THE LABOR MARKET RESPONSE TO ECONOMIC GROWTH IN VIETNAM: AGGREGATE AND MICRO-LEVEL ANALYSES OF LABOR MARKET INDICATORS FROM 1993 TO 2008

A Thesis

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ABSTRACT

Economic growth generally has been associated with declining poverty and increasing living standards (Fields 2001). When this is true, economic growth has translated into increased well-being through higher labor earnings and improved work opportunities (*World Development Report 1995* 3). Therefore, in order to understand the impacts of economic growth on a country, it becomes crucial to understand how economic growth transforms the labor market. This thesis examines how labor market indicators in Vietnam changed in response to economic growth from 1993 to 2008. First, I examined how aggregate labor market indicators changed from 1993 to 2008. Specifically, are workers employed in better job categories than before and are workers earning more for their labor than before? Secondly, I asked from 2002-2008 when individuals are followed over time in panel data, which personal and labor market characteristics are associated with the largest labor income gains? Utilizing the VLSS and VHLSS data, I created both anonymous and panel statistics to answer my research questions. I obtained my results by analyzing trends, descriptive statistics, and OLS regression outputs. This allowed me to understand which workers experienced larger gains in labor income than did others.

Looking at the aggregate, I found that from 1993 to 2008, overall, the labor market improved. All groups of workers enjoyed increasing wages and the composition of the labor market shifted towards high-paying employment categories. Therefore, workers were employed in better job categories and were earning more for their labor than previously. Additionally, in analyzing panel data to answer my second research question, I found from 2002 to 2008 that workers' employment categories and personal

characteristics impacted earnings changes. The specific employment categories that most impacted earnings change varied between two-year panels. However, the majority of workers remained in wage employment, but they experienced large earnings increases while remaining in wage employment. Thus, workers responded to economic growth by changing employment status or remaining within an employment status. Those who were employed outside of household enterprises experienced on average the largest income gains. The same is true of workers initially in the lowest income quintile. Thus, firm type and initial income proved to be the most significant predictors of change in income.

BIOGRAPHICAL SKETCH

Elaina Mule graduated with a B.S. in Industrial and Labor Relations (ILR) from Cornell University's ILR School in 2010. As an undergraduate Elaina's internships, coursework, and work experiences focused on labor economic research, economic development, and labor markets. Before returning to Cornell University to complete an M.S. focused in Labor Economics and International and Comparative Labor, Elaina spent a year in Budapest, Hungary as a Reese Miller Exchange Fellow of the Telluride Association. In Budapest, Elaina was a visiting student at Central European University and completed graduate work in International Public Policy. Elaina returned to Cornell University in 2012 through the ILR School's M.S. program. She served as a graduate teaching assistant for courses in Labor Economics and International and Comparative Labor. Elaina's coursework and research for her M.S. focused on econometrics, labor economics, economic development, and international labor markets.

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Secondly, I would like to thank the Cornell Institute for Social and Economic Research (CISER) and the Cornell Statistical Consulting Unit (CSCU). The instruction and guidance I received from these resources was crucial to the creation of my models and datasets. Their constant support was extremely helpful in my research process.

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I. INTRODUCTION

I.1 Background

Over the past two decades, Vietnam has experienced impressively high levels of economic growth. Between 1993 and 1998 GDP in Vietnam increased annually by 8.9% (Haughton 67). Similarly, between 2000 and 2009 Vietnam's annual growth rate averaged 7.5%. During the same period Asia and the Asian Pacific region experienced an average growth in GDP of 5.9%, while the world averaged 3.9% GDP growth. Therefore, we can see that Vietnam had one of the fastest growth rates in the world. Only China exceeded Vietnam's exceptional growth from 1993 to 2009 (*Labour and Social Trends in Vietnam* 7, Haughton 89).

Vietnam's economic success can be attributed largely to the reforms that occurred during the country's renovation process, known as the Doi Moi (*Vietnam Employment Trends* 5). The Doi Moi reforms are estimated to have increased the growth rate of GDP in Vietnam by about 5 percentage points (Dollar 39). Beginning in 1986 The Communist Party of Vietnam instituted policies in order to open their economy and promote a free market, retreating from a centrally planned economy. Polices such as trade liberalization, reducing tariffs and non tariff barriers, the introduction of real interest rates, stabilization of inflation, and strengthening agricultural property rights aimed to encourage foreign direct investment and the establishment of private business (Dollar 29, 38). Reform policies drove economic growth in the private sector while state investment in the economy reduced from 59% to 29% from 2000 to 2008 (*Labour and Social Trends in*

Vietnam, 8). These policies, establishing free market incentives, were successful in altering the Vietnamese economy.

Economic growth in Vietnam was coupled with an inevitable shift in the structure of the economy from one based in agriculture to one based in industry and manufacturing. This is evidenced by economic growth rates and contributions to GDP by industry. From 1999 to 2009 average annual growth rates in GDP for the industrial, manufacturing, and service sectors were 9.3%, 10.8%, and 7.1%, respectively (*Vietnam Employment Trends 2010* 5). Industry and construction increased their share of GDP from 35% in 2000 to 42% in 2008. Conversely, the average annual GDP growth rate for the agricultural sector was 3.7%. Similarly, the share of GDP contributed to by agriculture decreased from 23% to 17% from 2000 to 2008 (*Labour and Social Trends in Vietnam* 8). This indicates that the market reforms targeted growth in specific sectors and industries. Economic growth manifested prominently in the manufacturing industry and foreign-invested enterprises.

In addition, economic growth in Vietnam created new employment opportunities, altering the composition of employment in the labor market. For every 1 percentage point increase in GDP from 2000 to 2007 the International Labour Organization estimates that employment grew by 0.28 percent (*Labour and Social Trends in Vietnam* 12). Similarly, the World Bank asserts that "the surge in business activity associated with economic reforms has led to a huge increase in the demand for labor" (VDR 2006 84). This manifested through a decrease in the percentage of agricultural workers in the labor force and an increase in the share of workers in wage employment (*Labour and Social Trends*

in Vietnam 8, *Vietnam Employment Trends 2010* 7). The growth of foreign and privately owned enterprises as well as a retrenchment of state owned enterprises led to an expansion of wage employment opportunities. Thus, the labor market adjusted to changes in economic growth. Along with economic growth, Vietnam has experienced a notable increase in average income and a decrease in poverty. From 1998 to 2006 real earnings increased by 5.7% and poverty decreased from 37.4% in 1998 to 14% in 2008 (*Labour and Social Trends in Vietnam* 18, Nguyen 5). This indicates that workers in Vietnam are earning more and have increased their economic well-being. In fact, job creation in the private sector has been a driving factor of increasing incomes and a reduction in poverty.

In this thesis, I assert that as economic growth occurred well-being increased for Vietnamese workers. The changing composition of the labor force benefitted Vietnamese workers, as indicated by increased labor earnings and the composition of the labor market shifting towards higher paying employment.

I.2 Motivation

The motivation for this paper stems from the unique economic growth Vietnam has undergone, which has been promoted by its market reforms. Such reforms have benefited the Vietnamese people through the labor market. In order to prove that economic growth has been beneficial for the country as a whole, this thesis specifically looks at employment opportunities and labor income of the Vietnamese labor force. In order to judge the well being of the Vietnamese labor force, my thesis answers the following questions:

- During Vietnam's economic growth from 1993 to 2008, how have aggregate labor market indicators changed? Specifically, are workers earning more for their labor than before? And, are workers employed in better job categories than before?
- From 2002-2008 the existence of panel data allowed me to track individuals over time. In each two-year period, some workers enjoyed larger gains in labor income than did others. Which labor market characteristics and personal characteristics were associated with the largest gains in labor income?

If labor income is increasing and employment opportunities are expanding in high paying jobs, then workers' welfare is deemed to be increasing. Similarly, if economic growth promotes workers to change their employment status and this is accompanied by a positive change in income, then workers are deemed to be better off. The availability of comprehensive datasets on employment and income in Vietnam at the individual level made it possible to answer the questions presented in this thesis.

Additionally, gaps exist in other researchers' work where the relationship between employment and income in Vietnam are concerned. Reports on employment trends produced by the International Labour Organization (ILO), World Bank, or Government of Vietnam have presented a wide range of research. Yet, such reports have failed to draw conclusions about the overall economic well being of the Vietnamese labor force. Rather, current research has concentrated on the welfare of specific groups of people within the labor market; the welfare of specific regions, industries, or sectors; and, often only offer a comparison of two years of data, without the aim of producing trends.

Similarly, other research has been devoted to employment quality, that is, employment conditions and social protections within Vietnam. Again, little attention is given to labor income as a judge of economic well being. Income mobility has also been a less prominent topic for research on Vietnam. The body of literature on income mobility in Vietnam has focused on poverty, inequality, and household income dynamics. The existing literature has not focused on individual labor income dynamics and its link to employment status. Thus, this thesis will fill in a research gap on the Vietnamese labor market by examining trends for all available data over a period of almost two decades and analyzing the relationship between employment status and income.

The structure of this thesis is as follows:

- Chapter 1 summarizes background information on economic growth and the labor market in Vietnam. In this chapter, I present the motivation for this thesis well as the hypotheses and a summary of findings.
- Chapter II presents information on the data sources utilized in this thesis. Chapter II also discusses methods used to transform and analyze the data in order to answer my thesis questions.
- Chapter III looks at trends in labor market indicators. Specifically, chapter III examines information on earnings and the composition of employment by differing employment categories. Looking at both short and long term trends, this chapter determines whether and how the labor market, overall, has benefitted from economic growth.

- Chapter IV uses panel data sets to examine how an individual's sector of employment impacts their earnings changes. Looking at the same individuals over time provides greater insight into how individuals respond to changes in the labor market, and, how these responses impact an individual's economic welfare.
- Chapter V offers a summary of the findings and conclusions drawn from this research. In this chapter, I analyze whether the findings in chapter III and chapter IV are congruent. Also, chapter V presents fallacies of my research and areas where these research topics could be expanded.

I.3 Hypotheses

This thesis analyzes how economic growth has affected the labor market and the employed labor force of Vietnam. Extensive cross sectional and inter-temporal research has validated that "usually but not always, economic growth reduces absolute poverty. On the other hand, when poverty has not fallen, it is generally because economic growth has not taken place" (Fields 2001 104). The same has been true in Vietnam. Poverty rates have fallen from 58% in 1993 to 16% in 2006 since the country's economic boom (*Vietnam Development Report 2008* 4).[1] In the World Development Report, the World Bank states that economic growth achieves this reduction in poverty through the labor market, specifically through "rising employment, increased labor productivity, and higher wages" (*World Development Report 1995* 3). The Report goes on to maintain that "For

[1] The General Statistics Office of Vietnam defines the poverty rate in absolute terms as those households with income and expenditures not high enough to afford a consumption basket deemed necessary to secure 2100 calories per person per day (*Vietnam Development Report 2004* 8). This consumption basket differs for rural, urban, and mountainous areas (*Vietnam Development Report 2004* 4).

today's low and middle-income countries, the fear that growth will primarily benefit capital, create few jobs, and fail to raise wages is unfounded (3). All groups of people are theorized to benefit from economic growth, including workers in all sectors and forms of employment. Thus, I hypothesize, that the gains of economic growth have been shared by all groups of workers in the form of higher labor earnings and movement into higher paying jobs.

This thesis will not focus on the quality of employment as indexed by benefits or social protections. Rather, by using the economic theories stated above, the criteria used to deem whether the labor market in Vietnam has been positively or negatively impacted by economic growth will be labor earnings and classifications of employment. More specifically, I will observe the levels of pay in different employment categories and the movement of workers into or out of these employment categories.

In chapter III, I look at average earnings levels across employment categories. Increasing real labor earnings of all groups of workers indicate a positive change in the labor market. Similarly, a movement of workers into the highest paying jobs and away from low paying jobs would also evidence a positive change in the labor market. I hypothesize that in chapter III I will find that economic growth has improved labor market conditions. Specifically, drawing on the hypotheses of Fields and Bagg, I premise that all groups of workers in different categories of employment have experienced an increase in labor earnings. This will be accompanied by a shift towards the highest-paying forms of employment and away from lowest-paying forms of employment, as evidenced by:

> A falling percentage of workers will be employed in agriculture [and household work]. This is a positive development because agriculture is typically the lowest-paying sector in a developing economy.
> A growing percentage of workers will be employed in wage and salary jobs. This is an improvement, because in many countries but by no means all, these jobs pay better than self-employment and unpaid family work…
> A rising percentage of workers will be employed in the private sector, [both domestic and foreign]. This would point to the private sector as the source of dynamism in the economy. (Fields 2003 40).

Similarly, I predict that an increasing percentage of workers will be employed in the manufacturing and service industries. This would indicate a shift out of the agricultural industry and toward the highest paying industries in the economy.

While on average all groups of workers are believed to benefit from economic growth, by no means does every individual worker share in the benefits of economic growth. Chapter IV of this thesis explores changes in earnings and employment categories at the individual level in more detail. Following individuals over two-year increments through a panel data set, I analyzed how an individual's decision to remain in an employment status or to transition from one employment status to another impacts a change in income. Therefore, chapter IV seeks to answer if and how the aggregate income and employment trends presented in chapter III are related.

I produced no specific hypothesizes for what I would find in chapter IV. Rather, I constructed an econometric model, which I believed would be most accurate in predicting the relationship between change in employment and change in earnings. Utilizing background information from other researchers' work on the

Vietnamese labor market, I discerned which variables might be influential in predicting a change in income. From this information I created an econometric model that controlled for employment and demographic characteristics. I first explored the relationship between change in income and change in employment status as well as change in income and the explanatory variables through the creation of an earnings change profile. Observing average changes in income, I predicted how each variable would impact change in earnings in a regression analysis. These predictions varied by panel years. Secondly, I produced correlation coefficients for each variable's association to change in income. Lastly, I ran OLS regressions. From these results I obtained detailed information about how categories within each variable specifically influence change in income, while holding all other variables constant.

The main results of the paper are summarized below. I have organized my findings by each research question. From 1993 to 2008, I found that aggregate labor market indicators responded to economic growth as follows:

- A decreasing percentage of workers were employed in agriculture from 1993 to 2008; and, agriculture remained the lowest paying sector of employment.
- An increasing percentage of workers were employed in wage work from 1993 to 2008; and, wage work remained one of the highest paying forms of employment.

- An increasing percentage of workers were employed in private firms, both domestic and foreign, from 2002 to 2008; and, private and foreign enterprises were both high paying sectors.
- A decreasing percentage of workers were employed in household enterprises from 2002 to 2008; and, household enterprises remained the lowest paying firm type.
- An increasing percentage of workers were employed in the manufacturing sector from 1998 to 2008; and manufacturing paid wages comparables with average earnings.

In analyzing panel data and tracking the same people over time from 2002 to 2008, I found that certain labor market characteristics and personal characteristics were associated with labor income gains. Specifically, I found that:

- From 2002 to 2008, the workers experiencing the greatest change in income are those moving from agriculture to wage employment with a median level of education, or remaining in wage employment, also with a median level of education.
- From 2002 to 2008, the most significant predictors of earnings change levels were firm type and initial income quintile. That is, those not in household work and those initially earning the least experienced the highest increases in labor income.

II. DATA AND METHODOLOGY

Two datasets on Vietnam are available and relevant for the questions addressed in my thesis. The first is the Labor Force Survey conducted by the General Statistics Office of Vietnam and utilized in the ILO Labor Trends Reports for Vietnam. The ILO report states that the 2007 and 2009 surveys used different survey methodologies, samples, questionnaires, and population weights because they were part of separate censuses (*Vietnam Employment Trends 2010* 3). Therefore, the data from 2007 and 2009 are not easily compared, despite their representativeness. Thus, this survey does not serve the purpose of my thesis in creating comparable trends over time and analyzing panel data.

I decided to utilize the Vietnam Living Standards Survey (VLSS) for 1993 and 1998 and the Vietnam Household Living Standards Survey (VHLSS) for 2002, 2004, 2006, and 2008. The VLSS and VHLSS focus on a broad range of topics including health, education, employment, demographics, consumption, expenditure, and non-labor income. The surveys were implemented through face-to-face interviews (Tung 2004, *Viet Nam Living Standards Survey)*. For all years, I explicitly used the individual level data from the household questionnaires, instead of the commune questionnaires, to produce all descriptive statistics and regression statistics. Using data from the employment survey section, I was able to ascertain the main economic activity of the past year for an individual, as well as annual labor income earned from this primary activity. I adjusted all income data for inflation using the consumer price index.

The surveys are nationally representative (Tung 2004, *Viet Nam Living Standards Survey*), despite certain issues of over sampling in sparsely populated areas (Haughton 69). However, sampling measures differ between the 1993 and 1998 surveys and the 2002, 2004, 2006, and 2008 surveys. In some instances labor force trends are deduced in the same manner and with the same questions and, therefore, statistics on employment are comparable between the VLSS and the VHLSS. However, this does not hold true for all employment composition indicators and I have indicated where comparisons were not possible.

Labor earnings between the VLSS and VHLSS, moreover, are not congruent. The earnings in the 1993 and 1998 surveys were reported mostly in *monthly* time units. In the minority of instances where individuals reported other time units of earnings, I transformed the income into a monthly equivalent. I also adjusted the income data for inflation to 1992 prices using the consumer price index. In 2002, 2004, 2006, and 2008 the earnings reported are average *yearly* earnings for the primary economic labor activity of the past year. I adjusted all reported income for inflation to 2002 prices using the consumer price index. I did not convert 1993 and 1998 data into yearly income because of the high prevalence of agricultural employment and employment without a contract reported among individuals in the survey. Agricultural income differs significantly from month to month depending on seasons and weather. Similarly, self-employment and instable wage employment create irregular earning patterns. Therefore, simply multiplying monthly income by twelve to formulate yearly earnings statistics would not accurately capture the changes in income throughout a larger time period, which are

reflected in average yearly incomes. Thus, because labor earnings are presented in different units of time, the income data from the VLSS and the VHLSS cannot be compared.

While these issues created only slight problems in the cross sectional analyses, they significantly affected panel analyses. Due to changes in sample sizes, sample selections, and variations in certain sections of the questionnaires, the data cannot be used to create a single panel. Rather, panel data sets were created and analyzed separately for the following time periods: 1993-1998, 2002-2004, 2004-2006, and 2006-2008. While the sample sizes of the surveys are very large, I lost many observations in the creation of panel data.[2] The data was only a partial panel and did not include all individuals in the proceeding surveys. Similarly, of all the individuals surveyed many did not respond to some questions in the employment section, particularly, when asked about labor income. Despite dropping many observations due to missing values, the cross sectional analysis was able to retain cases for 300-500 individuals for 1993 and 1998 surveys; 28,000 for the 2002 survey; and about 3,000 for the 2004, 2006, and 2008 surveys. In the panel analysis, missing values and panel creation reduced the sample size in the 1993-1998 panel to an unusable amount (about 13), and in all other panel years to between 740 and 1575. Therefore, it is possible that the sample used for my analyses, particularly the panel analysis, is no longer nationally representative.

[2] Sample sizes were initially between 16,000 and 38,000 observations, with the exception of the 2002 survey, in which the sample size was 130,000.

III. LABOR MARKET TRENDS

III.1 Literature Review and Background

In answering my research question "How have key labor market indicators been affected by economic growth in Vietnam from 1993 to 2008," I first explored what the existing literature offered as an answer. I sought to discern what past research contributed to understanding how labor market trends have evolved from 1993 to 2008. I was, particularly, searching for trends in employment composition and earnings by employment status, firm type, and industry. This information would allow me to evaluate the labor market changes as either positive or negative as outlined in my criteria in chapter I. An improvement in labor market conditions would be evidenced by increasing employment in the highest paying sectors and industries, and also a decrease of employment in the lowest paying sectors and industries.

Other authors' research made it difficult to answer my research question using these criteria. Reports presented trends in basic employment compositions oftentimes without statistics on earnings levels. Thus, little evidence existed to determine whether these trends indicated improvements in the Vietnamese labor market. Similarly, most reports and papers only looked at trends over two to five year periods of time, while I am interested in a longer period of observation. However, the literature offered broad answers to my research topic, and these answers are outlined below.

With regards to labor earnings, average real earnings of workers overall showed an increase. From 1993-1998, real hourly income increased by 10.5% per year (Gallop 58).

Real labor earnings increased by 5.7% per year on average from 1998 to 2006 (Nguyen 5). Per capita monthly wages increased by 78.7% in total from 2002 to 2006. Not only did workers earn more in their current positions, they also moved into better paying positions (*Labour and Social Trends in Vietnam* 17). In terms of the composition of employment, past research shows that the labor market has shifted away from agriculture and household work toward wage employment in growing sectors and industries. In the following sections, I will outline what evidence exists from other research to explain how earnings and employment levels changed in different employment statuses, sectors, and industries.

A. Employment Status

i. Earnings

From 1998 to 2006, economic growth spurred a 56% increase in average annual earnings for wage employees. Real income for agricultural workers increased much more slowly, by only 28% (Nguyen 5).

ii. Employment

In the book "Growth, Reform, and Poverty in Vietnam," Paul Glewwe analyzed the VHLSS surveys for 1993 and 1998. The book illustrates that from 1993 to 1998 the prevalence of agricultural self-employment decreased by 2 percentage points from 52% to 50%, while the prevalence of wage employment and self employment each increased to levels of 25% by 1998 (Gallup 58). The decrease in agricultural employment was split

equally by an increase in wage employment and non-agricultural self-employment (Gallup 56).

Similarly, using the VLSS and VHLSS, researchers found an increase in wage employment and a decrease in agriculture employment from 1993 to 2006. From 1998 to 2006 the share of the labor force engaged in wage employment increased from 19% to 33%, with the industrial sector contributing substantially to this growth (Nguyen 4, *Vietnam Development Report 2004* 46). Farm employment declined from 64% in 1998 to 47% in 2002 (*Vietnam Development Report 2004* 46).

In the *Vietnam Employment Trends Report* for 2010, the ILO finds moderate growth in wage employment from 30.5% in 2007 to 33.4% in 2009.[3] This growth in wage employment occurred mainly within industry and manufacturing (7). Similarly, the labor force decreased participation in own-account work and agricultural employment, but increased participation in unpaid family work (7).

Overall, wage employment showed significant increases in earnings, and also increased its share of total employment. Self-employment showed slight increases as well with no information reported on earnings. Conversely, agricultural work decreased and agricultural workers remained lower paying than wage workers. However, agriculture remained the primary source of income for most Vietnamese workers.

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[3] The Report utilized data from the General Statistics Office of Vietnam's labor force surveys conducted in 2007 and 2009.

B. Firm Type and Firm Sector

i. Earnings

When reviewing earnings by sector of employment, I learned that income has been increasing in all sectors. Foreign enterprises remained the best paying employers, followed by state-owned and government enterprises, and then by private enterprises and lastly, household enterprises. Household enterprises consistently paid the lowest wages, with workers earning about half of wages paid to employees of state owned enterprises (*Vietnam Development Report 2008* 47). This ordering in terms of average pay levels remained stable from 1998 to 2006. Earnings differences among firms of different ownership were exacerbated, as the highest paying firms also experienced the largest wage growth (*Vietnam Development Report 2008* 47). From 1998 to 2006, household enterprises experienced an annual change in average wages of 2.3%. This statistic increased to 6.8% for private enterprises and 8.6% for state owned enterprises (SOEs) as well as foreign enterprises (*Labour and Social Trends in Vietnam* 17).

ii. Employment

In the 2008 Vietnam Development Report, the World Bank explored employment patterns from 1993-2006. The Report found that employment in government, SOEs, private enterprises, and foreign-invested companies have consistently risen (40). Government work increased from 3.1% in 1993 to 5.5% in 2006; employment in state owned enterprises increased from 2.5% to 3.3%; employment in private enterprises

increased from 10.8% of to 17.3%; and employment in foreign companies increased from 0.5% to 1.6% (40). [4]

The increase in private sector employment is not surprising. Legislation and legal reforms have encouraged private sector growth by simplifying registration processes (*Vietnam Development Report 2006* 3). However, the rise in public sector employment is surprising given the retrenchment of state owned enterprises. In order to deal with over staffing and inefficiencies, SOEs that were lacking sufficient demand, capital, or up to date technologies were discontinued in the late 1990s (*Vietnam Development Report 2006* 9). This retrenchment is evidenced by a decrease of wage jobs in government administration of state owned enterprises from 42% in 1998 to 31% in 2002 (*Vietnam Development Report 2006* 46).

C. Industry

In observing trends in economic growth by industry, it is clear that the manufacturing industry drove changes in the labor market. Both the service and industrial sectors experienced an increasing share of employment between 2000 and 2008. 22.3% of the labor force was employed in services in 2000 and by 2008 this percentage had risen to 28.6. The industrial sector experienced similar growth, from 12.4% in 2000 to 19.2% in 2008 (*Labour and Social Trends in Vietnam* 12). Over the eight-year period, the

[4] Most private firms have developed from household enterprises and are small in size and capital, serving mainly individuals (*Vietnam Development Report 2006* 8). This indicates that not all employment in private enterprises is stable.

agricultural sector decreased its share of employment from 65.2% to 52.5%. This indicates that from 2000 to 2008, the distribution of employment shifts away from agriculture, towards industry and services (*Labour and Social Trends in Vietnam* 12). Therefore, it is evident that manufacturing industries and service industries have become more important over the years (*Vietnam Development Report 2006* 13). These industries have grown through export orientated growth strategies as well as foreign direct investments. Such growth has added to the increases seen in wage employment (*Vietnam Development Report 2006* 13, 19).

In summary, all groups of workers have experienced an increase an average real earnings. In terms of the composition of employment, past research shows that agricultural employment has decreased, self-employment has increased, and wage employment has increased. However, agriculture remains the primary form of employment in Vietnam. Also, the share of employment in private, foreign, and government enterprises has risen, indicating an increasing share of work performed outside the home. This is in part due to the shift of work towards the industrial and service sectors, away from agriculture. These findings validate my expectation that economic growth increased worker welfare through improvements in labor market conditions.

III.2 Methodology

Discerning how economic growth has impacted the labor market in Vietnam required information on labor market composition and average labor earnings over time. I have produced labor market trends on earnings by employment category and composition of

employment by category in order to evaluate workers' well-being in Vietnam.[5] To do so I compiled individual level data from the VLSS and VHLSS on employment characteristics and labor earnings from 1993 to 2008. This allowed me to construct statistics that are representative of the Vietnamese labor market and that provide sufficient levels of detail on employment indicators. I assembled trends and compositions of the Vietnamese labor market at several points in time and therefore, was able to analyze and compare statistics over both short and long periods of time.

III.3 Results and Discussion

In response to economic growth from 1993 to 2008, average labor income of workers on aggregate has risen, as is demonstrated in Figure 1.[6]

[5] For employment status I calculated percentages using the number of individuals reporting a given employment status divided by the number of individuals in total who reported being engaged in the labor force, that is, reported being employed or unemployed. Because some people reported being engaged in multiple employment activities, the total labor force number is mildly inflated, causing the employment composition percentages to be slightly underestimated. Individuals working in multiple forms of employment were counted as one person for each sector of activity reported. In 1993 and 1998 we see that between 7-10% of the labor force is engaged in work in more than one activity. However, between 2002 and 2008 this proportion of the labor force rises to about 30%.
For sector and industry of employment, the survey only asked the individuals which sector or industry they were employed in if they had already reported being employed. Therefore, these percentages are only out of the employed labor force.

[6] It was not possible to compare income data from 1993 and 1998 and income data from 2002, 2004, 2006, and 2008. Therefore, this figure only illustrates average income levels from 2002 to 2008.

Figure 1: Average Real Annual Earnings of Vietnamese Workers

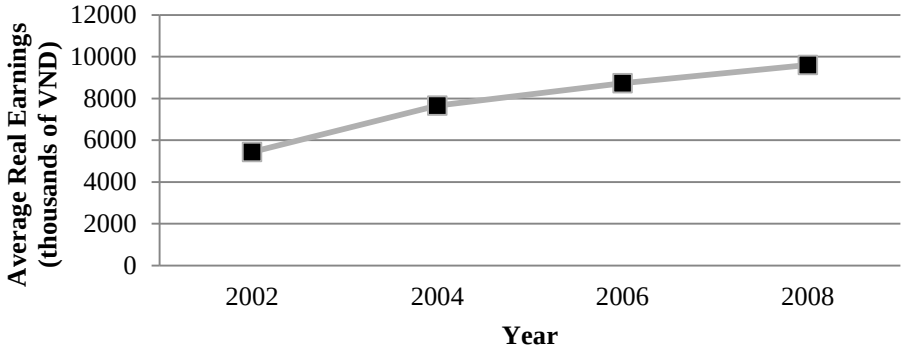


Figure 1 presents the long term trends in average earnings for workers on aggregate. This chapter examines earnings trends also by employment status, sector of employment, and industry of employment. This allowed me to discern whether all groups of workers also experienced an increase in average earnings. I found that average earnings increased in all employment categories for all years.

Additionally, the composition of employment shifted in favor of better paying jobs. That is, the highest paying employment status, sectors, and industries also expanded their share of labor force employment.

The movement of workers into jobs with the highest income growth and the highest wage potential, along with increases in labor earnings across all industries, sectors, and employment categories, indicates an improvement of labor market conditions. These results are congruent with the findings of previous research, as summarized in section III.1.

However, across the six years of observation certain fluctuations and discontinuities existed. Therefore, I focused on analyzing trends over two year periods in order to better understand how the labor market has varied. This short-term analysis provided greater insights into what may be affecting the overall trends.

A. 1993 to 1998

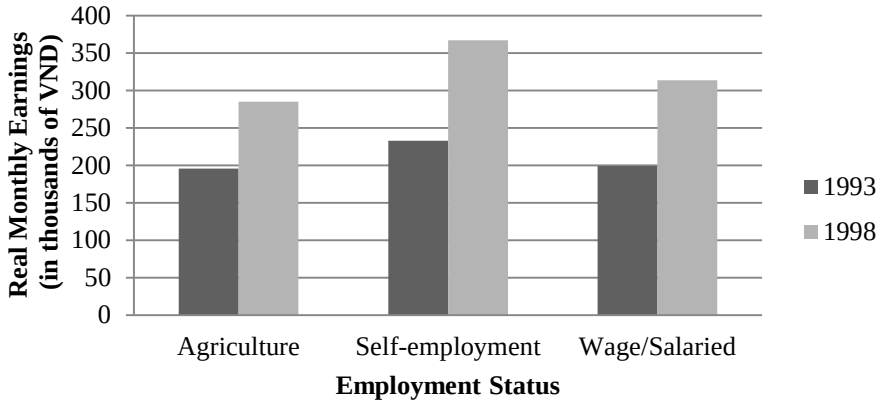
Between 1993 and 1998 the labor market underwent improvements that benefited all groups of workers in Vietnam. Workers in all categories of employment experienced an increase in real monthly labor earnings. The average monthly labor earnings of an individual worker increased by over 50%, from about 200,000 dong to 315,000 dong. Similarly, the composition of the labor force shifted in favor of the highest paying forms of employment. While all groups of workers benefitted from economic growth and shared in wage growth, workers in certain industries and sectors experienced exceptional earnings growth. As I discuss below, wage workers, the self employed, workers in the manufacturing industry, and employees of collective firms experienced the largest growth in labor income.

i. Employment Status

From 1993 to 1998 all employment statuses experienced an increase in labor earnings. However, earnings increases did not change the ordering of the highest and lowest paying employment statuses. As can be seen in figure 2, in 1993 the self-employed earned an

average monthly income of 232,000 dong, wage employees a mean monthly income of 199,000 dong, and agricultural workers a mean monthly income of 195,000 dong.[7] A similar pattern emerged in 1998 with the self-employed being the highest earners (367,000 VND), followed by wage employees (313,000 VND), and lastly agricultural workers (284,000 VND).

Figure 2: Average Monthly Labor Earnings by Employment Status



The self employed and wage workers both had rates of earnings growth of 57%, while agricultural workers only experienced a 45% increase in earnings. Because the self-employed were the highest earning workers in 1993 and also experienced the highest rates of growth, they remained the highest paying employment category. Similarly, wage employees were the second highest earners in 1993 and also experienced the same rate of wage growth as the self-employed. Therefore, wage employees remained the second

[7] In 1992 prices, 232,000 dong converts to about $11.00 USD a month or about $16.00 USD in 2012 prices. In 1992 prices, 195,000 dong converts to about $9.00USD a month or about $14.73 in 2012 prices.

highest earners. Agricultural workers were the lowest paid employees in 1993 and also in 1998 due to a comparatively low growth rate in wages.

In addition to changes in labor income, from 1993 to 1998 the composition of the labor force also shifted as well. As demonstrated in figure 3, the share of the labor force participating in self-employment decreased from 20% to 16.5%. The share of the labor force engaged in agriculture also decreased from 51% to 50%. Conversely, laborers increased their share in wage employment from 26.5% to 30.5%.

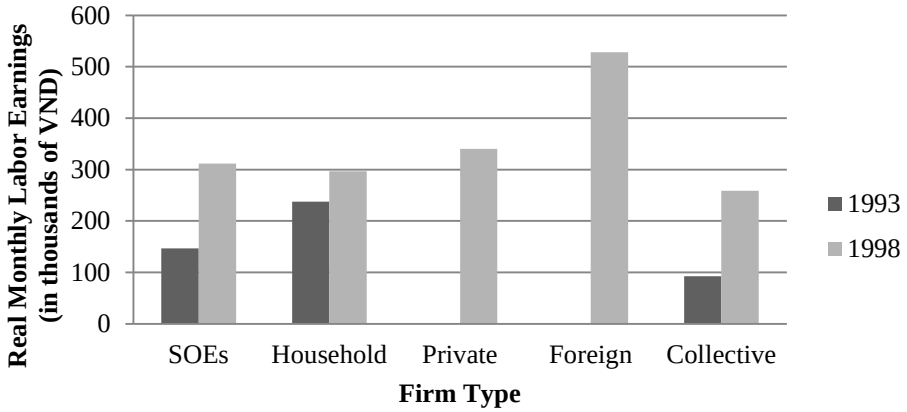
Figure 3: Percentage of the Labor Force Engaged in Differing Employment Statuses

Thus, we see movement out of the lowest-paying form of employment, agriculture; movement out of the highest paying form of employment, self employment; and movement into the second highest paying form of employment, wage employment. While the increase in wage employment and decrease in agricultural work are deemed an improvement of labor market conditions, the decrease in self-employment indicates a worsening of labor market conditions.

ii. Firm ownership and Firm Sector

When I analyzed earnings changes by firm ownership, I found that differing rates of earnings growth caused a shift in the ordering of highest paying firm types. I have summarized the earnings comparison between 1993 and 1998 in figure 4.[8]

Figure 4: Real Monthly Labor Earnings by Firm Type



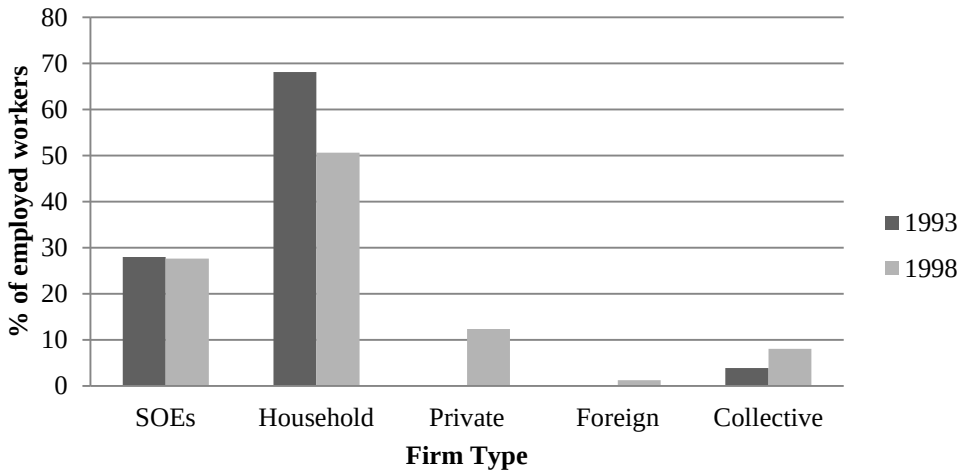
In 1993 household enterprises were the highest paying firms with average monthly earnings of 230,000 dong. By 1998, household enterprises had experienced the least earnings growth (24%), becoming one of the lowest paying sectors. State owned enterprises and government enterprises were the second highest paying firms in 1993, with employees earning on average 145,000 dong per month. State owned and government enterprises saw high earnings growth at a rate of 110%. However, this high growth rate placed SOEs as mid-level earners, with average monthly earnings of 310,000 dong. In 1993 collective firms were the lowest paying enterprises because employees earned on average 90,000 dong per month. Interestingly, collective firms experienced the highest growth in earnings at 180%, but remained the lowest paying firm type, with

[8] No data was available in the 1993 survey on private and foreign enterprises.

average monthly earnings of about 260,000 dong. No information was available in the 1993 survey on labor market earnings for employees of private and foreign owned enterprises. However, in 1998 foreign enterprises paid employees an average of 520,000 dong monthly and private enterprises paid on average 340,000 dong monthly, making these firm types the highest paying.

Without 1993 data on the composition of employment in private and foreign enterprises it is difficult to draw conclusions about the changing state of the labor market in Vietnam. However, I can discus movements out of the lowest paying sectors of employment.

Figure 5: Percentage of Workers in Differing Firm Types



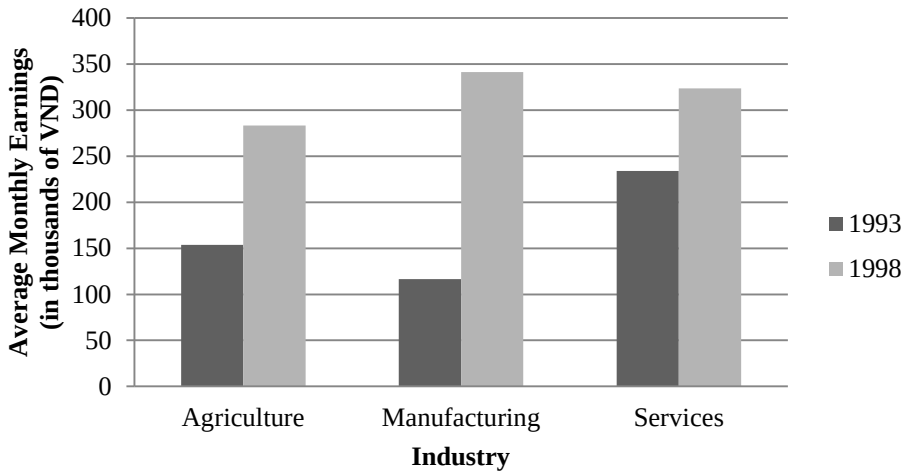
In figure 5 we see that employment in state owned and government enterprises remained stable at about 28%. The prevalence of household enterprises decreased from 68% of employment to 50%. And, employment in collective enterprises increased from 4% to 8%. The decrease in employment in household enterprises, which are some of the lowest paying firms by 1998, indicates an improvement in labor market conditions. The increasing prevalence of employment in collective firms, the lowest paying firm type,

however, points to a decline of labor market conditions. Therefore, the effect of sector of employment on labor market conditions was ambiguous.

iii. Industry

When we observe patterns in income growth by industry in figure 6, we do not see consistency in the highest and lowest paying industries. That is, as economic growth occurred and wages increased, some industries benefited more than others.

Figure 6: Average Monthly Earnings by Industry



Services were the highest paying industry in 1993, with average monthly earnings of 233,000 dong. The agricultural industry was the second highest paying industry in 1993, with average monthly earnings of 150,000 dong, and the manufacturing sector was the lowest paying industry in 1993 with average monthly earnings of 115,000 dong. By 1998 these patterns changed as the economy grew. The manufacturing industry experienced income growth of 190%, becoming the highest paying industry with average monthly earnings of 340,000 dong. The services industry increased earnings by 38%, making workers in this industry the second highest paid with average monthly earnings of

320,000 dong. The agricultural industry became the lowest paying industry with average monthly income of 280,000 dong, despite earnings growth of 84%.

There was a clear incongruence in the measurement of the composition of employment by industry between 1993 and 1998, so it is not possible for me to analyze change in the composition of employment by industry between these two survey years.

iv. Conclusion

Overall, from 1993-1998, wage employment, agricultural employment, and household enterprises contributed to bettering labor market conditions. Given the mixed evidence presented on self-employment and SOEs/government enterprises, as well as some missing data, it is difficult to draw specific conclusions about the entire labor market. However, I believe that the benefits from increasing wage employment outweigh any other negative effects on labor market conditions. Similarly, the percentage point decrease in household enterprises outweighs the percentage point increase in collective enterprises.

As I discussed in section I.1, manufacturing was in large part responsible for the extremely high economic growth rates Vietnam was experiencing through the 1990s and 2000s. This alludes to job growth occurring in foreign and private enterprises, the highest paying industries. It is probable then that wage employment in these firms offers more security and stability than self-employment. Thus, a decrease in self-employment and increase in wage employment should indicate an improving labor market. Therefore,

despite mixed evidence in some specific sectors and industries, the labor market overall benefited from economic growth from 1993 to 1998, as evidenced by data from the VLSS.

B. 2002 to 2004

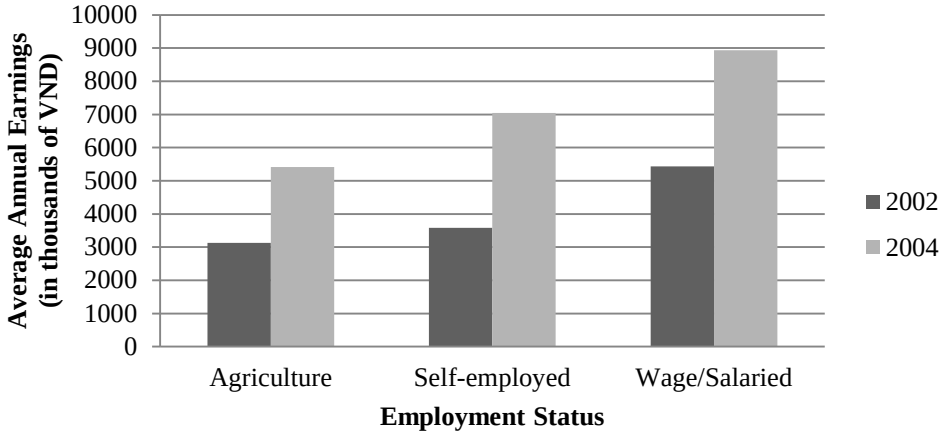
From 2002 to 2004 workers as a whole experienced growth in income. That is, labor earnings increased for workers in all industries, firm types, and sectors. On average, an individual's annual labor income increased by 40%, from 5,400,000 dong in 2002 to 7,600,000 dong in 2004.[9] These earnings increases coupled with growth in high paying jobs, indicates improving labor market conditions from 2002 to 2004.

i. Employment Status

As figure 7 illustrates, over this two-year period the rank of employment status by earnings remained unchanged. Wage employees remained the highest earners, the self-employed remained the second highest earnings, and agricultural workers continued to be the lowest earners.

[9] See chart 1in the appendix for conversions between VND and USD at 2002 price levels.

Figure 7: Average Annual Labor Earnings by Employment Status

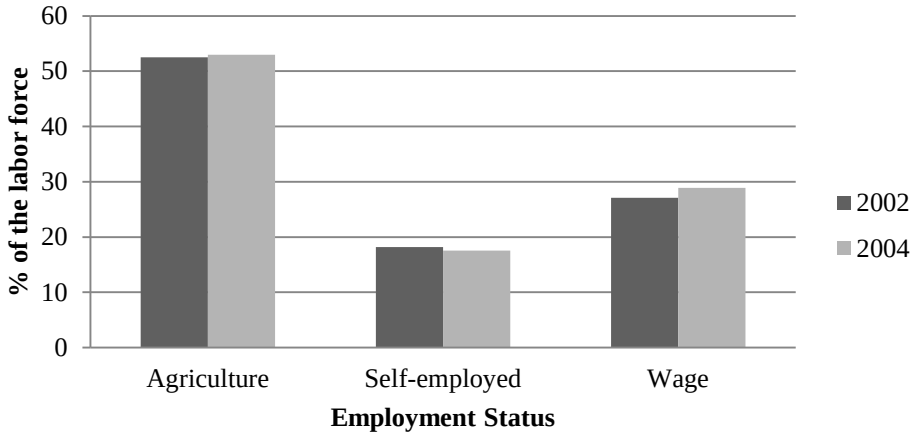


Interestingly, the self-employed experienced the highest rate of change in labor income at almost 97%. The earnings of the self-employed nearly doubled from 3,600,000 dong to 7,000,000 dong. This immense income growth closed a portion of the gap in earnings between the self-employed and wage workers. However, the self-employed workers continued to earn less than the average worker in 2002 and 2004.[10] Wage employees experienced a 40% income growth, earning 5,400,000 dong in 2002 and 7,650,000 in 2004. Agricultural workers also experienced high income growth. In 2002, agricultural workers earned on average 3,100,000 dong annually, not much less than the self-employed. However, a 73% growth rate in labor income was not enough to surpass the earnings of other employment categories. With average earnings of 5,400,000 dong in 2004, agricultural employment remained by far the lowest earning employment category, while wage employment remained the highest earning employment category.

[10] In 2002 the average annual labor earnings for an individual was 5,430,000 VND and in 2004 it was 7,650,000 VND.

In order to discern whether labor market conditions have improved from 2002 to 2004, I determined if employment opportunities were expanding in high paying sectors and contracting in low paying sectors. From 2002 to 2004, wage work increased its share of workers in the labor force from 27% to 29%, as is depicted in figure 8.

Figure 8: Percentage of the Labor Force Engaged by Employment Status

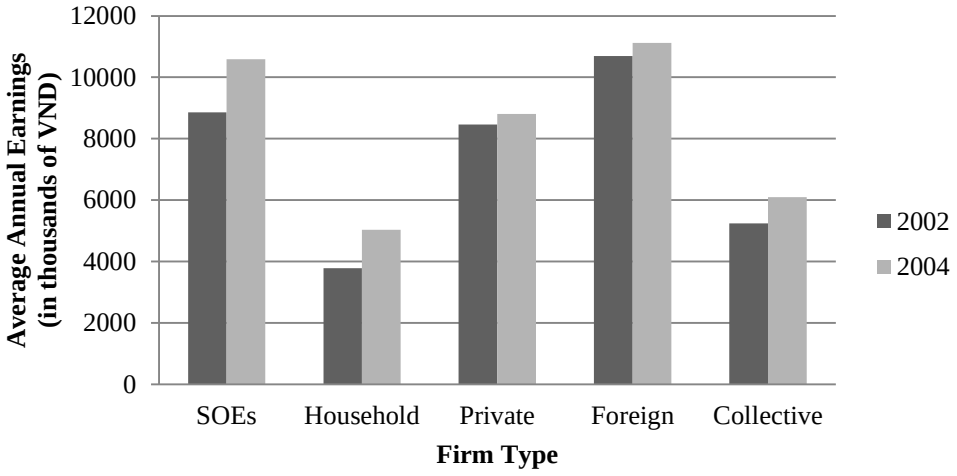


Moreover, workers in agricultural employment increased their share of the labor force from 52.5% to 53.0%, while self-employed decreased its prevalence from 18.20% to 17.5%. The movement of workers into a high paying sector—wage employment, and the movement of workers out of a low-paying sector—agriculture, indicates unambiguous improvements in the labor market. The increasing prevalence of self-employment is more obscure. Self-employed workers earned less than the overall average earnings in 2002 and 2004. So, while self-employment may not be considered a high earnings category, it remains more desirable than agricultural employment. Overall, the ambiguity of self-employment is outweighed by other labor market improvements

ii. Firm ownership and Firm Sector

Next, I analyzed the labor market earnings and employment composition of differing firm types or sectors of employment. From 2002 to 2004 all sectors of employment experienced income growth. While rates of growth differed, the ordering of the highest to lowest paying firm types remained unchanged. That is, employees of foreign enterprises were the highest earners, followed by government and state owned enterprises, private enterprises, collective firms, and lastly household firms. Figure 9 clearly displays the highest and lowest paying sectors.

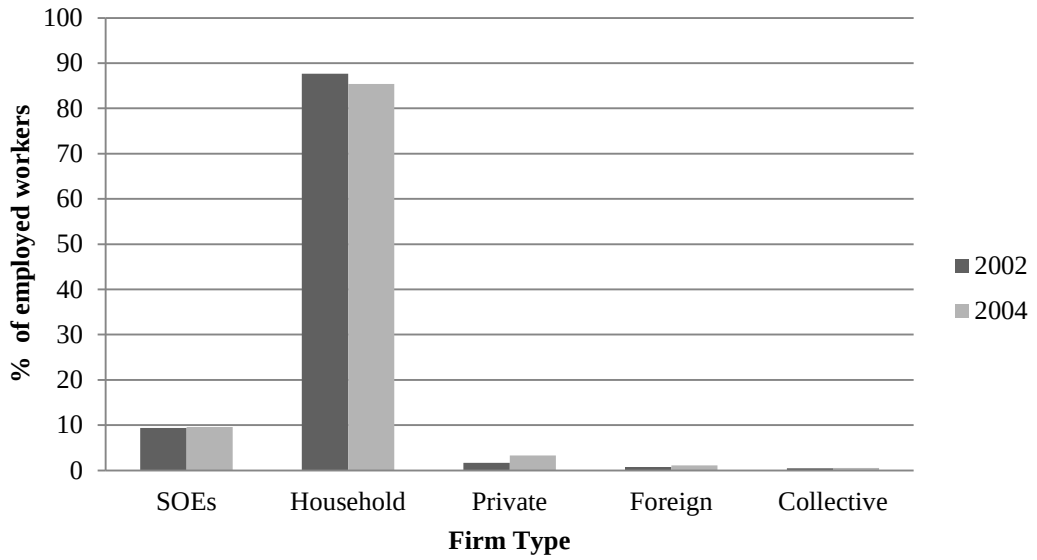
Figure 9: Average Annual Labor Earnings by Firm Type



Interestingly, the lowest paying firm type experienced the highest growth in individual labor income and the highest paying firm type experienced the lowest growth in labor earnings. As is illustrated in figure 9, household enterprises experienced a 32% rate of change in labor earnings—from 3,700,000 dong in 2002 to 5,000,000 dong in 2004. However, this increase in income was not significant enough to move household enterprises out of its position as the lowest paying sector. In line with the low earning

potential of household enterprises, workers decreased their prevalence in this type of enterprise from 88% to 85.5%, as is exhibited in figure 10.

Figure 10: Percentage of Employed Workers by Firm Type



Meanwhile, private and foreign firms experienced only a 4% growth in income. Employees of private enterprises earned about 8,500,000 dong in 2002 and 8,800,000 dong in 2004; and, employees of foreign enterprises earned 10,700,000 dong in 2002 and 11,100,000 dong in 2004. Despite the low growth rates, these enterprises remained some of the highest paying firms. Thus, an increasing share of the labor force moving into employment with private and foreign enterprises in figure 10 indicates a positive shift in the labor market. Private employment increased from 1.7% to 3.3%, while employment in foreign firms increased from 0.72% to 1.12%.

Interestingly, employees of state owned enterprises or the government saw almost a 20% increase in annual labor earnings, from 8,800,000 dong in 2002 to 10,500,000 dong in

2004. Despite large increases in labor earnings in state owned and government enterprises, the share of workers employed in these enterprises remained relatively unchanged. Employees in state owned enterprises and government organizations consistently made up about 9.5% of the labor force. These patterns, which displayed earnings increases and stable employment, were somewhat expected. The Vietnamese government was implementing retrenchment policies towards state owned enterprises during this time, which would explain the inability of workers to move into this high paying sector (Belser 2001).

Similarly, employment in collective firms appeared to be stable from 2002 to 2004, at around 0.5%. While collective firms experienced a growth in income of about 16%, employees of these firms remained one of the lowest earners, earning 5,200,000 dong and in 2004 earning 6,100,000 dong.

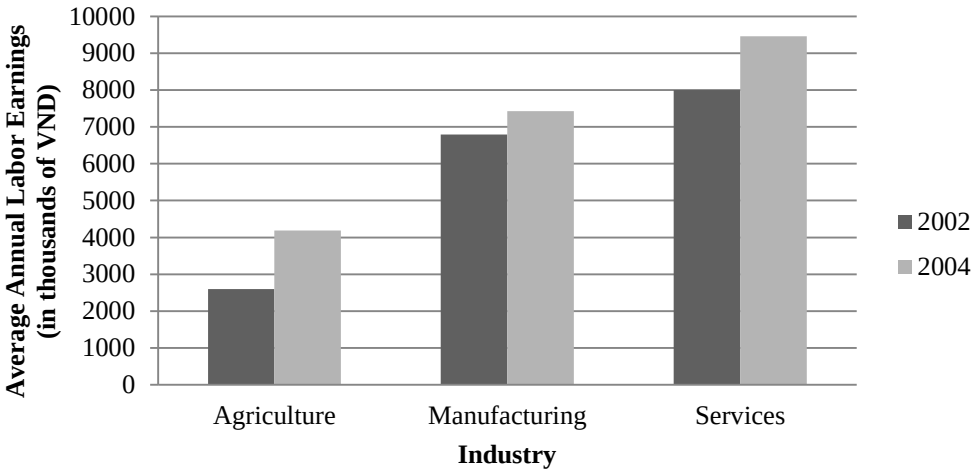
Thus, the movement of workers out of household firms and into private and foreign firms indicates a shift towards high paying firms and away from the lowest-paying firms. Therefore, the labor market is deemed to be improving when I analyze it by firm type.

iii. Industry

Lastly, for the 2002 to 2004 time period I analyzed income and employment composition for differing industries. Once again, workers in all industry categories—agriculture, manufacturing, and services—shared in economic growth through increased earnings, as figure 11 clearly portrays. However, the service industry remained the highest earning

industry, and agriculture the lowest earning industry, while manufacturing remained an average paying industry.

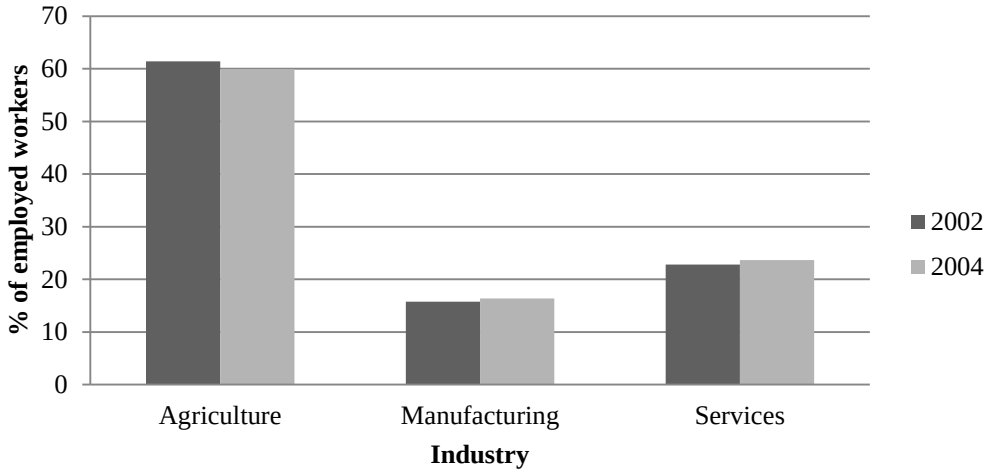
Figure 11: Average Annual Labor Earnings by Inudstry



Between the two survey years, laborers in the agricultural industry experienced 61.2% income growth, those in the manufacturing industry saw a 9.3% growth rate in labor earnings, and workers in the service industry increased their earnings on average by 18.2%. Despite the highest rate of change in labor earnings, workers in the agricultural industry consistently remained the lowest earners with annual income of 2,600,000 dong in 2002 and 4,200,000 dong in 2004. By comparing figure 11 with average earnings, we observe that agricultural workers earned far below the average income of workers as a whole in both 2002 and 2004.[11] Thus, the decline in the percentage of the labor force participating in the agricultural industry from 61.5% in 2002 to 60.0% in 2004 indicates a movement out of low-earning work.

[11] In 2002 the average annual labor earnings for an individual was 5,430,000 VND and in 2004 it was 7,650,000 VND.

Figure 12: Percentage of Employed Workers by Industry



The manufacturing industry was the second highest earning industry, and despite its low earnings growth its workers remained significantly better off than agricultural workers in terms of income. Workers in the manufacturing industry earned above the average income in 2002, with earnings of 6,800,000 dong, yet earned just below the average earnings of workers as a whole in 2004, with earnings of 7,400,000 dong. In 2002 15.8% of the labor force was employed in the manufacturing industry. By 2004 this percentage had risen to 16.3%, indicating an increase in average paying jobs.

The service industry was the highest paying industry in 2002 with workers averaging earnings of 8,000,000 dong. After experiencing high growth in earnings (18.2%) in 2004, workers earned on average 9,400,000 dong working in the service industry. This exacerbated the earnings gap between the service and manufacturing industries, making services unequivocally the most desirable industry. Thus, the increasing percentage of the labor force employed within the services industry indicates a positive shift in the

composition of the labor market. 22.8% of those employed worked in services in 2002, compared to 23.6% in 2004.

iv. Conclusion

Overall, from 2002 to 2004 the labor market experienced earnings growth and changing employment compositions that allowed more workers to be employed in higher paying jobs. That is, workers moved into wage work and out of agricultural work, into foreign and private enterprises and out of household enterprises, and workers moved into the service industry and out of the agricultural industry.

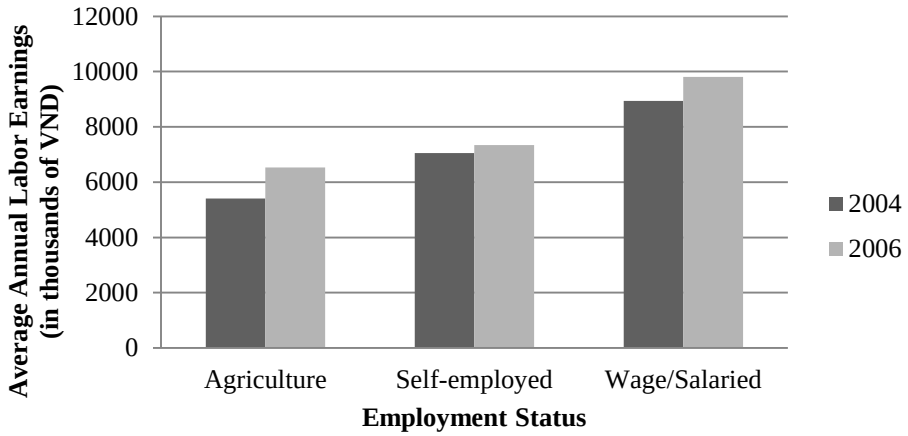
C. 2004 to 2006

In 2006 all groups of workers on average earned more labor income than in 2004. Specifically, the average annual income of an individual worker increased 14.0% from 7,650,000 dong to 8,725,000 dong. By employment categories, foreign enterprises on average experienced income losses while all other jobs shared in the earnings gains seen in the labor market. However, foreign firms remained one of the highest paying sectors in the labor market and, therefore, continued to contribute to improving labor market conditions. Overall, employment composition continued to shift away from low-paying jobs and towards high-paying jobs, bettering opportunities for workers.

i. Employment Status

From 2004 to 2006 wage employment remained the highest paying employment status, self employment the second highest paying, and agriculture the lowest paying employment status. Figure 13 summarizes average real labor earnings by employment status from 2004 to 2006.

Figure 13: Average Annual Labor Earnings by Employment Status



Wage employment experienced a growth rate of 14.0%, increasing income from 8,900,000 dong in 2004 to 9,800,000 dong in 2006. Additionally, wage employment also increased it share of in the labor market from 28.9% to 29.6%, as can be seen in figure 14. Wage employees consistently earned more than the average income of workers on aggregate. Thus, this movement of workers into the highest paying type of employment indicates a positive shift in labor market composition.

Figure 14: Percentage of the Labor Force by Employment Status

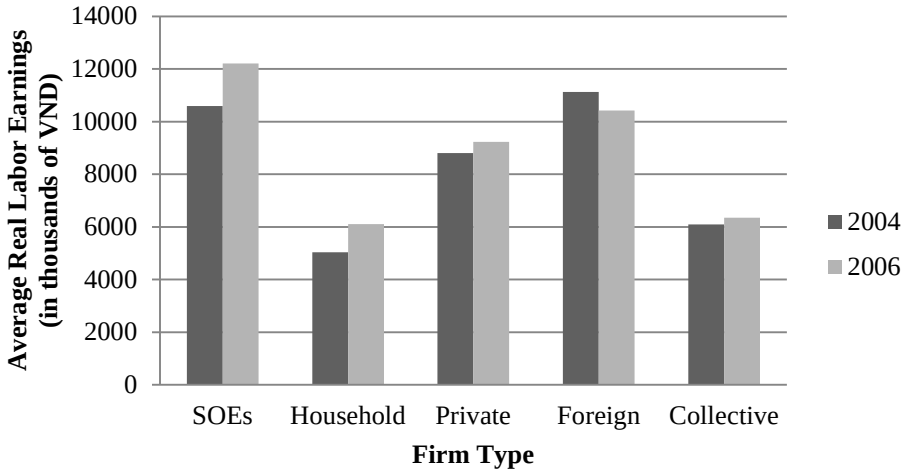
Moreover, agriculture experienced the highest earnings growth rate at 20.1%. Yet, because the initial income of this group of earners was so low (5,400,000 dong) the increase in income was not significant enough to classify agricultural workers as high earners. Therefore, the decreasing prevalence of agricultural work from 52.9% in 2004 to 50.7% in 2006 evidenced a movement away from the lowest paying forms of employment.

The self-employed experienced the smallest change in income, from 7,000,000 dong in 2004 to 7,350,000 dong in 2006, an income growth of 4.2%. The self employed can be considered neither high earners nor low earners. The earnings of this group are less than that of the average worker, yet higher than the earnings from agricultural work. Thus, the fact that self-employment increased from 17.5% to 19.0% from 2004 to 2006 had ambiguous impacts on the labor market.

ii. Firm Ownership and Firm Sector

In order to better understand how economic growth impacted the labor market from 2004 to 2006, I evaluated the labor market by different firm types. Economic growth translated into labor earnings growth for all firm types with the exception of foreign firms. The diverse range of rates of change among firm types caused a re-ordering of firm types from highest to lowest earning employees. I present a synopsis of this change in figure 15.

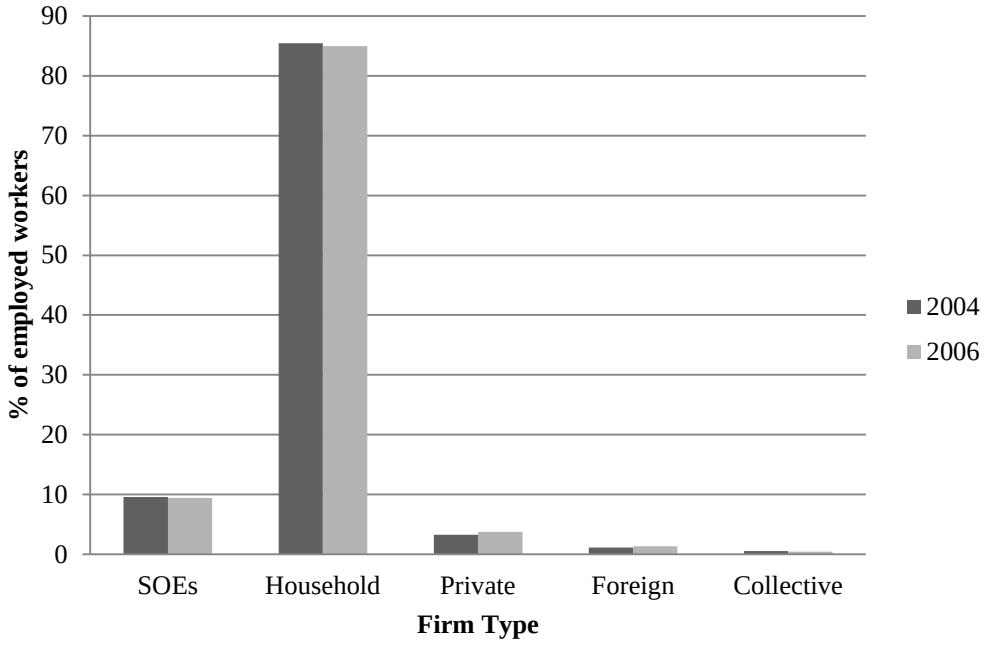
Figure 15: Average Real Labor Earnings by Firm Type



Initially in 2004 employees of foreign firms earned the highest average annual income (11,120,000 dong), followed by employees of state owned or government enterprises (10,580,000 dong), employees of private firms (8,800,000 dong), employees of collective firms (6,100,000 dong), and, lastly, employees or owners of household enterprises (5,020,000 dong). By 2006 employees of state owned enterprises and government organizations had experienced a growth rate in labor income of 15.4%. This increased the average income of SOE employees to 12,200,000 dong, making this the highest paid sector of employment. Over the same two year period, SOEs employed consistently about

9.5% of the labor market, as can be seen in figure 16. Due to state retrenchment policies, it is feasible that employment opportunities would not expand within this sector.

Figure 16: Percentage of Employed Workers by Firm Type



Foreign enterprises paid their employees less in 2006 than in 2004. This negative change in income of 6.2% brought the average income of employees in the foreign sector to 10,400,000 dong. However, the foreign sector remained the second highest paying sector. Therefore, the slight increase in employment in foreign enterprises from 1.12% of the labor force to 1.36% of the labor force indicates positive movement in employment composition.

Moreover, the domestic private sector experienced minimal growth in labor earnings. At a growth rate of 4.7%, labor earnings increased to 9,200,000 dong. With earnings still above average worker earnings, the private sector remained a high paying sector.

Therefore, as the private sector increased its share of labor force employment from 3.3% to 3.8%, more workers were able to obtain high paying jobs.

Collective firms had a growth rate of 4.1% and remained a low paying firm type. The average annual income for an employee of a collective firm in 2006 was 6,350,000 dong, significantly below average income. Employment in collective firms decreased very little from 0.55% to 0.47%.

Household enterprises experienced earnings growth of 21.5%. This high rate of change helped to close the earnings gap between household enterprises and collective firms. However, household enterprises remained the lowest earning firm type, with average annual labor income of 6,100,000 dong. The labor force decreased its share of workers employed by or owning household enterprises from 85.4% in 2004 to 84.9% in 2006. Because work within household enterprises proved to have the lowest returns, workers moving out of household enterprises and into higher-earning work reflects a positive change in the labor market.

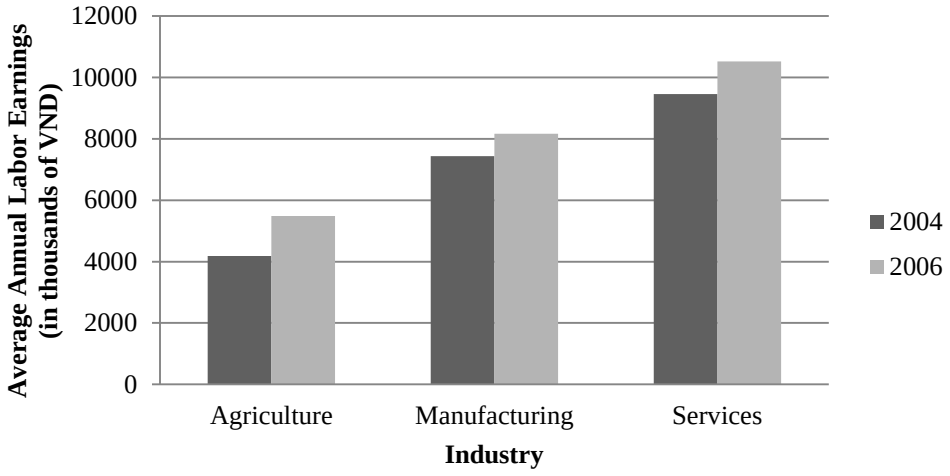
Overall, the labor market variations by firm sector from 2004 to 2006 evidence movements towards high paying sectors (private, foreign) and away from low paying sectors (household, collective). This signifies improvements in labor market conditions. However, the slight decrease of employment in state owned enterprises demonstrates a negative outcome in the labor market. Because all other sectors positively impacted the

labor market and the decrease of employment in the public sector was so minute, the labor market is still deemed to have improved.

iii. Industry

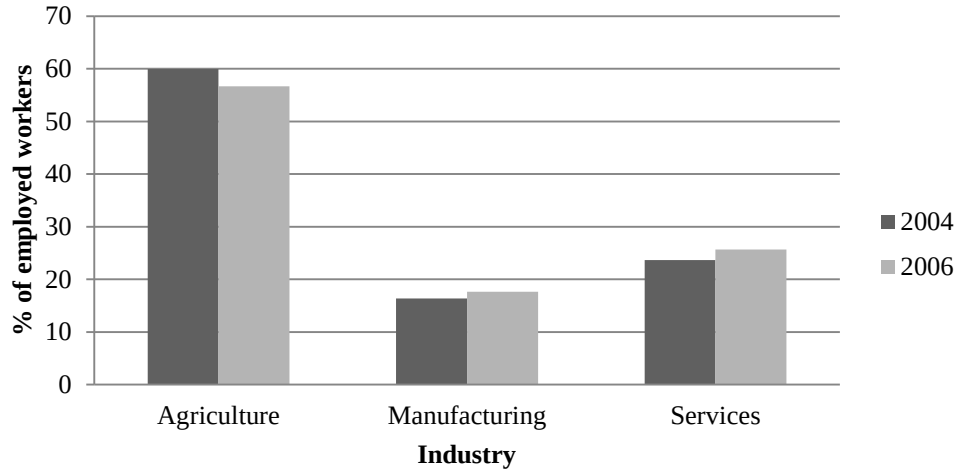
Lastly, I observed changes in labor market indicators by industry. Again, looking specifically at agriculture, manufacturing, and services, we see in figure 17 that workers in all industries experienced income growth.

Figure 17: Average Annual Labor Earnings by Industry



Services remained the highest paying sector in both 2004 and 2006, manufacturing remained the second highest paying sector, and agriculture remained the lowest paying sector. All industries underwent differing rates of income growth, despite maintaining labor earnings ranks. The service sector experienced an 11.2% increase in labor earnings from 9,500,000 dong in 2004 to 10,500,000 dong in 2006. The labor force responded to these increased earnings by expanding the share of employment in services 2 percentage points, from 23.6% to 25.6%.

Figure 18: Percentage of Employed Workers by Industry



The manufacturing industry increased the labor earnings of its employees from 7,450,000 dong to 8,165,000 dong. These earnings were still below the average earnings of workers on aggregate and significantly below the average earnings of service industry employees. However, they were also significantly higher than the labor income of the agricultural industry. Therefore, it is difficult to determine if an increase in the prevalence in manufacturing jobs from 16.3% in 2004 to 17.6% in 2006 betters the labor market.

Moreover, workers in the agricultural sector, while experiencing an increase in labor earnings of 31.2%, remained extremely low earners. In 2004 the average worker in the agricultural industry earned 4,180,000 dong per year. Because of the low initial value of labor earnings even a high rate of growth could not drastically improve this industry. Thus, in 2006 agricultural workers earned only 5,500,000 dong annually. Additionally, the percentage of the labor force employed in the agricultural industry decreased from 60.0% to 56.6%. This substantial decrease in low paying work indicates a significant improvement in labor market conditions.

iv. Conclusion

In summary, from 2004 to 2006 the labor market improved through increased earnings for all groups of workers and improving labor market opportunities. Specifically, wage employment, private employment, foreign employment, and employment in services and manufacturing increased. Also, agricultural employment, household work, and employment in collective firms decreased. Therefore, it is evident that employment expanded in the highest-paying job categories and decreased in the lowest paying job categories. While, self-employment and employment in the public sector had negative or ambiguous effects on the labor market, these effects were substantially less than the positive effects. Thus, from 2004 to 2006 labor market conditions are deemed to be improving.

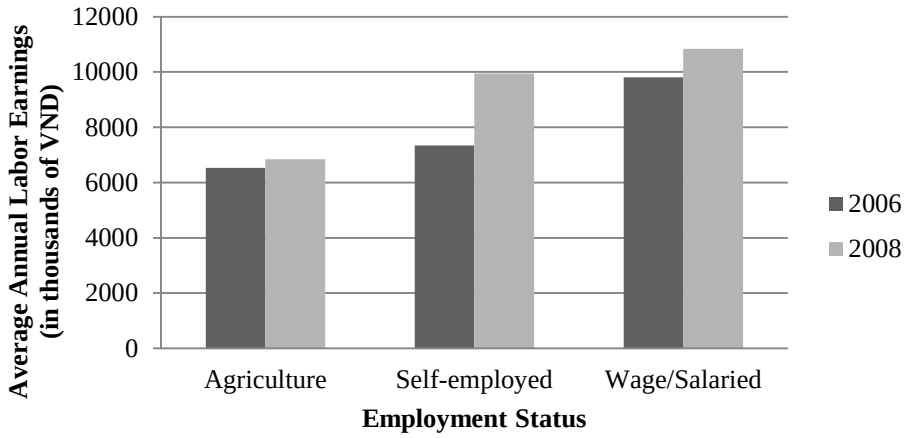
D. 2006 to 2008

From 2006 to 2008 the average annual income of an individual worker increased from 8,725,000 dong to 9,610,000 dong, a rate of change of about 10.2%. While workers continued to benefit from economic growth in the form of higher wages, the rate of income growth in the labor market was slower in the 2006-2008 period than in previous years. In addition to the decreasing rate of income growth, employment composition displayed ambiguous impacts on the labor market from 2006 to 2008.

i. Employment Status

From 2006 to 2008 labor earnings increased for workers in all employment status categories, as is evidenced in figure 19.

Figure 19: Average Annual Labor Earningsby Employment Status



As seen in previous years, wage employees remained the highest earners, the self-employed remained the second highest earners, and agriculture workers remained the lowest earners. Wage employees experienced income growth of 10.4%, increasing average income from 9,800,000 dong in 2006 to 10,840,000 dong in 2008. Wage employment, similarly, expanded its share of the labor market by employing 31.5% of the labor force in 2008, about 2 percentage points higher than in 2006. This increase is exhibited in figure 20.

Figure 20: Percentage of the Labor Force by Employment Status

The self-employed saw an even greater rate of change than wage employees. Average labor earnings increased by 35.4% between 2006 and 2008 for the self-employed, from 7,340,000 dong to 9,950,000 dong. The earnings gains were accompanied by the self-employed composing a smaller share of the labor force in 2008 (17.7%) than in 2006 (19.0%). While the self-employed were not the highest earners on average, they remained a relatively high paying employment category. Thus, the decrease in the percentage of the labor engaged in self-employment should deteriorate labor market conditions.

In previous years we have seen agricultural workers undergoing the largest rates of change in labor income, however, from 2006 to 2008 the agricultural sector experienced a rate of growth of only 4.7%, significantly smaller than in the other observed time periods. Agricultural workers were the lowest earning employment category in 2006 with average labor income of 6,530,000 dong. Because the agricultural sector also had the lowest rate of income growth, agricultural workers remained the lowest earning, with average labor income of 6,840,000 dong. Not only was the agricultural sector the

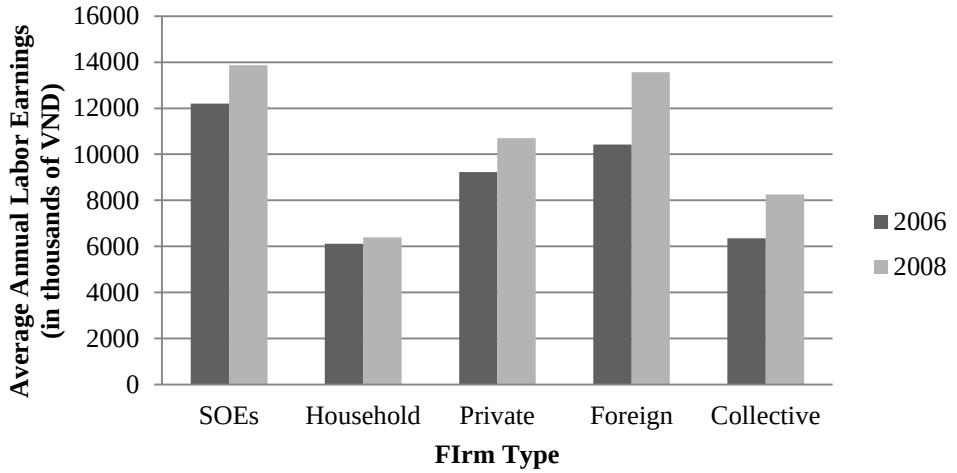
absolute lowest paying sector from 2006 to 2008, but over the two-year period, agricultural workers also became relatively poorer due to the increasing income gap among themselves and other employment categories. Therefore, the decreasing prevalence of agricultural work positively impacts the labor market. However, it is disconcerting that this decrease was only by two-tenths of a percentage point. In 2006 50.7% of the labor force was engaged in agricultural work and in 2008 50.5% of the labor force participated in agriculture.

Overall, the increasing presence of wage employment and decreasing expansiveness of agricultural employment positively impact the labor market. A less concrete conclusion can be drawn about self-employment.

ii. Firm Ownership and Firm Sector

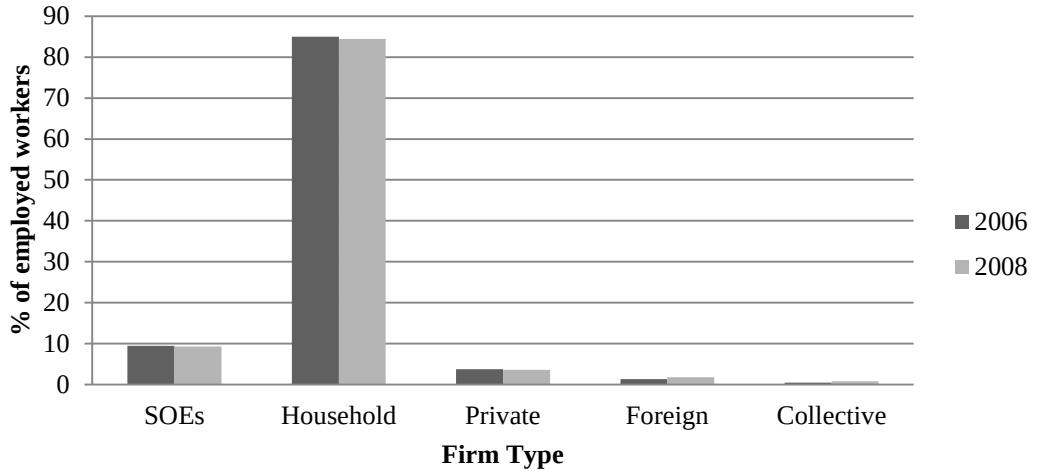
Analyzing income and employment data by firm type provided further insight into the specific kinds of employment that were benefitting most from economic growth. All sectors and firm types experienced a positive change in income from 2006 to 2008, as is depicted in figure 21.

Figure 21: Average Annual Labor Earnings by Firm Type



Employees of government organizations and state owned enterprises earned 12,200,000 dong in 2006 and 13,870,000 dong in 2008. While the earnings growth rate of 13.6% that these firms cultivated was impressive, it indicates a decreasing marginal rate of income growth from previous years. Similarly, a stable percentage of the labor force was employed in state owned enterprises and government organizations in 2006 and 2008, as is displayed in figure 22. Due to the retrenchment of state owned enterprises and a decreasing share of public sector work in GDP, such stagnation might be expected despite large income increases (*Vietnam Development Report* 10).

Figure 22: Percentage of Employed Workers by Firm Type



Employees of foreign owned enterprises earned on average in 2006 10,420,000 dong. By 2008 these wages had increased by 30.2% to 13,570,000 dong, making foreign enterprises the second highest paying firm in both 2006 and 2008. While foreign enterprises continued to employ only a small percentage of the labor force, this percentage increased from 1.36% in 2006 to 1.8% in 2008. Therefore, a growing number of workers were employed in one of the highest paying sectors in the labor market, indicating improving labor market conditions.

Private firms, similarly, experienced a large positive change in income. Employees of private firms earned on average 9,220,000 dong in 2006 and 10,700,000 dong in 2008. Thus, private firms increased labor earnings by 16.0% and remained a high paying firm throughout both years. However, the percentage of the labor force employed by private firms decreased minimally from 3.77% in 2006 to 3.65% in 2008, and therefore, did not contribute to improving labor market conditions.

Collective enterprises experienced a similarly high growth in income. From average earnings of 6,350,000 dong in 2006 to 8,260,000 dong in 2008, collective enterprises increased wages by 30% and about 2,000,000 dong. However, collective enterprises remained low-paying firms, with average wages significantly below state enterprises and government organizations, private enterprises, and foreign enterprises as well as below the average labor earnings. Employment increased in collective firms from 0.47% of the labor force in 2006 to 0.82% of the labor force in 2008, indicating a negative shift in labor market composition.

Household enterprises experienced very little growth in earnings from 2006 to 2008. In 2006 household enterprises earned on average 6,100,000 dong and in 2008 earned 6,400,000 dong. Thus, household enterprises experienced a minimal positive change in Vietnamese dong and a rate of change in earnings of only 4.6%. However, because employment in household enterprises decreased from 84.96% in 2006 and 84.40% in 2008, this sector contributed to improving labor market composition.

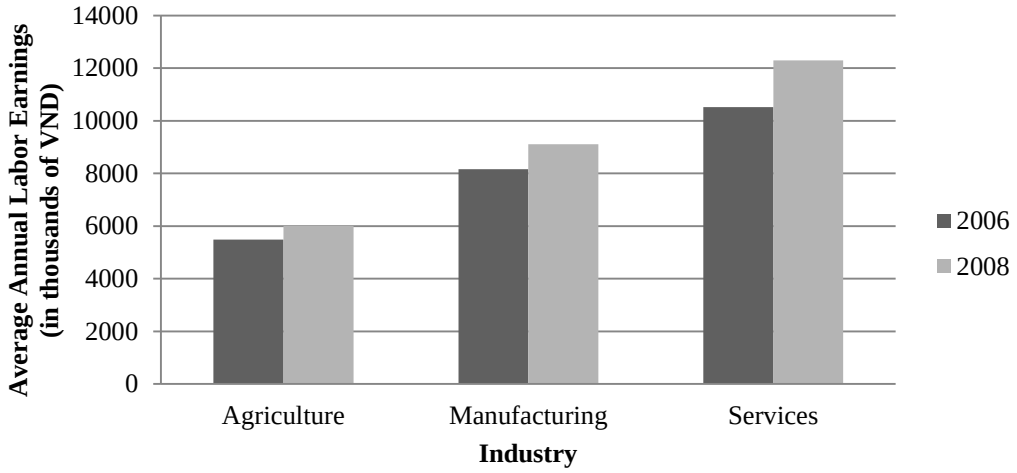
Interestingly, during this period the lowest earning firm type, household enterprises, experienced the smallest growth in income in both rate of change and change in Vietnamese dong. Conversely, the highest paying firm type, foreign enterprises, experienced the largest change in income, both in growth rate and in dong. This trend increased the difference in earnings between the highest and lowest paid categories of workers. Conversely, in all previous survey years household enterprises increased earnings at the highest rates and sometimes by the largest amount of Vietnamese dong.

Overall, state owned and government enterprises and private firms did not have concrete influences on the labor market. However, foreign firms, and household enterprises contributed to the improvement of the labor market, while collective enterprises worsened the labor market. While, decreasing employment in the lowest paying sector of the labor market, household enterprises, indicated an improvement in labor market conditions, household enterprises remained by far the most prevalent sector in Vietnam. Therefore, a more significant decrease in this sector would have been optimal.

iii. Industry

From 2006 to 2008, consistent with patterns observed in previous years, all industries experienced increasing labor income. Additionally, growth rates maintained the highest and lowest paying industry types, as can be seen in figure 23.

Figure 23: Average Annual Labor Earnings by Industry



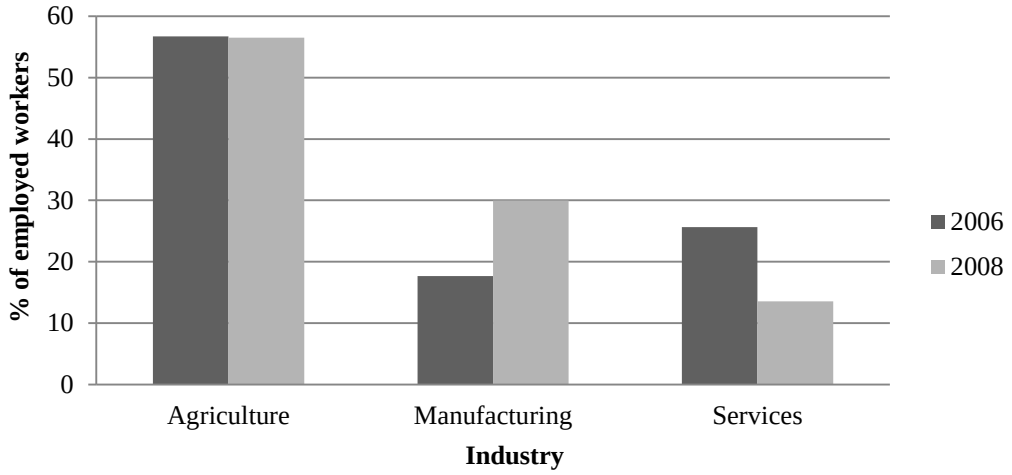
More specifically, services were the highest paying industry in 2006 with average earnings of 10,520,000 dong. Undergoing earnings growth of 16.8%, employees in the

service industry earned 12,300,000 dong by 2008. Because the service industry was the highest paying industry in 2006 and also experienced the highest rate of change, it remained the highest paying industry in 2008.

Additionally, the agricultural industry was the lowest paying industry in 2006, with average annual earnings of 5,500,000 dong. With the lowest rate of earnings change, 9.5%, agricultural workers remained the lowest paid in 2008 with annual earnings of 6,000,000 dong. Thus, in both years workers in the agricultural industry earned less than the average labor income of workers on aggregate and about half as much as the average earnings for workers in the service industry.

Therefore, a decrease in employment in the agricultural sector and increase in employment in the service industry would reflect positively on the impact of economic growth on the labor market. The labor force did, indeed, decrease its share in the agricultural industry from 56.68% to 56.47%. However, the labor force also decreased its share in the service industry significantly from 25.66% on 2006 to 13.57% in 2008, as is illustrated in figure 24.

Figure 24: Percentage of Employed Workers by Industry



The manufacturing industry experienced a growth in earnings of 11.2%, increasing labor earnings from 8,200,000 dong in 2006 to 9,110,000 dong in 2008. Thus, employees in manufacturing earned more than those in agriculture but less than those in services. However, the manufacturing industry was not a high paying industry, as, on average its employees earned slightly less than the average worker in 2006 and 2008. The manufacturing industry drastically increased the percentage of the labor force it employed from 2006 to 2008. Manufacturing employed 17.66% of the labor force in 2006 and 29.96% in 2008, an increasing of 12 percentage points. Because agricultural employment remained relatively stable over the period, I assumed that a large share of workers were leaving services and entering manufacturing. Thus, moving into a lower paying industry signifies deteriorating industrial labor market conditions.

iv. Conclusion

From 2006 to 2008 we again see labor market conditions vastly improving. All groups of workers experienced an increase in average annual labor earnings. The increase in the prevalence of high paying work (wage work, foreign enterprises, manufacturting) and the

decrease in the prevalence in low paying work (agriculture, household work) positively impacted the labor market. While self-employment, employment in state owned enterprises, and employment in the service industry either negatively or ambiguously impacted labor market conditions, positive labor market changes outweighed such impacts.

III.4 Conclusion

A. Summary

In conclusion, from 1993 to 2008, aggregated trends showed that as economic growth occurred in Vietnam all groups of workers benefited in the form of higher labor earnings. Some groups of workers unambiguously experienced high earnings and high earnings growth over time. Such groups included wage workers, those employed in services, and those employed by a state owned enterprise or foreign enterprise.

Chart 1 summarizes the results presented in this chapter by illustrating whether differing industries, firm types, and employment categories experienced improvements in labor market conditions, a decline of labor market conditions, or ambiguous changes. Those categories that saw an improvement in labor market conditions had experienced: increases in average labor earnings, were deemed high earning, and experienced an increase in employment opportunities; or, were deemed low-earning categories and experienced a contraction of employment opportunities. Those categories that experienced a decline in labor market conditions were high paying jobs accompanied by employment decreases or low paying jobs accompanied by employment increases. Where

earnings changes and changes in employment composition did not move together, I deemed changes in the labor market to have been ambiguous. As chart 1 demonstrates, wage employment, agriculture, foreign enterprises, and state owned/government enterprises, consistently experienced improving labor market conditions.

Chart 1: Summary of Labor Market Changes 1993-2008

	1993-1998	**2002-2004**	**2004-2006**	**2006-2008**
Labor Market Improvements	Wage employment	Wage employment	Wage employment	Wage employment
	Agriculture	Agriculture	Agriculture	Agriculture
	Household Enterprises	Household Enterprises	Household Enterprises	Household Enterprises
		Private Firms	Private Firms	Foreign Firms
		Foreign Firms	Foreign Firms	
		Service Sector	Collective Firms	
			Service Sector	
			Manufacturing Sector	
Declining Labor Market Conditions	Collective Firms			Self-Employment
				Private Firms
				Collective Firms
				Service Sector
				Manufacturing Sector
Ambiguous Changes in the Labor Market	SOE/Government Enterprises	Self-Employment	SOE/Government Enterprises	SOE/Government Enterprises
	Self-Employment	Manufacturing Sector	Self-Employment	
		SOE/Government Enterprises		
		Collective Enterprises		

No employment categories showed an overall negative impact on the labor market. That is, no high-earning group consistently decreased employment and no low-earning group consistently increased employment. Wage employment, agriculture, and household enterprises consistently experienced improving labor market conditions. However, self-

employment, private enterprises, collective enterprises, the manufacturing sector, and the service sector presented varied changes in labor market conditions by year. Interestingly, self-employment and state owned or government enterprises were the only categories that showed ambiguous changes in earnings and employment within every single time period. Self-employment employed a decreasing share of the labor force, despite experiencing high earnings increases. This caused an ambiguous effect on the labor market rather than a decline in labor market conditions because self-employment rarely led to earnings greater than those of the aggregated total employed labor force. That is, the self employed were not high earning. Also, the vast majority of the self-employed in the dataset participated in home-based work, a form of employment with low earnings. Therefore, decreasing self-employment could actually be a positive improvement for the labor market. Moreover, SOEs had high earnings and neither increasing nor decreasing employment levels, meaning that SOEs more so experienced labor market improvements than declines. Between 1993-1998, 2002-2004, 2004-2006 and 2006-2008 the positive labor market impacts outweighed the negative or ambiguous labor market impacts, evidencing that, overall, from 1993 to 2008 the labor market demonstrated an improvement.

B. Economic Growth and Earnings Change

In acknowledging that economic growth benefited workers most in specific sectors, industries, and employment categories, it becomes important to analyze the paths of economic growth. In particular, I compared the growth rates of the whole economy, the growth rates of specific industries, the growth rates of earnings, and the changing

composition of the labor force overall.[12] These comparisons allowed me discern whether the levels and distribution of economic growth were important influences in the size of changes in labor market conditions.

We have learned in section III.1 that from 1993 to 2008 the changes in labor market conditions minimized over time. That is, average annual earnings of an individual worker continued to increase but at a decreasing rate. This pattern is clearly summarized in chart 2a, when looking at the entire economy. All change in earnings are reported in thousands of dong and all rates of economic growth are reported as a percentage of GDP.

Chart 2a: Economic Growth and Earnings Change 1993-2008

	1993	1998	2002	2004	2006	2008
TOTAL						
Change in earnings (thousands of dong)		1310.84	1672.04	2220.71	1073.16	886.53
Rate of earnings change		53.50%		40.90%	14.00%	10.20%
Annual economic growth (% of GDP)	8.1	5.8	7.1	7.8	8.2	6.3

Chart 2b: Economic Growth and Earnings Change by Industry 1993-2008

	BY INDUSTRY	1993	1998	2002	2004	2006	2008
Manufacturing	Change in earnings (thousands of dong)		224.52	6450.46	638.07	733.25	947.67
	Rate of earnings change		192.60%		9.40%	9.90%	11.60%

[12] Data was on available on growth rates by employment status. Data on growth rates by sector of employment was only available beginning in 2007. Therefore, I was not able to compare growth rates for these categories to changes in labor market conditions.

	Rate of economic growth (% of GDP)	N/a	N/a	11.6	10.9	13.4	9.9
	Industrial economic growth (% of GDP)	12.6	8.3	9.5	10.2	10.4	5.7
Services	Change in earnings (thousands of dong)		89.7	7672.89	1460.5	1065.44	1772.29
	Rate of earnings change		38.30%		18.30%	11.30%	16.80%
	Rate of economic growth (% of GDP)	8.6	5.1	6.5	7.3	8.3	7.2
Agriculture	Change in earnings (thousands of dong)		129.36	2312.42	1588.42	1305.02	523.44
	Rate of earnings change		84.10%		61.20%	31.20%	9.50%
	Rate of economic growth (% of GDP)	8.1	5.7	4.2	4.4	3.7	4.4

Conversely, the annual percentage growth in GDP of the Vietnamese economy, while remaining positive, did not exhibit marginal decreases over time. Rather, chart 2 exhibits that the growth rate differences between each observed year fluctuated and presented no distinct pattern. The GDP growth rate decreased 2.3 percentage points from 1993 to 1998, increased by 2.4 percentage points from 1998 to 2006, and then decreased by 1.9 percentage points from 2006 to 2008. Similarly, the percentage point changes in employment composition summarized in figures 12, 18 and 24 in section III.1, varied significantly from year to year and do not show decreasing levels of change. Thus, the growth rates only correlate with and help to explain the changes in overall earnings (in dong) between 2006 and 2008, when change in growth and change in earnings both slowed.

Moreover, chart 2b displays, by industry, the rates of growth in GDP and in earnings. The agricultural industry, consistent with average earnings of all groups of workers, showed

earnings to be increasing between each year of observation, but by marginally smaller amounts. Conversely, the earnings of workers in the manufacturing industry consistently increased by increasing amounts. The service industry did not show any uniform pattern in its marginal rates of change in earnings. The agricultural, manufacturing, and services industries experienced growth in GDP from 1993 to 2008. However, the rate of growth declined from 1993 to 2008 for all industries, but not in a consistent manner. Additionally, the manufacturing and service industries demonstrated the largest increase in earnings when GDP growth was at its lowest. Thus, the labor earnings patterns in all industries were not determined by rates of economic growth.

C. Economic Growth and Employment Change

Despite economic growth not influencing workers' average change in earnings, levels of economic growth did influence employment composition. Specifically, the growth of employment opportunities in certain industries closely follows GDP growth. For example, the manufacturing industry exhibited GDP growth at the highest levels in the entire economy, between 9.9% and 13.4%. At the same time, the manufacturing industry experienced the largest change in employment composition. The percentage of the labor force employed in the manufacturing industry increased by over 18 percentage points from 1993 to 2008.

Furthermore, state owned enterprises underwent retrenchment from 1991 onwards. Due to these policies the share of SOEs in the economy declined gradually from 50-65% in 1997 to about 35% in 2004 (*Vietnam Development Report 2006* 9-10). Thus, we can see

that the state owned sector experienced little economic growth. Moreover, the share of the labor force engaged in state owned enterprises stagnated from 2002 to 2008. Therefore, both economic growth and employment growth in the public sector experienced decreasing rates of change.

In conclusion, levels of economic growth impacted employment levels in certain parts of the economy. However, levels of economic growth did no impact levels of earnings growth. Because the highest paying sectors attracted and provided employment opportunities for a greater percentage of the labor force, fewer workers remained in the lowest-paying forms of employment. Thus, economic growth expanded employment levels in high paying sectors and did not increase employment levels in low-paying sectors. Thereby, economic growth provided better labor market opportunities for more workers and improved labor market conditions.

IV. PANEL ANALYSIS

This chapter seeks to specify which personal and labor market characteristics of individuals were associated with the largest earnings gains when individuals are followed over time. Because of some inconsistencies reported in the long-term trends, I look to analyze the individual level contributors to the aggregate trends. The VHLSS dataset allowed me to examine how an individual's change in employment status affected a change in that individual's income. The existing literature on employment mobility and earnings in Vietnam provided a basis upon which I built my econometric model. In reviewing the research of other authors, I was able to discern employment and demographic characteristics that may also impact a change in income. I verified the inclusion of these control variables into my model by producing descriptive statistics in an earnings profile and earnings change profile. I proceeded with the analysis of the panel data by constructing and evaluating correlation coefficients and regression results.

Overall, I found that, holding education at median levels, the workers experiencing the greatest change in income are those moving from agriculture into wage employment or remaining in wage employment. However, agricultural employment remained the category with the least change in earnings over all panels. Education levels within employment categories significantly influenced these findings. Additionally, firm type and initial income were the employment characteristics that most consistently predicted earnings changes.

IV.1 Literature Review

This chapter of my thesis seeks to answer the following question: how do employment characteristics and personal characteristics impact a change in individual income in Vietnam from 1993 to 2008 when individuals are followed over time? I hypothesized that economic growth was translated into gains for workers in the form of higher labor earnings and better employment conditions. Other authors' research was particularly useful in informing my decisions about the employment and personal characteristics for which to control in my analyses. The existing literature demonstrated that gender, location, firm of employment, and formality were related to changes in income as well as changes in employment. However, most of the available information referred to changes in employment with little mention of changes in income.

For the years 1993 and 1998 John Gallup used the VLSS to describe general employment mobility trends. In rural areas, Gallup found that men decreased their participation in agricultural work, while increasing their participation in wage employment and nonagricultural self-employment. Interestingly, men increased their participation in wage employment more than they increased their participation in self-employment. (Gallup 58). Similarly, in rural areas women decreased their participation in agricultural work as well as their participation in wage employment. Women in rural areas moved only into non-agricultural self-employment. Moreover, two-thirds of women and more than half of men were still employed in family farms. In urban areas, men decreased their participation in agricultural work and moved equally into wage employment and non-

agricultural self-employment. In both survey years, males in urban areas were predominantly employed in wage jobs. (Gallup 58). Women in urban areas decreased their participation in both agricultural work and non-agricultural self-employment activities and moved into wage employment (Gallup 58). Gallup's research evidenced that from 1993 to 1998 gender and geographic location were important determinants of change in employment status. Similarly, he demonstrated that workers respond to economic growth by altering their main economic activities.

For the same time period the Vietnam Development Report, produced by the World Bank, only briefly described a relationship between change in income and changing employment status. The Report found that from 2004-2006 those moving out of wage employment and moving into self-employment increased their earnings (*Vietnam Development Report 2008* 42). The World Bank also noted that severance payments from the government to employees of state owned enterprises provided the capital that allowed many wage workers to move into self-employment (*Vietnam Development Report 2004* 89). [13]

[13] Due to market reforms and the down sizing of over-staffed state owned enterprises, there has been a retrenchment of wage employment in these enterprises in Vietnam. Downsized workers were provided with a government-funded severance, payments to aid in job seeking, and a training allowance (*Vietnam Development Report 2004* 88). Most of this money was "used for physical or financial investments, including housing, starting or expanding a household business, and repayment of debts" (*Vietnam Development Report 2004* 89). This access to capital allowed many wage earners to move into self-employment by expanding an existing business or starting a household business. Moreover, "at 33% per year, the rate of return on starting or expanding a household business appears to be extremely high," encouraging self-employment among this group (VDR 2004 89). The retrenched workers report being as well off as before the retrenchment, with 80% being able to find new employment (*Labour and Social Trends in Vietnam* 22). However, some workers simply had hours cut, social and health insurance cut. Others could not find new wage employment and were forced to return to agricultural work or casual work in informal activities, particularly if they were migrant workers from rural areas (*Labour and Social Trends in Vietnam* 23, *Vietnam Development Report 2005* 49).

Moreover, from 2001 to 2003, "the labor turnover rate among foreign companies reached a stunning 43.4%" (*Vietnam Development Report 2006* 94). 32% of these workers simply moved into other foreign enterprises, 23% established their own enterprise and 18% took jobs in domestic enterprises (*Vietnam Development Report 2006* 95). As very few workers were terminated from foreign enterprises at the same time that employees of state owned enterprises were terminated, the movement out of wage work into self-employment appeared to be both voluntary and involuntary. However, workers from both foreign enterprises and state owned enterprises who moved into self-employment experienced an increase in labor earnings. Therefore, the findings of Vietnam Development Report supported my hypothesis that changes in employment are associated with changes in income.

Nguyen, Nordman, and Roubaud (2011) utilized panel data from 1998-2006 to observe employment transitions and earnings among informal wage earners, formal wage earners, informal self-employment, and formal self-employment.[14] The authors found that both formal wage workers and the formally self-employed earned more than their informal counterparts. However, both formal and informal self-employed workers earned more than formal wage workers. The formal self-employed had the highest employment mobility, while formal wage workers had the least employment mobility (Nguyen 14). This indicated the stability of formal wage employment and the instability of formal self-employment. Those transitioning from formal self-employment mostly moved into

[14] The authors defined informal employees as those not covered by a social security scheme.

informal self-employment. The informal self-employed had a low probability of becoming formally self-employed, and rather often moved into informal wage work. Informal wage work also provided the lowest labor income (Nguyen 16). Those transitioning from informal wage employment moved into either informal self-employed or formal wage employment. The workers who were able to become formally self-employed, typically formal wage workers, experienced the highest earnings (Nguyen 16). The findings of this study illustrate the heterogeneity that exists within the Vietnamese labor market, both within employment categories and across employment categories. I was interested by the findings because those initially in the lowest paying employment categories experiencing income gains, while those initially in the highest paying employment categories experienced income losses. This alluded to the need to control for the dichotomy within each employment status in my analyses, by including a measure of formality and initial income in my predictions of earnings changes.

From 2007 to 2009, Gaëlle Pierre found that households in Vietnam that exited poverty were more likely to have changed sector of employment rather than remain in the same sector of employment (Pierre 39). The author concluded that strategies to increase income included starting an economic activity and refocusing labor market participation (39). In this sense, a review of the literature supported my research question in validating the relationship between changes in income and changing employment status.

Other studies provided ample background information on factors that affect changing employment status. Specifically, I learned that gender, geographic location, initial

income, informality, and differing employment tiers affected income levels as well as the decision to change employment activity. However, the existing literature did not definitively answer *how* changes in income and employment status were related. Particularly, the literature did not define the direction or magnitude of any of the relationships specified.

IV.2 Data and Panel Formation

My goal in the panel analysis was to understand how an individual's decision to change employment or remain in a certain form of employment impacted their change in earnings from 1993 to 2008. Because workers on average experienced income growth over the observed time period, I wanted to understand in more detail which workers had benefitted most and least from economic growth. Some workers were indeed enticed into new employment categories by increased earning potential. However, some workers may have been excluded from transitioning into new employment or forced to exit a high earning form of employment. By following individual workers over time in a panel analysis I was able to understand how movement between employment categories influenced levels and directions of income change.

In my research I decided to analyze panels over a shorter length of time, rather than analyzing one long-term panel. The household surveys from the VLSS and VHLSS cannot be used to create a single panel due to differing survey methodologies, differing sampling selections, and variations in certain sections of the questionnaires. The VHLSS, however, could be used to generate a six-year panel from 2002 to 2008. I opted to created

one five-year panel and three two-year panels to be analyzed separately for the following time periods: 1993-1998, 2002-2004, 2004-2006, and 2006-2008. I decided to study separate panels in order to better track changes in employment. Between 2002 and 2008 an individual is likely to transition into differing employment categories. Thus, in the case of an individual working in multiple employment categories, the change in income over the entire six-year period would be difficult to interpret. It would not be possible to attribute the change in income specifically to a change in employment status. As income could have fallen and risen with each employment transition, a six-year panel would provide a limited overview of changes that occurred within the time period. Therefore, using two-year panels provides much more transparency and insight in deciphering how changes in employment affect changes in income.

Additionally, the VHLSS is constructed as a partial panel, such that it only follows a portion of individuals into the subsequent survey year. The number of observations that are tracked remains stable from year to year because new individuals are also added into the panel at each year. However, the number of observations that are followed from the baseline 2002 survey diminishes with each additional survey year. Due to this methodology, the formation of three two-year panels rather than one six-year panel allowed me to maintain the highest attrition levels and sample sizes.

In order to measure change in income over two survey years, I created a variable that expressed the difference between income in year t and income in year t-1. Income was measured as labor earnings from the primary economic activity over the past year. While

about 30% of individuals from the 2002-2008 surveys participated in multiple economic activities, the labor earnings accumulated from secondary and tertiary economic activities was minimal.[15] Due to a loss of observations in the merging process as well as that fact that many individuals did not disclose their income information in the 1993 survey, the 1993-1998 was unusable.[16] I adjusted all reaming income data from the VHLSS to 2002 price levels, using the consumer price index.

IV.3 Econometric model

After reviewing contributions from other authors to employment mobility and income change in Vietnam, I observed certain employment and individual characteristics that highly influenced earnings levels. For this reason I decided to include the following variables as control variables in my analysis:

Employment Characteristics[17]	**Individual Characteristics**
Sector of Employment	Ethnicity
Informality[18]	Status within the Household
Initial Labor Income	Gender
Informality*Employment Status	Education
Education*Employment Status	Urban or Rural location
	Age

[15] Secondary and tertiary employment activities, constituted about 17% and 13% of total income, respectively.
[16] Thirteen observations remained in the 1993-1998 panel after merging and dropping missing values.
[17] I also sought to include a measure of firm size because large state owned enterprises and private businesses demonstrate higher success rates (*Vietnam Development Report 2006* 15-16). I was curious to see if these large enterprises continued to experience growth in form of large positive changes in earnings. However, this information was not available survey years, except the 1993 VLSS.
[18] In 1993 and 1998 informality was defined as working without a signed contract. From 2002 to 2008 informality was defined working without a business license or being employed by a business without a license.

I further investigated these characteristics by creating an earnings profile with anonymous data for various groups in the Vietnamese population from 1993 through 2008.[19] I learned that: Chinese workers on average earn significantly more than other ethnicities; household heads and their spouses typically earn more than children and other relatives residing in a household; men consistently out-earn women; higher educational degrees are associated with higher earnings; workers in rural areas only earn on average 55% to 62% of what urban workers earn; and, prime aged workers (those aged 25-54) earn more than young adults and the elderly. Moreover, I discovered that employees of state owned enterprises and foreign enterprises earned more on average than employees of other firm types; informal workers earned less than 75% of formal worker earnings; and, that great earnings diversity exists within each employment status, indicating that jobs exist at higher and lower tiers within each category of employment.

This information led me to postulate that individual and employment characteristics, which displayed clear income differences, would be influential in predicting change in income. The levels of income change may follow different patterns than those of average labor earnings. However, it is reasonable to assume that, nonetheless, patterns would emerge for these variables.

Furthermore, I included interaction variables in order to account for the heterogeneity that exists within the following employment categories: wage employment, self-

[19] I constructed the earnings profile using average income data from the anonymous population not the panel population that was tracked over time. I present the earnings profile in charts 1 and 2 in the appendix.

employment, and agricultural employment. Not all employment within each category is of the same quality. I aimed to distinguish between the self-employed owners of large enterprises and those in home based work, as well as wage employment with high stability that require skilled labor versus unskilled wage employment with low stability. To do this, I interacted education and informality separately with employment status. This assumes that workers with more education will enter the best paying jobs, and will have the skill set to succeed in these jobs. Similarly, the interaction term expects that formal enterprises provide the most desired forms of employment. Unfortunately, the number of cases in which individuals were able to answer questions on informality and also disclose income information was extremely low. These observations reduced further when I created panel datasets. Therefore, I was unable to use informality in my analysis.

After considering all variables that theoretically would impact change in income and that were also available in the data set, I developed an econometric model. The following equation represents the model as well as the variables to be included in the subsequent analyses:

$\Delta Y_{i,\,t} = \beta_0 + \beta_1$ employment status $+ \beta_2$ Y Quintiles $_{t-1} + \beta_3$ firm type $+ \beta_4$ ethnicity $+ \beta_5$ status within household $+ \beta_6$ education $+ \beta_7$ D_male$_{t-1} + \beta_8$ ln (age$_{t-1}$) $+ \beta_9$ D_urban$_{t-1}$ $+ \beta_{10}$ education*employment status $+ \varepsilon$

Where, $\Delta Y_{i,\,t}$ is the dependent variable, x_1 is the main independent variable and x_2 -x_{10} are control variables. $\Delta Y_{i,\,t}$ measures the change in labor market income in real dong.

Specifically, I measured change in income as the difference between an individual's labor earnings from the primary economic activity of the last 12 months in year t and in year t-1.

Employment status is the change in employment activity from year t-1 to year t, as judged by the main economic activity of an individual over the past 12 months. Employment status was coded as a categorical variable from 0 to 9, with 0 representing remaining in agriculture, 1 remaining in wage employment, 2 remaining in self employment, 4 transitioning from agriculture to wage, 5 transitioning from agriculture to self-employment, 6 transitioning from wage work to agriculture, 7 transitioning from wage work to self-employment, 8 self-employment to agriculture and 9 self-employment to wage employment.

Y Quintiles $_{t-1}$ is a categorical variable with values 1 through 5, representing the income quintile an individual belonged to in year t-1. 1 indicates the lowest earning quintile and 5 the highest earning quintile. I found the interpretation of a change in income based on initial income categories easier to understand than a change in real income. Such categories provide more detail on how a workers income in year t-1, compared to the rest of the income distribution.

Firm type represents the sector of an individual's employment or the ownership of the firm in which an individual was employed. I measured firm type categorically as a

household enterprise, government organization/ state owned enterprise, collective enterprise, private enterprise or foreign enterprise.

Ethnicity represents a dummy variable in which the Kinh population, the ethnic majority, is coded as 1 and all other ethnic minorities are coded 0. These minorities included the Chinese, Thai, and Philippine populations. However, the minority groups exhibited low observation numbers in the survey and were not able to be analyzed separately.

Status within the household is a categorical variable indicating if the individual is a household head, a spouse of the household head, a child of the household head, or another relative residing within the household.

Education is a categorical variable representing the highest diploma or degree an individual has received. The categories were coded 0-5 and titled as follows: none, primary, secondary, upper secondary, professional/vocational, and college or higher. Within the surveys I had the choice of measuring education by highest degree earned or by highest grade attained. I decided to measure education by degree type instead of highest grade attained because it simplified the distinction between levels of education.[20]

D_male_{t-1} is a dummy variable coded 1 if an individual surveyed was male and 0 the individual was female.

[20] Years of education were not available in the surveys.

Ln (age_{t-1}) is a continuous variable representing the log value of the initial age of an individual, which is an individual's age in year t-1. I measured age in log values because the variable did not display a normal distribution initially. However, after log transformations age much more closely approached a normal distribution.

D_urban_{t-1} is a dummy variable, coded 1 if an individual lives and works in an urban area and 0 if an individual lives and works in a rural area.

Education*employment status is an interaction variable of education and employment status. I included the interaction term to account for earnings heterogeneity that existed within each employment category. This variable operates under the assumption that those with a higher education moved into the best forms of wage work, self-employment, and agricultural work. Thus, the effect of each employment status on change in income also accounts for varying education levels.

ε represents the error term and β's signify the direction and magnitude of each corresponding variable's relationship to change in income.

IV.4 Methodology

In evaluating how changing employment status impacted change in income from 2002-2004, 2004-2006, and 2006-2008, I explored the relationship between my independent and dependent variable in a variety of ways. First, I looked at average change in income of the panel population by changing employment status. In this way, I was able to

understand how employment movement affected change in income on average without any controlling factors.

Secondly, I produced univariate regression results between change in income and change in employment status, as well as between change in income and each of the control variables. This analysis provided me with correlation coefficients that signified the directional impact of each variable on change in income without any controlling factors. However, the correlation coefficients provided no insight into how each category within a variable was related to change in income.

Lastly, I executed multivariate regressions. The composition of the analysis—observing change over two points in time—allowed me to create single variables that represented "change in income" and "change in employment status" over the observed two-year period. Therefore, panel regression analysis was not necessary, despite the fact that I analyzed panel data. Rather, I utilized multivariate OLS linear regressions for each panel.

I found that all employment categories associated with self-employment—moving into self-employment, moving out of self-employment and remaining self-employment—had low observations. The sample sizes of these categories were consistently between 3 and 35. Because self-employment categories had the most pronounced earnings gains and losses on average, I predicted that the low number of observations would skew the regression results. For this reason I transformed the employment status variable for the multivariate regression analysis. I condensed the categories associated with self-

employment into a single category, described as "self-employment/other." This changed the number of employment categories from 9 to 5. The new employment status categories were: remaining in agriculture, remaining in wage employment, self-employment/other, moving from agricultural work to wage work, and moving from wage work into agricultural work.

In evaluating the initial regression results, I discovered violations of the OLS model assumptions. The error terms did not display a normal distribution and a constant variance, violating normality and homoskedasticity requirements. To correct for the assumption violations, I explored commonly practiced statistical techniques.[21] Specifically, these established statistical mechanisms corrected for heterogeneity by addressing outliers. First, I identified outliers in the data by calculating standardized residuals. This procedure transformed residuals into z-scores, which are easily interpreted. Large standardized residuals have a low probability of being observed in a standard normal distribution. Therefore, these points may not belong in the model if they are not naturally occurring. In practice, standardized residuals with an absolute value greater than two are further examined for data entry errors. (Russell 2013, "Statistical Data Analysis: Detecting Outliers"). If outliers cannot be corrected or explained, applied statistical mechanisms recommend dropping outliers greater than the absolute value of

[21] Substituting ln ($\Delta Y_{i,t}$) for $\Delta Y_{i,t}$ created a normal distribution of residuals. However, I chose not to make this substitution. My research question focused on how much income individuals gained or lost. Interpreting change in income as a percentage of initial income rather than a change in dong would be misleading and less informative. For low-earning individuals, a small increase in real income measured in dong could measure as a large percentage of initial income. Similarly, when using ln ($\Delta Y_{i,t}$) observations with zero change in income were omitted, decreasing the sample size.

3.0-3.5, given a sufficiently large dataset (Yaffee 2002, “Stata Data Analysis Examples”). Where deleting outliers does not correct for heterogeneity and non-normality, a robust regression corrects for outliers. Such a regression weighs outliers less heavily in the results but does not fully discard them in the presence of non-normal and heteroskedastic error terms (Yaffee 2002, “Stata Data Analysis Examples”). I deleted outliers that were not errors and could not be adjusted. This successfully eliminated heterogeneity from the 2002-2004 and 2004-2006 models. The corrected dataset produced residuals that were near normally distributed and also homoskedastic. Subsequently, in the 2006-2008 dataset analysis I utilized a robust regression.

IV.5 Results and discussion

A. 2002-2004

After analyzing the earnings change profile, correlation coefficient, and multivariate regression results, I found certain patterns existed within the 2002-2004 panel. Those initially in the lowest income quintile, the ethnic majority, men, and those not working in a household enterprise were significant predictors of positive changes in income. The workers experiencing the greatest change in income, holding education at median levels, were those moving from agriculture into wage employment. However, the workers experiencing the lowest changes in income remained in agriculture.

i. Earnings change profile

I constructed descriptive statistics from my panel datasets in order to measure the change in average yearly income. I did this for individuals who were tracked by their employment status, initial sector of employment, and initial demographic characteristics. After reviewing such statistics, I was able to hypothesize how each variable in my econometric model should impact change in income.

Employment Status

When looking at changing employment status, all employment categories showed an increase in income. Those moving from self-employment into wage employment over the course of the 2002-2004 panel had significantly greater increases in income than others. Moving from agriculture into self-employment on average produced the smallest income gains. Therefore, I predict that changing employment status will be associated with positive changes in income. Specifically, I think that entering wage employment will be associated with the largest income gains.

Initial Income

From 2002 to 2004 the earnings change profile demonstrated that all income quintiles experienced growth in labor earnings. The two lowest income quintiles experienced the greatest average income growth. However, the highest earning quintile experienced more income growth than those initially in the 3rd and 4th quintiles.[22] Therefore, I postulate that increasing income quintiles will have a negative impact on change in real dong.

[22] The top quintile has an extremely large standard deviation, indicating that income change for this group was more diverse. For example, the maximum lost to an individual in the highest quintile over the two year

Firm type

Employees working for a state owned enterprise or a foreign company experienced increases in labor income of 2,400,000 VND to 2,600,000 VND. Those working for a household experienced the smallest earnings increase, which was about one-third of the increase employees of a state owned enterprise or foreign enterprise experienced. Thus, I hypothesize that firm ownership impacts change in income positively, particularly when compared to the earnings change of household enterprises.

Demographic Characteristics

Next, I analyzed the average change in labor earnings encountered by demographic characteristics. From 2002 to 2004 men increased their mean income by about 400,000 VND more than women. By ethnicity, Thai, Kinh, and Chinese individuals had average income increases between 1,600,000 VND and 1,900,000 VND, which was significantly larger than the 845,000 VND that other ethnic minorities saw in the 2002-2004 panel.[23] Similarly, urban areas had income increases of about 2,000,000 dong, while rural areas only saw average income increases of about 1,400,000 dong from 2002 to 2004. Not surprisingly, the higher the educational degree attained the higher the increase in income. The largest positive difference in income increases was between a Masters degree and a

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panel was 19,989,000 dong, while the maximum amount an individual gained was 40,124,000 dong. The income change has much less variation in the other quintiles, indicating that the higher earning workers may also be subject to less job stability and inflated risk along with greater earning opportunities.

[23] Information on ethnicity was not available for 2002, so the 2004 data served as the baseline data, since ethnicity is not expected to have changed from 2002 to 2004.

doctorate degree. Technical degrees and professional secondary school degrees were associated with a larger income increase than a higher secondary school degree. Based on this information and statistics collected during my literature review, I predict that gender, and geographic location will positively impact change in earnings. Similarly, I predict that due to increasing education levels and expanding labor market opportunities, increased education will lead to greater changes in earnings. However, it is unclear how ethnicity will affect change in earnings, as some ethnic minorities experienced large income increases and others experienced small income increases.

Additionally, all age groups increased their earnings. However, those aged 45-54 years old experienced the highest increase in labor earnings—1,800,000 VND. Those aged 55-64 years old experienced the lowest increase in labor earnings—7,000 dong. Individuals of prime working age did particularly well, while young adults and the elderly achieved little income growth. Therefore, I believe that age will be positively related to change in income.

Within the immediate family in the 2002-2004 panel, the household head experienced the highest income increase. However, this increase was only 300,000 dong more than his or her spouse's income increase. Grandparents within the household experienced an income loss over the panel. Contrary to other variables, I believe that household status will be negatively related to a change in earnings, as compared to change in earnings of the household head.

These hypotheses are predicated on the belief that most high earning categories will continue to reap the greatest benefits of economic growth. Therefore, I would expect the earnings gap within most variables to continue to widen.

ii. Correlation results

In order to explore the association between change in income and change in employment status as well as change in income and the control variables, I produced correlation coefficients. These pair wise coefficients measure the statistical relationship between change in income and each variable on a scale from -1.0 to 1.0. A perfect negative linear relationship is represented by a -1.0 correlation, while a perfect positive linear association is represented by a 1.0 correlation. Chart 3 summarizes the correlation coefficients for the 2002-2004 panel.

Chart 3: Correlation Coefficients Between Change in Income and Explanatory Variables

	2002-2004
Employment Status	0.0954
Initial Income Quintiles	0.1086
Firm type/Sector	0.1852
Position in Household	0.0283
Ln(age)	0.0100
Gender	0.0418
Urban	0.0633
Education	0.2007
Ethnicity	-0.0491

From 2002-2004 changing employment status was weakly correlated with a change in income. Ethnicity was associated with a decline in income. Conversely, age, gender, and

living in an urban area were positively correlated with a change in income. For categorical variables, due to methodology, it was not possible for me to determine whether a positive or negative relationship existed with change in income.[24] However, education exhibited the strongest relationship with change in income, negative or positive. This indicates that education may be the best predictor of change in income in the model.

iii. Regression results

To estimate the impact of employment status on a change in real income, I ran a standard linear model, which estimates parameters using linear approximation or ordinary least squares. This model suited my research question because it produced a descriptive regression revealing how an increase in X is associated with a change in Y. My research question did not seek to understand a causal relationship, and therefore, this analysis will focus less on probabilities and more fully on β coefficients.

After running the econometric model I obtained results, which are represented by the following equation: [25]

[24] I calculated correlation coefficients for categorical variables by running a univariate regression between change in income and the set of dummy variables within a categorical variable. This progress did not assume a uniform distance between each category of the variable. The regression produced an r-squared value. I took the square root of this value to obtain r, the correlation coefficient.

[25] I have summarized the results, including all corresponding β coefficients and probabilities in a regression output presented in chart 5 in the appendix.

$$\Delta Y_{i,t} = \beta_0 + \beta_{1j} x_{ij} + \beta_{2j} x_{2j} + \beta_{3j} x_{3j} + \beta_4 x_4 + \beta_{5j} x_{5j} + \beta_{6j} x_{6j} + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10\,ji}(x_{1j} * x_{6i}) + \varepsilon \quad (1)$$

In order to discern the impact on $\Delta Y_{i,t}$ of each employment status in $x_{1,}$ I differentiated equation 1 with respect to x_1 for each employment category.

$$\frac{d}{dx_1}(\Delta Y_{i,t}) = \frac{d}{dx_1}\left(\beta_0 + \beta_{1j} x_{1j} + \beta_{2j} x_{2j} \ldots + \beta_{10\,ji}(x_{1j} * x_{6i}) + \varepsilon\right) \quad (2)$$

In this differentiation x_2-x_{10} are held constant and, thus, considered integers. After differentiation, all constants become 0. The effects of x_{1j} on $\Delta Y_{i,\,t}$ are present in β_{1j}, the coefficient on employment status, and β_{10ji}, the coefficient of employment status interacted with education, x_6. In order to obtain a single influence for each x_{1j}, I took the median value of education, x_{10}, which was having obtained a lower secondary school degree or category 2. Therefore, the total effect of x_{1j} is taken as:

$$\frac{d}{dx_1}(\Delta Y_{02-04}) = \beta_{1j} + \beta_{10\,j2} \quad (3)$$

For each employment category I calculated the total effects on ΔY, considering both the impact of employment status and employment status interacted with education. The results of being in each employment status in thousands of dong are as follows:

Chart 4: Effects of Employment Status on Earnings Change (2002-2004)[26]

j	β_1	β_{10}	$\beta_{1+}\beta_{10}$
Remaining in agriculture	Omitted category	1381 (1.52)	
Remaining in wage employment	546 (0.46)	1385 (1.19)	1931
Being in involved in self-employment in any way	106 (0.07)	2393 (1.54)	2499
Moving from agriculture to wage employment	-2976 (-1.83)*	6075 (3.64)**	3098
Moving from wage employment to agriculture	188 (0.28)	Omitted category	

β_1 represents the impact of employment category, j, on ΔY when an individual has no education. Based on the hypothesis that employment categories differ in quality by education level, the interaction term is interpreted though $\beta_{10.}$ β_{10} represents the difference in ΔY of being in employment category, j, with a lower secondary school education versus being the same employment category, j, with no education. The total effect of employment status on change in income, therefore, is β_{1+} $\beta_{10.}$ This sum represents the difference in ΔY of remaining in agriculture with a lower secondary school education, versus being employed in another category, j, with the same level of lower secondary school education.

Therefore, we can see that remaining in agriculture with a lower secondary education would expectedly lead to a change in income of 1,380,000 VND more than remaining in agriculture with no education.

[26] I present t-statistics in parentheses below each corresponding coefficient. I used the t-statistics to determine significance of the coefficients. One asterisk represents significance at the 10% level and two asterisks indicate significance at the 5% level.

With no education, moving from wage employment to agricultural employment is expected to change income by 190,000 VND more than remaining in agriculture with the same education level.

With a degree from lower secondary school, a worker remaining in wage employment is expected to experience a change in income 1,900,000 VND greater than a worker remaining in agriculture. The differences in earnings change increase as workers vary their employment. For instance moving from agriculture to wage employment with a lower secondary schooling degree was associated with a change in income 3,100,000 VND greater than remaining in remaining in agriculture with the same education level. Also, being involved in self-employment in any way—remaining in self-employment, moving into self-employment, or moving out of self-employment—with a lower secondary school education predicted a change in income 2,500,000 VND greater than remaining in agriculture with the same education level.

However, at the 10% significance level, moving from agriculture into wage employment was the only employment category that was significant both by itself and at all education levels in the interaction term. Therefore, we learn that at a median education level, moving from agriculture to wage employment most significantly and most drastically increased change in labor earnings. This impact on earnings change was seen as compared to remaining in agriculture, the most prevalent form of employment in Vietnam.

In addition to change in employment status affecting a change in income, the control variables also significantly contributed to predicting a change in income. I presented these results in the regression output in chart 5 in the appendix. All variables in the econometric model accounted for 14.99% of the variation in change in labor earnings, with an R-squared value of 0.1499. In this discussion, I am presenting only the variables that were significant in their relationship to change in income at the 10% significance level or higher.[27]

All income quintiles were significant in predicting change in income. Compared to being in the lowest earning income quintile in 2002, each additional quintile experienced an increasingly lower change in labor earnings. For instance, initially being in the second lowest earnings income quintile predicted a change in income 570,000 VND lower than the change in income experienced by the lowest earnings income quintile. This difference increases to 1,450,000 VND less for the third income quintile, 2,325,000 VND less for the fourth income quintile, and 3,270,000 VND less for the initial highest earning quintile. Thus, the lowest earning workers benefitted most from economic growth and experienced the largest change in earnings.

Similarly, the Kinh population was predicted to experience a change in labor earnings 780,000 VND larger than ethnic minorities experienced, including the Chinese, Thai,

[27] I determined statistical significance at the 10% level or higher based on p-values below 0.10 and sufficiently large t-statistics.

Philippine, and others.[28] Based on the regression output, men would be predicted to experience a change in income 600,000 VND greater than women. Lastly, certain categories of firm type or firm ownership were significant in predicting change in income. Working in a household enterprise was associated with a change in income 1,150,000 VND less than self-employed workers. Also, those working for a private firm were expected to change their labor earnings by 863,000 VND less than self-employed workers.

Overall, the workers experiencing the greatest change in income are those moving from agriculture into wage employment. However, the workers experiencing the lowest changes in income remained in agriculture. Moreover, those initially in the lowest income quintile, the ethnic majority, men, and those not working in a household enterprise were significant predictors of positive changes in income.

B. 2004-2006

Overall, through the analysis of the earnings change profile and correlation coefficient results, I found that initial income quintiles, ln(age), and ethnicity displayed a weak negative relationship with change in income. Conversely, change in labor earnings was positively related to firm ownership, household status, gender, living in an urban area, and education. The regression results showed that the workers experiencing the greatest

[28] This was significant at the 1% significance level with a t-value of 2.56.

change in income are those moving from agriculture into wage employment and those experiencing the least growth remained in agriculture.

i. Earnings change profile

In order to understand how employment status and other control variables impacted the change in labor earnings from 2004-2006, I first observed descriptive statistics of the panel dataset. Chart 4 in the appendix depicts the mean change in income by several groups of the panel population. Of greatest interest to my research question is average change in income by employment status.

Employment Status

When exploring change in labor income by changing employment status in the 2004-2006 panel no distinct patterns emerged. The workers with the largest income growth (2,700,000 to 3,700,000 VND) were those who were initially in self-employment and: stayed in self-employment, moved into wage work or moved into agriculture. This may indicate that certain skills are gained through self-employment or that moving into more stable employment from self-employment can be associated with a wage increase. Those moving from agriculture into self-employment had the smallest income growth—only 790,000 VND. All other employment categories experienced comparable income growth between 1,400,000 to 1,900,000 VND. Interestingly, a wage premium existed for those beginning in self-employment, while a wage penalty existed for those moving into self-employment. However, a very small percentage of employed workers were involved in self-employment at any point in the panel. Because the self-employed presented

themselves as a group experiencing both the largest and smallest income gains, I was cautious to draw conclusions about the impact of changing employment status on change in income.

Initial Income

From 2004 to 2006 those initially in the lowest quintile of the income distribution saw the highest increase in income throughout the panel—an increase of 3,213,000 VND. The average income increase for all other income quintiles was only 46-56% of the income growth of the lowest quintile. Therefore, in the regression analysis I expect that an increase in income quintile will be negatively associated with change in income.

Firm type

The 2004-2006 panel demonstrated, unsurprisingly, that household enterprises, the lowest-paying economic sector, experienced minimal income growth (900,000 VND). Employees of foreign enterprises, which were part of a growing and high paying sector, also experienced a small growth in labor earnings (1,700,000 dong). However, those working for a private firm or a SOE saw significant income growth of 2,200,000 VND and 2,800,000 VND, respectively. Interestingly, employees of collective firms had the largest income change of 3,500,000 VND. This data presented no consistent patterns on the basis of public versus private sectors. However, I conclude that in the regression analysis, when compared with the earnings change of household enterprises, other firm types will exhibit a positive change in earnings.

Demographic Characteristics

Next, I observed the average change in income for workers in the 2004-2006 panel by demographic characteristics representing the control variables. Looking at the age distribution, I found that those aged 15-24 years had the greatest increase in income (2,400,000 dong). Those under 15 and those aged 25-44 years all had similar income increases of about 1,800,000 VND in 2004-2006. However, The age group 55-74 experienced negative income changes, with the size of income loss increasing with age. Therefore, I expect that age will display a negative relationship with change in income. That is, as age increases earnings will increase by a smaller amount or even begin to decrease.

Moreover, workers with higher educational degrees also experienced positive income growth. The marginal change in income increased with each additional educational attainment.[29] This illustrates that education and change in income should be positively correlated.

Geographically, individuals residing in urban areas experienced a positive income growth of 2,500,000 VND, which is 1,000,000 VND larger than rural areas. I hypothesize that compared to the earnings growth experienced in rural areas, urban areas will exude a positive increase in earnings.

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[29] Individuals with no education and individuals with a doctorate demonstrated labor income losses. However, I believe this is on account of the small number of observations for these educational categories. I interpreted these statistics carefully because they do not represent properly the population without degrees or the population of doctorate holders.

From 2004 to 2006, less distinct patterns emerged by gender, household status, and ethnicity. By gender, men increased their labor earnings by about 200,000 more VND than women, with both groups experiencing average income growth of about 2,000,000 VND. Similarly, all members of a household experienced similar increases in labor earnings. However, the child of the household head had the largest positive income change of 2,200,000 VND.[30] The income increase of the household head was just 400,000 VND less than the child's, and the spouse of the household head experienced income growth 600,000 VND less than the child's. The similitude in earnings growth levels across gender and within a household created difficulties in summarizing the relationship between change in income and these variables.

Interestingly, the Thai population, a minority, experienced the largest income growth over the 2004-2006 panels, with an increase of 4,100,000 VND. The Kinh and Chinese populations saw income growth of about 1,800,000 VND, while all other ethnic minorities experienced income growth of 1,200,000 VND. Therefore, compared to the ethnic minorities, it is not evident whether the Kinh population, the ethnic majority, will experience an earnings gain or earnings loss.

[30] In 2004 the average age of children of the household head was 16.5, the average age of the household head was 49 and the average age of the household head's spouse was 45—with standard deviations of 8 to 13 years. Therefore, children could have large income increases in the household if they are prime working age or if they are still in school and working while reaching higher educational attainments.

In summary, I expect a positive relationship between change in earnings and firm type, age, education, and geographic location. The relationships between earnings change and employment status, gender, household status, and ethnicity, however, were ambiguous. Therefore, I made no predictions for these variables.

ii. Correlation results

In creating pair wise correlation coefficients, I observed the statistical relationship between change in income and all categories of x variables. Chart 5 displays the coefficients between change in income and each variable.

Chart 5: Correlation Coefficients Between Change in Income and Explanatory Variables

	2004-2006
Employment Status	0.0985
Initial Income Quintiles	0.1166
Firm type/Sector	0.1881
Position in Household	0.0616
Ln(age)	-0.0565
Gender	0.0190
Urban	0.1046
Education	0.2209
Ethnicity	-0.0214

As can be observed in chart 5, changing employment status conveyed only a slight relationship to change in income. Ln (age), and ethnicity displayed a weak negative relationship with change in income. Change in labor earnings was positively related to gender and living in an urban area. As we saw in the 2002-2004 panel data, education,

again, exhibited the most pronounced relationship with change in income. The correlation coefficients justified other hypotheses about directional impacts on earnings changes, with the exception of age. Moreover, the correlation results provided insights into the impact of variables on earnings change, whose effects were ambiguous in the earnings profile. However, the directional impact of categorical variables on change in income could not be determined because r was calculated by taking a square root.[31]

iii. Regression results

I interpreted the regression results for the 2004-2006 panel in the same manner as the 2002-2004 panel. That is, I differentiated the equation 1, which represented the results, with respect x_1 in order to obtain the total effects of changing employment status on ΔY. The median education level in the 2004-2006 panel was lower secondary education, represented by category 2 in x_6. Therefore, considering both x_1 and $x_1 * x_6$, the impact of each employment category, j, in x_1 on ΔY is given as:

$$\frac{d}{dx_1}(\Delta Y_{04-06}) = \beta_{1j} + \beta_{10\,j2} \qquad (4)$$

The coefficients for each employment category, j, are summarized in the table below:

[31] I regressed change in income on the set of dummy variables for each categorical variable. I calculated the correlation coefficient by taking the square root of the r-squared value produced in the regression.

Chart 6: Effects of Employment Status on Earnings Change (2004-2006)[32]

j	β_1	β_{10}	$\beta_{1+}\beta_{10}$
Remaining in agriculture	Omitted category	1276 (0.22)	
Remaining in wage employment	2286 (0.38)	36 (0.02)	2322
Being in involved in self-employment in any way	2160 (0.34)	-131 (-0.04)	2028
Moving from agriculture to wage employment	250 (0.04)	3636 (1.36)	3886
Moving from wage employment to agriculture	529 (0.09)	Omitted category	

β_1 represents the impact of employment category, j, on ΔY when an individual has no education. The interaction term coefficient, β_{10}, represents the difference in ΔY between being in employment category, j, with a lower secondary school education versus being in the same employment category, j, with no education. $\beta_{1+}\beta_{10}$ represents the difference in ΔY between remaining in agriculture with a lower secondary school education versus being employed in another category, j, with the same level of lower secondary school education.

As we can see from chart 6, remaining in agriculture with a lower secondary school education predicted an income change of 1,275,000 VND more than remaining in agriculture with no education. This indicated the high level of importance education plays in earnings increases and labor market success.

[32] I present t-statistics in parentheses below each corresponding coefficient. I used the t-statistics to determine significance of the coefficients. One asterisk represents significance at the 10% level and two asterisks indicate significance at the 5% level.

Also, moving from wage employment to agriculture with no education was associated with a change in income 530,000 VND greater than remaining in agriculture with no education. These results demonstrated that moving into agriculture, compared to remaining in agriculture, did not drastically change income.

Earnings change gaps became more pronounced as workers varied their employment type while holding education constant. Remaining in wage employment with a lower secondary degree is expected to produce an earnings change gap of 2,320,000 VND more than remaining in agriculture with the same level of education. Having a lower secondary degree and being involved in self-employment, whether remaining in, exiting or entering self-employment, predicted a 2,030,000 VND greater change in earnings than remaining in agriculture with the same education level. Lastly, when compared with remaining in agriculture with a lower secondary education, moving from agriculture into wage employment was associated with greatest increase in earnings—3,890,000 VND. Despite the lack of statistical significance, moving into wage employment from agriculture presented the greatest positive effect on the magnitude of earnings changes.

While neither employment status alone nor employment status interacted with education were significant in any categories, certain control variables exhibited a significant relationship with change in income. Initial income quintiles all demonstrated a significant and negative relationship with earnings change. Compared with the lowest earning quintile in 2004, the second lowest earning quintile demonstrated a change in income 1,110,000 VND less. Similarly, this difference in change in earnings was only magnified

with each successive income quintile. For instance, the third income quintile predicted a change in income 1,650,000 VND less than the change in income of those in the lowest earnings quintile. Similarly, the fourth quintile and the highest earning quintile were expected to experience a change in earnings 2,700,000 VND and 3,800,000 VND less than the lowest earnings quintile, respectively.

Moreover, working in a private firm produced a change in income 1,000,000 VND greater than working in a household enterprise. Similarly, working in state owned enterprises or government enterprises predicted an even greater difference in change in income. These workers were expected to change their income by 1,620,000 VND more than workers in household enterprises.

Based on the regression results, urban workers are expected to experience a change in income 600,000 VND greater than rural workers. And, men are expected to undergo a change in income 550,000 VND greater than women.[33]

In summary, I predicted that firm type, age, education, gender, and household status and geographic location would be significantly and positively related to a change in earnings. Additionally, based on descriptive statistics and univariate regression results, I hypothesized that initial income quintiles, ln (age), and ethnicity would display a weak negative relationship with change in income. In analyzing the econometric model through

[33] With p-values of 0.102 and 0.134, respectively, the urban and gender variables were not statistically significant at the 10%, but just over. For this reason, I reported the relationships.

a multivariate OLS regression, I found that employment status did little to explain changes in income. However, the workers experiencing the greatest change in income were those moving from agriculture into wage employment and those experiencing the least growth remained in agriculture, when education was held at median levels. Moreover, being in low earning quintiles, not working in a household enterprises, working in urban areas, and being male proved to predict the highest positive changes in income.

C. 2006-2008

First, I observed an earnings change profile for the 2006-2008 panel. This profile illustrated no consistent patterns in average earnings change among wage workers and self-employed workers. However, agricultural workers consistently experienced the lowest change in earnings. Based on the correlation coefficients and the earnings change profile I made the following predictions about my econometric model: Employment status, firm type, ln (age), gender, living in an urban area, and education should predict a positive change in labor earnings. Additionally, I predicted that initial income quintiles, household status and ethnicity would exhibit a negative association with change in earnings. The multivariate regression results demonstrated that remaining in wage employment predicted the largest positive change in income, while remaining in agriculture predicted the smallest changes in income. Contrary to my theories, only initial income quintiles, firm type, and household status significantly predicted changes in income.

i. Earnings change profile

I first explored the relationship between change in income and each explanatory variable by constructing an earnings change profile. This profile calculated the average change in earnings for individuals in the panel data set based on employment and individual characteristics. I summarized the results for each variable below and present the earnings change profile in chart 4 in the appendix.

Employment Status

In the 2006-2008 panel patterns in average income change emerged based on employment status. Those with the largest wage growth—about 2,600,000 VND—had remained in self-employment throughout the panel or moved from wage employment into self-employment. Differing from the 2004-2006 panel, a wage premium was now associated with movement into self employment rather than moving from self employment.

Those who remained in wage employment, moved into wage employment, or moved into self employment from agriculture all had comparable labor income growth of 1,200,000 to 1,600,000 VND. Thus, we see that movement into self-employment produced earnings growth greater on average than movement into wage employment.[34]

[34] These patterns differ from the previous panels. This could be explained by the low number of observations associated with self-employment, which could skew average earnings change from the true population mean.

More consistency existed in the earnings increases associated with agricultural employment. Individuals with the lowest income growth, about 400,000 VND on average, were those moving into agriculture from self-employment. Individuals moving from wage work into agriculture or remaining in agriculture also saw experienced low income growth of about 900,000 VND. This indicated that in addition to experiencing the lowest initial earnings, agricultural was also experiencing little or no growth in earnings. Thus, I expected that all employment categories would display a positive earnings change when compared with the earnings change of those remaining in agriculture.

Initial Income

In the 2006-2008 panel the lowest income quintile encountered income growth of 2,206,000 VND. All other income quintiles, however, experienced only 40-68% of this income growth. Therefore, I hypothesized that compared with the change in earnings of the lowest earning quintile, all other quintiles would demonstrate a negative change in earnings.

Firm type

The 2006-2008 panel demonstrated sector earnings change patterns very closely aligned with average earnings in the anonymous trends. For instance, those working for a state owned enterprise experienced positive income change, expanding labor income on average by 2,200,000 VND. Similarly, those working for a foreign enterprise increased labor income on average by 2,000,000 VND. Conversely, collective and private firms only increased labor income by 1,200,000 VND. Working for a household, again,

provided minimal income growth (500,000 VND). Thus, the firm types with the greatest and most consistent potential for income growth were state owned enterprises and foreign enterprises. On the contrary, household enterprises proved to be the firm type with the lowest growth potential for labor income.

Demographic Information

By gender men demonstrated a slightly higher change in labor income than women, of 150,000 VND. Between 2006 and 2008 urban areas experienced positive income growth of 1,500,000 VND, compared to 1,200,000 VND in rural areas. Therefore, urban workers and male workers continue to have higher income growth, even after having higher initial earnings. This exacerbates inequality and indicates that geographic location and gender should be positively related to a change in labor earnings.

In the age distribution, the cohort aged 45-54 exhibited the largest change in income, an increase of about 2,500,000 VND. Those aged 15-44 all had comparable income increases of 1,000,000 to 1,500,000 VND. The age group 55-74 experienced negative income changes, with the size of this loss increasing with age. However, those over the age of 85 began experiencing income growth instead of income loss. This growth was about 1,300,000 VND. I detected no distinct relationship between age and change in earnings for 2006-2008 panel.

Moreover, earnings growth varied by educational attainments. Workers with no education had higher positive income changes than those with primary or lower secondary degrees;

and, those with a doctorate degree had a smaller income increase than those with a Masters degree. However, all other degree categories showed that change in earnings increased with each additional degree earned.

Differing positions within the household demonstrated similar changes in earnings. The household head experienced the largest income increases of 1,500,000 VND, only 200,000-300,000 VND more than a child or a spouse. The immediate family members are seen to have higher income increases than other relatives residing within the household. Therefore, the immediate family (household head, spouse of the household head, and their children) saw income changes that move together. However, no significant patterns manifested in order to explain a relationship with change in earnings.

The Thai population had the largest income growth over the 2006-2008 panel, with a growth of 1,900,000 VND. The Philippine and Chinese populations however, experienced only a 930,000 and 100,000 VND increase, respectively. The ethnic majority, the Kinh population saw income growth of 1,400,000 VND. Thus, we see the Kinh and Thai people continuing to thrive by substantially increasing their labor incomes, while ethnic minorities were not able to accomplish such growth. However, I cannot predict how a change in income for all minorities would compare with a change in income for the majority.

In summary, I predicted that gender and geographic location would have positive impacts on change in income. However, I could not determine any distinct relationship between earnings change and age, education, household status, and ethnicity.

ii. Correlation results

Calculating correlation coefficients provided more insight into the relationship between each variable and change in labor earnings. I have summarized the results of these univariate regressions in chart 6 below.

Chart 6: Correlation Coefficients Between Change in Income and Explanatory Variables

	2006-2008
Employment Status	0.0574
Initial Income Quintiles	0.0741
Firm type/Sector	0.1360
Position in Household	0.0300
Ln(age)	0.0195
Gender	0.0114
Urban	0.0271
Education	0.0985
Ethnicity	-0.0102

Similar to the previous two panels, the 2006-2008 panel demonstrated a weak relationship between employment status and change in earnings. This association barely represents a patterned relationship. Ln (age), gender, and living in an urban area were associated with an increase in labor earnings, that is, a positive change in income. Ethnicity, however, exhibited a negative association with change in earnings.

Analyzing the association between change in income and each variable individually, the correlation coefficient more reliably illustrates the statistical relationship through both direction and magnitude. However, the correlation coefficient lacks the capacity to compare change in income by categories within each variable. For this reason, I focus on the regression analysis results. Moreover, employment status, initial income quintile, firm type, education, and position within the household could have been positively or negatively associated with a change in income.[35]

iii. Regression results

Similar to the previous panels, I interpreted the regression results through a differentiation of my econometric equation with respect to x_1 at the median education level. For the 2006-2008 panel the median education category was 3 and represented obtaining a higher secondary schooling degree. Therefore, the total impact of change in employment status on change in income is given by:

$$\frac{d}{dx_1}(\Delta Y_{06-08}) = \beta_{1j} + \beta_{10j3} \qquad (5)$$

Chart 7 below summarizes the effect of each employment status, j, on change in income in thousands of dong.

[35] I regressed change in income on the set of dummy variables for each categorical variable. I calculated the correlation coefficient by taking the square root of the r-squared value produced in the regression.

Chart 7: Effects of Employment Status on Earnings Change (2006-2008)[36]

j	β_1	β_{10}	$\beta_{1+}\beta_{10}$
Remaining in agricultural	Omitted category	1706 (0.76)	
Remaining in wage employment	4692 (3.21)**	-1935 (-1.25)	2757
Being in involved in self-employment in any way	6124 (2.24)**	-4936 (-1.61)	1188
Moving from agriculture to wage employment	1637 (3.25)**	1060 (0.50)	2697
Moving from wage employment to agriculture	1261.96 (0.75)	Omitted category	

Chart 7 demonstrates that remaining in wage employment; being involved in self-employment in either 2006, 2008, or both years; and, moving from agriculture to wage employment are significant in predicting change in labor earnings at the 5% significant level. However, when employment status was interacted with education this variable produced no statistically significant results. Nonetheless, I am still interested in exploring the relationships predicted by the econometric model.

An employee with no education moving from wage employment into agriculture was predicted to experience a change in income about 1,260,000 VND greater than remaining in agriculture also with no education. Remaining in agriculture from 2006 to 2008 with a higher secondary education predicted a change in income 1,700,000 VND larger than

[36] I have also presented t-statistics in parentheses, which are marked with * for significance at the 10% level or a ** for significance at the 5% level.

remaining in agriculture with no education. Therefore, the results illustrate that wage premiums were associated with wage employment as well as with increased education.

Interestingly, changing employment and varying employment activities did not result in larger changes in income. For example, remaining in wage employment with a higher secondary schooling degree predicted a change in income 2,760,000 VND greater than remaining in agriculture with the same education level. When moving from agriculture into wage employment with a higher secondary degree, the same comparison produced an expected change in income of 2,670,000 VND. Being involved in self-employment with a higher secondary degree at any point in time throughout the panel estimated an earnings change of 1,200,000 VND more than remaining in agriculture with the same education level. Therefore, we can see that remaining in wage employment or moving from agriculture into wage employment with a median education level predicts the largest impacts on earnings change.

Contrary to employment status, some of the control variables did significantly predict change in income. These variables included initial income quintiles, household status, and firm type. However, within these variables only certain categories displayed statistical significance. I discuss these categories below.

As seen in the 2002-2004 panels, income quintiles had a negative impact on change in income. That is, compared to being in the lowest initial income quintile all other quintiles were associated with a lower change in earnings. This change in earnings became

increasingly smaller for each marginal income quintile. Of statistical significance, the fourth income quintile predicted a change in income about 1,600,000 VND less than the change in income for the lowest income quintile. Similarly, the highest income quintile estimated an earnings change about 2,325,000 VND less than the lowest income quintile.

Similarly, household status also exhibited a negative relationship with change in income. Compared to the household head all other individual's residing within a household predicted a lower change in income. Being the child in the household was associated with a change in income 1,325,000 VND less than the household head; and, being another relative was associated a change in income 1,900,000 VND less than the household head.

Also, firm ownership demonstrated a positive relationship with change in income. Being employed in a state owned enterprise or government organization was associated with a change in labor earnings of about 2,000,000 VND more than being employed in a household enterprise.

Overall, remaining in wage employment predicted a large positive change in income for workers when compared to remaining in agriculture. On the other hand, being associated with self-employment predicted the smallest change in income when compared to remaining in agriculture. These results assumed that workers all exhibited a median level of education and demonstrate that remaining in agriculture produces the smallest change in earnings. Additionally, being in the lowest earning quintile, being the household head,

and not being employed in a household firm were all significant predictors of positive changes in income.

IV.6 Conclusion

This chapter of my thesis sought to answer the following question: Which labor market and personal characteristics are associated with the largest labor income gains from 2002 to 2008 when individuals are followed over time? I hypothesized that economic growth was translated into gains for workers in the form of higher labor earnings and better employment conditions. In order to test this theory I followed individual workers over time, observed whether these workers changed employment status, and analyzed how this specific change in employment influenced a change in income. In order to properly discern this relationship, I controlled for both employment characteristics and individual characteristics that might influence a change in income.

The multivariate regression results indicated that moving from agriculture to wage employment with a median level of education has greatest affect on change in income from 2002-2004 and 2004-2006 when compared to remaining in agriculture. From 2006-2008 remaining in wage work with a median level of education predicted the greatest positive change in income. However, in all panels remaining in agriculture predicted the smallest changes in income.

Interestingly, the most significant and consistent predictors of earnings change levels throughout all panels were firm type and initial income quintile. That is, those choosing

to work outside of home based enterprises experienced large positive earnings growth. Similarly, those initially in the lowest earning portion of the income distribution also experienced the largest changes in earnings. These relationships were expected based on my analyses of descriptive statistics and correlation coefficients.

V. CONCLUSION

V.1 Findings

Overall, I found that from 1993 to 2008 that aggregate trends showed that all groups of workers benefitted from economic growth in Vietnam. These benefits took the form of increased earnings and employment composition shifting towards better paying jobs. Specifically, employment in wage employment, foreign enterprises, services and manufacturing expanded, and, employment in agricultural and household enterprises contracted.

Moreover, when individual workers were followed over two-year periods from 2002-2008, I found that certain employment characteristics and personal characteristics were associated with large gains in labor earnings. Workers moving into wage employment from agriculture or remaining in agricultural experienced the highest increases in labor income, compared to remaining in agriculture. This further indicates movement into the highest paying forms of employment. Also, firm type and initial income quintile were the most consistent predictors of change in income. Those not working in a household enterprise and those initially in the lowest income quintile were associated with the greatest increases in labor earnings.

Additionally, the findings from chapter III, which analyzed aggregate trends, and chapter IV, which followed individuals over time, supported one another. When looking at firm type, household based enterprises presented as the lowest paying firms in chapter III. In chapter IV workers in household enterprises experienced the smallest changes in income, compared to all other firm types. From 2002 to 2008 workers in wage employment were the highest earners, while workers in agriculture were the lowest earners. Chapter III illustrated that employment in wage work was increasing while employment in agricultural work was decreasing. This indicated that in response to economic growth labor market conditions improved through increasing aggregate wages for all groups of workers and movement into the highest paying jobs.

Similarly, chapter IV demonstrated that workers remaining in wage employment or moving into wage employment experienced the greatest change in earnings, while workers in remaining in agriculture experienced the smallest change in earnings.[37] From 2002-2008, 45% -54% of workers remained in wage employment, 17%-18% of workers moved from agriculture employment into wage employment, and only 12%-13% remained in agriculture. This indicates that the occupational movements made by the majority of Vietnamese workers in the panel data also led to the highest increases in labor earnings.

Therefore, chapter III and chapter IV both showed movement into employment categories with the highest earnings and the highest earnings change. Such movement into the highest paying and highest growing jobs evidences unambiguous improvements in the

[37] These results occurred when I held education constant at median levels.

labor market. Thus, from 1993 to 2008 Vietnam's economic growth benefitted its people through increased aggregate earnings and positive changes in labor market composition.

V.2 Shortcomings of the Research

Despite the agreement among the findings in chapter III and chapter IV, my research and data exhibited certain shortcomings that call into question the representativeness of my results. One major fallacy of my research is that the income data is not congruent with the employment data, in that, the income data does not properly represent the employment composition of the labor market. The majority of people reporting their income were in wage employment, disproportionately increasing the representation of wage employment in the labor force. We see this in the characteristics of the anonymous and panel data sets. In the anonymous datasets agriculture made up about 50% of the labor force and in the panel data agriculture made up only about 12% of the labor force. Despite this problem, both anonymous and panel analyses demonstrated that groups of workers experiencing the highest earnings also should experience the highest earnings change.

Additionally, the downfall of using three-two year panels instead of one six-year panel is that there may not be as much control in other personal or employment characteristics, some of which are unmeasured. This could be distorting the influences on the changes in income. By tracking the same people for the entire panel we would be able to say that individual characteristics are fully controlled for. Also, having to exclude informality, firm size, and the interaction variable of employment status and informality from the model due to a lack of observations could have led to missing variable bias in the results.

Furthermore, only about 30% of people reporting being active in wage employment remarked that it was their only form of employment. Thus, because my research does not take into account being involved in multiple activities, the results may not be fully accurate. Also, looking at multiple employment activities would have been interesting as it would have allowed me to analyze not only changes in employment status, but diversification of economic activities as well. Pierre (2013) found that poverty reduction in Vietnam was especially tied to diversification of income generating activities, not only employment status. Therefore, this should be a topic that is expanded upon in future research.

APPENDIX

Chart 1: VND to USD Conversions

VND	USD (2002 prices)
500,000	34.01
1,000,000	68.03
1,500,000	102.04
2,000,000	136.05
2,500,000	170.07
3,000,000	204.08
3,500,000	238.10
4,000,000	272.11
6,000,000	408.16
8,000,000	544.22
10,000,000	680.27
20,000,000	1360.54

In 2002, 1 USD=14,700 VND.

Source: www. Oanda.com/currency/historical-rate

Chart 2: Earnings profile 1993-2002 (in thousands of Vietnamese dong)

	1993				1998				2002		
	obs	mean	sd		obs	mean	sd		obs	mean	sd
by initial earnings				**by initial earnings**				**by initial earnings**			
lowest quintile	91	54.7379	26.734	lowest quintile	75	150.03	57.042	lowest quintile	5418	896.428	403.454
quintile 2	89	116.735	14.765	quintile 2	44	228.06	14.719	quintile 2	5453	2331.81	471.25
quintile 3	103	170.019	19.183	quintile 3	64	288.28	20.362	quintile 3	5379	4126.81	566.8071
quintile 4	89	250.104	31.443	quintile 4	57	369.80	27.875	quintile 4	5704	6724.07	967.7982
highest quintile	73	488.438	202.180	highest quintile	57	565.40	186.529	highest quintile	5129	13447.8	6666.135
by geographic location				**by geographic location**				**by geographic location**			
urban	n/a	n/a	n/a	urban	n/a	n/a	n/a	urban	n/a	n/a	n/a
rural	n/a	n/a	n/a	rural	n/a	n/a	n/a	rural	n/a	n/a	n/a
By employment status				**By employment status**				**By employment status**			
agriculture	82	195.57	188.47	agriculture	45	284.85	132.55	agriculture	13317	3132.28	2800.862
self employment	34	232.86	207.46	self employment	6	367.11	134.94	self employment	1389	3579.8	4021.741
salaried	390	199.26	158.86	salaried	252	313.43	170.25	salaried	27081	5431.6	5259.571
unemployment	13	278.59	288.28	unemployment	35	324.53	133.06	unemployment	244	3748.84	4847.792
by gender				**by gender**				**by gender**			
male	237	242.392	197.2293	male	171	329.3168	167.604	male	16795	5762.93	5505.347
female	208	160.341	101.7818	female	126	291.5113	168.584	female	10288	4890.13	4782.359

	1993				1998				2002		
	obs	mean	sd		obs	mean	sd		obs	mean	sd
by age group				**by age group**				**by age group**			
<15	13	97.16	66.13	<15	6	221.98	61.74	<15	331	2097.7	1731.845
15-24	137	185.86	138.67	15-24	104	298.08	142.34	15-24	7096	4088.05	3229.759
25-34	147	215.97	161.78	25-34	76	293.08	126.24	25-34	7794	5663.5	5045.151
35-44	87	218.00	154.72	35-44	58	345.50	189.78	35-44	7420	6057.46	5898.697
45-54	28	207.74	175.90	45-54	32	406.85	273.87	45-54	3634	6700.82	6748.496
55-64	25	236.66	227.30	55-64	16	274.60	94.14	55-64	648	5368.25	5847.466
65-74	8	203.17	412.15	65-74	5	197.09	143.72	65-74	145	3062.37	4855.978
75-84	0			75-84	0	.	.	75-84	14	2113.71	1417.057
85 or greater	0			85 or greater	0	.	.	85 or greater	1	4160	.
by education				**by education**				**by education**			
				pre-school	0	.	.	none	6240	3148.225	2699.735
none	85	223.51	173.58	primary	102	308.76	129.07	primary	7063	4221.477	3639.231
primary	101	254.85	213.94	lower secondary	89	314.05	190.29	lower secondary	6372	4841.537	4026.193
lower secondary	102	213.25	174.40	upper secondary	31	351.31	162.19	higher secondary	2703	6927.518	5572.196
higher secondary	34	155.08	80.54	vocational	20	284.44	104.50	technical	792	9314.771	5748.85
technical	18	136.87	102.20	university	13	462.49	352.35	professional secondary	1691	8175.011	4452.357
vocational	47	148.72	106.30					junior college	617	8952.639	4464.996
bachelor	16	144.13	77.84	**By household status**				bachelor	1544	13155.64	10214.86
master	0	n/a	n/a	head	89	304.14	174.59	master	46	15421	7744.851
underdoctorate	1	125	.	spouse	47	333.52	167.62	doctor	14	22189.29	15783.44
doctorate	0	n/a	n/a	child	143	320.52	171.82				
				grandchild	5	294.08	106.68				

	1993				1998				2002		
	obs	mean	sd		obs	mean	sd		obs	mean	sd
				neice/nephew	0	.	.	**By household status**			
By household status				parent	2	168.73	141.48	head	9969	5641.738	5534.267
head	148	229.60	174.54	sibling	5	231.79	102.97	spouse	5183	5807.143	6075.979
spouse	80	169.02	133.22	son/daughter in law	5	251.80	72.73	child	11160	5034.689	4507.764
child	169	183.00	133.50	brother/sister in law	n/a			parents	41	5853.415	7162.289
grandchild	4	259.80	151.26	grandparent	0	.	.	grandparent	13	3513.462	3272.783
niece/nephew	2	450.00	212.13	father/mother in law	0	.	.	grandchild	335	5029.997	4454.888
parent	1	182.62	.	other relative	0	.	.	other relationship	381	6811.44	5773.193
sibling	6	365.69	331.51	servants	n/a	n/a	n/a				
son/daughter in law	31	202.57	176.82	tenants	n/a	n/a	n/a	**by ethnicity**			
brother/sister in law	1	250.00	.	other non relatives	1	238.91	.	Kinh			
grandparent	0							Tuy (Phillippine)			
father/mother in law	0			**by ethnicity**				Thai			
other relative	3	507.28	615.05	Kinh	261	317.23	166.63	Chinese			
servants	0			Tuy (Phillippine)	2	205.39	26.28	Other			
tenants	0			Thai	0						
other non relatives	0			Chinese	10	436.87	249.95				
				Other	24	227.84	113.14				

	1993				1998				2002		
	obs	mean	sd		obs	mean	sd		obs	mean	sd
								by sector/firm type			
by ethnicity				**by sector/firm type**				self employed	6401	1733.341	1675.929
Kinh	406	201.41	156.47	government	39	254.72	138.05	working for a household	11011	4977.658	3645.662
Tuy (Phillippine)	2	200.00	70.71	SOE	25	399.91	244.59	government	3973	8375.539	5456.18
Thai	3	392.85	223.30	cooperative	0	.	.	social organization	313	6411.067	5128.585
Chinese	9	253.01	277.99	private enterprise	4	58.64	27.43	SOE	2266	9995.344	7089.848
Other	25	206.28	232.75	small household	29	340.46	169.73	other state sector	360	8796.428	6290.731
				joint company	120	302.24	139.46	collective	374	5246.936	5521.679
				foreign	0	.	.	private	1265	8466.127	6876.858
by sector/firm type				other	15	311.82	112.04	state captalist	74	10915.95	8100.553
government	83	120.19	54.85					foreign	535	10696.24	8774.364
social organization	12	117.76	44.30	**licensing status or pension**							
SOE	38	205.21	177.12	formal	18	280.90	178.24	**licensing status or pension**			
mixed government/private	0			informal	279	315.37	168.27	formal*	0		
joint venture	2	225.00	106.07					informal	0		
foreign	0			**industry**				**industry**			
cooperative	15	75.24	56.89	agriculture	120	2.76	1.38	agriculture	10987	2595.527	2413.214
private/household	295	237.40	178.18	manufacturing	102	3.04	1.52	manufacturing	8383	6791.573	5340.513

other	0			services	75	3.03	1.48	services	7706	7996.573	6150.684
licensing status or pension											
formal	109	139.37	103.85								
informal	336	225.02	175.55								

Notes: For 1993 only available definition of formal is if a worker is receiving a pension, for 1998 it is if the worker has a signed contract. For 2002-2008 formal is defined as having a business license.

Chart 3: Earnings profile 2004-2008 (in thousands of Vietnamese dong)

	2004			2006			2008		
	obs	mean	sd	obs	mean	sd	obs	mean	sd
by initial earnings									
lowest quintile	632	1754.162	753.6256	593	2129.391	869.239	609	2220.87	919.5978
quintile 2	619	3934.975	593.8681	592	4711.244	683.6278	607	4959.876	754.7774
quintile 3	626	6024.998	705.8733	595	7217.351	772.5407	608	7653.64	820.9064
quintile 4	625	9209.881	1146.423	592	10494.24	1155.535	608	11271.57	1383.73
highest quintile	625	17369.43	7675.839	590	19127.98	8354.92	608	21957.5	9639.596
by geographic location									
urban	1159	10542.24	7877.92	1068	11438.02	8665.295	1103	12833.38	10034.46
rural	1968	5950.018	4726.958	1894	7195.566	5289.456	1937	7777.297	6139.948

	2004			2006			2008		
	obs	mean	sd	obs	mean	sd	obs	mean	sd
By employment status									
agriculture	1114	5411.907	4096.321	937	6532.302	4798.823	947	6840.637	5101.198
self employment	141	7048.162	5422.968	114	7346.942	6087.256	120	9952.049	10083.68
salaried	3127	7652.093	6478.489	2962	8725.256	7006.838	3040	9611.789	8151.098
by gender									
male	1935	8090.251	6974.177	1846	9150.702	7525.038	1869	10114.06	8731.235
female	1192	6940.823	5509.946	1116	8021.518	5990.308	1171	8810.131	7057.901
by age group									
<15	51	1976.842	1674.968	26	2386.297	2042.008	27	3128.362	2813.077
15-24	806	5243.811	3649.178	823	6489.15	4358.814	731	6631.955	4573.938
25-34	815	7938.8	5952.591	684	9308.656	6122.689	765	9972.444	7254.84
35-44	782	8612.051	7136.655	728	9404.161	7544.492	767	10651.38	8336.256
45-54	544	10095.66	8071.53	536	11052.79	8946.166	589	12017.77	10839.92
55-64	102	7473.221	6491.233	125	8748.634	8373.111	137	9555.268	8800.625
65-74	25	5642.99	7966.84	35	5832.186	7571.818	20	4377.932	5653.338
75-84	2	319.4118	311.748	5	1249.426	589.1658	4	3446.765	5605.716
85 or greater	0			0	.	.	0	.	.
by education									
none	30	6113.182	3910.706	15	6993.744	7831.06	13	7993.927	4794.491

	2004			2006			2008		
	obs	mean	sd	obs	mean	sd	obs	mean	sd
primary	741	5883.295	4417.171	679	6731.324	4507.197	700	6822.824	4596.462
lower secondary	813	6667.339	4901.962	807	7896.022	5498.519	805	8138.119	5555.516
higher secondary	683	9384.3	6691.13	688	10151.25	7574.105	718	11375.36	9615.449
vocational	0	.	.	0	.	.	0	.	.
professional high school	0	.	.	0	.	.	0	.	.
junior college	123	11126.72	4728.826	90	13703.97	7482.929	98	14322.74	6438.232
bachelor	269	14592.79	10278.37	251	17055.68	9729.191	282	20171.7	10415.45
master	7	29081	16359.71	6	16336.86	6442.796	12	24983.25	12062.29
doctorate	3	31745.63	8207.219	4	26016.82	8013.43	3	25881.59	2149.088
other	1	14036.12	.	3	5373.459	659.4555	3	10181.52	7242.048
By household status									
head	1097	8627.615	7257.296				1017	10750.49	9479.42
spouse	566	8601.81	7219.61	**not available for 2006			573	10214.3	8260.92
child	1359	6541.089	5331.083				1335	8529.717	6935.718
parent	0						5	3671.29	4652.989
grandparent	0						0	.	.
grandchildren	40	4959.588	3655.234				28	7554.796	4982.196
other relatives	64	7880.853	4651.056				82	9960.125	6341.958

	2004			2006			2008		
	obs	mean	sd	obs	mean	sd	obs	mean	sd
by ethnicity									
Kinh	2874	7804.608	6563.028	2645	8957.018	7158.192	2820	9758.331	8261.979
	2004			2006			2008		
	obs	mean	sd	obs	mean	sd	obs	mean	sd
Tuy (Phillippine)	50	8083.619	6754.717	56	9352.704	5816.518	47	9591.833	6990.27
Thai	22	8081.445	4624.023	22	8965.382	7253.456	15	6381.167	5012.461
Chinese	21	7240.514	4501.735	17	11260.84	5561.44	21	12281.17	8814.204
Other	160	4772.681	4307.911	222	5587.711	4240.62	137	6546.761	5201.45
by sector/firm type									
self employed (private)	0			0	.	.	0	.	.
self employed (non private)	0			0	.	.	0	.	.
working for a household	1494	5028.991	3574.435	1415	6109.857	5082.177	1514	6396.895	4859.557
SOE	1076	10584.13	7543.559	971	12208.86	7892.196	913	13872.65	8883.988
collective	62	6097.268	8737.101	48	6349.525	5515.893	80	8258.654	5873.7
private	370	8805.51	6828.846	388	9226.551	6712.866	357	10701.67	8587.833
foreign	125	11121.55	7731.027	140	10423.45	7261.294	176	13568.31	13021.44
licensing status or pension									
formal	190	10466.08	8595.02	203	11631.66	7741.193	30	12614.31	6764.844
informal	797	6937.713	5081.177	715	8161.412	5497.409	3010	9581.864	8159.104
industry									

	2004			2006			2008		
	obs	mean	sd	obs	mean	sd	obs	mean	sd
agriculture	569	4183.944	3278.05	451	5488.965	5272.084	500	6012.409	5635.981
manufacturing	1304	7429.645	6293.089	1294	8162.894	5950.102	1575	9110.567	8193.344
services	1254	9457.076	7062.633	1217	10522.52	8010.273	965	12294.81	8310.487

Notes: For 1993 only available definition of formal is if a worker is receiving a pension, for 1998 it is if the worker has a signed contract. For 2002-2008 formal is defined as having a business license.

Chart 4: Earnings Change Profile (in thousands of Vietnamese dong)

	Two Year Panels									
	2002-2004				**2004-2006**			**2006-2008**		
	obs	mean	sd		obs	mean	sd	obs	mean	sd
by initial earnings				**by initial earnings**						
lowest quintile	161	2695.802	2919.628	lowest quintile	131	3213.858	4228.802	328	2206.246	3821.642
quintile 2	243	2013.968	2797.14	quintile 2	173	1741.138	2993.036	379	1505.186	4080.581
quintile 3	355	1308.066	2607.268	quintile 3	185	1827.653	3740.487	425	1388.548	3882.913
quintile 4	415	1113.964	3376.589	quintile 4	185	1491.207	4165.213	490	885.6521	4761.281
highest quintile	433	1656.983	6836.768	highest quintile	203	1726.497	6956.958	496	1243.683	8615.889
By change in employment status				**By change in employment status**						
always agriculture	458	1321.317	2783.838	always agriculture	201	1629.473	3289.219	458	954.4696	3595.925
always self employment	23	1672.869	1756.662	always self employment	14	3641.327	5204.809	41	2630.612	7091.982
always salaried	1607	1597.729	4389.279	always salaried	877	1923.262	47.427	2118	1385.781	5568.847
salaried to self employment	80	1142.42	3146.366	salaried to self employment	35	1799.338	4866.95	82	2431.061	7586.925

	2002-2004				2004-2006			2006-2008		
	obs	mean	sd		obs	mean	sd	obs	mean	sd
salaried to agriculture	626	1128.013	2949.524	salaried to agriculture	263	1416.067	3456.481	458	954.4696	3595.925
agriculture to wage	637	1534.623	3203.197	agriculture to wage	298	1908.757	3710.251	644	1160.009	4061.622
agriculture to self employment	36	1059.787	2542.379	agriculture to self employment	15	790.393	3501.505	25	1144.143	5216.071
self employment to wage	59	2634.553	2889.581	self employment to wage	36	2754.372	4286.815	77	1682.903	6439.445
self employment to agriculture	23	1620.02	1496.515	self employment to agriculture	16	2773.416	5548.362	17	413.0735	2493.934
by gender				**by gender**						
male	1042	1732.911	4802.561	male	587	1986.571	4845.542	552	1492.512	5902.912
female	565	1348.419	3491.739	female	290	1795.115	4522.487	1566	1348.159	5447.676
by age group				**by age group**						
<15	17	759.3799	2210.284	<15	12	1929.493	2558.313	5	1996.042	1800.519
15-24	380	1550.293	3660.615	15-24	196	2416.576	4784.677	206	1353.946	4655.765
25-34	453	1564.923	4535.243	25-34	218	1721.76	4435.574	195	1054.633	4228.02
35-44	482	1666.873	4514.349	35-44	236	1867.715	4672.731	260	1564.727	5124.055
45-54	243	1856.436	5083.022	45-54	179	2164.875	5295.307	173	2476.165	7270.201
55-64	29	6.906997	3378.343	55-64	28	-259.2757	4115.649	25	-723.6979	5738.314
65-74	3	624.2189	1478.976	65-74	8	-809.9621	2101.381	6	-3951.379	7474.139
75-84	0	.	.	75-84	0	.	.	2	-1225.124	271.9885
85 or greater	0	.	.	85 or greater	0	.	.	1246	1323.902	5684.388
by education				**by education**						
none	296	863.7506	2639.545	none	6	-835.2356	2565.911	10	1121.254	3076.558
primary	362	947.5869	3634.348	primary	191	1390.762	3697.399	476	779.6647	4196.634

	2002-2004				2004-2006			2006-2008		
	obs	mean	sd		obs	mean	sd	obs	mean	sd
lower secondary	343	1255.639	3507.384	lower secondary	224	1849.074	4473.898	534	850.7342	4600.56
higher secondary	201	1894.43	4010.39	higher secondary	211	2101.997	4936.681	516	1989.251	6560.937
technical worker	52	2560.91	7061.785	vocational	0	.	.	0	.	.
professional secondary school	169	2045.188	3826.987	professional high school	0	.	.	0	.	.
junior college	54	3057.664	4264.638	junior college	38	2968.712	6030.372	78	2059.353	5423.973
masters	127	3846.674	8623.811	bachelor	79	5468.781	6763.619	225	3612.06	8396.754
doctorate	3	8314.57	2221.082	master	0	.	.	11	5859.668	7307.87
				doctorate	1	-2135.449	.	2	4017.084	11669.06
				other	0	.	.	1	-10971.32	.
By household status										
head	641	1751.888	4717.111	**By household status**						
spouse	323	1485.675	3991.237	head	347	1866.124	4644.151	781	1562.87	5942.882
child	548	1530.458	4359.97	spouse	161	1464.402	4547.352	434	1217.803	5461.546
child in law	68	1238.258	3915.189	child	341	2236.53	5010.209	829	1352.483	5348.23
parents	0	.	.	parent	0	.	.	1	-846.9039	.
sibling	6	2466.135	1870.082	grandparent	0	.	.	0	.	.
grandparent	2	-182.7589	59.82588	grandchildren	9	1034.834	2735.2	17	1136.13	4881.148
grandchild	15	1113.897	1881.103	other relatives	19	1653.488	3606.763	56	826.4269	4395.617
other relationship	4	2671.247	3105.888							
by ethnicity**										
Kinh	1473	1653.402	4431.605	**by ethnicity**						
Tuy (Phillippine)	0	.	.	Kinh	804	1922.954	4824.391	1936	1408.414	5680.808
Thai	25	1926.014	5499.272	Tuy (Phillippine)	15	3234.075	3101.118	32	931.9016	3703.015

	2002-2004				2004-2006			2006-2008		
	obs	mean	sd		obs	mean	sd	obs	mean	sd
Chinese	8	1811.85	2761.904	Thai	6	4113.621	4341.585	5	1926.726	1906.827
Other	94	845.2313	2936.735	Chinese	5	1791.305	4878.076	13	101.0322	6846.374
				Other	47	1244.592	3571.858	132	1269.898	4072.478
by geographic location										
urban	564	2004.956	5296.645	**by geographic location**						
rural	1043	1377.522	3794.387	urban	368	2506.127	5804.567	828	1582.271	6426.616
				rural	509	1501.858	3737.477	1290	1259.662	4939.022
by sector/firm type**										
self employed (private)	0	.	.	**by sector/firm type**						
self employed (non private)	0	.	.	self employed (private)	0	.	.	0	.	.
working for a household	731	758.4906	2902.202	self employed (non private)	0	.	.	0	.	.
SOE	616	2404.783	5080.591	working for a household	379	939.6003	3374.053	895	589.8889	4267.213
collective	29	973.9282	6045.721	SOE	350	2845.527	5536.478	787	2259.066	6022.404
private	167	1997.716	5643.646	collective	13	3577.801	7598.433	42	1208.374	4638.796
foreign	64	2654.452	5010.097	private	99	2290.68	5006.215	284	1262.866	7050.759
				foreign	36	1704.688	4816.191	110	1998.563	6567.04
by change in licensing status or pension										
always formal	Informality did not exist in the 2002 survey so data is based only on formality 04.			**by change in licensing status or pension**						
always informal	101	2846.39	6669.696	always formal*	32	5628.556	6241.778	11	1406.537	3082.694
formal to informal	383	1082.333	3891.876	always informal	152	1748.913	4797.132	55	2885.111	8924.218
informal to formal				formal to informal	20	1793.521	4889.326	2	-1617.23	799.2628
				informal to formal	24	3260.575	4416.585	14	2030.605	4002.397

Notes: Household status and informality for the 2002-2004 panel data on formality, firm type, and ethnicity was only available for 2004. The 2004 values are reported here for these variables. for the 2006-2008 panel no info for 2006 household status so used 2008.

Chart 5: Regression Results 2002-2004, 2004-2006, and 2006-2008

Dependent Variable: Change in Income

Method: OLS Regression

Variable	*2002-2004*	*2004-2006*	*2006-2008*
Employment Status_2	545.054 (0.46)	2286.213 (0.38)	4676.766 (3.21)***
Employment Status_3	106.043 (0.07)	2160.526 (0.34)	6124.522 (2.24)**
Employment Status_4	-2,976.42 (-1.83)*	250.1415 (0.04)	1637.53 (3.25)***
Employment Status_5	188.038 (0.28)	529.6396 (0.09)	1261.96 (0.75)
Education_1 (primary)	-368.136 (-0.46)	-178.2859 (-0.04)	-3054.085 (-1.37)
Education_2 (lower secondary)	-914.778 (-1.16)	-57.2493 (-0.01)	-3305.118 (-1.68)*
Education_3 (higher secondary)	401.845 (0.45)	419.5868 (0.10)	-2008.79 (-1.02)
Education_4 (vocational)	1,561.78 (1.60)	n/a	n/a
Education_5 (college or higher)	3,042.93 (2.71)**	2388.46 (0.53)	-4508.984 (-3.37)***
Income Quintile 2	-569.629 (-1.65)*	-1112.198 (-1.97)**	-592.0965 -(1.35)
Income Quintile 3	-1,454.14 (-4.21)***	-1648.974 (-2.95)**	-556.6987 -(1.23)
Income Quintile 4	-2,326.96 (-6.48)***	-2708.264 (-4.74)***	-1593.095 (-3.28)***

Income Quintile 5	-3,270.31 (-8.45)***	-3801.746 (-6.34)***	-2325.497 (-3.10)**
D_ethnicity	782.726 (2.56)**	-408.7021 (-0.65)	542.8252 (0.99)
Household Status 2	34.703 (0.13)	104.8841 (0.22)	-797.2349 -(1.27)
Household Status 3	-354.247 (-1.32)	61.95564 (0.12)	-1352.074 (-2.22)**
Household Status 4	-115.024 (-0.17)	37.83035 (0.04)	-1892.348 (-2.34)**
Firmtype 1 (household)	-1,151.64 (-3.40)***	n/a	n/a
Firmtype 2 (SOE)	-81.76 (-0.2)	1621.634 (3.60)***	1989.855 (3.93)***
Firmtype 3 (private)	-863.6 (-1.95)*	1039.619 (2.02)**	927.4176 (1.33)
Firmtype 4 (foreign)	-456.056 (-0.77)	675.2666 (0.86)	694.4948 (0.79)
Ln(age)	-435.668 (-1.17)	-655.1678 (-0.90)	-1209.308 -(1.46)
D_urban	262.82 (1.27)	598.1495 (1.64)	292.3236 (0.57)
D_male	599.278 (2.96)**	554.7257 (1.50)	342.1565 (0.80)
Employment Status 1 *Education 1	529.941 (0.57)	2112.416 (0.36)	1706.634 (0.76)
Employment Status 1 *Education 2	1,381.33 (1.52)	1276.702 (0.22)	1144.476 (0.57)

Employment Status 1 *Education 3	409.892 (0.38)	1757.718 (0.30)	885.791 (0.43)
Employment Status 1 *Education 4	457.998 (0.41)	n/a	n/a
Employment Status 1 *Education 5	-1,105.62 (-0.79)	2963.346 (0.48)	2401.762 (1.59)
Employment Status 2 *Education 0	402.266 (0.34)	-1037.19 (-0.19)	-3836.366 (-2.44)**
Employment Status 2 *Education 1	621.878 (0.53)	-939.9623 (-0.43)	-3261.04 (-1.81)*
Employment Status 2 *Education 2	1,385.86 (1.19)	36.47564 (0.02)	-1935.299 -(1.25)
Employment Status 2 *Education 3	1,003.96 (0.81)	-643.6667 (-0.28)	-2886.514 (-1.76)*
Employment Status 2 *Education 4	-49.78 (-0.04)	n/a	n/a
Employment Status 2 *Education 5	omitted	omitted	omitted
Employment Status 3 *Education 0	382.893 (0.24)	-2265.127 (-0.40)	empty
Employment Status 3 *Education 1	409.757 (0.26)	-1463.017 (-0.42)	-6395.435 (-2.19)**
Employment Status 3 *Education 2	2,393.56 (1.54)	-131.5428 (-0.04)	-4936.02 -(1.61)
Employment Status 3 *Education 3	341.333 (0.20)	-973.3731 (-0.30)	-7666.333 (-2.73)**

Employment Status 3 *Education 4	823.863 (0.49)	n/a	n/a
Employment Status 3 *Education 5	omitted	omitted	omitted
Employment Status 4* Education 0	3,232.46 (1.94)*	empty	omitted
Employment Status 4* Education 1	4,590.08 (2.77)**	3247.724 (1.23)	1029.1 (0.46)
Employment Status 4* Education 2	6,075.40 (3.64)***	3636.617 (1.36)	1060.287 (0.50)
Employment Status 4* Education 3	5,444.29 (2.67)**	1105.767 (0.41)	73.21959 (0.03)
Employment Status 4* Education 4	3,764.16 (1.99)**	n/a	n/a
Employment Status 4* Education 5	omitted	omitted	omitted
Employment Status 5 * Education 0	omitted	omitted	empty
Employment Status 5 * Education 1	omitted	omitted	omitted
Employment Status 5 * Education 2	omitted	omitted	omitted
Employment Status 5 * Education 3	omitted	omitted	omitted
Employment Status 5 * Education 4	omitted	n/a	n/a
Employment Status 5 * Education 5	omitted	omitted	omitted
Constant	3,119.16 (2.21)**	3062.407 (0.62)	6908.336 (2.17)**
R-squared	0.15	0.15	
Adjusted R-squared	0.13	0.11	0.07
Observations	1,575	740	854

Standard errors are reported in parentheses.

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

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