

# **UNIVERSITI PUTRA MALAYSIA**

GENDER-BASED OCCUPATIONAL SEGREGATION AND GENDER EARNINGS DIFFERENTIALS ACROSS QUANTILES IN MALAYSIA

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By

WAN LIYANA MARIAH WAN ZAINAL ABIDIN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

May 2016

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

# GENDER-BASED OCCUPATIONAL SEGREGATION AND GENDER EARNINGS DIFFERENTIALS ACROSS QUANTILES IN MALAYSIA

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#### May 2016

# Chairman : Zaleha Mohd Noor, PhD Faculty : Economics and Management

One of the most stylized facts in labour economics is that women receive lower earnings as compared to men. The general objective of this research is to examine the issues of gender inequality in the labour market in Malaysia across time. Using unpublished secondary data sources of Labour Force Survey (LFS) and Household Income Survey (HIS) for 2004, 2009 and 2012, this research employs a combination of different methods to address these issues in depth. The main findings from this research may be summarized as follows. Firstly, the Duncan Dissimilarity Index and OLS regression are used to address the first objective which is to examine the level of occupational gender segregation and its determinants across time. It is found that the level of occupational segregation had worsened in 2012 as compared to the period of 2004 and 2009. Henceforth, this denotes that more male and female employees were needed to change occupations in order to equalize the occupational distribution for both gender groups within the period. Female were largely concentrated in professions such as teaching professionals and office clerks. Meanwhile, male largely worked as science and engineering professionals. From policy stance, incentive in the form of scholarships should be provided for female to motive them to enroll in the science and technical courses at the tertiary level. This would be able to reduce the extent of occupational segregation in Malaysia. Secondly, the Fortin and Huberman (2002) decomposition method is utilized to attempt the second objective which is to analyze whether the portion of gender earnings differentials is due to gender differences in occupational distribution or within occupational groups; or both, across time. Despite female educational attainment improving, they experienced lower earnings as compared to their male counterpart in most of the occupational categories within the period. Therefore, whilst vertical inter-occupational segregation had improved across time due to higher educational attainment by female which leads them to enter the male-dominated occupations, nonetheless, they remain at the lower hierarchical level within the particular occupation group. This reflects the vertical intra-occupational segregation. Furthermore, the horizontal segregation which denotes the gender attitude of what supposed to be female jobs and male jobs persist throughout the period of 2004, 2009 and 2012. To overcome this problem, it is proposed that structural evaluation technique is implemented at the office in the form of test performance, number of projects completed and revenue creation for the organization to avoid the stereotype decision making amongst the employers pertaining to employees' contribution to the company. Thirdly, the quantile regression method is used to address the third objective which is to evaluate the extent of gender earnings differentials across the earnings distribution across time, whether the glass ceiling or sticky floor exists. Glass ceiling and sticky floor exist in the Malaysia labour market in 2004, 2009 and 2012. However, the impact of sticky floor effect had increased within the three periods. Simultaneously, the glass ceiling effect had increased across time. Therefore, it is suggested that the female decision making should be further enhanced to overcome the problem of glass ceiling in the labour market and implementation of the minimum wage policy should be enforced.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

# SEGREGASI PEKERJAAN MENGIKUT JANTINA DAN KETIDAKSAMAAN PENDAPATAN MENGIKUT JANTINA SECARA 'QUANTILES' DI MALAYSIA

Oleh

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Menurut teori ekonomi buruh, kaum wanita menerima pendapatan yang lebih rendah di bandingkan dengan kaum lelaki. Objektif umum kajian ini adalah untuk meniliti isu ketidaksamaan jantina di dalam pasaran buruh di Malaysia berdasarkan fasa waktu. Dengan menggunakan data sekunder yang tidak diterbitkan yang diperolehi dari data Penyisatan Tenaga Buruh dan Penyiasatan Pendapatan Isi Rumah bagi tahun 2004, 2009 dan 2012, kajian ini telah menggunakan pelbagai kombinasi teknik untuk mendalami isu-isu ini secara lebih terperinci. Dapatan kajian boleh disimpulkan seperti berikut. Pertama, 'Duncan Dissimilarity Index' dan 'OLS Regression' telah digunakan untuk menilai objektif pertama iaitu untuk menilai tahap segregasi pekerjaan dan faktor-faktor yang mempengaruhinya berdasarkan fasa waktu. Hasil dapatan mendapati bahawa aliran segregasi pekerjaan telah merosot pada tahun 2012 dibandingkan dengan tahun 2004 dan 2009. Berdasarkan tempoh kajian, jelas menunjukkan bahawa lebih ramai pekerja lelaki dan wanita diperlukan untuk beralih kepada pekerjaan lain untuk meghasilkan taburan pekerjaan yang setara untuk kedua-dua jantina. Kaum wanita lebih tertumpu kepada jenis pekerjaan seperti tenaga pengajar professional dan kerani pejabat. Manakala kaum lelaki pula lebih tertumpu kepada pekerjaan dalam bidang sains dan kejuruteraan professional. Daripada sudut polisi, kemudahan biasiswa perlu diberi keutamaan kepada wanita untuk menggalakkan penglibatan mereka di bidang sains dan teknikal di peringkat universiti. Ini akan mengurangkan kadar segregasi pekerjaan di Malaysia. Kedua, kaedah penguraian oleh 'Fortin dan Huberman (2002)' telah digunakan untuk mencapai objektif kedua kajian ini iaitu untuk menganalisa sama ada bahagian ketidaksamaan pendapatan adalah dipengaruhi oleh faktor ketidaksamaan jantina di dalam taburan pekerjaan atau melalui perbandingan kumpulan pekerjaan, atau keduanya-duanya sekali, berdasarkan fasa waktu. Walaupun taraf pendidikan kaum wanita telah meningkat, mereka didapati masih menerima pendapatan yang lebih rendah berbanding dengan kaum lelaki dalam pelbagai kategori pekerjaan sepanjang tempoh kajian. Oleh itu, walaupun segregasi menegak 'inter-occupational' telah menunjukkan kemajuan berdasarkan fasa waktu disebabkan oleh mereka telah dapat memasuki pekerjaan yang didominasi oleh kaum lelaki, namun begitu, mereka kekal di tahap yang lebih rendah dalam setiap satu kategori pekerjaan tersebut. Ini menunjukkan bahawa terdapat segregasi menegak 'intra-occupational'. Segregasi mendatar telah menunjukkan bahawa tanggapan umum terhadap apa yang sepatutnya merupakan pekerjaan kaum wanita dan lelaki kekal sepanjang tempoh 2004, 2009 dan 2012. Untuk mengatasi masalah ini, penggunaan kaedah evaluasi terperinci adalan disarankan di pejabat dalam bentuk penilaian prestasi, jumlah projek yang telah dilaksanakan dan dapatan keuntungan untuk organisasi untuk menilai khidmat pekerja kepada pihak organisasi. Kaedah ini juga dapat mengelakkan keputusan 'stereotype' majikan terhadap pekerja.Ketiga, teknik 'quantile regression' telah digunakan untuk mencapai objektif ketiga kajian iaitu untuk menilai ketidaksamaan pendapatan berdasarkan fasa waktu, sama ada 'glass ceiling' atau 'sticky floor' telah berlaku. 'Glass ceiling' dan 'sticky floor' wujud di pasaran buruh di Malaysia pada tahun 2004, 2009 dan 2012. Namun begitu, impak 'sticky floor' adalah lebih besar daripada 'glass ceiling'. Adalah didapati bahawa impak 'sticky floor' telah meningkat sepanjang tempoh tiga tahun kajian ini. Impak 'glass ceiling' juga telah meningkat sepanjang tempoh kajian. Adalah disarankan bahawa pembuat keputusan wanita perlu ditingkatkan untuk mengatasi masalah 'glass ceiling' di dalam pasaran buruh dan polisi gaji minimum akan dipertingkatkan oleh kerajaan.

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I certify that a Thesis Examination Committee has met on 10 May 2016 to conduct the final examination of Wan Liyana Mariah bt. Wan Zainal Abidin on her thesis entitled "Gender-Based Occupational Segregation and Gender Earnings Differentials Across Quantiles in Malaysia" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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# LIST OF ABBREVIATIONS

CEDAW	Convention on the Elimination of Discrimination against Women
DOS	Department of Statistics
EB	Enumeration Block
EPF	Employee's Provident Fund
EPU	Economic Planning Unit
HIS	Household Income Survey
ILO	International Labour Office
ID	Index of Dissimilarity/Duncan Dissimilarity Index
ISCO	International Standard Classification of Occupations
ITM	Mara Institute of Technology
JKM	Jabatan Ke <mark>majua</mark> n Masyarakat
LFS	Labour Force Survey
LQ	Living Quarter
MASCO	Malaysia Standard Classification of Occupations
MDGs	Millenium Development Goals
MFLS-2	Second Malaysian Family Life Survey
NIEW	NAM Institute of Empowerment Women
NPW	National Policy for Women
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PMR	Penilaian Menengah Rendah
SOCSO	Social Security Organization
SPM	Sijil Pendidikan Malaysia
SRP	Sijil Rendah Pelajaran
STPM	Sijil Tinggi Pelajaran Malaysia
UITM	Universiti Teknologi Mara
UNESCO	United Nations Educational, Scientific and Cultural
UNDP	United Nations Development Program
UNDW	United Nations Division for the Advancement of Women
UPSR	Ujian Penilaian Sekolah Rendah

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# **CHAPTER 1**

### **INTRODUCTION**

## 1.1 Preamble

Gender equality deals with issues of fairness and equity. It is considered as a major factor which contributes towards well-being and happiness around the world. Despite women outperforming men in some areas of education level, nevertheless women remain to earn less than men and less likely to end up working at the top position in their career (OECD, 2012). In addition, it is without doubt that the female labour force participation has increased significantly over the years. However, according to International Labour Office (ILO) in 2012, female labour force participation is lower as compared to their male counterparts. From the global perspective, female labour force participation rates remain lower at 51.1 per cent as compared to male with the value of 77.1 per cent. Whereas, by region, in the South-East Asia, despite experiencing slight improvement in 2012, female participation rate remains lower at 58.8 per cent as compared to male at 82.8 per cent.

Nevertheless, it is a striking fact that whilst male labour force participation rate has declined over the years, female's however denotes upward trend which contributes towards the narrowing of gender gap in the labour force participation rate in South-East Asia at 23.1 per cent (ILO, 2012). Subsequently, there exists an unequal distribution of men and women across sectors and occupations. Female's participation is concentrated in a narrow range of occupations, which often are lower-paying occupations as compared to predominantly male occupations. This reflects significant gap in the occupational segregation (ILO, 2012). There are two forms of occupational segregation; namely horizontal segregation and vertical segregation. First and foremost, horizontal segregation signifies that women are over-represented within a particular occupation. In other words, the employment share of women in certain occupations is higher than their share in other occupations. Meanwhile, vertical segregation which depicts glass ceiling occurs in a situation when women and men work in similar occupation, but men acquire more responsibilities, better pay and higher status as compared to women, which are not due to factors such as skills or experience (ILO, 2012).

Women remain over-represented in services, housework and agricultural occupations (UNDAW, 2009). In both developed and developing countries, men are overrepresented in "craft and related trade workers", "plant and machine operators" and "managerial and legislative" occupations (ILO, 2012). Despite that, women are concentrated within a limited range of occupations than men. Women are highly concentrated in mid-skills occupations, such as "clerks and service workers" and "shop and market sales workers." This denotes that women do not experience the same opportunities as men to gain access to the full range of occupations (ILO, 2012). The glass ceiling exists in both developed and developing economies (UNDAW, 2009). Evidence from the European Union and the United States indicates that diversification of choices in the tertiary education leads to lower employment segregation (Blau, Brumund & Liu, 2012). Subsequently, gender stereotyping offers an explanation for women and men to be over-represented in particular types of occupations (ILO, 2012). For instance, women are largely concentrated in occupations such as nursing, teaching, social care and child-care. On the other hand, men are highly concentrated in construction and management, which are related to physical strength, risk-taking or decision-making. Moreover, occupational segregation is also explained by women's preferences for job security or their culture which requires them to balance work and family responsibilities (ILO, 2012). Consequently, women encounter obstacles to climb up the career ladder (OECD, 2012). As reflected earlier, this is known as a "glass ceiling" phenomenon.<sup>1</sup> The term "glass ceiling" had emerged as early as 1970s when the number of women in politics had increased steadily in United States (Palmer and Simon, 2008). Later, it was coined in a report from Wall Street Journal in 1986 to describe an artificial barrier to the advancement of women into corporate management position (U.S. Glass Ceiling Commission, 1995).

The possible explanation to describe the existence of the glass ceiling is due to the common institutional restrictions or societal and cultural perceptions which result to professional women encountering barriers that limit their career progression (Evertson and Nesbitt, 2004). In 1991, the Glass Ceiling Act was established as part of the Title II of the Civil Rights Act of 1991 in United States. Given its importance, a Glass Ceiling Commission had been set up to conduct a study and proposed recommendations to eliminate the artificial barriers to the advancement of women and increase their opportunities and development experiences for them to enter the management and decision making level (U.S. Glass Ceiling Commission, 1995).

To date, in OECD countries, on average, women earn 16 per cent less than men. At the higher pay scale, the gap had enlarged with female-top-earners gain 21 per cent less than their male counterparts. This denotes glass ceiling phenomenon, reflecting that women are at disadvantaged in the decision-making process and lower representation at the senior management level since women represents only one for every ten men in the boardroom (OECD, 2012). On contrary, "sticky floor" concerns the workers at the lower-income level. It occurs when the gaps widen at the bottom of the earnings distribution. Booth, Francesconi & Frank (2003) defined it as a situation which occurs when identical men and women who were suppose to be in similar rank, but the women were appointed at the bottom whilst men further up the scale. The issue is considered as crucial as glass ceiling since both concepts are focusing on the detailed gender gap across the earnings distribution. It will facilitate the policy makers to formulate better targeted policies in future to address the issue of gender inequality.

<sup>&</sup>lt;sup>1</sup> Morrison *et al.* (1987) describe glass ceiling as a transparent barrier which kept women from rising above a certain level in the corporate sector. This applies to women as a group who are kept from advancing higher just because they are women. Hence, women encounter barriers which block their vertical mobility in a particular organization.

This chapter is divided into the following sections. Section 2 describes the female labour force participation in Malaysia. Next, Section 3 presents an overview of occupational segregation and gender earnings differentials in Malaysia. The problem statement of this research is set out in Section 4. Subsequently, the objectives are further discussed in Section 5 whilst Section 6 presents the significance of the study. Finally, the layout of the chapters for this study is provided in Section 7 whilst Section 8 concludes.

# 1.2 Female Labour Force Participation in Malaysia

Female labour force participation in Malaysia has increased tremendously over the years and contributed significantly towards economic development. In 1970, the female's participation rate in the labour market was 37.2 per cent as compared to 79.3 for male. In 2004, the female labour force participation rate had increased to 47.3 percent as a result of higher educational attainment and employment opportunities (UNDP, 2005). The female participation rate had improved to 52.4 per cent in 2013 as compared to 2012 which was 49.5 per cent (Department of Statistics, 2013).

However, further improvement in the women's participation level is vital for Malaysia to achieve the goal to become a high-income nation. Furthermore, from global perspective, female labour participation rate in Malaysia is still low as compared to other countries such as Thailand, Philippines, Indonesia and Singapore (World Bank, 2012). Consequently, despite the increase in the level of educational attainment amongst female, majority of them leaves the job market due to family commitment (Economic Planning Unit, 2011). This contributes to lower female participation rate as compared to other countries. Figure 1.1 indicates the employment opportunities amongst gender in the labour market in Malaysia from 1982 to 2013.



Figure 1.1: Labour Force by Gender in Malaysia, 1982-2013

Adapted: Labour Force Survey, various years. Note: Labour Force Survey was not conducted in 1991 and 1994. It is denoted that the female labour force participation in the labour market in Malaysia had improved to 52.4 per cent in 2013. It signifies significant improvement in the female participation level as compared to previous years. Furthermore, despite female denotes increasing trend in recent years, male experiences a slight declining trend prior to 2012. In order for Malaysia to reach its goal to achieve a high-income nation status, the country needs to fully utilise all human factors in the country, for both male and female. Henceforth, the figures presented in Figure 1.1 reflect the government's commitment in improving the labour force to achieve the target to become a high income nation. Female participation rate in 2013 is the highest across the period of 1982 to 2013. However, the main challenge for the country is shortage of skilled workers, henceforth; female participation level must be enhanced to achieve its aspirations (World Bank, 2012).

It could be seen that despite the improvement in the female labour force participation level as depicted in Figure 1.1, however, the existence of glass ceiling and sticky floor persist in the labour market in Malaysia. As reflected in Table 1.3, it stated that female remain to earn lower wage as compared to male across various occupational group in Malaysia. In order to explain the sticky floor effect, it is reflected from Table 1.3 that workers at the low-paying occupations such as elementary occupations, skilled agricultural, forestry and fishery workers experience larger gender wage gap as compared to high-paying occupation such as managers. On the other hand, Table 1.4 and Table 1.5 denote the existence of glass ceiling in the public and corporate sectors in Malaysia respectively. Based on Table 1.4, it signified that in 2014, the female decision makers at the top management level is at 33 per cent. On contrary, based on Table 1.5, the women as board of directors is only at approximately 10 per cent as compared to male. This signified the barriers faced by women at the decision making level which reflected the existence of glass ceiling in the labour market in Malaysia.

The glass ceiling and sticky floor effect could be explained through various theories which is discussed in Chapter 2. Amongst the theories which relate to discrimination are due to taste-based discrimination, statistical discrimination and prejudice theory to explain the existence of glass ceiling and sticky floor effects. In contrast, the tournament theory, competitive model and theory of romance of leadership are amongst those theories which could explain the glass ceiling and sticky floor which is not due to discrimination.

In addition, from global perspective, the female participation level for Malaysia is still lag behind from other countries. As reflected in Figure 1.2, Malaysia's position in terms of the ratio of female to male of labour force participation in the economy in 2012 was the lowest at 0.56 as compared to other neighbourhood countries. Thailand denotes the highest ratio of 0.82, follows by Singapore, Philippines and Indonesia of 0.71, 0.62 and 0.58 respectively. Furthermore, Malaysia experienced highest income loss due to labour force gender gap at 0.16 and highest gender gap labour force which depicts the fraction of women excluded from the labour force relative to men at 0.44 as compared to other countries (World Bank, 2012).





Source: World Bank (2012)

According to the Global Gender Gap Report (2014), Malaysia was ranked at 107 out of 142 countries in 2014. The figure has improved as compared to 2006, during the period the report was first introduced by the World Economic Forum. The Global Gender Gap Index measures the magnitude and scope of gender-based disparities in four key areas of basic rights which are economic participation and opportunity, educational attainment, political empowerment as well as health and survival respectively.

The ranking based on this index offers effective comparisons across regions and income groups over time (World Economic Forum, 2014). According to the Global Gender Gap Index 2014, in the case of Malaysia, from economics point of view, the female to male ratio for legislators, senior officials, and managers is 0.27. It proves greater inequality as in 2010, its ratio is 0.32. On the other hand, the professional and technical workers encounter greater equality with its ratio of 0.77, signifying slight improvement as in 2010, its value is 0.71. In terms of political perspective, the ratio is not encouraging though. For women in parliament, the ratio is 0.11 in 2010 and very slight improvement to 0.12 in 2014. The female to male ratio for labour force participation has signified slight improvement to 0.59 in 2014 as compared to 0.57 in 2010 whilst for enrolment in tertiary and health life expectancy, the results are significant whereby the ratio is more than 1, which denotes that equality has been achieved in both 2010 and 2014.

In addition, there exists significant improvement in gender equality throughout the years due to increase in the female participation level in the labour market as well signifying government efforts to achieve greater equality (UNESCO, 2015). Perhaps the Third Malaysia Plan with specific references to women marked the beginnings of recognition given to women in signifying their crucial role towards economic growth in

Malaysia (Economic Planning Unit, 1976). Under the Fourth Malaysia Plan, the importance of the participation of women were given due consideration in the economic development process. However, emphasize were given on community and health services rather than on economic programmes (Economic Planning Unit, 1981). The Fifth Malaysia Plan denotes further Government's commitment for women's equality status and benefits, and the plan had discussed the existence of wage differentials between male and female employees (Economic Planning Unit, 1986).

Consequently, the Eighth Malaysia Plan had emphasized on the importance to strengthen the national machinery and institutional capacity for female (Economic Planning Unit, 2004). Henceforth, the policy of 30 per cent female decision making had been implemented in the public sector. In addition, the Eight Malaysia Plan (2001-2005) and Ninth Malaysia Plan (2006-2010) had emphasized on the provision for education and training to further promote the advancement for women. The policies enable them to move from low-paying jobs to high-paying jobs dominated by male. Therefore, the extent of occupational gender segregation could be reduced and concurrently, the issue of gender wage gap could also be addressed more effectively.

In order to address the participation, segregation and gender wage gap, several strategies were undertaken in Eighth Malaysia Plan. Amongst those strategies were to increase female participation in the labour market, to provide more education and training opportunities for women to meet the demand of the knowledge-based economy and improve their upward mobility in the labour market (Economic Planning Unit, 2001). Consequently, women's role, position and responsibilities had been further enhanced to motivate them to increase their participation and involvement in social and economy (Economic Planning Unit, 2001). In the Tenth Malaysia Plan, the female's position have been strengthened and given more importance as they have been recognized as the main contributor towards achieving higher growth in the future. It has become a main priority for the Government to enhance the position of female in the labour market in Malaysia within the Plan. Therefore, continuous promotion of female labour force participation and increase in the number of women at the decision making level has been upgraded (Economic Planning Unit, 2011).

Turning to other policies concerning women in Malaysia, the Employment Act 1955 without specific reference to gender signifies a comprehensive legal framework comprises matters such as payment of wages had not permitted inequality or discrimination against women. Nevertheless, the policy had been revised in 2012 and addressed the issue of sexual harassment at the workplace. Furthermore, despite the government's acceptance of the Principles of Equal Pay for Equal Work in 1969, gender wage differentials persist. Though the wage gap has been narrowing, but its existence remains crucial as Malaysia aims to achieve the high income nation status (World Bank, 2012). On the other hand, the National Policy for Women (1989) is formed to fully integrate women in the nation's development. Its objective is to ensure an equitable sharing in the acquisition of resources, information, opportunities and benefits of development for women. In 1997, Plan of Action for the Advancement of Women had been implemented by the government. However, in 2009, both policies had been reviewed by the government to acknowledge the challenges and changes which need to be done to sustain the development of the nation.

Moreover, the commitment of the government had been enhanced through the implementation of National Social Policy in 2003 to build a progressive society based on the qualities of unity, resilience, democracy, morality, tolerance, progress, care, fairness and equity. Consequently, the government had emphasized on the importance to adhere to Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and pledges made in the Beijing Declaration and Platform for Action. Malaysia had joined Beijing Declaration and Platform for Action since 1995 during the Fourth World Conference on Women which highlighted the international community with a consensus to move forward on issues which relates to women (Ministry of Women, Family and Community Development, 2015).

# **1.3** Occupational Segregation and Gender Earnings Differentials in Malaysia: An Overview

From Malaysian perspective, on average, men earned RM 2,086 which was relatively higher as compared to women who earned RM 1,992 in 2013. Moreover, the gender wage gap between men and women had increased by 0.1 percentage point as compared to 2012 (Department of Statistics, 2013). Nevertheless, Malaysia experiences smaller gender wage gap as compared to other East Asian countries. However, this is due to the lower female labour force participation rate as compared to other countries which reflects that women who exist in the job market are more likely to be better skilled which leads to narrowing of the gender wage gap (World Bank, 2012). On the other hand, based on the Malaysia Standard Classification of Occupations 2008 (MASCO) in 2013, women were under-represented in the managerial, craft and related trade workers and skilled agricultural, forestry and fishery workers categories. In contrast, men were under-represented in the clerical support workers and over-represented in the service and sales workers categories (Department of Statistics, 2013). This reflects the existence of occupational gender segregation in Malaysia. Labour market segregation reflects the different patterns in the occupations and sectors amongst women and men (ILO, 2012).

Henceforth, it is noted that the gender segregation is not only confined to within occupation per se which is the focus of this research, however, it also exists within industries or between workplaces as well. Most often, women and men do not work in similar occupations and industries (Reskin and Roos, 1990). Ahmad (1998) states that majority of women remain in low-skilled, labour-intensive jobs in agriculture, and in semi-skilled assembly work in the industry sector. Segregation results from differences in gender patterns of representation within occupations, both classifies by industries and by professional status and within different employment status and employment contract groups (Emerek, Figueiredo, Gonzalez, Gonas & Rubery, 2003). In 2004, the government plans to fulfil 30 per cent of decision-making positions in the public sector with women, and encourage private sector to follow suit (Economic Planning Unit, 2006). In 2012, the public sector has achieved the target rate with the value of 32 per cent, with six women holding secretary general positions at various ministries. In June 2011, similar policy had been implemented in the private sector (NAM Institute of Empowerment Women, 2012). However, by 2013, there exists only 24 per cent of female in top management in Malaysian public listed companies (TalentCorp Malaysia, 2014). This indeed signifies that glass ceiling persists in the labour market in Malaysia.

It is stated earlier that the level of the female labour force participation has improved over these recent years as compared to the 70's and one major factor that contributes is due to the increase in the level of educational attainment amongst female. There is a positive link between female education level and their participation in the labour market in Malaysia. However, majority of them prefers to exit from the labour market due to family commitment (Economic Planning Unit, 2011).

Level	Year	Male	Female	Total	Male (%)	Female (%)	Ratio M:F
PhD	2011	3,755	3,130	6,885	54.5	45.5	1:0.83
	2012	3,168	2,494	5,662	56.0	44.0	1:0.79
Masters	2011	9,042	12,842	21,884	41.3	58.7	1:1.42
	2012	8,313	12,107	20,420	40.7	59.3	1:1.46
Advanced	2011	249	716	965	25.8	74.2	1:2.88
Diploma	2012	629	2,803	3,432	18.3	81.7	1:4.46
Degree	2011	35,600	62,251	97,851	36.4	63.6	1:1.75
	2012	31,883	59,059	90,942	35.1	64.9	1:1.85
Diploma	2011	17,361	24,034	41,395	41.9	58.1	1:1.38
-	2012	15,448	23,007	38,455	40.2	59.8	1:1.49

Table 1.1: Gender Composition of Students' Enrolment in Higher Educat	ion by	r
Level, (2011-2012)		

Source: Ministry of Higher Education (2012)

Based on Table 1.1, the results denote the gender composition in 2011 and 2012 at the higher education level. It is noted that percentage of female is higher than male for most categories except at doctorate level. Overall, the table signifies favourable position for female enrolment in education in Malaysia. This indicates the positive relationship between female education attainments with the improvement of the female labour force participation within recent years as shown in Figure 1.1.

Despite that, it is crucial to examine the field selected by the female when pursuing their studies at the tertiary level. This is essential as the choice of their selected field may lead to the existence of gender-based occupational segregation, glass ceiling or sticky floor in the labour market in Malaysia. The Eighth Malaysia Plan (2001-2005) and Ninth Malaysia Plan (2006-2010) had emphasized on the policy to increase education and training opportunities. STEM refers to courses comprise of science, technology, engineering and mathematics. Figure 1.3 displays that gender gap exists in the selection of courses in STEM disciplines in higher education in Malaysia in 2012. Female largely pursue higher education in pharmacy whilst they have low representation in the engineering field. Female also dominates two other fields which are science and mathematics and medicine. In addition, the gender gap is narrowed in the manufacturing, processing and technology and in information technology and communication (UNESCO, 2015).



# Figure 1.3: Proportion of Students Enrolled in STEM Disciplines in Higher Education in Malaysia in 2012 by Sex (%)

Source: UNESCO (2015)

Meanwhile, Table 1.2 displays that female were over-represented as clerical support workers in 2012 and 2013. However, there are slightly more female than male within the professional category. In contrast, the male are over-represented in the managerial, technicians and associate professionals, craft and related trades, plant and machineoperators and assemblers and elementary occupations categories amongst others (Department of Statistics, 2013).

Year	20	2012		2013
Occupation	Male	Female	Male	Female
-	('000)	('000)	(`000)	(000)
Managers	538.5	147.7	542.5	153.3
Professionals	559.8	686.6	572.4	711.5
Technicians &	866.6	417.7	867.7	420.7
Associate				
Professionals				
Clerical Support	326.3	843.7	322.6	866.9
Workers				
Service & Sales	1,438.9	1,186.7	1,477.6	1,388.5
Workers				
Skilled	873.3	302.0	869.0	293.9
Agricultural,				
Forestry & Fishery				
Workers				
Craft & Related	1,207.0	207.1	1,207.7	245.0
Trades Workers				
Plant & Machine	1,221.7	326.4	1,271.7	336.1
Operators and				
Assemblers				
Elementary	1,061.3	511.8	1,106.6	556.7
Occupations				

Table 1.2: Employed Persons by Occupation and Sex, Malaysia, 2012 and 2013

Source: Department of Statistics (2013)

In order to highlight some understanding of gender wage gap in Malaysia, Table 1.3 is presented to reflect the differences in the average wage by gender within various occupations. It denotes that the gender wage gap in the managerial category had decreased in 2013. Other categories which have also experienced reduction in the wage gap are skilled agricultural, forestry and fishery workers, craft and related trade workers and plant and machine-operators and assemblers. Consequently, the wage gap amongst professionals is higher in 2013 as compared to 2012 with 0.7 percentage points. Other categories which denotes increment in the wage gap in 2013 is clerical support workers, service and sales workers and elementary occupations (Department of Statistics, 2013).

Year	2012	2013
Occupation	(%)	(%)
Managers	26.3	18.7
Professionals	22.3	23.0
Technicians and Associate	4.9	7.4
Professionals		
Clerical Support Workers	10.3	14.2
Service and Sales Workers	33.4	34.9
Skilled Agricultural, Forestry and	35.8	26.8
Fishery Workers		
Craft and Related Trades Workers	43.3	39.7
Plant and Machine Operators and	31.7	21.8
Assemblers		
Elementary Occupations	25.5	28.9

#### Table 1.3: Gender Wage Gap by Occupations, Malaysia, 2012 and 2013

Source: Department of Statistics (2013)

Table 1.4 signifies the persistent increase for female in top management and managerial and professional position in the public sector prior to 2014. However, results denote significant improvement for the female in top management as compared to the managerial and professional position in the public sector. The proportion of women of 33 per cent at the top management level in 2014 which is the highest signified the positive impact in the public sector following the implementation to achieve the 30 per cent of female at the decision making level.

	20	09	20	10	20	011	20	12	20	013	20	14
Position	М	F	М	F	М	F	М	F	М	F	М	F
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Тор	75.8	24.2	73.4	26.6	72.7	27.3	71.8	28.2	67.4	32.6	67	33
Management												
Managerial	38.8	61.2	39	61	38.6	61.4	38.1	61.9	37.8	62.2	36	64
and												
Professional												

# Table 1.4: Proportion of Public Service Employees at Top Managementand Managerial and Professionalby Category and Gender, Selected Years

Source: Public Services Department (2014)

In contrast, Table 1.5 signifies that the proportion of women as the board of directors in the Malaysian Public Listed Companies had increased significantly after 2011. This is due to the announcement to achieve the quota for 30 per cent of female decision making in the private sector in 2011 (NIEW, 2012). Thus, the value for the proportion experienced significant improvement to 10.2 per cent in 2014. Despite that, the value has still not yet achieved the target of 30 per cent female decision making. In short, proportion of women's decision making in the private sector is still lower as compared to the public sector.

Table 1.5: Proportion of	Women at I	Decision-Making	Level in th	e Corporate
	Sector for '	Various Years		

	2007	2008	2009	2010	2011	2012	2013	2014
Position	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Board of	n.a	7.5	7.8	7.9	7.7	7.9	8.6	10.2
Directors								

Source: NAM Institute of Empowerment Women (2014)

Note: Board of Directors in Malaysian Public Listed Companies.

Researchers have studied various issues regarding occupational segregation such as the measure of the extent of occupational segregation, the effects of segregation and the determinants of segregation. There have been several studies done in Malaysia in the area of gender occupational differences but the focus of most studies is not on segregation *per se* but rather on the issue of gender earnings differentials in various occupational groups (Fernandez, 2007; Latifah, 2000). However, Goy and Jhones (2012) discussed the segregation per se in the labour market in Malaysia. Their study indicated that much of the wage gap is due to the within-occupation effect.

	2011				2012			2013		
	Professor	Associate Professor	Lecturer	Professor	Associate Professor	Lecturer	Professor	Associate Professor	Lecturer	
Male	1,546	2,946	9,079	1,442	2,664	8,529	1,728	3,154	9,775	
Female	457	1,866	10,756	511	1,926	10,945	567	2,207	12,181	
Total	2,003	4,812	19,835	1,953	4,590	19,474	2,295	5,361	21,956	
%Female	22.8	38.8	54.2	26.2	42.0	56.2	24.7	41.2	55.5	

# Table 1.6 Numbers of Academic Staff in Public Higher Education Institutions,<br/>Malaysia, 2011-2013

Source: Ministry of Women, Family and Community Development (2014)

Table 1.6 signifies the number of academic staff in public higher education institutions in Malaysia from 2011 to 2013. It denotes that percentage of female in the lecturer position for all years is relatively between 54 to 56 per cent. Despite that, their representation at the professor and associate professor positions are relatively low as compared to male. It implies that across the teaching position at the public higher education institution, majority female remain at the lowest position of the academic staff, which is lecturer.

From another perspective, quantile regression technique has become more popular in studying the gender wage differentials (see Arulampalam, Booth & Bryan, 2007; Booth, 2006). It provides a snapshot of the wage gap at different points across the wage distribution, hence, revealing the widest gap. This would indicate the existence of a glass ceiling effect or sticky floor effect across the wage distribution. Koenker and Basset (1978) introduced this technique which later been popularized by Buchinsky (1998) when analyzing the gender wage differentials.<sup>2</sup> Although there have been studies done on glass ceiling in Malaysia, nevertheless the empirical evidences presented were from management point of view (see Zubaidah, Azwan & Kamaruzzaman, 2009; Siti Rohaida, 2009; Dimovski, Skerlavaj & Mok, 2010). Previous Malaysian studies from economics perspective had focused in studying the wage gap at one particular point of the wage distribution, mainly at the average level (see Chua, 1984; Schafgans, 2000; Fernandez, 2007). Meanwhile, Goy and Johnes (2012) highlighted the inequality in wages in Malaysia based on the framework developed by Brown, Moon & Zoloth (1980). However, the study is conducted for oneyear period, which is in 2004. Henceforth, this study seeks to fulfil the gap in the existing literature by focusing on occupational segregation and gender earnings differentials across the earnings distribution in the Malaysian labour market over time.

<sup>&</sup>lt;sup>2</sup> By using the quantile regression technique, it is possible to estimate the effect of gender, education, occupations, industry and all other controls on log wage at the top (e.g.  $90^{\text{th}}$  percentile), the median and the bottom (e.g.  $10^{\text{th}}$  percentile) of the wage distribution (Kee, 2006).

# 1.4 Problem Statement

Gender-based occupational segregation and gender earnings differentials are prevalent all across the world. Over the last few decades, increasing recognition has been given to the importance of reducing the extent of segregation and wage gap for effective and sustainable development. Occupational segregation imposes large costs on the welfare of individuals (mainly women) as well as households and affects their ability to improve their lives. In addition to these personal costs, gender earnings differentials reduce productivity and efficiency when female received lower payment as compared to male. Henceforth, it will lead to lower prospects for reducing poverty and achieving economic progress in the country. Despite the favourable position of the female enrolment in education in Malaysia, the labour market still favours male. Occupational segregation by gender is due to men and women perform different jobs and tasks and duties in the labour market (Chapman and Harding, 1985). This could be reflected based on Table 1.2, whereby men were largely represented in the managerial, craft and related trades, plant and machine-operators and assemblers and elementary occupation categories in 2012 and 2013. Nonetheless, female were largely concentrated in the clerical support workers. This signifies the existence of occupational segregation in the labour market in Malaysia. Therefore, it is crucial to examine factors contributing towards the level of segregation of workers in particular occupations.

Table 1.6 outlays more information about occupational segregation in Malaysia. It could be in a form of vertical intra-occupational segregation whereby women work in lower hierarchical level as compared to men in particular occupation. It is noted that the position of professor, associate professor and lecturer is classified as teaching professionals based on MASCO 2008. According to Table 1.6, despite female largely concentrated in the lecturer position, however it is at the lowest position of the academic staff as compared to greater involvement of men in the professor and associate professor position. Thus, although female acquired higher educational attainment which enables them to be an academic staff at the public institution, however, majority remained at the lower position as compared to men. Wan Abdullah and Mansor (2009) acknowledge that despite women heavily involved in teaching occupations, the proportion of female academic staff in the categories of professor and associate professor in public universities remain below their male counterpart. This denotes that vertical intra-occupational segregation exist in the labour market.

To highlight the issue of gender earnings differentials, focusing on the glass ceiling and sticky floor effects in Malaysia, Table 1.3 reflects that gender wage gap persist in 2012 and 2013. However, it is noted, that the gender wage gap for the low-paying occupations such as elementary occupations, skilled agricultural, forestry and fishery workers are substantial as compared to high-paying occupations such as managers. This signifies the sticky floor effect in the labour market in Malaysia. It is because wider wage gap is found at the low-paying occupations as compared to the high-paying occupations. Specifically, the gender wage gap for elementary occupations in 2013 is approximately 29 per cent as compared to managers with the value of approximately 19 per cent. In addition, according to World Bank (2012), gender wage gaps in Malaysia are greatly found in the lowest paying occupations, which require lower education

levels. The results are similar as obtained from other East Asia countries such as China, Indonesia and Thailand.

Moreover, with reference to Table 1.4, the glass ceiling is measured at the top management level. In 2009, female comprised of only approximately 24 per cent as compared to 76 per cent of male. However, the gap had narrowed in 2012. Consequently, in 2013, the female representation at the top management level had increased beyond 30 per cent, which showed that the target of government policy of 30 per cent female decision making had been achieved in the public sector during the year. In contrast, from private sector perspective, Table 1.5 denotes that the female board of directors in the corporate sector were still below the targeted level of 30 per cent female decision making in 2014.

# 1.5 Objectives of Study

The general objective of this study is to examine the issues of gender inequality in the labour market in Malaysia across time. The specific objectives are;

- 1) To examine the level of occupational gender segregation and its determinants across time.
- 2) To analyze whether the portion of gender earnings differentials is due to gender differences in occupational distribution or within occupational groups; or both, across time.
- 3) To evaluate the extent of gender earnings differentials across the earnings distribution across time, whether glass ceiling or sticky floor exists.

# 1.6 Significance of Study

First and foremost, this study will contribute further towards a detailed analysis on the issue of occupational gender segregation in Malaysia. Based on the previous research in Malaysia, this issue has been discussed concurrently with the issue of gender earnings differentials. As stated in Chapter 2, the study of gender-based occupational segregation in Malaysia had been conducted by Goy and Johnes (2012). However, the study conducted is based on one-year period, namely 2004. Therefore, the contribution of this research is to analyze the portion of gender earnings differentials due to differences in occupational distribution or within occupational groups across time based on 2004, 2009 and 2012.

Secondly, this study contributes towards examining the factors affecting the level of occupational segregation, which is lacking in the previous research in Malaysia. The identification of the factors which contribute towards the level of occupational segregation should be a great concern as this could assist the policy makers to formulate better targeted policies to reduce the extent of occupational segregation in the

labour market in Malaysia as they would be able to identify the main determinant which affects the level of segregation in the labour market.

Thirdly, majority studies of gender earnings differentials in Malaysia had examined this issue at the average earnings gap, which covers the analysis of the earnings gap at the mean level only. Whereas, analysis of earnings gap across the earnings distribution would provide more fruitful information for the policy makers. By doing so, analysis of the earnings gap could be assessed across the earnings distribution, which enables them to determine which categories of workers encounter the largest earnings gap across the earnings distribution.

Fourthly, this study will further contribute towards highlighting the previous policies as stated in the Eighth Malaysia Plan, Ninth Malaysia Plan and Tenth Malaysia Plan with the findings as obtained from this study. Henceforth, the impact of the policies based on the Malaysia Plan could be ascertained with the findings of this study.

Fifth, despite the improvement in the female participation rate in the labour market in Malaysia in 2013 to 52.4 per cent; however, its value is still low as compared to men which are 80.7 per cent. As stated earlier, female labour force participation level in Malaysia is the lowest as compared to its neighbourhood countries. This results to income losses for the country as Malaysia is not making use of its female potential resources. By addressing the issues of gender earnings differentials across the earnings distribution and gender-based occupational segregation, better targeted policies could be formulated to encourage further women's potential in the economy. Henceforth, the aim for the country to achieve the high income nation status could be achieved.

Sixth, the impact of the policy to achieve the 30 per cent quota for women at decisionmaking level as stated in Eighth Malaysia Plan could be addressed in this study by analyzing the earnings gap across the earnings distribution. Hence, a wider gap at the top level of the earnings distribution could highlight the existence of glass ceiling for the three periods.

Seventh, the Ninth Malaysia Plan stressed upon the importance to perform systematic collection and compilation of gender disaggregated data to undergo effective analysis, monitoring impact assessment and policy formulation. It further emphasized on gender mainstreaming whereby mainstreaming strategy would be taken place to ensure gender considerations were routinely included in the formulation of major sectoral policies, strategies and program (Economic Planning Unit, 2006). Therefore, this study has contributed by using the disaggregated unpublished data by gender.

Finally, by studying the gender earnings differentials across the earnings distribution could effectively resort to minimum wage for the low-skilled workers and brain drain which concerns the high-skilled workers. Minimum wages lead to the reduction in the gender pay gap at the bottom level (Dolado, Kramarz, Machin, Manning, Margolis &

Teulings, 1996). Women are likely to stay in the labour market due to high wages floors (Arulampalam *et al.*, 2007).

For these reasons, addressing the issue of gender-based occupational segregation and examining the gender earnings differentials across the earnings distribution are important. This study will fulfil the gap of previous researchers by analyzing the gender-based occupational segregation and gender earnings differentials across the earnings distribution within the period of three years.

# 1.7 Organization of Study

This study comprises of six chapters. The first chapter incorporates important insights on the research issues which comprises of discussion on female labour force participation in Malaysia, an overview of occupational segregation and gender earnings differentials in Malaysia, objectives and significance of the study. Chapter 2 presents the review of the literature. It starts with discussion on the theoretical literature underlying the occupational gender segregation and gender earnings differentials. Next, it covers the empirical evidences in Malaysia and across other countries representing both issues. The methodological differences are later to be highlighted. Chapter 3 discusses the theoretical framework, model specification and model estimation to analyze the objectives of this study. It further explores the description of the data sets to conduct this research.

The profile of the working-age group between 15-64 years old by gender in the labour market in Malaysia is discussed in Chapter 4. It begins with the discussion of the characteristics of men and women in the working-age group which comprises of individuals who are in the labour force and individuals outside the labour force. In addition, the profile of the employees by gender based on the socio-economic and demographic characteristics is further examined to serve as a backdrop of this study. Subsequently, Chapter 5 analyzes the gender-based occupational segregation in the labour market and gender earnings differentials across the earnings distribution from Malaysian perspective. First and foremost, the index of segregation is applied to examine the level of occupational gender segregation and its determinants across time. Then, the decomposition analysis is utilized to reflect the portion of gender earnings differences contributed by gender differences in the distribution of occupations or within occupational groups. Next, evaluation of the gender earnings differentials across the earnings distribution to signify the existence of glass ceiling or sticky floor in the labour market in Malaysia is performed using the quantile regression technique. Finally, Chapter 5 concludes. The key findings of this study are presented and the discussion of policy implications and recommendation is incorporated in the chapter.

# 1.8 Conclusion

It is no doubt that the issue of gender inequality is crucial to be addressed by the policy makers. In Malaysia, despite the increase of the female enrolment in higher education which surpassed male over these recent years, nevertheless, their engagement in the labour market is still low as compared to neighbourhood countries such as Singapore, Thailand, Philippines and Indonesia (World Bank, 2012). Furthermore, women are still found to be minority in the decision making process in the public and private sector. This research studies two issues of gender inequality in the labour market, namely gender-based occupational segregation and gender earnings differentials across the earnings distribution from Malaysian perspective. The findings of this study nevertheless would be informative and is able to enhance the understanding of the policy makers to formulate more targeted policies in addressing these issues in future.



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