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Greater Mekong Subregion–Phnom Penh Plan for Development Management

# Research Report Series

## Earnings and Quality of Female Labor in the Border Areas of Viet Nam and Implications for Greater Mekong Subregion Cooperation

Nguyen Manh Hung, Nguyen Thi Hong Nhung, and Bui Quang Tuan



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## Contents

List of Tables and Box	v
List of Appendixes	vi
Acknowledgments	vii
Abbreviations	viii
Foreword	ix
Abstract	x
1. Introduction	1
1.1 Research Problem	1
1.2 Research Objectives and Research Questions	2
1.3 Research Hypotheses	3
1.4 Research Methodology	3
2. Overview of Labor Market for Women in the GMS and Viet Nam	4
2.1 GMS Labor Market for Women	4
2.2 Viet Nam's Labor Market for Women	5
2.3 Border-Gate Economic Zones in Viet Nam	7
3. Framework to Evaluate Earnings and Quality of Female Labor	9
3.1 Theory of Labor Quality	9
3.1.1 Human Capital Approach	9
3.1.2 Labor Productivity Approach	11
3.2 Methods to Examine Earnings	12
3.2.1 Basic Mincerian Function	12
3.2.2 Extended Mincerian Function	13
4. Study Sites and Data	14
4.1 Overview of Study Sites	14
4.1.1 Mong Cai	14
4.1.2 Cau Treo	15
4.1.3 Moc Bai	16
4.2 Data	17
4.2.1 Border-Gate Economic Zone Survey	17
4.2.2 Viet Nam Household Living Standard Survey	17
5. Findings and Discussions	18
5.1 Examination of Border-Gate Economic Zone Survey Data	18
5.1.1 Overview of Labor Market Conditions	18
5.2 Examination of Viet Nam Household Living Standard Survey Data	22
5.2.1 Basic Earning Function	25
5.2.2 Extended Earning Function	25
5.2.3 Gender Inequality	27

6.	Policy Implications and Conclusions	27
6.1	Border-Gate Economic Zones and Cross-Border Integration	27
6.1.1	The Border-Gate Economic Zone as a Vehicle of Cross-Border Economic Integration and Development of the Border Economy	27
6.1.2	Effects of Border-Gate Economic Zones and Cross-Border Integration on Earnings and Quality of Female Labor	28
6.1.3	Possible Bottlenecks in Future Development of Border-Gate Economic Zones	29
6.2	Improvement of Labor Quality in the Border-Gate Economic Zones and Border Areas	30
6.2.1	Increasing Communication between Demand and Supply of Labor	30
6.2.2	Creating Sustainable Structural Transformation of the Border-Gate Economic Zone Labor Market	30
6.2.3	Providing Vocational Training and Skills Enhancement for Female Labor	30
6.2.4	Improving Working Conditions for Female Labor to Facilitate Investment in Human Capital	31
6.2.5	Ensuring Gender Equality	31
6.3	Policy Implications for Greater Mekong Subregion Cooperation	32
6.4	Limitations and Future Research	33
	References	34
	Research Team	58

## List of Tables and Box

### Tables

Table 1	Key Indicators of Population and Labor Force in Cambodia, the Lao PDR, Myanmar, Thailand, and Viet Nam	4
Table 2	Key Indicators of Gender Issues for Female Labor in Cambodia, the Lao PDR, Myanmar, Thailand, and Viet Nam	5
Table 3	Percentage of Female Employees in Enterprises (as of December 2008)	6
Table 4	List of 26 Border-Gate Economic Zones of Viet Nam	10
Table 5	Variables in the Extended Mincerian Earning Functions	13
Table 6	Summary Distribution of the Sample	18
Table 7	Monthly Earnings of Labor Before and After the Establishment of the Border-Gate Economic Zones	18
Table 8	Monthly Earnings of Labor That Participate and Do Not Participate in the Economic Activities Associated with the Border-Gate Economic Zones	19
Table 9	Skills of Female Workers Who Participate and Do Not Participate in the Economic Activities Associated with the Border-Gate Economic Zones	19
Table 10	Education Level of Female Labor	20
Table 11	Estimation Results of Basic Earning Function	21
Table 12	Estimation Results of Extended Earning Function	21
Table 13	Estimation Results of Extended Earning Function for Gender	23
Table 14	Earnings per Hour for Persons with Salary and/or Wage	23
Table 15	Employment Composition	24
Table 16	Education Level of Female Labor in Provinces With and Without BEZs	24
Table 17	Estimation Results of Basic Earning Function for VHLSS 2008 Data	25
Table 18	Estimation Results of Extended Earning Function for VHLSS 2008 Data	26
Table 19	Estimation Results of Provinces With and Without BEZs	27
Table 20	Estimation Results of Extended Earning Function for Gender for VHLSS 2008 Data	28

### Box

Labor Regulations in Viet Nam	8
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**List of Appendixes**

Appendix 1	Labor Questionnaire	37
Appendix 2	In-Depth Interview Report	45
Appendix 3	Viet Nam Household Living Standard Survey Data	48
Appendix 4	Border-Gate Economic Zone Survey Data	49
Appendix 5	Diagnostic Test Results	54

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## Abbreviations

ADB	- Asian Development Bank
BEZ	- border-gate economic zone
CLVY	- Cambodia; the Lao People's Democratic Republic; Viet Nam; Yunnan Province, People's Republic of China
D	- dong
GMS	- Greater Mekong Subregion
ILO	- International Labour Organization
OECD	- Organisation for Economic Co-operation and Development
SEZ	- special economic zone
UNDP	- United Nations Development Programme
VHLSS	- Viet Nam Household Living Standard Survey

## Foreword

The Greater Mekong Subregion (GMS) Phnom Penh Plan for Development Management (PPP) was launched in 2002 to build a core of highly trained development managers in the GMS countries who would play a key role in shaping policy choices towards the vision of a more integrated, prosperous, and harmonious subregion. The PPP's programs for capacity building include (i) learning programs for GMS civil servants, (ii) short-term high impact programs for top and senior level officials, and (iii) dialogues on development issues. In 2004, the PPP initiated the publication of the *Journal of GMS Development Studies*—a multidisciplinary publication that seeks to promote better understanding of development issues in the GMS among planners, policy makers, academics, and researchers.

As GMS countries continue to face increasingly complex challenges of economic development, the knowledge base required to inform policy choices has become increasingly important. Learning courses provide the tools but not the empirical basis for designing policy. Moreover, the differential impacts of policies among various publics need to be better understood to assess the appropriate trade-offs. This policy-knowledge gap is more apparent in the less developed GMS countries where research institutions have limited capacities and resources to conduct policy-based research. Recognizing this, and in an effort to bring its capacity building goal to a higher plane, the PPP Research Program was launched in March 2009 to help promote a more effective link between knowledge generation and policy formulation.

The PPP Research Program aims to engage research institutions in the policy process by supporting scholarly works that would bring multifaceted perspectives on development issues and provide new knowledge on the impacts and consequences of policy choices. By providing resources and opportunities to the GMS research institutions, the PPP Research Program could be a potent and active partner in the development process.

To carry out these objectives, the PPP Research Program provides financial support (grants) and technical assistance to indigenous GMS research institutions and think tanks for conducting research on subregional development issues. The grants are directed to research projects that tackle subregional issues confronting the GMS; this subregional focus intends to ensure that the PPP Research Program's outputs would be useful to the GMS Program agenda, and would not overlap with other research support provided to the study of national development issues.

The PPP Research Report Series features the scholarly works that have been supported by the PPP Research Program. It is hoped that by disseminating the research results to a wide audience, the breadth and depth of the GMS development challenges can be better appreciated and understood by policy makers, implementers, and other stakeholders in the subregion. Through this, the PPP Research Program would have made a modest contribution in responding to the opportunities and challenges brought about by greater economic integration in the subregion.

Alfredo Perdiguero  
PPP Program Manager

## **Abstract**

Border-gate economic zones (BEZs) are symbols of the increased cross-border exchange and the development initiative of the border areas in the Greater Mekong Subregion (GMS). Over the past decade, BEZs have been able to attract a great number of women workers seeking for new job opportunities. Using survey data collected at the BEZs of Mong Cai, Cau Treo, and Moc Bai in Viet Nam and from the Viet Nam Household Living Standard Survey (VHLSS) to examine the factors that influence earnings in the BEZs and in the border provinces that host the BEZs and those where no BEZs are present, the research finds that the BEZs and cross-border integration increase the earnings of female labor. However, there seems to be a missing link between the establishment of the BEZs and cross-border integration and the improvement of female labor quality. Poor labor quality, and the predominance of the exploitative factors exaggerated by the unsustainable structure of the border-gate economy, are likely to make BEZs vulnerable areas of the GMS labor market where women's rights are easily violated and female workers have little awareness and self-estimation of their working status.

# 1. Introduction

## 1.1 Research Problem

The border-gate economic zone (BEZ)—a kind of special economic zone in border-gate areas—has become a symbol of the increase in cross-border exchange. In the Greater Mekong Subregion (GMS), BEZs have come to symbolize initiatives to develop border areas. Since the early 2000s, the BEZs in the GMS quickly attracted a great number of women workers seeking new job opportunities.

There is an abundance of literature on special economic zones (SEZs) and their other forms, such as export processing zones and industrial zones, which are found in developing countries like Bangladesh, the People's Republic of China (PRC), India, Malaysia, the Philippines, Sri Lanka, and Thailand, and in Africa and Latin America. Assessments and remarks on the role and impact of SEZs are varied, ranging from positive to negative in almost all of their aspects, including economic growth, trade, investment, labor, productivity, environment, and social impacts (Aggarwal 2007, International Labour Organization [ILO] 1998 and 2003, Heron 2004). More relevant and physically closer to Viet Nam and the lower-income countries in the GMS, such as Cambodia, the Lao People's Democratic Republic (Lao PDR), Viet Nam, and Yunnan Province in the PRC (CLVY), is the literature on the SEZs of the PRC. In the PRC, SEZs are understood to be a land area that is accorded a special status and preferential treatment to attract foreign capital, technology, and management methods to develop export- and foreign-oriented business activities (Hoa 2009). At the beginning of the PRC's reform period, the coastal SEZs were regarded as laboratories for the implementation of Deng Xiaoping's open-door policy; and they had successfully created a development miracle.

With only a few exceptions, existing literature tends to concur with the positive employment-generation effect of SEZs (ILO 1998). Jobs can be created in three ways: direct employment for skilled and unskilled labor, indirect employment, and employment for women (Aggarwal 2007: 2).

It is theoretically assumed that SEZs can contribute positively to human capital formation (Aggarwal 2007, Kusago and Tzannatos 1998, Johansson 1994). For example, at the individual level, it is believed that as people have jobs and more income, they will invest more in education and training, thus improving labor quality and human capital development. At the firm level, workers can be provided with on-the-job training. In addition, skills formation for unskilled workers can also occur through assimilation of industrial discipline. The presence of SEZs brings about an upgrading of facilities to raise human capital, such as schools and hospitals, that cater to the needs of the zone's units. Foreign investment in the SEZs can bring in technology transfer and managerial and other skills and training for staff.

In contrast, a number of researches have proved that the additional job opportunities in the SEZs are not necessarily associated with an increase in income, human capital, and labor skills. Empirical studies indicate that the actual impact of the SEZs on wages is ambiguous. Wage gaps between SEZs and non-SEZs vary across zones in the same country and across sectors in the same zone, as well as between countries (Kusago and Tzannatos 1998, Aggarwal 2007). There is also a large body of literature that criticizes the working conditions in SEZs, referring to violation of workers' rights, compulsory overtime, job insecurity, lack of safety, use of pressure tactics to meet deadlines, and sexual harassment of female workers (ILO 1998 and 2003).

There are many reasons for this. For instance, the SEZs may be target-oriented workplaces where facilities for raising human capital, such as schools, training centers, hospitals, and clinics, are ignored (Aggarwal 2007). Even when those facilities are adequate, it is observed that workers may not want or are not able to participate in training programs to improve their skills, simply because (i) training is not

needed for their job, or firms only need low-skilled workers; (ii) workers do not want to forfeit time spent earning money; or (iii) they do not have time for training and education. In many cases, the presence of SEZs only creates more opportunities for low-paid jobs that do not contribute to raising the income of labor. Labor laws are not extended to the zones' firms; and where these laws are applicable, they are not strictly enforced (Aggarwal 2007). Thus, the increase in earnings and improvement of labor skills in the SEZs depend more on other characteristics of the local labor market and local conditions than on incomes and job opportunities.

Looking at the local context, the above critical line of argument may theoretically presuppose that the quality of female labor in the BEZs of CLVY is low. This may be caused by a number of factors pertinent to BEZs located in poor, remote, and mountainous border areas. Among such factors are the limited affordability of education and training for women because of extreme poverty; poor infrastructure, including poor educational and health care facilities; and the prevailing social and cultural customs of the indigenous communities that are biased against women. Migration is also an important factor that affects female labor quality given that most female migrants come from less developed areas where they make up a sizeable portion of the poor and unskilled labor group. Because of their unsettled life, temporary employment, and, very often, poverty, migrants pay little attention to the benefits of education and health care. In addition, because of the migrants' temporary labor status, labor quality is less of a concern for the employers and local authorities.

Existing literature can help to understand the situation of female labor in the SEZs within a broader international context. However, it does not explain the situation of female labor in BEZs in the GMS because these BEZs bear some characteristics that are different from those of SEZs.

First, the BEZs are not strictly target-oriented zones with primary specific purposes, such as experimenting with a new policy (e.g., a laboratory for open-door policies, as in the case of the first generation of the PRC SEZs in the late 1970s and early 1980s) or exporting (e.g., export processing zones in other developing countries) which may subsequently sacrifice working conditions and human development opportunities.

Second, the BEZs do not always have an advantageous location, for example, along the coast or close to the big cities. On the contrary, the BEZs are often situated within a poor and less developed border region, where traditional agricultural activities are predominant. They serve not only as the source of economic growth but also as the development hub of the surrounding areas by providing crucial facilities, such as schools, training centers, hospitals, and clinics, to raise human capital.

Third, the special status in terms of free trade and investment accorded to BEZs is intended to serve their aim of development and poverty reduction in the border areas. The establishment of BEZs brings about the integration of the border economy, not only to create jobs and incomes, but also to help improve labor skills in the less developed border areas by shifting labor away from traditional agriculture to services and industries and by bringing women outside the home to work.

The above viewpoints suggest that while the positive impact of BEZs on female employment generation is quite clear, their impact on the earnings and quality of female labor still needs to be examined.

## **1.2 Research Objectives and Research Questions**

This research aims to

- assess the effects of the BEZs and, to a larger extent, cross-border integration on the earnings

- and the quality of female labor in the border areas of Viet Nam;
- provide policy recommendations to increase the earnings and improve the quality of female labor in the border areas of Viet Nam, and thereby contribute to poverty reduction and empowerment of women in the increasingly integrated labor market in the border areas; and
- draw policy implications for GMS cooperation with regard to the impact of the BEZs, and, to a larger extent, cross-border integration, on the earnings and quality of female labor in the border areas.

The research asks the following questions:

- How do BEZs and cross-border integration affect the earnings and quality of female labor in the border economy?
- What lessons can Viet Nam offer to GMS cooperation regarding the effects of BEZs and cross-border integration on earnings and quality of female labor in the border areas?

### 1.3 Research Hypotheses

The research proposes that BEZs

- i. increase the earnings of female labor, and
- ii. tend to narrow the income gap between male and female labor.

Moreover, since the BEZs can be seen as a proxy for cross-border integration of the border economy, by comparing the border provinces that host the BEZs with those that do not, the research examines the following analogous propositions:

- i. cross-border integration increases the earnings of female labor, and
- ii. cross-border integration tends to narrow the income gap between male and female labor.

Since earnings are closely related to labor quality, the research also hypothetically suggests that the BEZs, in particular, and cross-border integration, in general, increase the quality of female labor in the border areas.

### 1.4 Research Methodology

The research uses both quantitative and qualitative approaches to examine the earnings and quality of labor and female labor, as well as factors that influence them in the border provinces that host the BEZs and those where no BEZs are present. The data used in the analysis were

- i. collected through the survey at the BEZs, and
- ii. from the Viet Nam Household Living Standard Survey (VHLSS).

The extended Mincerian earnings functions are used to examine the impact of different factors on the earnings of female labor in the labor market. The research also uses qualitative data from in-depth interviews to support the quantitative analysis with richer information.

The survey is conducted in three BEZs in Viet Nam: Mong Cai, Cau Treo, and Moc Bai. These are three of nine major BEZs where international border gates are located and which are accorded priority by the Government of Viet Nam in terms of infrastructure development, managerial mechanisms, and administrative status. They represent not only diverse geographic locations (in the north and bordering

the PRC, in the center and bordering the Lao PDR, and in the south and bordering Cambodia), but they also encompass examples of other factors that influence the quality of local female labor force, such as the level of economic development, variations in economic activities, dynamics of cross-border transactions, local social and communal environment, and migration patterns.

## 2. Overview of Labor Market for Women in the GMS and Viet Nam

### 2.1 GMS Labor Market for Women

During nearly 2 decades of socioeconomic liberalization, the number of women in the labor market of the GMS has increased rapidly. Women now account for more than 50% of the working-age population (15–64 years of age) in the GMS. More than half of them participate in the labor force. The economic activity rate of women aged 15 and over is as high as 74.4% in Cambodia, 72.2% in Viet Nam, 68.2% in Myanmar, 65.6% in Thailand, and 54.0% in the Lao PDR (Table 1).

Although women in the GMS are working outside the home more than ever, *the quality of female labor is still inadequate to meet the demands of the labor market*. Female adult literacy rates (age 15 and over) are still as low as 64.1% in Cambodia and just under 61% in the Lao PDR (Table 2). Even among the younger generation (15–24 years of age) in the Lao PDR, the female literacy rate is only 74.7%. In terms of skills, only 33% of Cambodian women who participate in the labor market are professional and technical workers (United Nations Development Programme [UNDP] *Human Development Report 2007/2008*).

**Table 1 Key Indicators of Population and Labor Force in Cambodia, the Lao PDR, Myanmar, Thailand, and Viet Nam**

	1	2	3	4	5
Countries	Population (million)	Total Labor Force (million)	Population Aged 15–64 (%)	Women in Population Aged 15–64 (%)	Female Economic Activity Rate (%)
Cambodia	14.49	8.6 (2008)	63.8	51.3	74.4
Lao PDR	6.83	2.1 (2006)	56.1	50.5	54.0
Myanmar	48.10	30.0 (2008)	69.3	50.5	68.2
Thailand	65.90	37.8 (2008)	70.5	50.6	65.6
Viet Nam	86.96	47.4 (2008)	69.4	50.2	72.2

Lao PDR = Lao People's Democratic Republic.

Sources: Indicators 1, 2, and 3: CIA World Fact Book, figures are estimated for 2009 or as specified in table. Indicator 4: Authors' calculation from CIA World Fact Book 2009. Indicator 5: United Nations Development Programme. *Human Development Report 2007/2008*, figures are for 2005.

The poor quality of the female labor force is due to a number of factors, such as lack of opportunity to receive adequate basic education, limited access to appropriate training, physical constraints, barriers within the family, and communes and workplaces that deprive women of chances to improve their skills and incentives to work. Statistical data in the GMS show that the labor market discriminates against women in various ways. Women are generally less educated than men and have fewer opportunities to join the working labor force. Once in the labor market, they earn less than men and, with the exception of Thailand, they are often subjected to greater risk of unemployment at times of economic difficulty. Women, in general, and female workers, in particular, have not been empowered in the GMS (Table 2).

**Table 2 Key Indicators of Gender Issues for Female Labor in Cambodia, the Lao PDR, Myanmar, Thailand, and Viet Nam**

	Gender Empowerment Measure Rank (out of 93 countries)	Female Economic Activity Rate as % of Male Rate (aged 15 and older), 2005	Ratio of Estimated Female to Male Earned Income, 2005	Female Unemployment Rate as % of Male Rate, 1996–2005	Female Literacy Rate (% aged 15 and older), 2005	Ratio of Female Literacy Rate to Male Literacy Rate (aged 15 and older), 2005
Cambodia	83	93	0.74	147	64.1	0.76
Lao PDR	...	67	0.51	...	60.9	0.79
Myanmar	...	79	...	...	86.4	0.92
Thailand	73	81	0.62	80	90.5	0.95
Viet Nam	52	92	0.70	131	86.9	0.93

... = data not available, Lao PDR = Lao People's Democratic Republic.

Source: United Nations Development Programme. *Human Development Report, 2007/2008*.

Low skills and discrimination have placed female workers in the most exploitative or lowest value-added sectors of the GMS economy. For example, 89% of female workers in the Lao PDR are in the agriculture sector and only 8% are in the service economy. This compares with 75% in agriculture and 15% in services in Cambodia (UNDP *Human Development Report 2007/2008*). Although rapid regional and international economic integration has brought many job opportunities to women in the GMS, these opportunities are unequal, especially in terms of their outcomes. Women are prone to becoming victims of exploitation. In Cambodia, for instance, over 85% of workers in foreign-invested industries—mostly garments—are women, and over 90% of them come from the rural areas (ADB Institute 2006). Foreign investment is facilitating a massive wave of female migrants from the countryside, and this trend has become a source of social imbalance. While increased subregional integration creates greater opportunities for cross-border employment, it is often associated with migration or trafficking of increasing numbers of women to work in vulnerable sectors, such as the entertainment industry.

In the GMS, border-crossing points are important nodes in a subregionally integrated economy and labor market. Since the mid-1990s, GMS governments have established BEZs, which are SEZs in the border-gate areas, to boost the socioeconomic development of backward border regions and to encourage cross-border economic activities. The PRC and Viet Nam commenced these efforts by establishing their first pair of BEZs in 1996. Since then, Viet Nam has created 25 more BEZs and has become an active BEZ proponent in the GMS. The Government of Cambodia has approved 21 SEZs along the border between Thailand and Viet Nam, 6 of which have commenced operations. To catch up with this trend, the Lao PDR has also begun the construction of its first SEZ in Savannakhet Province.

## 2.2 Viet Nam's Labor Market for Women

Women account for 48.6% of the total labor force in Viet Nam. According to the Mid-Term Review Report of the implementation of the Five-Year (2006–2010) Socio-Economic Development Plan, in 2007 the labor force participation rate of women was 65.4% compared with 74.0% for men. In 2007, Viet Nam's Gender Development Index was 0.73, and it ranked 91st out of 157 countries. In 2003, when Viet Nam's Gender Development Index was 0.70, it ranked 83rd out of 177 countries, indicating that while the score has risen, the rank has fallen.



At first glance, the quality of Viet Nam's female labor force can be assessed in terms of employment distribution. The latest data show that around 70%–80% of women work in the informal sector of the economy; 60% are in the agriculture sector; and 20% are in non-agriculture sectors, which are mostly affiliated with micro production and service units (Linh 2008). In the formal sector, most female employees work in labor-intensive enterprises, such as production of food and beverages, apparel, and luggage; tanning and dyeing of fur; trade; and construction. Only a very small percentage of women work in high value-added and high-skill enterprises in fields such as science and technology and education (Table 3). In 2007, the earnings of women were only 74.5% that of men in the same jobs, 81.5% that of men for those with middle-range skills, 90.1% that of men for those with vocational training, and 86.0% that of men for university graduates (General Statistics Office 2007).

**Table 3 Percentage of Female Employees in Enterprises (as of December 2008)**

<b>Enterprises by Sectors</b>	<b>Percentage (Total = 100%)</b>
Agriculture and forestry	3.17
Fishery	0.17
Mining and quarrying	1.09
Manufacturing	66.12
Electricity, gas, and water supply	0.75
Construction	4.84
Trade, repair of motor vehicles and household goods	10.78
Hotel and restaurant	2.43
Transport, storage, and communications	2.95
Financial intermediation	2.91
Science and technology activities	0.02
Activities related to real estate and consultancy	3.12
Education and training	0.31
Health and social work	0.24
Cultural and sport activities	0.35
Personal and public services	0.74
Private households with employed persons	0.00

Source: Authors' calculation based on data of the General Statistics Office (GSO); 2010. *Statistical Yearbook 2009*. GSO. Ha Noi: Statistical Publishing House.

As in other GMS countries, there are many reasons for the low quality of female labor in Viet Nam. These include limited access to education and training; gender discrimination in families, communities, and workplaces that create barriers for women to increase their education and skills, to have better jobs and working conditions; poor implementation or absence of regulations and laws that protect female labor; and conformance of women to their situation, regions, and areas (urban and rural).

The UNDP *Human Development Report 2007/2008* shows that the literacy rate of women aged 15 and over was 86.9% in 2005, or 93% of the rate for men. Only 13.0% of women enter tertiary education, compared with 18.4% of men. In the labor market, the ratio of trained female workers to male workers is approximately one third, and the average hourly wage of female workers is 80% of the male average hourly wage (Linh 2008). Within the social and domestic environment, the results of the Family Survey in 2006 show that 3.4% of husbands fight with their wives, 15.1% of husbands abuse their wives, and 7.2% of husbands coerce their wives. Family violence is caused by drunkenness, differences in

opinion in business, economic difficulties, conflict in bringing up children, addiction, and gambling. There is discrimination between sons and daughters and the work of husband and wife within the family. Girls from minority ethnic groups have extremely low educational attainment due to economic barriers, the need to work, and parents' and girls' perceptions of the value of education (Ministry of Planning and Investment 2009).

Since the early 2000s, thanks to the promulgation of the Labor Code, the Law on Gender Equality, the National Plan of Action for the Advancement of Women, 2006–2010, and other policies on gender and the family, together with efforts to achieve the Millennium Development Goal to promote gender equality and women's empowerment, the treatment and quality of female labor have improved in many respects. For example, the Labor Code and the Law on Gender Equality ensure gender and wage equality at work. Laws also guarantee gender equality in access to production resources, credit, employment, property, and inheritance. Nonetheless, the pace of women's advancement remains slow. Laws lack implementing guidelines, some policies that give priority to women appear unfeasible, and the implementation of laws and policies is poor, especially in remote and backward areas.

### **2.3 Border-Gate Economic Zones in Viet Nam**

The development of border-gate economy is vital for the socioeconomic development of border areas which lag behind other regions. It is closely tied to the dynamism of cross-border economic transactions between Viet Nam and its neighbors in the GMS (Cambodia, Yunnan Province and Guangxi Zhuang Autonomous Region of the PRC, and the Lao PDR). For this reason, Viet Nam has established 26 BEZs along its borders with Cambodia, the PRC, and the Lao PDR (Table 4); and it plans to establish 4 more zones by 2020. A BEZ, as defined in Government Decree 29/2008/ND-CP, is an economic zone located in the land-border region where there is an international or main checkpoint or more. It encompasses not only the border gate or gates, but also the contiguous administrative areas which are spatially inseparable. The geographic area of each BEZ is specifically defined in the decision issued by the Prime Minister or the government establishing it. BEZs are granted special administrative and regulatory status suited to the local conditions to ensure rapid socioeconomic development and strong spillover effects in the surrounding areas.

Since the establishment of the first BEZ in 1996, BEZs have made a significant contribution to the socioeconomic development of the border areas of Viet Nam, as well as to the economic relations between Viet Nam and its neighboring countries. In general, the border economy is most dynamic and fast-growing in the north, followed by the south, and the center. The BEZs in the northern frontier, such as Lao Cai, Mong Cai, and Lang Son, serve as the bridges for economic exchange between Viet Nam and the PRC. As of 2006, eight BEZs in the northern provinces contributed 85.4% of the government budget, 80.0% of the tariff revenue, and 59.8% (\$2.1 billion) of the cross-border trade turnover of all BEZs combined. These BEZs also attracted 86.8% (D4.9 trillion or \$308 million) of total investment in all BEZs. In Lao Cai BEZ, for example, the volume of cross-border trade increased to \$243 million in 2005 from \$106 million in 2001.

Economic activity has also grown rapidly, though to a lesser degree, along the border with the Lao PDR because of the presence of BEZs. In 2006, the BEZs in the central provinces of Viet Nam accounted for 8.6% (D466 billion or \$29.1 million) of the total contribution by all BEZs to the government budget. Most cross-border economic activities in the BEZs along the border with the Lao PDR are concentrated in Lao Bao (Quang Tri Province), Cau Treo (Ha Tinh Province), and Bo Y (Kontum Province), which are strategically located along major roads.

### **Labor Regulations in Viet Nam**

The 1995 Labor Code of Viet Nam and the 2002 Revised Labor Code have amended sections that benefit employees, enhance respect of labor rights, and provide better working conditions.

The revised Labor Code, which took effect on 1 January 2003, provides the regulatory framework for the rights and obligations of workers and employers, labor standards, and labor utilization. In the amendment, the protection of female workers is included and has become a priority goal.

Chapter X, "Separate Provisions on Female Employees," of the 2002 Revised Labor Code sets out special provisions concerning the rights of female workers. Notably, Article 109 stipulates that the State must ensure the right to work of women on the basis of equality in every respect with men. The State must also adopt measures to improve women's employment opportunities, working conditions, and skill levels. The authorities must also organize training to provide female workers with additional skills as a means to facilitate their employment in suitable jobs. Moreover, Section 2, Article 110 emphasizes that enterprises will receive preferential treatment and reduced taxes from the State if they employ a high number of female workers.

The 2002 Revised Labor Code also prohibits discrimination against a female employee, and encourages the implementation of the principle of equality between males and females in respect of recruitment, utilization, wage increases, and wages (Section 1, Article 111). Women with equal qualifications to male candidates must receive priority in recruitment (Section 2, Article 111); while marriage, pregnancy, maternity leave, or the need to nurse a child under 12 months of age are not valid reasons for dismissal (Section 3, Article 111).

According to Section 1, Article 113, pregnant workers must not be employed in hard or dangerous work, or in work that will expose them to toxic substances harmful to child bearing. Women also have the right to unilaterally terminate their labor contract without being liable to compensation if continued employment would adversely affect the fetus (Article 112). Women from the seventh month of pregnancy or nursing a child under 12 months of age are excluded from overtime and night work or work in distant places (Section 1, Article 115). Time off for 60 minutes per day with full pay must be granted to women nursing a child under 12 months of age, and for 30 minutes per day with full pay for women during their menstruation period (Section 3, Article 115). Facilities, such as cloakrooms, bathrooms, and kindergartens, must be made available where women workers are employed (Article 116).

Paid maternity leave (prenatal and postnatal) from 4 to 6 months must be granted (Section 1, Article 114). After this period, optional additional leave without pay must also be offered (Section 2, Article 114). Furthermore, on returning to work following childbirth, female workers are guaranteed employment (Section 2, Article 117). Maternity leave, in conjunction with social security benefits, is set out in Chapter XII. Notably, Article 144 states that, during the period of maternity leave, a female worker who has paid social insurance contributions is entitled to social security benefit equal to 100% of her wage and to an additional allowance of 1-month salary, in respect of her first and second child. Importantly, Section 1, Article 118 informs that all decisions affecting the rights and benefits of female employees must be made in consultation with the representative of the female employees.

Source: National Assembly of Viet Nam. 2002. *Labor Code (Amended and Supplemented)*. Ha Noi.

The BEZs on the border with Cambodia contributed 34.4% (\$1.2 billion) of the total cross-border trade turnover, 6% (D326 billion or \$20.4 million) of the government budget, and 10.2% of the tariff revenue of all BEZs in 2006. In the southern provinces, cross-border economic activities are most active in the BEZs of Moc Bai (Tay Ninh Province), and An Giang (An Giang Province) (Hue 2009). Thus, BEZs have become the vehicles for subregional and cross-border integration of the border provinces of Viet Nam.

The dynamic economic activities of the BEZs in Viet Nam and other GMS countries, especially those linked to cross-border trade, have made them an attractive place for employment. Women now have more job opportunities in the booming local service sector and newly established factories in the industrial zones. Yet, the BEZs are also likely to host a large number of unskilled female workers due to the particular socioeconomic conditions of the zones' location. First, the BEZs are often located in less developed surrounding regions where poor infrastructure facilities, such as schools and hospitals, have reduced the quality of the labor supply. Second, poverty and often the customs of the indigenous communities in the border areas have been the main causes of high school dropout rates among female children who join the labor force early, and this hinders adequate participation of women in skills training. Third, the BEZs have diverse economic activities, especially low-paid simple services, that suit and attract unskilled female workers. There are large numbers of female workers in the informal sector, such as in black market money changers, transport of smuggled goods across the border, or karaoke bars and massage parlors, where they are easily exploited and sexually abused.

If the exploitative sectors of the border-gate economy are likely to provide more job opportunities for unskilled women, they destroy the incentive to improve the quality of female labor; and, more importantly, they are likely to become the source of social disruption and violation of women's rights in the border-gate areas.

### **3. Framework to Evaluate Earnings and Quality of Female Labor**

#### **3.1 Theory of Labor Quality**

There are two popular ways of defining the quality of labor. One is based on the human capital approach, while the other is based on labor productivity approach.

##### **3.1.1 Human Capital Approach**

Adam Smith (1776) developed the concept of human capital as the acquired and useful abilities of the inhabitants or members of society. The acquisition of such talents, through education, study, or apprenticeship, always costs a real expense, which is a fixed capital and realized in his person. The improved dexterity of a workman may be considered as a machine or instrument of trade which facilitates and abridges labor, and which, though it costs a certain expense, repays that expense with a profit. In short, Adam Smith saw human capital as skills, dexterity (physical, intellectual, psychological, etc.), and judgment.

In 1928, Arthur Cecil Pigou tried to define more clearly the term *human capital* when he made a comparison between human capital and material investment (Pigou 1928). However, the most well-known concept of human capital belongs to Jacob Mincer and Gary Becker. Becker (1964) defines human capital similar to physical means of production, e.g., factories and machines: one can invest in human capital (via education, training, medical treatment) and one's outputs depend partly on the rate of return on the human capital one owns. Human capital is substitutable, but not transferable like land, labor, or fixed capital.

**Table 4 List of 26 Border-Gate Economic Zones of Viet Nam**

No.	BEZs	Province	Border with	Established by Decision
1	Dong Dang–Lang Son <sup>a</sup>	Lang Son	PRC	138/2008/QD-TTg and 1055/2010/QD-TTg
2	Chi Ma	Lang Son	PRC	185/2001/QD-TTg
3	Lao Cai <sup>a</sup>	Lao Cai	PRC	44/2008/QD-TTg
4	Mong Cai <sup>a</sup>	Quang Ninh	PRC	675/1996/QD-TTg
5	North Phong Sinh	Quang Ninh	PRC	115/2002/QD-TTg
6	Hoanh Mo–Dong Van	Quang Ninh	PRC	115/2002/QD-TTg
7	Thanh Thuy	Ha Giang	PRC	136/2009/QD-TTg
8	Ma Lu Thang	Lai Chau	PRC	187/2001/QD-TTg
9	Ta Lung	Cao Bang	PRC	171/1998/QD-TTg
10	Tra Linh	Cao Bang	PRC	171/1998/QD-TTg
11	Soc Giang	Cao Bang	PRC	171/1998/QD-TTg
12	Cau Treo <sup>a</sup>	Ha Tinh	Lao PDR	177/1998/QD-TTg
13	Cha Lo	Quang Binh	Lao PDR	137/2002/QD-TTg
14	Nam Giang	Quang Nam	Lao PDR	211/2006/QD-TTg
15	Bo Y <sup>a</sup>	KonTum	Lao PDR	217/2005/QD-TTg
16	Lao Bao <sup>a</sup>	Quang Tri	Lao PDR	219/1998/QD-TTg
17	A Dot	Hue	Lao PDR	64/2008/QD-TTg
18	Na Meo	Thanh Hoa	Lao PDR	138/2008/QD-TTg
19	Road 19	Gia Lai	Cambodia	139/2001/QD-TTg
20	Bonue	Binh Phuoc	Cambodia	3/2005/QD-TTg
21	Moc Bai <sup>a</sup>	Tay Ninh	Cambodia	210/1998/QD-TTg
22	Xa Mat	Tay Ninh	Cambodia	186/2003/QD-TTg
23	Dong Thap <sup>a</sup>	Dong Thap	Cambodia	166/2008/QD-TTg
24	An Giang (Tinh Bien, Vinh Xuong, and Khanh Binh BEZs) <sup>a</sup>	An Giang	Cambodia	65/2007/QD-TTg
25	Ha Tien	Kien Giang	Cambodia	32/2000/QD-TTg
26	Long An	Long An	Cambodia	7/2010/QD-TTg

BEZ = border-gate economic zone, PRC = People's Republic of China, Lao PDR = Lao People's Democratic Republic, <sup>a</sup> Priority BEZ.

Sources: Decision 52/2008/QD-TTg, and Decision 64/2008/QD-TTg by the Government of Viet Nam.

The concept of human capital can also be found in many modern studies. For example, Hersch (1991) states that human capital refers to work experience and education, in which work experience is measured by years of full-time work experience and formal education is accounted for in years. Supporting this point, Jacobsen (1998) emphasizes that anything translated into higher productivity, including education and training, physical fitness, and health, is considered human capital. In World Bank papers and researches, human capital is defined as the skills and capacities embodied in people (World Bank 1995).

In general, most studies describe human capital with reference to its three main components: ability; qualifications; and experience and knowledge acquired through education and skills, and expertise acquired through on-the-job training.

In the theory of human capital, educational attainment and technical skills were for a long time the only two proxies of the quality of the labor force. However, the concept of labor quality has been developed continuously to reflect socioeconomic changes. For example, Galenson and Pyatt (1966) stipulated that the quality of labor was measured by education, health, housing, and social security. Education was measured by school enrollment, including the percentage of the respective age group in primary, secondary, vocational, and higher schools; health was measured in terms of infant mortality, population per physician and per hospital bed, and per capita calorie intake; housing was measured as the per capita dwellings and ratio of investment in dwellings to gross national product; and social security was measured by the ratio of benefit to national income and average per capita social security expenditure. All of these measurable factors were applied for 52 countries, including those that are industrially advanced and those that are less developed.

There are some criteria suggested by the World Bank in various issues of World Development Indicators to assess labor quality, such as educational system and human resource training; the availability of laborers as well as administrative managers who are of high quality and level of education; and proficiency in English, technique, and advanced technology. Ward (1997) argues that in the new forms of production organization, labor quality goes beyond educational attainment and technical skills alone. In today's business environment, personal skills and attitudes of workers are also important. Thus, terms such as "adaptability" and "ability to work in teams," which are social aspects of labor, began to be used more in assessing the human resources of companies. A recent approach developed by San et al (2006) incorporates seven major factors to compile the quality of labor index: education, training, labor productivity, changes in the structure of the labor force, safety and health, work ethic and industrial relations, and labor-management models and the quality of the workers' livelihood.

### 3.1.2 Labor Productivity Approach

Samuelson and Nordhaus define labor productivity as *total output divided by labor inputs* (Koch and McGrath 1996). As such, achieving a high degree of labor productivity is a desirable outcome. If a firm's strategy is effective, it should be able to find good people and put them to good use. A firm that excels in the creation of human capital resources should have people who are highly productive relative to the competition.

The Organisation for Economic Co-operation and Development (OECD 2001) defines labor productivity as *the ratio of a volume measure of output to a volume measure of input*. Volume measures of output are normally gross domestic product or gross value added, expressed at constant prices, i.e., adjusted for inflation. The three most commonly used measures of input are hours worked, workforce jobs, and number of people in employment. However, Horowitz and Sherman (1980) mention that labor productivity is measured by the *contemporaneous earnings and the physical measure* (e.g., the condition of equipment the workers cared for). Labor productivity can be measured in physical terms or in price terms. In some ways, the physical measure is preferable than the earnings measure of individual output.

Labor productivity will vary as a function of input factors and the efficiency with which the factors of production are used (total factor productivity). So, two firms or countries may have equal total factor productivity, but because one has more capital to use, its labor productivity will be higher.

While the output produced is generally measurable in the private sector, it may be difficult to measure in the public sector or in nongovernment organizations. The input may be more difficult to measure in an unbiased way as soon as we move away from the idea of homogeneous labor (per worker or per worker-hour). This is because productivity can refer to the qualitative, rather than quantitative, dimensions of

labor input. This insight becomes particularly important when measuring productivity in services. For example, management may be preoccupied with the productivity of employees, but the productivity gains of management itself might be very difficult to prove.

The advantage of the human capital approach is the ability to take into account various dimensions of labor quality, whereas the advantage of the productivity approach (e.g., expressing labor productivity as per worker-hour) is the ability to produce a concise and comparable statistics. However, in practice, collecting reliable data in both cases is a difficult, sometimes impossible, exercise, especially in the informal sector of the BEZs.

Thus, at the first level, our research focuses on the earnings of female labor and factors that influence earnings. At the second level, earnings are related to labor quality in several ways:

First, earnings can be used as proxy for labor quality because higher labor quality is associated with higher pay. For example, labor in sectors that require more skills tends to receive higher pay than labor in sectors that need lesser skills, and labor with more sophisticated skills tends to be paid more than those with simple skills in the same sector.

Second, it can be logically and practically assumed that as people have more income, they will invest more in factors of human capital (e.g., education, training, and health care), therefore, leading to the improvement of labor quality.

Third, even though people with more income will not always invest more in factors of human capital, this is generally because they fail to recognize the benefits of increased earnings. This can be overcome by constructing a facilitating environment and developing a proper mechanism to translate the increase in earnings into an increase in labor quality.

## 3.2 Methods to Examine Earnings

### 3.2.1 Basic Mincerian Function

The basic earning model developed by Jacop Mincer (1974) can be regarded as a cornerstone of empirical labor economics. The model captures the influence of education (i.e., years of schooling) and on-the-job training (i.e., learning from experience) on earnings of labor. Moreover, Mincer (1974) developed the rationale for the standard quadratic form for the experience variable. The function could be expressed as

$$\ln Y_i = \alpha + \beta_1 S_i + \beta_2 EXP_i + \beta_3 EXP_i^2 + \varepsilon_i \quad (\text{Equation 1})$$

where:

$\ln Y_i$ : logarithm of hourly wage of labor of individual  $i$ ,  
 $S_i$ : number of years of schooling by individual  $i$ ,  
 $EXP_i$ : years of experience of individual  $i$ , and  
 $EXP_i^2$ : square of year of experience of individual  $i$ .

In this function, the coefficient of years of schooling ( $\beta_1$ ) can be interpreted as the average private rate of return to one additional year of schooling, regardless of the level of schooling.

### 3.2.2 Extended Mincerian Function

The basic Mincerian function can be developed to incorporate and quantify the effect of any potential factor on labor productivity. This improved function could be expressed as

$$\ln Y_i = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \dots + \beta_n X_{in} + \varepsilon_i \quad (\text{Equation 2})$$

in which,  $X_i$  are the potential determinants of labor productivity in the regression.  $X_i$  can be any variable, such as *years of education, potential experience, region, area, migrant, ethnicity, marital status, or occupation*.

By assessing the statistical significance of the variables in the regression, it is possible to compare and identify which factors would play an important role in determining labor earnings. Based on the extended Mincerian earning function, we develop the econometric models to examine the factors that can have impact on the earnings of female workers, using primary survey data and data from the 2008 Viet Nam Household Living Standard Survey. Table 5 lists the variables used in the earning functions.

**Table 5 Variables in the Extended Mincerian Earning Functions**

Variable	Explanation
Earning	Total earning of individual per month
L_Earning	Log form of Earning
BEZ	Dummy variable, for the survey data: equal to 0 for an individual who does not participate in the economic activities associated with the BEZ; and 1 for an individual who participates in the economic activities associated with the BEZ.
Integration	Dummy variable, for the VHLSS data: equal to 0 for an individual in provinces that do not host the BEZs and 1 for an individual in provinces that host the BEZs
Gender	Dummy variable, equal to 0 for male and 1 for female
Age	Age of individual
YoEdu	Number of years of schooling for an individual. YoEdu is converted from levels of education: primary to 5, secondary to 9, high school to 12, vocational to 14, university to 16, masteral to 18, doctoral to 22.
EduExp	Education expenditure of individual
Exper	Years of experience is calculated from age and education as follows: Exper = age – years of schooling – age of starting school. In Viet Nam, since by law, school starts at the age of 6, Exper = age – year of schooling – 6
Exper <sup>2</sup>	Square of Exper
Area	Dummy variable, equal to 0 for rural and 1 for urban
Skill	Dummy variable, equal to 0 for unskilled workers (who work in sectors or jobs that need only low, simple skills) and 1 for skilled workers (who work in sectors or jobs that require more sophisticated skills)

BEZ = border-gate economic zone, VHLSS = Viet Nam Household Living Standard Survey.

Source: Authors.



## 4. Study Sites and Data

### 4.1 Overview of Study Sites

#### 4.1.1 Mong Cai

Mong Cai BEZ is located on the border between Viet Nam's Quang Ninh Province and Guangxi Zhuang Autonomous Region of the PRC. It was established in 1996 as the first BEZ of Viet Nam under Decision 675/1996/QD-TTg by the Prime Minister. The BEZ includes the town of Mong Cai and several villages in northeast Quang Ninh Province (i.e., Hai Xuan, Hai Hoa, Binh Ngoc, Tra Co, Ninh Duong, Van Ninh, Hai Yen, Hai Dong, Hai Tien, Vinh Trung, and Vinh Thuc). It covers an area of approximately 51,900 hectares (ha) and had a population of around 106,000 in 2010.

Mong Cai is an important border gate in northern Viet Nam due to its strategic location in two economic corridors and one economic belt.<sup>1</sup> The BEZ plays a key role in promoting trade between Viet Nam and the southern provinces of the PRC. In particular, it borders the town of Dong Xinh, an open-door economic zone in Guangxi Zhuang Autonomous Region, which has been built to become a large and modern city and a gateway for the PRC to enter the Southeast Asian market. Mong Cai has a convenient network of land and sea routes. Along its coastline, small ports, including tourist and commercial ports, are being developed in Dan Tien, Mui Ngoc, and Tho Xuan communes. In particular, Van Gia port is a destination for import–export goods not only for Quang Ninh Province and Dong Xinh town but also for other inner provinces of Viet Nam and economic centers of the PRC.

Mong Cai has changed rapidly since the opening of the border gate. It has become one of the largest trade centers of Quang Ninh Province. Mong Cai is the first city in Viet Nam to apply preferential policies for the BEZ according to Decision 675/1996/QD-TTg and Decision 53/2001/QD-TTg by the Prime Minister and Resolution 54/2005/NQ-TW of the Politburo. Besides, Mong Cai also benefits from two national strategic development programs,<sup>2</sup> as well as Decision 120 of the Prime Minister, and other favorable policies of Quang Ninh Province.

Between 2000 and 2009, the average annual economic growth rate of Mong Cai has been over 16%—twice the national average. The city's per capita income increased more than 2.5 times from \$565 in 2000 to \$1,420 in 2008. The economic structure has rapidly shifted to services. In 2008, tourism contributed 65% of the city's gross domestic product with more than 2 million tourists and a trade volume reaching \$4.0 billion compared to \$0.14 billion in 2000. Mong Cai operates as a large commercial center, providing goods, particularly goods from the PRC, to all other provinces. The PRC Rong Ji Trade Center and Dong Sheng Group Trade Center are located near the border gate. In addition, there is the Togi Trade Center and Mong Cai City's central market. In these commercial centers, there are some 6,000 household shops, of which around 1,000 are owned by foreigners, mostly from the PRC.

Besides the service sector, industrial development has gained momentum. Mong Cai has established four industrial clusters, one of which (Hai Yen) is one of the five largest industrial clusters in Quang Ninh Province. In 2010, Mong Cai had 23 foreign direct investment projects with a registered capital of \$235 million. Not only Mong Cai as a whole, but also villages that belong to the Mong Cai BEZ, have benefited from its opening. Hai Hoa, Hai Xuan, Ninh Duong, and Van Ninh used to be considered backward areas.

<sup>1</sup> Lao Cai–Ha Noi–Quang Ninh–Kunming economic corridor, Ha Noi–Hai Phong–Quang Ninh–Lang Son–Nanning economic corridor, and the Tokin Economic Belt.

<sup>2</sup> These are Program 134—Program for Providing Assistance of Production Land, Residential Land, Housing and Clean Water to Poverty Stricken Ethnic Minority Communities with Special Difficulty, and Program 135—Socio-economic Development Program for Extremely Difficult Communes in Ethnic Minority and Mountainous Areas.

Now, with the presence of the BEZ, local habitants of various ethnicities, such as Kinh, Muong, Tay, Nung, San Diu, Hoa, and Dao, are experiencing a significant improvement in their living standards. In each village, there are a number of cultural houses, which are used during community activities, such as meetings and other events. All the children go to school and medical services have been delivered to all people in the villages who need medical care. The number of poor households has been reduced, and in some villages, such as in Ninh Duong and Binh Ngoc, they account for less than 5% of households.

Mong Cai BEZ has a higher level of development than its surrounding areas and other BEZs around the country. The economic activities in Mong Cai are diverse, ranging from trade, tourism, manufacturing, and seaport services to entertainment industries and handicrafts. The BEZ is seen as the economic nucleus of the belt of Viet Nam's northern coastal provinces and a growth locomotive and labor hub of the whole of the northeastern region. The central government and the provincial authority have spent large amount of money on infrastructure development in this area, including health care facilities, schools, canals, lakes, dams, ports, water supply, and waste and wastewater treatment plants.

#### **4.1.2 Cau Treo**

Cau Treo BEZ is located in the border area between Huong Son District, Ha Tinh Province of Viet Nam and Kham Cot District, Bolykhamxay Province of the Lao PDR, just 56 kilometers (km) away. It was established in 1998 under Decision 177/1998/QD-TTg of the Prime Minister. The BEZ covers an area of around 57,000 ha, including the villages of Son Kim 1, Son Kim 2, and Tay Son town, with more than 21,000 habitants. In October 2007, the Prime Minister issued Decision 162/2007/QD-TTg to accord Cau Treo the status of international BEZ, replacing Decision 177/1998/QD-TTg, which only provided the BEZ with experimental status.

Cau Treo has a strategic role in boosting economic exchange between neighboring countries, thanks to its location on national road 8A, which offers the shortest route to the Eastern Sea, particularly the deep-sea port of Vung Ang–Son Duong, 140 km away, for the central area of the Lao PDR and northeast Thailand. The distance between Cau Treo and Vientiane, the capital city of the Lao PDR, is around 300 km, making the BEZ a convenient transport node for Viet Nam, the Lao PDR, and northeastern Thailand. Natural forests cover almost 80% of the total area of the BEZ. Natural forests, mineral water, and tin are the main resources of Cau Treo BEZ. Therefore, ecotourism, mining, and trade are considered the core economic activities of the BEZ.

Cau Treo BEZ has enjoyed preferential policies. On 9 February 2009, the Prime Minister issued Decision 155/2009/QD-TTg adopting the development master plan of Cau Treo International BEZ by 2025, with an aim to turn it into (i) a multifunctional economic zone combining the development of industry, services, including trade and tourism, agriculture and forestry, and urban residential areas; (ii) an important international commercial and transport gate in the East–West Economic Corridor; and (iii) a cultural, service, and tourist center of Ha Tinh Province.

However, the economic activities in Cau Treo BEZ are still limited because of its low level of economic development and the low level of economic development in that part of the Lao PDR. The import–export turnover through the gate totaled \$86.2 million in 2007, \$56.4 million in 2008, and \$96.9 million in 2009. The goods and commodities imported and exported through Cau Treo gate include petroleum, oil and gas, construction materials, electronic goods, electrical appliances, rice, beverages, wood, and fertilizer. By 2010, only 9 investment projects with a total registered capital of D2,000 billion (\$105 million) had been granted licenses in the BEZ, and more than 120 local companies had been established, together with a few hundred household businesses. In September 2009, a project for assembling electric vehicles with a capital of D385 billion (\$20.3 million) was started. Nonetheless, several important projects are under

way in Cau Treo; for instance, Dai Kim Industrial Zone, Da Mong Multifunctional Economic Zone, and the expansion of connectivity between Cau Treo gate and Nam Phao gate (also in Ha Tinh Province).

Compared to the other two BEZs, Cau Treo is relatively less developed because of its disadvantageous geographic location, the low level of economic development on the Lao PDR side of the border, and widespread poverty in its surrounding areas. So far, the economic activities in Cau Treo have been limited to trade and cross-border transport of goods and people. Thus, whereas Mong Cai and Moc Bai can attract a large number of workers from neighboring provinces, most of the labor in Cau Treo is from the contiguous communes.

#### 4.1.3 Moc Bai

Moc Bai BEZ belongs to Tay Ninh Province, 70 km away from Ho Chi Minh City in Viet Nam. The BEZ is situated on the border with Cambodia's Svay Rieng Province, 170 km from Phnom Penh. The BEZ was established in 1998 under Decision 210/1998/QD-TTg of the Prime Minister. It is considered a propulsive node for the development of the border areas of Cambodia and Viet Nam due to its strategic location in the Trans-Asia Highway, which connects Cambodia, the Lao PDR, Myanmar, Thailand, and Viet Nam. Moc Bai BEZ has an area of around 21,200 ha, including seven villages—Long Thuan, Tien Thuan, Loi Thuan, An Thanh of Ben Cau District, Phuoc Luu, Binh Thanh, and Phuoc Chi of Trang Bang District. In 2010, it had a total population of about 66,500.

Decision 114/2004/QD-TTg by the Prime Minister granted Moc Bai BEZ preferential status. Enterprises operating in the commercial center and industrial zones are exempted from import–export value-added tax. This led to a dramatic increase in trade volume in Moc Bai. However, in 2009, due to the impact of the economic slowdown nationwide, the total export–import turnover of Moc Bai BEZ and through the border gate fell to \$90 million from almost \$120 million in 2008. The attraction of Moc Bai is its chain of duty-free supermarkets which receive nearly 10,000 shoppers each day. The number of visitors to Moc Bai duty-free zone more than doubled by 2009 from about 1.3 million in 2006. Domestic visitors of Moc Bai duty-free zone are permitted to buy up to D500,000 (\$25) worth of duty-free goods.

The number of people passing through the border gate in Moc Bai increased from about 0.4 million in 2004 to 2.2 million in 2009 (*Tay Ninh Online Journal*, 17 April 2010). The number of vehicles passing through the gate also increased steadily. Export goods from Viet Nam to Cambodia are mainly consumer goods, construction materials, and household appliances, which account for about 40%–50% of trading business in Cambodia. In 2010, Moc Bai BEZ had 34 investors with 47 projects and a total registered investment capital of D5,500 billion (\$275 million). Among these projects, 29 are in commerce and services, industrial infrastructure, and urban development; one is in ecotourism; and one is a golf project.

Although the economic activities in Moc Bai are still sparse, they are expected to grow in the coming years because the economy on both sides of the border is developing fast. Essential infrastructure and facilities, such as duty-free supermarkets, mini supermarkets, shopping malls, and restaurants, have already opened; modern housing complexes are being built; new roads are being constructed; and industrial projects have been allocated plots. With this expansion and transition process, the demand for workers in unskilled, low paid positions has been increasing. At the same time, many unskilled laborers employed previously as porters are now looking for opportunities to increase their earnings by becoming sellers.

## **4.2 Data**

### **4.2.1 Border-Gate Economic Zone Survey**

The researchers conducted a survey in Mong Cai, Cau Treo, and Moc Bai with a sample size of 480 to collect primary data. The sample structure is provided in Table 6.

The research team conducted face-to-face interviews with the respondents in the survey area, using the same questionnaire for all three sites (Appendix 1). The survey sample was extracted from the labor databases provided by local authorities (i.e., the Department of Labor, Invalid and Social Affairs and the General Statistics Office).

In addition to the survey, the researchers undertook in-depth interviews with a sample of 15 respondents (Appendix 2). The interviewees included workers at the BEZs in various forms of employment; employers of female workers in different economic sectors; local officials in the People's Committees of the districts and communes where the three BEZs are located; selected authorities of the BEZs; and officials in the provincial Department of Labor, Invalid and Social Affairs, the Ministry of Labor, Invalid and Social Affairs, and the National Committee for the Advancement of Women in Viet Nam.

### **4.2.2 Viet Nam Household Living Standard Survey**

In addition to survey data, the research used data from the Viet Nam Household Living Standard Survey (VHLSS) to examine the labor and earning conditions in the provinces that host the BEZs and those which do not have BEZs (Appendix 3). The VHLSS is designed to study living conditions, poverty, and inequality issues. It was conducted in 1993, 1998, 2002, 2004, 2006, and 2008. The earlier rounds of the survey (in 1993 and 1998), known as the Viet Nam Living Standard Survey, were representative at the national, rural and urban, and regional levels; whereas the VHLSS is representative down to the provincial level.

The VHLSS is probably the most used national survey, and its data quality is considered to be reasonably good. Although it was not designed to be a labor survey, it has an employment section which collects data on employment status, working hours, migration, and wages of all family members. It provides a good source of data to study wages and wage determinants and their relation to poverty and income inequality at the macro level (nationwide and provincial). The VHLSS offers indicators on labor force participation overall and by income sources (farm versus non-farm, wage versus non-wage, and by industry and occupation for those in wage employment). The data of the VHLSS can be used to examine Viet Nam's labor market both from the demand and supply sides. However, most of the studies so far have looked at the aggregate level (e.g., economy or industry). Studies at the firm or micro level are rare and, to the knowledge of the authors, there are no studies of the labor market in the border-gate areas and BEZs. The research uses the latest VHLSS available—the 2008 survey—for the earning functions.

**Table 6 Summary Distribution of the Sample**

Category	Female	Male	Total
Labor that participates in the economic activities of the BEZ	121	120	241
Mong Cai	41	40	81
Cau Treo	40	40	80
Moc Bai	40	40	80
Labor that does not participate in the economic activities of the BEZ	123	116	239
Mong Cai	41	39	80
Cau Treo	41	39	80
Moc Bai	41	38	79
<b>Total</b>	<b>244</b>	<b>236</b>	<b>480</b>

BEZ = border-gate economic zone.

Source: Survey data.

## 5. Findings and Discussions

### 5.1 Examination of Border-Gate Economic Zone Survey Data

#### 5.1.1 Overview of Labor Market Conditions

The survey data show that there is a clear difference in the labor income, after taking inflation into account, before and after the establishment of the BEZs in all three sites. Except in Moc Bai, the average income of female labor has fallen behind that of male labor after the establishment of the BEZs in Mong Cai and Cau Treo (Table 7). Therefore, *the BEZs may increase labor income but to the disadvantage of women*. Those who participate in the economic activities associated with the BEZs tend to have higher incomes, except for male labor in Moc Bai (Table 8). However, the difference between the mean income of male participants and non-participants in Moc Bai is not significant. One can still notice that in Moc Bai, the development of the services sector—mostly trade—favors female workers more than male workers. In other words, *the BEZ economic activities associated with the services sector are advantageous to female labor*.

**Table 7 Monthly Earnings of Labor Before and After the Establishment of the Border-Gate Economic Zones (D'000)**

Item	Mong Cai		Cau Treo		Moc Bai	
	Male	Female	Male	Female	Male	Female
Before establishment of BEZs	1,314	1,513	2,205	2,468	1,439	1,572
After establishment of BEZs	4,540	4,360	5,542	3,995	2,007	2,282

BEZ = border-gate economic zone, D = dong.

Source: Survey data.

**Table 8 Monthly Earnings of Labor That Participate and Do Not Participate in the Economic Activities Associated with the Border-Gate Economic Zones (D'000)**

Type of Participation	Mong Cai		Cau Treo		Moc Bai	
	Male	Female	Male	Female	Male	Female
Nonparticipant	3,300	2,841	3,026	2,030	2,039	2,235
Participant	6,035	5,958	7,854	6,166	1,975	2,330

D = dong.

Source: Survey data.

Especially for those who are engaged in BEZ economic activities, either in formal or informal jobs, *the BEZ provides their main source of income*. More than 80% of those who earned their income from the BEZ said that the BEZ economic activities provided at least 50% of their total household income (Appendix 4, Table A4.4).

Of those who are involved with the economic activities of the BEZs, 75% said that it was not difficult for women to find a job in the BEZs. Importantly, *there is an asymmetric information problem in the labor market* since almost 17% of respondents who do not participate in the economic activities of the BEZs said that they did not know about job opportunities in the BEZs (Appendix 4, Table A4.16).

Table 9 indicates that women who participate in the BEZ economic activities tend to be engaged in higher-skilled jobs. In contrast, more than 50% of female labor who are not involved with the BEZ economic activities are unskilled workers. This is consistent with the female workers' educational level which is clearly lower for those who do not participate in the economic activities of the BEZs (Table 10). Thus, *the BEZs can help to provide skilled jobs to the labor market*. Nonetheless, the quality of working conditions may be a big concern in the BEZs as almost 60% of respondents said they had no employment contract and 70% said they were not paid social insurance (Appendix 4, Tables A4.12 and A4.13).

In short, analysis of the survey data in Mong Cai, Cau Treo, and Moc Bai shows that the establishment of the BEZs helps to increase job opportunities, earnings, and skills for female labor. However, much still needs to be done to improve the quality of working conditions and gender equality.

**Table 9 Skills of Female Labor Who Participate and Do Not Participate in the Economic Activities Associated with the Border-Gate Economic Zones**

Type of Participation	Female Labor by Level of Skill			Total (% and number)
	Highly Skilled	Skilled	Unskilled	
Participant	44.6%	37.2%	18.2%	100.0% (121)
Nonparticipant	36.6%	11.4%	52.0%	100.0% (123)

Note: The skill level is evaluated according to sector and nature of jobs.

Source: Survey data.

**Table 10 Education Level of Female Labor**

Type of Participation	Primary School	Lower Secondary School	Upper Secondary School	Professional Training School	College and Higher	Total (% and number)
Participant	4.2%	23.3%	65.0%	3.3%	4.2%	100.0% (120)
Non-participant	22.0%	47.2%	19.5%	4.1%	7.3%	100.0% (123)

Note: The skill level is evaluated according to sectors and nature of jobs.

Source: Survey data

### a. Basic Earning Function

The basic earning function was developed to quantify the impacts of educational attainment and work experience on individual's earnings. It is expressed as

$$L\_Earning_i = \alpha + \beta_1 YoEdu_i + \beta_2 Exper_i + \beta_3 Exper_i^2 + \epsilon_i \quad (\text{Equation 3})$$

Table 11 presents the results of the regressed basic earning function. It shows that, except *Exper* and *Exper2* in the regression for female labor, all coefficients are statistically significant at 1% and their signs are as expected. The positive signs on *YoEdu* and *Exper* coefficient reflect that as education and experience increase, earnings of individuals would be higher. The negative sign on *Exper*<sup>2</sup>, the squared term, reflects the downward trend in the contribution of experience to earning. Compared by gender, one more year of schooling increases the earnings of male labor by 13.8%, and an additional year of work experience increases it by 10.3%; however, for female labor, the figures are lower, at 9.0% for an extra year of schooling and 4.1% for work experience. *It could be said that in the BEZ area, male labor benefits more from educational achievement and work experience than the female labor.*

### b. Extended Earning Function

In the extended earning function, we incorporate the variables *BEZ*, *area*, and *skill* into the regression as follows:

$$L\_Earning_i = \alpha + \beta_1 YoEdu_i + \beta_2 Exper_i + \beta_3 Exper_i^2 + \beta_4 Area_i + \beta_5 Skill_i + \beta_6 BEZ_i + \epsilon_i \quad (\text{Equation 4})$$

**Table 11 Estimation Results of Basic Earning Function**

Variable	Overall	Male	Female
Constant	6.22 <sup>a</sup> <i>0.000</i>	5.49 <sup>a</sup> <i>0.000</i>	6.67 <sup>a</sup> <i>0.000</i>
YoEdu	0.111 <sup>a</sup> <i>0.000</i>	0.138 <sup>a</sup> <i>0.000</i>	0.090 <sup>a</sup> <i>0.000</i>
Exper	0.062 <sup>a</sup> <i>0.000</i>	0.103 <sup>a</sup> <i>0.000</i>	0.041 <sup>b</sup> <i>0.026</i>
Exper <sup>2</sup>	(0.001) <sup>a</sup> <i>0.002</i>	(0.002) <sup>a</sup> <i>0.001</i>	(0.001) <i>0.166</i>
<b>Adjusted R-squared</b>	0.16	0.23	0.10
<b>Number of observations</b>	400	194	205

( ) = negative.

<sup>a</sup> Statistically significant at 1%.

<sup>b</sup> Statistically significant at 5%.

Note: P-value in italics.

Source: Authors.

The inclusion of these three variables into the extended earning function makes variable YoEdu become insignificant (and the sign also becomes negative) (Table 12). However, it is quite noticeable that, compared to other variables, education does not have a big influence on earnings. The explanation might come from the fact that *to perform jobs associated with the BEZs does not require high level of education*.

**Table 12 Estimation Results of Extended Earning Function**

Variable	Overall	Male	Female
Constant	6.557 <sup>a</sup> <i>0.000</i>	6.319 <sup>a</sup> <i>0.000</i>	6.859 <sup>a</sup> <i>0.000</i>
YoEdu	0.005 <i>0.730</i>	0.008 <i>0.728</i>	(0.003) <sup>a</sup> <i>0.861</i>
Exper	0.082 <sup>a</sup> <i>0.000</i>	0.092 <sup>a</sup> <i>0.000</i>	0.066 <sup>a</sup> <i>0.000</i>
Exper <sup>2</sup>	(0.002) <sup>a</sup> <i>0.000</i>	(0.002) <sup>a</sup> <i>0.001</i>	(0.001) <sup>a</sup> <i>0.001</i>
Area	0.527 <sup>a</sup> <i>0.000</i>	0.474 <sup>a</sup> <i>0.000</i>	0.596 <sup>a</sup> <i>0.000</i>
Skill	0.522 <sup>a</sup> <i>0.000</i>	0.627 <sup>a</sup> <i>0.000</i>	0.423 <sup>a</sup> <i>0.000</i>
BEZ	0.263 <sup>a</sup> <i>0.000</i>	0.337 <sup>a</sup> <i>0.000</i>	0.222 <sup>b</sup> <i>0.010</i>
<b>Adjusted R-squared</b>	0.44	0.23	0.42
<b>Number of observations</b>	400	194	205

( ) = negative, BEZ = border-gate economic zone.

<sup>a</sup> Statistically significant at 1%.

<sup>b</sup> Statistically significant at 5%.

Note: P-value in italics.

Source: Authors.



*BEZ is an important variable that affects earnings* (Table 12). For both male and female labor, all other things being equal, participation in the economic activities associated with the BEZ (the BEZ variable) helps to increase the earnings of labor by 26.3%. By gender, BEZ increases the earnings of male labor by 33.7%, compared to those who are not involved with the BEZ economic activities, and by 22.2% for female labor. Skill proves to be an important factor because it helps to increase earnings by 52.2% for skilled labor compared to unskilled labor. The importance of the skill variable is also emphasized by the fact that *most of the jobs associated with the BEZ require skills training rather than basic education*.

Another important factor is the area of labor residence. The earnings of female labor are 59.6% higher if they reside in urban areas, compared with 47.4% for males. The fact that living in the urban areas seems to give advantage to labor is understandable because the road system in the BEZ region has not been developed enough to help people shorten travel to their workplaces.

### c. Gender Inequality

To examine the income gap between male and female labor in the BEZ, we control for variable BEZ and incorporate the gender variable to determine its importance using the following regression function:

$$L\_Earning_i = \alpha + \beta_1 YoEdu_i + \beta_2 Exper_i + \beta_3 Exper_i^2 + \beta_4 Area_i + \beta_5 Skill_i + \beta_6 Gender_i + \varepsilon_i \quad (\text{Equation 5})$$

The results show that for non-participants in the economic activities associated with the BEZs (non-integration), gender is not a significant variable in the regression (Table 13). It may imply that *there is no crucial earnings gap between male and female labor for those who do not participate in the BEZ economic activities. However, the regression for labor involved with the BEZ economic activities shows that gender inequality exists*. On average, all other things being equal, earnings of male labor are 19.5% higher than the earnings of females.

## 5.2 Examination of Viet Nam Household Living Standard Survey Data

The Viet Nam Household Living Standard Survey (VHLSS) data from 2002 and 2004, when the economic activities of BEZs had just become active, show that the average earnings of female labor in provinces that host the BEZs were higher than those in provinces without BEZs. However, their earnings began to fall below the earnings of those in the provinces that do not have BEZs in 2006. The gap widened in 2008, probably due to the impact of the economic slowdown, which was more severe for more economically open provinces (Table 14). Cross-border integration, thus, may raise female labor income to some extent but this link is not certain.

**Table 13 Estimation Results of Extended Earning Function for Gender**

Variable	Inside BEZ	Outside BEZ
Constant	7.006 <sup>a</sup> 0.000	6.777 <sup>a</sup> 0.000
YoEdu	(0.012) 0.541	0.027 0.167
Exper	0.060 <sup>a</sup> 0.000	0.070 <sup>a</sup> 0.007
Exper <sup>2</sup>	(0.001) <sup>a</sup> 0.017	(0.002) <sup>a</sup> 0.004
Area	0.613 <sup>a</sup> 0.000	0.364 <sup>a</sup> 0.005
Skill	0.750 <sup>a</sup> 0.000	0.293 <sup>b</sup> 0.014
BEZ	(0.195) <sup>a</sup> 0.009	0.003 0.970
<b>Adjusted R-squared</b>	0.55	0.24
<b>Number of observations</b>	227	172

BEZ = border-gate economic zone.

Sources: Authors' calculation based on the Viet Nam Household Living Standard Survey in 2002, 2004, 2006, and 2008.

**Table 14 Earnings Per Hour for Persons with Salary and/or Wage (D'000)**

Area	2002			2004			2006			2008		
	Female	Male	Both	Female	Male	Both	Female	Male	Both	Female	Male	Both
Border provinces with BEZs	4.35	3.57	3.89	5.14	6.19	5.81	6.24	6.85	6.62	9.33	9.88	9.67
Border provinces without BEZs	2.63	3.03	2.86	4.73	5.27	5.08	7.10	6.32	6.61	11.45	10.35	10.80

BEZs = border-gate economic zones, D = dong.

Notes:

1. Data represent the average for provinces that host the BEZs and provinces that do not host BEZs.
2. Both = average for both male and female.

Source: Authors' calculation based on the Viet Nam Household Living Standard Survey in 2002, 2004, 2006, and 2008.

Table 15 shows a clear difference in labor market structure between the border provinces that host the BEZs and those that do not. Provinces hosting BEZs have a higher share of female and male labor working in industry and services. This may hypothetically suggest that *higher skilled labor concentrates in the provinces with BEZs*. However, the structural transformation from agriculture to industry and services is unclear for female labor in these provinces. This process seemed to have been reversed considering the impact of the economic slowdown in 2008, when agriculture's share of female workers increased.

**Table 15 Employment Composition (%)**

Sector	2002			2004			2006			2008		
	Female	Male	Both	Female	Male	Both	Female	Male	Both	Female	Male	Both
<b>Provinces with BEZs</b>												
Agriculture	68.3	66.3	67.3	66.1	61.0	65.7	66.2	61.4	63.7	73.1	67.2	70.0
Industry	9.7	14.7	12.0	8.9	17.0	12.2	9.7	16.9	13.4	11.4	19.6	16.0
Service	22.0	19.1	20.6	25.0	22.4	22.1	24.1	21.7	22.9	15.4	13.2	14.0
<b>Provinces without BEZs</b>												
Agriculture	71.8	68.6	70.3	70.2	65.5	71.0	69.8	68.1	69.0	78.0	71.0	74.5
Industry	7.8	13.0	10.3	8.0	15.5	10.5	6.8	12.7	9.8	9.1	16.5	12.8
Service	20.3	18.3	19.4	21.8	19.1	18.5	23.5	19.1	21.2	13.0	12.0	12.7

BEZs = border-gate economic zones.

Notes:

1. Figures are averages for provinces that host BEZs and provinces that do not host BEZs.

2. Both = average for both male and female.

Sources: Authors' calculation based on the Viet Nam Household Living Standard Survey in 2002, 2004, 2006, and 2008.

*The education level of female labor is slightly higher in 2008 for the provinces with BEZs, after slow improvement over the 2002–2006 figures (Table 16). The share of female labor with secondary school education and below fell from 77% in 2002 to 74% in 2008 for provinces hosting BEZs. However, it dropped more quickly in provinces without BEZs, from 81% in 2002 to 75% in 2008. Therefore, cross-border integration may not stimulate a rapid improvement of education for female labor.*

**Table 16 Education Level of Female Labor in Provinces With and Without BEZs (%)**

Education Level	2002	2004	2006	2008
	<b>Province with BEZs</b>			
Primary school	44.60	33.05	39.36	35.29
Secondary school	32.43	34.88	35.03	38.50
High school	10.01	15.54	11.36	10.85
Vocational training school	11.27	12.36	9.74	10.00
College and higher	1.69	4.16	4.51	5.36
<b>Provinces without BEZs</b>				
Primary school	45.82	36.60	38.03	38.88
Secondary school	35.15	36.79	38.50	36.00
High school	10.31	15.77	9.86	10.79
Vocational training school	6.96	7.12	10.56	8.79
College and higher	1.76	3.72	3.05	5.73

BEZs = border-gate economic zones.

Note: Figures are averages for provinces that host BEZs and provinces that do not host BEZs.

Sources: Authors' calculation based on the Viet Nam Household Living Standard Survey in 2002, 2004, 2006, and 2008.

### 5.2.1 Basic Earning Function

We develop the basic earning function to measure the impacts of educational attainment and work experience on earnings as follows:

$$L\_Earning_i = \alpha + \beta_1 YoEdu_i + \beta_2 Exper_i + \beta_3 Exper_i^2 + \varepsilon_i \quad (\text{Equation 6})$$

The empirical results show that the number of years of education and experience have a positive effect on earnings and all coefficients are significant at the 1% level for the overall sample as well as for the male and female labor function. This means that when the number of years of education and experience increases, earnings will rise. However, there is a substantial difference in the effect of education and experience on earnings among male and female labor (Table 17). An additional year of schooling increases the income of female labor by 11.1%, compared with only 8.5% for male labor. An additional year of experience increases female labor earnings by 8.6% and male labor earnings by 5.2%. Thus, *at the provincial level, education and experience are more important for the earnings of female labor than for male labor*, but the magnitude of their effect on earnings is still modest.

**Table 17 Estimation Results of Basic Earning Function for VHLSS 2008 Data**

Variable	Overall	Male	Female
Constant	8.05 <sup>a</sup> <i>0.000</i>	8.34 <sup>a</sup> <i>0.000</i>	7.64 <sup>a</sup> <i>0.000</i>
YoEdu	0.096 <sup>a</sup> <i>0.000</i>	0.085 <sup>a</sup> <i>0.000</i>	0.111 <sup>a</sup> <i>0.000</i>
Exper	0.068 <sup>a</sup> <i>0.000</i>	0.052 <sup>a</sup> <i>0.000</i>	0.086 <sup>a</sup> <i>0.000</i>
Exper <sup>2</sup>	(0.001) <sup>a</sup> <i>0.000</i>	(0.001) <sup>a</sup> <i>0.000</i>	(0.002) <sup>a</sup> <i>0.000</i>
<b>Adjusted R-squared</b>	0.333	0.278	0.414
<b>Number of observations</b>	1,803	1,072	731

( ) = negative, VHLSS = Viet Nam Household Living Standard Survey.

<sup>a</sup> Statistically significant at 1%.

Note: P-value in italics.

Source: Authors.

### 5.2.2 Extended Earning Function

We add into the basic earning function a set of independent variables, including integration,<sup>3</sup> skill, and area, to develop an extended earning function as follows:

$$L\_Earning_i = \alpha + \beta_1 YoEdu_i + \beta_2 Exper_i + \beta_3 Exper_i^2 + \beta_4 Area + \beta_5 Skill + \beta_6 Integration + \varepsilon_i \quad (\text{Equation 7})$$

Table 18 shows that, except for the estimated coefficient of the variable Integration in the regression equation for female labor (which is statistically significant at 10% level), all other estimated coefficients are significantly different from zero at the 1% significance level, and the adjusted R-square in the extended earning function is higher than the one in the basic function for all regression equations. This

<sup>3</sup> Integration indicates the difference between provinces that host the BEZs and those that do not.

implies that the set of variables in the extended function explains the earnings of labor better than the one in the basic earning function.

*For females, the first important factor for earnings is skill.* All other things being equal, the earnings of skilled labor are higher than unskilled labor by 45.6% (Table 18). The number of years of education and experience also has a positive effect on the earnings of female labor, but the net effect is minor considering that the increase in earnings was only 7.8% for education and 8.3% for experience.

*For males, area seems to be the most important factor that affects their earnings.* Other things being equal, the gap between the earnings of those who reside in the urban area and those who reside in the rural area is 25.8%. The second most important factor is skill. Earnings of skilled labor are 23.9% higher than for unskilled labor.

*Integration plays a substantial role in improving the earnings of labor, for both male and female labor.* All other things being equal, the earnings are 9.8% higher for female labor and 12.8% higher for male labor for those who work in the provinces with BEZs.

**Table 18 Estimation Results of Extended Earning Function for VHLSS 2008 Data**

Variable	Overall	Male	Female
Constant	7.984 <sup>a</sup> <i>0.000</i>	8.272 <sup>a</sup> <i>0.000</i>	7.577 <sup>a</sup> <i>0.000</i>
YoEdu	0.070 <sup>a</sup> <i>0.000</i>	0.062 <sup>a</sup> <i>0.000</i>	0.078 <sup>a</sup> <i>0.000</i>
Exper	0.065 <sup>a</sup> <i>0.000</i>	0.051 <sup>a</sup> <i>0.000</i>	0.083 <sup>a</sup> <i>0.000</i>
Exper <sup>2</sup>	(0.001) <sup>a</sup> <i>0.000</i>	(0.001) <sup>a</sup> <i>0.000</i>	(0.002) <sup>a</sup> <i>0.000</i>
Area	0.203 <sup>a</sup> <i>0.000</i>	0.258 <sup>a</sup> <i>0.000</i>	0.142 <sup>a</sup> <i>0.000</i>
Skill	0.315 <sup>a</sup> <i>0.000</i>	0.239 <sup>a</sup> <i>0.000</i>	0.456 <sup>a</sup> <i>0.000</i>
Integration	0.121 <sup>a</sup> <i>0.000</i>	0.128 <sup>a</sup> <i>0.005</i>	0.098 <sup>b</sup> <i>0.088</i>
<b>Adjusted R-squared</b>	0.3640	0.3106	0.4542
<b>Number of observations</b>	1,765	1,034	731

( ) = negative, VHLSS = Viet Nam Household Living Standard Survey.

<sup>a</sup> Statistically significant at 1%.

<sup>b</sup> Statistically significant at 10%.

Note: P-value in italics.

Source: Authors.

In both the provinces that host BEZs and those that do not, *the effect of education on earnings is important compared with other factors* in the model. However, the effect of education on earnings in the provinces without BEZs is more substantial than in the provinces with BEZs. All other things being equal, education helps to increase earnings by 10.7% in provinces without BEZs compared with 6.6% in provinces with BEZs (Table 19). In contrast, the effect of work experience seems greater for labor working in provinces with BEZs (Table 19).

**Table 19 Estimation Results of Provinces With and Without BEZs**

Variable	With BEZs	Without BEZs
Constant	8.139 <sup>a</sup> <i>0.000</i>	7.626 <sup>a</sup> <i>0.000</i>
YoEdu	0.066 <sup>a</sup> <i>0.000</i>	0.107 <sup>a</sup> <i>0.000</i>
Exper	0.085 <sup>a</sup> <i>0.000</i>	0.078 <sup>a</sup> <i>0.000</i>
Exper <sup>2</sup>	(0.002) <sup>a</sup> <i>0.000</i>	(0.002) <sup>a</sup> <i>0.000</i>
Area	0.195 <sup>a</sup> <i>0.000</i>	0.008 <i>0.942</i>
Skill	0.569 <sup>a</sup> <i>0.000</i>	0.172 <i>0.206</i>
<b>Adjusted R-squared</b>	0.477	0.423
<b>Number of observations</b>	527	204

( ) negative, BEZs = border-gate economic zones.

<sup>a</sup> Statistically significant at 1%.

Note: P-value in italics.

Source: Authors.

### 5.2.3 Gender Inequality

To examine the income gap between male and female labor in the provinces that host the BEZs and those that do not, we control for the variable integration and incorporate the variable gender to derive the following function:

(Equation 8)

$$L\_Earning_i = \alpha + \beta_1 YoEdu_i + \beta_2 Exper_i + \beta_3 Exper_i^2 + \beta_4 Area + \beta_5 Skill + \beta_6 Gender + \epsilon_i$$

All estimated coefficients of the model for provinces with BEZs are statistically significant at the 1% level. However, in the model for province without BEZs, area and gender are not statistically significant. Thus, *we do not have enough evidence to conclude that gender inequality exists in the provinces that do not host BEZs*. In contrast, the negative coefficient of gender in the model for provinces with BEZs implies that *there is a significant income gap between female and male labor in those provinces* (Table 20).

## 6. Policy Implications and Conclusions

### 6.1 Border-Gate Economic Zones and Cross-Border Integration

#### 6.1.1 The Border-Gate Economic Zone as a Vehicle of Cross-Border Economic Integration and Development of the Border Economy

Whereas the first wave of SEZs was established as a symbol of open-door policy, the second wave of SEZs in the form of BEZs—a recent phenomenon of development—can be seen as a symbol of cross-border integration in the GMS. Unlike the first generation of SEZs, which are located in more advantageous areas (e.g., along the coast) to enjoy favorable conditions for rapid growth, BEZs are

often situated in disadvantageous border locations, surrounded by remote and mountainous areas. Thus, BEZs serve as a vehicle for cross-border integration and development of the less developed border areas in the GMS.

Cross-border integration encourages structural transformation of the labor market in the border areas from agriculture to industry and services. The presence of BEZs has the same effect. BEZs are becoming multifunctional economic zones with a focus on services and industrial development. However, at the current stage, most BEZs are still developing, and they serve as transport gateways rather than production hubs in the border areas. They have the mixed characteristics of the urban, semi-urban, and mountainous rural areas, combining traditional agricultural production with the emerging services and industry sectors. The prevailing sector of the BEZ economy is low-skilled services. Although some industrial clusters have been built, industries are still immature, mostly because of inadequate infrastructure development.<sup>4</sup> Inside the BEZ area, there is a dual economy: one part is associated with the BEZs and the other is not.

**Table 20 Estimation Results of Extended Earning Function for Gender for VHLSS 2008 Data**

Variable	With BEZs	Without BEZs
Constant	8.213 <sup>a</sup> <i>0.000</i>	7.812 <sup>a</sup> <i>0.000</i>
YoEdu	0.065 <sup>a</sup> <i>0.000</i>	0.087 <sup>a</sup> <i>0.000</i>
Exper	0.062 <sup>a</sup> <i>0.000</i>	0.081 <sup>a</sup> <i>0.000</i>
Exper <sup>2</sup>	(0.001) <sup>a</sup> <i>0.000</i>	0.070 <sup>a</sup> <i>0.000</i>
Area	0.258 <sup>a</sup> <i>0.000</i>	(0.002) <i>0.141</i>
Skill	0.343 <sup>a</sup> <i>0.000</i>	0.100 <sup>a</sup> <i>0.003</i>
Gender	(0.199) <sup>a</sup> <i>0.000</i>	0.229 <i>0.138</i>
<b>Adjusted R-squared</b>	0.387	0.349
<b>Number of observations</b>	1,295	470

( ) = negative, BEZs = border-gate economic zones, VHLSS = Viet Nam Household Living Standard Survey.

<sup>a</sup> Statistically significant at 1%.

Note: P-value in italics.

Source: Authors.

### 6.1.2 Effects of Border-Gate Economic Zones and Cross-Border Integration on Earnings and Quality of Female Labor

Within the above context, the female labor market in the BEZs is complicated both in terms of the quantity and quality of employment. It is noticeable that Viet Nam's BEZs have successfully provided greater job opportunities for female labor. Their impact has been considerable and is not limited to nearby areas, including cross-border areas, but also extends to the inner domestic provinces through migration. Our research confirms the hypothesis that in Viet Nam, as well as increasing job opportunities, the presence of BEZs can increase the income of female labor.

<sup>4</sup> Data show that the 2008–2009 economic recession slowed down the business activities of the BEZs, mostly through the trading channel, thus negatively affecting labor income and the job market.

It can also be said that cross-border integration, demonstrated by the presence of BEZs, helps to increase female labor income in the border provinces. Cross-border integration brings more investment and trade opportunities to border areas where there were virtually none before, therefore bringing more job opportunities.

Yet, the labor market associated with the BEZs has not experienced a sustained trajectory of development. Data show that earnings in the BEZs remain lower than expected.<sup>5</sup> Although it is not difficult for women to find a good job in the BEZs, the number of high-paying jobs and the demand for skilled labor are limited as BEZs are still at an early stage of development. Our in-depth interviews also reveal that instability of income is another barrier to those seeking jobs associated with the BEZs.

There are many constraints to translating the increase in female labor income into improved female labor quality. The labor quality and the types of job opportunities available to female workers in the border-gate areas are likely to make the BEZs exploitative corners of the job market.

Moreover, although BEZs and cross-border integration have created more jobs in border areas, there is still limited access to employment for a number of groups, especially the women who are more vulnerable and disadvantaged (e.g., ethnic minority groups, inhabitants of remote areas, people with lower educational levels, and those traditionally engaged in agriculture).<sup>6</sup> In general, the predominant reasons for the low rates of participation of female labor in the BEZ economic activities are lack of adequate skills, physical limitations, low incomes, insufficient capital to start business, and family care responsibilities (Appendix 4, Table A4.15).

### 6.1.3 Possible Bottlenecks in Future Development of Border-Gate Economic Zones

According to Prime Minister's Decision 52/2008/QĐ-TTg, which approved the Development Scheme of Viet Nam's Border-Gate Economic Zone up to the Year 2020, the overall goal of border-gate economic zones in Viet Nam is to become the engine for the socioeconomic development of the provinces bordering Cambodia, the PRC, and the Lao PDR.

Yet, the BEZs are under mounting pressure as increased job opportunities and rapid urbanization create an influx of migrants into the BEZs.<sup>7</sup> Sooner or later, this demographic boom will exert pressure on the BEZ labor market, both in terms of quantity and quality of employment. Deterioration of labor quality as infrastructure for human capital development (e.g., schools and hospitals) become strained can become a bottleneck in the sustainable development of the BEZs.

<sup>5</sup> Around 55% of respondents said that they did not want to participate in the economic activities of the BEZs because of low income.

<sup>6</sup> About 52% of female unskilled workers, 47.2% of females with lower secondary education, and 22% of females with primary education still do not participate in BEZ economic activities.

<sup>7</sup> For instance, the total population of Mong Cai City, the biggest BEZ in Viet Nam, is expected to increase from around 106,000 in 2011 to 175,000 over the next 10 years. The total population of Cau Treo is expected to increase from 21,000 in 2011 to 30,000 over the next 5 years, and to 50,000 by 2025.



## **6.2 Improvement of Labor Quality in the Border-Gate Economic Zones and Border Areas**

### **6.2.1 Increasing Communication between Demand and Supply of Labor**

Although many jobs have been created in the BEZs, the employment opportunities are not equally shared. Self-exclusion from the economic activities of the BEZ is common among the more disadvantaged groups of women, as explained earlier. This occurs when women do not know that demand for labor exists or do not apply for jobs in the belief that they are not qualified for the positions.

Local governments; BEZ authorities; employers; labor unions; training centers; and civil society organizations, such as women's unions, youth organizations, and informal labor networks (e.g., migrant labor networks), should play a more active role in overcoming the problem of asymmetric information. For instance, they can cooperate to organize regular job fairs, and they can establish career orientation centers. A very useful practice that is neglected in many BEZs is the posting of advertisements in public areas.

Equally important is the need for strong intervention (e.g., through awareness-raising programs by civil society organizations and local authorities) to help indigenous people overcome their chronic acceptance of the subsistence economy and become interested in participating in the economic activities of the BEZs to increase their income.

### **6.2.2 Creating Sustainable Structural Transformation of the Border-Gate Economic Zone Labor Market**

The relationship between skills or job type and earnings reflects the demand side of the female labor market. The presence of BEZs provides a favorable environment for local areas to host higher-skilled jobs that tend to receive higher pay. Yet the gains are mainly due to the services sector. It should be noted that the services sector in BEZs may be classified as simple, with little added value, and mostly relating to cross-border trade. This explains why jobs in BEZs require only skills training, and cross-border integration may not bring about rapid human development for female labor.

To ensure sustainable development and structural transformation of their labor markets, the BEZs need to encourage more business activities in the production sector. More incentives should be provided for investment in productive enterprises or labor-intensive manufacturing sectors that are higher up the skills chain, and cultivate higher human capital in labor (e.g., by requiring more sophisticated skills, technological application, and industrial and organizational disciplines).

Furthermore, to integrate unskilled rural poor and ethnic women into the BEZ job market, and to encourage previously hired labor to start up and run their own business sustainably, there is a need to increase their access to capital (e.g., credit and micro credit) and to improve their management skills (e.g., through training).

### **6.2.3 Providing Vocational Training and Skills Enhancement for Female Labor**

Vocational training and skills enhancement are particularly important for female labor associated with economic activities of the BEZs. The survey shows that participation in the economic activities of the BEZs does not require a high level of education. Currently, most jobs associated with the BEZs require only short- and medium-term training to equip labor with the necessary skills, even though at the provincial level the effect of basic education on earnings is more important.

This may imply that the BEZ areas need to set up more vocational training centers and encourage on-the-job training, while formal schools are needed in the border provinces that host the BEZs. Training should put greater emphasis on specific skills, rather than on general skills, so that learners can quickly begin to work.

As basic education plays an important role, in the longer run and for a larger scale of development, policies and programs should look at linking basic education and vocational training to high-skill enhancement in the BEZ areas.

At the same time, local officials and civil society organizations should run campaigns to convince those currently working that participating in training courses will not deprive them of opportunities to increase their income. Rather, they should emphasize that training is an indispensable way to escape from low-paid employment and/or to be able to open a business.

#### **6.2.4 Improving Working Conditions for Female Labor to Facilitate Investment in Human Capital**

The quality of working conditions and/or job security needs to be improved. Working illicitly or without an employment contract and social insurance in the informal sector makes women vulnerable to exploitation, especially when individual employees do not have bargaining power with their employers.

A good working environment is a supportive factor for the development of female labor capital because it creates a sense of security (i.e., free from fear of being exploited and of losing their job); therefore, promoting a desire to invest in human capital development (e.g., education and training) for long-term interests.

In contrast to the formal sector, where intervention from local authorities can be effective in improving the quality of working conditions for female labor, the informal sector in the BEZs requires active involvement from the local women's unions and civil society organizations. For example, these organizations can (i) propagate, publicize, and monitor the application of labor standards in the BEZs; (ii) support the establishment of women's groups, networks, and clubs of female workers and entrepreneurs to promote and protect women's rights; and (iii) serve as the contact channel for bringing the voice of labor to the authorities.

#### **6.2.5 Ensuring Gender Equality**

Gender equality is a big concern in the BEZs. The BEZs may increase labor income but they do so to the disadvantage of women. For those engaged in BEZ economic activities, there is an earnings gap between male and female labor in favor of male labor, but this gap does not exist for those who are not involved in BEZs. This is also true between provinces that host the BEZs and those that do not. Moreover, the data from the Viet Nam Household Living Standard Survey show that at the provincial level, male labor benefits more from educational achievement and work experience than female labor. Although BEZ economic activities associated with the services sector currently benefit female labor, this may be a short-term effect because of limited labor absorption capability of the trading sector that currently prevails in the BEZs.

The key policy recommendation focuses on promoting the role of civil society organizations in various aspects of the protection of women's rights. For instance, civil society organizations can (i) conduct awareness raising programs on gender in the workplace, (ii) conduct awareness raising intervention in

the communities to encourage women to work outside their home, and (iii) prepare people who intend to migrate to the BEZs with basic skills and awareness of their rights in different economic and cultural contexts.

### **6.3 Policy Implications for Greater Mekong Subregion Cooperation**

The BEZs are the propulsive vehicles for cross-border economic integration and are important nodes in the economic corridors of the GMS. The presence of the BEZs in the border areas encourages cross-border trade and investment and facilitates structural change in the border economy. Based on the analysis of BEZs in Viet Nam, we propose the following recommendations to enhance GMS cooperation toward increasing female labor quality:

First, creating BEZs to generate employment and reduce poverty in backward border areas is an appropriate policy. To ensure that this employment generation effect can be extended to neighboring countries, the GMS governments should promote freer cross-border movement of labor. This can be implemented first within the areas of the paired BEZs on either side of the border.

Second, in line with the employment generation impact, the governments and local authorities in the border areas need to pay greater attention to the quality of female labor in the BEZs, rather than focusing merely on earnings. In this regard, the BEZs, in particular, and cross-border integration, in general, need a mechanism to turn the policy impact from output to outcome, or to convert the policy that has increased the number of jobs and quantity of labor supply into a policy that will increase the quality of jobs and quality of labor supply.

Third, at the current stage, the informal sector makes a large contribution to the employment generation effect of most BEZs, and although it has the advantage of flexibility, it lacks sufficient incentives to encourage the sustainable development of human capital. Thus, our research strongly recommends that civil society organizations take a more active role. These organizations can cooperate closely with local authorities and businesses to make a significant contribution to

- i. increasing cross-border communication between demand and supply of labor, e.g., by organizing regular job fairs and creating career orientation centers to introduce the opportunities of cross-border employment;
- ii. improving working conditions for female labor abroad, e.g., by propagating, publicizing, and monitoring the application of labor standards in the BEZs of the neighboring countries; and by supporting the establishment of women's groups and networks, especially among migrant and seasonal workers; and
- iii. ensuring gender equality in the BEZs and the border areas, e.g., by conducting awareness-raising programs on gender in the workplace abroad and in the communities to encourage women to work outside the home and to seek new job opportunities across borders, and to prepare migrants to BEZs outside the country with basic skills and an awareness of their rights.

Local authorities should work closely with civil society toward the same aims. The government can support civil society organizations by providing them with direct funding for campaigns and propagating programs, and by providing facilities through implementing public projects (e.g., setting up training centers, clinics, and other public venues).

The GMS governments can look forward to harmonizing their labor regulations, and establishing a joint monitoring mechanism for labor standards. This can be done first in the BEZ areas. More importantly, at

this nascent stage of cooperation in labor policy and an integrated labor market, the national and local governments in the GMS should avoid “beggar-thy-neighbor” and “race-to-the-bottom” policies to push or pull the labor force.

#### **6.4 Limitations and Future Research**

The research finds that although cross-border integration and the presence of the BEZs in the border provinces help to increase job opportunities and income for female labor, there is a weak feedback link between these benefits and various intertwined aspects of human capital and social progress, such as educational level, skills, job type, and gender equality. The BEZ labor market therefore has oppressive features for women.

However, it must be noted that our research was not designed to target labor quality directly. Rather, it looks first at the earnings of female labor, then at the factors that influence earnings (e.g., education, skills, occupation, gender, and involvement in the economic activities associated with the BEZs); then, it recommends policy measures to convert the increase in earnings into an increase in the quality of female labor. In this manner, the research can address complications in the practical measurement of labor quality.

Although the research has uncovered multifaceted problems concerning female labor quality—including social ones—in the BEZs, it does not intend to go much beyond the economic rationale of these problems in order to find the solutions (i.e., it concentrates primarily on issues such as earnings, the earnings gap between male and female labor, and investment on education and health facilities). Further research may choose to investigate from the perspective of gender and the development of the social mechanisms (e.g., social capital and social networking) for connecting income to gender equality and human capital development of female workers in the BEZs.

In addition, from an economic perspective, it seems that little attention has been paid so far to exploring the comparative advantages of the different BEZs in the GMS. In theory, each country may have comparative advantages over its neighbors and this encourages cooperation among them. This calls for more research into the comparative advantages of the BEZs in Cambodia, the Lao PDR, Viet Nam, and Yunnan Province in the PRC.

## References

- Asian Development Bank Institute (ADBI). 2008. *E-newsline*. 22/8/2008. <http://www.adbi.org/e-newsline/080822.html> accessed 25 August 2009.
- . 2006. *Foreign Direct Investment in the Transition Economies*. <http://www.adbi.org/book/2006/10/23/2053.mekong.direct.investment/foreign.direct.investment.in.the.transition.economies/> (accessed 24 August 2009).
- Aggarwal, A. 2007. *Impact of Special Economic Zones on Employment, Poverty and Human Development*. Indian Council for Research on International Economic Relations. May 2007. New Delhi, India.
- Becker, G. S. 1964. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Chicago: University of Chicago Press.
- . 1985. Human Capital, Efforts and the Sexual Division of Labor. *Journal of Labor Economics* 3 (1). pp. 33–58.
- Diep, P. N. 2009. A Report on Viet Nam's Labor Market. CIEM-DANIDA Project.
- Edmonds, E. and N. Pavcnik. 2004. *Product Market Integration and Household Labor Supply in a Poor Economy: Evidence from Viet Nam*. Dartmouth College and the National Bureau of Economic Research (NBER).
- Galenson, W. and G. Pyatt. 1966. The Quality of Labor and Economic Development in Certain Countries: A Preliminary Study. *Industrial and Labor Relations Review*. 19 (2). pp. 314–315. (Reviewed by Spielmanns J.V.)
- General Statistics Office (GSO). 2007. *Labor Survey Data*. 2007. Ha Noi.
- GSO. 2010. *Statistical Yearbook 2009*. Ha Noi.
- Government of Viet Nam. 2002. Labor Code of Socialist Republic of Viet Nam. Ha Noi.
- Government of Viet Nam, Ministry of Planning and Investment. 2009. *Result-Based Mid-Term Review Report for Implementation of the Five-Year Socio-Economic Development Plan, 2006–2010*. Ha Noi.
- Heron, T. 2004. Export Processing Zones and Policy Competition for Foreign Direct Investment: The Offshore Caribbean Development Model. In G. Harrison, ed., *Global Encounters: International Political Economy, Development Theory and Governance*. London: Palgrave.
- Hersch, J. 1991. Male-Female Differences in Hourly Wages: The role of human capital, working conditions and housework. *Industrial and Labor Relations Review*. 44 (1). pp. 746–759.
- Horowitz, S. A. and A. S. Sherman. 1980. A Direct Measure of the Relationship between Human Capital and Productivity. *The Journal of Human Resources* 15 (1). pp. 67–76.
- Hue, N. 2009. *Economy and Forecasting*. <http://www.tinkinhte.com/nd5/detail/cong-nghiep/khu-cong-nghiep-khu-kinh-te/cac-khu-kinh-te-cua-khau-thuc-day-tang-truong-kinh-te-dat-nuoc/36287.136147.html> (accessed 19 August 2009).

- International Labour Organization (ILO). 1998. Labor and Social Issues Relating to Export Processing Zones. Technical Background Paper for The International Tripartite Meeting of Export Processing Zone-Operating Countries in Geneva, 28 September–2 October 1998. ILO, Geneva. Geneva. 28 September to 2 October.
- ILO. 2001. *Labor Migration and Trafficking within the Greater Mekong Subregion: Proceedings of Mekong subregional experts meeting and exploratory policy paper*. Bangkok, Thailand. December 2001.
- ILO. 2003. Employment and Social Policy in Respect of Export Processing Zones. *Committee on Employment and Social Policy*. Geneva. GB.286/ESP/3, March.
- ILO. 2008. *Responsive migration policy and practice - Labor dimensions of human trafficking: understanding the issue and effective responses, lessons from the Greater Mekong Subregion*. <http://www.ilo.org/public/english/region/asro/bangkok/child/trafficking/downloads/labordimension/d3s3-2-safe-migration.pdf> (accessed 3 April 2009).
- International Organization for Migration (IOM). 2006. *Review of labor migration dynamics in Cambodia*. Cambodia: IOM.
- Invest in Cambodia. 2009. [http://www.investincambodia.com/economic\\_zones/sezs.htm](http://www.investincambodia.com/economic_zones/sezs.htm) (accessed 27 August 2009).
- Jacobsen, J. P. 1998. *The economics of gender* (2nd [upd.] ed.), Malden, MA: Blackwell.
- Johansson, H. 1994. The Economics of Export Processing Zones Revisited. *Development Policy Review*. 12. pp. 387–402.
- Koch, M. J. and R.G. McGrath. 1996. Improving Labor Productivity: Human Resource Management Policies do Matter. *Strategic Management Journal*. 17 (5). pp. 335–354.
- Kusago, T. and Z. Tzannatos. 1998. Export Processing Zones: A Review in Need of Update. *World Bank Discussion Paper No. 9802*. World Bank. Washington, DC.
- Linh, N. 2008. *Law on Gender Equality and the Responsibility of Government Organizations*. (Luật bình đẳng giới và trách nhiệm của các cơ quan quản lý nhà nước). Civil Law Network. Ha Noi, Viet Nam.
- Mekong Institute. 2006. Transborder Migration Flows to and from Cambodia. *Regional Policy Formulation Meeting on Transborder Migration in Greater Mekong Subregion*. Thailand.
- Mincer, J. 1974. *Schooling, Experience and Earnings*. New York: National Bureau of Economic Research.
- Pigou, A. C. 1928. *A Study in Public Finance*. Macmillan: London. p. 29.
- Smith, A. 1776. An Inquiry into the Nature and Causes of the Wealth of Nations. In E. Cannan, ed. 1976. *Of the Nature, Accumulation, and Employment of Stock*. Chicago: University of Chicago Press. <http://www.econlib.org/library/Smith/smWN.html>

Tinkinhte, 2009. *Border-Gate Economic Zones Promote Economic Growth of the Country*. (Các khu kinh tế cửa khẩu thúc đẩy tăng trưởng kinh tế đất nước). <http://www.tinkinhte.com/nd5/detail/cong-nghiep/khu-cong-nghiep-khu-kinh-te/cac-khu-kinh-te-cua-khau-thuc-day-tang-truong-kinh-te-dat-nu-oc/36287.136147.html> (accessed 20 August 2009).

United Nations Development Programme. 2007. *Human Development Report 2007/2008*. New York.

Ward, W. A. 1997. *Labor Quality and Economic Development: Development Strategies for Anderson County* (South Carolina). In the *New Global Competition*, Working Paper WP081597, Department of Agricultural and Applied Economics, Clemson University.

World Bank. 1995. *Priorities and Strategies for Education: A World Bank Review (Development in Practice)*. World Bank. Washington, DC.

## Appendix 1 Labor Questionnaire

Question No. \_\_\_\_\_

### A. Respondent's Information

- A1. Respondent's full name: \_\_\_\_\_
- A2. Head of the household:                    1. Yes                        2. No
- A3. Gender:                                        1. Male                        2. Female
- A4. Age: \_\_\_\_\_
- A5. Current marital status:                    1. Married                    2. Not married
- A6. How many children do you have?: \_\_\_\_\_ persons
- A7. Ethnic group:                                1. Kinh                        2. Other
- A8. Address:
- Commune/District Town: \_\_\_\_\_
- District/Provincial Town: \_\_\_\_\_
- Province/City: \_\_\_\_\_
- A9. Area:    1. Urban                        2. Rural
- A10. Education level:                            1. Primary                        4. Vocational training
2. Lower Secondary            5. University/college
3. Upper secondary            6. Above university
- A11. Your current employment: \_\_\_\_\_
- A12. Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_
- A13. Inquirer's full name: \_\_\_\_\_

### B. General Household Information

- B1. How many members are there in your family?: \_\_\_\_\_ persons
- B2. Are there persons who have earned income in your household?: \_\_\_\_\_ persons
- B3. Was your household classified as a poor one of the commune in this year?
1. Yes                        2. No
- B4. Do you participate directly in the economic activities related to the BEZ?
- B4.1. Directly, and being native labor                        => go to part BI
- B4.2. Indirectly, and being migrant worker, moving in after 2007:        => go to part BII
- B4.3. No        => go to part D



**BI. For Native Labor**

B5. Please indicate the amount of your household's income over the last 12 months (thousand dong per month) from the following sources

No.	Source	1. Monthly Average income in 2009 (thousand dong)	2. Monthly Average income in 2007 (% of total income)
1.	Agriculture production		%
2.	Services		%
3.	Construction and industry		%
4.	Wage and salary (bureaucrat, military personnel and policeman)		%
5.	Subsidies (poor household, pension, etc.)		%
6.	Other		
	<b>Total</b>		
	Income from working in BEZ as % of total income		

B6. Please compare the current living standard of your household with that of 2007:

No.	Item	1. Higher	2. Unchanged	3. Lower
1.	Food			
2.	Education			
3.	Health care			
4.	Entertainment			
5.	Accommodation			
6.	Infrastructure (road, clean water, electricity, etc.)			
7.	Sanitary/environmental conditions			
8.	Working conditions			
9.	Income			

**BII. For Migrant Workers (moving in after 2007)**

B7. Year moved in: \_\_\_\_\_

B8. Just before you moved here, where did you live?

Another commune

Another district

Another province/city

Other case: \_\_\_\_\_

B9. What was your occupation before you came to BEZ?

B9.1. Main job:

- 1. Industry sector
- 2. Service
- 3. Agriculture
- 4. Bureaucrat, government official, military personnel, policeman
- 5. Aid recipient (pension, poor subsidies)

B9.2. Extra job:

- 1. Industry sector
- 2. Service
- 3. Agriculture
- 4. Others: \_\_\_\_\_

B10. Please specify why did you move to BEZ?

No.	Reasons	1. Important	2. Less important	3. Unimportant
1.	More job opportunity			
2.	Higher income			
3.	Better working conditions			

B11: Please compare your current working and living conditions with the conditions before you came to BEZ.

No.	Condition	1. Better	2. Unchanged	3. Lower
1.	Food			
2.	Education			
3.	Health care			
4.	Entertainment			
5.	Accommodation			
6.	Infrastructure (road, clean water, electricity, etc.)			
7.	Sanitary/environmental conditions			
8.	Working conditions			
9.	Income			

B12. Please indicate your monthly average income and your household (thousand dong).

Item	Individual		Household	
	1. Before the establishment of BEZ	2. Currently	1. Before the establishment of BEZ	2. Currently
Total				
Of which				
1. Agriculture production				
2. Service (small business)				
3. Construction and industry				
4. Wage, salary (official, military personnel, policeman)				
5. Subsidies (pension, poor household)				
6. Other				

**C. For Labor Working in BEZ**

C1. What is your occupation in the BEZ?

No.	Main Job	Begin since (year, month in year)	Working time (hours per day, or days per month, or months per year)	Average income (thousand dong)
1.	Jobs require high skills (owner of shop, restaurant, business enterprise; manager; professional accountant; etc.)			
2.	Jobs require moderate skills (being trained from one week to two years, salesperson, guard person, worker, etc.)			
3.	Unskilled jobs (jobs do not need trainings, motorcycle/taxi driver, porter, etc.)			
No.	Extra Job			
1.	Jobs require high skills (owner of shop, restaurant, business enterprise; manager; professional accountant; etc.)			

No.	Extra Job	Begin since (year, month in year)	Working time (hours per day, or days per month, or months per year)	Average income (thousand dong)
2.	Jobs require moderate skills (being trained from one week to two years, salesperson, guard person, workers, etc.)			
3.	Unskilled jobs (jobs do not need trainings, motorcycle/taxi driver, porter, etc.)			

C2. Indicate the importance of your income from BEZs in the total income of the household

1. Main income of the household
2. 50% of total household income
3. Extra income of the household

C3. Please indicate the importance of the following factors to do well your work above

No.	Factor	1. Important	2. Less important	3. Non-important
1.	Trained			
2.	Capital			
3.	Experience			
4.	Health			
5.	Male			
6.	Female			

C4. Do you agree with the following statements regarding male and female labor in the BEZ?

No.	Item	1. Agree	2. Don't agree
1.	Male gets job more easily.		
2.	Male's income (earning) is higher.		
3.	Male has more stable job.		
4.	Male's job needs higher skill.		
5.	Male's work is more exhausting.		

C5. What is the biggest difficulty female labor face when they are working in BEZ?

No.	Item	1. Significant	2. Less significant	3. Insignificant
1.	Skill/ability limitation			
2.	Physical limitation			
3.	Time to take care of family/ children			
4.	Lack of capital			
5.	Prevented by the family			

C6. Please indicate the level of stability of your income?

- 1. Very stable
- 2. Stable
- 3. Average
- 4. Unstable
- 5. Very unstable

C7. How do you feel about your present job in BEZ?

- 1. Very satisfied
- 2. Satisfied
- 3. Average
- 4. Unsatisfied
- 5. Very unsatisfied

C8. Please indicate the job opportunity for female labor in the BEZ?

- 1. Very easy
- 2. Easy
- 3. Average
- 4. Difficult
- 5. Very difficult

C9. How did you look for this job?

- 1. By myself
- 2. By relation
- 3. Labor agency/employment office
- 4. Local government, organization (women's union, etc.)
- 5. Communication (TV, radio, newspaper, etc.)

C10. Do you have an employment contract?

- 1. Yes
- 2. No

C11. Are you paid social insurance?

- 1. Yes
- 2. No

C12. In general, the female labor working in the BEZ are:

- 1. Unskilled
- 2. Skilled labor
- 3. Mixed

**D. For Labor who do not Participate in Economic Activities of the BEZ**

D1. What is your occupation?

- 1. Industry/construction sector
- 2. Service
- 3. Agriculture
- 4. Bureaucrat, government official, military personnel, policeman
- 5. Student/pupil
- 6. Unemployed
- 7. Other \_\_\_\_\_

D2. Please indicate the amount of your household's income over the last 12 months (thousand dong per month) from the following sources:

No.	Source	1. Monthly Average income in 2009 (thousand dong)	2. Monthly Average income in 2007 (% of total income)
1.	Agriculture production		%
2.	Services		%
3.	Construction and industry		%
4.	Wage and salary (bureaucrat, military personnel, policeman)		%
5.	Subsidies (poor household, pension, etc.)		%
6.	Other		
	<b>Total</b>		
	Income from working in BEZ as % of total income		

D3. Please indicate why you do not participate in economic activities of the BEZ

No.	Reason	1. Significant	2. Less significant	3. Insignificant
1.	Do not have skill/degree/ training			
2.	Lack of capital			
3.	Physical limitation			
4.	Living far away from BEZ			
5.	Being a woman			
6.	Have to spend time taking care of family/children			
7.	Low income			
8.	Other			

D4. Have you known the demand for labor in the BEZ?

1. Yes

2. No

D5. Do you want to participate in the economic activities of the BEZ?

1. Yes

2. No

Thank you!

## Appendix 2 In-Depth Interview Report

A number of issues were discovered during the in-depth interviews with local officials and workers in the BEZs in Mong Cai, Cau Treo, and Moc Bai.

### Mong Cai

According to local officials, the establishment of Mong Cai BEZ has brought benefits to local residents and migrants who now can easily access job opportunities that do not require a high level of education. Workers currently only need to participate in a training course of about 1 or 2 months to adapt to a new job. Others were mainly in manual work (e.g., porters, drivers, and sellers). Because of easier access to job opportunities, young people tend to drop from school to earn money by doing simple jobs that do not require high levels of skills or training. They consider capital, experience, and practical skills even more important than diplomas or certificates.

**Excerpt of Interview with a Female Worker (21 years old, single, local, telephone salesperson in Mong Cai electronic market)**

*I think that young people do not want to improve their education level because higher education does not mean more money for them. The most important thing is the ability to adapt to a new job. Many people spend their time learning a foreign language. I say that practical skills are more crucial. Moreover, getting a job also depends on social relations. For example, people with secondary education can find a job in the BEZ. Therefore, education is not essential.*

The establishment of the BEZ has helped local people and migrant workers improve their income and alleviate poverty.

**Excerpt of Interview with a Male Worker (52 years old, married with 2 children, Bac Ninh Province)**

*In our hometown, my wife and I tried to work hard but our income was only enough to meet our essential needs. This forced me to move to Mong Cai and work as a driver. Currently, I earn D200,000 per day (about \$11). After subtracting all expenses, I could save about D4 million per month (about \$220). Working in Mong Cai has helped me earn money more easily. My work is not as difficult as in my hometown.*

Interviews with local officials also revealed that a number of women agricultural workers did not participate in BEZ activities and that this trend has increased sharply recently. This is because there was reportedly an increase in the number of women being trafficked in BEZs, so female workers were afraid of participating in activities in and near BEZs.

**Excerpt of Interview with the President of the Women's Union of Ninh Duong Ward**

*75 % of women in the ward are working in the agriculture sector. Most of them were afraid to take part in activities in and near BEZs because the number of trafficked women has increased recently. Doing farm work at home is more stable than working in BEZs.*

There is a women's club in Mong Cai, but its role is still limited.



**Excerpt of Interview with a Member of the Businesswomen’s Club of Mong Cai City**

*The club was established with 20 people in 1998. From 2001 to 2005, there were 75 members and this was the highest number. Now, the number of businesswomen in the club is only 45. After 2007, many people shifted to different sectors and migrated to other places to do business. This caused difficulties for the club’s operations.*

Regional discrimination among migrants was also raised in the interviews. It is reported that migrants from the same hometown or province always gather together in the same places.

**Excerpt of Interview with a Female Labor (23 years old, salesperson in a telephone shop, Bac Giang Province)**

*I have been working in this BEZ for about 2 years. My salary is D2 million (about \$110), including lunch. I rented a house together with three friends who came from the same hometown. The houses for rent are grouped according to the same hometown or province (e.g., Bac Giang, Nam Dinh).*

**Cau Treo**

The interviews with the management board of Cau Treo BEZ, People’s Committee of Huong Son Ha Tinh District, enterprises, and local workers showed that the economic activities at the site were limited to trade and cross-border transport of goods. Cau Treo has a relatively disadvantageous geographical location and rugged terrain. This influences import–export activities between the BEZ and the neighboring country. Moreover, inconsistent government policies, bureaucracy, and cumbersome administrative procedures are hindrances for businesses wanting to invest.

**Excerpt of Interview with the Management Board of Cau Treo–Ha Tinh Border-Gate Economic Zone**

*Cau Treo was one of the three major BEZs in central Viet Nam. This site is less developed because of its disadvantageous geographical location and inconsistent government policies. Thus, it prevented foreign investors, as well as domestic enterprises, from investing in the site.*

*Cross-border transport of goods was limited because the neighboring country is also less developed. Import and export activities do not have many opportunities to increase.*

The average education level in the BEZ is low and many people have only secondary school education. Low education level and limitations in foreign languages reduce workers’ ability to gain high-paying jobs.

**Excerpt of Interview with a Female Worker (21 years old, salesperson in Trade Center, Tay Son Town)**

*I dropped from my secondary school. My family was very poor, thus, I migrated to Ha Noi to earn money. My salary at that time was about D700,000 per month (about \$33), including lunch. The low salary forced me to return home to find another job. I was employed in a grocery shop with basic salary of D850,000 (about \$44) per month, including lunch. My income would increase depending on the shop’s sales.*

Currently, the majority of the local youth go to other regions to improve their education. The rest are mainly workers in the agriculture and forestry sectors and have small business in the BEZ.

**Excerpt of Interview with a Female Labor (21 years old, Son Kim Commune, hotel receptionist in Tay Son Town)**

*I finished high school. With D1.6 million (\$90) per month, I do not have to support my family. For me, working in this hotel is appropriate. I do not have any intention to improve my education level or find an alternative job.*

*In my hometown, young people, who finished secondary school or high school, tend to improve their education level or migrate to other places because there are not many job opportunities for locals as well as migrants.*

**Moc Bai**

Economic activities in Moc Bai are still scattered because this site is still in the process of expansion. Thus, the site has few opportunities to attract investment. Currently, trade centers, seven big and mini supermarkets, and duty-free shops have been established. Expanding these zones creates more jobs for local labor. The majority of laborers working on the site are low- and medium-skilled.

**Excerpt of Interview with the Management Board of Moc Bai Border-Gate Economic Zone**

*According to our statistics, there are about 1,800 laborers in the BEZ and most of them are locals and work as sellers. More policies have been issued to encourage local female workers.*

The interview with local workers revealed that degrees were not required when workers apply for the job. Normally, newly employed workers will be trained. According to local workers, a higher level of education will not bring in higher income. Rather, local workers should be informed in a timely manner about enterprises' recruitment requirements.

**Excerpt of Interview with a Male Worker (29 years old, salesperson, duty free shop)**

*I have been working here since 2006. My initial income was nearly \$100 a month. After 2 years, my wage increased a little bit more. I had to have a high school level education to get this job. Working in this position does not require a higher degree. If I had a higher degree, I would still receive the same wage. I was sent for training for a week with assistance from the company.*

**Excerpt of Interview with a Female Labor (23 years old, salesperson)**

*I have been working as a salesperson in this supermarket since 2008. I work from 8 a.m. to 5 p.m. every day. My salary is \$110 per month. My house is not far from here, so when the company announced it was recruiting, I applied for this job. At that time, the company was newly established, so it was easier for me to get a job because there was less competition.*

### Appendix 3 Viet Nam Household Living Standard Survey Data

**Table A3.1 Education Level of Labor in Provinces with and without Border-Gate Economic Zones (%)**

Education level	2002		2004		2006		2008	
	With BEZs	Without BEZs	With BEZs	Without BEZs	With BEZs	Without BEZs	With BEZs	Without BEZs
Primary school	42.8	44.4	32.1	35.0	37.5	35.1	34.6	36.4
Secondary school	33.4	34.9	34.4	37.1	34.4	36.7	36.8	36.7
High school	9.1	10.9	14.2	15.9	11.4	12.6	11.6	11.6
Vocational training school	12.1	7.4	14.3	8.2	11.8	12.2	11.7	9.9
College and higher	2.7	2.5	4.9	3.8	5.0	3.4	5.3	5.5

BEZs = border-gate economic zones.

Note: Data refer to average for provinces that host the BEZs and for provinces that do not host BEZs.

Sources: Authors' calculation based on the Viet Nam Household and Living Standard Survey in 2002, 2004, 2006, 2008.

**Table A3.2 Key Indicators for Human Development of Provinces with and without Border-Gate Economic Zones (D)**

Presence of BEZ	Household Expenditure per year	Household Education Expenditure per year	Household Health Expenditure per year
<b>2002</b>			
With BEZs	14,071.00	676.73	665.36
Without BEZs	12,897.00	733.96	751.64
<b>2004</b>			
With BEZs	18,132.00	1,019.90	885.70
Without BEZs	16,993.00	1,016.20	1,133.70
<b>2006</b>			
With BEZs	23,200.00	1,260.10	1,394.20
Without BEZs	20,701.00	1,247.30	1,132.50
<b>2008</b>			
With BEZs	34,585.00	1,791.60	1663.30
Without BEZs	33,127.00	1,837.60	1456.30

BEZs = border-gate economic zones, D = dong.

Note: Data refer to average for provinces that host the BEZs and for provinces that do not host the BEZs.

Sources: Authors' calculation based on the Viet Nam Household and Living Standard Survey in 2002, 2004, 2006, 2008.

## Appendix 4 Border-Gate Economic Zone Survey Data

**Table A4.1 Responses to the Question for Native Labor: Please compare the current living standard of your household with that of 2007 (%)**

Item	Higher	Unchanged	Lower
Food	91.1	8.5	0.5
Education	69.5	30.5	0.0
Health care	46.9	50.2	2.8
Entertainment	53.5	46.0	0.5
Accommodation	48.8	50.2	1.0
Infrastructure (road, clean water, electricity)	77.0	22.1	0.9
Sanitary/environmental conditions	61.5	37.1	1.4
Working conditions	91.5	7.1	1.4
Income	95.3	3.3	1.4

**Table A4.2 Responses to the Question for Migrant Workers: Please specify why did you move to the BEZ? (%)**

Reasons	Important	Less important	Unimportant
More job opportunity	90.0	6.7	3.3
Higher income	86.2	3.4	10.3
Better working condition	44.8	17.2	37.9

BEZ = border-gate economic zone.

**Table A4.3 Responses to the Question for Migrant Workers: Please compare your current working and living conditions with the conditions before you came to BEZ (%)**

Condition	Better	Unchanged	Lower
Food	69.0	17.2	13.8
Education	17.9	50.0	32.1
Health care	20.7	48.3	31.0
Entertainment	34.5	48.3	17.2
Accommodation	27.6	41.4	31.0
Infrastructure (road, clean water, electricity)	27.6	58.6	13.8
Sanitary/environmental conditions	24.1	58.6	17.2
Working conditions	86.2	10.3	3.4
Income	86.2	10.3	3.4

BEZ = border-gate economic zone.

**Table A4.4 Responses to the Question for Labor Engaged in BEZ Economic Activities:  
Indicate the importance of your income from BEZs in total income of the household (%)**

Item	Responses
Main income of the household	55.5
50% of total household income	26.9
Extra income of the household	17.6

BEZs = border-gate economic zones.

**Table A4.5 Responses to the Question for Labor Engaged in BEZ Economic Activities:  
Please indicate the importance of the following factors to do well your work above (%)**

Factor	Important	Less important	Unimportant
Trained	49.0	19.2	31.8
Capital	45.2	29.7	25.1
Experience	80.3	12.6	7.1
Health	93.7	3.8	2.5
Being male	44.5	33.5	22.0
Being female	18.4	48.4	33.2

BEZ = border-gate economic zone.

**Table A4.6 Responses to the Question for Labor Engaged in BEZ Economic Activities:  
Do you agree with the following statements regarding male and female labor in the BEZ? (%)**

Statement	Agree	Don't agree	Don't know
Male gets job more easily.	57.7	34.7	7.5
Male's income (earning) is higher.	38.9	54.4	6.7
Male has more stable job.	52.3	39.7	7.9
Male's job needs higher skill.	37.7	46.9	15.5
Male's work is more exhausting.	76.6	15.5	7.9

BEZ = border-gate economic zone.

**Table A4.7 Responses to the Question for Labor Engaged in BEZ Economic Activities:  
What is the biggest difficulty female labor face when they are working in BEZ? (%)**

Difficulty	Significant	Less significant	Insignificant
Skill and/or ability limitation	56.3	23.9	19.7
Physical limitation	67.2	20.2	12.6
Time to take care of family and/or children	66.4	25.2	8.4
Lack of capital	45.0	34.9	20.2
Prevented by the family	31.5	48.7	19.7

BEZ = border-gate economic zone.

**Table A4.8 Responses to the Question for Labor Engaged in BEZ Economic Activities:  
Please indicate the level of stability of your income (%)**

Gender	Very Stable	Stable	Average	Unstable	Very unstable
Male	1.7	10.3	72.4	14.7	0.9
Female	0.0	17.4	62.0	19.8	0.8

BEZ = border-gate economic zone.

**Table A4.9 Responses to the Question for Labor Engaged with BEZ Economic Activities:  
How do you feel about your present job in the BEZ? (%)**

Gender	Very satisfied	Satisfied	Average	Unsatisfied	Very unsatisfied
Male	1.7	23.3	64.7	10.3	0.0
Female	0.8	17.4	59.5	21.5	0.8

BEZ = border-gate economic zone.

**Table A4.10 Responses to the Question for Labor Engaged  
in BEZ Economic Activities: Please indicate the job  
opportunity for female labor in the BEZ.**

Item	%
Very easy	0.4
Easy	15.1
Average	60.9
Difficult	23.5
Very difficult	0.0

BEZ = border-gate economic zone.

**Table A4.11 Responses to the Question for Labor Engaged in BEZ Economic Activities:  
How did you look for this job? (%)**

Gender	By Myself	By Relationship	Labor Agency or Office	Local Government, Organization	Communication (TV, Radio, Newspaper)	Other
Male	64.1	26.5	0.9	0.9	0.0	7.7
Female	63.6	20.7	0.0	0.0	0.0	15.7

BEZ=border-gate economic zone.

**Table A4.12 Responses to the Question for Labor Engaged in BEZ Economic Activities: Do you have an employment contract? (%)**

<b>Gender</b>	<b>Yes</b>	<b>No</b>
Male	36.8	63.2
Female	44.6	55.4
<b>Total</b>	<b>41.0</b>	<b>59.0</b>

BEZ = border-gate economic zone.

**Table A4.13 Responses to the Question for Labor Engaged in BEZ Economic Activities: Are you paid social insurance? (%)**

<b>Gender</b>	<b>Yes</b>	<b>No</b>
Male	27.4	72.6
Female	37.2	62.8
<b>Total</b>	<b>32.2</b>	<b>67.8</b>

BEZ=border-gate economic zone.

**Table A4.14 Responses to the Question for Labor Engaged In BEZ Economic Activities: In general, the female workers in the BEZ are... (%)**

<b>Item</b>	<b>%</b>
Unskilled labor	73.9
Skilled labor	9.2
Mixed	16.8

BEZ = border-gate economic zone.

**Table A4.15 Responses to the Question for Labor not Engaged in BEZ Economic Activities: Please indicate why you do not participate in economic activities of the BEZ (%)**

<b>Reason</b>	<b>Significant</b>	<b>Less significant</b>	<b>Insignificant</b>
Do not have skill, degree, or training	55.9	22.7	21.4
Lack of capital	42.9	18.1	39.1
Physical limitation	62.2	17.6	20.2
Living far away from BEZ	10.5	58.4	31.1
Being a woman	21.4	51.3	27.3
Have to spend time taking care of family and/or children	46.2	25.6	28.2
Low income	54.6	18.5	26.9

BEZ = border-gate economic zone.

**Table A4.16 Responses to the Question for Labor Not Engaged In BEZ Economic Activities: Have you known the demand for labor in the BEZ? (%)**

<b>Gender</b>	<b>Yes</b>	<b>No</b>
Male	81.9	18.1
Female	84.4	15.6
<b>Average</b>	<b>83.2</b>	<b>16.8</b>

BEZ = border-gate economic zone.

**Table A4.17 Responses to the Question for Labor not Engaged in BEZ Economic Activities: Do you want to participate in the economic activities of the BEZ? (%)**

<b>Gender</b>	<b>Yes</b>	<b>No</b>
Male	71.6	28.4
Female	67.2	32.8
<b>Average</b>	<b>69.4</b>	<b>30.6</b>

BEZ = border-gate economic zone.



## Appendix 5 Diagnostic Test Results

### Viet Nam Household Living Standard Survey 2008:

#### I. Tests for Basic Earning Function

```
. estat ovtest
```

Ramsey RESET test using powers of the fitted values of L\_Earning

```
Ho: model haus no omitted variables
    F(3, 1796) = 10.62
    Prob > F   = 0.0000
```

```
. estat imtest, white
```

```
White's test for Ho: homoskedasticity
  against Ha: unrestricted heteroskedasticity
    chi2 (8) = 64.23
    Prob > chi2 = 0.0000
```

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	64.23	8	0.0000
Skewness	47.66	3	0.0000
Kurtosis	13.10	1	0.0003
Total	124.99	12	0.0000

```
. estat hettest, normal
```

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

```
Ho: Constant variance
Variables: fitted values of L_Earning
    chi2 (1) = 39.01
    Prob > chi2 = 0.0000
```

```
. estat dwatson
```

Durbin-Watson d-statistic ( 4, 1803) = 1.940555

```
. estat bdgofrey, lags (1 2 3)
```

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	1.506	1	0.2198
2	4.831	2	0.0893
3	5.628	3	0.1312

```
Ho: no serial correlation
```

```
. estat vif
```

Variable	VIF	1/VIF
Exper2	14.45	0.069226
Exper	14.44	0.069245
YoEdu	1.02	0.975741
Mean VIF	9.97	

## II. Tests for Extended Earning Function

```
.
. estat ovtest

Ramsey RESET test using powers of the fitted values of L_Earning
Ho:    model haus no omitted variables
      F(3, 1755) = 6.93
      Prob > F   = 0.0003

. estat imtest, white
White's test for Ho:    homoskedasticity
against Ha:            unrestricted heteroskedasticity
chi2 (23) =            79.23
Prob > chi2 =          0.0000
```

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	79.23	23	0.0000
Skewness	49.65	6	0.0000
Kurtosis	15.58	1	0.0001
Total	144.46	30	0.0000

```
. estat hettest, normal
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho:    Constant variance
Variables: fitted values of L_Earning
chi2 (1) =    41.82
Prob > chi2 =    0.0000
```

```
.estat dwatson
Number of gaps in sample:    37
Durbin-Watson d-statistic ( 7, 1765)    =    1.920575
. estat bdgofrey, lags (1 2 3)
Number of gaps in sample:    37
```

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	0.667	1	0.4141
2	3.508	2	0.1730
3	4.117	3	0.2491

Ho: no serial correlation

```
.
. estat vif
```

Variable	VIF	1/VIF
Exper	14.45	0.069206
Exper2	14.40	0.069454
YoEdu	1.68	0.596052
Skill	1.58	0.634615
Area	1.10	0.908803
Integration	1.04	0.957594
Mean VIF	5.71	

## Border-Gate Economic Zone Survey Data

### I. Tests for Basic Earning Function

. estat ovtest

Ramsey RESET test using powers of the fitted values of L\_Earning

Ho: model haus no omitted variables  
 F(3, 393) = 3.73  
 Prob > F = 0.0115

. estat imtest, white

White's test for Ho: homoskedasticity  
 against Ha: unrestricted heteroskedasticity  
 chi2 (8) = 16.50  
 Prob > chi2 = 0.0358

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity			
Skewness			
Kurtosis			
Total			

. estat hetttest, normal

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance  
 Variables: fitted values of L\_Earning  
 chi2 (1) = 8.15  
 Prob > chi2 = 0.0043

.estat dwatson

Number of gaps in sample: 2  
 Durbin-Watson d-statistic ( 4, 400) = 1.506247

. estat bdgodfrey, lags (1 2 3)

Number of gaps in sample: 2

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	24.679	1	0.0000
2	39.775	2	0.0000
3	51.056	3	0.0000

Ho: no serial correlation

. estat vif

Variable	VIF	1/VIF
Exper2	20.98	0.047660
Exper	20.39	0.049043
YoEdu	1.23	0.811146
Mean VIF	14.20	

## II. Tests for Extended Earning Function

```
.
. estat ovtest

Ramsey RESET test using powers of the fitted values of L_Earning
Ho:    model haus no omitted variables
      F(3, 390)    = 7.99
      Prob > F    = 0.0000

. estat imtest, white
White's test for Ho:    homoskedasticity
against Ha:            unrestricted heteroskedasticity
chi2 (23)    =    32.33
Prob > chi2 =    0.0934
```

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	32.33	23	0.0934
Skewness	11.84	6	0.0657
Kurtosis	0.67	1	0.4128
Total	44.84	30	0.0400

```
. estat hettest, normal
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho:    Constant variance
Variables: fitted values of L_Earning
chi2 (1)    =    3.73
Prob > chi2 =    0.0534
```

```
.estat dwatson
Number of gaps in sample:    2
Durbin-Watson d-statistic ( 7, 400) =    1.614367
```

```
. estat bdgodfrey, lags (1 2 3)
Number of gaps in sample:    2
```

Breusch-Godfrey LM test for autocorrelation

lags (p)	chi2	df	Prob > chi2
1	14.118	1	0.0002
2	23.890	2	0.0000
3	29.742	3	0.0000

Ho: no serial correlation

```
. estat vif
```

Variable	VIF	1/VIF
Exper	22.97	0.043537
Exper2	21.62	0.046246
YoEdu	1.94	0.514913
Skill	1.52	0.659867
Area	1.50	0.667686
Integration	1.27	0.789404
Mean VIF	8.47	

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## Greater Mekong Subregion–Phnom Penh Plan for Development Management Research Report Series

This series features the scholarly works supported by the Phnom Penh Plan for Development Management, a region-wide capacity building program of the Asian Development Bank that supports knowledge products and services. It seeks to disseminate research results to a wider audience so that policy makers, implementers, and other stakeholders in the Greater Mekong Subregion can better appreciate and understand the breadth and depth of the region's development challenges.


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