FOREIGN LABOUR IN MALAYSIA : SELECTED WORKS

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Foreword

Understanding the impact of foreign labour in Malaysia is vital for the continued development and prosperity of the nation. The growth of the services, land development, and infrastructural sectors, catalysed by the successful implementation of the first and subsequent Malaysia Plans, have seen the inflow of foreign labourers to meet the manpower needs of these sectors.

While the increased population of foreign laborers' has contributed positively towards the nation's economic development, their social, environmental, and political impact is still being fully comprehended. From labourer rights and social cohesion, to Malaysia's relationship with its neighbouring nations, this is a multi-faceted, multi-interest issue. The long-term systemic and structural reliance of these sectors on foreign labour must be looked into seriously to determine its sustainability.

I am heartened by this publication as it attempts to explore the realities of the situation by means of providing research and evidence-based insights and knowledge on the matter. I congratulate the researchers for producing these works and believe continued efforts are required for a more robust discussion on the issues and in formulating policies as we move forward.

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Preface

Based on a valid estimation, there are over two million registered legal foreign workers, and at least another four million unregistered illegal foreign workers in Malaysia. They are everywhere, serving almost all economic sectors in the country. The majority of them serve the plantations, construction sites and factories. The influx of these foreign workers in the labour market created not only multiple socio-economic and political dilemmas but to a certain extent also a national security threat. With the aim of providing opportunities for undocumented foreign workers to obtain legal work permits, initiation of amnesty and rehiring programmes were carried out. Even so, it is quite obvious that these programmes were not that successful. The main reason insinuated was the unfavourable cost to them. Albeit caution of stern actions and stiffer penalties against employers harbouring illegal foreign workers, massive involvement by Malaysians to hire and willingly employ illegal foreign workers still persist. On top of that, there are exceptions to the official pardon agenda. Certain sectors are permitted the exemption in order to facilitate the acute labour shortage in their sector.

A real solution to this predicament requires serious thinking and wisdom. It requires precise and swift, but meticulous resolution. In order to significantly abide by this commitment, suitable and appropriate data gathering process, and systematic information management process are imperative to be put in place. Availability of empirical data sourced from valid and reliable scientific researches are paramount to describe and illustrate the actual patterns and relationships of all the variables involved. Therefore, a compilation of published scholarly works from researchers will come in handy as a reference tool to further understand, analyse and predict probable solutions to the uncertainty.

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INTRODUCTION

DIVULGING FOREIGN WORKERS ISSUES IN MALAYSIA

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PREAMBLE

It is undeniably true that there are endless complaints with regard to the ever increasing number of foreigners, especially the unskilled foreign workers in Malaysia. Wong (2016) suggested the relationship between Malaysian and the issue is a *Love-Hate* connection. Malaysians strongly believe the country's dependence on foreign workers endure serious long term consequences. Nonetheless, the demand for foreign workers by businesses has deep implications on the country's economy. For instance, a state in the country with 1.4 million hectares of oil palm plantation relies on 78% foreign workers and only 22% locals. Without the foreign workers, palm fruits will rot and result in loss as there are insufficient workers to harvest. The state suffered RM 1 billion a year due to uncollected fresh fruits because of this. Likewise, the policy to ban importation of new foreign workers coupled with active and multiple systematic raids by the immigration and other enforcement departments against unregistered foreign workers, according to Foo (2016) resulted in not only construction sites short-handed and plantations virtually unattended, but also some local furniture factories to wind up, owing to labour crunch. Obviously, many of our economic sectors are excessively dependent on foreign workers.

Transformation of the country's economic structure from agricultural to manufacturing and services in the past recent decades has resulted in changes to the labour requirements. The manufacturing sector was severely affected due to the rapid growth as a result of the export oriented and heavy industries policies introduced in early 1980s. The fast changing manufacturing and services sectors require more professional and skilled workers to cope with the rapid change in technological adoption. Admitting the obstacle Nasri, Rahmi & Rahmah (2015)

indicated the country's economy had to rely on foreign workers throughout implementation of the policies. Despite the legal channels provided, majority of foreign workers still use illegal channels, mainly to save cost. Demands for foreign workers revealed professionals and technical-supervisors are positively related to output level and wage. However, the demand for semi skilled and unskilled labours is still high due to the fact that total number of employment increases. It is negatively related to price of capital and local wage. What it means is that the professional and technical-supervisor foreign workers complement the local workers and capital. The economic transformation changed the structure of the labour demand. The rapid growth of the manufacturing and services sectors require more professionals and skilled workers to cope with the adoption of fast changing technology. Besides that, the growth rate between countries in the region and labour mobility, the phenomenon was also initiated by globalisation, and has significantly taken place all over the world.

In the nineties, the labour market was tight and the government started to encourage employment of foreign workers, especially from the Southeast Asia regions due to labour inadeaquacy. According to Zaleha, Noraini, Rusmawati & Suhaila (2011) the growing presence of foreign workers in Malaysia can be explained by excess demand for labour associated with rapid economic growth, as well as the relatively cheaper cost of foreign labour. Foreign workers migration phenomenon is difficult to avoid especially when most countries in the world today are focusing on maximising their economic development. From the macroeconomic perspective, in terms of economic theory, immigration of foreign workers brings good impact to the receiving countries. Increasing domestic and foreign labours and material yield positive influences on labour productivity. Nevertheless, capital labour ratio tends to show negative relationship on labour productivity.

FIGURE 1.0: NUMBER OF FOREIGN WORKERS BY COUNTRY OF ORIGIN, 2000 - 2015

	2000	2001	2002	2003	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
INDONESIA	603,453	634,744	788,221	988,165	1,211,581	1,174,011	1,148,051	1,085,658	991,940	792,809	785,236	746,063	1,021,655	817,300	835,965
BANGLADESH	158,149	114,308	82,642	94,541	55,364	62,669	217,238	316,401	319,020	319,475	116,663	132,350	322,750	296,930	282,437
THAILAND	2,335	2,508	20,599	10,158	5,751	13,811	18,456	21,065	19,402	17,209	5,838	7,251	17,044	12,467	13,547
PHILIPINE	14,651	11,944	21,234	17,400	21,735	24,008	23,283	26,713	24,384	35,338	44,359	44,919	69,126	63,711	65,096
PAKISTAN	3,101	2,392	2,000	2,141	13,297	11,551	16,511	21,278	21,891	28,922	26,229	31,249	50,662	51,563	72,931
MYANMAR	3,444	6,539	27,870	48,113	88,573	109,219	104,305	144,612	139,731	160,504	146,126	129,506	161,447	143,334	145,652
NEPAL	666	48,437	82,074	109,067	192,332	213,551	189,389	201,997	182,668	251,416	258,497	304,717	385,466	490,297	502,596
INDIA	18,934	26,312	39,248	63,166	134,947	138,313	142,031	130,265	122,382	95,112	87,399	93,761	124,017	105,188	139,751
OTHERS'	2,363	2,645	3,641	4,229	91,655	121,994	185,542	114,607	96,728	117,086	102,714	81,773	98,155	92,624	77,060

Source: Ministry of Home Affairs

Ministry of Home Affairs statistics on the number of foreign workers by country of origin (2000–2015) identified at least 8 countries as the major source for foreign workers to Malaysia. The main contributor countries listed are Indonesia, Bangladesh, Thailand, Philippine, Pakistan, Myanmar, Nepal, and India. Based on the supply patterns, Indonesia, Bangladesh, Nepal and Myanmar can be considered as the major active contributors for Malaysia's foreign workforces. Figure 1.0 indicates Indonesia tops all other countries since year 2000 in supplying foreign workers to Malaysia. However, the overall percentage of workers registered declined every year. From being the major contributor with almost 75% share in 2000, the number has reduced to about 44% in 2010 and has further shrunken to less than 40% in 2015.

Nonetheless, the actual total number of workers registered increased from slightly more than 0.5 million in 2000 to peak at more than 1.2 million in 2006, and maintained a total number of 850,000 in 2015. Bangladesh maintained a regular supply of foreign workers with an average of about 11% within the last 15 years. There was a sharp increased in 2007 until 2010, but then dropped significantly in 2011 and 2012, before drastically increased again in 2013 and maintained a total number of about 300,000 in 2015. Apart from that, the total number of

registered foreign workers from Nepal also increased from merely 666 or 0.1% in 2000 to a total of more than 500,000 or 23.5% share of foreign workers in 2015. The significant increase occurred from 2001 until 2006 before it slowed down until 2009, then the number increased sharply in 2010 and continued to increase moderately until 2015. Another active major supplier for foreign workers to Malaysia, Myanmar maintained a 5% share of the total supply. The number of registered workers soared upward and continued to increase from about 3,500 in 2000 to almost 150,000 in 2015.

The number of foreign workers in Malaysia has grown rapidly over the last twenty years. However to accurately suggest the exact number is quite impossible, because the flawed data available. Even so, in estimating the total number of foreign workers in Malaysia, Pook (2016) put forward an approximation of 2.1 million registered migrant workers or legal foreign workers based on the numbers indicated by the Ministry of Human Resources. Alternatively, the number of illegal foreigners is also estimated at around 3 million. On the other hand, the Malaysian Employers Federation (MEF) proposed an estimate of 6 million legal and illegal foreign workers in the country. The Associated Chinese Chambers of Commerce and Industry of Malaysia (ACCCIM) equally agree and suggest the ratio of legal to illegal foreign workers is at 1:2. Hence, if the legal registered foreign workers are 2.1 million, the illegal foreign workers should total about 4.2 million. Therefore, in total the number of foreign workers in the country should be estimated around 6.3 million. In spite of this, Aliza & Fong (2016) denoted the number of foreign workers from Nepal, the Philippines and Indonesia has dropped. There is a drastic plunge with at least 140,000 foreign workers deciding to seek jobs somewhere else. This is due to their certainty of better employment opportunities and remuneration prospect accessible elsewhere. The current Deputy Home Minister was quoted to imply foreigner found Malaysia no longer attractive as an employment destination. However, the Director General of Immigration revealed the drop of Malaysia Ringgit resulted in unwillingness to renew employment contracts, besides the increasing levy deemed too expensive for their liking.

Rahmah et al. (2003) opined based on economic sense, studies indicated positive correlation between economic growth and foreign labour due to the job creation opportunities and capital accumulation. On the contrary, other studies indicated foreign workers retard the economic growth because majority are unskilled. Countries benefitted from influx of foreign workers as it stimulates economic growth through increase of public demand for goods and services, and capital formation. Nonetheless, massive influx of foreign workers would hamper economic

growth due to low-skilled and low-educated work force. Additional to it, influx of foreign workers lead to socio-economic and political problems due to illegal entry. Influx of foreign workers significantly impact economic growth, employment opportunities and wage of local workers. This is because the flooding of foreign workers increases the capital formation and creates new job opportunities for local workers. According to Wong (2016) in 2015 a total of 308,834 highly-skilled Malaysians moved overseas, with 47.2% to Singapore, 18.2% to Australia, 12.2% to US and the rest to other countries like UK and Canada. On top of that, the number of skilled Malaysians living abroad rose 300% in the last 2 decades, with 2 out of every 10 Malaysians with tertiary education opting to leave for either Organisation for Economic Co-operation and Development (OECD) countries, or Singapore.

Apparently, the influx of large numbers of foreigners into the labour market has seriously impacted the local demographic structure. Lax enforcement and absence of effective mechanism to manage migrant workers resulted in millions of foreigners to overstay their employment contracts. The event resulted in the substantial increase in the share of foreign workers in the country's labour force over the last few decades. According to Kanapathy (2006), what started as an interim policy solution to meet the increasing demand for low skilled labours in support for the nation's long-term high growth strategy and economic expansion backfired and turned into a problematic situation. The state of affairs has given rise to active debates on foreign workers' impact to the locals and firms. Among the issues raised, foreign workers taking away jobs from the locals and abundance of lower priced foreign workers are taking away and destroying potential incentives and perks awarded by the companies and firms. Like rubbing salt in a wound, the locals who are the tax payers for all public facilities felt that it is highly unacceptable for the foreign workers to utilise the same public facilities without having the hurdle to pay taxes. The general perception is that this would later on lead to elimination and reduction of additional funds and amenities for the locals.

Some illegal workers find this country as a safe haven. It's comforting for them to remain here as there will always be those who are willing to employ them. On top of all that there are special 'arrangements' for amnesty period, rehiring programme and legalising undocumented foreign workers. It is obvious any illegal entrance to a nation is deportation and any activity of harbouring illegal is a potential threat to the country's security and safety. Apparently the heavy penalties and fines with possible imprisonment and caning for those who are caught employing illegal foreign workers, according to Siti Awanis & Rohani (2014) has never been

successful and effective in curbing the problem. The inference is obvious - the benefits of cheap labour far outweigh the fear of getting caught. The issue of effective enforcement is far from adequate. Michael (2013) attested to the risk and threat of human trafficking and moral deprivation mentioned, Malaysia is a transit country for trafficking between Thailand and the Philippines and between other Asian countries like Japan, Korea and to Europe and the United States. And, now there are reports indicating groups of these foreigners are involved with terror threats. Teoh (2016) reported the confirmation by the Inspector-General of Police with regards to 7 individuals including 4 foreigners were arrested between November 3 and December 16 of 2016 on suspicions of involvement in terrorism activities. Suspects hauled from Selangor, Malacca, Johor and Sabah by the counter terrorism task force in special operations held nationwide. Two of the foreigners were students of an International University in Shah Alam, one a factory operator in Johor and another person identified and wanted by foreign authorities on suspicions of links to terrorism.

CONCLUDING REMARKS

Generally it is noticeable that foreign workers are relatively inexpensive, hard-working and will not resist to 3D (dirty, dangerous and difficult) tasks. Commonly agreed conclusion is local workers will only opt for jobs that are in 'comfortable' working environment with minimum exposure of harsh elements, stench, dust or overtime. Nevertheless, the nation's workforce needs to be upgraded with more specialisation in areas of expertise as traditional commodity-based exports will lose out to the high technology products and services. The country needs to further enhance and develop higher skilled and knowledgeable domestic work force. Clearly there must be limitation of hiring foreign workers. Malaysia needs only educated and highly skilled foreign workers in the long run. Thus, in order to boost higher production rates and have higher quality goods and services, Malaysia ought to increase the level of employment of domestic higher skilled human resources. However, the critical success factor to win the situation is to combine the forces of socio-economic, cultural and political views to rationalise the impact in the future. Further to that, the initiatives involve encouragement of rapid increase in education levels and creation of new tools for knowledgeable nation building.

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RECENT TRENDS IN TRANSNATIONAL POPULATION INFLOWS INTO MALAYSIA: POLICY, ISSUES AND CHALLENGES*

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Abstract

Malaysia's foreign population increased rapidly in the last three decades. In 1980, of a population of over 13 million, 0.49 per cent were non- citizens. In 2010, the number of non-citizens increased to 2.3 million, making up 8.3 percent of a total population of 28.4 million. The majority is low skill workers, both legal and irregular. There are also other groups comprising expatriates, international students, participants of the 'Malaysia My Second Home' programme, and asylum seekers/refugees whose numbers are relatively small. The inflows which contribute significantly to economic development have their attendant problems. This paper takes a comprehensive view of all the major inflows, taking a cue from state policy towards them. The inflows are divided into two categories: welcome and problematic inflows. It then outlines how each inflow emerged and expanded, state responses towards them and discusses related issues and challenges. All categories of migrants have both positive and negative impacts, but the low skill workers (including asylum seekers and refugees) are the most challenging especially in relation to the economy, border security, and internal order. The paper concludes with a discussion on the urgent need to review the foreign worker policy including Malaysia's stand on asylum seekers/refuge es to address the problems related to migrants.

Introduction

Malaysia witnessed a rapid increase in its foreign population in the last three decades. In 1980, there were only 63,700 non-citizens making up 0.49 per cent of a total population of about 13 million (Department of Statistics, 1983). By 2010, the foreign population escalated to over 2.3 million, making up 8.3 per cent of a total population of 28.4 million (Department of Statistics, 2011). The rapid increase is mainly due to transnational population inflows in response to labour shortages in some sectors of the economy. This paper attempts to identify the various streams of population inflows into the country, and examine public perceptions and responses towards them and how such perceptions impacted state policy regarding the new migrants. It will focus mainly on the low skill foreign workers who form over 93 per cent of foreigners in Malaysia. This will be followed by a discussion on the foreign worker policy, strategies and challenges in implementation. As the majority of the low skill foreign workers are in the urban areas, the paper will also explore how their presence and employment impacted development and urbanisation in the country.

This paper draws on secondary data and official statistics as well as findings from the writer's fieldwork on migrant workers, illegal immigrants, and refugees carried out intermittently in Peninsular Malaysia and Sabah between 2000 and 2013. Reports in the print and electronic media are also used to gauge public response to the immigrant populations. By adopting a macro view of the migration trends in Malaysia, this paper departs from previous studies on migration which tend to investigate the inflows and migrants in a fragmented manner, based on their nationalities, job sectors, gender and legal status.

Transnational Migration

With regard to transnational migration, Malaysia plays a dual role as a labour receiving and sending country, and it is the former role which is dominant. While there are no comprehensive official records on emigration, it is estimated that about 900,000 Malaysians are abroad, as students, workers and their dependents. The diaspora is widespread globally, especially in developed countries such as the United States of America, the European Union, Australia, New Zealand, Japan, and elsewhere such as in the Middle East, Africa, Taiwan, Korea, Singapore and Brunei. There are also thousands of Malaysians who commute to work to Singapore

on a daily basis. The 2010 population census shows that there are over 2.3 million foreigners in the country, but this figure is a gross underestimate. There are a large number of irregular migrants, or illegal immigrants (or *pendatang asing tanpa izin* or *PATI* in Bahasa Malaysia),* as they are officially referred to in Malaysia.[2] Many of these illegal migrants have not been enumerated, as they refused enumeration for fear of being arrested, and hence the actual number is difficult to determine. Certainly, the number of non-citizens in the country is much higher than indicated in the decennial population censuses.

Apart from the temporary inflow of tourists that rose to 25 million in 2012, there are other identifiable population inflows consisting of low and high skill foreign workers, students, asylum seekers, and participants of the 'Malaysia My Second Home' (MM2H) Programme. Foreign workers, especially the expatriates have played a major role in Malaysia's economic development in the pre-independence era, and continue to do so after independence in 1957, albeit at a reduced rate. In the early years of independence, the services of high skill foreigners were sought to guide socio-economic development planning and steer its implementations both in the private and public sectors. The low skill foreign workers began to move in from the early 1970s, and their number escalated exponentially within a decade in response to acute labour shortage in some sectors of the economy particularly in agriculture in the countryside, and construction industry in the urban areas. The early seventies also saw the entry of asylum seekers from the neighbouring countries, starting with those from Mindanao in southern Philippines into Sabah; and from war torn Vietnam and Cambodia into Peninsular Malaysia.

Since the 1990s, asylum seekers have also been arriving in substantial numbers from other regions such as Bosnia in Eastern Europe, Sri Lanka, Afghanistan, Iran, Iraq, South Thailand, Indonesian Acheh, and Myanmar; with a sprinkling from a few African countries facing political instability or environmental disaster. The entry of foreign students and foreign residents began in the late 1990s. The Private Education Act 1996 facilitated the establishment of private higher education institutions (HEIs) to provide more places for the growing demand for higher education which could be met by the existing public institutions. It was also intended to attract international students in an attempt to commoditise education as a new source of state revenue (Tham 2013: 1-17; Azizah Kassim 2013: 41-65). This has led to the continuous inflow of foreign students.

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2   The term ' illegal immigrants' will be used interchangeably with 'irregular migrants' in this paper.

At the end of 1990s, the Department of Immigration introduced a scheme to lure older rich foreigners to live in Malaysia, under its Silver Hair Programme. The programme was reviewed in 2002 and repackaged as the 'Malaysia My Second Home' (MM2H) Programme. In 2006, it was placed under the purview of the Ministry of Tourism (MoT), where a One Stop Centre was established to administer the programme. Several changes were made to the terms and conditions of participation, of which the most significant is allowing foreigners below 50 years to apply and application procedures were made simpler by allowing personal application as an alternative to sponsored entry. The MM2H programme is now actively pursued by the Ministry of Tourism and many housing developers target their high end products to cater to the needs of this group of foreigners.

Inflow Patterns and State Response

State response to the different groups of foreigners in the country vary as reflected in the different rules and regulations that govern their entry (Liow 2006). The entry of foreign workers, be they legal, low skilled or high skilled, is managed by separate divisions in the Department of Immigration. The low skill legal foreign workers (LSFW) or *pekerja asing* are administered by the Foreign Workers Division (*Bahagian Pekerja Asing)*; the high skill foreign workers by the Expatriate Service Division (*Bahagian Penggajian Pegawai Dagang)*; and illegal workers and migrants (IM) by the Enforcement Division *(Bahagian Penguatkuasaan).* The MM2H participants are under the purview of the Ministry of Tourism, foreign students under the Ministry of Education; while the asylum seekers and refugees (ASR) come under the National Security Council *(Majlis Keselamatan Negara)* in the Prime Minister's Department. In general, the different streams of population inflows can be divided into two categories depending on state response towards them: first, the welcome inflows, comprising the expatriates, MM2H participants, and foreign students; second, the problematic inflows, consisting of low skill foreign workers, illegal immigrants and asylum seekers and refugees. The status of the different inflows and state response towards them will be discussed next.

Welcome Inflows: The Expatriates, MM2H Participants and Foreign Students

Expatriates

They are high skill foreign workers in the managerial, executive and technical capacity who are engaged in both the private and public sectors. In the latter, they are in education, medicine, agriculture, tourism and related industries; in the former, many are working in multi-national corporations/industries owned and run by their respective native countries. They are the elites among foreign workers with a minimum monthly salary of RM5,000 and minimum job contract of two years. As Malaysia aspires to be a developed nation by 2020, more expatriates are needed in both the private and public sectors. The government is going all out to lure them to work in Malaysia. Among the initiatives taken to achieve this objective is the establishment of the Expatriate Service Division in 2011 and strategies adopted to attract them include making their recruitment procedure relatively short and giving long term visa - the Residence Pass-Talent (RP-T)- that allows top foreign talent in eleven selected industries to live and work in Malaysia for ten years.[3]

Expatriates are allowed to bring along family members, buy properties, and invest. Besides the high salary, the expatriates also enjoy other perks attached to their jobs such as medical insurance for themselves and family members, accommodation, education fees for their children, and paid home leave. As such, they are not considered a burden to the Malaysian economy. In 2012, there were 44,140 expatriates in Malaysia, making up 2.7 per cent of foreign workers in the country. They were mainly from India (20%), China (10%), Indonesia (7%), the Philippines (7%), Japan (6%), United Kingdom (5%), Repubic of Korea and Pakistan (4% each), Singapore and Australia (3% each), Iran (2%) and the remaining 29 per cent from other parts of the world. In terms of job sectors, the majority are in services (50%), followed by manufacturing (18%), information technology (10%), education and construction (7% each), and petroleum (5%).

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3   The selected industries include oil, gas and energy; palm oil; financial services; tourism; business services; communications and infrastructure; electronics and electrical; wholesale and retail; education; healthcare and agriculture which form part of the National Key Economic Areas (NKEA) as outlined in the Economic Transformation Programme (ETP) of the government of Malaysia.

Malaysia My Second Home Programme (MM2H)

This is a residence scheme that enables 'rich' foreigners to stay in Malaysia for a relatively long period, that is, on a ten-year visa which is renewable on expiry. It is open to all foreigners from countries recognised by Malaysia, subject to various terms and conditions which include opening a fixed deposit account amounting to RM300,000 in an international bank operating in Malaysia for applicants below 50 years of age; and RM150,000 for those above 50 years, in addition to proof of an off-shore monthly income of RM10,000. Applicants must also undergo and pass a medical check-up (except for those already suffering from some form of illness), and have no criminal records. Among the perks given to MM2H participants are permission to take along close family members (spouse, parents and unmarried children below 21 years), exempt from taxes on the purchase of cars, interest on fixed deposits and import of household goods.

They can also buy properties, invest in the local stock exchange, and undertake business ventures. Participants of MM2H below 50 years are not allowed to take up employment, but those above fifty years are allowed to take up part time jobs. Within a decade, the programme gained a measure of success with the number of participants increasing from 818 in 2002 to 22,230 in 2012. The majority are from Asia with the Republic of China (19%) taking the lead, followed by Japan (13%), Bangladesh (12%), Great Britain and Northern Ireland (9%), Iran (6%), Singapore, Taiwan and Pakistan (4% each) and Korea and India (3% each). (Source: *http://www.mm2h.gov,my/statistics* [accessed on 18 October, 2013]). Participants are attracted to live in Malaysia due to the relatively low cost of living compared to their home countries, political and economic stability, cultural diversity, and the use of the English language in official circles and among the public. The warm climate provides a chance for those from temperate countries to escape the cold weather.[4]

Foreign Students

Malaysia's initiative towards internationalisation of higher education began in earnest in the second half of the 1990s, when the Private Higher Education Act was passed in 1996 to relegate part of the task of providing higher education to the private sector (Government of Malaysia, 2009). It is also designed to provide

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4   Discussions with foreigners living in upper middle class housing areas,Villamas and Sierramas in the district of Sungai Buloh, Selangor in June 2013 and December 2012.

a mechanism to regulate and monitor the expansion of the private sector education to ensure quality. By 2011, higher education was positioned as a strategic export service, with Malaysia as a regional hub. The internationalisation policy for higher education which affects both the public and private higher education institutions (HEIs) has six core aspects[5], one of which is student mobility into and out of the country. In 2003, there were about 32,000 foreign students and the figure rose to 86,923 in 2011 (Table 1). Malaysia plans to accelerate the enrolment of foreign students to 150,000 in 2015 and 200,000 in 2020 (Ministry of Higher Education 2011). With the rise in numbers of foreign students, Malaysia hopes that some of the best foreign talents will remain and work in the country on completion of their education to overcome the shortage of high skill professionals and technicians that are required to propel Malaysia into a developed country by 2020. Those who return home will hopefully provide the necessary network that can facilitate future business ventures between Malaysia and their home country.

Table 1. Number of foreign students enrolled in institutions of higher learning, 2003-2011

	Public Institutions	Private Institutions	Total
2003	5,239	25,158	30,397
2004	5,732	25,932	31,664
2005	6,622	33,903	40,525
2006	7,941	36,449	44,390
2007	14,324	33,604	47,928
2008	18,485	50,679	69,164
2009	22,456	58,294	80,750
2010	24,214	62,705	86,919
2011	-	-	86,923
Total	**105,013**	**326,724**	**518,660**

Source: Department of Higher Education, Ministry of Higher Education

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5   The others are staff mobility, academic programmes, research and development, governance and autonomy and social integration and cultural engagements.

Statistics from the Department of Higher Education (2011) show that there are 501 private higher education institutions (HEIs) in Malaysia which include branch campuses of foreign universities; of this number, only 58 have been conferred the status of University and University College. In addition, there are twenty public HEIs that are supporting the internationalisation policy. The majority of the international students are in the private HEIs, as the public HEIs cater mainly for local students. According to enrolment records, there were 86,923 foreign students from over 250 countries worldwide, mostly from Asia, the Middle East and Africa. A substantial number are from Iran (14%), China (12%), Indonesia (11%); Nigeria and Yemen (7% each), Libya (4%), Sudan and Saudi Arabia (3% each) and the remaining 39 per cent from other countries. The annual income from foreign students comes up to over RM2.346 billion a year (Department of Higher Education 2011). Apart from the HEIs, Malaysia also has a substantial number of foreign students attending primary and secondary schools at the 113 international and expatriate schools located in all states in Malaysia except for Perlis and the Federal Territory of Putrajaya. The majority of the students are children of expatriates.

Problematic Inflows

While Malaysia actively encourages the entry of expatriates, MM2H participants and foreign students, its response to other types of inflows is less enthusiastic. Low skill foreign workers are welcomed as long as they are recruited and employed legally in accordance with the guidelines provided by the Ministry of Human Resources and the Ministry of Home Affairs. Undocumented migrants/workers, and those who arrive legally but violate the immigration and labour laws will be penalised. Asylum seekers and refugees are tolerated on humanitarian grounds and to avert condemnation from the international community. These are problematic inflows and an insight into the status of such flows and how the state deals with them will now be examined.

Legal Low Skill Foreign Workers (LSFW)

As mentioned earlier, foreign workers from the neighbouring countries began entering Malaysia surreptitiously in the 1970s. These undocumented migrant workers were initially employed in the agricultural sector, especially in state land development schemes and private plantations, with a few engaged in the

construction sector for building physical infrastructure in the urban areas. By the early 1980s, with increased influx, more began to move into other sectors in the urban areas such as services, manufacturing and domestic services. For over a decade their presence was tolerated as Malaysia was facing an acute labour shortage in some sectors of the economy. However, as their number rose and their entry into the urban areas made them more visible, public resentment towards them started to emerge especially because of the competition they posed to the local urban poor for the limited supply of low cost housing, public and social amenities and petty trading opportunities. A few were also involved in criminal activities (Azizah Kassim 1987).

The negative impact of their presence and employment soon became issues for public debate which found its way into Malaysia's national political agenda. They began to be seen as a threat to border security and internal order. Several measures were taken to regularise their inflow, and this led to the formulation of the Foreign Worker Policy (*Dasar Pengambilan Pekerja Asing)* which was implemented in early 1992. The policy has two pronged objectives: first, to encourage legal recruitment and employment of foreign workers; and second, to curb and eventually stop the entry of illegal migrant workers. Measures to be taken under this policy are entrusted to the Cabinet Committee for Foreign Workers (that later saw a name change to the Cabinet Committee for Foreign Workers and Illegal Immigrants), chaired by the Deputy Prime Minister. The implementation of this policy paved the way for the legal recruitment and employment of low skill foreign workers subject to strict regulatory terms and conditions, which tended to deny the workers of their basic rights as residents and workers in Malaysia. Unlike the expatriates, they cannot bring along family members, cannot marry while in service, and have to pay an annual levy for their work permit.

In 1993, a year after the implementation of the foreign worker policy, official statistics on the number of legal low skill foreign workers (LSFW) became available. The number of LSFW increased from slightly over half a million in 1993 to more than 1.4 million in 1997 before declining sharply to over 769,000 in 2001 following the 1997 Asian financial crises. Thenceforth it rose again, peaking at over 2 million in 2007, in spite of the government's attempt to reduce the nation's dependency on migrant workers starting in 2006 (Government of Malaysia 2006). The economic slowdown in the subsequent years saw their number declining again to about 1.571 million in 2012 (Table 2). In August 2013, the number of LSFW had risen again to 2.1 million due to the regularisation exercise under the 6P Programme which shall be explained later.

Table 2. Inflow of foreign workers to Malaysia, 1993-2012

1993	532,723
1995	726,689
1996	745,239
1997	1,471,645
1998	1,127,652
1999	879,705
2000	819,684
2001	769,566
2002	1,057,156
2003	1,412,697
2004	1,474,686
2005	1,821,750
2006	1,871,038
2007	2,044,805
2008	1,935,975
2009	1,918,146
2010	1,817,871
2011	1,573,061
2012	1,571,679

Source: Azizah Kassim (2012:47)

In the 1990s, workers arrived mainly from neighbouring countries such as Indonesia, the Philippines and Thailand, with a small number from Bangladesh. In early 2002, following a riot at a factory in Nilai Negeri Sembilan where Indonesian workers clashed with the Malaysian police force, the then Prime Minister Mahathir Mohamed reduced the intake of Indonesians and opened Malaysia's door to workers from other source countries within the Association of Southeast Asian Nations (ASEAN), South Asia and others, thereby increasing the number of source countries to fourteen (Department of Labour 2011). Based on 2012 official statistics on issuance of work permits (the *Pass Lawatan Kerja Sementara)* there were over 1.571 million legal foreign workers in Malaysia. Almost half were from Indonesia (47.4%), followed by Nepal (19.3%), Bangladesh and Myanmar (about 8% each), and the rest from South and East Asia, other member countries of ASEAN and elsewhere (Table 3). In terms of job distribution, the highest percentage was

manufacturing (39%), followed by plantations (20%), construction (14%), and agriculture, services and domestic maids at 9 per cent each. The distribution of LSFW by country of origin and job sectors differs between Peninsular Malaysia and the two eastern states of Sabah and Sarawak. In Peninsular Malaysia, the workers are from all the designated source countries, while in Sabah the two designated sending countries are Indonesia and the Philippines. In Sarawak, Indonesia is the only designated country. However, workers from other countries are also allowed to work in cases where the designated countries have no workers with the expertise for particular jobs required by the three regions.

**Table 3. Documented and undocumented foreign workers in Malaysia
by country of origin, 2011/2012**

Country of origin	Documented (2012)*		Registered undocumented under the 6P Programme (2011)#	
	Number	Percent	Number	Percent
Indonesia	746,063	47.466	640,609	49.16
Nepal	304,713	19.387	33,437	2.57
Bangladesh	132,350	8.420	267,803	20.55
Myanmar	129,506	8.240	144,098	11.06
India	93,761	5.965	52,478	4.03
V i e tnam	48,348	3.076	13,515	1.04
Philippines	45,009	2.864	47,589	3.65
Pakistan	31,249	1.988	22,121	1.70
Cambodia	20,105	1.279	24,780	1.90
Thailand	7,251	0.461	9,455	0.73
China	8,508	0.541	3,327	0.26
Sri Lanka	4,538	0.289	5,601	0.43
Laos	76	0.005	0	0.00
Others	292	0.019	38,313	2.94
	1,571,769	100.000	1,303,126	100.00

Source: #Enforcement Division, Department of Immigration and *Foreign Workers Division, Department of Labour, Ministry of Human Resources, Malaysia (unpublished)

The distribution of migrant workers reflects the state of economic development in the three regions. In Peninsular Malaysia, where industrialisation and manufacturing have been expanding rapidly, the majority of LSFW are in manufacturing, while in Sabah and Sarawak where the economy is still largely dependent on agriculture, LSFW are mostly found in agriculture and plantations. In fact the two sectors utilise 75 per cent of all LSFW in Sabah and 65 per cent of those in Sarawak. Legal low skill foreign workers will become illegal if they fail to conform to the rules and regulations of the foreign worker policy, such as by running away from designated employers or not renewing their work permit annually. Such violations occur frequently, thus adding to the number of irregular migrants in the country.

Irregular Economic Migrants and Workers

The implementation of the foreign worker policy succeeded in raising the number of legal foreign workers (LSFW) but failed to curb the increase in irregular migrants and their dependents. In fact, the number of illegal migrants (IM) escalated, along with that of LSFW in spite of the many measures taken to restrict their entry. Under the Malaysian Immigration Act 1959/63, IM who violate the immigration law can be arrested, send to a detention centre previously known as the 'immigration depot' and since 2010, as Ministry of Home Affairs Depot or MOHA Depot *(Depot Kementerian Dalam Negeri)*. They can be charged in court for violating immigration law, sentenced and deported after serving the sentence. IM have no basic rights and no recourse to justice. But there are avenues for them to escape being charged, sentenced and deported through regularisation and amnesty exercises carried out periodically since the mid- 1980s.

Through regularisation, IM can work legally, and by participating in an amnesty exercise, they are not charged under the Immigration Act. Instead, they can go home voluntarily and not be deported. Apart from regularisation and amnesty, other measures taken to curb the expansion of IM are the on-going border control operations under the *Ops Nyah 1* and the *Ops Nyah 2* that began in 1992. The former is to stop further entry of foreigners into Malaysia through unauthorised entry points (*jalan tikus* or rat trails). The latter is to root out IM who fail or refuse to participate in the regularisation and amnesty exercises. In 1998, the Immigration Act was amended to introduce caning as a penalty for violating immigration law and to increase the fines and jail sentences. In 2002, the Act was amended again to introduce sanctions against transporting IM, employing and harbouring them and forging official documents. Subsequently in order to facilitate quick disposal

of cases involving illegal immigrants, in 2006 a special court to deal with illegal immigrants (*Mahkamah PATI*) was introduced and these courts are located at the MOHA depot or in its vicinity. Illegal entry is closely related to human smuggling and trafficking. To complement the existing measures to curb the expansion of IM, the Anti-trafficking in Persons Act (ATIP) was introduced in 2007. In 2010, ATIP was amended to include human smuggling, thus changing its name to the Anti-trafficking in Persons and Anti-smuggling of Migrants Act (ATIPSOM). Under this Act, victims of human trafficking or smuggling are no longer subjected to the same immigration law as the people who victimised them, that is, the perpetrators. They are 'rescued' and sent to safe houses until they are repatriated, while the perpetrators are 'arrested' under the immigration law, detained and charged in court. In 2010, the government introduced the biometric identification system as a means of verifying a person's identity, in an attempt to clamp down on the use of fake passports and other documents by foreigners that facilitate the expansion of irregular migrants into the country. In spite of all these measures, the number of IM remained high. This prompted the government to introduce yet another measure to control their expansion by introducing a 'comprehensive' programme called the 6P which involved registration (*pendaftaran)*, regularisation (*pemutihan),* amnesty (*pengampunan*), monitoring (*pemantauan),* enforcement (*penguatkuasaan*) and deportation (*pengusiran),* all of which are to be carried out in stages beginning July 2011.

It was expected to be completed within a year. Under the operation of the 6P Programme, over 1.3 million IM registered, of which over 600,000 chose to be regularised and continue to work in Malaysia, while others chose to go home under the amnesty exercise. Among those who registered, almost half were Indonesians, followed by citizens of Bangladesh (11%) and Myanmar (11%). The implementation of the 6P Programme was hindered by many factors. These include the role of both unregistered and formal agents in the registration and regularisation of IM. Many of the agents who promised identification papers and passports to employers and undocumented workers or to renew their expired passports, pay their levies and get their work permits, absconded with their money leaving thousands of IM without work permits, thus making them illegal immigrants again.[6] The large number of IM who registered also could not get their travel documents processed by their respective embassies within the one year period. In Sabah where the number of IM is relatively high and their management acutely problematic, a Royal Commission of Inquiry (RCI) was set up in 2012 to find ways to resolve the problem. The RCI wrapped up its findings in December 2013.

6   Letter from the Director of Enforcement, Dept of Immigration, Malaysia to the writer dated July 2012 and interviews with some of the cheated illegal immigrants in Sungai Buloh, December 2011 and April 2012.

As stated earlier, in 2011 over 1.3 million IM registered under the 6P Programme but the actual number is much higher. Many are still reluctant to register and hence their number is difficult to estimate. In addition, there are 44,189 IM in the MOHA depot waiting for trial or deportation. The largest number of IM is from Indonesia (37%), followed by Myanmar (21%), Bangladesh (7%), Thailand and Vietnam (6% each), Pakistan (3%) (*Source*: Ministry of Home Affairs). However, official sources put the number of IM now between 1.3 million and 3 million. If this is correct, then, for every one LSFW there are two illegal ones. With the large number of IM, it is evident that measures taken have failed to reduce the inflow. Implementation of these measures was impeded by several factors - geographical, socio-cultural, historical and administrative in nature. The long sea and land borders make surveillance and border control acutely difficult. Historical baggage too plays a role: kinship links between border communities of different nationalities facilitate and abet illegal crossings and visa abuse. The lack of enforcement personnel and inadequate space in the detention depot also obstruct effective implementation of these measures. While there are millions of IM at large, as shown in the registration under the 6P Programme in 2011, the detention depot can only accommodate about 11,400[7] detainees at any one time, thus slowing down the rooting out operations. Moreover, there is also the problem of systemic corruption among a few errant enforcement officials, some of whom have been charged, found guilty and sentenced. Effective policy implementation is also subverted by inconsiderate and greedy employers and recruiting agencies.

Asylum Seekers and Refugees (ASR)

Asylum seekers and refugees (ASR) started arriving in Malaysia in the early 1970s from the Philippines, Vietnam and Cambodia and in the following decades more arrived from a host of other countries in the Middle East, Eastern Europe, South Asia, and Africa, and from ASEAN member countries: Indonesian Acheh, South Thailand and Myanmar. They are found in Peninsular Malaysia and Sabah, while Sarawak is spared the entry of ASR due to its geographical location. Although Malaysia is not a signatory to the Geneva Convention on the Status of Refugees 1952, ASRs are allowed to stay temporarily on humanitarian grounds. They are permitted to stay until the United Nations High Commissioner for Refugees (UNHCR) finds one of the three durable solutions for them: repatriate them once their country of origin attains peace and accepts them, send them to a third country

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7   Capacity status for 2011. No later figures are available. The present capacity is deemed to be the same.

for resettlement, or integrate them into the host country, if possible. For most ASRs, the wait for a durable solution takes decades. The case of the Vietnamese and Filipinos who arrived in the seventies are two good examples. Some of the Vietnamese refugees were resettled in stages, while those who were refused resettlement by third countries were finally sent home after two decades, in the mid-1990s. The Filipino refugees in Sabah are allowed to stay temporarily on the IMM13 visa which is renewed every year on payment of an annual fee of RM90 per person (Azizah Kassim 2009). The Filipino refugees are luckier than most ASRs in Peninsular Malaysia; the presence of many of the ethnic groups from Myanmar like the Chins and Rohingyas as refugees is not officially acknowledged by the state and are living in a legal limbo. Although there is a government directive to all enforcement agencies not to arrest ASR when they carry out operations to root out illegal immigrants,[8] many ASR are arrested and taken to the MOHA depot where they are detained. They can be only released with the intervention of the UNHCR office in Kuala Lumpur. According to figures provided by the Federal Special Task Force (FSTF for Sabah and Labuan), there were 69,317 Filipino refugees in Sabah in 2012.[9] Of these, 35 per cent were in Sandakan, 33 per cent in Kota Kinabalu, 25 per cent in Tawau and 7 per cent in Labuan. With the IMM13 visa, they do not require a work permit to be employed.

The majority are urban based and are engaged in construction and services sectors, with some in self-employment, particularly in petty trading, and fishing if they are living close to the sea. However, if they fail to renew the IMM13 pass annually, their status will change to that of an illegal immigrant making them vulnerable to arrest by enforcement officers and deportation. Those deported to the Mindanao region usually make their way back to Sabah swiftly as they have no relatives in the Philippines, property or job to induce them to stay. Most of the Filipino refugee population have been born in Sabah. They are second or third generation refugees who know little of the land of their ancestors and are not fluent in their mother tongue. In Peninsular Malaysia, the number of ASRs has fluctuated over the years. When some are resettled or repatriated, their number declines, but with growing political instability in some countries within the region as experienced by Myanmar since June 2012, the inflow of ASRs has mounted again. Ethnic conflicts between the dominant Burmese Buddhists and the minority Muslim Rohingyas in the Arakan region in Myanmar drove out thousands of

8   Information provided by UNHCR officials in 2011 and later confirmed by officials of the National Security Council in the Prime Minister 's Department, and the Director of the MOHA Depot, Putrajaya in February 2013.
9   Letter from the director of the Federal Special Task Force to the writer dated June 2013 and interview with one of its officers on 30th October 2013.

Rohingyas, some of whom arrived in Malaysia seeking asylum. Statistics from the UNHCR office in Kuala Lumpur shows that in 2012 there were 101,081 ASRs registered with the UN agency and of the total, over 92 per cent were from Myanmar, followed by Sri Lanka, a very distant second (4%). The largest number was ethnic Chins, followed by the Rohingyas who were stripped of their citizenship by the Myanmar government in 1982. This figure does not include 9,000 ASRs who were detained in 14 MOHA depots in Peninsular Malaysia. Of these about 2,384 are new arrivals, comprising mostly adult males (83%) and children (11%). The actual number of ASR could be much higher as our study on the Rohingyas reveals that a substantial number who have been in Malaysia for many years are not registered with UNHCR due to various reasons such as difficulty in getting to the UNHCR office in Kuala Lumpur and/or ignorance of the need to do so.[10]

In addition, it is officially estimated that over 3,000 Rohingyas entered Malaysia between June 2012 and June 2013 due to ethnic and religious conflicts in Myanmar. There is no ruling on whether ASRs can work in Peninsular Malaysia. However, most of the able bodied adult ASR and some of their children are economically active as they are engaged as employees in informal sector activities especially in services and construction to support themselves. Due to their anomalous status, many employers are afraid to engage them for fear of being arrested for employing and harbouring IM under the Immigration Act 1959/63. Those who hire them tend to exploit them knowing that ASRs have no recourse to justice in the case of non-payment of wages by employers; or in the event of employer-employee disputes. A few ASRs are self-employed, working as petty traders, gardeners, collecting discarded goods for sale, or as small time sub-contractors in the building industry. At their workplace, or on their way to work, many ASRs are also arrested by enforcement officers who mistake them for illegal economic migrants (see among others, SUARAM Annual Reports, 2002–2010).

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10   The writer headed a research team for a project on the Rohingyas in Malaysia between 2009-2011. It was commissioned by the National Security Council, in the Prime Minister 's Department, Putrajaya.

Major Issues and Challenges

There are now at least six types of population inflows into Malaysia, in addition to the continuous inflow of tourists which reached 25 million in 2012, thus accentuating the cultural diversity of the population. Malaysia's main concern is the large number of foreign workers (both legal and illegal), and the ASRs who are also in the labour force. Many authors have written on the positive impacts of labour inflow into the country, on how their presence overcomes labour shortage and keeps the economy going. A recent World Bank Report (The World Bank, 2013:1-28. The writer headed a research team for a project on the Rohingyas in Malaysia between 2009-2011. It was commissioned by the National Security Council, in the Prime Minister 's Department, Putrajaya. 28) on immigrants in Malaysia, among others, stated that immigrant workers, "… *generate jobs for Malaysians by reducing costs of production making Malaysian firms cheaper and more competitive in the global market, allowing them to expand and consequently increasing their demand for Malaysian workers*.". (p.11). According to the report, the large number of low skill immigrant workers are at the bottom of the Malaysian job hierarchy. The small number of expatriates are at the top, and do not displace Malaysian workers. The employment of expatriates has minimal impact on wages and employment of citizens. The millions of workers are also consumers and their presence in large numbers create a big demand for consumer goods, especially food and housing, as well as services such as medical, banking and transportation.

However, there is a flip side to all these. Many of the attendant problems in the economic, socio-cultural, political and security dimensions have been raised frequently and discussed. Economically there are concerns that the reliance on foreign workers can delay up-grading of technical skills, mechanisation and automation, thus sustaining labour intensive industries. Many claim their employment also leads to a decline in productivity in some sectors of the economy, depresses local wages and drains the economy due to remittances sent to the source countries, besides the high cost of monitoring, control, detention and deportation of illegal immigrants (Tham and Liew 2004; Pillai 1999). Those who focused on the electoral process highlighted the intrusion of foreign nationals into the state electoral roll which upsets the balance of power between the various ethnic-based political parties in the state (Sadiq 2005; Mutalib 1999). Others are worried about the impacts of illegal entry on border and internal security and diplomatic relations (Azizah Kassim 1997& 2005; Ramli Dollah *et al.* 2003; Nor Azizan Idris 2005). It is this last issue that is of great concern to the authorities, especially because of

the continuous presence and expansion of irregular migrants, the tendency among low skill foreign workers to violate Malaysian laws especially immigration and labour laws and their involvement in serious crimes such as armed gang robberies, murder, smuggling of prohibited commodities especially drugs, manufacture of forged documents, and commercial crimes.[11]

Statistics from the prison department show that in 2011, about two-thirds of all prison space was taken by foreigners for all kinds of offences. Illegal immigrants are officially viewed as public enemy number two, next to that of drug abuse (Mohd Zamberi Abdul Aziz 2011). Among the common immigration violations are illegal entry that is closely related to human smuggling activities where Malaysia is used as a transit point for people smuggling from Pakistan, Afghanistan, Iran and Myanmar by international syndicates who then take them to Australia. For those who arrive legally, pass abuse,[12] overstaying and working illegally in Malaysia, non-payment of levies, running away from designated employers/jobs are rather common. Hence illegal immigrants as a category are heterogeneous (Azizah Kassim and Ragayah Haji Mat Zin 2011). Most of the immigrant population in Malaysia is concentrated in the urban areas. The MM2H participants, expatriate workers and international students are urban based; so are the low skill foreign workers, asylum seekers and refugees, as urban centres provide ample employment opportunities for them. The large presence, especially of the low income group, has a significant negative impact on urbanisation in Malaysia. Most of the low skill workers are engaged as domestic maids and in the construction, manufacturing and service sectors which are urban based. Their concentration in the urban areas such as the Klang Valley has led to contestation for urban space and economic opportunities. They compete with the local urban poor for low cost accommodation in urban housing estates and in the squatter areas. This often leads to a rise in rental, and abuse of state subsidised low cost homes meant for poor Malaysians when unscrupulous Malaysian house owners rent out rooms or their housing units to foreigners who are willing to pay more.[13] Many low skill foreign workers live in crowded rooms and houses to reduce the cost of living.

11   Under the Ops Cantas, an on-going operation launched in mid 2013, many foreigners were found to have links with secret societies, and involved in drug smuggling, forgery and murder. These crimes are widely reported in the national print and electronic media throughout the year.

12   Many foreigners arrive in Malaysia on tourist passes to seek employment. In 2010, the VISA-on Arrival (VOA) procedure to facilitate tourist arrivals for some selected countries has been widely abused. Over 40,000 Indian tourists were reported 'lost' in Malaysia as they never returned to India.

13   Our study reveals that some two rooms state-subsidized low cost housing are rented to foreigners between RM700 –RM800 a month, when those rented to locals are for RM400-RM500.

Some low skill foreign workers, in particular Indonesians, solve their housing problems by jointly buying land in Malay reserve areas which cannot be sold to non- Malays, let alone to foreigners. They circumvent this sale prohibition by using Malaysians of Indonesian origin from their own ethnic groups (Baweanese or Minangkabau, for example) who are now categorised as 'Malays' as the proxy owner in the sale transaction. The *de facto* buyers, usually a group belonging to a kinship or ethnic group built terrace or semi-detached houses on the land, enabling them to establish their own ethnic enclaves in such areas as Gombak and Sungai Buluh in Selangor; and Sungai Pencala in the Federal Territory of Kuala Lumpur. Very often, these houses are built without urban planning permission, creating problems for urban authorities and much resentment from the law abiding local population (Azizah Kassim 2011). Their crowded living conditions particularly at their rented houses and in the make-shift living quarters or *kongsi* at the construction sites have been cited as contributing to the spread of communicable diseases. Some of them, especially those who arrived illegally, have been found since the 1990s to suffer from contagious diseases which were once under control in Malaysia, such as malaria, tuberculosis and hepatitis B. Their presence is perceived as a danger to public health even today as announced recently by the Minister of Health at a conference of medical practitioners in Kuala Lumpur. Quoting figures from FOMEMA (Foreign Workers Medical Examination and Monitoring Agency), the agency responsible for doing medical check-ups on foreign workers, the Minister reported that 48,734, or 3.6 per cent of the illegal immigrants who registered in the 6P exercise in 2011 were found to suffer from contagious diseases such as tuberculosis, hepatitis B, syphilis and HIV/AIDS (New Straits Times 2013e; 2013f; Utusan Malaysia 2013b; Wong, 2013). Such disclosure prompted a national daily to caption its lead article on the foreign workers the next day as *"More than health issues: Illegal foreign workers endanger the people and the economy"* (New Straits Times, 2013g). Given this background, the presence of a large number of low skill foreign workers in the urban areas places a heavy stress on state medical facilities as well other social services and public amenities.

There are also social problems arising out of their presence. According to statistics from the Council for Anti-trafficking in Persons and Anti-trafficking of Migrants, over 90 per cent of all female victims rescued under the Act from 2007–mid-2013 are foreigners involved in sex related industries as masseuse and prostitutes. They are mainly from Indonesia, Vietnam, Thailand, Philippines and Cambodia, with a few from Africa. In addition, there is also a substantial number of foreign beggars comprising mainly women and children in the urban areas, and their presence is most noticeable on Fridays when Muslims perform their

obligatory weekly communal prayer; and prior to and during religious celebrations such the Muslim Aidil Adha (or *hari raya Haji*) and Aidil Fitri, (*hari raya puasa* at the end of the Muslim fasting month of *Ramadan*);[14] Christmas, Chinese New Year, Hindu Deepavali and Thaipusam. In the urban areas, foreign nationals openly participate in trading activities which are prohibited to them. They are visible in places like the Chow Kit market in Kuala Lumpur, and in night markets all over the Klang Valley and their presence is crowding out the local traders. Some are also opening small businesses in the neighbourhood, where they sell basic goods such as foodstuffs, or operate workshops for motorcycles targeting their countrymen as customers. Many are trading without licenses from the urban authorities while others do so by using trading licenses "bought" or "rented" from local traders who are unable to compete with the immigrant petty traders.[15]

Much of the negative aspects of foreign workers are reported in the national print and electronic media (including social media), evoking resentment among the general public, especially those whose lives are negatively affected by their presence. There are numerous reports on complaints made by the local urban poor of their fear of 'invasion' of their neighbourhood by foreigners with alien culture and strange ways: loud voices and drunkenness, permissive life styles and most importantly of their habit to litter their environment, and the tendency of a few to commit crimes. A most recent one is a report on residents in Pandan Jaya, Pandan Indah, Pandan Cahaya and Ampang in Selangor who are very worried about the high number foreigners among them, and whose presence is perceived as an interference into their daily lives as some started petty trading activities and food outlets to cater for their people. They are also viewed as a danger to public order, as a few are suspected of break-ins in the area (Utusan Malaysia 2013b).

Not all Malaysians are opposed to the immigrants. Some who benefited from their presence such as employers, traders and landlords welcome them. However, it is the sense of resentment from the lower income group that frequently gets to the national media most of which are politicised by interest groups such as political party leaders and non-government organizations (NGOs) that influence

14   The writer found many foreign women and children begging at the Kiara Muslim cemetery in Kuala Lumpur during three successive hari raya in 2011, 2012 and 2013. They came from Pahang, Perak and Johor the day before the hari raya and spent the night at some mosques in Kuala Lumpur or Selangor. From there they made their way to the cemetery by taxi. Our enquiries reveal that at other Muslim cemeteries too, such begging activities by foreigners took place.

15   Discussions with Kuala Lumpur City Hall enforcement officers during our research on migrants, urbanization and development (2008-2009) and in March 2013 with an officer in charge of petty traders in the same urban authority.

policy decisions on foreign workers, illegal immigrants and ASR; as well as foreign perceptions of Malaysia's treatment of its immigrant population. Hence many unpopular measures are taken against the LSFW, IM and ASR as mentioned earlier. The canning of migrants who violated the immigration law and sending them to jails and deportation has been highly criticised by many, including NGOs and human rights groups (see among others SUARAM Annual Reports, 2002-2010; Fernandez 2008, Amnesty International 2010). Such reports contribute significantly to Malaysia's poor rating in the annual Trafficking in Persons Report (TIP Report) issued by the State Department of the United States of America (US). In 2009, Malaysia was placed on Tier 3, on the same rank with countries with horrendous human rights records. In the following year, the rating improved to Tier 2 (Watch list), a placing that runs for four years in a row until 2013. Malaysia still has a poor rating on human rights, notwithstanding its concerted efforts to up-grade its services in spite of several constraints faced as a new player in implementing the ATIPSOM, such as insufficient finance, lack of trained enforcement officers and legal personnel, inadequate up-to-date equipment and low public awareness on the scourge of human trafficking and smuggling.[16]

It must be stressed that the inflows of expatriates, MM2H participants and international students sought after by the state are not without their challenges, albeit on a small scale and which are less visible to the public. For example, in recent years there is evidence that many foreigners abuse student passes to enter Malaysia in search of employment. This is well illustrated in the case of 21 young foreign women from an African country believed to be involved in prostitution and who were rescued from an apartment in Mentari Court, in Petaling Jaya in 2012.[17] All of them were on student visas registered at a local non-existent college to study English. A few foreigners who arrived on student visas are also found to be involved in commercial crimes and drug trafficking.

The expatriates and MM2H participants, on the other hand, are unlikely to be involved in unlawful activities. However, their presence as well as speculative residential property investment by some of them has been blamed for the sharp increase in the price of houses in the urban areas in recent years (New Straits Times 2013a; 2013b). The state response to this is found in the newly introduced 2014

16   See minutes of the Malaysian Council for Anti-trafficking and Anti smuggling of Migrants (MAPO) monthly meetings from 2008-2012.

17   As a member of MAPO the writer (and three others) was asked by the MAPO secretariat to interview these African "students" at a safe house for human trafficking victims in Kuala Lumpur in early 2012.

Malaysian Budget announced by the Malaysian Prime Minister in Parliament on 25 October 2013 (Government of Malaysia, 2013: 101 & 132; The Star 2013). Effective from 2014, foreigners will only be allowed to buy houses with a price tag of not less than one million ringgit each, and the real property gains tax (RPGT) has been amended to make foreigners pay more than local vendors if they sell their property within three or five years (New Straits Times 2013c, 2013d). In Johor, where there is widespread investment on properties by foreigners in the Iskandar Development Project, the state administration is considering the introduction of a two tier assessment tax on properties, with foreign owners paying a higher tax than the locals (New Sunday Times 2014). In addition, the Minister of Tourism is also considering raising the deposits for MM2H participants to one million Ringgit from RM300,000 (Utusan Malaysia 2013a). The challenges imposed by the expatriates, MM2H participants and international students are manageable, and their presence and employment is not viewed with concern.

The Way Forward

The inflows of foreigners contribute significantly to Malaysia's economic development; however, its many attendant problems, if not attended to urgently, may cost the country more than what it gains. The main problem in respect of the inflows is the heavy reliance on foreign labour and the persistent expansion of irregular migrants in the work force. This has been attributed to the failure of the foreign worker policy which has been criticised by many including NGOs, trade union leaders, employers associations and academics as 'flip-flop'; 'ad hoc'; 'knee-jerk reactions'; 'inconsistent' and 'criminalising migration' (Pillai 1999; Fernandez 2008; Neeko 2008; Amnesty International 2010; National Union of Plantation Workers (NUPW)[18] and Malaysian Employers Federation (MEF)[19]. Nonetheless, a few regard the policy as an appropriate strategy to deal with the fluctuating economic trends in the world market (Abd Rashid *et al*. 1999; the World Bank 2013). Many critics blame the failure of the policy to its poor implementation.

However, this writer believes that the root cause of the problem is the in-built weaknesses of the policy that makes it counter-productive, resulting in increasing instead of reducing the number of irregular migrants and workers (Azizah Kassim 2012). Measures taken to curb the spread of illegal immigrants also need urgent

18   Interview with, Mr. A. Navamukundan, National Executive Secretary of the National Union of Plantation Workers (NUPW) on 1 November 2013.

19   Discussions with the Executive Secretary of Malaysian Employers Federation (MEF) on 5 May 2011.

revision. Rather than a 'one size fits all' solution that failed to take into account the heterogeneous nature of the illegal migrant population (Azizah Kassim and Ragayah Hj. Mat Zin 2011), there is a need to come up with a specific solution to each type of illegal migrants. These measures must be accompanied by others aimed at reducing dependency on foreign workers such as accelerating automaton, and moving away from labour intensive enterprises; establishing more day care centers for children and homes for the elderly, and allowing more people to work from home, some of which are already in place in Malaysia. Finally, it must be emphasised that population inflows especially of low skill labour will continue even after Malaysia achieves developed nation status in 2020. As seen now in developed countries in the West and in Japan, industrialisation is usually accompanied by a decline in fertility and an increase in the ageing population. This, together with the continued availability of several types of work that cannot be mechanised or automated necessitates the hiring of foreign labour.

Malaysia's relatively better economic performance and political stability compared to some of its neigbours within the Association of Southeast Asian Nations (ASEAN), and the protracted political instability in Myanmar, South Thailand and the Mindanao region in the Philippines and elsewhere, will also push more migrant workers, asylum seekers and refugees into Malaysia. The biggest challenge for Malaysia is to find the right formula to minimise the negative impacts of labour inflows and maximise their benefits. This should include taking a positive stand on the issue of asylum seekers and refugees by establishing a legal mechanism to administer them that allows them to stay and work legally which is in line with the inclusive development that Malaysia is pursuing.

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FOREIGN WORKERS IN MALAYSIA :
LABOUR MARKET AND FIRM LEVEL ANALYSIS*

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Abstract

This paper presents the employment patterns of foreign workers in Malaysia using two key datasets, the Malaysian Labour Force Survey and the Economic Census, which are compiled by the Department of Statistics of Malaysia. The datasets provide complementary individual-and firm-level information about the employment of foreign workers and offer a comprehensive picture of the utilisation of foreign labour in the country. The datasets discussed should be useful for other researchers to further explore the questions raised in the paper.

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Introduction

Globalisation and integration of markets have been the defining features of the world economy over the last two decades. One of the key components of globalisation is the integration of labour markets. The policy debate creates the impression that foreign workers and immigrants are flooding destination countries, especially those that are members of the OECD. However, labour markets are probably the only area where global integration has been relatively slow. The share of the international migrants -people living or working in a country in which they were not born -has been relatively steady at around 3% of the global population over the last six decades (Ozden et al. 2011).

A prominent misperception is about the importance of OECD countries as the key destinations for migrants. Yet, migration between developing or non-OECD countries accounts for almost half of all international migrant stocks (Artuc et al. forthcoming). Many developing countries and regions have become important destinations, especially for migrants from their neighbours and other developing countries.[1] In this group, we also need to include several East Asian countries including Malaysia (Athukorala 2006).

Malaysia is an excellent country to study the main features and implications of regional labour mobility. It has developed faster and more steadily than its two more populous neighbours -Indonesia and the Philippines. Furthermore, the impressive and rapid improvements in education created relative shortages for unskilled workers needed in low-skill sectors such as agriculture, construction and low-tech manufacturing.

1   Prominent destination countries are the oil-rich Persian countries, South Africa, Turkey, Chile, Brazil and Mexico.

These patterns led to excess demand for unskilled labour which was met with willing workers, not only from these two neighbouring countries but also from other countries in Asia, including Thailand, India, Bangladesh, Nepal, Myanmar and Cambodia. The lessons learned from Malaysia will provide important insights into the implications of SouthSouth migration patterns that are likely to dominate the global landscape for the decades to come.

The share of foreign workers in the Malaysian labour force has increased substantially over the last two decades. This has given rise to an active debate on foreign workers' impact on Malaysian workers and firms, and created an urgent need for an evidencebased understanding of the role of foreign workers in the Malaysian economy. The first concern is that foreign workers take away the jobs of Malaysian workers or depress their wages[2], a concern which is frequently voiced in OECD countries as well. A second worry is that the presence of cheap and abundant labour takes away the firms' incentive to invest in superior technologies and upgrade their investments. This is viewed as a critical roadblock on Malaysia's road to becoming a high income economy by 2020.

Of particular concern is the increase in the numbers of undocumented foreign workers who either entered Malaysia without proper permits or overstayed their existing visas. The presence of a large number of undocumented foreign workers can complicate many policy initiatives -such as the implementation of the minimum wage laws -as well as many migration policies such as sector specific visa quotas and levies.

Within this framework, an emerging key policy objective is how to manage the process of admitting foreign workers and reducing overdependence on them without harming Malaysian workers, firms and economic growth, especially in key sectors. For this purpose, the Ministry of Human Resources (MOHR) and the World Bank collaborated on a report on foreign workers in Malaysia, as part of a larger project that aims to identify the human resource needs, constraints and strengths of Malaysia. In addition to quantifying the impact of foreign labour on Malaysian workers, firms as well as macroeconomic variables, the project aims to help the MOHR in identifying immigration policy areas that need to be reformed in order for the Government to meet its overall foreign labour related objectives.

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2   Athukorala and Devadason (2012) find that in the manufacturing sector, the impact of foreign workers on the growth of low skilled worker wages is negative but very small.

This paper is one of the background papers prepared for this project. Its main objective is the presentation of the patterns observed in two of the main databases used for the analysis. These are the Labour Force Surveys (LFS) for 1990-2010 and the Malaysian Economic Censuses that collect establishment level data every five years for most economic sectors and sub-sectors : 2000, 2005 and 2010. Given the distinct sampling methodologies used by these data sources, they each capture slightly different groups of workers. For example, the LFS dataset does not record foreigners living in communal housing (only in individual housing) whereas establishment data do. On the other hand, establishment data do not capture informal foreigners working in unregistered firms (only formally registered firms are interviewed) whereas the LFS data partially do.

This paper does not present detailed econometric analyses; these were performed in several other background papers prepared and are discussed in detail there. The goal here is to introduce the two key datasets, examine their main features, present the main patterns and finally discuss how they can be used in further analysis.

Background

Although the reliance on foreign workers began in the early 1970s and through the 1980s to support Malaysia's rapid growth, formal guidelines pertaining to foreign workers were only introduced in the early 1990s (Azizah and Zin 2011). The official policy stance was to permit foreign workers as an interim solution to meet the increasing demand for lowskilled labour in the country. The Government's stated plan was to support the nation's high growth while it pursued a longer-term strategy to upgrade the economy and expand the supply of skilled labour (Kanapathy 2006). As a result, the use of foreign workers gained wide acceptance, first in plantations, and later in other industries employing a lot of low-skilled labour, such as construction and domestic services.

Local labour was either unavailable in these sectors or it was perceived that wages and conditions of work could not attract Malaysian workers in sufficient numbers to fill the rapidly expanding demand (Hugo 2004). Internally, the driving force is (and has been) a combination of economic, socio-cultural, and political factors. In addition to rapid industrialisation, urbanisation, and strong economic growth (well above an average rate of five per cent annually during the last two decades), an additional factor was the rapid increase in education levels, and a

relatively small population base. All of these factors jointly created a situation of tight labour markets and increased demand for low-skilled foreign workers. The implementation of the New Economic Policy (NEP) in 1971 led to massive urbanisation and a population movement from rural to urban areas. This led to labour shortages in several key economic sectors, especially in rural areas, such as plantations and other natural resource related sectors. These shortages were largely addressed by the arrival of foreign workers from Indonesia, the Philippines and Thailand. The presence of immigrants from other countries was low at that time. Over time, labour shortages became a concern in the urban sectors such as construction and domestic services, where increased prosperity generated increased demand for more workers. Initially, the recruitment of foreign workers was done surreptitiously as there were no legal provisions. But this changed over time. Immigration policy began to develop (heavily influenced by necessity) to allow a sufficient supply of unskilled and semi-skilled foreign workers into the country to maintain economic growth.

The expansion of formal education since independence led to changes in job preferences of many Malaysians. More specifically, young Malaysian workers with formal education shunned menial jobs such as those in agriculture and construction in favour of formal and better-remunerated employment in the public and private sectors (Athukorala 2006). Rapidly increasing education rates also led to a rise in the number of educated women who sought formal jobs, which in turn led to an increase in the demand for domestic workers.

External economic and political factors have also contributed to an increase in the inflow of migrant workers into Malaysia. Political instability in neighbouring countries created asylum seekers and refugees who ended up joining the Malaysian labour market as irregular workers. However, the main factors were the comparatively slower economic growth rates in several neighbouring countries, accompanied by low wages and sometimes higher levels of unemployment that gave rise to disparities in living standards and economic structures between Malaysia and source countries. All these forces provided increased incentives for workers to emigrate out of their countries and into the rapidly growing, stable and nearby Malaysia. Different population dynamics in East and South-east Asia will continue to trigger immigration in the region in the next few years (Walmsley et al. 2013).

Labour Market Data

The following section of the paper uses Labour Force Surveys (LFS), collected between 1990 and 2010, for labour market analysis of both Malaysian and foreign workers. The Department of Statistics of Malaysia has been collecting labour force data for an extended period of time. The surveys ask questions on nationalities and countries of birth of the respondents as well as several additional questions on the education levels, sectors of employment, age, wages (starting from 2007), employment status (full-time, part-time, unemployed), and non-employment status (student, housewife, retired, disabled).[3] As a result, LFS data can be used to analyse the patterns and economic implications of the presence of foreign workers in different sectors, regions and over time. One concern remains-the sampling is such that it fails to collect data on workers who live in communal or group housing. This tends to be the case in plantations and various low-skill intensive enterprises. Since foreigners tend to be over-represented among the workers in these cases, and there is anecdotal evidence that they also tend to be undocumented, the data possibly undercounts these types of foreigners in the LFS.

Figure 1. Foreigners in Malaysia, 1990-2010
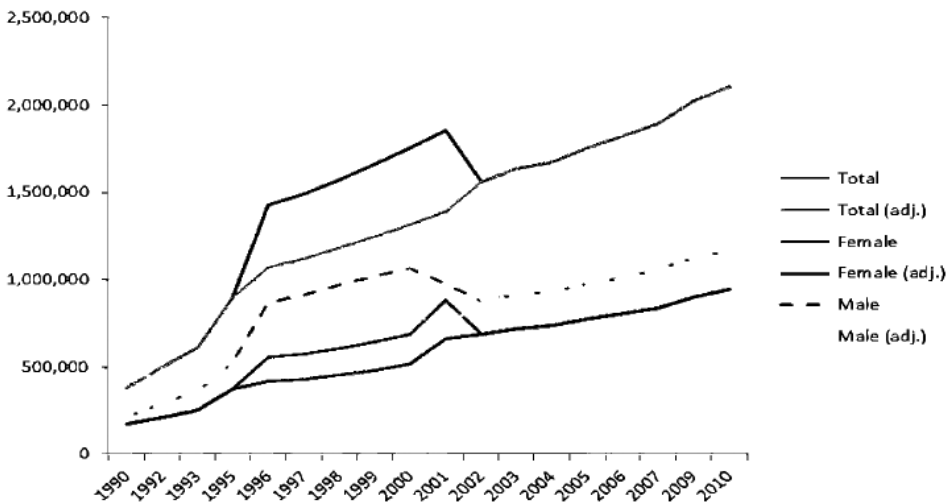
Source : Authors' calculations with Department of Statistics, Labour Force Survey

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3   Note that the LFS is a representative repeated cross-section of the Malaysian population and does not follow individuals over time.

The number of foreign workers in Malaysia has grown rapidly over the last twenty years. It is difficult to accurately measure their number since data are imperfect.[4]As seen in Figure 1, there were around 380,000 foreign workers in Malaysia in 1990 according to the LFS. The number increased rapidly to around 2.1 million in 2010. Male foreigners currently constitute around 55 per cent of the overall foreign population, after declining from a peak level of 62 per cent in 1998. There is a slight peak in 2001 (to 1.85 million), a relatively rapid drop to 1.56 million in 2002, and then a smooth increase during the next eight years, reaching over two million. It seems the peak in 2001 and drop in 2002 were due to a switch in the sampling frame of the underlying survey and new weights created based on the new 2000 census. Hence, it is likely that the 'bump' in the graph is a statistical artifact and the actual time series is smoother. The dotted lines represent the smoothed time-series of the fraction of immigrants. The second critical statistic is the share of foreigners in the total labour force, which increased from 3.5 per cent in 1990 to 9.5 per cent in 2010.

Figure 2 presents the significant change that has taken place over the last twenty years. A related statistic worth noting is the significant increase in the share of foreigners among the population above 15 years of age (who are considered to be in the labour force). Both lines follow quite closely, with the share of foreigners among the working population increasing from 3.2 per cent to 7.4 percent in 2010. Again, the 'blip' in 2001 is present in this graph as well. However, it does not distract from the overall trend, which shows an increase until 2001 and then stays stable around 9.5 per cent until 2010. The dotted lines represent the smoothed time-series of the fraction of foreign workers.

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4   The LFS captures a large portion of the migrant population in the economy and provide a statistically acceptable source for the analysis presented in this paper. Further details on the surveys used are provided in the last part of this paper.

Figure 2. Foreigners as a (per cent) share of the labour force, 1990-2010
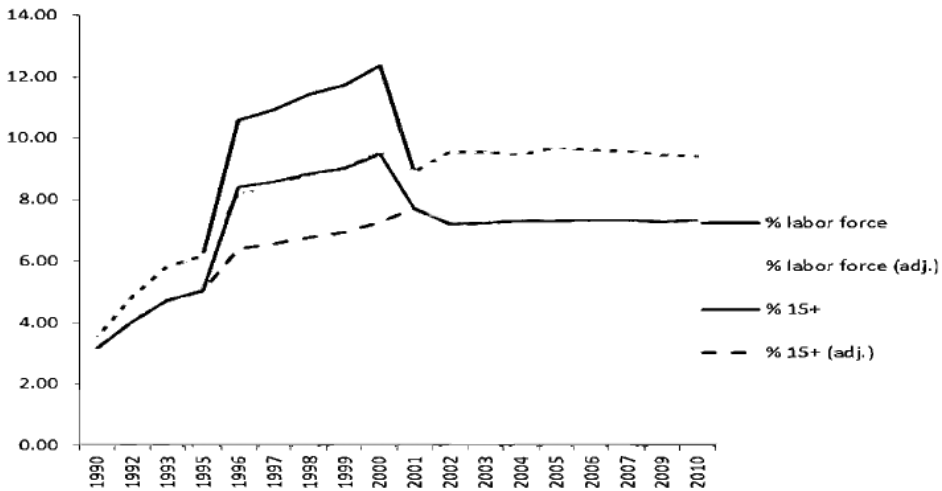
Source : Authors' calculations with Department of Statistics, Labor Force Survey

While their numbers were increasing, foreign workers were participating in the labour force at higher levels than Malaysians. This is to be expected since the main reason for foreigners to come to Malaysia is to increase their earnings and savings, possibly to send remittances to their families back in their home countries. As a result, employment levels of both male and female foreigners are higher than their Malaysian counterparts. During 1990 and through to 2010, the employment rate of male foreigners moved within a narrow range (between 93 and 95 per cent) while it increased from 41 per cent to over 60 per cent for female immigrants. On the other hand, the employment rate of Malaysian males declined from 81 per cent in 1990 to 73 per cent in 2010. The participation of Malaysian females in the labour force, between 41 and 46 per cent, is chronically low despite the fact that they are highly educated.

As of 2010, Indonesians were (still) the main foreign group (55 per cent), and Filipinos the second largest group in Labour Force Surveys (20 per cent). The prominence of Indonesians among foreigners is not surprising given the cultural and physical proximity of the two countries. For many Filipinos, migration is a common part of life and Filipino maids, seamen and nurses are prominent features of the labour markets in many OECD, Persian Gulf and East Asian countries. Filipino workers account for around 20 per cent of the total foreign worker population in the LFS, working primarily in the nearby states of Sabah and Sarawak. The rest

of the immigrants, between 20 per cent and 25 per cent of the total, come from numerous other countries and their composition has been changing over time. Historically, South Asian countries, such as India and Bangladesh, were important sources due to their excess population and cultural links. In recent years, people from other ASEAN countries-such as Vietnam, Laos, and Myanmar-have become more commonplace in Malaysia as regional integration has been strengthened, labour mobility costs lowered, and restrictions reduced (Figure 3).

Foreign Workers In Malaysia: Labour Market and Firm Level Analysis

Figure 3. Countries of origin of foreigners
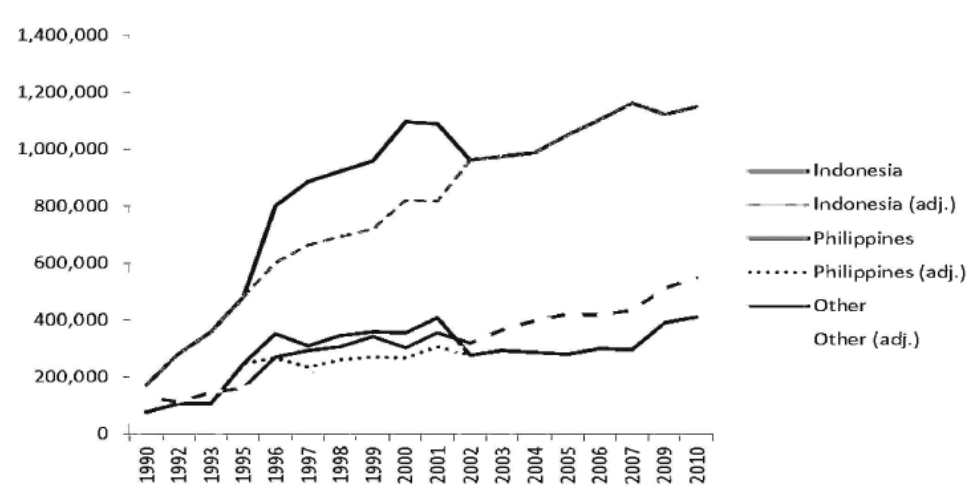
Source : Authors' calculations with Department of Statistics, Labor Force Survey

Foreign workers are concentrated in several big states and their distribution across states is stable over time. Sabah has always been the largest destination state in Malaysia for immigrants, with over 36 per cent of the total foreign population residing there in 2010, down from 44 per cent in 2000. Proximity to Indonesia and the Philippines, cultural affinity, and the prominent role of agriculture, especially plantations, in the economy of the state are among the main reasons why it is an attractive destination. Selangor and Johor follow with 15 per cent and 12 per cent of the foreign population, respectively, in 2010 (Figure 4). As of 2010, these three states were hosts to almost two-thirds of all foreigners in Malaysia. Other

states (or territories) with over five per cent share of foreigners are Pahang, Pulau Pinang, Sarawak, and Kuala Lumpur. [5] The concentration of foreign workers in a few large states is due to the concentration of economic opportunities available for low-skilled labour in those states. It is natural for foreign workers to be attracted to states where economic opportunities abound for their skill sets. Figure 5 displays the share of the total population in a given state that is foreign-born. Sabah leads the list with foreigners making up almost 30 per cent of the total population. Foreign workers are less concentrated in other states. For example, they make up 10 per cent of the population in each of the following states : Johor, Pahang, Kuala Lumpur, and Pulau Pinang. In Selangor, Melaka, Negeri Sembilan, Sarawak, and Kuala Lumpur they only make up 5 per cent of the total population. All other states have a negligible share of foreign population.

Figure 4. Distribution of foreign workers across states
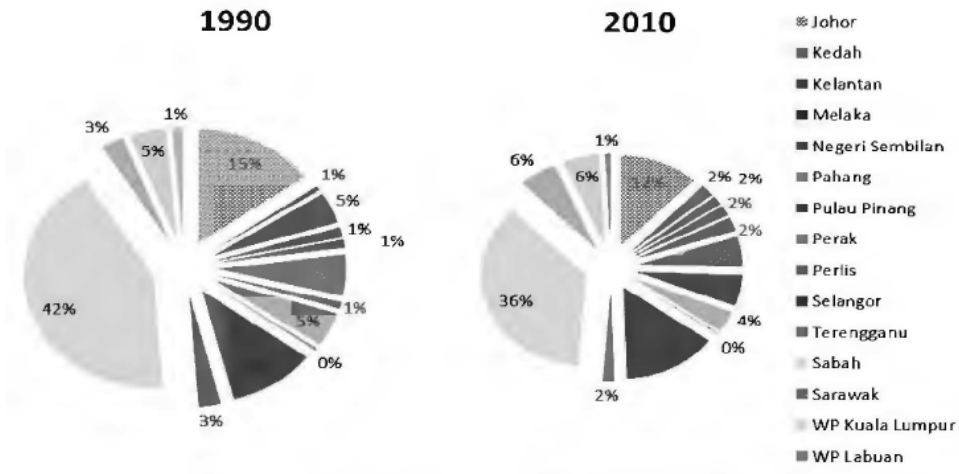
Source : Authors' calculations with Department of Statistics, Labor Force Survey

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5   For the purpose of this analysis, the territory of Putrajaya, which became a Federal Territory In 2001 was merged with Selangor in order to have a consistent time series. Labuan was excluded from this figure, despite the large number of immigrants, because of its small size and small population share.

Figure 5. Share of foreign workers in different states
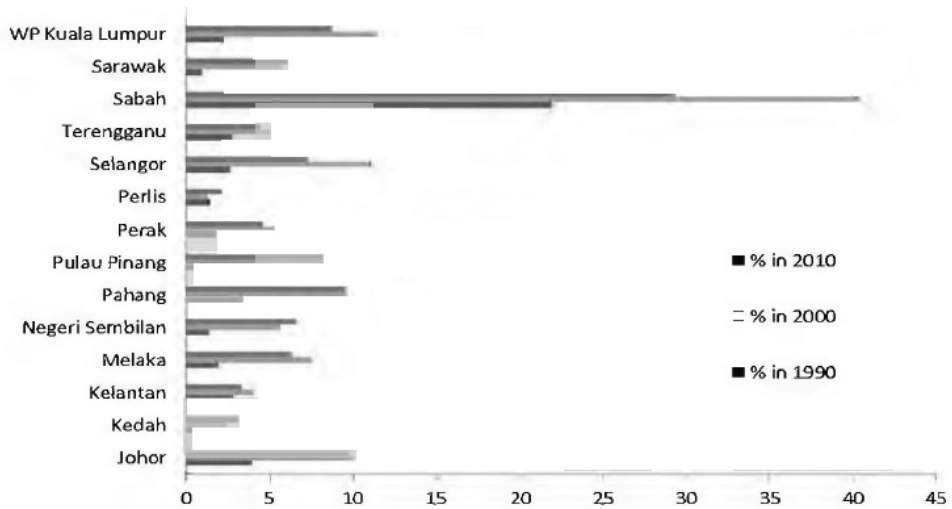
Foreign labour continues to be largely concentrated in physically demanding sectors of the economy such as agriculture, plantations and construction. About 32 per cent of all foreign employment was in the agricultural and plantation sector in 2010; this percentage was down from a higher level of 35 per cent and 48 per cent in 2000 and 1990, respectively. It needs to be added that the Labour Force Survey is likely to undercount the number of foreign workers in plantations since workers in communal and group housing are under-represented in the sample.

The construction sector was the second largest employer immigrants, with 14 per cent of the total, in 2010 (Figure 6). It was followed by other services that encompass a host of low-skilled demanding services[6] (12 per cent), wholesale retail (11 per cent), and accommodation services such as hotels (7 per cent). With the exception of the relatively rapid decline in the share of agricultural employment among immigrants, other sectors were more stable. This was especially true for service sector that employ relatively more unskilled workers (for Instance, hotels, construction, and restaurant), and are spread across the country.

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6   Among others, other services include domestic services, sports and recreation and culture

High technology, high-skllled manufacturing and high-skilled service sectors were not big employers of foreigners given that they often require specialised skills that most foreigners tend not to possess.

Figure 6. Distribution of foreign workers across sectors

As a share of an entire economic sector, foreign workers make up the largest share of the labour force in wood-manufacturing sector, fellowed by other services, and agriculture. The data shown in Figure 7 provide a picture of the distribution of foreigners and their role across sectors.

Figure 7. Share of foreign workers in different sectors (per cent)
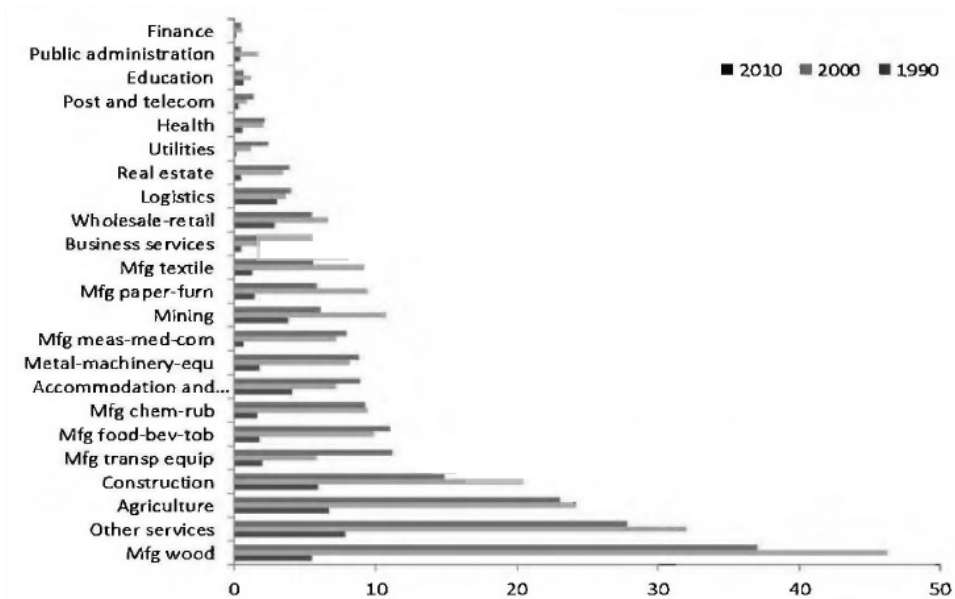
Source : Authors' calculations with Department of Statistics, Labour Force Survey
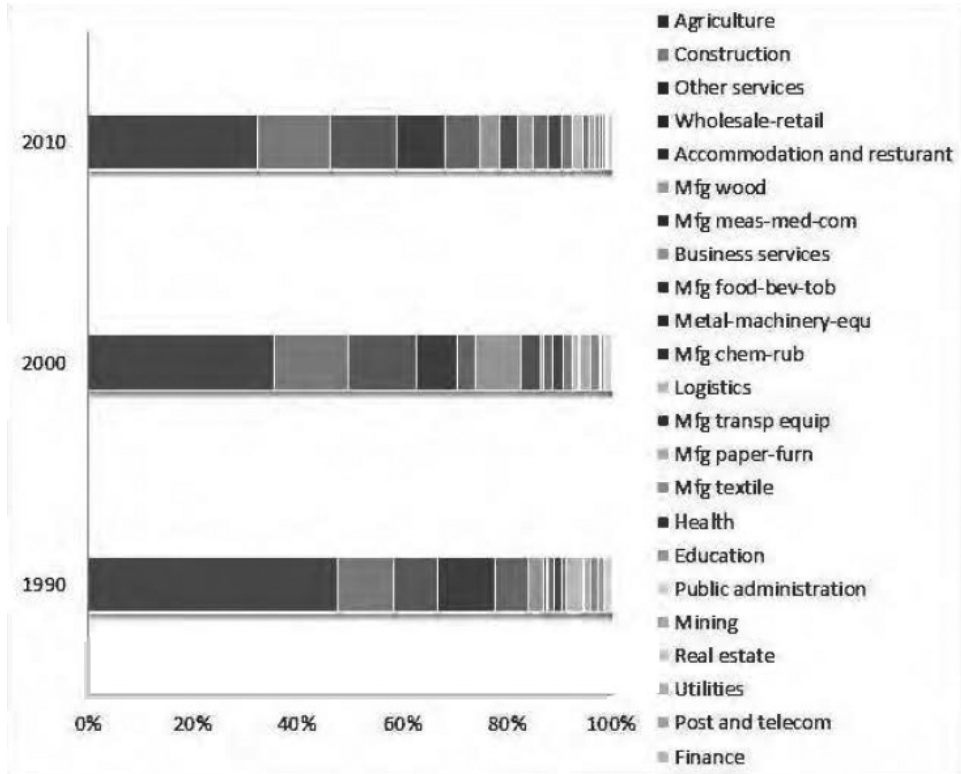
Foreigners had the highest share of employment in the manufacturing of wood products (37 per cent in 2010, down from 46 per cent in 2000), other service sectors of the economy (27 per cent in 2010), agriculture and plantations (23 per cent), construction (14 per cent), and manufacturing of transportation machinery and manufacturing of food products (each 11 per cent). Even though agriculture, construction and other services employed most of the immigrants, it is clear that foreigners played a significant role in several relatively smaller manufacturing sectors (wood, food and transport equipment). Also, as mentioned previously, foreigners were not present in service sectors that either required high levels of human capital or where public servants were employed-for instance, finance, telecommunications, health, education, and public administration.

There is a widening gap between the educational attainments of foreign and Malaysian workers, indicating that foreign workers complement the Malaysia workers and close the shortages at the low end of the human capital spectrum. Educational attainment, a proxy for skill level, is often used as an indicator for income and labour market outcomes. The education levels in Malaysia have been

rapidly improving over the last 20 years (World Bank 2013). One can argue that this is the most important defining feature of the Malaysian labour force over the last two decades. While the share of the population with primary school education or less went from 61 per cent in 1990 to 26 per cent in 2010, the share of diploma/certificate and degree holders increased from five per cent to 18 per cent (Figure 8). The largest increase in terms of educational attainment took place in the share of the secondary school graduates over the last two decades. Education for this group expanded from 31 per cent in 1990 to SS per cent in 2010. Immigrants, on the other hand, were significantly less educated than Malaysians and their placement in the labour market reflected their low levels of educational attainment.

Figure 8. Distribution of Malaysians and foreigners by education over time
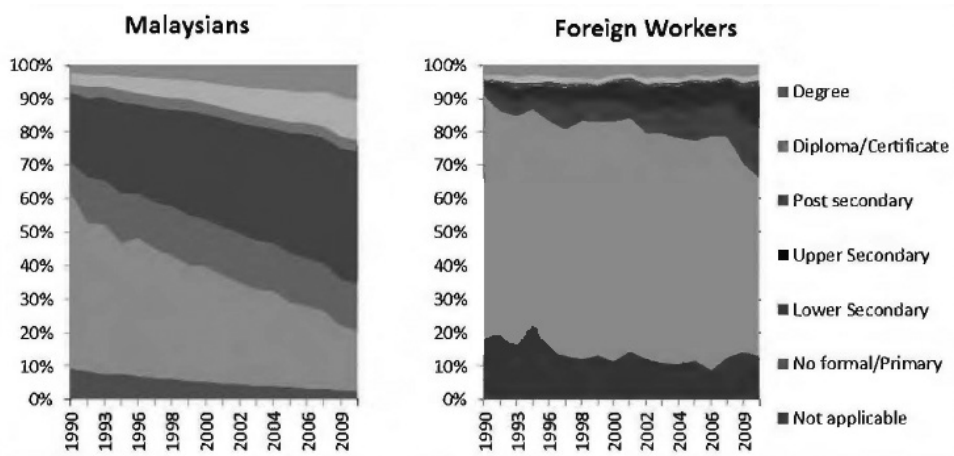
Source : Authors' calculations with Department of Statistics, Labor Force Survey

Furthermore, unlike the increasingly evolving levels of education for the Malaysian population, foreigners had educational distributions that were more or less stable over time. For example, the share of primary (or less) educated fluctuated between 8S per cent and 91 per cent over the 20-year period studied. Similarly, the share of university educated foreigners stayed between 4 per cent and 6 per cent. Finally, foreigners with secondary education were the only group that managed to increase their share of education from 10 per cent to 18 per cent over the 20-year period under review.

Labour-intensive economic sectors, i.e. those with a high labour-to-capital ratio, rely more heavily on foreign labour than capital-intensive sectors. Furthermore, even in capitalintensive sectors, foreigners typically hold low-skilled occupations. Labour-intensity varies across sub-sectors in the Malaysian economy. For instance, just over half of Malaysian workers in the agriculture sector of the economy have low levels of education; this is a labour-intensive sector that relies heavily on foreign labour and only a small subset of workers have medium or high levels of education. Similarly, low-skilled service sectors such as accommodation (26 per cent), construction (28 per cent), logistics (21 per cent), and other services (2S per cent), have very high shares of workers with primary levels of education.

On the other hand, sectors with higher skill intensity such as education (77 per cent), finance (59 per cent), health and real estate (48 per cent) have increasingly higher shares of university educated workers. Foreigners in these sectors are much less educated than their Malaysian counterparts. for example, within the last group of highskilled services, only 13 per cent to 35 per cent of foreigners are college educated (Figure 9). Similarly, even in agriculture, 79 per cent of foreigners have primary education or less compared to 57 per cent for Malaysians. Similar gaps exist in other sectors.

Figure 9. Education of immigrants by economic sector, 2010
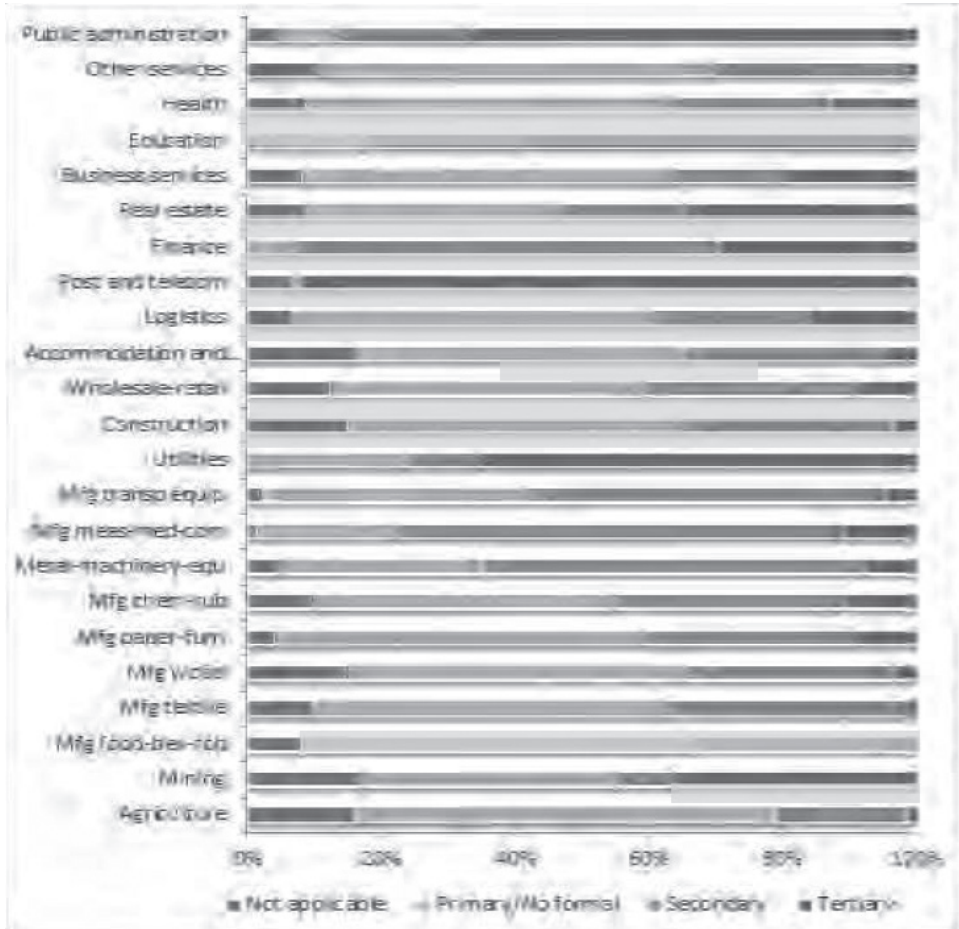
Source : Authors' calculations with Department of Statistics, Labor Force Survey

Firm Level Data

For the firm/establishment level analysis, the paper uses the Malaysian Economic: census, a sector by sector cencus of establishment, collected by the Department of Statistics of Malaysia. The data were collected In 2000, 2005 and 2010 for most economic sectors and sub-sectors.[7] There are two important differences with respect sampling between establishment censcus data and LF5. Unlike the labour force data that are collected from a sample of all (formal and informal) workers via household surveys, the establishment data are collected from a sample of firms/establishments that are all formally registered. Thus, the LFS is able to measure the impact of 'all' foreigners on 'all' Malaysians, whereas the establishment-level information is only able to measure their impact on formally registered firms.

Another important difference between the two data sources is that the LFS is unable to collect data from workers living in communal housing, and is thus likely to undercount the number of foreigners in certain sectors (namely agriculture and manufacturing). On the other hand, the establishment data are able to convey information on all formal firms in all sectors, and thus able to account for all workers regardless of their living arrangements (assuming that the firms include the information on all workers when responding to the questions). Therefore, the establishment data allow for a more accurate count of foreigners working in sectors previously missed by the LFS. An important implication of their differences is that the data sources are likely to reflect different estimates of foreigners in the economy.[8]

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7   These are Accomodation, Agriculture, Arts, Education, Financial, Brokerage, Food Services, Health Education, ICT, Manufacturing, Mining, Other Services, Professional, Real Estate, Recreation, Repair, Sports, Transportation and travel agent.

8   A clear advantage of the Economic Census is that it is a census (of firms), while the LFS is only a small sample of individuals at the household level, typically 1-2% of the population. It is difficult for the LFS to provide an accurate view of the role of foreigners in each sector with such a small sample size. This is especially the case for sectors where the sampling might pose challenges, especially for migrants. On the other hand, the Economic Census is unlikely to capture foreign workers that are either not in the labour force or are employed in informal sectors/firms that are not listed in the sampling frame of the Economic Census. These are the reasons why we provide the different types of data from both sources and note that they should be used to answer different questions. All of these reasons make it unlikely that a sector-by-sector comparison of the Economic Census and the LFS is truly meaningful.

Industrialisation in Malaysia was accompanied by increased foreign direct investment (FDI) in labour-intensive sectors during the 1990s which prompted the need for more labour in an already tight market. The Government increased flexibility to import labour from neighbouring countries to work in the growing sectors of the economy-mainly in manufacturing (Noor et al. 2011) but also in agriculture and construction. Over time, more foreign firms came to Malaysia to invest and more foreigners came to work in labour-intensive sectors. Currently, the services sector is the largest contributor to the country's gross domestic product (59 per cent) and labour force (52 per cent), followed by the manufacturing sector (with about 27 per cent of GDP and 28 per cent of employment share). Third is the agriculture and plantation sector (7 per cent of GDP and 12 per cent of employment) followed by mining and construction (together they make up 9 per cent of GDP and 7 per cent of the employment share).

Establishment data from all economic sectors corroborate that the foreign workforce has increased in terms of numbers as well as a share of the labour force over the last decade. Foreign workers comprise 30 per cent of the manufacturing labour force, according to the Economic Census that captures all registered firms. There are almost 40,000 firms in eight manufacturing sub-sectors and they jointly employed a total of 1.8 million workers in 2010, with around 515,000 immigrants. About 2,300 of the largest firms (with over 150 workers each) accounted for 67 per cent of all manufacturing employment.

Figure 10 shows that the percentage of foreigners employed in Malaysian manufacturing establishments has more than doubled since year 2000. This increase represents a significant portion of the manufacturing labour force.

Figure10. Total number of foreigners by year and percentage in manufacturing
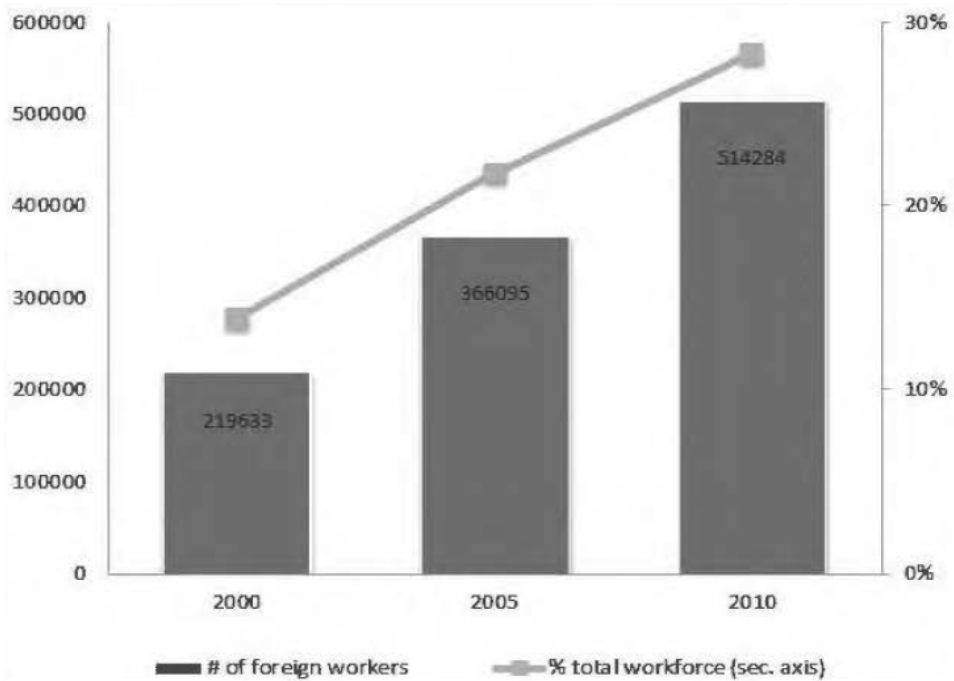
Foreign labour has also Increased In formally registered firms In agriculture and plantations, in both nominal terms and as a share of the total workforce in the sector. There were 6,300 registered firms in 2010 and 10.8 per cent were classified as large (employed over 150 workers}. Since most of the large firms are In plantations and they employ significantly more foreign workers relative to other agricultural enterprises, the rest of this section of the paper will focus on plantations. In 2010, there were 4,892 establishments in the plantations section of the establishment database and 13.8 per cent could be classified as large. These firms employed about 66.7 per cent of the 319 thousand plantations workers. About 98 per cent of plantations workers were unskilled and staggering 69 per cent of the total plantations labour force was composed of foreign workers. Their percentage, as a share of the labour force in the sector, had gone up from 66 per cent to 69 per cent from 2005 to 2010 (Figure 11). The increased supply of immigrant labour likely affected production levels and the marginal product of all types of labour in the sector, local and foreign.

Over 60 per cent of all construction establishments and 80 per cent of all workers focus on building construction, the sub-sector where foreign labour is most needed. The sector has been growing rapidly in Malaysia in the last decade and is expected to continue growing with large projects-the Klang Valley Mass Rapid Transit estimated at RM 50 billion, highways in the Iskandar region, Kuala Lumpur (KL) financial district, a new 100-story building known as the Warisan Merdeka in the middle of KL-underway or planned. About half of the sector's workforce is foreign-born. The sector is largely dependent on foreign workers, most of whom are low-to medium-skilled and acquire their work knowledge when they are hired to assist more experienced workers.

Figure 11. Total number of immigrants by year and percentage in plantations
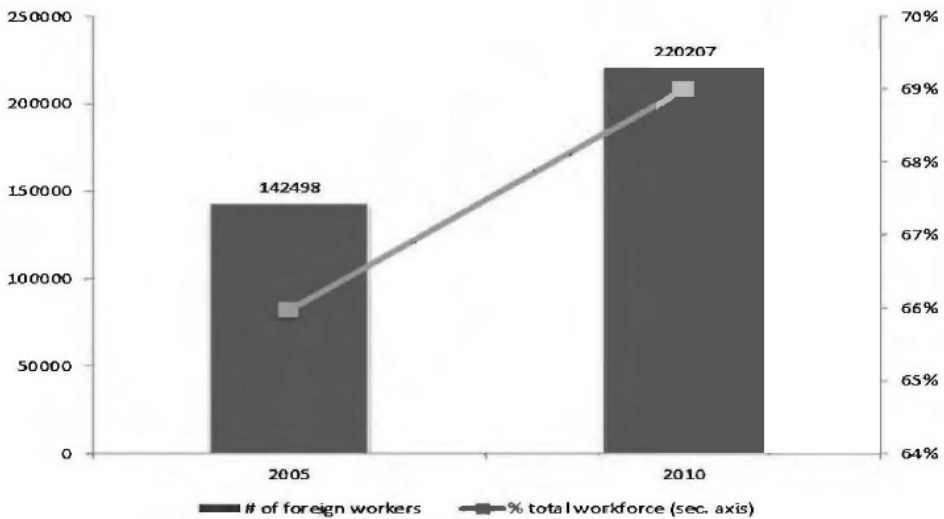
Source : Authors' calculations with Department of Statistics, Economic Census

Various reports show that the construction industry faces shortages of labour on a regular basis and local recruitment is a big challenge for the sector. The sector is known for paying low wages, offering difficult working conditions, and having limited upward career movement. Thus, young Malaysians, even those with low skills and work experience, are not attracted to the sector, which makes hiring foreigners a necessity. The official data at the Ministry of Home Affairs records a significantly lower number of registered workers in the sector than what the sector

actually employs. In 2007, the last year for which establishment data are available for this sector, about 45 per cent of all workers in the sector were foreign born. This is almost double the number from year 2000 (Figure 12).

Most medium-sized and large firms in the sectors analysed employ foreign workers. The manufacturing and construction sectors rely on foreigners for low value-added activities that require lower levels of skills, offer low remuneration, and are unattractive to Malaysian workers. In manufacturing, both export-oriented and domestic-oriented establishments tend to keep high utilisation rates of their plants, thus requiring a regular flow of all types of workers (high-, medium-and low-skilled, as well as foreign and domestic). Figure 13 shows that about 29 per cent of small firms (defined here as having six to SO workers), 71 per cent of medium-size (defined as having 51 to 149 workers), and 87 per cent of large firms (150 and more workers) employ foreign workers.

Figure 12. Total number of Immigrants, by year and percentage, In construction
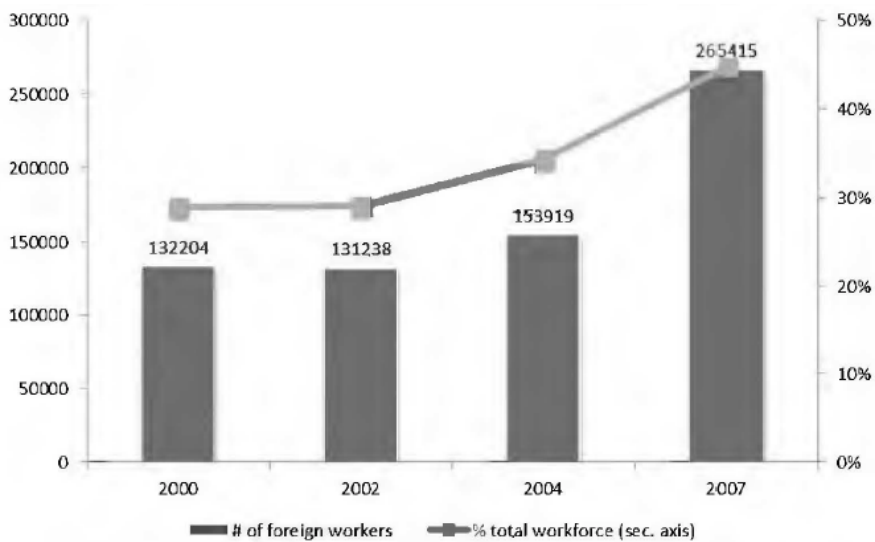
Source : Authors' calculations with Department of Statistics, Economic Census

Figure 13. Manufacturing firms with/without immigrants, by size, in 2010
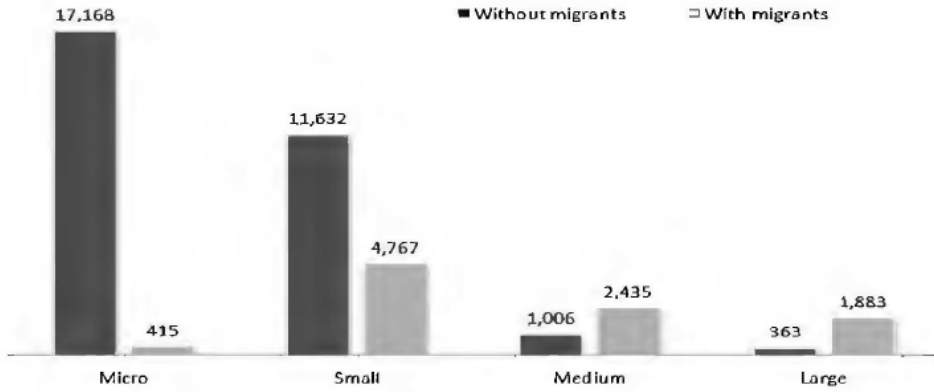
Source : Authors' calculations with the Department of Statistics, Economic Census

Medium-and large-sized establishments in plantations and construction also rely heavily on foreign labour. Moreover, in plantations and construction, the widespread presence of foreign workers is also apparent in small firms. This indicates that foreign labour is used in all establishments except in family farms, family-run businesses and micro-size establishments (Figures 14 and 15).

Figure 14. Plantations with/without immigrants, by size, in 2010
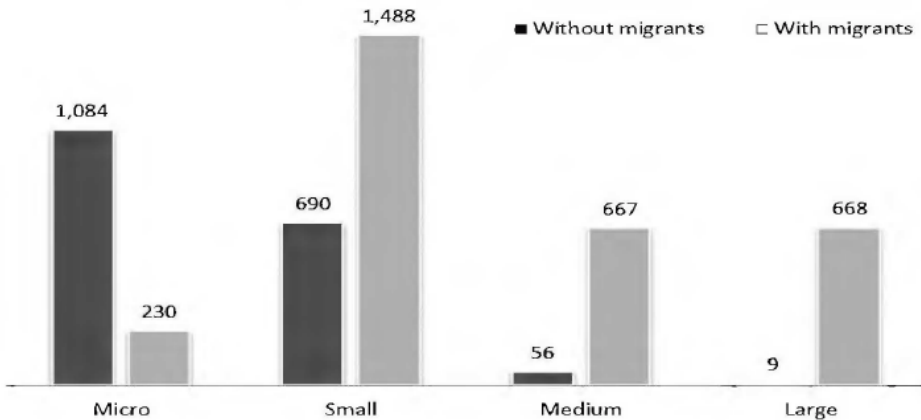
Source : Authors' calculations with the Department of Statistics, Economic Census

Figure 15. Construction with/without immigrants, by size, in 2007
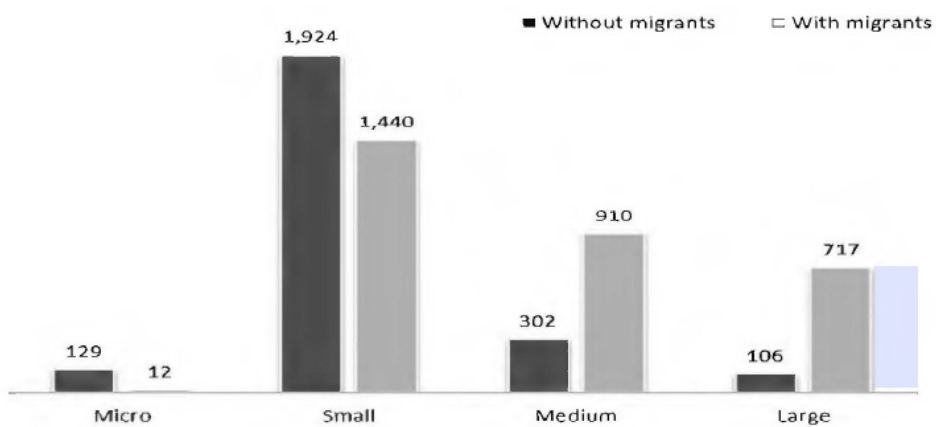
Source : Authors' calculations with the Department of Statistics, Economic Census

Conclusions

The Malaysian Labour Force Survey and Economic Census are excellent data sources for understanding the role of foreign workers in Malaysia. The data presented in this paper suggest the critical economic role played by foreign workers in Malaysia across a wide range of sectors and geographic areas. This is especially true as most Malaysians continue to raise their education levels, while labour-intensive sectors such as agriculture and construction (and sub-sectors in manufacturing and services) remain important to the country's future growth.

Malaysia's rapid economic growth, accompanied by labour market shortages for unskilled workers, will continue to attract foreigners from neighbouring countries. The differences in growth differentials and overall educational gaps between the labour force in Malaysia and those of its more populous neighbours, such as Indonesia and the Philippines, are the key pull and push factors that fuel the current migration patterns. These fundamental gaps need to be kept in mind in any discussion and analysis. Demand for foreign unskilled labour in Malaysia has amplified several long-term factors that are critical for economic growth. The first one is the rapid advance in the education level and skill upgrading of the Malaysian labour force.

This is very clearly visible in LFS data through the decline in the ratio of the population with primary schooling (or less) and the accompanying increase in the higher secondary and tertiary educated groups in the labour force. The second factor is the continuing importance of certain natural resources and labour-intensive sectors such as agriculture, low-skill and low-technology manufacturing such as wood products, as well as domestic service sectors such as construction. The former group led the export boom and integration of the Malaysian economy into the global economy. They are still important within the economy and employ a sizeable portion of the domestic labour force. Service sectors, such as construction, are important components of the dynamic domestic economy that have visibly shaped the landscape of the country.

On the enterprise side, the presence of foreign workers has been (and continues to be) a key factor for expansion in many sectors, especially among export-oriented companies in the manufacturing sector. Firm size seems to matter when it comes to employing foreign labour and is likely to have an impact on productivity.

The excellence of the data withstanding, there are some areas in which the value of the LFS and Malaysian Economic Census in understanding the role of foreign workers in the Malaysian economy could be enhanced. First, coverage continues to be an issue in the LFS. It would help if the LFS started sampling people living in communal housing and paid additional attention to ensuring that the sampling framework was representative of foreign workers, documented and undocumented.

Second, having part of the LFS follow a rotating two-year panel, i.e. some individuals are sampled in subsequent years, would help enormously in understanding some dynamic aspects of the impact of an inflow of foreign workers on sectors and regions of Malaysia. The introduction of a few retrospective questions may achieve similar ends. Third, the introduction of more detailed information on the foreign workforce in the Malaysian Economic Census, for example, the number of foreign employees by education level or the payroll for foreigners, would help enormously to enhance this data source for understanding the economic role of foreign workers in Malaysian firms.

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THE IMPACT OF FOREIGN WORKERS ON LABOUR PRODUCTIVITY IN MALAYSIAN MANUFACTURING SECTOR*

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Abstract

The growing presence of foreign workers in Malaysia can be explained by excess demand for labour combine with rapid economic growth, as well as the cheaper cost of foreign workers. Besides, industrialization also brought the foreign workers into Malaysia. Thus, when the foreign workers enter the labour force, they have many possible outcomes on labour market issues and productivity. This study determines the impact of foreign workers on labour productivity. Besides, the relationship between domestic and foreign workers as well as their contribution on Malaysian Manufacturing sector growth also investigated. The Cobb- Douglas production function is used to derive the model specification in this study. The results in this study show that foreign labours have positive and significant impact on labour productivity. Further, the study also reveals that foreign labours are neither substitutes nor complements for domestic labours.

Keywords: Foreign worker, domestic worker, labour productivity, manufacturing sector, Malaysia

Introduction

Evolution of labour force has been influenced by many factors, for example changes in population size and labour force participation rate. However, population growth depends on rate of natural increase and net migration. The rate of natural increase is determined by both fertility and mortality rate. Net migration is determined by outward (emigration) and inward migration. Until recently, migration has not been important in providing labour force to the country until the nineties. Foreign workers from migrants to Malaysia then helped ease the tight labour condition, especially in the manufacturing sector. The demographic situation changed rapidly in Malaysia during the seventies and this trend has continued ever since (Zaleha, 2007). As can be seen in Table 1, the population in Malaysia has been increasing steadily from 1965 to 2005. This has provided the source of labour force for the economy. Labour force has also increased steadily during this period.

Table 1 Population, Labour Force and Unemployment Rate,
1965-2005 ('000)

	1965	1970	1975	1980	1985	1990	1995	2000	2005
Population	9320.0	10777.0	12249.0	13879.2	15791.1	18010.2	20262.7	23490.0	26130.0
Labour force	3246.0	3606.8	4225.0	5109.9	639.1	746.5	8114.0	9571.6	10422.0
Unemployment rate	6.1	7.4	7.0	5.7	6.9	6.0	4.5	3.1	3.5

Source: Zaleha, 2007

Unemployment rate was quite high during the seventies; this was caused by the shortfall in job creation, and acceleration of labour force. This has made employment creation a challenge to the government. Many development strategies were introduced and implemented to create more jobs, especially in modern sectors such as manufacturing and service sectors.

In the nineties, the labour situation started to change where labour market was tight. This was when the government started to encourage the employment of foreign workers, especially from around the South East Asia regions to solve the problem of labour shortage. The growing presence of foreign workers in Malaysia can be explained by excess demand for labour associated with rapid economic growth, as well as the relatively cheaper cost of foreign labour. Currently there are

about 1.8 million legal foreign workers who constitute 16% of the labour force as shown in Table 2. When the foreign workers enter the labour force, they brought many possible outcomes. These foreign workers will not only be competing with domestic workers for the same jobs but they could be a liability if their presence and entry are not controlled. Therefore, the aims of this paper is first to study the impact of foreign workers on labour productivity in Malaysian manufacturing sector. Next, the second objective is to look at the relationship between domestic and foreign workers, whether they are complements or substitutes to each other.

The rest of the paper is organized as follows; the next section will give the overview of Malaysian manufacturing sector, followed by some review of literature on the topic in section three. Methodology will be given in section four, while the results of the analysis will be shown in section five. Section six concludes and gives some policy recommendations.

Table 2 Labour force growth, Malaysia 2000-2010

	2000	2005	2010
	(000)	(000)	(000)
Labour force	9,571.6	11,290.5	12,406.8
Local labour	8,820.6	9,512.9	10,864.3
Foreign labour	751.0	1,777.6	1,542.5
Foreign worker with permit	732.6	1,742.1	1,500.0
Expatriate	18.4	35.5	42.5
Unemployment	297.0	395.7	430.8
Unemployment rate (%)	3.1	3.5	3.5
Labour force participation rate (%)	65.7	66.7	67.3

Source: Economic Planning Unit (various years)

Overview of Malaysian Manufacturing Sector

It has been recognized that one of the ways to achieve development and progress is through industrialization. Industrialization process in Malaysia has experienced five distinctive phases (Jomo, 1993). The first phase was during the British colonial rule but the industrialization only limited to export and import processing and packaging of food and simple consumer items. After independent in 1957, the second phase took place through the introduction of import substitution strategy (1957 - 1968) that protected industrial estate by high tariffs. Realizing the limits of the import substitution, industrialization process move to the third phase of export-oriented industrialization (1968 – early 1980's). These new labor intensive industries generated employment opportunities though at generally lower wage levels. The fourth phase (1983 – 1986) focused on promotion of selected heavy industries without abandon the export-oriented industrialization. The fifth and current phase of industrialization focused on the recovery of manufacturing industry due to economic crisis though realignment of international currency. The effective massive depreciation of the ringgit, which has lowered production cost, especially labor, deregulation and new investment incentives have contributed to increase in manufacturing investment especially Foreign Direct Investment (FDI).

The policy introduced by government in the Second Malaysia Plan that encouraged FDI led the manufacturing industry to be the engine of growth of the Malaysian economy. The manufacturing sector grew by 19.1% and accounts for 32.3 of Malaysia's Gross Domestic Product (GDP) in 2000 compared to 2005 by 10.5% and 31.8%. However, currently in Malaysia the economy is undergoing a structural shift from manufacturing-based to service-oriented economy, with the share of the service sector to GDP is highest compared others sector. The service sector is increasing from 53.6% in 2000 and forecast to 58.5% in 2010. Table 3 also shows the growth and the share of GDP of others selected economy sector.

Table 3 GDP growth by selected economy sector 1970-2010

Sector	Annual growth (%)						Share of GDP (%)					
	1970	1980	1990	2000	2005	2010f	1970	1980	1990	2000	2005	2010f
Agriculture	5.3	3.9	1.8	2.0	2.8	2.5	32.0	20.8	18.7	8.6	8.3	7.6
Mining	5.0	5.1	2.1	1.9	5.0	1.1	6.0	10.4	9.7	7.5	7.1	7.9
Manufacturing	11.7	8.6	13.3	19.1	10.5	1.7	12.0	19.7	27.0	32.3	31.8	26.2
Construction	8.7	3.6	13.9	1.0	0.5	3.2	4.0	4.8	3.5	3.3	3.0	3.2
Services	8.5	6.6	8.4	5.7	6.0	3.6	46.0	46.0	42.0	53.6	57.1	58.5

Source: Economic Reports (various issues)
* f = forecast

Literature Review

Studies on impact of foreign workers have been looking at areas such as; the effect on economic issues, social aspect, labour productivity or total factor productivity as well as substitution or complementary relationship between local and foreign labour. From the macroeconomic view point, in term of economic theory, the immigration of foreign workers brings a good impact to the receiving countries. For example; the improvement of labor productivity, or the total factor productivity (TFP). But, there will also be some negative effects, in term of the rise in wage differentials between high income group and low income group from the microeconomic view point (Aizawa, *et al*., 2001). Many studies found either positive or negative impact of immigrants on productivity. For instance, Tsao (1985) found that the TFP growth was very low in Singapore manufacturing industries because of the low wages policy combined with influx of low-skilled foreign labour. A recent paper by Llull (2008) suggests a negative impact of immigrants on productivity. As the consequences, any increase in the immigration rate will reduce the average wage. Moreover, the result for Spain also shows that the domestic workers are more productive than foreign workers. Some researchers have also found positive impact of immigration on the receiving economies. Recent study by Kangesniemi *et al*. (2007) finds that foreign workers are more productive than domestic workers in the United Kingdom (UK).

Numerous researches have also been carried out investigating the relationship between domestic and foreign workers, whether they are substitutes or compliments. A study by Dupuy and DeGrip (2003) estimates the elasticity of substitution between labour in Denmark. They divide the workers by their educational level and occupation skills. They found skilled workers with all other labour inputs and capital had a higher elasticity of substitution in larger firms than smaller firms. Besides, the elasticity of substitution between skilled and unskilled workers was also larger in the large firms. Next, Idris and Rahmah (2006) investigate the substitutability between local and foreign workers at different job categories. They divide the job categories in Malaysia by the skill consisting semi-skilled local and foreign workers, unskilled local and foreign workers. They found that both local and foreign workers are substitutes at various job categories.

Recent study by Parasnis (2010) investigates the relationship between natives labour, migrants labour and capital. In general, he finds migrant workers are substitute for native workers. He estimates the elasticities of substitution and indicates that native labour and capital are substitute, while migrants labour and capital are complement. There are many studies on the consequences of impact of immigrants on different angle and the relationship between domestic and foreign workers, but currently it is important to recognize more about the economic impact of foreign workers on labor productivity especially in Malaysian manufacturing sector. Additionally, it is also important to investigate the relationship between domestic labor and foreign labor; whether their substitute or complement. Policy recommendations regarding the effect of minimum wage on the demand of foreign labour have been based on such studies. For example Meier (2004) and Shimada (2004) found that the introduction or the increase of minimum wage will decrease the demand of foreign workers in Germany and Hong Kong respectively.

Methodology And Data

Model Specification

Generally, the estimation of labour productivity is analyzed using the neoclassical production function (Mahmood, 2008). Hence, a basic functional form can be formulated through by using a Cobb-Douglas production function. This analysis employs the Cobb-Douglas production function with three inputs given by;

$$Y_t = AK_t^{\alpha} L_t^{\beta} Mat_t^{\theta} \qquad [1]$$

Where Y is aggregate output (total gross of output), K is capital input (total of physical capital stock), L represents as labour input (total numbers of workers), Mat represents as intermediate input (material), A is efficiency parameter, α is the elasticity of output with respect to the capital input, β is the elasticity of output with respect to labour input and θ represents the elasticity of output with respect to intermediate input, and t is a time index (1972-2005). Based on Rahmah (2009), they used the effective labour which education level as a proxy for labour input (See also Corvers, 1997). The time period covered by the data in this analysis is from 1972 until 2005. In this analysis, labour is made up of two types of labour, which is domestic workers (LD) and foreign workers (LF). Intermediate input (material) also adding into the model as an additional input (see Ahmed, 2006).

$$Y_t = AK_t^{\alpha} LD_t^{\beta_1} LF_t^{\beta_2} Mat_t^{\theta} \qquad [2]$$

Based on equation [2], if we divide the equation with the total number of workers (L), we will obtain the labour productivity equation:

$$\frac{Y}{L} = A\left(\frac{K}{L}\right)^{\alpha} \left(\frac{LD}{L}\right)^{\beta_1} \left(\frac{LF}{L}\right)^{\beta_2} \left(\frac{MAT}{L}\right)^{\theta} \qquad [3]$$

Equation [3] shows the labour productivity depends on the contribution of two types of labour, domestic and foreign as well as capital and intermediate input contribution in the model. Thus, the estimation model for the first objective that is to study the impact of foreign workers on labour productivity is based on Equation [3] as follows,

$$\ln y_t = A + \alpha \ln k_t + \beta_1 \ln ld_t + \beta_2 \ln lf_t + \theta \ln mat_t + U_t \qquad [4]$$

Where,
y = Y / L = value added per number of person engaged
k = K / L = value of capital per total of labour
ld = LD / L = number of domestic labour per total of labour
lf = LF / L = number of foreign labour per total of labour
mat = MAT / L = value of real material per total of labour

Next, we use Granger Causality Test to determine the causality between the domestic and foreign labour. Equation [4] will be used as an estimation model for the second objective in this research.

Empirical Estimation and Data

Equation [4] will be tested using the vector autoregressive (VAR) model. Before proceeding with further analysis, the data must be tested for the existence of the time series problem using the Unit Root Tests. Next, we proceed with Multivariate Cointegration Test and Granger Causality Test within vector-error correction model (VECM). Data for this study is obtained from the Manufacturing sector survey conducted by the Department of Statistics of Malaysia. The annual times series data was used in this empirical analysis. The year 2000 was used as a base year.

Results And Analysis

In this study, the application of the ADF and PP Unit Root test for the five variables were applied to detect if the variables are stationary or non-stationary. The results reveal the null hypothesis of the existence of a unit root cannot be rejected. However, the presence of a second unit root was rejected at the standard significance levels. With these, we can conclude that the series are behaving as $I(1)$. The series are then subjected to the Johansen cointegration test to see whether they are cointegrated. The results show that all of the variables under study are cointegrated, and there is only one cointegrating equation. Therefore we can now proceed to test our hypothesis by running the VECM to equation [4]. The results are given below;

$$\ln y_t = 1.0653 - 0.0794 \ln \kappa_t + 1.9390 \ln ld_t + 0.1719 \ln lf_t + 1.0645 \ln mat_t$$
$$\qquad\quad (-3.9788) \quad (5.6618) \quad (8.1378) \quad (51.2068) \qquad\qquad [5]$$

The equation above reveals that the domestic labour, foreign labour and material yield positive influence on the labour productivity of the manufacturing industries. 1% increase in the usage of domestic labour will increase labour productivity by 1.93%, while the productivity will increase 0.172% if foreign labour increased by 1%. While an increased of 1% of the material will increase productivity by 1.06%. We can see that labour productivity in Malaysian manufacturing sector is still very much depending on labour, and domestic labour is more important compared with foreign labour. From this we can also conclude that the foreign labour has a significant and positive impact on labour productivity in Malaysian manufacturing sector. To reduce the dependency on foreign labour, it need a long time to helped the government achieved their aims.

On the contrary, the increase of capital labour ratio seems to cause a decrease in labour productivity. An increasing the capital labour ratio by 1% will decrease the labour productivity by less than 0.1%. We can conclude from this result that the Malaysian manufacturing sector is still labour intensive in nature, because any increase in capital usage, which will increase the capital labour ratio, will lead to a decrease the labour productivity. The causal relationship in [5] is obtained by running the Granger causality test to determine the causal relationship between domestic and foreign workers. The relationship is shown by Table 4.

Table 4 Results of Granger causality test

Null hypothesis	Observation	F-statistic
lf does not Granger cause ld	32	2.2946 (0.1201)
ld does not Granger cause lf	32	2.7997 (0.0785)

Notes: Numbers in parenthesis are corresponding to p-values.

From Table 4, the results reveal that there is no causality between domestic and foreign labour. We accept both null hypotheses which state that foreign labour does not Granger cause domestic labourrand vice versa. This means that domestic and foreign labour have no significant relationship. Thus, we can conclude that foreign labours are neither substitutes nor complements for domestic labours. Increasing the influx of foreign labour will not affect the domestic labour.

This was due to smaller percentage of foreign labour from total workforce in Malaysian manufacturing sector. Besides, domestic labour consists of unskilled, semi-skilled and professional, while majority of foreign labour are unskill woerkers. Thus, foreign workers are not complement for domestic labour among their skills.

Summary And Conclusion

The aim of this paper is to examine the economic impact of foreign workers on labour productivity in Malaysian manufacturing sector using annual time series data which covers 1972 to 2005 periods. Besides, the relationship between foreign and domestic workers was also investigated. Econometric methodology has been employed in this paper to examine the impact of foreign labor on labour productivity and causal relationship between the two types of labour. Prior to testing for causality, the ADF, PP and Johansen cointegration test were used to examine for unit roots and cointegration. Our estimation results indicate increasing the domestic labour, foreign labour and material will yield positive influence on the labour productivity of the manufacturing industries. But, the capital labour ratio tends to show negative relationship on the labour productivity. Since foreign labour has positive relationship and significant impact on the labor productivity we can conclude that the government will need a long time to reduce the dependency on foreign workers. Further, the study found that there is no causal relationship between domestic and foreign labour. The results exhibit that domestic and foreign workers are neither substitute nor complement to each other. Therefore, reducing the number of foreign workers will not affect the performance of domestic workers. In order to reduce the dependency on foreign workers, the study suggests that the problem should be tackled from the root especially to face the presence and entry of illegal workers. Policies such as the minimum wage will discourage employers from hiring foreigners, as there will be no wage differences between local and foreign workers. Studies by Meier (2004) and Shimada (2004) have come up with the same recommendations. For future research, we also recognized that more meaningful results can be obtained if we can analyze data from each sub-industry in the manufacturing sector and more detailed policy recommendation could be made.

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THE DEMAND FOR FOREIGN WORKERS IN THE MANUFACTURING SECTOR IN MALAYSIA*

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Abstract

The objective of this study is to investigate the demand for foreign workers in the manufacturing sector in Malaysia. In order to achieve this objective, the simultaneous equation model is developed and the analyses are based on data from the Industrial Survey conducted by the Department of Statistics Malaysia for the period of 1994-2005. The Labor demand model is derived from the Cobb-Douglas production function. The results from the estimation of the production function show that foreign workers in the category of professional significantly contributed to the output growth of ISIC 35, ISIC 36 and ISIC 38, while skilled workers and technical-supervisors also give a significant contribution to output growth in ISIC 31. The demand for foreign workers reveals that professionals and technical-supervisors are positively related to output level and wage rates. However, they are negatively related to the price of capital and local wage rate. It means that the professional and technical-supervisor foreign workers complement the local workers and capital.

Keywords : Demand; output; foreign workers; wage

Introduction

Over the past few decades, the Malaysian economic structure has been experiencing change; from agricultural sector to manufacturing and services sectors. As a result of this change, Malaysia is facing labor shortages at all job categories. The manufacturing sector, particularly, is severely affected than other sectors due to its rapid growth rate especially in early 1980s when export oriented and heavy industries were introduced. To overcome this problems, the Malaysian economy had to rely on foreign workers through the implementation of policies that permitted them to migrate legally into Malaysia. The neighboring countries like Indonesia, the Philippines, Thailand and Myanmar took advantage of this situation by sending their workers, especially the unskilled to work in Malaysia. This was done in parallel to overcome their labor surplus. Despite a legal channel provided by the government, the majority of foreign workers still used an illegal channel in order to save costs in terms of levy payments (See Azizah 1998; Mohd Anuar 1997; Zulkifly 1996).

Osili (2007) suggested that part from changes in the economic structure and dichotomy in the growth rate between countries in the region, labor mobility was also initiated by globalization which is significantly taking place all over the world. Changes in the international trade structure and a rapid interaction between all areas had motivated trade, investment, remittance, saving and the flow of information technology that greatly influenced labor mobility. In the ASEAN region for example, the formation of growth triangle such as Indonesian-Malaysian-Thailand Growth Triangle (IMTGT), Indonesian-Malaysian-Singapore Growth Triangle (IMS-GT) and Indonesian-Malaysian-Philippines Growth Triangle (IMP-GT) had stimulated the interaction among these countries. Moreover, the main objective of this formation is to increase investment, trade and export among the region as well as to increase tourism and labor mobility (See also Rahmah 1997; Zulkifly & Rahmah 1997).

Kanapathy (2008) supported the view that economic transformation changed the structure of labor demand. The rapid growth of the manufacturing and services sectors has required more professional and skilled workers to cope with the adoption of fast changing technologically. However, the demand for semi-skilled and unskilled workers is still high due to increase in the total number of employment. In this regard, the Malaysian economy facets two scenarios. The first scenario is labor surplus in certain job categories. This is as a result of fast improvement in

the educational attainment among people and difficulties in planning its human resource in accordance to the country's need. Apart from this, people are becoming more selective in accepting job offer. Another scenario is job abundance especially in the lower rank; where by foreign workers are needed due to reluctance from local workers.

According to the Mnistry of Home Affairs report 2011 (Mnistry of Home Affairs 2011), the number of migrant worker in Malaysia by country of origin shows that Indonesia has the highest number of migrant, followed by Bangladesh, Pakistan, Thailand, and Philippines. The number of Indonesian migrant workers to Malaysia increased considerably from 269,194 in 1999 to approximately 1,1 million in 2008. They make up more than half of the total number of migrants in Malaysia. Migrations from the Philippines showed an increasing trend over time of which the number was at 7,299 and 26,713 in1990 to 2008, respectively.

The number of migrants from Thailand showed an unstable trend, from only 2,130 in 1999 to 20,599 in 2002, and 5,751 in 2005 but then increased to 21,065 in 2008. Although, the percentage of the Philippine and Thai migrants was quite low, making up less than 5%, the impact was rather significant to Malaysian economy. The majority of the migrant workers are in the manufacturing sector, comprising with more than 30% of the total migrants in Malaysia. This shows that the manufacturing sector in Malaysia depends highly on foreign workers.

The objective of this study is to analyze the demand for foreign workers in the manufacturing sector in Malaysia. More specifically, the objectives of this study are to analyze : (1).The contribution of foreign workers to the manufacturing output sub-industries in Malaysia; (2).The determination of industrial demand factors to foreign workers; (3). The elasticity substitution of foreign workers to capital and local workers.

Literature Review

Whether or not an involvement of foreign labors in the production process of a country will assist in economic growth is still debated (Osili 2007). Some findings showed a positive correlation between economic growth and foreign labor because they can create job opportunities and capital accumulation (Simon 1988). On the contrary, other studies found that foreign workers retarded economic growth because the majority of them are unskilled (World Bank 1995). On the positive side, some studies argued that the influx of foreign labors could increase demand for food and services in destination countries; and subsequently increased the rate of return from investment and capital accumulation (Greenwood & McDowell 1986).

The first opinion is generally argued that countries will get benefits from the influx of foreign workers because they can stimulate economic growth through the increasing of public demand for goods and services, and capital formation (Simon, Stephen & Sullivan 1993). This opinion is based on the Say's Law which suggests that supply will always create a demand (supply create its own demand). While others opinions expressed that if the influx of foreign workers is massive, they could hamper economic growth because they are of low-skilled and low-educated. In fact, some argued that the influx of foreign workers will only lead to problems in the social, economic and political areas of the importing country because many of those entered illegally (see also Orjithan 1985).

A study conducted by Simon (1988) in the state of California and the city of Los Angeles in the United States found that the influx of foreign workers has provided substantial benefits to a wide range of industrial output growth in both regions. While the negative effect of the influx of foreign workers to local workers was very small and mostly concentrated to the local workers who come from Latin American countries. Furthermore, the highest impact of the influx of foreign workers on economic growth was mainly due to strong growth of employment in both regions. During the 1970-1980 periods, employment had grown by 46.1% in California and 52.7% in Los Angeles. The increase in the growth of the labor force caused a 5.2% contraction in wage due to the influx of foreign workers in those two regions.

In Europe, the findings of a study conducted by Zimermann (1995) concurred the study conducted by Simon (1988). The influx of foreign workers significantly impact on economic growth, employment opportunities and wages of local workers.

This is because the influx of foreign workers increases the capital formation and creates new job opportunities for local workers. In 137 The Demand for Foreign Workers in the Manufacturing Sector In Malaysia Increase Demand for Products in Countries Destination Increase Capital Development in Countries Destination The influx of Foreign Workers - Increase Capital Rate of Return - Increase Industrial Marginal Revenue - Increase Output and Job Opportunities Increase Economic Growth in Countries Destination The Effects of Stimulus addition, the influx of foreign workers does not adversely affect the wages of local workers because they were complementary in the production process (see Figure 1).
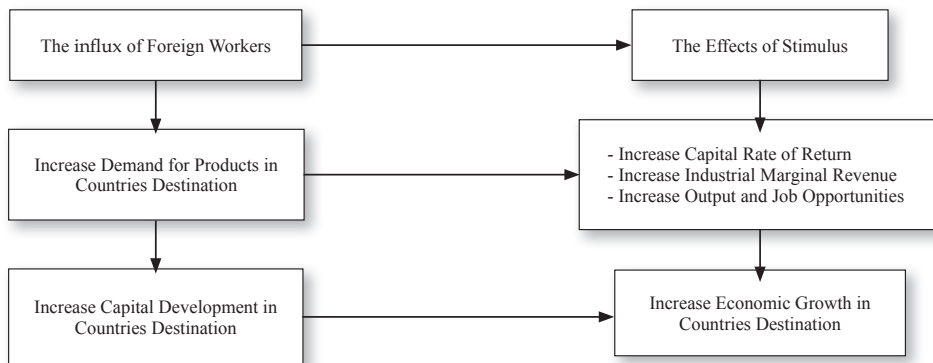
FIGURE 1 Effect of foreign workers against economic growth (opinion optimistic)

In Australia, a study conducted by Dickson (1975), found that the influx of foreign workers acts as a stimulus to the economic growth of the country. The influence of this stimulus occurred through the complementary relationship between foreign workers with local workers, whereby the influx of foreign workers encouraged the local workers to be more productive; thus, stimulating the increase in output and consumer demand for goods and services produced. Shortly, we could note that the complementary relationship between foreign workers with local workers is believed to be one of the forces that could encourage an increase in the rate of economic growth in the country.

A study conducted by Norman and Meikle (1985) in the same state also supported Dickson's findings (1975). By using econometric analysis, Norman and Meikle found that the influx of foreign workers could improve job opportunities for

local workers far exceeding's the negative effect caused by the influx of foreign workers. Creation of employment opportunities is not only done by foreign workers together with local workers to form a joint venture, but it could also be done by foreign workers themselves independently. Therefore, Norman and Meikle (1985) believed that the form of a complementary relationship between foreign workers with local workers provided considerable benefits to boost the country's economic growth.

In contrast to the studies by Dickson (1975), and Norman and Meikle (1985), other studies conducted by Greenwood and McDowell (1986) in the United States found that the opposite situation; whereby the influx of foreign workers resulted in a negative and significant impact on wages and employment opportunities for local workers. According to them, the influx of more foreign workers surrogate (substitute) against the interests of local workers for foreign workers to get involved and become a member of the labor union. They generally worked in non-permanent jobs and many of the foreign workers worked illegally. This situation led to various demands by local workers to improve their well-being that was affected because of the foreign workers.

Therefore, Greenwood and McDowell (1986) believed that the influx of foreign workers, especially foreign workers without permits had reduced employment opportunities and wages of local workers. The study conducted by Baker (1987) in Australia, as well as a study conducted by Baker and Benjamin (1994) in Canada supported the results of studies conducted by Greenwood and McDowell (1986). According to those researchers the influx of foreign workers could hamper the economic growth, employment opportunities and wages of local workers because foreign workers enjoy the benefits from the use of capital without paying any cost for it. Foreign workers utilized public facilities of a country but they do not have to pay taxes, while taxes are used to construct public facilities. This situation would lead to an elimination of the amount of capital available for local workers. Therefore, those experts believed that the influx of foreign workers could hamper economic growth and the opportunity for raising wages earned by local workers.

A study conducted by Baker (1987) in Australia for example found that for every 1% increase in the number of workers caused by the influx of foreign workers would raise 1% of investment. Mean while, the increase of 1% in local workers could raise 8% capital formation compared to capital formation caused by the influx of foreign workers. This suggested that the effect of the influx of foreign workers against capital formation is very small and could inhibit the incoming

of overall capital formation. Therefore, Baker (1987) believed that the influx of foreign workers could hamper economic growth, employment opportunities and rising wages of local workers.

In Malaysia, there are several studies that investigate the issues of foreign workers, such as the studies by Zulkifly (1995), Rahmah, Nasri, Zulkifly and Zulridah (2003) and Idris and Rahmah (2006). For example, the study conducted by Zulkifly (1995) in the case of foreign workers in plantation sector, he found that the ratio of foreign worker to total labours had increased. Meanwhile, the wage rate of local workers had shown down ward trend due to the presence foreign workers influx. Although, this studied was not tested emperically, but it provides the indication that the influx of foreign workers to Malaysia had brought unfavorable condition to job opportunities and wage rate of local workers. The influx of foreign workers had caused the job opportunities and wage rate for local workers to decreased.

Rahmah et.al. (2003) studied the role of foreign labour on output growth, job opportunity and wage in the Malaysian manufacturing sector and found that professional foreign labour contributed significantly to manufacturing output growth. The study also found that professional foreign labour and local labour are complementary, while the unskilled foreign labour and local labour are substitutes. Similar to Rahmah et.al. (2003), Idris and Rahmah (2006) also analysed the elasticity of substitution between foreign and local workers in the Malaysian manufacturing sector.

The results from the study showed that the foreign and local workers are more of substitute than complement. It indicates that when the foreign wage decreased, firms would be willing to take foreign workers to cut cost of production. A high substitutability are found in heavy industry of basic metal products. Idris and Rahmah (2006) also suggested that the influx of foreign labour may jeopardized the local in terms of job opportunity, especially in heavy industry.

The Demand Model For Foreign Workers

As we know that the industrial demand for labor is derived from the demand of manufacturing output. Therefore, the demand function of the manufacturing industry for foreign labourer can be derived from two different approaches. The first is the production function with cost constraint, and the second is cost function with production constraint. The former can be done if the inputs of manufacturing production functions are fully available, while the second can be done if inputs of production function are limited (Hamersmesh 1984).

There are different types of production function - (eventhough they assume that labor is homogeneous or heterogeneous) - and they have long been developed by economics experts, for examples : Cobb-Douglas production function, production function with constant elasticity of substitution (CES) and translog function. Unfortunately, these three production functions have limitations when they are used to analyze the capital and labor roles through outputs of various industries. The Cobb-Douglas production function weakness is the aggregative, where by the total of all production functions at firms level cannot be formed as a function that is commonly accepted in an industry (Osman & Maisom 1990). The CES production function is not easily developed if we use more than two inputs in the process of production. The translog production function cannot analyze the data with a value that is equal or close to zero (Bairam 1991).

The Cobb-Douglas production function has a limitation. However, it is still more suitable to achieve the objectives of this study. There are several reasons for it this. First, this production function can accept more than two inputs in the process of production where by this advantage cannot be found in CES and translog production functions. Second, it has a simple form and easier to understand as it is formed in log-linear (Hamermesh, 1984; Osman & Maisom1990). The common form of Cobb-Douglas production function is as the following (see Gujarati 1995; Zanias 1991) :

$$Q = A\,K^{\alpha}\,L^{\beta}, \text{ where } A > 0;\ 0 < \alpha \text{ and } \beta < 1 \tag{1}$$

Where Q is output, K and L are capital and labor inputs, while α and β are parameters to show the extending of technology that intensively utilize capital and labor in the process of production.

This production function is a commonly written and used by economic experts. It can be generalized to more than two inputs that are used in the process of production. For examples, the utilization of inputs combinations : capital and local workers, capital and foreign workers, local workers and foreign workers. There by Cobb-Douglas production function with capital, local and foreign workers inputs, could be written in equation form as the following (Rahmah & Lum 2000) :

$$Q = A \, K^{\alpha} \, L_n^{\ \beta} \, L_m^{\ \delta} \tag{2}$$

As like usual Q is output, A is the parameter that shows technological improvement; K, L_n and L_m are capitals, foreign and local workers in the process of production, respectively.

The costs that are spent by industry for these three inputs are very essential in determining the industrial profits. This is because the highs and lows of outputs' selling prices in the market depend on the fluctuation of inputs costs fluctuation. Nevertheless, in practice the calculation of costs spending by industry is complicated, especially the cost for foreign workers. In that respect, the industrial spending for various inputs can be estimated through costs that are paid out by an industry. Cost function that expresses the high and low of outputs' selling prices in the market can be written as the following (Hebbink 1993) :

$$C = r \, K + w_n \, L_n + w_m \, L_m \tag{3}$$

Where C is costs of r, w_n and w_m, are capital, goods price, local workers wage, and foreign workers wage, respectively. In this context, wage is seen as cost that has to be paid in production process. It means, the higher the wages for workers, the lesser the profits for employers. The increasing of wages causes the employers to rethink and compare them between additional profits received and additional costs for workers' payment. In that case, the increasing of wage will cause the decreasing of industrial demand for foreign workers or the demand for capital goods will increase.

By using the Langrange Equation (ξ), the industry optimum benefits can be gained by cost minimizing with production constraints as follow :

$$\xi = rK + w_n L_n + w_m L_m + \lambda(Q - AK^\alpha L_n^\beta L_m^\delta) \qquad (4)$$

$$\partial\xi/\partial K = r - \lambda\alpha AK^{\alpha-1} L_n^\beta L_m^\delta = 0 \qquad (5)$$

$$\partial\xi/\partial L_n = w_n - \lambda\beta AK^\alpha L_n^{\beta-1} L_m^\delta = 0 \qquad (6)$$

$$\partial\xi/\partial L_m = w_m - \lambda\delta AK^\alpha L_n^\beta L_m^{\delta-1} = 0 \qquad (7)$$

$$\partial\xi/\partial\lambda = Q - AK^\alpha L_n^\beta L_m^\delta = 0 \qquad (8)$$

The equilibrium of inputs between foreign workers with capital; and local workers, can be found by the equation (5) to (8) :

$$\frac{w_m}{r} = \frac{\delta K}{\alpha L_m} \qquad (9)$$

$$\frac{w_m}{w_n} = \frac{\delta L_n}{\alpha L_m} \qquad (10)$$

$$\frac{w_m}{r} = \frac{\beta K}{\alpha L_n} \qquad (11)$$

By simplifying equation (9) to equation (11), the demand of each input in the production process can be written as follows :

$$K = \left(\frac{Q}{AL_n^\beta L_m^\delta}\right)^{1/\alpha} \qquad (12)$$

$$L_m = \left(\frac{\delta r}{\alpha w_n}\right)K \qquad (13)$$

$$L_n = \left(\frac{\beta w_m}{\delta w_n}\right)L_m \qquad (14)$$

There are a few steps to complete the industry demand derivatives of foreign workers. *First,* insert the substitution equation (14) in equation (12) in order to get a new equation. *Second,* the result of the new equation is substituted in equation (13) to find the demand function for foreign workers :

$$L_m = \left\{ \left(\frac{\delta r}{\alpha w_n} \right)^\alpha \left(\frac{Q(\delta w_n)^\beta}{A(\beta w_m)^\beta} \right) \right\}^{\frac{1}{\alpha+\beta+\delta}} \qquad (15)$$

Where L_m is foreign workers demand, Q is output, and r, w_n and w_m are prices of capital goods, wages for local and foreign workers respectively.

Model Spesification And Variables

This study utilizes pooling data with cross section analysis and time series. This specification may appear biased; caused by firms differences that occur in certain industry categories, for instance sizes, the amount of workers, industry locations, and technology that are used in the production process (Bregman, Fuss & Regev 1995). Moreover, the new firms that merge with certain industry categories cannot be observed during the study conducted as well as for the firms that have been bankrupt.

From the model it can be seen that the output variable (Q) and demand for foreign workers (L_m) interfere with each other. Thus, to get the correct estimation, the simultaneous equation is used as follows :

$$\ln Q_{it} = \alpha_{i10} + \alpha_{i11} \ln K_{it} + \alpha_{i12} \ln Ln_{it}$$
$$+ \alpha_{i13} \ln Lm_{it} + u_{i1t} \qquad (16)$$

$$\ln Lm_{it} = \alpha_{i20} + \alpha_{i21} \ln Q_{it} + \alpha_{i22} \ln r_{it}$$
$$+ \alpha_{i23} \ln wm_{it} + \alpha_{i24} \ln wn_{it} + u_{i2t} \qquad (17)$$

Where Q is output, and K, L_n and L_m are capital, local workers and foreign workers respectively. In addition r, w_n and w_m are prices of capital goods, wage for local and foreign workers respectively. Variables that have signs "it", for instance "Q_{it}" indicates that the Q variable is output that resulted in industry i in year t.

There are five categories of foreign workers to the analyzed in this study : Professional workers, teckhnicalsupervisor, skilled, semi-skilled and unskilled. The specification for production and the demand functions for foreign workers can be rewritten as :

1. The Production Function

$$\ln Q_{it} = \ln \alpha_{11} + \beta_{111} \ln K_{it} + \beta_{112} \ln Ln_{it}$$
$$+ \beta_{113} \ln Lmp_{it} + \beta_{114} \ln Lmtp_{it}$$
$$+ \beta_{115} \ln Lmm_{it} + \beta_{116} \ln Lmsm_{it}$$
$$+ \beta_{117} \ln Lmtm_{it} + \mu_{it} \qquad (18)$$

2. The Demand Function for Foreign Workers

$$\ln Lmp_{it} = \ln \alpha_{130} + \alpha_{131} \ln Q_{it} + \alpha_{132} \ln r_{it}$$
$$+ \alpha_{133} \ln wmp_{it} + \alpha_{134} \ln wnp_{it}$$
$$+ \mu_{13t} \qquad (19)$$

$$\ln Lmtp_{it} = \ln \alpha_{140} + \alpha_{141} \ln Q_{it} + \alpha_{142} \ln r_{it}$$
$$+ \alpha_{143} \ln wmtp_{it} + \alpha_{144} \ln wntp_{it}$$
$$+ \mu_{14t} \qquad (20)$$

$$\ln Lmm_{it} = \ln \alpha_{150} + \alpha_{151} \ln Q_{it} + \alpha_{152} \ln r_{it}$$
$$+ \alpha_{153} \ln wmm_{it} + \alpha_{154} \ln wnm_{it}$$
$$+ \mu_{15t} \qquad (21)$$

$$\ln Lmsm_{it} = \ln \alpha_{160} + \alpha_{161} \ln Q_{it} + \alpha_{162} \ln r_{it}$$
$$+ \alpha_{163} \ln wmsm_{it} + \alpha_{164} \ln wnsm_{it}$$
$$+ \mu_{16t} \qquad (22)$$

$$\ln Lmtm_{it} = \ln \alpha_{170} + \alpha_{171} \ln Q_{it} + \alpha_{172} \ln r_{it}$$
$$+ \alpha_{173} \ln wmtm_{it} + \alpha_{174} \ln wntm_{it}$$
$$+ \mu_{17t} \qquad (23)$$

Where *Lmp, Lmtp, Lmm, Lmsm and Lmtm* are professional foreign workers, teckhnical-supervisor, skilled, semi-skilled and unskilled, respectively. Then *wnp, wntp, wnm, wnsm, wntm* are wages for professional local workers, teckhnical-supervisor, skilled, semi-skilled and unskilled, respectively. Capital (K) influences output through inputs consumption in the production process. In this case, capital is consisted of fixed assets and current assets according to time and types of industry and technology that are used in production. Nonetheless, in producing output the owners or employers of the firms are still in need of machines and equipment.

The fixed asset cannot change in a short time frame, as capital cost is too high. Moreover, in many cases when machines and equipment are bought, the owners of firms usually obtain loans from the banks with a low interest rate. Therefore, it is fair to surmise that capital is an exogenous variables in this model (Bedrossian & Petoussis1987). Capital goods price (r) influences output through foreign workers demand. Thereby, the increase of capital goods will cause decrease in the number of physical capital inputs and skilled workers in the production process. Eventually, the firms or industries would switch to semi-skilled foreign workers (Griliches 1969; Borjas1983; and Hamersmesh 1984).

Foreign workers wage (w_m) influences output growth through industrial demand for foreign workers. The increasing of wage could stimulate firms or industries to their inputs' consumption in their production process. Then, the firms that are of an industry will usually dispense their demand for foreign workers. In contrast, there are many cases where increasing of wage causes industrial demand for foreign workers. In the labor market theory, there is a positive relationship between wage and industrial demand for foreign workers whereby it is discussed in higher wage economic theory (see Ress 1973 and Katz 1986).

In high wage economic theory, it is stated that improvement in wage can create better moral and prosperity among workers. It can also improve workers' motivation. In this situation, high productivity and competitiveness among the workers will cause them to achieve better heights. Even in the new version of the high wage economic theory, which is known as *efficiency wage theory*, it clarifies that the firms' profits can improve if wages are paid is above the equilibrium of the market wage. It means, that high wage is a stimulus for workers' motivation, which in turn will minimize workers' turnover cost, reduce labor union bargaining power, and attract more qualified workers (Katz 1986).

Local workers wage (w_n) can also influence output growth due to industrial demand for foreign workers. The increasing of local workers' wages can influence firms to replace their labor input with a cheaper alternative. In the short term, the employers' alternative is replacing the utilization of local workers with foreign workers in the production process. The adjustment of this labor input in labor market theory is known as cross elasticity substitution between local workers and foreign workers (Borjas 2000).

The Procedural Analysis And Sources Of Data

As explained earlier, the output variable (Q) and the demand for foreign workers (Lm) influences one another. That is why, the usual regression equation (OLS) often used by econometric experts is less precise. To overcome this problems, the simultaneous equations are use in order to obtain the estimation results that are more precise and accurate than OLS. To that end, there is an alternative that we can use; which is to swap the equation system's structure as shown by equation (17) up to equation (19) to the derivative equation form (*reduced form*).

Structured equation is an equation in which the function of endogenous factors functions to the exogenous and endogenous factors. When the equation of this structure is transformed in the reduced form, the endogenous factors in the model will serve to exogenous factors alone (Greene 2000). In general, the derivate equation (reduced form) presented in this study are as follows :

$$\ln Q_{it} = \Pi_{i10} + \Pi_{11} \ln K_{it} + \Pi_{i12} \ln Ln_{it}$$
$$+ \Pi_{i13} \ln r_{it} + \Pi_{i14} \ln wm_{it} + v_{i1t} \qquad (24)$$

$$\ln Lm_{it} = \Pi_{i20} + \Pi_{i21} \ln K_{it} + \Pi_{i22} \ln Ln_{it}$$
$$+ \Pi_{i23} \ln r_{it} + \Pi_{i24} \ln wm_{it} + \Pi_{i2t} \qquad (25)$$

Where Π_{ijk} is a function of the parameter $^a_{jk}$ in equation (17) so that equation (19), or $\Pi_{ijk} = f(^a_{ijk})$, and $v_{ijt} = f(^a_{ijk}$ and $u_{ijt})$.

Instrument variables are used to avoid the mistakes in simultaneous equations models. In this study, the estimation for Production Function (Q_{it}) and Demand Function for foreign workers (Lm_{it}) used instrument variables, such as input of capital, price of capital, and wage for foreign workers based on job categories. Although, the utilization of instrument variables will not solve all problems that are related to simultaneous equations, the usage of instrument variables is expected to minimize cross section variation (Bregmant et al. 1995). Moreover, to estimate the parameters in simultaneous equations, the equation of 2-SLS (two stage least squares) is used. This equation is commonly applied in econometrics. To obtain the desired parameters, estimations are performed using the SPSS computer program package.

Data used in this study are based upon the Industrial Survey conducted by The Department of Statistics Malaysia for the period of 1994-2005. This is after the memorandum of understanding (MoU) between Malaysian and Indonesian officials, and some other countries in 1984. Specifically the data used in this study are as follows : *First*, production or output (Q) macro data of each industry have a four-digit classifications. The data covers gross value of outputs produced by each industrial classification based on a constant price in 2000.

Second, capital data (K) consists of fixed asset and current assets, types of industry and technology that are used in the production process. In practice, the physical capital input data are very difficult to obtain,. This is because the capital represents certain types of assets, such as machines, equipments, vehicles, and building for plants and offices. Therefore, to calculate these assets for capital stock can create some problems. To estimate the stock value of capital, the data of machines and equipments depreciation from various industries are used as proxy.

Third, the number of labor data (*L*), the number of local workers (*Ln*) and the number of foreign workers (*Lm*) for each industry, have five job categories. They are professional workers, technical-supervisor, skilled workers, middle-skilled and unskilled workers. Professional workers are those who have professional training to conduct certain tasks such as research, and knowledge to solve problems related to technology, economy and social welfare. Professionals are usually connected to engineers, architects, doctors, lawyers, and accountants. Technical-supervisors are those involved in research and directed by professionals. Skilled workers are workers who have formal training. Middle-skilled workers are those with limited training and not included in the skilled workers category. Further, the unskilled workers are those who have never had related training to do their jobs.

Fourth, the wage data in this study are the data of wage paid by industry for all workers according to the industrial classifications and their job categories. The wage data is real wage data that is accepted by workers per year. In view that there is no detailed data available regarding wages for every worker, the wage data used in this study will be proxied by wage share that is paid by each industry category for all workers according to their job types. The data use consumer price index on the basis of constant price in year 2000.

Others data are also used in this study; namely those that are related to interest spent by each industry. In the case of capital (K), it is difficult to select the appropriate variable to be applied to measure the price of capital goods. This is because it involves various values such as assets values, depriciation, interest rates and tax (Hebbink1993). The data used as proxy to measure the price of capital goods (r) is interest rate; this means the firm's cost's expenditure is as a consequence of getting bank loan.

Empirical Findings

Table 1 shows the estimation results of the Cobb-Douglas production function and resources of outputs growth from various categories of industry. In general, it can be stated that the process of industrial development in Malaysia has shown some results whereby physical capital and local workers have a positive role and they are significant at improving Malaysia's output, except for local workers participation in the food, beverage and tobacco industry (ISIC 31), wood, wood products and furniture industry (ISIC 33).

TABLE 1 Cobb-Douglas estimation function base on industry categories and job types

Variable	ISIC (International Standard Industry Classifications)					
	31	32	33	35	36	38
K	1.177	.457	.817	.416	.770	.462
	(10.34)***	2.71)**	(4.12)***	(3.29)***	(7.55)***	(5.66)***
Ln	-.037	.487	.160	.216	.263	.518
	(-0.27)	4.47)***	(-1.35)	(2.58)**	(1.59)*	(5.91)***
Lmp	-.044	.170	-.167	.292	.431	.129
	(-.53)	826)	(-1.352)	(2.19)**	(3.06)***	(2.13)**
Lmtp	.114	.060	-.006	-.018	-.109	-.037
	(2.28)**	0.597)	(-.062)	(-.214)	(-1.66)*	(-.951)
Lmm	.091	-.029	-.090	-.022	-.057	.014
	(1,80)*	(-.434)	(-.853)	(-.351)	(-1.17)	(.371)
Lmsm	-.122	-.090	,098	-.001	.082	.014
	(-3.14)***	(-.610)	(.570)	(-.011)	(.599)	(0.279)

Variable	ISIC (International Standard Industry Classifications)					
	31	**32**	**33**	**35**	**36**	**38**
Lmtm	.074	.052	.092	-.021	-.063	-.016
	(0.79)	404)	(.719)	(-.324)	(-.851)	(-.382)
Constant	2.225	3.964	3.864	6.859	1.793	3.888
	(2.44)**	2.54)**	(2.54)***	(5.20)***	(1.21)	(6.43)***
R^2	.928	.983	.990	.925	.860	.956
N (Obs.)	56	18	24	39	34	93

Note :

31   = Food, Baverage and Tobaco Industry; 32 = Textyle, Garmen,and Leather industry;

33   = Wood, Wood Products and Furniture Industry; 35 = Chemical and Chemical products

36   = Non-Metal Products; 38 = Fabricated metals, Machinary, electronic and equipment

*** = Denote Statistical Significance at the 1%; ** = Denote Statistical Significance at the 5%;

*   = Denote Statistical Significance at the 10%

The testing of Cobb-Douglas production function shows that professional foreign workers have important contribution to outputs growth of various industries in Malaysia, particularly in heavy industries that are capital intensive. For instances, chemical, chemical products, petroleum, rubber and plastic industry (ISIC 35), non-metal products industry (ISIC 36), also as well as fabricated metals, machineries, electronics and equipments industry (ISIC 38).

Meanwhile, skilled and technical-supervisors of foreign workers have significant roles in the outputs of light industries, especially for food, beverage and tobacco industry (ISIC 31). This means the expatriate workers have consequential participation in outputs' growth of various industries in Malaysia. Table 2 shows the estimation of demand function for foreign workers according to industrial categories and job types. In general it can be stated that outputs, the prices of capital goods and wage have influenced the industries at various levels. However, positive and significant elasticity of demand- outputs are founded in the textile, garment and leather industries (ISIC 32); fabricated metals, machineries, electronic and equipments industries (ISIC 38); chemical, chemical products, petroleum, coal, rubber and plastic industries (ISIC 35); and non-metal products (ISIC 36).

TABLE 2 The estimation of industry demand function for foreign workers base on industry and job categories

Code ISIC	Variable	Job Categories				
		Professional	Technical Supervisor	Skilled	Semi-Skilled	Un-skilled
31	Q	.349	.507	.019	-.044	.017
		(5.26)***	(5.29)***	(.178)	(-.244)	(.144)
	r	-.041	-.031	.054	-.075	-.061
		(-.626)	(-.388)	(.484)	(-.416)	(-.469)
	wm	.954	1.012	.972	.844	.831
		(27.60)***	(35.06)***	(25.63)***	(13.96)***	(13.87)***
	wn	-.423	-.740	-.236	.071	.010
		(-9.51)***	(-10.12)***	(-3.21)***	(.455)	(.071)
	Constant	-4.442	-2.789	-.433	.033	-.008
		(-12.59)***	(-7.18)***	(-.735)	(.039)	(-.010)
	R^2	.971	.976	.949	.897	.925
	N(Obs.)	56	56	56	56	56
32	Q	.644	.845	.291	-.263	.063
		(4.99)***	(7.16)***	(2.56)**	(-.403)	(.458)
	r	-.242	-.416	-.277	.307	-.143
		(-1.253)	(-4.03)***	(-2.90)**	(.560)	(-.1.287)
	wm	.647	.839	.916	.691	.859
		(4.36)***	(14.69)***	(40.94)***	(4.410)***	(35.92)***
	wn	-.126	-.321	.023	.391	.204
		(-1.275)	(-2.05)*	(.391)	(.916)	(1.820)*
	Constant	-6.807	-6.123	-2.968	-2.899	-2.031
		(-8.10)***	(-1`2.37)***	(-6.53)***	(-1.368)	(-4.08)***
	R^2	.981	.989	.996	.916	.925
	N(Obs.)	18	18	18	18	18

Code ISIC	Variable	Job Categories				
		Professional	Technical Supervisor	Skilled	Semi-Skilled	Un-skilled
33	Q	.014	.386	.279	.149	.535
		(.065)	(2.72)**	(1.039)	(.670)	(2.44)***
	r	.185	.184	.073	.342	.109
		(.672)	(1.166)	(.228)	(1.206)	(.501)
	wm	.586	.722	.908	.921	.810
		(5.70)***	(15.82)***	(15.24)***	(14.08)***	(24.40)***
	wn	-.002	-.347	-.388	-.645	.445
		(-.013)	(-3.69)***	(-1.272)	(-2.03)*	(-3.54)***
	Constant	-2.789	-4.936	-2.116	-.067	-3.897
		(-2.71)**	(-6.14)***	(-1.207)	(-.050)	(-3.39)***
	R^2	.984	.996	.990	.991	.994
	N(Obs.)	24	24	23	24	23
35	Q	.882	.634	.162	1.252	-.283
		(3.95)***	(2.36)**	(.324)	(1.97)*	(-.938)
	r	-.054	-.226	.073	-.479	.110
		(-.329)	(-1.225)	(.213)	(-1.163)	(.561)
	wm	.563	.802	.756	.940	.870
		(3.90)***	(9.69)***	(10.02)***	(7.63)***	(27.99)***
	wn	-.322	-.049	.134	-.655	.230
		(-1.76)*	(-.273)	(,512)	(-3.045)***	(2.84)***
	Constant	-9.753	-8.318	-5.512	-8.670	-.249
		(-5.29)***	(-5.21)***	(-1.61)*	(-1.97)*	(-.124)
	R^2	.898	.932	.869	.780	.971
	N(Obs.)	39	39	39	39	39

Code ISIC	Variable	Job Categories				
		Professional	Technical Supervisor	Skilled	Semi-Skilled	Un-skilled
36	Q	1.709	.062	-.251	.103	-1.100
		(4.44)***	(.296)	(-1.441)	(.305)	(-4.14)***
	r	-1.003	-.278	-.298	.087	.783
		(-2.99)***	(-1.60)*	(-1.92)*	(.232)	(2.77)***
	wm	.670	.895	.810	1.076	.848
		(7.04)***	(18.47)***	(19.76)***	(6.857)***	(18.82)***
	wn	-.844	-.183	.442	-.892	.450
		(-4.85)***	(-1.15)	(2.22)**	(-4.58)***	(3.56)***
	Constant	-7.130	1.288	.844	3.504	1.562
		(-3.93)***	(1.450)	(.919)	(1.93)*	(1.131)
	R^2	.687	.960	.985	.712	.938
	N(Obs.)	34	34	34	34	34
38	Q	.445	.020	.551	-.098	-.273
		(3.34)***	(.294)	(3.78)***	(-.618)	(-1.351)
	r	-.082	.151	-.114	.284	.167
		(-.986)	(3.06)***	(-716)	(1.89)*	(1.075)
	wm	.695	.841	.770	.776	.812
		(16.52)***	(31.88)***	(17.93)***	(17.36)***	(24.58)***
	wn	-.097	-.044	-.373	-.117	.208
		(-1.132)	(-.662)	(-3.74)***	(-1.030)	(1.61)*
	Constant	-6.250	-3.405	-3.876	-.853	-.291
		(-11.55)***	(-13.96)***	(-5.66)***	(-1.254)	(-.340)
	R^2	.970	.979	.900	.892	.911
	N(Obs.)	93	93	93	93	92

Note :

31= Food, Baverage and Tobaco Industry; 32= Textyle, Garmen, and Leather Industry;

33= Wood,Wood Products and Furniture Industry;35= Chemical and Chemical Products;

36= Non-Metal Products; 38=Fabricated metals, Machinary, electronic and equipment.

***= Denote Statistical Significance at the 1%; **= Denote Statistical Significance at the 5%;

*= Denote Statistical Significance at the 10%

This study findings complement previous studies, of Stein (1981) and Myint (1984). In their studies, they found that the demand for foreign workers by exportoriented industries tends to increase. However, industrial demand for import substitution has a tendency to decline. This is becaused export-oriented industries are more likely to achieve the economic of scale than import substitution industries. In addition, the prices of goods of export-oriented industries are more stable than the price of goods for import substitution industries.

The negative relationship between industrial demand for foreign workers who have high skills with capital goods in ISIC 32 and ISIC 36, indicate that capital and foreignworkers are complementary, especially for professional and technical-supervisor foreign workers. It matches the prior studies by Griliches (1969), Hamersmesh (1984), Borjas (1993), and Rahmah et.al. (2003). They found that there was a substitution relationship between capital and unskilled foreign workers. Meanwhile, the relationship between capital and high skilled foreign workers are complementary in the process of production. This means, if there is an increase in capital goods, the employers will shift from their capital and invest more in unskilled foreign workers.

The shift in response of industrial demand for foreign workers as an affect to the increase in foreign workers wage, is positive and significant to all industry categories. This positive relationship does not suit the theory. Instead, it relates to the introduction of lower wage labor applied by Malaysia since the 1970s. This policy has brought some multinational corporations into Malaysia (especially those who are labor intensive) to replace their workers with contracted workers and cheaper foreign workers from various countries such as Indonesia.

The positive relationship between wage and demand for foreign workers is also related to foreign employers or owners preferences of employing workers from their own countries. In Malaysia, most foreign multinational corporations prefer to hire workers from their own countries, particularly for professional and technicalsupervisor workers. The demand for these high level foreign workers is determined by owners' decision, although their wages are high. Hence, this situation is also related to the owners' perceptions (including local owners); whereby they are more interested in hiring foreign workers rather than local workers. They think that foreign workers of this category are more efficient, productive, and have a higher commitment to their jobs (Immigration Department 2002).

The response of industrial demand for foreign workers to the change of local workers' wage shows varying relationships from one industry to another. However, the response of unskilled foreign workers to the increasing of local workers' wage is positive for all industrial categories. Meaning, the increase in unskilled local labors wage causes an increase in the industrial demand for foreign workers. The finding of this study indicates that unskilled foreign workers are substitutes for local workers of the same category.

Although there is a substitution relationship between local workers and unskilled foreign workers, for high skilled foreign workers such as professionals and technical-supervisors, there is opposite correlation, whereby the coefficient results are negative. As such, the high skilled foreign workers are complement to local workers in the production process. This matches prior studies such as by Dickson (1975), Norman and Meikle (1985) in Australia, Winegarden and Khor (1991) in the US, Zimmermann (1995) in some European countries, Venturini (1999) in Italy, as well as Idris and Rahmah (2006) in Malaysia. In their studies, they found that foreign workers are complementsto local workers. Therefore, those foreign workers could not be seen as competitor for local workers in the production process.

Conclusions And Implications

In conclusion, it can be stated that highly skilled foreign workers are still necessary for industrial development in Malaysia. At the same time, the presence of those foreign workers negatively impact local wage level. Therefore the dependence could be eliminated through several efforts. First, by redesigning the human resource development to produce the high skilled workers; that is through the cooperation between universities and industries. Second, by utilizing advanced technology and investing in more machineries and modern equipments. Lastly, by giving incentive to research and development (R&D) staff, i.e. technology that corresponds to local workers' abilities.

The Using Of Professional Workers

For middle and heavy industries that are capital intensive in their process of production, such as in the chemicals industry, chemical products, petroleum, coals, rubber and plastic industries (ISIC 35), and non-metals industry (ISIC 36) the

professional foreign workers are still needed, since they are as a catalyst for output growth. Meanwhile, the technical-supervisors, especially of the ISIC 36 should be reduced and replaced with local workers since these foreign workers can stagnant outputs. The use of professional foreign workers in these three industry categories is essential to push technological transfer.

The demand for professional foreign workers is still beneficial for heavy industries, for example in the fabricated metals, electronics, and equipments industries (ISIC 38). However, their contribution to outputs' growth is relatively small compared to middle and heavy industries that intensively utilize physical capital. For the food, beverage and tobaco industries (ISIC 31), the demand for skilled and technical-supervisor foreign workers are still needed due to technological development in the production process. In contrast, the use of middle skilled foreign workers should be reduced, since they can impede the output growth.

The Utilization Of Advanced Technology

Another way to reduce the dependence on foreign workers, especially for low skilled workers is by using modern technology. It is essential for those industries which are labors intensive replace workers with semiautomatic or automatic machineries. In the future, the manufacturing industry cannot rely only on the laborers of low cost, but to utilize technology and be of capital intensive.

The Regulations Of Price Inputs

The substitution ability between capital and labor shows that each changes in price ratio, such as the increasing in interest rate, will stimulate the demand for workers, including foreign workers demand, especially for lower skilled and unskilled. For capital intensive industries or industries with high demand-capital elasticity, the policy to increase the interest rate will cause the diminishing of industrial activities. Therefore, regulations that maintain interest rate is critical to improve the investment and utilization of technology for various industries in Malaysia.

The Welfare Of Workers

Since the 1980s the cheap labor cost strategy used is aimed to maintain the minimum wage rate. It has provided a lot of benefits for the growth of manufacturing industries in Malaysia. However, in the future the cheap labor strategy cannot be justified to maintain products' competitiveness. The benefits from lower labor cost have since diminished as several industrial countries namely the US and the European community had highlighted on the social issues of labor during the World Trade Organization (WTO) forum; whereby this problem is related to the ILO agreement. If the agreement is not followed, this issue will be a barrier of non-tariff trade for developing countries.

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Appendix

APPENDIX 1 Migrant worker in Malaysia by country of origin

Country of Origin	Year							
	1999		**2002**		**2005**		**2008**	
	Number	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**
Indonesia	269,194	65.7	788,221	73.8	1,211,584	66.7	1,085,658	52.6
Bangladesh	110,788	27.0	82,642	7.7	55,364	3.0	316,401	15.3
Thailand	2,130	0.5	20,599	1.9	5,751	0.3	21,065	1.0
Philippines	7,299	1.8	21,234	2.0	21,735	1.2	26,713	1.3
Pakistan	2,605	0.6	2,000	0.2	13,297	0.7	21,78	1.0
Others	17,644	4.3	152,833	14.3	507,507	28.0	591,481	28.7
Total	**409,660**	**100**	**1,067,529**	**100**	**1,815,238**	**100**	**2,622,596**	**100**

Source : Ministry of Home Affairs, Malaysia, 2011

APPENDIX 2 Mingrant workers in Malaysia by sector

Sector	Year							
	2002		**2005**		**2008**		**2011**	
	Number	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**
Maid	232,282	65.7	320,171	17.6	293,359	14.2	184,092	11.7
Manufacturing	323,299	27.0	581,379	32.0	728,867	35.3	580,820	36.9
Plantation	298,325	0.5	472,246	26.0	333,900	16.2	299,217	19.0
Construction	149,342	1.8	281,780	15.5	306,873	14.9	223,688	14.2
Services	64,281	0.6	159,662	8.8	211,630	10.3	132,919	8.4
Agriculture	NA		NA		186,967	9.1	152,325	9.6
Total	**1,067,529**	**100**	**1,815,238**	**100**	**2,061,596**	**100**	**1,573,061**	**100**

Note : na is not available
Source : Mnistry of Home Affairs, Malaysia, 2011.

ELASTICITY OF SUBSTITUTIONS BETWEEN FOREIGN AND LOCAL WORKERS IN THE MALAYSIAN MANUFACTURING SECTOR*

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Abstract

Industrialization has brought many foreign labours into Malaysia. They have fulfilled job vacancies at various levels and the majority of them are at the lower job rank. Nonetheless, the involvement of expatriates is also of significant. One of the pertinent labour market issues regarding foreign labours is their substitutability or complementarities with the local labours. Job opportunities for the local labours will be jeopardized when they can easily be substituted by these foreigners. Consequently, the unemployment rate among the locals would increase. This paper investigates the substitutability between local and foreign labours at various job categories and with capital. The data from the Manufacturing Survey of 1985 to 1996 collected by the Department of Statistics, Malaysia is used for the analysis. Four job categories covered in this analysis are semi-skilled local and foreign workers, unskilled local and foreign workers. Five sub industries are selected for the analysis, namely, wood-based, paper products, chemical products, non-metallic mineral products and basic metal products. The translog cost function is used to derive the elasticity of the substitutions. The results from this study show that both the local and foreign workers are more substitutes. Further, the study finds that the substitutability or complementarity does not depend on the types of industry but the number of statistically significant elasticity of substitutions is bigger in the light industry.

Keywords: Foreign and local workers, manufacturing sector, substitutability

Introduction

During the 1980s, Malaysian economy experienced a dramatic change in its structure, a shift from dependence on the role of agriculture towards manufacturing and services sectors. High growth rates in these two sectors resulted in a substantial increase in the demand for labour, which consequently, led to the problem of labour shortages at all levels of job categories. The shortage was more severely felt by the manufacturing sector than other sectors due to its faster growth especially at the beginning of 1980s when the export-oriented industrialization and heavy industry were introduced. To overcome this problem, the Malaysian economy began to rely on foreign labours. The situation was seen as an opportunity for the excess supply of unskilled workers of the neighbouring countries like Indonesia, the Philippines, Thailand and Myanmar.

The economic transformation has also changed the structure of labour demand. The fast changing manufacturing and services sectors require more professional and skilled workers to cope with the rapid change in technological adoption. However, the demand for semi skilled and unskilled labours is still high due to the fact that total number of employment increases. In this regard, Malaysia faces two different economic scenarios. Firstly, the labour surplus in certain job categories is a reflection of improvement in the educational attainment amongst the citizens and the difficulties encountered in the human resource planning in meeting labour requirement. Furthermore, jobless are becoming choosier to accept jobs offered to them. Secondly, the shortage of labour exists especially at the lower job rank due to reluctance of the local labours to take these jobs (Rahmah 1997; Zulkifly and Rahmah 1997).

Despite of the business cycle experienced by the manufacturing sector, labour requirement in this sector is always large and the reliance on foreign labours is inevitable. Rapid technological advancement in this sector has changed the pattern of its labour demand towards more skilled workers. However, a dramatic increase in demand for labour has resulted in the shortages for jobs at the upper rank as well as the lower rank. Changes in the demand structure for the foreign labours in Malaysia are preceded by changes in policy for foreign labour that can be arbitrarily divided into three phases. Firstly, an introduction of heavy and exportoriented industrialization at beginning of the 1980s, which has led to substantial job opportunities. Secondly, an introduction of new policy in the mid 1980s that restricted the hiring of foreign workers to only certain sectors. Thirdly, another

policy was introduced in 1992 to limit the hiring of the foreign workers to only skilled workers. On the supply side, the development of the Malaysian economy has resulted in a great improvement in the educational attainment among its working population. The emphasis made by the government on education provides greater accessibility for Malaysians to acquire education. At the workplace, opportunities to further education and training are also greater. Employers are required to provide better training facilities to their workers to enhance their capabilities in carrying out duties and be more productive.

It is particularly important to look at the demand for labour and the substitutability between various skills, and with capital. It is important to study the labour demand because the effect of any policy change on factor prices faced by the employers will depend on the structure of labour demand. Besides, the impact of skill, human capital improvement and human capital mix can be assessed only if one knows the underlying structure of substitutions among different groups of workers. Knowledge of the values of the elasticity of substitution is useful for policy makers in changing the market signals for greater labour absorption and also to identify the appropriateness of techniques being used in the production process. Rosen (1983) and Grilliches (1969) for example, provide some initial findings on the capital-skill complementarity hypothesis. This finding has major implications on the employment effects of such policies as accelerated depreciation, investment tax credits and other attempts to stimulate investment in physical capital, suggesting that they will increase the demand for the skilled-related to unskilled labours. The elasticity of the substitution also has a positive relationship with output and productivity (Granville 1989; Klump and Granville 2000; Dupuy and deGrip 2002).

This article attempts to analyze elasticity of substitution between local and foreign labours and with capital in five manufacturing subsectors, namely, wood-based, paper products, chemical products, non-metallic mineral products and metal products. The rationale for choosing these sub-industries is based on their large involvement in hiring foreign labours. The first two industries are regarded as light industry and the other three industries are categorized as heavy industry. The analysis utilizes data obtained from the Manufacturing Survey of 1985-1996 conducted by the Department of Statistics, Malaysia. This paper is organized into six sections. The following write-up contains the review of foreign labour in the manufacturing sector, literature review, theoretical framework and model specification, analysis of the results and summary and conclusion.

Foreign Labour In The Manufacturing Sector

In most manufacturing sub-industries, the annual growth rate of the foreign workers was higher than that of local workers. This reflects that in a task to cut cost of production, many firms prefer hiring foreign workers especially the unskilled ones. In the light industry, for example, during 1985-1996, the average annual growth rate of the foreign workers was 26.1% as compared to 7.1% of the local workers. In the same vein, the annual growth rate of the foreign workers in the heavy industry was 32.8% as compared to 12.9% of the local workers during the same period. Some sub-industries that experience high growth rate of foreign workers are rubber products; textiles; publishing industry; and paper products, machinery and equipment and metal products. The growth rate of local workers is higher in the rubber products; paper products; fabricated metals, machinery and equipment, at above 10.0% that due to their high export contents.

It is particularly important to note that during 1985-990 and 1990-1996, annual growth rates of local workers decreased in both categories of industry. In contrast, the growth rate of foreign workers increased dramatically. In the light industry, growth rate increased from 18.5% during 1985-1990 to 32.8% during 1990-1996 and in the heavy industry, the rate increased from 11.2% to 53.9% during the same period. These statistics clearly indicate that the expansion of the Malaysian manufacturing sector increases the reliance on foreign labours. Technological advancement particularly in heavy industry requires more expatriates that may bring together their foreign direct investment (FDI). The detail distribution of the foreign labour in the Malaysian manufacturing sector is presented in Table 1.

Between 1985 and 1996 the largest percentage of foreign labours was unskilled. In the light industry, the percentage of unskilled labours increased from 27.9% in 1985 to 40.4% in 1990 but decreased to 33.3% in 1996. In this industry, the semi-skilled foreign workers formed the second largest percentage at 20.0% in 1985, but this decreased to only 19.5% in 1990 and 13.8% in 1996. The involvement of foreign labours in the professional, technical and supervisory employment is very minimal at less than 10.0%. They are commonly called expatriates.

The same scenario is observed in the heavy industry, with the largest percentage of the foreign workers is the unskilled. However, the percentage of the professionals in this industry is higher due to more advanced technology. Furthermore, it was also obvious that in both light and heavy industries, the percentage of the skilled workers increased substantially due to the technological advancement especially in the era of liberalization and globalization in the 1990s where production of export goods are more emphasized (refer to Table 2). A greater involvement of foreign labours at lower job categories implies that they are receiving lower wage rate. As a result, the bargaining power of local labours for wage increase is becoming lesser.

TABLE 1 : Malaysia: Foreign labour in the manufacturing sector by sub industry 1985-1996

Code	Malaysian Industry Classification (MIC)	1985		1990		1996		Annual growth rate		
		Total	%	Total	%	Total	%	1985-90	1990-96	1985-96
A.	**Light Industry**	**5,035**	**69.6**	**12,407**	**75.9**	**67,904**	**56.4**	**18.5**	**32.8**	**26.1**
31	Food, beverage & tobacco	1,607	14.0	1,671	10.2	6,924	5.8	9.4	26.7	18.5
32	Textile, wering apparel & leather	372	4.9	372	2.3	17,772	14.8	0.0	90.5	42.1
33	Wood, wood products and furniture	3,548	46.6	9,881	60.4	19,607	16.3	22.7	12.1	16.8
342	Publication and publishing	41	0.5	29	0.2	1,087	0.9	-6.7	82.9	34.7
355/56	Rubber 8c plastic products	230	3.0	372	2.3	21,296	17.7	10.1	96.3	50.9
39	Others	47	0.6	82	0.5	1,218	1.0	11.8	56.8	34.4
B.	**Heavy Industry**	**2,314**	**30.4**	**3,939**	**24.1**	**52,426**	**43.6**	**11.2**	**53.9**	**32.8**
341	Paper and paper products	20	0.3	61	0.4	2,478	2.1	25.0	85.4	55.0
351/54	Chemical, petroleum & coal	287	3.8	216	1.3	1,617	1.3	-5.5	39.9	17.0
36	Metal products	541	7.1	1,035	6.3	4,931	4.1	13.8	29.7	22.2
37	Basic metals products	135	1.8	116	0.7	3,783	3.1	-3.0	78.7	35.4
38	Fabricated metals, machinery, electronic 8c equipment	1,331	17.5	2,511	15.4	39,627	32.9	13.5	58.4	36.1
Total		**7,619**	**100**	**16,346**	**100**	**120,340**	**100**	**16.5**	**39.5**	**28.5**

Source: Department of Statistics, various years

TABLE 2 : Malaysia: Foreign labour by job category 1985-1996

Num	Job Category	1985		1990		1996		Annual Average Growh Rate		
		Total	%	Total	%	Total	%	1985-90	1990-65	1985-96
A.	**Light Industry**	**5,035**	**69.6**	**12,407**	**75.9**	**67,904**	**56.4**	**18.5**	**32.8**	**26.1**
1.	Professional	355	4.7	547	3.3	807	0.7	9.0	6.7	7.8
2.	Technical and supervisor	174	2.3	321	1.9	622	0.5	12.4	12.2	12.3
3.	Skilled	522	6.9	933	5.7	12,120	10.1	12.3	53.3	33.1
4.	Semi skilled	1,524	20.0	3,182	19.5	16,606	13.8	15.9	31.7	24.2
5.	Unskilled	2,126	27.9	6,601	40.4	36,503	30.3	25.4	33.0	29.5
6.	Others	504	6.6	832	5.1	1,246	1.0	10.5	7.0	8.6
B.	**Heavy Industry**	**2,314**	**30.4**	**3,939**	**24.1**	**52,426**	**43.6**	**11.2**	**53.9**	**32.8**
1.	Professional	668	8.8	1,437	8.8	3,284	2.7	16.6	14.8	15.6
2.	Technical and supervisor	108	1.4	181	1.1	627	0.5	10.9	23.0	17.3
3.	Skilled	152	2.0	288	1.8	10,191	8.5	13.6	81.2	46.6
4.	Semi skilled	574	7.5	710	4.3	12,388	10.3	4.3	61.0	32.3
5.	Unskilled	592	7.8	993	6.1	24,734	20.6	10.9	70.9	40.4
6.	Others	220	2.9	330	2.0	1,212	1.0	8.4	24.2	16.8
	Total	**7,619**	**100**	**16,346**	**100**	**120,340**	**100**	**16.5**	**39.5**	**28.5**

Source: Department of Statistics, various years

FOREIGN LABOUR IN MALAYSIA : SELECTED WORKS

Literature Review

Most of the earlier studies using more than two-factor models were done using manufacturing data in the United States. Normally, they used two types of labour inputs that are to divide labour by occupation – with the majority using breakdown between production and non-production workers. Undoubtedly, this is largely due to the availability of data from government sources that separates labours by occupation. However, a study by Dupuy and deGrip (2000) in Denmark divided workers by their educational level and occupation as low, medium and high based on their educational achievement and sector involved. The elasticity of substitution results from twelve studies in the United States is presented in the Table 3.

TABLE 3 : Elasticity of substitution - Production and non-production workers

Study	Data and Method	S_{pk}	S_{nk}	S_{pn}
Berndt-White (1978)	Manufacturing, 1941-71, translog cost	0.91	1.09	3.70
Clark-Freeman (1977)	Manufacturing, 1950-76, translog cost	2.10	-1.98	0.91
Kesselman et al. (1977)	Manufacturing, 1962-71, translog cost	1.28	-0.48	0.49
Berndt-Christensen (1974)	Manufacturing, 1929-68, translog production	2.92	-1.94	5.51
Dennis-Smith (1978)	Manufacturing 1952-72, translog cost	0.14	0.38	-0.05
Denny-Fuss (1977)	Manufacturing 1929-68, translog cost	1.50	-0.91	2.06
Freeman-Medoff (1982)	Maufacturing 1972, translog cost	0.53	-0.02	-0.24
Grant (1979)	SMSA, census of population 1970, translog cost	0.47	0.08	0.52
Denny-Fuss (1977)	Manufacturingl929-68,translog production	2.86	-1.88	4.76
Woodbury (1978)	Manufacturing 1929-71, translog cost	-	-	-0.7

Study	Data and Method	S_{pk}	S_{nk}	S_{pn}
Hensen et al (1975)	Manufacturing 1967, translog production	-	6.0	-1.3
Dupuy & deGrip (2002)	Manufacturing, 1992-1995, translog cost	[a]1.73,	[a]1.48,	[a]1.43,
		[b]1.67,	[b]1.53,	[b]1.49,
		[c]1.63	[c]1.52	[c]1.56

Notes: The subscript 'p' denotes production workers, 'n' denotes non-production workers, and 'k' denotes capital. For the study by Dupuy and deGrip production workers are defined as workers with low education and low occupation, non-production workers are defined as workers with intermediate and high education in intermediate and high occupation. a denotes small size firms, [b] denotes medium size firms and [c] denotes large size firms.

Ten of fourteen value of elasticity of substitution showed that production and non-production workers were substitutes. All studies in the table found that production workers and capital were substitutes. The results are less clear-cut between non-production workers and capital since four of the studies found that they were complements. The study by Dupuy and deGrip (2002) also found that the larger firms had a higher elasticity of substitution between skilled (non-production) workers in skilled jobs and capital than smaller firms. The elasticity of substitution between skilled and unskilled (production) workers in skilled jobs was also larger in the large firms. Fallon and Layard (1975) found that the substitutability between the combination of capital and skilled workers and workers with low and no education was higher than the substitutability between capital alone and workers with low or no education. This shows that the capital and skilled labour are more complement in the production process.

The earlier studies on elasticity of substitution in Malaysia had only focused on the traditional capital-labor substitution framework in the manufacturing sector. Thillainathan (1969) used the 1968 census data to estimate the elasticity of this substitution. The study measured the elasticity of substitution by using Constant Elasticity of Substitution (CES) model. The selasticity were measured for industries, defined at the two-digit level, including food, timber-based, chemical products and metal, machinery, electrical goods and transport equipment industries. Thillainathan concluded that the extent of the capital-labour substitution was significant, of which the elasticity range between 0.45 and 1.18. Based on these estimates, he

rejected the proposition that factors were used in fixed proportions in the Malaysian manufacturing sector. Using the same 1968 census data, Bhanoji and Ramana (1970) calculated the elasticity of substitution for 60 manufacturing industries made up of 35 four-digit level industries, 11 three-digit level industries, 6 two-digit level industries and eight industry group formed by adding two- or four-digit level industries. However, of the 60 industries considered, only 20 recorded elasticity measures that were statistically significant at the 5 percent leveL They concluded that consumption-oriented industries tend to have a relatively higher elasticity than investment-oriented industries.

Maisom (1989) calculated time series estimates of elasticity of substitution. Estimates were made for 50 industry groups (five-digit level) for the period 1963-84. The study compared two methods for estimating the elasticity; CES and Translog Cost functions. The estimated elasticity using CES ranged between 0.254 and 1.259, where as translog cost function gave slightly higher estimates that the ones ranged between 0.462 and 1.325 (with the exception petroleum refineries, which had an elasticity of 4.649). Maisom also found that the elasticity to be quite low: 34 out of the 50 industry groups had their elasticity values smaller than one while 16 had greater than one.Hoffman and Tan (1980) used four different approaches, including the Arrow- Cheney-Minhas-Solow (ACMS) measure, the Diwan method, the Variable Elasticity of Substitution (VES) and the Kmenta measures. Regressions were fitted to 55 industry group data based on a survey of 338 manufacturing establishments in West Malaysia in 1974. They found that the alternative estimates did not produce substantial differences. The results showed that of the 55 industries, 35 had elasticity of less than one, 17 greater than one and three industries exhibited elasticity equal to unity.

Mahani (1993) calculated estimates of elasticity of substitution for the textile and electrical and electronic industry group. The study compared two estimates for the years between 1979 and 1985. The study found that the elasticity of substitution for the textile industry in general had increased slightly from 0.893 in 1979 to 1.173 in 1985. The product group elasticity was varied in 1979; from a low 0.54 to a high 1.39. Nevertheless, the range of elasticity narrowed in 1985 and most product groups fell between the range of 1.0 and 1.3. Rahmah and Idris (2001) studied elasticity of substitutions between skills and with capital in the Malaysian manufacturing sector. In this study, workers were not divided into local or foreign categories but they were streamed into three groups, i.e. professional, skilled and unskilled. Their study found that the majority of elasticity of substitutions was greater than unity and there were substitutability and complementarities between skills.

Studies on the impact of foreign labor on local labor job opportunity can reflect their complementarities or substitutability. A study by Zimmermann (1995) in Europe and Dickson (1975), Norman and Meikle (1985) in Australia, Lalonde and Topel (1991), Simon et al (1993), Winter and Zweimuller (1999) in Austria and Muller and Espenshade (1985), Grossman (1982) and Freeman and Medoff (1979) in the United States showed that both the foreign and local labours were complement. In contrast, Greenwood and Me Dowell (1986) in the United States, Baker (1987) in Australia, Baker and Benjamin (1994) in Canada found that foreign labours affect job opportunities of local labours, indicating they are substitute.

Winegarden and Khor (1991) found that impact of foreign labour on job opportunities in the United State differed for Black and White workers. Their study showed that the foreign workers and Blacks were substitute, while foreign and Whites were complement. This is due the fact that the Whites are more skilful and cannot be substituted by the foreign labours that are mostly unskilled. Venturini (1999) found that in Italy, the substitutability (complementarities) between foreign and local labour was very much dependent on workers' geographical mobility and government policy on foreign labour. He argued that the higher was workers' mobility and the more stringent government policy resulted in complementarities between the foreign and local labour.

In contrast, when workers were less mobile and the government policy was more lenient, foreign and local workers tend to be more substitute. Markusen et al (2000) found that inflow of foreign labour through foreign direct investment on the demand for domestic skilled labour was uncertain. They could be substitute or complement depending on at what equilibrium we are looking at. They may be substitute at partial equilibrium but complement at general equilibrium. On the other hand, Federico and Minerva (2005) found that there were complementarity between domestic and foreign employment in the case of advanced countries and substitute in the case of Western Europe countries. These results are contrary from what were found in the studies by Brainard and Riker (1997), Braconier (2000), Konings and Murphy (2001). These studies found that employment in foreign affiliates located in low wage countries is complementary to home employment, while there is substitution in advanced countries. The international trade especially in the form of outsourcing will also influence the elasticity of substitution. Rodrik (1997) and Senses (2004) argued that the increased possibility of substituting foreign labour for domestic should make labour demand more elastic. Therefore, understanding the substitutability between foreign and local labour will provide the policy makers the information on how wage change affect resulting from inflow of foreign labour will affect the demand for local labour.

Theoretical Framework And Model Specification

The traditional capital-labour substitution framework assumes that labour inputs are perfectly substitutable. Therefore, labour can be combined into an aggregate labour index without losing economic information. This assumption allows researcher the luxury of using two-factor production and cost functions to estimate the various combinations of capital and labour needed to produce a given level of output and to determine the optimal combination of capital and labour for a given total of expenditure. However, the assumption that little is lost by aggregating perfectly substitutable labour inputs is no longer true when labour inputs are highly but imperfectly substitutable.

When labour inputs are not perfect substitute for capital, then it is possible to test the capital-skill complementarity hypothesis. This hypothesis states that the more skills acquired by workers, the more likely they will complement capital in the production process (Griffin 1992). In order to support this hypothesis, the elasticity of su titution estimates between labour inputs and capital must vary according to skill differences between labour inputs.

Translog Model

Many studies of production are done in the context of a flexible functional form. Flexible functional forms are used in econometrics because they allow researchers to model secondorder effects such as elasticity of substitution, which are functions of the second derivatives of production, cost, or utility functions (Greene 1997). The linear model restricts this to zero, whereas the log-linear model (such as Cobb-Douglas model) restricts the elasticity to the values of-1 or +1. Among the most frequently used flexible functional forms in empirical work is the translog function.

a. Model with Two Inputs
A translog function is derived from a Taylor Series expansion and is a flexible functional form used to relax the unitary constraint inherent in Cobb-Douglas functions.

The Cobb-Douglas cost function $C = AW^{\delta_1} R^{\delta_2}$ in log terms is

$$\ln C = \ln A_0 + \delta_1 \ln W + \delta_2 \ln R \tag{1}$$

Where, C is cost of production, W is price of labor and R is price of capital. Taylor Series expansion of (1) to the second moment is

$$\ln C = \ln A + \delta_1 \ln W + \delta_2 \ln R + 1/2\, \delta_{11}(\ln W)^2 + 1/2\, \delta_{12}(\ln W)(\ln R) + 1/2\, \delta_{22}(\ln R)^2 + 1/2\, \delta_{21}(\ln R)(\ln W)$$

(2)

Assuming symmetry ($\delta_{12} = \delta_{21}$), equation (2) takes the form

$$\ln C = \ln A + \delta_1 \ln W + \delta_2 \ln R + 1/2\, \delta_{11}(\ln W)^2 + 1/2\, \delta_{12}(\ln W)(\ln R) + 1/2\, \delta_{22}(\ln R)^2$$

(3)

Equation (3) is the translog functional form of a two-factor Cobb-Douglas cost function.

By using a cost minimization approach and assuming input markets are competitive, Shephard's Lemma demonstrates that

$$\partial \ln C / \partial \ln P_i = (X_i / P_i) = S_i$$

(4)

Where X_i = L or K, P_i = W or R, and S_i is the cost share of the input in the total cost to produce at the optimal level of output.

In general, Shephard's Lemma is defined as the derivative of the expenditure function with respect to the price of a good that gives the Hicksian demand for that good. Taking partial logarithmic derivatives from the cost function (3) and equating them with the cost shares, we have

$$SL = \partial \ln C / \partial \ln W = \delta_1 + \delta_{11} \ln W + \delta_{12} \ln R$$

(5)

$$SK = \partial \ln C / \partial \ln W = \delta_2 + \delta_{12} \ln W + \delta_{22} \ln R$$

(6)

Where, SL is share of labour and SK is share of capital.
For the translog cost specification

$$\sigma_{ij} = (\delta_{ij} + S_i S_j) / S_i S_j \quad i \neq j$$

(7)

Where, σ_{ij} is the elasticity of substitution (Allen Elasticity of Substitution) between pairs of factors.

$\sigma_{ij} > 0$ the factors are substitutes
$\sigma_{ij} < 0$ the factors are complements
$\sigma_{ij} = 0$ the factors have no relationship

b. Model with More than Two Inputs

Expanding the translog model from two factors to five factors requires the cost and production functions to change from two to five-input functions.

$C = Q\, f\,(P_1, P_2, P_3, P_4, P_5)$
$Q = f\,(X_1, X_2, X_3, X_4, X_5)$

Where, P_1 is the average annual wage for local semiskilled workers (X_1).
P_2 is the average annual wage for foreign semiskilled workers (X_2).
P_3 is the average annual wage for local unskilled workers (X_3).
P_4 is the average annual wage for foreign unskilled workers (X_4).
P_5 is the price of capital (X_5).

As shown for the two-factor model, the Cobb-Douglas cost function has the translog
form,

$$\ln C = \ln Q + \ln \delta_0 + \sum \delta_i \ln P_i + 1/2 \sum\sum \delta_{ij} \ln P_i P_j$$

(8)

Where, $\delta_{ij} - \delta_{ji}$ technology parameters are $\delta_0, \delta_i, \delta_j$ and C and P_i represent the total cost and input prices, respectively. If δ_{ij} equals zero, the translog reduces to the standard Cobb-Douglas function.

Once again, Shephard's Lemma demonstrates

$$\partial \ln C / \partial \ln P_i = (X_i / P_i) = S_i$$

(9)

Where, $X_i = X_1, X_2, X_3, X_4, X_5$, and S_i is the cost share of the input X_i in the total cost of producing Q.

Taking partial logarithmic derivatives and equating them with the cost shares for the cost function, we have

$$S_1 = \partial \ln C / \partial \ln P_1 = \delta_1 + \delta_{11} \ln P_1 + \delta_{12} \ln P_2 + \delta_{13} \ln P_3 + \delta_{14} \ln P_4 + \delta_{15} \ln P_5$$

(10)

$$S_2 = \partial \ln C / \partial \ln P_2 = \delta_2 + \delta_{21} \ln P_1 + \delta_{22} \ln P_2 + \delta_{23} \ln P_3 + \delta_{24} \ln P_4 + \delta_{25} \ln P_5$$

(11)

$$S_3 = \partial \ln C / \partial \ln P_3 = \delta_3 + \delta_{31} \ln P_1 + \delta_{32} \ln P_2 + \delta_{33} \ln P_3 + \delta_{34} \ln P_4 + \delta_{35} \ln P_5$$

(12)

$$S_4 = \partial \ln C / \partial \ln P_4 = \delta_4 + \delta_{41} \ln P_1 + \delta_{42} \ln P_2 + \delta_{43} \ln P_3 + \delta_{44} \ln P_4 + \delta_{45} \ln P_5$$

(13)

$$S_5 = \partial \ln C / \partial \ln P_5 = \delta_5 + \delta_{51} \ln P_1 + \delta_{52} \ln P_2 + \delta_{53} \ln P_3 + \delta_{54} \ln P_4 + \delta_{55} \ln P_5$$

(13)

In order for the translog cost function to be homogeneous in prices, the cost shares must sum to one. This requires that the following three constraints be imposed:

a. $\delta_1 + \delta_2 + \delta_3 + \delta_4 + \delta_5 = 1$
b. $\delta_{11} + \delta_{12} + \delta_{13} + \delta_{14} + \delta_{15} = 0$
c. $\delta_{ij} - \delta_{ji}$, (symmetry)

There are two standard approaches to econometrically estimate the translog function. The first approach is to estimate the translog equation directly and then solve for the cost shares. The second approach is to estimate four of the cost share equations simultaneously and then impose the constraints to solve for the fifth cost share equation.

By using the second approach, the cost share equations will provide a seemingly unrelated regression model that can be used to estimate the parameters of the model. To make the model operational, one must impose the constraints and solve the problem of singularity of the disturbance covariance matrix of the share equations. This can be done by eliminating the last term in each row and column of the parameter matrix and by dropping one of the cost share equations.

It is possible to substitute the constraint $(\delta_{11} = -\delta_{12} - \delta_{13} - \delta_{14} - \delta_{15})$ into the first cost share equation:

$$S_1 = \delta_{11} + \delta_{121} (\ln P_2 - \ln P_1) + \delta_{131} (\ln P_3 - \ln P_1) + \delta_{141} (\ln P_4 - \ln P_1) + \delta_{151} (\ln P_5 - \ln P_1)$$

(15)

Likewise, substituting in the fact that $(\delta_{22} = -\delta_{12} - \delta_{23} - \delta_{24} - \delta_{25})$ into the second cost share equation:

$$S_2 = \delta_{21} + \delta_{121} (\ln P_1 - \ln P_2) + \delta_{231} (\ln P_3 - \ln P_2) + \delta_{241} (\ln P_4 - \ln P_2) + \delta_{251} (\ln P_5 - \ln P_2)$$

(16)

Likewise, substituting in the fact that $(\delta_{33} = -\delta_{13} - \delta_{23} - \delta_{34} - \delta_{35})$ into the second cost share equation:

$$S_3 = \delta_{31} + \delta_{131} (\ln P_1 - \ln P_3) + \delta_{231} (\ln P_2 - \ln P_3) + \delta_{341} (\ln P_4 - \ln P_3) + \delta_{351} (\ln P_5 - \ln P_3)$$

(17)

Likewise, substituting in the fact that $(\delta_{44} = -\delta_{14} - \delta_{24} - \delta_{34} - \delta_{45})$ into the second cost share equation:

$$S_4 = \delta_{41} + \delta_{141} (\ln P_1 - \ln P_4) + \delta_{241} (\ln P_2 - \ln P_4) + \delta_{341} (\ln P_3 - \ln P_4) + \delta_{451} (\ln P_5 - \ln P_4)$$

(18)

By estimating four of the five cost share equations using the seemingly unrelated regression technique and using the fact that $(S5 = 1 - S_1 - S_2 - S_3 - S_4)$, it is possible to solve for the fifth cost share.

Once the five cost shares are estimated, the elasticity of substitution (Allen Elasticity of Substitution) between pairs of factors can be calculated.

$$\sigma_{ij} = (\delta_{ij} + S_i S_j) / S_i S_j \quad i \neq j$$

(19)

Where, σ_{ij} is the elasticity of substitution (Allen Elasticity of Substitution) between pairs of factors.

$\sigma_{ij} > 0$ the factors are substitutes
$\sigma_{ij} < 0$ the factors are complements
$\sigma_{ij} = 0$ the factors have no relationship

Source of Data

Five industries are chosen, namely, wood-based (MIC 33), paper products (MIC 34), chemical products (MIC 35), non-metallic mineral products (MIC 36) and basic metal products (MIC 37). For the purpose analysis, the workers are divided into four groups, namely, local semi skilled (including skilled), foreign semi skilled (including skilled), local unskilled and foreign unskilled workers. The skilled workers cannot stand by themselves because their number are quite small particularly the foreign. This study uses annual time series data for the above mentioned industries for the period 1985-1996. The data is obtained from the annual Manufacturing Survey conducted by the Malaysian Department of Statistics (DOS). Data of 1985-1996 used in this study are gathered from the raw data at DOS. A more recent data cannot be utilized due to two reasons; firstly, difficulties in obtaining raw data from DOS due to time and cooperation; the published data is too aggregated and doesn't classified the occupational level by industries; secondly, data after 1999 was not classified by skills, ie unskilled, semi skilled and skilled labour were lumped together under the production workers. Unlike data up to 1999 the production workers are categorized by unskilled, semi skilled and skilled workers. The information from the survey that used in this analysis is total wage pay to local and foreign workers, number of local and foreign workers. Data on price of capital (interest rate) is obtained from the Annual Statistical Bulletin published by the Bank Negara Malaysia. In this study the annual average baselending rate is utilised.

Analysis Of The Results

Table 4 presents the results of the estimation of elasticity of substitution between foreign and local workers and capital in five selected industries.

TABLE 4 : Estimates of the elasticity of substitution in selected Malaysian manufacturing industries, 1985-96

Industry	σ_{12}	σ_{13}	σ_{23}
	1.0283	1.3613	0.3387
Wood-based (ISIC 33)	(3.7337)***	(1.3164)	(2.8331)***
Paper products (ISIC 34)	1.0039	2.7984	0.1516
	(0.3752)	(1.9102)**	(0.3132)
	1.0006	2.4849	0.9607
Chemical products (ISIC 35)	(0.2105)	(7.2659)***	(0.0773)
Non-metallic mineral products (ISIC 36)	0.9179	-2.7969	2.4778
	(1.7415)*	(-0.8053)	(0.5145)
	1.0259	3.0709	0.5086
Basic metal products (ISIC 37)	(0.8460)	(2.1599)**	(0.1905)

Notes: **'1' denotes local workers**
              '2' denotes foreign workers
              '3' denotes capital
              '*' denotes significant at 10% level
              '" denotes significant at 5% level**
              '*' denotes significant at 1% level**

The figures in the parentheses below the estimated elasticity are their t-statistics

Among these industries there are two light industries, i.e. wood-based and paper products and three heavy industries, ie, chemical, non-metallic and basic metal products. There are fifteen estimated elasticity of substitutions, in which six of them are significant, five are less than unity and ten greater than unity.

Elasticity of substitution between foreign and local workers is significant in the woodbased and non-metallic product industries. The result shows that foreign workers are higher substitutes in the wood-based industry as compared to the non-metallic mineral products industry. This result could be attributed to lower technological adoption in the light industry, i.e. wood-based and associated with a greater hiring of unskilled workers. Noticeably, the majority of foreign workers are unskilled. Further, the result shows that the elasticity of substitution between capital and foreign workers is only significant in the wood-based industry.

The results of estimation of elasticity of substitution by level of skills are presented in Table 5. Of the fifty estimated elasticity of substitution, thirty-five are greater than unity (in absolute value) and 15 are less than unity and twenty-three are statistically significant. The majority of elasticity of substitutions is higher in the paper products and basic metal products and most of them are statistically significant. In the wood-based industry, even though most of the elasticity of substitution is significant, they are less than unity. The results indicate that elasticity of substitution between local and foreign workers does not depend on group of industry whether they are light or heavy. Instead the elasticity of substitution is very dependence on types of products and skills mix. This result could also be attributed to level of technological adoption and skill required by these industries. For example, technology is higher in the paper product industry as compared to the woodbased, and need more skilled workers. On the hand in the heavy industry, most of the elasticity of substitutions is not statistically significant. The elasticity of substitution is greater in the chemical and basic metal products as compared to non-metallic mineral products.

The elasticity of substitution between local and foreign semiskilled workers is statistically significant in the paper products, non-metallic mineral products and basic metal products. In the first two industries, they are complement and in the last industry they are substitute. In contrast, the local semiskilled and foreign unskilled workers are substitutes in most of the industries under study. The value of elasticity is significantly high especially in the paper products, chemical and basic metal products. This result indicates that any wage reduction for the unskilled foreign workers will result a decrease in demand for local semiskilled.

TABLE 5 : Estimates of the elasticity of substitution in selected Malaysian manufacturing industries, 1985-96

Industry	σ_{12}	σ_{13}	σ_{14}	σ_{15}	σ_{23}	σ_{24}	σ_{25}	σ_{34}	σ_{35}	σ_{45}
Wood-based	1.2740	0.9037	1.1542	0.9687	1.1128	0.8151	0.6805	-0.7417	0.9726	0.9481
(ISIC 33)	(1.2906)	(3.7325)***	(3.6799)***	(0.4614)	(2.4457)***	(2.4615)***	(3.0107)***	(-0.0823)	(-1.8738)*	(2.1874)**
Paper products	-12.2870	-0.6491	13.8672	1.0158	7.9826	-11.6168	1.0992	-13.1181	0.9243	1.9855
(ISIC 34)	(-1.9870)**	(-6.1695)***	(-1.9265)*	(0.9826)	(-3.9065)***	(-2.4452)**	(0.1280)	(-0.7702)	(1.7054)*	(1.2268)
Chemical products	6.0167	-1.4868	9.8898	1.0744	-2.1133	-1.6434	1.1050	-7.4556	0.9775	1.7781
(ISIC 35)	(0.4302)	(-5.7243)***	(0.9682)	(2.6109)***	(-0.2516)	(-0.8052)	(0.1775)	(-0.0534)	(0.6659)	(1.5073)
Non-metallic mineral products	-2.6223	0.8002	1.5242	1.0511	-1.3217	7.0839	1.1811	-9.2866	0.9834	0.9457
(ISIC 36)	(-2.5904)***	(2.0871)**	(2.0824)**	(1.5709)	(-0.7145)	(0.7117)	(0.9330)	(-4.4888)***	(1.1671)	(-1.4494)
Basic metal products	5.9429	0.5803	4.0245	1.0658	4.7686	-1.9058	1.0712	8.7280	1.0079	0.8903
(ISIC 37)	(1.8975)*	(-4.5136)***	(-4.3564)***	(1.3379)	(0.7902)	(-0.8138)	(-1.4588)	(3.0569)***	(0.4336)	(0.7988)

Notes: '1' denotes local semiskilled workers
              '2' denotes foreign semiskilled workers
              '3' denotes local unskilled workers
              '4' denotes foreign unskilled workers
              '5' denotes capital
              '*' denotes significant at 10% level
              '**' denotes significant at 5% level
              '***' denotes significant at 1% level

The figures in the parentheses below the estimated elasticity are their t-statistics

The foreign semiskilled workers are shown to be a substitution for local unskilled in the wood-based and paper product industries. Both values are greater than unity and in the paper products the value of elasticity is high. This result could be attributed to willingness of foreign workers to accept lower wage even though they are more skill. The foreign semiskilled and capital are substitutes in the wood-based industry, which implies that technological adoption in this industry is still low. Further, the result show that the local and foreign unskilled workers are complement in the non-metallic mineral products industry and substitute in the basic metal industry. The foreign unskilled and capital are substitute in the wood-based industry.

The results from this study can also be influenced by the availability of labor facing some industries. When there is labor shortage, foreign and local labor is more likely to be complement regardless of their skills. Therefore, even though wage increase for the particular skills, the demand for them increase because of shortages in their supply.

Summary And Conclusion

The results from this study show that the foreign and local workers are more substitutes than complement. Of the fifteen significant elasticity of substitution, eleven are substitute and four are complement. This reflects that when the foreign wage rate decrease, firms would be willing to take foreign workers to cut cost of production. A high substitutability are found in heavy industry basic metal products The results suggest that the influx of foreign labour may jeopardize the local in terms of job opportunity especially in heavy industry. The less complementarity between the local and foreign labours and the higher elasticity of substitution suggest that the government must undertake a correct policy to safeguard local workers especially in getting jobs. Any wage change that involved foreign labour will affect local job opportunity in certain industries. Although the wage policy suggest equal pay for equal job regardless of local or foreign, many employers do not obey this rule and continue to pay less wages to the foreign.

This study covers data from 1985 to 1996 which exclude the crisis period of 1997/98. This is because of problem in gathering the recent data, even though it is available until 1999 with the same data format. But given longer time further research may include 1997, 1998 and 1999 data. However, we would expect that there will be not much different in the results because the 1997/98 crisis affect mostly on the output and export not the technology. The cost function estimated in this study concerning cost share that may change via technological change. Further research may be needed just to confirm this claim.

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THE EFFECT OF THE INFLUX OF FOREIGN LABOUR IN MALAYSIA BY AUGMENTED MRW MODEL*

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Abstract

There are pros and cons in hiring foreign labour on the economy. The influx of foreign labour is a common phenomenon, but when their involvement is unlimited it will be one serious issue. Malaysia is one of the developing countries where industrial and construction sectors are in need of labour and this has opened up opportunities for foreign labour. Their inflow into Malaysia is increasing every year and this has caused problems such as time-consuming construction due to low-skilled labour and crime problems caused by problematic labour. We augmented Mankiw-Romer-Weil model by isolating the foreign labour element in human capital to find the effect of the influx of foreign labour in Malaysian economic growth. The results from our model show that the employment of foreign labour increases the rate of human capital but decreases the rate of physical capital. Therefore, the level of the production function also decreases.

Keywords : Mankiw-Romer-Weil model, human capital, production function, economic growth, foreign labour

Introduction

The influx of foreign labour in Malaysia has increased over the past decades due to labour shortage to sustain its developing economy. Dependency on foreign labour give negative impacts to the nation from the social and cultural perspective, and the salaries that are sent back to their countries cause the increasing of money outflow to foreign economies [1]. The reason for hiring foreign labour is because Malaysia experiences a critical shortage of labour especially in construction, manufacturing and industrialisation sectors. Domestic labour is not interested in works that require them to use physical strength and they prefer working in offices and they abhor the 3D (dirty, dangerous and demeaning) works [1]. Other than that, the salary of foreign labour is cheaper than domestic labour even though with the minimum wage act practised in Malaysia [2]. However, by employing foreign labour, it increases the low-skilled labour and this leads to low productivity and poor quality of work [3].

The Malaysian economy is the scope of this study. Total employment in Malaysia increases steadily every year. Table 1 shows the data of total labour force in Malaysia from 2009 to 2013.

Table 1 Type of labour force

Year, t	Total Labour Force, L(t)	Domestic Labour, $L_{dw}(t)$	Foreign Labour, $L_{fw}(t)$
2009	11,315,300	9,829,365	1,067,935
2010	12,303,900	10,221,671	1,677,830
2011	12,675,800	10,589,153	1,695,247
2012	13,119,600	11,005,568	1,717,632
2013	13,634,600	11,439,860	1,770,140

Source: Department of Statistics Malaysia

From Table 1, the influx of foreign labour increases the size of labour force in Malaysia. Here we developed a new model by isolate the foreign labour element in human capital to find the effect of hiring foreign labour in Malaysia. We

augmented Mankiw- Romer-Weil model by adding the variable of foreign labour. Mankiw-Romer-Weil model developed by Mankiw, Romer and Weil and known as MRW model [4] where they introduced the human capital as a separate input in the capital stock. Human capital is a stock of knowledge and skills. Findings from this study demonstrate that foreign labour does contribute to the economic growth of a country. To generate and sustain the economic growth, Malaysia requires a high rate of investment for capital accumulation [5]. Capital accumulation consists of human capital and physical capital accumulation. This study focuses on human capital and the employment of foreign labour.

The main purpose of MRW model is to explain the processes of economic growth. Economic growth is an increase in the level of national output. Human capital is an economic factor in economic growth as well as physical capital, labour force and technological progress. The increase in investment in either of these economic factors increases the national output hence generates the high rate of economic growth. In this paper, Section 2.0 is the methodology in augmenting MRW model. In Section 3.0 is the data analysis that is used to determine capital accumulation and production function and in Section 4.0 the result and discussion are presented. Section 5.0 is the summary and conclusion.

Augmented MRW Model

MRW model includes the variable of human capital as an input in capital stock. Therefore, we augmented MRW model by isolating the foreign labour element as an input in human capital. Though foreign labour has the potential in producing more human capital, they are, however, are not imposing much impact on the volume of physical capital [6]. Human capital consists of skilled labour and low-skilled labour. We assumed that domestic labour is skilled labour and foreign labour is low-skilled labour. We assumed the domestic labour is skilled labour by looking at their educational attainment in Malaysia from primary to tertiary levels. While, for foreign labour, the employers are not considering their educational attainment during the hiring, and we assumed the foreign labour is low-skilled labour. Economic growth refers to the increase in the level of production function.

The equation for production function is,

$$Y(t) = K(t)^a H(t)^b \left[A(t)L(t) \right]^{1-a-b}$$ (1)

where,

Y (t)   output,
K(t)   physical capital,
H (t)   human capital,
A(t)   level of technology,
L(t)   labour force,
a   capital share, and
b   labour share.

In Equation (1) physical capital, human capital, level of technology and labour force are inputs of economic growth. The increased in one of the inputs increased the level of production function. In this study, we divided Equation (1) with effective labour, *A(t) L(t)* where

$$y(t) = \frac{Y(t)}{A(t)L(t)},$$

$$k(t) = \frac{K(t)}{A(t)L(t)}, \text{ and}$$

$$h(t) = \frac{H(t)}{A(t)L(t)}.$$

The production function per effective labour in Equation (1) becomes,

$$y(t) = k(t)^a h(t)^b.$$ (2)

To find the effect of foreign labour, we injected the variable of foreign labour from human capital, $h_{fw}(t)$ in Equation (2).

$$y(t) = k(t)^a \left[h_{dw}(t)h_{fw}(t) \right]^b$$ (3)

where $h_{dw}(t)$ is the human capital for domestic labour. Physical capital and human capital is accumulated when the representative agents (households) save the output to have more capital (either physical or human capital).

The equations of capital accumulation are,

physical capital accumulation,

$$\dot{k}(t) = s_K y(t) - (m + n + g + \delta) k(t), \qquad (4)$$

human capital accumulation,

$$\dot{h}_{dw}(t)\dot{h}_{fw}(t) = s_H y(t) - (m + n + g + \delta)\left[h_{dw}(t) h_{fw}(t) \right] \qquad (5)$$

where,

s_K	saving rate of physical capital,
s_H	saving rate of human capital,
m	rate of population growth for domestic labour,
n	rate of population growth for foreign labour,
g	rate of technological progress, and
	capital depreciation rate for physical and human capital.

It is noted that human capital and physical capital depreciate at the same rate [4].

Data Analysis

To determine the human capital, we identified the rate of labour participation and human development index (HDI). The rate of labour participation is the rate of employed labour while HDI is an average measure of human development; a healthy life, being knowledgeable and a decent standard of living [7]. Table 2 shows the data of percentage of human capital for domestic and foreign labour.

Table 2 Percentage of human capital for domestic and foreign labour

Year (t)	Domestic Labour Participation Rate (%)	Foreign Labour Participation Rate (%)	Human Development Index (HDI)	Human Capital Domestic Labour (H_{dw})	Human Capital Foreign Labour (H_{fw})
2009	90.2	9.8	0.76	0.6855	0.0745
2010	85.9	14.1	0.76	0.6855	0.0745
2011	86.2	13.8	0.77	0.6614	0.1086
2012	86.5	13.5	0.77	0.6637	0.1063
2013	86.6	13.4	0.77	0.6661	0.1040

Source : Department of Statistics Malaysia and UNDP

Human capital for domestic labour is given by,

$$H_{dw}(t) = \frac{L_{dw}}{L(t)} * HDI \tag{6}$$

human capital for foreign labour is given by,

$$H_{fw}(t) = \frac{L_{fw}}{L(t)} * HDI . \tag{7}$$

In determining human capital for domestic and foreign labour Equations (6) and (7) are used. From Table 2, the rate of human capital for domestic labour decreases from 2010 to 2013 because of the participation rate of domestic labour is decreases while the rate of human capital for foreign labour increases due to sharply increasing the participation rate of foreign labour. Data Table 3 shows the physical capital in Malaysia.

Table 3 Constructing physical capital

Year, t	Gross Fixed Capital Formation, GFCF (RM million)	Consumption of Fixed Capital, COFC (RM million)	Physical Capital, K(t), (RM million)
2009	141,584	99,767	1,866,888
2010	158,397	103,502	1,925,518
2011	168,393	108,026	1,990,409
2012	200,773	114,113	2,083,156
2013	217,879	121,802	2,186,922

Source : Department of Statistics Malaysia

Table 3 consists of the data for the Consumption of Fixed Capital (COFC) that represents the depreciation of physical capital and Gross Fixed Capital Formation (GFCF) that represents the accumulation of investment in physical capital. We also use Gross Fixed Capital (GFK) data to have the initial value of physical capital. By using the following equation, we constructed the physical capital data in Table 3.

$$K(t) = K(t-1) - COFC(t-1) + GFCF(t). \tag{8}$$

To determine the effective labour, $A(t)L(t)$ we need the data for the level of technology, $A(t)$.

By using Cobb Douglas [8] production function form,

$$Y(t) = AK(t)^a L(t)^{1-a}$$

$$A(t) = \frac{Y(t)}{K(t)^a L(t)^{1-a}} \tag{9}$$

where capital share is a = 0.33 [9] and labour share is 1- a = 0.67 . Table 4 shows the data of the level of technology and effective labour.

Table 4 Calculating level of technology

Year, t	Gross Domestic Product (GDP, RM billion), $Y(t)$	Level of Technology, $A(t)$	Effective Labour, $A(t)L(t)$
2009	629.9	1106.63	12657905758.18
2010	676.7	1110.82	13763807115.85
2011	711.8	1131.14	14179834543.45
2012	751.9	1147.97	14676293194.61
2013	787.6	1150.77	15252400011.53

From Table 4, data in the second column is the output of production in Malaysia and the data from the Department of Statistics Malaysia [10]. Data of the level of technology that is referring to knowledge in the third column produces the data for effective labour in the fourth column [6, 9]. Data of effective labour is obtained from the multiplication of total labour in Table 1 with the level of technology.

Table 5 Parameters of the model

Year, t	n	m	S_K	S_H	g	d
2009	0.5645	0.0355	0.3400	0.5513	0.0038	0.0360
2010	0.0083	0.3882	0.3540	0.5504	0.0183	0.0370
2011	0.0125	0.0386	0.3570	0.5543	0.0149	0.0440
2012	0.0316	0.0405	0.3300	0.5568	0.0024	0.0570
2013	-	-	0.3120	0.5597	-	0.0670
Average	**0.12338**	**0.10056**	**0.3386**	**0.5545**	**0.00788**	**0.0482**

Source : Department of Statistics Malaysia and The World Bank

Table 5 shows the average data of labour growth rate, saving rate for domestic and foreign labour, rate of technological progress and rate of capital depreciation in Malaysia. We assumed these parameters were at a constant rate, and we determined their average rate and used these parameters to determine the capital accumulation per effective labour.

Maximum Values For Foreign Labours

Table 6 Accumulation of capital and production function of the model

Year, t	Physical Capital Accumulation per Effective Labour, $k_1(t)$	Physical Capital Accumulation per Effective Labour, $k_2(t)$	Human Capital Accumulation per Effective Labour, $h_{dw}(t)$	Human Capital Accumulation per Effective Labour, $h_{dw} h_{fw}(t)$	Production Function per effective labour, $y_1(t)$	Production Function per effective labour, $y_2(t)$
2009	3.5051	3.0655	3.0266	3.1055	2.2055	2.1274
2010	3.4999	3.0610	2.9126	2.9767	2.1886	2.1083
2011	3.5070	3.0682	2.9190	2.9843	2.1908	2.1109
2012	3.5135	3.0741	2.9172	2.9824	2.1908	2.1109
2013	3.5158	3.0756	2.9089	2.9729	2.1889	2.1088

Table 6 shows the differences in the presence and the absence of data rate of foreign labour growth in the accumulation of physical capital per effective labour in Malaysia. In the third column, the presence of foreign labour growth reduces the rate of physical capital accumulation. According to Solow [9], an increase in the population growth rate is one of the reasons why a country is poor. The influx of foreign labour increases the rate of population growth in Malaysia. From Table 6, it shows that employment of foreign labour increases every year and the average rate of foreign labour growth is higher than domestic labour. This has made the growth rate of population growth increased in Malaysia.

The fourth and fifth columns are human capital accumulation per effective labour with the presence and the absence of foreign labour. Based on the difference, it shows that the influx of foreign labour increases the human capital accumulation. In 2009, the employment of foreign labour from Table 1 increased sharply, but the rate of human capital accumulation decreased from 3.1055 to 2.9767 in 2009 to 2010. It shows that there should be a limitation to the hiring of foreign labour and Malaysia has to increase the domestic labour that is higher skilled and more knowledgeable.

The sixth and seventh columns show the data of production function per effective labour in Malaysia. Data in the sixth column is the production function without the addition of human capital from foreign labour. Meanwhile, the seventh column represents the production function with the addition of human capital from foreign labour.

Based on the above table, the level rate of the production function in the absence of foreign labour is higher than the level rate of the production function with the presence of foreign labour. Even though the influx of foreign labour increases the rate of human capital labour, it however reduces the level of the production function in Malaysia. From the table, it shows that, the influx of foreign labour decreases the production function. The employment of foreign labour increased the rate of human capital accumulation as per the fifth column but they decrease the rate of physical capital accumulation, which leads to the decrease of the level of production. This significantly shows that the economic growth is more prolific with the absence of foreign labour than its presence.

Table 7 Human capital per effective labour

Year, t	Human Capital per Effective Labour for Domestic Labour, $h_{dw}(t)$	Human Capital per Effective Labour for Foreign Labour, $h_{fw}(t)$
2009	0.7600	0.7602
2010	0.7980	0.5284
2011	0.7673	0.7870
2012	0.7673	0.7874
2013	0.7692	0.7761

From Table 7, in 2009, it shows that the rate of human capital per effective labour for domestic labour is 0.7600 and human capital per effective labour for foreign labour is 0.7602. In that year, the total labour for foreign labour is 1,067,935. It suggests that the employment of foreign labour should be around 1.1 million, as a raise in low-skilled labour would negatively affect developing economy [1].

Conclusion

To generate and sustain economic growth, the level of production function must increases. By hiring foreign labour, the rate of human capital accumulation increased whereas the rate of physical capital accumulation decreased. Due to the reduction of the physical capital accumulation rates, the level of production function is also reduced. The relationship between skilled labour and low-skilled labour plays a significant role in generating higher production rates. The data for human capital for domestic and foreign labour (Table 2) and human capital per effective labour (Table 7) shows that the increase in low-skilled labour does not help in generating higher production rates. Thus, in order to boost higher production rates and have higher quality goods and services, Malaysia ought to increase the level of employment of higher skilled labour that is domestic instead. Construction is the main sector in Malaysia where in reality, the demand for foreign labour and dependency on their contribution exists. This high demand will maintain if domestic labour is not interested in working at construction sites and is not willing to receive similar salary paid to foreign labour [11].

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MIGRANT WORKERS IN MALAYSIA: PROTECTION OF EMPLOYERS*

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Abstract

Among the Asian countries, the importation of migrant workers in Malaysia is a necessity when the country is facing an acute shortage of labour force in its multi-sectoral development programs. Malaysia desperately needs the migrant workers in order to keep up with sustainable economic development and rapid economic progress in the country. However, the government should be very vigilant and play an active role in employing the optimum number of foreign workers. While their rights and welfare must be taken care of as not to affect the existing political relationship between the sending and receiving countries, the rights of the employers must not be ignored. Migrant workers are always portrayed as victims of abuse, exploitation and harassment by their employers. In reality, employers of the migrant workers deal with bigger responsibilities such as adhering to the rules, regulations and policies laid down by the law. Apart from that, employers of migrant workers also have duties towards the country, society and respective immigrant workers. Employers have to ensure that the productivities of their immigrant workers contribute to the stability of economy and their employment benefit the society. Employers also have to ensure that the rights and welfare of the immigrant workers are well taken care of. In spite of the challenging responsibilities, employers of the migrant workers lack assistance and protection with regards to their rights. This research looks into the protection of employers of migrant workers, the effect and recommendations to improve the relationships of both groups. The focus of this research is on three sectors, namely manufacturing, construction and domestic.

Keywords: Economy, employers, employment, migrant workers

Introduction

In the last few decades, Malaysia has experienced a very high level of industrial development. Currently, its industrial sector is becoming increasingly important day by day. This sort of industrial development, obviously, generates a huge demand of the work force for immediate employment especially in the industrial and manufacturing sectors. The rapid expansion of the manufacturing and industrial sectors creates a large number of employments in the country. But as there is a great scarcity of domestic labour force in the country, they have to depend largely on the migrant workers for their burgeoning industrial plans. The importation of migrant workers into Malaysia is a necessity when the country has been facing an acute shortage of labour force.

The Position Of Migrant Workers In Malaysia

The Immigration Department, under the Ministry of Home Affairs, bears full responsibility for the policy implementation. The government reviews the employment situation regularly. Industries that require migrant labour will be scrutinized before importation is allowed. Prior to this, the employers are required to forward their recruitment advertisements and reminded that local workers should be given priority. The employers can apply to the Immigration Department when such vacancies are not filled by the locals. Only then, are the employers issued with a certificate to recruit immigrant workers who must have a valid passport and visa, and pass the medical check-up. The employment of migrant workers is just a temporary measure to fulfill the vacancy in the organization. The migrant workers should leave once their permit and visa expire. An employer is responsible to each and every migrant worker employed. There must not be discrimination between local and migrant labours.[1]

Malaysia pursues an implicit policy to "hire first and fire last" all Malaysian nationals with respect to the recruitment of low-skilled foreign labour. Import of contract migrant labour is subject to the labour market test. For example, employers must prove that there are no local workers for the particular job by having the post advertised before they are allowed to hire foreign labours. Foreigners must go first in the event of retrenchment.

The entry, residence and employment of foreign labour are governed by the Employment (Restriction) Act 1968 and the Immigration Act 1957. These overarching regulations have been amended and substantiated with other ad hoc policies and measures to deal with the import of low-skilled and high-skilled migrants. However, the major part of immigration and migrant employment policies deal with contract migrant workers and irregular migrants since the former accounts for an overwhelming 98.0 per cent of the total migrant workers with close to a third in irregular status. Such creates tremendous challenges to managing migration.[2] Given the dynamics of International Labour Migration (ILM), policies to regulate the import of labour have evolved over the years. A number of factors that include labour market imbalances, pressure from labour and human rights organizations, national security and foreign relations, high incidence of irregular migration, and legal and social infractions by migrants influence the amendments. In general labour migration policies aim to:

i.   control and regulate the import of migrant workers;
ii. reduce clandestine or irregular migration; and
iii. protect the rights of migrant workers.

Wide arrays of policy instruments and measures have been used to regulate the inflow of migrant workers in maintaining equilibrium of the short-term versus long- term needs of the economy. These include the use of authorized employment agencies to recruit contract migrant workers, bilateral agreements with selected sending countries, issuance of work permits, imposition of a levy and a freeze or ban on import of contract migrant workers from time to time. These policy instruments have recorded mixed success. To a large degree, they determine the trends and patterns of labour migration in Malaysia since the mid-1980s.[4]

Private Employment Agencies Act 1981 ~~is to~~ permits the establishment of private agencies to recruit foreign labours. These recruitment agencies play a vital role in sourcing migrant workers. Competition among these agencies has ensured that they provide fairly efficient services at competitive fees. These agents deal with recruitment agencies in source countries and they process all administrative paperwork and provide the logistics. Such services alleviate employers on the complexities in hiring foreign labour. Government attempts to remove their intermediary role and to deal directly with agents overseas have failed in the past. Recognizing their beneficial role, the present bilateral Government-to- Government (G to G) agreements use labour recruiters to facilitate the recruiting process.

Not all agents are registered even though agents and recruiters fall under the purview of the Private Employment Agencies Act 1981.. Many migrants opt to use unlicensed labour recruiters or agents. Some migrants are unaware of their legal status or some find services of unlicensed labour recruiters or agents to be more economical**.** Unlicensed labour recruiters and agents have been guilty of charging exorbitant fees, falsifying documents, misleading workers about wages, and other abuses.[5] It has been estimated that on the average of 3,000 workers, mainly from Indonesia, Nepal and India, are left in the lurch every year. Authorities have not been too successful in monitoring the recruitment practices of the agents. [6]New recruitment mechanisms have been introduced to ensure that the migrants are not exploited by labour agents.

At present, most of the foreign workers are being recruited through agents or directly by employers. As of August 2005, companies intending to hire fewer than 50 foreign workers have to use the services of labour outsourcing companies. A total of 58 outsourcing companies have been appointed by the government to supply and manage labour. Government has appointed a total of 58 outsourcing companies to supply and manage labour. However, the initial ban on agents has been lifted when the authorities realize that the use of agents is an "unstoppable trend". [7]Illegal agents can be fined up to RM5000, three year jail or both under the Private Employment Agencies Act 1981. Outsourcing companies has to post bonds on each worker, provide housing and a minimum salary if the worker does not have a job. The labour outsourcing firms have been in operations since the end of 2005. It is too early to assess their effectiveness. [8]Policy experiences have revealed the inherent limitations of the unilateral approach to curb irregular migration. For instance, irregular migrants apprehended without proper identification papers could not be deported to their country of origin.

Recognizing the importanc e of greater state involvement to stem irregular migration, the Government-to-Government (G to G) agreement was reintroduced in February 2006. It is to ensure that the process of recruitment to be more systematic and transparent, and beneficial to all parties. Sending countries are more forthcoming in engaging with the bilateral agreements following Malaysia's tough legislation and other repressive preventive measures in combating irregular migration. The wide publicity in sending countries on the harsh treatment of irregular migrants has brought immense public pressure on their governments to play a more active role in protecting their workers overseas.[9]

Streamlining the role of recruiting agencies addresses many of the shortcomings of earlier bilateral agreements. The bilateral agreements include several clauses dealing with the responsibilities of the signing parties, the employers and the migrant workers on conditions of residence and employment.

The Position Of Employers
Of Migrant Workers In Malaysia

As stated earlier, in order to hire migrant workers, employers must adhere to the government policies and procedures. Employers must give priorities to the local employees. Advertisements must be made and continued for the period of six months. Upon expiration of that period, if no locals is interested or the locals are not enough to fulfil the vacancies, then only the vacancies are offered to migrant workers. However, application must be made through the relevant ministry according to employment sector e.g. manufacturing sector must make an application through the Ministry of International Trade and Industry(MITI), and construction sector through the Construction Industry Development Board (CIDB). The application is subject to approval by the Immigration Department.

Once approved, cost is another burden for all employers. Consider that an employer has to spend around RM2500.00 to RM8000.00 for each and every migrant worker. This amount excludes the costs on medical check-ups, accommodation, transportation and food once the employees are in the country. Application for migrant workers in domestic sector must be made through registered agents i.e. agents registered under the Labour Department. Apart from the high cost of employing domestic migrant workers, employers have to deal with "middle person" or the agent. These agencies operate to gain profit even though all agents must be registered as required under the Private Employment Agencies Act 1981[10] and subjected to this legislation.. They operate their businesses with the objective of gaining profit and the welfare of the employers and the migrant workers are not the priority.

It is the norm that employers expect some level of skills from the employees and the same goes to migrant workers. Employers are often promised by agents to provide employees with basic skills either skilled or semi-skilled. Employers in the manufacturing sector, especially requires employees with some level of skills i.e. skilled or semi-skilled to operate machines or equipment. Level of education

can also be an advantage with regards to skills. Employers are left with no options except to provide training or short courses to the migrant workers if they are unskilled. Trainings and courses not just incur cost but also time in order for the migrant workers to get into full employment. It may lead to decline in productivity. There are also cases where these workers left their employment and look for other companies to get a better and higher salary[11] after they have been developed to become skilled or semi-skilled. When this happens, employers have to bear the losses in terms of hiring, recruiting and others costs.

Another problem that employers have to face includes migrant workers, especially in the domestic sector, run away or flee from their employment. Theft, abuse of the employers' children or elderly, damage to properties and belongings are among other problems that employers have to bear. In the construction and manufacturing sectors, crime is the biggest problem that employers have to deal with. Fights among migrant workers, usually from different groups, race and countries and sometimes it may lead to murder. At the same time, employers must ensure that the migrant workers do not hurt the sentiment of the local people and these migrant workers integrate well with the locals. Employers have the challenging duties in these aspects.

These are only among a few problems that employers of the migrant workers are currently facing. These few problems mentioned are merely tip of the iceberg that employers of the migrant workers currently face. Obviously, employing migrant workers come with bigger responsibilities and heavier tasks compared to locals. It is clear that employers of the migrant workers should also be accorded enough protection in order to ensure the development of the country. Employers contribute to the development of the country either directly or indirectly.

The Need To Protect Employers Of Migrant Workers In Malaysia

Legally speaking, the rights and protections accorded to employers of migrant workers in Malaysia are still unclear. Employment Act 1955 and Industrial Relations Act 1967 clearly protect the rights and welfare of employees. The Employment Act 1955 is more concerned with monetary benefits such as. annual leaves, sick leaves, maternity allowance, overtime and so on. The Act is of compelling nature that failure to provide any of those benefits is an offence. Employer can be prosecuted in court

should they fail to adhere to the Act. On the other hand, the Industrial Relations Act 1967 is more of persuasive nature. Industrial Relations problems are resolved through negotiation and conciliation. Employers may find these legislations as legal guidelines in employment. Part XIIB of the Employment Act 1955 contains provisions regarding employment of foreign employees. However, the Act is silent on the right and protection accorded to the employers of the migrant workers. Sections 60K,[12], 60L,[13], 60M,[14], and 60N[15] provide duties of employers towards the Director General and foreign employees. The employers' groups lack legal protection and the principle of "Equality before the Law" is not achieved. Labour laws, as the term itself suggests concerns and protects the employees groups which are often perceived as the underprivileged ones.

From the perspective of economy, the productivities of a particular sector are expected to increase if employers of the migrant workers are protected legally. In this case, the employers know that they are subjected to the legislations, not only as guidance and responsibilities to employ migrant workers, simultaneously they are provided with assurances and protections of their rights. Indirectly, productivity and economy can improve when both groups, employers and employees, recognize their roles, duties and responsibilities towards each other. At the same time, it creates conducive working environment. Issues regarding migrant workers are always the subject between the sending countries and a receiving country like Malaysia. People in both countries become tense when migrant workers are abused or subject to unfair treatment. In such case, employers in Malaysia are blamed and, indirectly, the political ties between both countries are affected. It would be better that groups, employers and employees, understood their rights, duties and responsibilities in employment in view of their interdependent relationships. If both groups know that their rights are protected and well taken care of, they will know how to channel respective grievances should the need arise.

Generally, if the employers of the migrant workers are given enough rights and protections as their fellow employees, both groups will respect each others' rights and will not take advantage or abuse their positions. One should remember that migration will increase in the future not decrease, given the global demographic trends, widening disparities in income, human securities and rights across countries, increasing migrant networks and environmental and climate changes.[16] In this context, there are currently three major migration issues that demand attention: governance of migration, protection of migrant workers and maximizing development benefits of migration.

Thus, the governance challenge is not on how to stop or prevent migration, In point of fact, it should focus on how to govern it for the benefit of all concerned that encompass the source countries, destination countries and migrant workers through international cooperation. Malaysia needs more and improved policies, not more policing, and intensified border controls.

Globalization has also led to the emergence of global production chains initiated by multinational corporations involving various levels of subcontracting and outsourcing to different suppliers. In the process, 'labour ' brokers have emerged supplying the needs of different enterprises. This has undermined the traditional employer-employee relationship, under which employers are accountable for conditions of work offered to workers.[17] Employers have a vital role to play in all the three areas identified above: governance of labour migration, protection of migrant workers, and promoting development benefits of migration. The employer group has played a valuable role in all of these processes.[18] However, employers are still facing challenges in relation to migration.

Employers confront numerous policy and practical challenges in employment of foreign workers: identifying, recruiting and ensuring entry of foreign workers through regular channels; complying with complex and lengthy administrative procedures; addressing document control; facing risks of sanctions for employing migrant workers without authorization; managing relations in multi-ethnic workplaces; and ensuring proper training and workplace protection.[19]

Recommendations

A number of suggestions can be made to address the challenges discussed above:

1. Migrant workers are now an international issue. From this perspective, it now requires international and regional co- operation. A harmonized labour policy should be formulated to deal with them efficiently. Laws should be enacted for preserving migrants' basics rights and also the rights of the local employers. As discussed above, labour laws provide protection for the employees groups. While, the employers of the migrant workers are subjected to rules, regulations and policies towards their migrant employees.

2. It has been recognized that Malaysia has been experiencing a rapid economic growth in its multifarious development sectors. Therefore, it is quite obvious that the country requires a huge number of manpower. In view of acute shortage of work-force, it has been suggested that the country should immediately implement high-powered technology for its development programmes which will reduce dependence on migrant workers.

3. Malaysia may request the sending countries to introduce some orientation programmes to their workers before sending them off to work in this country. Orientation programmes are not necessarily limited to work training; it may include knowledge of the country, working culture and environment, social culture, religions and sensitivities of the society. It may help in preventing or minimizing the culture shock, different working environment in terms of weather, language and social issues. Basically, this orientation can provide the do's and the don'ts while working in Malaysia. Most migrant workers only focus on getting their salaries and saving enough to return to their countries of origin. Orientation programmes will most likely overcome the problems discussed above.

4. Employing migrant workers should be at national level whereby Malaysian government deals directly with the government of the sending countries (G to G) to reduce or possibly abolish the middle contractor that deals with the employment of migrant workers. This may reduce the cost of employing migrant workers especially in the domestic sector. It is due to the possibilities that these agents or middle contractor can easily charge exorbitant fees, while the welfare of both the employers and the migrants' workers are not taken into account. The government initiative can also prevent unregistered agents from operating and bringing in illegal immigrants to the country.

5. Owing to bureaucracy, the processes of employing migrant workers are tedious, lengthy and costly. In view of the challenges, employers are more interested in employing illegal migrant workers. If recommendation (4) can be achieved, these three issues may have a good solution.

Conclusion

It is clear that foreign workers migration phenomenon is difficult to avoid especially when most countries in the world today are focusing on maximizing their economic development. The roles of human resources are still important especially in particular sectors such as manufacturing, construction and domestic even though the world today is getting hi-tech. Shortage of human resources in a country will cause development of foreign resources in order to cater for domestic employment demands.

It is critical that the government of receiving and sending countries to initiate efforts towards migration benefits development. Simultaneously, both employers and employees need to collaborate, and provide support and understanding towards the same goal. Policy makers should formulate a more transparent and comprehensive policy in dealing with migrant workers.

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10 Private employment agency" means-- (a) an employment agency conducted with a view to profit, that is to say, any person, company, institution, agency or other organization which acts as intermediary for the purpose of procuring employment for a worker or supplying a worker for an employer with a view to deriving either directly or indirectly any pecuniary or other material advantage from either employer or worker; the expression does not include newspapers or other publications unless they are published wholly or mainly for the purpose of acting as intermediaries between employers and workers; (b) an employment agency not conducted with a view to profit, that is to say, the placing services of any company, institution, agency or other organization which, though not conducted with a view to derive any pecuniary or other material advantage, levies from either employer or worker from the above service an entrance fee, a periodical contribution or any other charge;

11 *Bosses Says Yes, Union Disagrees*. News Straits Times, March 12, 2012. (online). Retrieved from http://www.mef.org

12 Duty to furnish information and returns.

13 Director General may inquire into complaint.

14 Prohibition on termination of local for foreign employee

15 Termination of employment by reason of redundancy

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A STUDY OF IM-SMARTSAFETY COURSEWARE DEVELOPMENT FOR FOREIGN WORKERS IN SAFETY COURSE MALAYSIA CONSTRUCTION INDUSTRY*

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Abstract

IM-SmartSAFETY is an application developed as a medium for delivering contents to foreign workers in response to language problem in Health and Safety Induction Course (HSIC). It is a compulsory initial course for all workers including local and foreign workers and professionals before entering into construction sites. In ensuring IM-SmartSAFETY meets the objective of the course, learning theories, particularly constructivism, social, and minimalism, have been applied along the development process. In accordance, this paper discusses the importance of applying learning theories in the IM-SmartSAFETY. Constructivism theory is important in IM-SmartSAFETY because it supports the creation of new knowledge through creative and critical thinking based on the existing knowledge while solving problems in existing cases. Meanwhile through social theory, emphasis on cognitive is deeper than on physical behavior in which visual representation of positive and negative behavior could be imitated. It also promotes social interaction among the peers and between the trainees and the trainers through activities provided in the application. Further, minimalism theory is important because it ensures the application is appealing in terms arrangement of text, information, graphic, color, and audio so that they never confuse the foreign workers, but make them understand.

Introduction

Construction industry involves complex and dangerous activities [8] [12] as well as high risk [1] [16]. Therefore, emphasis on safety and health among the workers is very important to avoid accident. It should be part of the activities in personnel department. Accordingly, in Malaysia, Construction Industry Development Board (CIDB) has proactively designed a special course to handle such issue, named Health and Safety Induction Course (HSIC). It is compulsary to everyone, local and foreign, labour or professional, who involve in the construction industry no matter directly or indirectly. In principle, the workers have to do the HSIC first before entering the construction site. Nurul Azita [17] found that the delivery of HSIC involves various media including *PowerPoint* slides and video. They are delivered by the trainers in face- to-face lectures, which involves also demonstration, as well as printed materials.

However, they (lecture, demonstration, printed, and electronic) are delivered to the foreign workers in Malay language. In cases the media is in English, the trainers still deliver in Malay language because a big percentage of them are not able to deliver in English. While the content in the course is comprehensive, this study believes that the barrier in the course is on the delivery language, in which Malay language is used to educate foreign workers who are not able to understand, especially those not from Indonesia. A study has been carried out involving workers from Myanmar, the biggest number of workers after Indonesia. In the study, the language barrier is clearly discovered. Particularly, the study found that only 13.7% (14) understoodwhile 43.1% (44) did not understand oral information delivered in Malay language. Meanwhile, only 6.9% (7) understood while 55.88% (57) did not understand written information delivered in Malay language.

On top of that, when asked, those Myanmar workers agree that there is language barrier in the course, in which 43.75% (42) of the total 96 traineesreferred it to oral communication, while it is more serious in written communication when 77.1% (74) agree. More than 85.4% (82) of the trainees agree that the issue arise because the trainers deliver course contents fully in Malay language. Although some of the trainers use English in certain situations, the study also found that 56.9% (58) of

the Myanmar workers did not understand oral information in English and 48.03% (49) of them did not understand written English [19].

In fact, previous studies also found that most *PowerPoint* slides are delivered in single-way from the trainer orally to the trainees without any interaction between the trainer and the trainees because of language barrier. This limits the trainees' knowledge creation and active participation. This has been proven by Haryati et al. [11] in which they found that 50% of contractors agreewith 41% of it strongly agree that there are communication (language) barrier in the construction industry. Additionally, an interview by Nurul Azita et al. [18] with five contractors (A, B, C, D, E) in Malaysia also evidenced that the problem is not only in oral communication, but also written communication. Similarly, such barrier has been tabled by Abdul Rashid and Abdul Aziz [2], who found that the foreign workers were not able to understand safety instructions, safety procedures, and were not able to interpret safety signage, which eventually led to accidents. Thus, the recommendations by Teo et al. [21] regarding effective communication (language) as part of important factors in fluencing the implemantation of safety procedures is difficult if no one looks into this language barrier problem.

In accordance to that, an application has been designed and developed as a mechanism for delivering contents to the foreign workers as an alternative in solving the language barrier problem in HSIC. This initiative is inline with Bahn [3], who recommends that upgrading training and course materials could be a way in handling safety procedures and avoiding accidents in work place in construction industry. This is especially effective to be applied among new workers, those immature and less knowledgeable, and those who careless while in the construction sites.

The Development Of IM- SmartSAFETY

IM-SmartSAFETY has been developedby incorporating various media elements in dwi- languages through two phases; application development and application assesshment. The detailed steps in both phases are depicted in Figure 1.
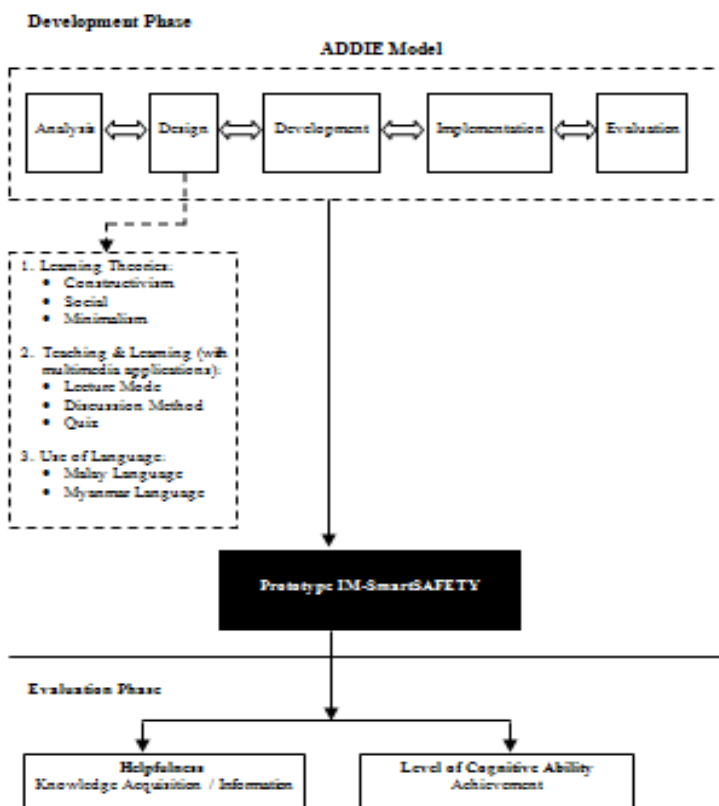

Figure 1 Conceptual Framework

The development phase was carried out using the ADDIE model, which involves analysis, design, development, implementation, and evaluation activities. Meanwhile, the assessment phase involves an assessment of the developed application using selected constructs in terms of how it assists Myanmar workers in meeting their needs. It was measured based on the knowledge they have

acquired, seen through their behavior and cognitive development after using IM-SmartSAFETY in the HSIC. Data were mainly gathered quantitatively, supported with some qualitative techniques. Only workers from Myanmar involved in this study because they are the second largest foreign workers in construction industry in Malaysia after Indonesia (statistics by Malaysian Immigration Department until 31 December 2010). They are the general workers based on the registry at the CIDB, who operationalize the construction works in construction sites, as commanded by their employers.

While language is the barrier, the development of IM-SmartSAFETY has to cater all aspects to ensure the trainees feel easy to use. Hence, it should be based on certain systematic procedures. Accordingly, ADDIE model has been used to drive the development, in which detailed activities are outlined illustratively in Figure 1. Among the major concern is the incorporation of learning theories, so that the approach in the application is effective and leading to the achievement of the ultimate objective of the HSIC.

Development Theory Of IM- SmartSAFETY

In ensuring the learning process takes place effectively, it has to apply some learning theories. According to Mohd Azhar et al. [15], learning theory refers to certain description on actions, suggestions, and thinking upon something related to situations where theories are applied to guide the process so that it is not deviated from the aspired purpose. It is also similar in preparing the teaching materials. It should consider recommendations by learning theories to support the achievement of learning outcomes. Hence, in designing interactive application for certain course, consideration on applying certain theories is very beneficial because it could ensure the development process is well-managed. According to Gagne [9], applying theories in application development could synergize the instructions with the effects of learning and the expected learning outcome. Similarly, Janudin [13] adds that applying theories into application could ensure the learning process is not deviated from the expected learning outcome. It also ensures that learning process is effective, meeting the users' aspiration in terms of acquiring knowledge. Accordingly, IM- SmartSAFETY that is designed and developed for Myanmar workers applies three theories to support the learning process; constructivism, social and minimalism theories.

Constructivism theory has been established by Bruner [5]. It explains about a learner who thinks and learns through cognitive structure, that the learner could create knowledge when their cognitive is challenged. Further, they could integrate new knowledge with the existing one in a new situation. In fact, the creation of new knowledge happens through social interaction. In this study, knowledge is created through discussions in solving certain problems, in which according to Vygotsky [22], such interaction could stimulate mental development to a further level. Hence, it could be deduced that theories are important in IM-SmartSAFETY so that the Myanmar workers could develop their cognitive and knowledge, improve their understanding through creative and critical thinking in solving problems by synergizing new knowledge with the existing knowledge invoked from case studies related to construction sites. Thus, IM-SmartSAFETY as suggested by the learning theories incorporates various media elements including text, graphics, animation, audio, and video [7].

While it is in line with the recommendations by the theories, it is highly possible to meet the learning outcomes. Also, the application provides opportunities for the trainers and trainees to communicate and interact in two ways through provided activities. They do the activities, including discussions on certain problem solving as seen in Figure 2 in their own language. This is totally different then the existing information delivery media that are in the form of presentation and one way, in which in such situation, the Myanmar workers just listen everything (in Malay language) and do nothing without challenging their cognition. This really keeps their critical thinking freezes without creating any new knowledge.
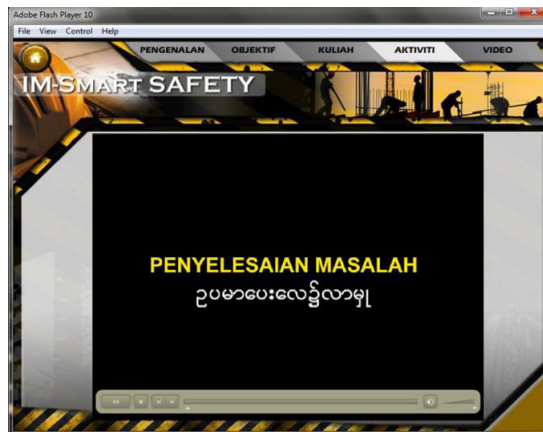

Figure 2 Screen of Problem Solving With Application Constructivism Theory (Social)

(Discussion Method)

Social theory on the other hand combines behaviorist and cognitive psychology using inner thoughts. Bandura [4], concerns on cognitive process involving modeled process through observation and imitation over something being observed compared to behavior. The main learning concept for this theory is focused on memory i.e interaction with individuals, attitude, and environment. Meanwhile Rotter [20] concerns on social interaction with other people, and that the environment influences human attitude. That is the reason for applying it in IM- SmartSAFETY (depicted in Figure 3), so that the Myanmar workers who are not able to understand Malay language could observe and imitate the contents they watch in the application. With that, they get sufficient information on positive and negative attitude through graphics and videos. On top of that, social interaction takes place also through interaction with their peers and their trainers through the activities and tasks based on certain situations. Nevertheless, Duan and Song [7] address that complicated information could be conveyed interestingly through a combination of various media. This is because learners learn better through graphical representation than textual alone. Hence, in overall, this study has found that media elements including text, graphics, animation, audio, and video are good in conveying information to Myanmar workers in HSIC [17].

Figure 3 Screen of Application Social Theory

Minimalism by Carroll [6] is another theory applied in IM-SmartSAFETY. It is a framework that guides in designing training materials to computer users such

as preparing complete learning activities so that learners could create knowledge on their own, error free, and providing learning activity based on past experience and knowledge. Besides that, the theory emphasizes on minimizing loads through the use of basic characteristics in the design. As an example, the most important element is placed at the most visible area [14]. The use of appropriate colors is also emphasized besides limiting cognitive loads by providing simple structures and consistent design for text, graphics, and audio. This includes minimizing teaching materials by omitting unnecessary information [10]. Besides that, every page in IM-SmartSAFETY in maintained short, requires no page scrolling. Further, Figure 4 illustrates the effect of Minimalism on the page design. This shows that the theory is important because it guides to a good design, to ensure the IM- SmartSAFETY is easy from the Myanmar workers' perception. In this context, easy implies to the arrangement of text, graphic, color, and audio, so that they do not confuse the Myanmar workers, and further easily understand the contents.

Malay Language   Myanmar language

Figure 4 Screen of Application Minimalism Theory

Conclusion

Overall, the design, development, and utilization of IM-SmartSAFETY in HSIC has assisted foreign workers particularly Myanmar a lot in their safety training. The application really encourages their active participation, which develops their knowledge through various activities along the course. This has been discovered through the early stage of this study, in which the Myanmar workers agree that they have gained a lot through the application. Language barrier is also solved because IM- SmartSAFETY provides information in their own language. The effectiveness of the learning application is based on the incorporation of learning theories (constructivism, social, and minimalism), which besides making the IM-SmartSAFETY attractive, it ensures also the application supports the learning outcomes.

In fact, constructivism encourages and forces learners to think critically and creatively, which leads to the making of new knowledge based on their existing knowledge in solving problems provided in case studies. Meanwhile through social theory, cognitive process is formed through modeled process. In this context, the Myanmar workers could observe and imitate positive attitudes by watching the provided graphical and video contents. Besides that, they could discuss and interact with their peers and trainers through the provided activities. On top of that, minimalism theory is applied, to guide the design of the application. Basically, the theory addresses principles to make the application easy to use by the Myanmar workers. Based on the recommendations by minimalism, IM-SmartSAFETY incorporates various media elements including text, graphics, animation, video, and audio. This ensures IM-SmartSAFETY does not confuse the Myanmar workers.

Based on the discussion in the previous paragraphs, this paper deduces that incorporating learning theories in IM-SmartSAFETY is really important, for various reasons. More importantly, it leads to the accomplishment of the learning outcomes, which concerns on the acquisition of the learning contents in the HSIC.

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