducive Studying Environment at home	0.123	0.098	0.050
	(0.036)**	(0.025)**	(0.018)**
Possessed Computer, Software and internet connection	-0.045	-0.031	-0.030
	(0.029)	(0.024)	(0.014)*
Additional Reading materials at home	0.117	0.067	0.040
	(0.028)**	(0.021)**	(0.013)**
Constant	-1.465	-0.559	0.174
	(0.248)**	(0.158)**	(0.136)
Observations	1231	1231	1231

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates including having a maid and mother employed full time enter the models linearly.

Table A.4-10: Quantile Regression Estimates of the Determinants of Standardized Academic Result in Year 6: All Variables Entered Linearly³

Standardized Academic Result	25th	50th	75th
Having a Maid in Year 6	-0.180 (0.129)	0.033 (0.085)	0.037 (0.056)
Having a Maid in Year 5	0.267 (0.187)	0.027 (0.099)	-0.062 (0.076)
Having a Maid in Year 4	-0.125 (0.214)	-0.090 (0.109)	0.022 (0.071)
Having a Maid in Year 3	0.117 (0.192)	0.097 (0.125)	0.015 (0.068)
Having a Maid in Year 2	0.171 (0.146)	0.077 (0.123)	-0.009 (0.071)
Having a Maid in Year 1	-0.031 (0.128)	-0.013 (0.087)	0.023 (0.050)
<i>Long Run Impact of Having a Maid</i>			
<i>Year 1 to Year 3</i>	<i>0.257</i> <i>(0.141)</i>	<i>0.161</i> <i>(0.116)</i>	<i>0.029</i> <i>(0.102)</i>
<i>Year 4 to Year 6</i>	<i>-0.038</i> <i>(0.140)</i>	<i>-0.03</i> <i>(0.115)</i>	<i>-0.003</i> <i>(0.105)</i>
<i>Overall Year 1 to Year 6</i>	<i>0.219</i> <i>(0.081)**</i>	<i>0.131</i> <i>(0.055)**</i>	<i>0.026</i> <i>(0.036)</i>
Attended extra classes in Year 6	0.119 (0.102)	0.091 (0.100)	-0.003 (0.061)
Attended extra classes in Year 5	0.112 (0.110)	0.091 (0.109)	0.039 (0.069)
Attended extra classes in Year 4	0.065 (0.108)	0.141 (0.094)	0.061 (0.059)
Attended extra classes in Year 3	0.003 (0.099)	-0.041 (0.070)	0.015 (0.044)
Attended extra classes in Year 2	-0.051 (0.103)	-0.064 (0.080)	-0.094 (0.047)*
Attended extra classes in Year 1	-0.203 (0.111)+	-0.126 (0.080)	-0.011 (0.045)
<i>Long Run Impact of Attending Extra Classes</i>			
<i>Year 1 to Year 3</i>	<i>-0.251</i> <i>(0.110)*</i>	<i>-0.231</i> <i>(0.068)**</i>	<i>-0.09</i> <i>(0.048)#</i>
<i>Year 4 to Year 6</i>	<i>0.296</i> <i>(0.123)**</i>	<i>0.323</i> <i>(0.090)**</i>	<i>0.097</i> <i>(0.050)*</i>
<i>Overall Year 1 to Year 6</i>	<i>0.045</i> <i>(0.149)</i>	<i>0.092</i> <i>(0.090)</i>	<i>0.007</i> <i>(0.055)</i>
Mother Employed Fulltime in Year 6	-0.049 (0.128)	-0.266 (0.105)*	-0.061 (0.108)
Mother Employed Fulltime in Year 5	-0.160 (0.190)	0.154 (0.174)	0.015 (0.128)
Mother Employed Fulltime in Year 4	0.023 (0.144)	0.061 (0.145)	0.028 (0.121)
Mother Employed Fulltime in Year 3	0.225 (0.193)	0.102 (0.131)	-0.007 (0.112)

Mother Employed Fulltime in Year 2	-0.135 (0.167)	-0.217 (0.142)	0.032 (0.096)
Mother Employed Fulltime in Year 1	-0.022 (0.127)	0.124 (0.098)	-0.063 (0.070)
<i>Long Run Impact of Mother Employed Full Time</i>			
<i>Year 1 to Year 3</i>	<i>0.068</i> <i>(0.170)</i>	<i>0.009</i> <i>(0.092)</i>	<i>-0.038</i> <i>(0.062)</i>
<i>Year 4 to Year 6</i>	<i>-0.186</i> <i>(0.158)</i>	<i>-0.051</i> <i>(0.095)</i>	<i>-0.018</i> <i>(0.061)</i>
<i>Overall Year 1 to Year 6</i>	<i>-0.118</i> <i>(0.096)</i>	<i>-0.042</i> <i>(0.065)</i>	<i>-0.056</i> <i>(0.045)</i>
Speak other than mother tongue at home	0.153 (0.081)+	0.010 (0.055)	-0.038 (0.038)
Gender – Male	-0.336 (0.081)**	-0.218 (0.051)**	-0.126 (0.034)**
Ethnic Group – Malay #	0.321 (0.177)+	-0.169 (0.124)	-0.246 (0.074)**
Ethnic Group – Chinese #	0.715 (0.183)**	0.296 (0.117)*	0.057 (0.065)
Parents Highest education –Secondary	0.654 (0.140)**	0.578 (0.123)**	0.539 (0.116)**
Parents Highest education –Tertiary	0.680 (0.143)**	0.661 (0.124)**	0.602 (0.115)**
Wealth Index	0.128 (0.034)**	0.113 (0.027)**	0.053 (0.016)**
Conducive Studying Environment at home	0.123 (0.038)**	0.096 (0.026)**	0.046 (0.020)*
Possessed Computer, Software and internet connection	-0.050 (0.031)+	-0.036 (0.024)	-0.029 (0.015)+
Additional Reading materials at home	0.131 (0.032)**	0.067 (0.019)**	0.040 (0.012)**
Constant	-1.460 (0.243)**	-0.547 (0.166)**	0.250 (0.134)+
Observations	1231	1231	1231

Notes:

- i) Standard errors in parentheses: + Significant at 10%; * significant at 5%; ** significant at 1%
- ii) Long run impacts obtained by total of all coefficients for the respective variables and tested using bootstrap standard error of 1000 replications. The control group for Ethnic group is Indian & Others
- iii) ³All other covariates including having a maid and mother employed full time enter the models linearly

Appendix 4-2: Questionnaire for Year 6 Students

Front Cover

Code Number

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**THE ECONOMIC IMPACT OF
FOREIGN DOMESTIC WORKERS IN MALAYSIA**

Address of School	:	
	:	
	:	
	:	

- Part A Background
- Part B Restrospective Questions
- Part C Self Perception
- Part D Self Reported Action

Interviewer Notes

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Please answer all questions in order unless the instruction tells you to skip a question.

A Background

A1 Gender : ☐ Male ☐ Female

A2 Age : _____

A3 Ethnic: ☐ Malay ☐ Chinese ☐ Indian ☐ Others

A4 No of siblings (including yourself) : _____

A5 Position among siblings:
 Eldest ☐
 Youngest ☐
 In Between ☐ please state your birth order:_____

A6 How many people normally stay in your house (please include maid if applicable) : _____

A7 Who usually lives at home with you? **(Please tick as many boxes as apply)**

- ☐ Mother
☐ Father
☐ Brothers, sisters, cousins.
☐ Grandparents
☐ Uncles, Aunties
☐ Maid

A8 What is your mother currently doing? **(Please tick only ONE box)**

- ☐ Working full time
☐ Working part-time
☐ Not working but looking for a job
☐ Other (e.g., home duties, retired)

A8 What is your father currently doing? **(Please tick only ONE box)**

- ☐ Working full time
☐ Working part-time
☐ Not working but looking for a job
☐ Other (e.g., home duties, retired)

A9 What is your mother's main job?(e.g., school teacher, sales manager, nurse)
 (If she is not working now, please tell us her last main job)
 Please state the job title,_____

A10 What does your mother do in her main job?(e.g., teaches high school students, manages a sales team, cares for patients)
 Please use a sentence to describe the kind of work she does or did in that job

A11 What is your father's main job?(e.g., school teacher, sales manager, carpenter)
 (If he is not working now, please tell us his last main job)
 Please the job title,_____

A12 What does your father do in his main job?(e.g., teaches high school students, manages a sales team, build houses)
 Please use a sentence to describe the kind of work he does or did in that job

- A13 What is your mother highest education level
☐ Primary and below
☐ Secondary
☐ Tertiary up to degree
☐ Post graduate
- A14 What is your father highest education level
☐ Primary and below
☐ Secondary
☐ Tertiary up to degree
☐ Post graduate
- A15 Name of your primary school:
(If you have study more than one school during your primary education please state the name off all the schools and year attended)
 _____ Standard _____ to standard _____
 _____ Standard _____ to standard _____
 _____ Standard _____ to standard _____
- A16 What language do you speak at home most of the time?
(Please tick only ONE box)
☐ Bahasa Malaysia
☐ English
☐ Mandarin
☐ Tamil
☐ Other dialects
- A17 Which of the following do you have in your home?
(Please tick as many boxes as applicable)
☐ A desk to study at
☐ A room of your own
☐ A quiet place to study
☐ A computer you can use for school work
☐ Educational software
☐ A link to the internet
☐ Your own calculator
☐ Classic literature (e.g. Shakespeare)
☐ Books of poetry
☐ Works of art (e.g., painting)
☐ Books to help with your school work
☐ A dictionary

- A18 How many of these do you have at your home? (Total up the numbers own by all the people staying in your house)
(Please tick only one box in each row)

	None	One	Two	Three of more
a) Hand phone.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Television.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Car.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Air Condition.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Bathroom.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Computer.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- A19 How many of books do you have at your home?
 (Do not include magazines, newspaper, or your school books)
(Please tick only one box in each row)

0-10 books.....	<input type="checkbox"/>
11-25 books.....	<input type="checkbox"/>
26-100 books.....	<input type="checkbox"/>
101-200 books.....	<input type="checkbox"/>
More than 200 books.....	<input type="checkbox"/>

- A20 To your best knowledge, what is your family total annual income?

- ☐ Less than RM12,000
☐ RM12,001 – RM24,000
☐ RM24,001 – RM48,000
☐ More than RM48,000

B Retrospective Questions

Please tick (if answer Yes) or write down the answer to the following questions according to your best knowledge.

	<u>Std</u> <u>1</u>	<u>Std</u> <u>2</u>	<u>Std</u> <u>3</u>	<u>Std</u> <u>4</u>	<u>Std</u> <u>5</u>	<u>Std</u> <u>6</u>
1) Did you have a maid when you were in.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) Did you attend any tuition when you were in.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) No of hours attending tuition per week when you were in.....	___	___	___	___	___	___
4) Did your sibling help you with school work when you were in.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) Did your mother help you with school work when you were in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) Did your father help you with school work when you were in..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) Did your maid help with your school work when you were in...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) Did you obtain help from others than the people in the above questions with your school work when you were in.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) Did your mother work full time when you were in.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) Did your father work part-time when you were in.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) Final Term Result for English.....	___	___	___	___	___	___
12) Final Term Result for Malay Language.....	___	___	___	___	___	___
13) Final Term Result for Mathematics.....	___	___	___	___	___	___
14) Final Term Result for Science.....	___	___	___	___	___	___
15) What is your weight when you were at.....	___	___	___	___	___	___
16) What is your height when you were at.....	___	___	___	___	___	___

C Self Perception

For each statement, please **TICK** the answer that best describes how true each statement is for you. There are no best answers. People are very different in how they feel about these statements. Please circle the first answer that comes to you.

How true is each statement for you?		Almost always <u>untrue</u>	Usually <u>untrue</u>	Sometimes <u>true</u> , sometimes <u>untrue</u>	Usually <u>true</u>	Almost always <u>true</u>
1)	If I'm mad at somebody, I tend to say things that I know will hurt their feelings.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
2)	When I am angry, I throw or break things.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
3)	My friends seem to enjoy themselves more than I do.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
4)	It often takes very little to make me feel like crying.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
5)	If I get really mad at someone, I might hit them.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
6)	I feel pretty happy most of the day.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
7)	When I compete in games or sports, I really try to crush my opponents.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
8)	I tend to be rude to people I don't like.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
9)	I get sad more than other people realize.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
10)	When I am mad, I slam doors.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
11)	I get sad when a lot of things are going wrong.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
12)	I tend to talk about other people behind their back.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
13)	My friends and I make fun of how other people look.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
14)	I don't criticize other people.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
15)	When I'm really mad at a friend, I tend to explode at them.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
16)	I feel sad even when I should be enjoying myself, like at Christmas or on a trip.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
17)	I pick on people for no real reason.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

D. Self Reported Actions

For each statement, please **TICK** the answer that best describes you. **HOWEVER** you can choose **NOT** to answer any of these questions below that you deemed sensitive.

In the last year, about how many times have you.....	<u>Never</u>	<u>Once</u>	<u>Twice</u>	<u>More than twice</u>
1) Stay out later than your parent(s) said you should?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
2) Hurt someone badly enough to need bandages or a doctor?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
3) Lied to your parent(s) about something important?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
4) Taken something from a store without paying for it?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
5) Had to bring your parent(s) to school because of something you did wrong?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
6) Skipped a day of school without permission?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
7) Stayed out at least one night without permission?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
8) Smoked a cigarette?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
9) Have drank alcohol, other than just a sip or two?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>
10) Used any type of illegal drugs?	0 <input type="checkbox"/>	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>

Thank you for completing this questionnaire.

CHAPTER 5 - THE IMPACTS OF TEMPORARY EMIGRATION OF LOWER-SKILLED FEMALES ON SENDING HOUSEHOLDS IN INDONESIA

5.1 Introduction

The temporary emigration of young women from developing countries to work as caregivers, maids and in other unskilled occupations in richer countries is a growing phenomenon. Some of the driving forces are as for other migration flows, such as growing international wage gaps, rising demand for services, divergent trends in youth and elderly populations in developed and developing countries, and catch up from the previously “everything but labour” nature of globalisation in the post-World War II era (Pritchett, 2006). However this international movement of young women also reflects deliberate policies of host countries wanting to raise labour force participation of their own, more educated, women, by importing domestic services. For example, Malaysia has a scheme which allows young women from especially Indonesia and more rarely the Philippines to work as caregivers, maids and in other domestic work or as factory workers.

A feature of many of these migration schemes, including the Malaysian one, is that they only allow temporary migration. For example, immigrants under the Malaysian scheme are given a one year work permit, which they may renew annually if their services are still needed. Proponents of such temporary migration programs argue that this feature may overcome perceived problems with settlement migration, such as permanent loss of labour from the source countries and hard-to-reverse social stress and fiscal costs in the host countries (Abella,

2006). However this expansion of guest-worker schemes is controversial, in both academic and policy circles, since previous temporary migration programs failed to meet many of their objectives (Ruhs, 2006).²⁹ What is largely absent from these debates however, is empirical evidence on the impacts that temporary migration programs have on either the host country or the source country, and more importantly the impact on temporary migration of female emigrants leaves their parents, husbands and children. Is the positive impact of temporary migration of these female migrants sufficient to out weight the cost of their temporary migration?

In this chapter, I provide first evidence on the impact of temporary migration on the emigrants themselves and on their sending households in Indonesia. I examine the income gains for emigrants, the determinants and nature of their remittances, and the impact of these remittances on household welfare, particularly expenditure and assets.

Such evidence is needed because the effect of emigration on income levels of migrant-sending households is unclear. First, it depends on whether remittances are large enough to offset possible reductions in local earnings and other contributions to household production that the emigrant would have made if they stayed home. Second, the evidence base is especially weak for lower-skilled migrants because of incomplete and unreliable data, due to the high proportion who are undocumented or irregular migrants (Asis & Piper, 2008).

²⁹ Among the many objectives of temporary migration programs are alleviating labour shortages in the host country, reduction of irregular immigration, promotion of special post-colonial ties and training of immigrants (Ruhs, 2006).

The aim of this chapter is to provide a comprehensive analysis, using both primary and secondary data to understand the impacts of emigration to Malaysia (and subsequent remittances) on the migrants and their families in Indonesia. I use a specially designed survey of Indonesian female immigrants in Malaysia that was conducted by the author in 2008. I then combined information from this survey with data from the Indonesia Family Life Survey (IFLS) to estimate the income gains for these migrant workers, determinants of remittances, purposes of remittances and planned use of repatriated income.

The results suggest that lower-skilled female migrants may gain US\$80 to US\$130 per month compared to their existing or potential earning had they stayed in Indonesia. I also examine the determinants of remittances and planned future use of their earnings to understand whether transitory income from temporary migrants generates a permanent effect on sending households. Remittances depend more on duration and earnings in Malaysia than on household characteristics in Indonesia. Similarly, the intended purposes of remittances reflect migrants' characteristics; unmarried females are more likely to remit to purchase fixed assets while married migrants remit for their children's education.

I also use the IFLS to understand the impact of emigration and remittances on household expenditure patterns. Analysis of these panel data suggests that emigration of females does not significantly increase household daily expenditure on food, non-food or education expenses but does have a significant impact on household fixed assets. This evidence may contradict existing literature that income from lower-skilled temporary migrants is usually used only for conspicuous consumption rather than for long term investment (Pessar, 2005).

Moreover, the emigration and remittances of females appear to have more positive impacts on Indonesian households than does the emigration of males.

These findings should be of broad interest, given the lack of literature focused specifically on the impact of lower-skilled female migration on sending households, in either Indonesia or anywhere. These findings are also relevant for governments of Indonesia and Malaysia since there are at least 1.9 million lower-skilled Indonesian workers in Malaysia and nearly half of them are females (Ministry of Finance, 2007). Moreover for the last few years, Indonesian female migrants have been complaining about low wages and poor working conditions in Malaysia (Chin, 2005). Nevertheless, there has not been any systematic study of their economic impacts on either the host or sending country.

The structure of this chapter is as follows: The next section provides a brief review of relevant literature. Section 5.3 describes the surveys used. The main results for impacts on the Indonesian emigrants and the effect of their migration and remittances on their own households in Indonesia are reported in Section 5.4. The final section concludes.

5.2 Previous Literature

One of the most direct impacts of migration is remittances. According to the World Bank, remittances that flow through official channels to developing countries reached a recorded high of \$328 billion in 2008 (Ratha, Mohapatra, & Xu, 2008). Remittances to Indonesia are worth \$6 billion in 2007 (Ratha & Yu, 2008). Remittances have been long viewed as a stable source of external finance and it is assumed that they help to alleviate poverty and assist in micro and macro development in the sending countries (Acosta, Calderón, Fajnzylber, & Lopez,

2008; Adams & Page, 2005; De Haas, 2006). For example in Sub-Saharan Africa countries, Gupta, Pattillo, & Wagh (2009) find remittances have a direct impact on poverty and financial development, while Adams & Page (2005) estimate that a 10 percent increase in remittances will lead to a 3.5 percent decline in poverty.

However, previous studies have not come to consistent conclusions on the micro-level impacts of emigration and remittances. While some studies find remittances to positively impact not only sending households but also non-migrant households (Yang & Martinez, 2006), others find increased income inequality and reduced non-migrant labour force participation (Barham & Boucher, 1998; Rodriguez & Tiongson, 2001; Taylor, 1999). The inconsistent estimates of remittance impacts may reflect modelling decision about whether to treat them as endogenous (due to self selection into migration) or exogenous (McKenzie, Gibson, & Stillman, 2007). It also depends on how remittances are used, the size of the out-migrant population and the initial income distribution (Osili, 2007). Finally, the individual characteristics of emigrants may be important for determining remittance behaviour. In summary, existing studies show that the impact of remittances and migration differs according to migrants' characteristics, remittance behaviour and remittance usage and also differs from country to country depending on political and economic policies in sending and receiving countries (Catrinescu, Leon-Ledesma, Piracha, & Quillin, 2009).

Therefore, it is likely that the impact of remittances by lower-skilled female temporary migrants will be different from the impact of remittances by migrants in general. Some researchers argue that temporary migrants are more likely to remit compared to permanent migrants as they are more likely to have children or a spouse in their home country (Dustmann & Mestres, 2009) and they are less

likely to settle in the host country (Adams, 2009). On the other hand, since these migrants are less educated they may remit less because they earn less than more educated migrants (Bollard, McKenzie, Morten, & Rapoport, 2009). Since females often earn less than males, remittances may be even less likely in the current case, although there is limited literature on whether female migrants have different purposes for remitting and remit more or less than men (Guzmán, Morrison, & Sjöblom, 2008; Kanaiaupuni, 2000).

Finally, long run impacts depend on the sustainability and usage of remittances. Although some studies show earnings from migrants to be invested in productive income generating activities (De Haas, 2005; Eki, 2002; Mendola, 2008), others claim that remittances and earnings from lower-skilled temporary migrants are usually spent on conspicuous consumption and non-productive investment (Pessar, 2005). Some studies also consider earnings from lower-skilled temporary migrants as a life support strategy rather than a life-changing strategy because the remittances provide immediate support to sending households for repaying debts and are used for daily consumption rather than long term investment (Jones & Pardthaisong, 1999). Given these conflicting claims it is important to empirically measure the impacts of remittances from lower-skilled female migrants.

5.3 Data

This study is based on a survey conducted by the first author (in early 2008 in Malaysia) and supplemented with data from the Indonesia Family Life Survey (IFLS) conducted by RAND Corporation. Details of these two datasets are provided here.

5.3.1 Author's Survey

The survey covered lower-skilled female Indonesian migrants working in the states of Selangor and Federal Territory Kuala Lumpur, Malaysia. These two selected states hold one-quarter of Malaysia's labour force and have the most female migrants in Malaysia. About 76 percent of all foreign workers in Malaysia are from Indonesia and half of these are women working as domestic maids or factory workers (Ministry of Finance, 2007).

The survey was completed by 194 respondents who answered questions about their family information in Indonesia, their work history, remittance pattern and planned future use of their earnings. About 87 percent of respondents worked as maids and 13 percent as factory workers. This sample balance reflects the fact that female migrant workers who work in factories are difficult to interview since they usually stay in workers quarters that are not accessible without employers' permission and some employers were reluctant to allow their workers to participate in the survey. However, despite the small size of the realised sample, it is the largest survey of lower-skilled female Indonesian migrants yet conducted.

Table 5-1 reports summary statistics for respondents' individual and household characteristics. The average age of respondents is 30 years old.³⁰ Two-fifths of the respondents are married, while just over half are never married children of the household head in Indonesia. About half of these female migrant workers obtained only primary education and just one percent have tertiary education. On average, they had previously worked in Indonesia for 2.2 years and

³⁰ The official age range for migrant maids in Malaysia is from 25 to 45 years old but some may falsify their age or are undocumented or irregular migrants. For factory workers they are only allowed to work for a maximum of five years in Malaysia.

have been working in Malaysia for 2.8 years. However, the distribution for working years is skewed to the right, with the median migrant having never previously worked in Indonesia and having only two years work experience in Malaysia.

In terms of their family background, the average household size for the respondents' family in Indonesia is 4.8 persons (including the migrant). On average, one person in their family is still in school, and the modal education level in the household is for at least one member to have attained upper secondary education. Finally, only half of these migrants' households owned farm land.

5.3.2 Indonesia Family Life Survey (IFLS)

I supplement the information from the survey of migrants with data from the latest three waves of the Indonesia Family Life Survey (1997, 2000 and 2007). The IFLS is a longitudinal survey which covers over 30,000 individuals originally living (in 1993) in 13 of 27 Indonesia's provinces (that held 83 percent of the population). The survey covers a range of household and individual information about migration, work, education etc.³¹

The IFLS is used here for three purposes. First to determine how representative is the author's survey; second, to provide a counterfactual income for migrants if they had never migrated, to use when calculating the income gains from migration; third, to estimate the impact of migration on household expenditure and assets. The IFLS is well suited for this third task. Since it is a panel survey, any unobservable factors correlated with both the decision to participate in emigration and with the outcomes of interest can be eliminated by

³¹ See Frankenberg & Karoly (1995); Frankenberg & Thomas, (2000); Strauss et al., (2004); Strauss, Witoelar, Sikoki, & Wattie, (2009).

estimating fixed effects models.³² In other words, the IFLS panel data provide a way to deal with self-selection bias.

Table 5-2 reports descriptive statistics for households and their heads in the latest wave of the IFLS (2007) to compare with the results from the authors' survey. On average, there are about four persons currently living in each household (not including the emigrant, so similar to the average of five persons including the migrant in the author's survey) where three are of labour force age and one is below 15 years old. In terms of internal and international migration, there are approximately four times as many internal migrants, and their prevalence is almost the same whether or not the household has an international migrant.

Four types of household expenditure from IFLS are considered; food, non-food (such as utilities), education, and other expenditure (such as electrical appliances and vehicles). These are reported in Table 5-2 in per capita annual terms except for education expenditure which is per student. Annual total household expenditure averages US\$677 per capita, with about one-half devoted to food.³³ On average, households with school children spent about US\$184 per school child per year. Households with overseas migrants have lower levels of average expenditure for all categories considered, and also lower levels of assets (mean assets of US\$7000 versus US\$8500 for households without migrants).

³² Fixed-effects estimation can eliminate time invariant unobservable factors but not time varying unobservable factors. However time variant unobservable factors such as time varying –region, varying policy changes are captured by using year dummy variable.

³³ Throughout the paper we use mid-rates for the Rupiah for January 2008 issued by the Central Bank of Indonesia of US\$1 = Rupiah9291 and RM1= Rupiah2871.

5.4 Results

5.4.1 Income Gains for Lower-skilled temporary Female Migrants

I use four types of differences in income to measure the income gains for these lower-skilled female temporary migrants. First, I use the difference between current income earned in Malaysia and the previous highest income earned in Indonesia to determine the income gains compared with staying in Indonesia. Since almost half of these migrants had either not worked before in Indonesia or previously were unpaid family workers, the income gains calculated this way also reflect participation choices. So as an alternative I also use their self assessed estimate of the income they would have earned had they stayed and worked in Indonesia to measure the income gains from migration.

However, only about 80 percent of respondents reported a potential income so I use a third procedure to generate a counterfactual income using information from IFLS 2007. Specifically I estimate an OLS regression of log income on a set of covariates such as age, education, marital status and work status that are common to both IFLS and our survey. The estimated coefficients from this regression are then applied to our survey to generate predicted income in Indonesia for each respondent. This procedure generates an imputed income for all respondents regardless of whether they had previously worked or reported a self-assessed potential income. To allow for extra information that the survey respondent has, as a fourth variant I replace the imputed income from the regression with zero for all respondents who reported zero self-assessed potential income.

In summary, to determine the income gains for lower-skilled female migrants, I generated four types of differences in income as follows:

- I. Model 1 based on current income in Malaysia minus previous highest earned income in Indonesia.
- II. Model 2 based on current income in Malaysia minus self-assessed potential income earned in Indonesia.
- III. Model 3 based on current income in Malaysia minus imputed income calculated from IFLS 2007.
- IV. Model 4 based on current income in Malaysia minus IFLS imputed income but replacing imputed income for all respondents without positive self assessed potential income earned in Indonesia with zero.

Subsequently, to ensure robustness in determining the income gains for lower-skilled female migrants, I repeat the analyses but restrict to respondents (n= 80) who had previously earned income in Indonesia.

These four types of difference in income are then used as the dependent variable in the following equation.

$$(5.1)$$

where Y_i denotes difference in income, X_i are covariates such as work experience, education level, marital status and type of job, and ϵ_i is an error term. The parameter of interest is α which denotes the income gains from working in Malaysia, controlling for various variables.

Means and medians of the four types of monthly income are reported in Table 5-3. The top panel refers to all respondents and the bottom panel just to respondents with previous income in Indonesia. The average monthly income earned in Malaysia is about US\$130 to US\$142 which is at about six times more than the actual previous monthly income earned in Indonesia. The self assessed potential monthly income earned in Indonesia is about US\$46 to US\$56, although this seems optimistic since the imputed income obtained using IFLS is only about US\$27 to US\$32. The imputed monthly income is even lower, at between US\$22 to US\$27 when respondents without positive self-assessed income in Indonesia have imputed income replaced by zero. Restricting attention to respondents with

previous earnings in Indonesia, the imputed income and self-assessed counterfactual incomes are largely the same, while the average previous income is higher (since zeros are excluded). Moreover, those with previous work experience earn slightly less than the average in Malaysia, so the estimated income gains will be even lower for this sub-sample.

Table 5-4 reports the calculated monthly income gains for all respondents (full sample) and for respondents with previous income in Indonesia (restricted sample) using four types of differences in income (Model 1 to Model 4). Overall, the results show that income gains for lower-skilled temporary female migrants are between US\$84 to US\$129 per month. The introduction of controls for type of job, work experience, education and marital status does not much alter the estimates. The log estimates show the Malaysian earnings to be about 3.6 to 4.7 times higher than earnings had they remained to work in Indonesia. The estimated gains are lower when the sample is limited to migrants with previous income in Indonesia, at about US\$42 to US\$105 per month or 3.2 to 4.6 times more than their home country earnings. In terms of types of counterfactual income used, results are similar when based on actual previous income or the income imputed from the IFLS regressions. But since respondents appear to report higher self-assessed potential income in Indonesia than the actual income, the estimated income gains are smallest in Model 2 which uses that counterfactual.

In summary, lower-skilled female migrants earn an additional US\$80 to US\$130 per month compared to if they had stayed in Indonesia. Those migrants without any previous income in Indonesia have the highest income gains from migration.

5.4.2 Determinants of Remittances

One use of the extra earnings from working in Malaysia rather than in Indonesia is to send remittances. To study the determinants of who remits, and for what purposes, probit regression is used:

$$(5.2)$$

where Y_i equals one if the survey respondent sent remittances (or remits for a particular purpose) and zero otherwise. Explanatory variables in X_i include not only the respondents' own characteristics but also those of their household in Indonesia. Amongst these are the number of household members of different age groups, and a household wealth index.³⁴

According to the descriptive statistics in Table 5-5, only one-quarter of the migrants have never remitted. One-half of them remit regularly, at varying frequencies from monthly to semi-annually, while the remainder only remit whenever necessary. Slightly more than half of the respondents indicated that the remittances are for household daily expenditures, which is consistent with previous findings (Orozco, Lowell, & Schneider, 2006; Pessar, 2005). The other common purposes for remittances are education expenses (34 percent), repaying debts (13 percent) and housing (10 percent). The frequency of debt repayment reflects needs of the emigrant rather than their household in Indonesia, since up-front migration costs are usually paid by wages advanced from their Malaysian employer and repayment is via monthly deduction from their current wages. The

³⁴ Wealth is used instead of income since it is more observable and is better known by the emigrant (many of whom were not household heads or spouses of the head). The wealth index is the first principal component from the following dummy variables: ownership of a mobile phone, fixed line phone, camera, car, television, video recorder, DVD player, computer, electric oven, fan, washing machine, sewing machine and generator. Filmer and Pritchett (2001) show that such an index gives a good proxy for income or consumption.

priority placed on accumulating fixed assets is also apparent from responses to questions about the future uses of repatriated earnings; one-half of the migrants indicated they will invest their earnings in fixed assets like purchasing land, houses or other buildings. Notably, a high proportion of the respondents were uncertain about whether, or when, they would return to live permanently in Indonesia.

The probit analysis of the data on who remits shows that only two variables, the earnings in Malaysia and the duration working there have a significant effect on whether migrants remit or not (Column 1, Table 5-6). Being more likely to remit if they have stayed longer likely reflects the fact that temporary migrants have to repay their migration cost, which typically takes the first four to eight months of their salary.

When the data on who remits are disaggregated according to the purpose of the remittances (daily expenditure, education, debt repayment, and purchase of fixed assets), different characteristics emerge as relevant determinants. Migrants working as maids are more likely to remit for daily expenses than are those who work in factories, perhaps because those working as maids come from poorer families who depend on their income to survive. Migrants who are married and with school-age children in their household in Indonesia, are more likely to remit for the purpose of paying education expenses than are other migrants. Conversely, unmarried, higher earning migrants working as maids and coming from households who own farmland in Indonesia are the most likely to remit for the purpose of investment in fixed assets.

In conclusion, remittances depend first and foremost on the duration of migration and the wages earned in the host country. Only migrants with children are more likely to remit for education expenses but unmarried migrants are more likely to remit for investment.

5.4.3 Planned Use of Repatriated Income

In addition to remittances the migrants also plan to repatriate income when they eventually return to Indonesia. Table 5-7 contains the results of probit models of the determinants of four planned uses of repatriated income: investing in fixed assets; business investment (starting new business or invest in farming); saving; and education expenses. Most of the planned uses are not explained by the available variables (and so reflect idiosyncratic factors), with the exception of contributing to educational expenses. For this planned use of repatriated income, married migrants who earn less in Malaysia and whose family owns farmland in Indonesia are the most likely to invest their earnings in education of their children, perhaps in the expectation that schooling will help them escape from poverty and the hardship of farming. In contrast, the unmarried migrants are more likely to invest their earning in fixed assets. In summary, most of the temporary lower-skilled female Indonesian workers in Malaysia do not know or have specific plan on how they are going to use their earning when they return home although many came for economical reasons such to support their families back home.

5.4.4 Impact of Migration on Household Expenditure and Assets from the IFLS

The above results suggest that remittances and repatriated income of unmarried Indonesian females who are temporarily working in Malaysia in lower-skilled jobs are directed mainly towards the accumulation of fixed assets in Indonesia rather than to supporting daily expenditures.

In this sub section, I use three rounds of IFLS data set to see whether this pattern of impacts on expenditure and assets holds more generally. I use IFLS not only because it is almost nationally representative but also because it is a panel survey, which can therefore help to overcome the fundamental problem of self-selection bias that would affect the interpretation of cross-sectional results on the impact of emigration.

Consider the following equation often used to estimate the impact of migration:

$$(5.3)$$

where Y_i is expenditure per capita of remaining household members (or specific components of expenditure) and γ is the parameter of interest, showing how much higher is expenditure when the household has a migrant working overseas, controlling for X_i set of covariates such as household size and education levels, and ε_i is a random error. The problem is that since households self select into migration, unobserved attributes of the households like motivation and ability are likely to be correlated with both the migration decision and with the outcomes of interest, violating the conditions for OLS regression to be unbiased:

With panel data this self selection problem is overcome by using fixed-effects (FE) regression.³⁵ Specifically, the unobservable factors are treated as time

³⁵ Fixed effects doesn't totally overcome the potential endogeneity problem faced in IFLS regression but it does overcome unobserved attributes of the households like motivation and ability which are correlated with both the migration decision and the outcomes interest.

invariant components of the error (Cameron & Trivedi, 2009, p. 231) and are removed by adding household fixed effects:

$$(5.4)$$

The inclusion of the fixed effects, μ_i accounts for unobservable, factors like motivation and ability, allowing the parameter of interest, γ to be estimated without bias.³⁶ The X_{it} also includes year dummies that capture all time variant information such as changes in price levels and other macro fluctuations that may change overtime and across region. In addition, the control variables also allow for internal migrants, who move to other parts of Indonesia to work, since they may also be sending remittances that affect household expenditures and assets (Income variable is not included due to data limitation).³⁷

Since panel data are used, the dependent variable is time-specific, capturing either annual expenditure per capita (per student in the case of education expenditure) or non-business assets of household i in year t . Also, the dummy for whether the household ever had an international economic emigrant at time t , $Migrant_{it}$ is disaggregated into separate dummy variables for male and female emigrants. This split follows from the fact that earnings abroad, the rates of

³⁶ However, due to limitation of IFLS data sets, we are not able to perform some econometric techniques such as Heckman's two-stage, econometric estimation, and various studies on estimating migrant earnings using self-selection bias correction to correct possible self-selection problem. Nevertheless, we also tried to implement instrumental variables regression to solve the possible endogeneity problem. We used distance from the dwelling to the nearest international airport but this proved to be a weak instrument.

³⁷ According to New Economic Labour Migration theory, migration is not the decision of an individual but a collective decision by each migrant and other related people such as their family members to minimize the risks of market failures in the absence of insurance and public safety nets in developing countries (Stark & Bloom, 1985). The collective decision by the family members is even more apparent when the migration is temporary and involves female-family members. Therefore in this thesis, unobservable individual characteristics are less important compared to household unobservable characteristics.

remitting, and the opportunity cost of not being in the local economy may all differ by gender.

The results of the fixed effects models for total expenditure, various expenditure components, and fixed assets for IFLS households are reported in Table 5-8. It appears that households who had ever had a female international emigrant (by the time of that wave of the survey) had significantly higher value of assets, by almost one quarter.³⁸ However, there is no difference in expenditure totals or expenditure components of households with female emigrants compared with non-migrant households. This is consistent with the results from our survey in Tables 5-6 and 5-7 that remittances and repatriated income from the temporary migrants in Malaysia are mainly directed towards asset accumulation rather than meeting current expenditure needs. This pattern is also consistent with existing research which shows that money earned from overseas is usually kept and invested in fixed assets such as land or dwellings or invested in businesses (Eki, 2002).

Interestingly, the results in Table 5-8 also show that whether the household had ever had a male work as an emigrant is associated with significantly lower per capita total household expenditures, lower non-food expenditures and lower ‘other’ expenditures. It appears that the opportunity cost of absent males outweighs any additional income provided from their remittances and repatriated earnings, in contrast to the situation for female emigrants. The final result of note from Table 5-8 is that whether the household had an internal migrant elsewhere in Indonesia had no significant effect on either expenditures or assets.

³⁸ Since the dependent variable is in logarithms, the correct interpretation is: $(e^{0.21} - 1) = 0.233$.

In a further analysis the IFLS sample was divided into urban and rural sub-samples, with different patterns apparent in the two sectors.³⁹ For urban households, having a female emigrant has an even larger effect on assets, raising their value by almost 40 percent compared to households without emigrants (Table 5-9). In contrast to the pooled urban and rural results, and also in contrast to results from the authors' survey, households with female emigrants also have higher per capita total, food and non-food expenditures – by around 20 percent. Also in contrast to the pooled results, male emigrants are associated with (weakly significantly) higher assets, while non-food expenditures are significantly lower – as they were in the pooled results.

The impacts of sending emigrants out from the household are weaker in rural areas. The positive impact of female emigrants on asset accumulation is only one-half as large as for the urban sector while there is also a weakly significant decline in educational spending for rural households with a female emigrant (Table 5-10). Rural households with male emigrants have approximately ten percent lower per capita total expenditure (albeit weakly significantly) and lower spending on 'other' consumption compared with households that do not participate in migration.

In summary, the analyses using IFLS data confirms the finding from the authors' survey that the main impact of international emigration (and subsequent remittances) of females from Indonesia is on asset accumulation, especially in the urban sector. For the rural sector, and for both urban and rural sectors pooled, there are no significant positive effects on total expenditures and expenditure

³⁹ The sub-sample analysis was done because many temporary lower-skilled migrant workers in Malaysia claims that they come from rural areas in Indonesia.

components. But in the urban sector, there are positive impacts of female emigration and remittances on expenditures that are in addition to the positive impacts on assets. In contrast to the largely positive impacts of female emigration, the analysis of IFLS data suggests that male emigration may have negative impacts on the welfare of the left behind members of the sending household in Indonesia.

5.5 Discussion and Conclusion

The temporary migration of young women from Indonesia to work as caregivers, maids and in other unskilled occupation in Malaysia has been a growing phenomenon over the last three decades. But the effect of this temporary emigration on the income of the emigrant and on the welfare of the migrant-sending household has never previously been estimated. In this study, the first such estimates are provided. One of the key findings is that there appear to be large income gains for lower-skilled female migrants from Indonesia working in Malaysia, of an additional US\$80 to US\$130 per month compared to earnings had they stayed in Indonesia. The largest gains are for workers who previously did not have paid work in Indonesia since neither accumulated years working in Malaysia nor previous work experience appear to alter the income earned in the host country.

Results from both our survey and from the analysis of IFLS data confirmed that the main impact of migration and remittances for female emigrants from Indonesia are on asset accumulation rather than consumption.⁴⁰ However, it was

⁴⁰ Due to the data limitation in IFLS and unavailable suitable Instrumental variable, the findings from IFLS may be subject to potential biases. Nevertheless, the bias is minimized as the migration

also notable that the results from our survey suggest that these lower-skilled Indonesian female migrants working in Malaysia are not sure on how they are going to use or invest their repatriated income when they eventually return home. Therefore, a useful intervention may be to ensure there is sufficient information about investment opportunities open to these female emigrants upon their return to Indonesia so that they can generate a lasting benefit from their temporary overseas earnings.

Finally, the analysis of the IFLS data suggested that there may be considerable gender differences in the impact that emigration and remittances have on households in Indonesia. It was difficult to see overall positive effects of the emigration of males, in terms of the expenditures and assets of left behind members in the household. In contrast, there appeared to be more benefits from female emigration, especially amongst urban households. Since the focus of the current paper has been on female migrants, it is not possible to estimate what benefit the male emigrants themselves gain from leaving Indonesia to balance against the apparent costs imposed on their left behind family. That remains a topic for future research.

of lower-skilled female migrants from Indonesia are mainly a collective decision by each migrant and their families, the missing of observable and unobservable characteristics of individual is less important compared to household unobservable characteristics.

Table 5-1: Lower-Skilled Female Migrants Individual and Household Characteristics

	<i>Percentage /mean</i>	<i>n</i>
<i>Individual Characteristics</i>		
<i>Age</i>	30.2 years	194
<i>Marital Status</i>		
Single	43.0 %	83
Currently Married	40.0 %	78
Separated/Widow/Widower/Divorced	17.0 %	33
<i>Relationship with Head of Household</i>		
Head	12.4 %	24
Wife	29.4 %	57
Children	51.5 %	100
Parents	0.5 %	1
Siblings	4.1 %	8
Other relative	2.1 %	4
<i>Education Level</i>		
Primary and below	47.0 %	91
Lower Secondary	34.0 %	66
Upper Secondary	18.0 %	35
University	1.0 %	2
<i>Work History</i>		
Years working in Indonesia	2.2 years	(3.9)
Years working in overseas	3.3 years	(3.0)
Years working in Malaysia	2.8 years	(2.7)
<i>Type of job in Malaysia</i>		
Maid	87.1 %	169
Factory worker	12.9 %	25
<i>Family Characteristics#</i>		
Household Size	4.8 persons	(1.7)
Number of household member less than 15 years old	0.9 person	(1.0)
Number of household member more than 60 year old	0.1 person	(0.4)
Number of household member aged 15 to 60	3.8 persons	(1.7)
Number of household still schooling	1.0 persons	(1.1)
<i>Highest Education Obtained by Household member</i>		
Primary and below	19.1 %	37
Lower Secondary	34.0 %	66
Upper Secondary	39.7 %	77
University	7.2 %	14
<i>Household Economy</i>		
Owning Farmland	52.0 %	101
Total Observations		194

Notes:

Standard Deviation in parentheses

These households size figures are inclusive of respondent themselves.

Table 5-2: Descriptive Statistics for Household and Head of Household for Year 2007 (IFLS4)

	<i>Household with Emigrant</i>	<i>Household without Emigrant</i>	<i>Overall</i>
<i>Household Characteristics in mean (only include members who are still in the household)</i>			
Household Size	4.0	4.1	4.1
Number of household members below 15 years old	1.1	1.0	1.0
Number of household members 15 to 60 years old	2.4	2.6	2.6
Number of household members above 60 years old	0.4	0.5	0.5
Number of household working in overseas	1.3	0.0	0.1
Number of household members working within Indonesia*	0.4	0.5	0.4
<i>Household Expenditure in mean (Yearly in US\$ at US\$1 = Rupiah 9291)</i>			
Total Household Expenditure per capita	531	687	677
Total Household Food Expenditure per capita	319	359	356
Total Household Non Food per capita	115	191	186
Total Household Other Expenditure per capita	65	101	99
Total Education Expenditure per student	142	188	184
<i>Household Assets in mean (In US\$ at US\$1 = Rupiah 9291)</i>			
Total Assets	6996	8508	8397
<i>Household location in Percentage</i>			
Urban	65%	50%	49 %
Rural	35%	50%	51%
<i>Household Head Characteristics</i>			
Mean Age of household head	54.5	53.0	53.1
<i>Household Head Highest Education Obtained in Percentage</i>			
Basic School and below (0-9 years of schooling)	89%	76%	77%
Middle School (10 to 12 years of schooling)	8%	17%	16%
Higher Education (above 12 years of schooling)	3%	7%	7%
Total Observations	389	5587	5976

* Refers to internal migrants.

Table 5-3: Various monthly incomes in mean and median (in US Dollar)

	Mean	Median
Actual level of income for all respondents (n=194)		
Monthly income earned in Malaysia	142	130
Previous highest monthly income earned in Indonesia	25	0
Self assessed potential monthly income earned in Indonesia	56	46
Monthly income imputed using IFLS 2007	32	27
Monthly income imputed using IFLS 2007 but replace imputed income for all respondents without positive self assessed potential income earned in Indonesia with zero.	27	22
Actual level of income for respondents with previous paid income in Indonesia (n=80)		
Monthly income earned in Malaysia	137	124
Previous highest monthly income earned in Indonesia	59	48
Self assessed potential monthly income earned	63	54
Monthly income imputed from IFLS 2007	35	31
Monthly income imputed using IFLS 2007 but replace imputed income for all respondents without positive self assessed potential income earned in Indonesia with zero.	33	22

Note:

The amount in US dollar is calculated at US\$1 = Rupiah 9,291(based on average foreign exchange middle rate against rupiah for January 2008 issued by Central Bank of Indonesia).

Table 5-4: Gains in Monthly income For Lower-Skilled Female Migrants

All Respondents				
Regression-based estimate:	Model 1	Model 2	Model 3	Model 4
<i>Change in the level of monthly income (US Dollar)</i>				
Without covariates	118 (4.6)	86 (6.0)	110 (3.3)	114 (3.4)
Controlling for work experience in Indonesia and overseas	102 (8.81)	84 (12.72)	90 (6.70)	91 (6.82)
Controlling for type of job, education, marital status, work experience in Indonesia and overseas	129 (15.62)	86 (22.81)	127 (11.48)	117 (11.97)
<i>Change in the log monthly income</i>				
Without covariates	4.7 (0.04)	4.4 (0.06)	4.6 (0.03)	4.7 (0.03)
Controlling for work experience in Indonesia and overseas	4.56 (0.076)	4.18 (0.119)	4.42 (0.054)	4.44 (0.055)
Controlling for type of job, education, marital status, work experience in Indonesia and overseas	4.51 (0.136)	3.60 (0.201)	4.64 (0.090)	4.57 (0.093)
Only Respondents with previous earned income				
Regression-based estimate:	Model 1	Model 2	Model 3	Model 4
<i>Change in the level of monthly income (US Dollar)</i>				
Without covariates	77 (7.3)	73 (8.2)	101 (4.4)	103 (4.6)
Controlling for work experience in Indonesia and overseas	42 (19.55)	62 (22.90)	80 (11.62)	83 (12.33)
Controlling for type of job, education, marital status, work experience in Indonesia and overseas	42 (34)	42 (39.58)	109 (19.49)	105 (21.03)
<i>Change in the log monthly income</i>				
Without covariates	4.3 (0.08)	4.3 (0.08)	4.6 (0.04)	4.6 (0.04)
Controlling for work experience in Indonesia and overseas	3.86 (0.201)	3.79 (0.220)	4.30 (0.093)	4.34 (0.096)
Controlling for type of job, education, marital status, work experience in Indonesia and overseas	3.18 (0.337)	3.28 (0.360)	4.49 (0.145)	4.47 (0.153)

Notes:

- i) Model 1 based on current monthly income in Malaysia less previous highest earned income in Indonesia. Model 2 based on monthly current income in Malaysia less self-assessed potential income earned in Indonesia. Model 3 based on current monthly income in Malaysia less imputed income obtained using IFLS 2007. Model 4 based on monthly income imputed using IFLS 2007 but replace imputed income for all respondents without positive self assessed potential income earned in Indonesia with zero.
- ii) Standard Error in parentheses.
- iii) Type of job refers is a binary variable with one for maids and zero for factory workers; Work experience in Indonesia and overseas is measured in years in absolute and square; marital status is a binary variable with one as unmarried and zero otherwise; education is a binary variable with one as having primary education and zero otherwise.
- iv) The amount is measured in US dollar and calculated at US\$1 = Rupiah 9,291 (based on average foreign exchange middle rate against rupiah for January 2008 issued by Central Bank of Indonesia).

Table 5-5 : Lower-Skilled Female Migrants Remittances & Migration Behaviour

	<i>Percentage</i>	<i>n</i>
<i>Frequency of Remittances</i>		
Monthly	15.0	29
Bi-monthly	7.7	15
Every 3 months	9.8	19
Every 4 to 6 months	8.8	17
Every 7 to 12 months	7.7	15
As necessary	26.3	51
Never	24.7	48
<i>Purpose of remittances</i>		
Household expenditure	54.1	105
Education Expenditure	34.0	66
Repayment of Debts	12.9	25
For building/renovating house	9.8	19
Others	9.3	18
<i>Sending goods back home</i>		
Ever sent or brought goods home	20.1	39
<i>Type of goods</i>		
Electrical	3.6	7
Clothing	14.4	28
Jewellery	1.0	2
<i>Future use of repatriated earnings</i>		
Accumulating Fixed Assets – house/land/building	50.5	98
For investment in business or farming	23.2	45
For saving	38.7	75
For children or own education	30.4	59
<i>Frequency of returning to home country</i>		
Once	26.3	51
Twice	10.8	21
More than 3 times	12.4	24
Never	50.5	98
<i>Main activities listed when asked hypothetical question, what would you be doing if you were not working in Malaysia</i>		
Studying	4.1 %	8
Working	82.5 %	160
Neither Studying nor working	13.4 %	26
<i>Future Plan upon completion of working contract in Malaysia</i>		
Continue working in Malaysia	48.0 %	93
To work in other country	4.0 %	8
To stay permanently in home country	18.0 %	35
Don't know	30.0 %	58
Total Observations		194

Table 5-6: Determinant of Remittances and Usage of Remittances among Lower-Skilled Female Migrants in Malaysia – Marginal effects from Probit Estimation

	Ever Remit	For Household Expenditure #	For Education Expenditure	For Repayment of Debts	For Purchase of Fixed Assets
Marital Status – 1=Single, 0 = Ever married	-0.043 (0.062)	0.006 (0.083)	-0.234 (0.074)**	-0.018 (0.051)	0.102 (0.047)*
Education – 1=None to Primary School, 0=Secondary and above	0.035 (0.059)	0.021 (0.080)	0.059 (0.075)	-0.004 (0.049)	-0.004 (0.039)
Income in Malaysia (USD/1000)	2.116 (1.029)*	2.296 (0.994)*	0.341 (0.933)	-0.957 (0.818)	0.911 (0.430)*
Type of Job – 1=Maid, 0=Factory worker	-0.023 (0.088)	0.302 (0.115)**	-0.016 (0.125)	0.073 (0.061)	0.058 (0.034)+
Years working in Malaysia	0.072 (0.017)**	0.027 (0.016)+	0.014 (0.013)	-0.003 (0.010)	-0.000 (0.008)
Number of household member in Indonesia below 15 years old	-0.021 (0.028)	-0.007 (0.039)	0.097 (0.035)**	0.021 (0.022)	0.026 (0.017)
Number of household member in Indonesia above 60 years old	-0.027 (0.078)	-0.232 (0.111)*	-0.049 (0.104)	0.081 (0.060)	-0.005 (0.050)
Number of household members in Indonesia in labour force	-0.010 (0.020)	0.007 (0.027)	0.035 (0.026)	-0.011 (0.017)	-0.012 (0.013)
Own farmland in Indonesia	-0.032 (0.058)	-0.053 (0.078)	-0.047 (0.074)	0.014 (0.047)	0.079 (0.039)*
Wealth Index for household in Indonesia@	0.014 (0.017)	0.018 (0.023)	0.027 (0.021)	0.014 (0.013)	0.005 (0.010)
Observations	194	194	194	194	194
LR Chi Square	36.72	23.16	28.84	8.16	18.21
Probability > Chi Square	0.0001	0.0102	0.0013	0.6131	0.0515
Pseudo R Square	0.1692	0.0865	0.1159	0.0547	0.1464

Notes:

Standard errors in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%.

#Household expenditure includes food, non-food and other household daily expenditure.

@Based on the first component from Principal Component Analysis from 13 variables as described in footnote eighteen.

Table 5-7: Determinants of Planned Use of Repatriated Income among Lower-Skilled Female Migrants in Malaysia – Marginal effects from Probit Estimation

	Fixed Assets	Investment	Saving	Education
Marital Status – 1=Single, 0 = Ever married	0.163 (0.080)*	0.031 (0.069)	0.086 (0.079)	-0.304 (0.068)**
Education – 1=None to Primary School, 0=Secondary and above	0.122 (0.077)	0.014 (0.065)	0.034 (0.075)	0.049 (0.071)
Income in Malaysia (USD/1000)	0.761 (0.963)	0.547 (0.754)	0.033 (0.112)	-2.558 (1.009)*
Type of Job – 1=Maid, 0=Factory worker	0.133 (0.116)	-0.088 (0.109)	0.033 (0.112)	-0.093 (0.131)
Years working in Malaysia	0.011 (0.015)	0.005 (0.012)	-0.012 (0.015)	-0.007 (0.014)
Number of household member in Indonesia below 15 years old	0.006 (0.037)	0.014 (0.031)	0.016 (0.036)	0.045 (0.034)
Number of household member in Indonesia above 60 years old	-0.037 (0.108)	0.110 (0.084)	-0.156 (0.111)	0.083 (0.100)
Number of household members in Indonesia in labour force	0.003 (0.026)	0.009 (0.021)	0.022 (0.025)	0.008 (0.024)
Own farmland in Indonesia	0.032 (0.077)	0.044 (0.063)	0.011 (0.075)	0.139 (0.068)*
Wealth Index for household in Indonesia@	0.017 (0.023)	-0.000 (0.018)	0.007 (0.021)	0.007 (0.020)
Observations	194	194	194	194
LR Chi Square	8.02	6.02	5.83	31.21
Probability > Chi Square	0.6272	0.8133	0.8292	0.0005
Pseudo R Square	0.0298	0.0287	0.0225	0.1309

Notes:

Standard errors in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%.

#Household expenditure includes food, non-food and other household daily expenditure.

@Based on the first component from Principal Component Analysis from 13 variables as described in footnote eighteen.

Table 5-8 : The Determinants of Yearly Household Expenditure (in Log) & Total Non-Business Assets (in Log) using Fixed Effect Model based on Indonesia Family Life Survey Data (1997, 2000 & 2007)

	Total Expenditure per capita in Log	Total Food Expenditure Per Capita in Log	Total Non-Food Expenditure Per Capita in Log	Total Education Expenditure Per student in Log	Total Other Expenditure Per Capita in Log @	Total Assets in Log ++
Household ever had MALE member working overseas	-0.114 (0.039)**	-0.052 (0.039)	-0.136 (0.059)*	0.060 (0.081)	-0.232 (0.081)**	0.033 (0.080)
Household ever had FEMALE member working overseas	0.021 (0.036)	0.031 (0.035)	0.051 (0.058)	-0.121 (0.080)	-0.001 (0.076)	0.210 (0.076)**
Household ever had member working within Indonesia (Intra migrant)	-0.007 (0.014)	-0.007 (0.014)	-0.021 (0.023)	-0.045 (0.033)	0.045 (0.028)	0.043 (0.034)
Current household size	-0.111 (0.004)**	-0.119 (0.004)**	-0.104 (0.006)**	-0.004 (0.010)	-0.085 (0.007)**	0.086 (0.009)**
Education level for household head – Middle Education (10 to 12 years) #	0.038 (0.023)	-0.004 (0.023)	0.094 (0.036)**	-0.122 (0.055)*	0.042 (0.048)	0.024 (0.046)
Education level household head – Higher Education (more than 12 years) #	0.145 (0.039)**	0.074 (0.043)+	0.196 (0.058)**	-0.013 (0.092)	0.181 (0.080)*	-0.013 (0.066)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	14.184 (0.020)**	13.733 (0.021)**	12.095 (0.032)**	11.880 (0.058)**	11.611 (0.037)**	15.164 (0.057)**
Observations	17928	17928	17915	10745	17870	12750
Number of households	5976	5976	5976	4948	5976	4256
R-squared: within	0.76	0.72	0.63	0.64	0.40	0.47
R-squared: between	0.07	0.09	0.05	0.11	0.04	0.02
R-squared: overall	0.50	0.52	0.37	0.35	0.23	0.20
F-Statistics	4107.61	3579.39	2322.15	1132.97	930.83	799.13
Probability > F	0.000	0.000	0.000	0.000	0.000	0.000

Note:

Robust standard errors in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%. The standard errors are clustered by household.

- The controlled group for education level for household head is those with basic education and below (less than 9 years of education).

@ Other expenditure refers to purchase of durable assets such as electrical appliances or vehicles.

++ Refers to fixed assets such as land, houses or buildings

Table 5-9: The Determinants of Yearly Household Expenditure (in Log) & Total Non-Business Assets (in Log) using Fixed Effect Model based on Indonesia Family Life Survey Data (1997, 2000 & 2007) for Urban Area Only

	Total Expenditure per capita in Log	Total Food Expenditure Per Capita in Log	Total Non-Food Expenditure Per Capita in Log	Total Education Expenditure Per student in Log	Total Other Expenditure Per Capita in Log @	Total Non-Business Assets in Log ++
Household ever had MALE member working overseas	-0.124 (0.082)	0.003 (0.077)	-0.251 (0.121)*	0.059 (0.158)	-0.204 (0.177)	0.236 (0.140)+
Household ever had FEMALE member working overseas	0.186 (0.063)**	0.188 (0.064)**	0.214 (0.101)*	0.093 (0.160)	0.247 (0.151)	0.332 (0.162)*
Household ever had member working within Indonesia (Intra migrant)	-0.008 (0.022)	-0.006 (0.023)	-0.040 (0.034)	-0.113 (0.052)*	0.069 (0.045)	0.009 (0.063)
Current household size	-0.105 (0.005)**	-0.113 (0.006)**	-0.099 (0.008)**	-0.020 (0.013)	-0.082 (0.010)**	0.058 (0.016)**
Education level for household head – Middle Education (10 to 12 years) #	0.016 (0.030)	-0.008 (0.031)	0.054 (0.044)	-0.174 (0.070)*	-0.007 (0.061)	0.049 (0.094)
Education level household head – Higher Education (more than 12 years) #	0.096 (0.048)*	0.019 (0.055)	0.125 (0.069)+	-0.104 (0.111)	0.184 (0.100)+	-0.003 (0.101)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	14.448 (0.029)**	13.892 (0.030)**	12.655 (0.045)**	12.487 (0.081)**	11.907 (0.055)**	15.692 (0.115)**
Observations	8114	8114	8111	5009	8097	5020
Number of households	3084	3084	3083	2448	3081	1953
R-squared: within	0.75	0.72	0.63	0.65	0.38	0.39
R-squared: between	0.21	0.26	0.12	0.12	0.10	0.06
R-squared: overall	0.48	0.51	0.36	0.34	0.22	0.15
F-Statistics	1657.45	1424.74	977.24	529.89	368.44	210.89
Probability > F	0.000	0.000	0.000	0.000	0.000	0.000

Note: Robust standard errors in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%. The standard errors are clustered by household.

- The controlled group for education level for household head is those with basic education and below (less than 9 years of education).

@ Other expenditure refers to purchase of durable assets such as electrical appliances or vehicles.

++ Refers to fixed assets such as land, houses or buildings

Table 5-10: The Determinants of Yearly Household Expenditure (in Log) & Total Non-Business Assets (in Log) using Fixed Effect Model based on Indonesia Family Life Survey Data (1997, 2000 & 2007) for Rural area Only

	Total Expenditure per capita in Log	Total Food Expenditure Per Capita in Log	Total Non-Food Expenditure Per Capita in Log	Total Education Expenditure Per student in Log	Total Other Expenditure Per Capita in Log @	Total Non-Business Assets in Log ++
Household ever had MALE member working overseas	-0.085 (0.046)+	-0.048 (0.047)	-0.073 (0.073)	0.136 (0.104)	-0.197 (0.094)*	-0.039 (0.093)
Household ever had FEMALE member working overseas	-0.060 (0.044)	-0.052 (0.043)	-0.003 (0.073)	-0.176 (0.098)+	-0.113 (0.089)	0.185 (0.093)*
Household ever had member working within Indonesia (Intra migrant)	-0.008 (0.019)	-0.002 (0.020)	-0.027 (0.032)	0.009 (0.046)	0.024 (0.038)	0.055 (0.040)
Current household size	-0.118 (0.006)**	-0.126 (0.006)**	-0.119 (0.010)**	0.011 (0.015)	-0.088 (0.011)**	0.095 (0.012)**
Education level for household head – Middle Education (10 to 12 years) #	0.092 (0.038)*	0.025 (0.039)	0.147 (0.061)*	-0.016 (0.095)	0.155 (0.087)+	0.021 (0.053)
Education level household head – Higher Education (more than 12 years) #	0.302 (0.077)**	0.268 (0.080)**	0.400 (0.116)**	0.231 (0.185)	0.266 (0.155)+	0.040 (0.096)
Household fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	13.977 (0.030)**	13.603 (0.031)**	11.689 (0.047)**	11.358 (0.087)**	11.358 (0.055)**	14.870 (0.065)**
Observations	9811	9811	9801	5733	9770	7727
Number of households	3548	3548	3548	2812	3546	2778
R-squared: within	0.76	0.73	0.34	0.63	0.40	0.52
R-squared: between	0.19	0.21	0.11	0.22	0.07	0.04
R-squared: overall	0.55	0.55	0.42	0.41	0.24	0.25
F-Statistics	2276.89	1978.29	1237.84	540.54	498.09	576.03
Probability > F	0.000	0.000	0.000	0.000	0.000	0.000

Note: Robust standard errors in parentheses: + significant at 10%; * significant at 5%; ** significant at 1%. The standard errors are clustered by household.

- The controlled group for education level for household head is those with basic education and below (less than 9 years of education).

@ Other expenditure refers to purchase of durable assets such as electrical appliances or vehicles.

++ Refers to fixed assets such as land, houses or buildings.

Appendix 5-1: Questionnaire for Lower-skilled Female Migrants

Front Cover

Code Number

FOREIGN DOMESTIC WORKERS IN MALAYSIA

Name of Respondent	:	
Address of Dwelling in home country	:	
(Please include province,kabupaten		
kecamatan)		

- Part A Household Roster
- Part B Household Work Status
- Part C Maid's Work History
- Part D DwellingFacilities and Durable Goods
- Part E Remittance Pattern and
- Part F Immigration Information

Interviewer _____

Supervisor _____

Data entry operator _____

Date completed

Date completed

Date completed

DAY	MONTH	YEAR

Interviewer Notes

A: HOUSEHOLD DEMOGRAPHICS

Person ID	Q.1 NAME What are the names of all the people who usually live in your household? Also list anyone who was living in this household and is now a seasonal worker in oversea. <i>Interviewer: Please write clearly</i> Start with the HOUSEHOLD HEAD and then other members	Q.2 SEX 1 = Male 2 = Female	Q.3 AGE How old is (Name)?	Q.4 RELATIONSHIP What is (Name's) relationship to the Household Head? 1 = Household Head 2 = Spouse 3 = Own/adopted child 4 = Son/Daughter-in-law 5 = Parent 6 = Parent-in-law 7 = Brother/sister 8 = Other relative 9 = Non-relative	Q.5 Marital Status What is (Name's) marital status? 1 = Never Married 2 = Married 3 = De facto 4 = Widowed 5 = Divorced 6 = Separated	Q.6 Religion What is (Name's) religion? 1 = Muslim 2 = Christian 3 = Other (write)	Q.7 STUDYING Does (Name) currently attend an educational institution? 1 = Yes 2 = No → Q. 9	Q.8 CURRENT EDUCATION What type of educational institution is (Name) attending? 0=Pre-school → Next person 1=Elementart school 2=Junior High school 3=Senior High school 4=University 5=Other	Q.9 HIGHEST EDUCATION RECEIVED What is (Name) highest level of education received? 0=Pre-school → Next person 1=Elementart school 2=Junior High school 3=Senior High school 4=University 5=Other
	Code	Years	Code	Code	Code	Code	Code	Code	Codes
01									
02									
03									
04									
05									
06									
07									
08									
09									
10									

Notes: A household is a group of people sharing expenses and living together

B: Family Work Status

Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	
Is (Name) currently working?	What was (Name)'s main occupation or job title?	Which category best describes the work that (name) does?	Is (Name) currently r working in overseas?	Which country is (name) woking now?	What is (Name's) average monthly salary/wage?	
1 = Yes 2 = No → Next person	<i>[Interviewer: prompt for specific occupations e..g. "taxi driver", "cleaner", "receptionist"].</i>	1= Unpaid family worker 2= Self Employed 3= Government worker 4= Private Worker	1 = Yes 2 = No → Next person	0= Indonesia 1 = Malaysia 2 = Singapore 3 = Hong Kong 4 = Middle East 5 = Pakistan 6 = Japan 7 = Other (write in) 8 = None	<i>[Report the currency e.g. Rupiah, Peso]</i>	
Code	Occupation	Code	Code	Code	Currency	Amount

C: Maid's Work Histoy

Please list down all your previous job from the earliest to the most current

List of Job	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6
	What was your main occupation or job title?	Which category best describes the work that (name) does?	Where did you work?	How long did you work on this job?	What was your average monthly salary/wage?	Where did you work
	<i>[Interviewer: prompt for specific occupations e..g. "taxi driver", "cleaner", "receptionist"].</i>	1= Unpaid family worker 2= Self Employed 3= Government worker 4= Private Worker	0= Indonesia 1 = Malaysia 2 = Singapore 3 = Hong Kong 4 = Middle East 5 = Pakistan 6 = Japan 7 = Other (write in) 8 = None		<i>[Report the currency e.g. Rupiah, Peso]</i>	0= Indonesia 1 = Malaysia 2 = Singapore 3 = Hong Kong 4 = Middle East 5 = Pakistan 6 = Japan 7 = Other (write in) 8 = None
	Occupation	Code	Code	No of Years	Currency	Amount
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

D. Dwelling Place and Durable Goods

D1	What is the status of your house?	<input type="checkbox"/> Self-owned <input type="checkbox"/> Occupying <input type="checkbox"/> Rented/Contracted <input type="checkbox"/> Other,specify:_____	<input type="checkbox"/> Go to D3 <input type="checkbox"/> Go to D3
D2	What is the monthly rent of this house?	<input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> , <input type="text"/> <input type="text"/> <input type="text"/> Rp. <input type="checkbox"/> Don't know	
D3	What is the main water source for drinking for this household?	<input type="checkbox"/> PIPE WATER <input type="checkbox"/> WELL / PUMP(ELECTRIC OR HAND) <input type="checkbox"/> SPRING WATER <input type="checkbox"/> RAIN WATER <input type="checkbox"/> RIVER / CREEK WATER <input type="checkbox"/> OTHER, SPECIFY _____	
D4	Where do majority of the householders go to the toilet?	<input type="checkbox"/> Own toilet with septic tank <input type="checkbox"/> Own toilet without septic tank <input type="checkbox"/> Shared toilet <input type="checkbox"/> Public Toile <input type="checkbox"/> Otherm specity _____	
D5	What is the main kind of fire/stove usedfor cooking?	<input type="checkbox"/> Electricity <input type="checkbox"/> Gas <input type="checkbox"/> Kerosene Stove <input type="checkbox"/> Firewood <input type="checkbox"/> Charcoal <input type="checkbox"/> Do not cook <input type="checkbox"/> Others, specify _____	
D6	Do you store perishable food in a refrigerator?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't have refrigerator	
D7	Do your household utilize/use "letter of poor"(surat keterangan tidak mampu)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
D9	Do your household have Health Card (KARTU SEHAT)?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

D9	What is the main source of energy use for lightning?	<input type="checkbox"/> Electricity <input type="checkbox"/> Gas <input type="checkbox"/> Kerosone Lamp <input type="checkbox"/> Other,specify:_____	
D10	Do any member of your household owns any of items listed?	<input type="checkbox"/> Mobile phone <input type="checkbox"/> Fixed telephone line <input type="checkbox"/> Cameras <input type="checkbox"/> Car <input type="checkbox"/> Television <input type="checkbox"/> Video Recorder <input type="checkbox"/> DVD <input type="checkbox"/> Computer <input type="checkbox"/> Gas or electric overn <input type="checkbox"/> Electric Fan <input type="checkbox"/> Washing Machine <input type="checkbox"/> Sewing Machine <input type="checkbox"/> Generators	
D11	Do your household own any farm land	<input type="checkbox"/> Yes(please specify the size_____) <input type="checkbox"/> No	
D12	Do your household own any other building than your current house?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
D13	Do our any livestock (cows, bulls, horse, pigs etc)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
D14	Which of the following best describes your house?	<input type="checkbox"/> Traditional house <input type="checkbox"/> Makeshift house <input type="checkbox"/> Brick house <input type="checkbox"/> Flat <input type="checkbox"/> Others : please specify_____	

E: REMITTANCE PATTERN

E1	How often on average do you send money of gift home?	<input type="checkbox"/> Monthly <input type="checkbox"/> Every two months <input type="checkbox"/> Every three months <input type="checkbox"/> Every 4 to 6 monhs <input type="checkbox"/> Every 7 to 12 months <input type="checkbox"/> Only on special occasion or request <input type="checkbox"/> Never	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
E2	What is the purposes of your remittances? (May tick more than one)	<input type="checkbox"/> Household expenditure <input type="checkbox"/> School fees <input type="checkbox"/> Repayment of loan <input type="checkbox"/> House building <input type="checkbox"/> Other(Please specify:_____)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
E3	What method do you usually use to send money back to your family? goods etc)	<input type="checkbox"/> Bank Transfer <input type="checkbox"/> Banker Cheque (Go To) <input type="checkbox"/> Relative or friend bringing back <input type="checkbox"/> Other (Please specify_____)	<input type="checkbox"/> <input type="checkbox"/>
E4	How long does it take for your family member to travel to the nearest bank by bus or car?	<input type="checkbox"/> Less than 1 hour <input type="checkbox"/> 1 - 5 hours <input type="checkbox"/> more than 5 hours	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
E5	Have you ever send any goods back? (clothing, jewelry, electical goods etc)	<input type="checkbox"/> Yes <input type="checkbox"/> No (Go to F1+T32)	<input type="checkbox"/> <input type="checkbox"/>
E6	What type of goods do you send home?	<input type="checkbox"/> Electrical Appliances <input type="checkbox"/> Clothings <input type="checkbox"/> Food <input type="checkbox"/> Other (Specify_____)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

F. IMMIGRATION INFORMATION

F1	How much do you pay for your traveling to Malaysia	Passport : _____ Levy : _____ Air Ticket: _____ Agent Fee : _____	<input type="checkbox"/> Don't know <input type="checkbox"/> Don't know <input type="checkbox"/> Don't know <input type="checkbox"/> Don't know
F2	How do you pay for all the expenses above?	<input type="checkbox"/> Advance from current employer <input type="checkbox"/> Borrow from family/friends <input type="checkbox"/> Other (Please specify_____)	
F3	How many months of salary do you have to pay for advance from your employer?	No of months : _____	
F4	For the first few months without salary, do your family members have any other source of income?	<input type="checkbox"/> Yes, from other working family members <input type="checkbox"/> Yes, borrowing from relative/friends <input type="checkbox"/> Yes, own farmland <input type="checkbox"/> Yes, from saving <input type="checkbox"/> Yes, other way please specify:_____	
F5	How often do you return to Indonesia since you first came ? (since your first job in Malaysia)	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> More than 3 times	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
F6	What do intend to do with your salary earn in Malaysia when you go back to Indonesia?	<input type="checkbox"/> Purchase Land <input type="checkbox"/> Purcahse house <input type="checkbox"/> Renovate house <input type="checkbox"/> Purcahase live stocks <input type="checkbox"/> Set up own business <input type="checkbox"/> As saving <input type="checkbox"/> For children education <input type="checkbox"/> Other (Please specify:_____)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

CHAPTER 6 - CONCLUSIONS & POLICY IMPLICATIONS

6.1 Conclusions

The findings of this thesis suggest several conclusions relating to whether it is economically viable for a host country like Malaysia to receive large numbers of lower-skilled female migrants from Indonesia working temporarily as maids.

First, there is a positive impact of foreign maids on the rate of female labour force participation in Malaysia, although the likelihood of women going to work as a result of having maids has declined from 1993/94 to 2004/05. Moreover, the positive impact that hiring foreign maids has on the rate of female labour force participation in Malaysia is not significant enough to generate a positive contribution to Malaysia's economy. A simple cost-benefit comparison revealed that the cost of hiring maids is two and half times more than the financial benefit generated from the extra labour supply of Malaysian women made possible by the hiring of maids. This may indicate that foreign maids have become more of a luxury good that increases women's leisure time rather than an indirect factor of production that releases more Malaysian women to join the labour force.

Second, although foreign maids may allow more non-working mothers to focus on caring for their children, the findings of this thesis show that the working status of mothers does not significantly affect their children's academic performance. Instead, mothers preferred to entrust their children's academic performance to specialists like private tutors, an arrangement which is only effective for students who need to catch up with their peers. In addition, the presence of foreign maids does not have a negative effect on children's academic

performance. On the contrary, the presence of maids does appear to help children achieve better academic results in the Malay language. However, this finding may be specific to the current setting where the predominant language of the maids (Bahasa Indonesia) is closely related to the Malay language.

Third, the economic impact of lower-skilled temporary female emigration from Indonesia on the workers' own households in Indonesia and on themselves appears to be very considerable. The income gains for Indonesian lower-skilled temporary female migrants can be as high as five times more than the income they would have earned in Indonesia. Furthermore, the main impact of emigration and remittances by female migrants is on assets rather than consumption. However, the majority of them are not sure of how they propose to use their repatriated income when they eventually return to Indonesia. The positive impact is more apparent in urban areas than rural areas.

6.2 Policy Discussion

Firstly, hiring of foreign maids or lower-skilled female migrants may have a positive impact on Malaysia own female labour force participation rate but the increase in female labour force participation rate is not sufficient to have a positive contribution to Malaysia economy. Therefore, a review of the immigration policy may be appropriate to tighten the rules of hiring maids as maids are not contributing positively to the economy, especially in East Malaysia where there is a huge decline of likelihood of women with maids going to work. Other the other hand, more women in West Malaysia may choose to join the labour force, if the initial cost of hiring foreign maids like tax/levy imposed of

hiring maids is reduced or abolished as the likelihood of women with maids in West Malaysia going to work has only declined slightly from 1993/94 to 2004/05.

Secondly, the presence of huge numbers of foreign maids may only have a small positive impact on Malaysia younger children and not on older or brighter children. Moreover, maternal employment also does not have any negative impact on children academic performance. But what is more important is the additional input of private tutoring classes to help less effective students to achieve a better academic results especially towards the examination years. This may indicate that the presence of foreign maids may not be useful for children if parents are able to send their children for private tutoring classes nearing to the examination year.

Finally, lower-skilled female migrants are more likely to benefit from working overseas if they are given sufficient opportunities and knowledge to invest their hard earned income to generate a lasting effect on themselves and their own households. Therefore, it is important for Indonesia government to create programs that will help lower-skilled female migrants to invest their repatriated income in more productive investment apart from securing a better employment benefits and working conditions for these migrants in overseas countries.

6.3 Policy Implications

The presence of three hundred and twenty thousand Indonesian maids in Malaysia has created much negative public sentiment in both countries. Although Indonesian maids are viewed as a linchpin in the modern Malaysian family home, there are many reports of Indonesian maids abusing children and the elderly under

their care. On the other hand, Indonesian maids have been complaining about low wages, poor working conditions and abuse in Malaysia. Therefore, policy questions arising from the above conclusions need to address two issues: First and foremost, the presence of Indonesian maids in Malaysia must contribute positively to the economy of Malaysia and Indonesia. Second, policy reform must aim to deal with issues which give rise to the negative public sentiments concerning Indonesian maids in both countries.

The Malaysian government needs to effectively review the immigration policy and rules for hiring foreign maids to increase the likelihood of women who hire foreign maids going to work. For example, working women who hire foreign maids may be exempted from the levy or tax imposed on hiring foreign maids. On the other hand, Malaysian women who hire foreign maids but choose not to join the labour force could be asked to pay a higher tax or levy, or be subjected to stricter rules to discourage the hiring of foreign maids for luxury purposes.

Furthermore, the governments of both the sending and receiving countries can work together to reduce the initial cost of migration by providing a cost-free platform to match potential employers with potential migrant workers. The initial cost of migration is about six to eight months of migrants' salary and is paid by migrant workers to the maid agency. The reduction of the initial cost of migration will definitely increase the income gains for migrant workers.

Secondly, policy initiatives must include changes to immigration and emigration rules to allow only efficient and well-trained foreign maids to work in the receiving countries. For example, the Malaysian government could amend the labour laws and regulations with effective enforcement mechanism to provide better working conditions in order to attract maids of higher quality. On the other

hand, policy makers in Indonesia should also work to allow only properly trained women to work abroad. Policy initiatives in the sending countries should aim to equip their women with not only work knowledge but also some knowledge of the culture and language of their destination country. All these measures will reduce many existing social issues caused by foreign maids such as runaways, abuse of children and the elderly under their care.

Finally, policy makers in Indonesia need to provide knowledge and investment opportunities for migrant workers, showing them how to invest their hard earned income in more productive investment schemes when they eventually return to Indonesia. This would help to enhance the economic status of the sending household and the workers themselves.

6.4 Future Research Needs

Future research needs to take into consideration some of the limitations of this thesis.

First, the current study uses cross-sectional data to estimate the likelihood of women with maids going to work but this may generate a biased estimate even when a matching method is applied. This is because the current data set does not have the information of women's working status prior to hiring maids. Furthermore, a matching method like propensity score matching relies on selection (in this case the decision to hire maids) which is based on observable variables only. Since unobservable characteristics may also affect the decision to hire foreign maids, future studies may need to incorporate panel data so that the impact of unobservable characteristics may be mitigated by using fixed effects. That is, an improved research design would measure the likelihood of women

going to work before and after hiring foreign maids and estimate the impact of maids as the difference in such a likelihood to confirm the findings of this thesis.

Second, the impact of additional input on human capital requires the use of data that capture the entire history of lagged input because human capital formation is a cumulative learning process. The impact of additional input on human capital is also different over the entire distribution of student achievement. Therefore, future studies may need to incorporate longitudinal surveys of school children to measure the impact of foreign maids on children's academic performance across the ability spectrum.

Third, in studying the impact of emigration and remittances on emigrant-sending households, this thesis captured time invariant unobservable characteristics by applying fixed effects, using panel data. In future studies, a suitable instrument variable, that affects the probability of emigration but not outcomes of interest except via higher migration probabilities, may be an alternative to solve self-selection problems. Furthermore, future studies may survey lower skilled female migrants who have returned to their home country to determine the actual use of their repatriated income.

Finally, future studies may need to look into the impact of the quality of maids on children's academic performance since better educated foreign maids are expected to effectively assist children academically. Apart from academic performance, it is important to look into other, non-cognitive aspects of children's development because maternal employment and the presence of foreign maids may have adverse effects on these forms of children behaviour even if there is no impairment to academic performance.

6.5 Future Research Directions

First, this study has led to the opening of many more research to study the impacts of other available alternatives that allow more women to go to work such as flexible working hours, day care center, and even informal baby-sitting using propensity score matching method mentioned in Chapter 4.

Second, as human capital formation is a cumulative learning process. I will use the lagged approach model to study the impacts of other inputs such teachers, type of schools, education system or using different language to teach certain subject. For example in Malaysia for about 30 years, Mathematics and Science were taught using Malay language. Subsequently over the last 8 years, it was revert to using English language to teach Mathematics and Science. In the coming year (2012), due to political intervention, teachers will revert back to using Malay language to teach both the subjects.

Finally, I will also extend the research to study the impact of emigration of lower-skilled male migrants who make up of two third of total migrant workers in Malaysia. Currently, there are at least 1.5 million lower skilled Indonesian male migrant workers in Malaysia.

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