

## Evaluating the Impacts of the Current Economic Slowdown on (Un)employment in Vietnam

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# ***Evaluating the Impacts of the Current Economic Slowdown on (Un)employment in Vietnam<sup>1</sup>***

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## ***Abstract***

This paper examines the impacts of the current economic slowdown on employment generation and unemployment in Vietnam. The study reports that as the country has experienced a slowdown, there would be an employment shortfall of around half million jobs in 2009. And if the growth prospect of 2010 is not improved compared to that of 2009, Vietnam would encounter a shortfall of more than one million jobs in 2010. As a consequence, our projected unemployment rates are higher than that of 2008 by nearly one and a half percentage point in 2009 and two percentage points in 2010. The findings are relatively robust under different assumptions of the economic growth. The study provides a somewhat different outlook from what has been suggested by the media – which has tended to highlight jobs losses taking place in certain parts of the country. The results of our analysis suggest that government efforts to stave off the effects of the crisis should have been focused more strongly on employment and job creation.

**JEL classification:** O10, E24, E17

**Keywords:** Economic slowdown, employment, employment elasticity, Vietnam

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## 1. Introduction

Since the economic reform in 1980s, Vietnam economy has been integrated increasingly into the global economy. Economic openness and trade liberalization have increased import and export revenue of Vietnam remarkably. Trade liberalization is often considered as an important component for economic growth and poverty reduction, at least in the long run (see, for instance, Harrison, 2005). However, the short-run effect of trade liberalization on growth and poverty is not unambiguous. A small economy when integrated into the global economy tends to be less stable (Easterly and Kraay, 2000). A shock from the global economy can have adverse impact on poverty of small open economies.

The recent experience of Vietnam under the economic and financial crisis provides a good example on vulnerability of being an open and small economy.<sup>2</sup> The current global economic crisis has been adversely affecting the economy. Vietnam has experienced slow economic growth since the beginning of 2008. The GDP growth rate of 2008 was 6.2 percent, compared to the average growth rate of 7.6 percent in the period 2000-2007. For the first half of 2009, the economy grew at just 3.9 percent compared to the same period of 2008. Both Vietnam's export and the FDI flow have decreased by 18 percent and 77 percent, respectively (using GSO data).

The economic slowdown, especially the reduction in export growth and foreign investment is likely to exert impacts on employment, both in the short term and in the long term, as some export-oriented and foreign-invested sectors in Vietnam are labour intensive. Employment impacts in the garment, footwear, seafood export *inter alia* could be potentially large. Although there have not been reliable estimates of job lost, common headlines in the media in Vietnam in the first half of 2009 have been on job lost observed in some industrial zones. However, figures from different sources suggest hugely different stories. While MOLISA reported an estimated number of 300 thousand, some other sources provided more pessimistic figures for 2009.

Outside Vietnam, the adverse impact of the current economic slowdown on employment has been forecasted in several studies. OECD (2008) predicted that the unemployment rate

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<sup>2</sup> Though the economic slowdown was first started due to imbalances of the fundamentals (e.g. high inflation, non-sterilized open market operation to absorb the surplus of US\$, extraordinary credit growth in the banking sector) partly caused by macroeconomic mismanagement.

of its member countries would increase from 5.5 percent in 2007 to 6.3 percent in 2009 and 7.3 percent in 2010. In particular, the unemployment rate of the United States would increase by nearly two percentage point between 2008 and 2010, the corresponding figure for the UK and Germany are three and one percentage point, respectively. ILO (2009) forecasted the world unemployment rate in the range of 6.5 to 7.4 percent in 2009, depending on the assumption on the GDP growth rate of 0.3 percent or -3.4 percent, respectively. It was also projected that the number of unemployed people in Southeast Asia can increase from 1.6 to 2.7 million and the impacts were said to be most serious in export-oriented sectors

In this context, this study aims at providing an estimate on the impact of the current economic and financial crisis on (un)employment in Vietnam. This study could be considered supplementary to Warren-Rodríguez (2009) who used data on macro-data on GDP and employment to calculate the employment elasticity of growth (EEG) and predicted employment generation and unemployment under different growth scenarios. The current study is however different from Warren-Rodríguez (2009) in two ways. Firstly, in addition to the EEG approach, we employ a regression-based approach using the firm-level data available from the Vietnam Enterprise Censuses in the period 2004-06. Secondly, when using the EEG approach, we use the most recent data on GDP growth (i.e. the first half of 2009) to provide an estimate of the (un)employment impact of the current economic slowdown.

Based on the results, we found that, similar to Warren-Rodríguez (2009), the most worrying impact of the current downturn is that *the economy has not been able to create sufficient new jobs to absorb the growing labour force of Vietnam* and this will consequently lead to higher unemployment rates. At macro and sectoral levels, we found little evidence on the crisis-induced job lost, which is opposite to the common understanding recently suggested by the media. These findings are taken to suggest a priority should be directed to job creation..

The structure of this study can now be outlined. The methodology and data employed in the study will be discussed in the second section. The third section presents empirical results and interpretation. Finally, some conclusions and policy implications as well as some cautions are drawn at the end of this paper.

## 2. Methodology and Data Sources

### 2.1 Methodology

Our objective is to simulate the impact of the economic slowdown on employment. One way to evaluate that impact is to find the difference between the level of employment under the slowdown state and the counterfactual level of employment under the normal state. This difference is interpreted as the shortfall in employment due to the economic slowdown. This indicator could be defined as:

$$\Delta_L = L_{1t} - L_{0t} \quad (1)$$

where  $L_{1t}$  and  $L_{0t}$  are the number of employment at time  $t$  in the state with economic slowdown (hereafterin, slowdown state) and the state without economic slowdown (hereafterin, normal state), respectively.

The second indicator of interest captures the impact of the economic slowdown on the unemployment rate:

$$\Delta_R = R_{1t} - R_{0t} = \frac{T_t - L_{1t}}{T_t} - \frac{T_t - L_{0t}}{T_t} = \frac{L_{0t} - L_{1t}}{T_t} = -\frac{\Delta_L}{T_t} \quad (2)$$

where  $R$  denotes the unemployment rate, and  $T$  denote the total number of people in the labor force, consisting of employed and unemployed people; the underscript  $1$  and  $0$  represent the slowdown state and normal state, respectively.

This study will simulate the impact of the economic slowdown on the above two indicators for the years 2009 and 2010. For each year, the indicators under the normal state,  $L_{0t}$  and  $R_{0t}$ , are unobserved and hence need to be projected to construct their counterfactual values. The indicators of the slowdown state,  $L_{1t}$  and  $R_{1t}$ , will only be available by the end of the year soonest from the official source (i.e. GSO). Thus, these indicators will also need to be projected. This projection is actually the most difficult part of this study. The procedure to estimate these indicators and associated assumptions are outlined below.

One way to project the number of employment in the normal state,  $L_{0t}$ , is to assume that the growth of employment in the year under consideration is equal to the average

employment growth in the previous years (*assumption 1* in this study<sup>3</sup>). With this assumption, we project the number of employment in the normal state as follows:

$$L_{0t} = G_L L_{t-1} \quad (3)$$

where  $G_L$  is the average growth rate of employment during the previous stage, and  $L_{t-1}$  is the (observed) employment level at period  $t-1$  (i.e. the year 2008 in this paper).

To estimate  $L_{1t}$ , two alternative approaches, including a regression model and employment elasticity of growth, are employed in this study.

#### *Regression-based method*

In order to estimate the number of employment in the slowdown state, we assume that firms' labour demand is a function of output and some other control variables:

$$\ln(L_t) = \beta_0 + \ln(Y_t)\beta_1 + X_t\beta_2 + D_t\beta_3 + \varepsilon_t \quad (4)$$

where  $Y_t$  is output of a firm,  $X$  is a vector of control variables, and  $D$  is the time dummy variable. This labor demand function is derived using the standard microeconomic theory. In empirical studies, control variables can include firms' characteristics such as wage, technology and capital (see, for instance, Roberts and Skoufias, 1997; Teal, 1995; Slaughter, 2001; Bernal and Cardenas, 2001).

As the normal state, the labor demand is expressed as:

$$\ln(L_{0t}) = \beta_0 + \ln(Y_{0t})\beta_1 + X_t\beta_2 + D_t\beta_3 + \varepsilon_t, \quad (5)$$

and the labor demand in the slowdown state is

$$\ln(L_{1t}) = \beta_0 + \ln(Y_{1t})\beta_1 + X_t\beta_2 + D_t\beta_3 + \varepsilon_t, \quad (6)$$

If we assume that the main transmission channel from economic slowdown to employment is through output change (this is *assumption 2* of this study), then the difference in the labour demand between the two states is given as:

$$\ln(L_{1t}) - \ln(L_{0t}) = [\ln(Y_{1t}) - \ln(Y_{0t})]\beta_1. \quad (7)$$

After some simple algebraic modification, it yields the following

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<sup>3</sup> The rationale of this assumption and the others will be discussed in Section 3. The same will be applied for all assumptions made in this methodological section.

$$\begin{aligned}
\ln\left(\frac{L_{1t}}{L_{0t}}\right) &= \ln\left(\frac{Y_{1t}}{Y_{0t}}\right)^{\beta_l} \\
\Rightarrow \frac{L_{1t}}{L_{0t}} &= \left(\frac{Y_{1t}}{Y_{0t}}\right)^{\beta_l} \\
\Rightarrow L_{1t} &= L_{0t} \left(\frac{Y_{1t}}{Y_{0t}}\right)^{\beta_l} \\
\Leftrightarrow L_{1t} &= L_{0t} \left[ \frac{(1+G_{1Y})Y_{t-1}}{(1+G_{0Y})Y_{t-1}} \right]^{\beta_l} = L_{0t} \left[ \frac{(1+G_{1Y})}{(1+G_{0Y})} \right]^{\beta_l}. \tag{8}
\end{aligned}$$

where  $Y_{t-1}$  is GDP of the previous period (i.e. the year 2008 in the current paper).  $G_{1Y}$  and  $G_{0Y}$  are the GDP growth rates in the slowdown state and normal state, respectively. The key in this equation is the coefficient  $\beta_l$  that could be estimated from running regression models using (5) and (6). This is estimated coefficient of the output variable is the employment elasticity of growth.

Similar to the assumption 1,  $G_{0Y}$  is assumed to be equal to the average growth rate in the previous years. In addition, the growth rate in the slowdown state,  $G_{1Y}$ , is also assumed to be equal to the GDP growth rate during the first six months of 2009 (this is *assumption 3*).

Substituting  $L_t$  into equations (1) and (2) yields an estimate of the impact of the economic slowdown on job creation and unemployment as below:

$$\Delta_L = L_{1t} - L_{0t} = L_{0t} \left[ \frac{(1+G_{1Y})}{(1+G_{0Y})} \right]^{\beta_l} - L_{0t} = G_L L_{t-1} \left[ \frac{(1+G_{1Y})}{(1+G_{0Y})} \right]^{\beta_l} - G_L L_{t-1} \tag{9}$$

$$\Delta_R = R_{1t} - R_{0t} = -\frac{\Delta_t}{T_t} = -\frac{G_L L_{t-1} \left[ \frac{(1+G_{1Y})}{(1+G_{0Y})} \right]^{\beta_l} - G_L L_{t-1}}{G_T T_{t-1}} \tag{10}$$

### *Employment elasticity of growth*

Similar to Warren-Rodriguez (2009), the relation between economic growth and employment is captured by an employment elasticity of growth, which could be expressed as follows:

$$e = \frac{G_L}{G_Y} = \frac{\Delta L/L}{\Delta Y/Y} \tag{11}$$

where  $Y$  denotes output of a sector.

Different from the coefficient  $\beta$  in equation (5) and (6), this employment elasticity could be calculated (not estimated) using the available macro or sectoral data. With the assumption 3, the main transmission channel from economic slowdown to employment is through output change. We further assume that employment elasticity of growth does not change in the short-time period (this is *assumption 4*), we can then forecast the number of employment at time  $t$  in the slowdown state as:

$$L_{1t} = L_{t-1}(1 + eG_{1Y}) \quad (12)$$

In the current study, the parameter  $e$  will be calculated using equation (11) and the economic growth variable  $G_{1Y}$  is assumed equal to that of the first six months of 2009 (as per assumption 2 above). Substitute (12) into (1) yields

$$\Delta_L = L_{1t} - L_{0t} = L_{t-1}(1 + eG_{1Y}) - G_L L_{t-1}. \quad (13)$$

The estimate of the impact of economic slowdown on the unemployment rate is then expressed:

$$\Delta_R = R_{1t} - R_{0t} = -\frac{\Delta_L}{T_t} = -\frac{L_{t-1}(1 + eG_{1Y}) - G_L L_{t-1}}{G_T T_{t-1}} \quad (14)$$

One property of equations (13) and (14) is that lower economic growth rate will lead to adverse impact on employment.

It is important to note that the estimated coefficient of  $\beta$  in the regression-based approach could also be used in replacement for  $e$  in the framework given in (13) and (14) to estimate the impact of the economic slowdown on (un)employment. This is a synthesis between the employment elasticity of growth approach and the regression-based approach.

### **2.3 Data Sources**

In order to perform the empirical methodology outlined in the previous sub-section, two major sources of data will be used in this study. The first source is macro and sectoral data on employment and output over the period 2000-2008, and GDP data in the first six months of 2009. This data is available from the latest estimates of GSO and will be used largely in the EEG approach.



The second data source is extracted from the annual Vietnam Enterprise Censuses conducted by GSO between 2004 and 2006. The censuses covered all registered enterprises that were under operation at the time of survey. The numbers of observations in the 2004, 2005 and 2006 censuses are 91,755; 113,352; and 131,975, respectively. Using these observations, a panel of 71,689 could be identified across the three years. The censuses provide information on enterprises of all types of ownership, covering background information, sectors of operation, labour, average wages, investment capital, assets, revenues and profits, taxes etc. The information available from the censuses is sufficient to perform the regression-based approach as described above.

### **3. Economic Slowdown and (Un)employment: Empirical Results**

#### **3.1 Some Specification Issues**

This section presents the empirical results of the impact of economic slowdown on (un)employment in Vietnam. Before embarking to empirical analysis, it is important to discuss the assumptions made in this study.

*First*, the assumption 1 implies that growth of employment in the year under consideration (i.e. 2009 and 2010 in the current paper) is equal to the average employment growth in the previous years. Investigating Figure A1 in the Appendix, the structure and growth pace of employment has been stable in the period 2000-2008, lends a notion for this assumption. Therefore, if the economic slowdown was not taken place (i.e. the normal state), it is arguably reasonable to assume that the employment growth in 2009 and 2010 would be as stable as over the period 2000-2008. Similarly, it is also reasonable to assume that the GDP growth rate in the normal state is equal to the average growth in the previous years.

*Second*, the study assumes that the main transmission channel from economic slowdown to employment is through output change (i.e. the assumption 2). In terms of the labour demand functions (5) and (6), it implies that *ceteris paribus* output change is the major determinant of labour demand. This assumption is also implicitly reflected in the EEG approach as per equation (12). In fact, a firm's labour demand is also determined by other firm characteristics captured in vector  $X$ . As responses to economic downturn, firms would encounter a number of options including firing workers. Firms would then evaluate cost

and benefits under each option before making final decisions. In the case of Vietnam, as it is not very ‘expensive’ to sack workers,<sup>4</sup> firms are more likely to lay off their workers in responses to the economic slowdown. However, it could also be the case that firms could temporarily hold their workers by reducing work hours if a recovery is anticipated with confidence. This has been actually observed in some firms in the seafood export or garment sectors. These firms could experience decreased in output without alternating its total workers hired, at least in the short run. Therefore, this assumption is relatively strong. However, taking into account the effects of these characteristics when investigating the impact of the current economic slowdown on (un)employment would be far more complicated than the approaches applied in this current study.

*Third*, the assumption 3 in this study states that the growth rate in the slowdown state,  $G_{1Y}$ , is equal to the GDP growth rate during the first half of 2009. Following the recent speculation on a recovery, this might be conservative rate of growth for 2009 (and 2010). However it is not clear whether and how bad loans created during the pre-crisis extraordinary credit growth were restructured; inflation pressure is still high; and the impact of the stimulus package is not yet clear. While the economic fundamentals are not stable yet, the external environment is unfortunately not improving but even deteriorating at times. This could be taken to suggest that the recovery prospect is, in our view, uncertain. Given this consideration, we argue that the growth rate of 2009 (and 2010) could be around the level of the first half of 2009.

*Finally*, the assumption 4 used in the regression-based approach states that the employment elasticity of growth does not change in the short run. Therefore, the average elasticity of the previous period could be used as proxy for the elasticity in 2009. This may be a strong assumption as the economy has arguably experienced a ‘structural break’, in which relationships between output decisions and other variables may be subject to structural changes. Under an economic slowdown period, the employment elasticity of growth could be higher when it is not very difficult for firms to lay off workers, which is unfortunately the case in the Vietnam’s underdeveloped labour market. Therefore, using this assumption might introduce a downward bias to the estimated impact of the economic crisis on job creation and unemployment.

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<sup>4</sup> For instance, the article 42 of the Labour Code states that the employment would pay compensation when ending the work contract with an employee and that compensation is equal to half of the monthly salary for each year under services (SRV, 2005). The Doing Business in Vietnam Report 2008 reported the Difficulty of Firing index of 40/100 (with 100 represents the most difficulty in firing workers) (WB and IFC, 2008).

Having these assumptions discussed, the key variables in the estimation procedure could be calculated or estimated as below

- $L_{t-1}$  is the observed number of laborers in 2008, which was published by GSO.
- $G_L L_{t-1}$  is the estimated number of employment in 2009 (and 2010) in the normal state using the assumption 1. In this study,  $G_L$  is the average growth rate of employment during the period 2005-2008. This is computed using the employment data from GSO.
- $G_{1Y}$  is the GDP growth rate in the slowdown state. Using the assumption 2,  $G_{1Y}$  in 2009 is equal to the growth rate of the first half of 2009 (compared to the first six month of 2008). In addition, the latest growth rates forecast by World Bank, International Monetary Fund, and Asia Development Bank are also used to obtain the estimated effects of the economic crisis on un(employment) underlying these different growth scenarios.
- $G_{0Y}$  is the GDP growth rate in the normal state, which is unobserved and assumed to be equal to the average growth rate of GDP during the period 2005-2008 (i.e. the assumption 1).
- $e$  is employment elasticity with respect to economic growth. This elasticity is either calculated using the employment elasticity of growth approach or estimated using the regression-based approach. This current study adopts both the two approaches to provide a robustness check. The results obtained from the EEG approach using macro data are not discussed here but reported in Table A1 of the Appendix. The elasticity used in the subsequent analysis of this paper is calculated as the average in the period 2005-2008.
- To estimate the elasticity using the regression-based approach, equation (5) is estimated using the fixed-effects panel model. This fixed-effect model can remove endogeneity bias due to time-invariant unobserved variables.<sup>5</sup> Results from this regression estimation is not discussed here for brevity but reported in Table A2 of the Appendix. It is however important to note that the regression results are statistically reasonable and hence provide a sound technical basis for formulating the discussions

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<sup>5</sup> We also tried random effects regressions, and use Hausman specification tests to test difference in coefficients between the random and fixed-effects regressions. The test statistics strongly reject the null hypothesis that the difference in coefficients between two regressions is not systematic. Thus, the application of the fixed-effects regression approach is statistically justified.

below. The elasticity estimated from this regression analysis is for the period 2004-2006, where the latest Enterprise Censuses are available.

### ***3.2 Impact of the Economic Slowdown on Employment***

Before embarking in the analysis of the economic slowdown, it should be noted that the economy is still growing at a positive rate, albeit at lower pace, according to all sources of statistics or forecast. Therefore, the economy will create more jobs in 2009 and 2010. From a macro perspective, there is thus no background to worry that the economic slowdown would lead to lower level of employment. Instead, attention should be directed to the fact that as the economy now creates fewer jobs than the counterfactual level under the normal state. Therefore, the economy would be unable to create sufficient jobs for the new entrants to the labour force, and as a consequence the unemployment rate will be higher.

The focus is now on the estimated impacts of the economic slowdown on employment. As mentioned earlier, this employment effect is measured by the difference between the projected level of employment under the slowdown state and the counterfactual level under the normal state. Table 1 reports the estimated impact in 2009 and 2010. The first panel gives the results using the employment elasticity approach with the elasticity calculated from the macro data. The second panel reports the results using the EEG approach with the employment elasticity estimated from the Vietnam Enterprise Censuses. Figures in the bottom panel are obtained from the regression-based approach. Under each panel, there are four estimates using the GSO's growth rates of the first half of 2009; and respectively the ADB, WB, and IMF's forecast growth rates for Vietnam in 2009.

It is important to note that results from the EEG approach in the first two panels are generally compatible, regardless how the employment elasticity is calculated or estimated. As expected, figures obtained from the regression-based methods are consistently lower than those from the EEG approach. This reflects the downward bias effect of the assumption 2 on the results as output change is assumed to be the main transmission channel from the economic slowdown to employment, keeping other factors unchanged. Given this consideration, the rest of this section will largely focus on the results obtained from the EEG approach.

The two final columns of Table 1 represent the estimated effect of the current economic slowdown on job creation for 2009 and 2010, respectively. As expected, the negative

figures suggest that due to the downturn the economy would create less employment compared to the counterfactual normal state. Using the GSO's growth rate, it was projected that the economy in 2009 would create less employment by an order of between 540 to 650 thousand jobs. As the other organizations projected higher growth rates compared to the GSO's data, the estimated effects using these projected GDP growth are lower than that using the GSO's. If the growth prospect of the Vietnam economy is not improved significantly in 2010, the effect of the slowdown on employment will be even higher after 2009. The results suggest that the slowdown would create an accumulated employment shortfall by an order of between four to six hundred jobs in 2009; and between 750 and 1,400 thousand jobs in 2010, compared to the level of 2008.

**Table 1: Employment under the Economic Slowdown**

	$G_{1Y}$ (GDP growth rate with slowdown %)	Elasticity calculated /estimated	Jobs in 2009 without slowdown (L0 - 2009) (thousand people)	Jobs in 2010 without slowdown (L0 - 2010) (thousand people)	Jobs in 2009 with slowdown (L1 - 2009) (thousand people)	Jobs in 2010 with slowdown (L1 - 2010) (thousand people)	Impact for 2009: L1 - L0 (thousand people)	Impact for 2010: L1 - L0 (thousand people)
<b>Employment elasticity of growth approach with elasticity calculated from macro data</b>								
GSO six months 2009	3.9	0.26	46,035	47,103	45,494	45,955	-541	-1,148
ADB	4.5	0.26	46,035	47,103	45,564	46,097	-471	-1,005
World Bank	5.5	0.26	46,035	47,103	45,681	46,335	-354	-768
IMF	4.75	0.26	46,035	47,103	45,593	46,157	-442	-946
<b>Employment elasticity of growth approach with elasticity estimated from the Enterprises Censuses</b>								
GSO six months 2009	3.9	0.19	46,035	47,103	45,376	45,718	-659	-1,385
ADB	4.5	0.19	46,035	47,103	45,428	45,823	-607	-1,280
World Bank	5.5	0.19	46,035	47,103	45,515	45,998	-520	-1,104
IMF	4.75	0.19	46,035	47,103	45,450	45,867	-585	-1,236
<b>Regression-based approach</b>								
GSO six months 2009	3.9	0.19	46,035	47,103	45,706	46,431	-330	-672
ADB	4.5	0.19	46,035	47,103	45,756	46,534	-279	-569
World Bank	5.5	0.19	46,035	47,103	45,841	46,706	-195	-397
IMF	4.75	0.19	46,035	47,103	45,778	46,577	-258	-526

*Source: Authors' calculations*

Table 2 presents the estimated impact of the economic slowdown on employment according to economic sectors, using the EEG approach using the macro data. Data on the

growth rates and employment by sector and ownership for the first half of 2009 were obtained from GSO. However, data on regional growth and employment is not available and hence the regional industrial growth rates were used while the spatial structure of employment is projected using the average regional shares in the total output and employment obtained from the Vietnam Enterprise Censuses between 2004 and 2006.<sup>6</sup> This EEG approach is selected as it is more flexible rather than imposing a functional form for the labour demand function and estimating the impact of the slowdown using *ceteris paribus* changes in output. The results are thus not subject to the assumption 2.<sup>7</sup>

**Table 2: Employment under the Economic Slowdown by Sector**

	$G_{1Y}$ (GDP growth rate in first half of 2009)	Elasticity	Jobs in 2009 without slowdown (L0 - 2009) (thousand people)	Jobs in 2010 without slowdown (L0 - 2010) (thousand people)	Jobs in 2009 with slowdown (L1 - 2009) (thousand people)	Jobs in 2010 with slowdown (L1 - 2010) (thousand people)	Impact for 2009: L1 - L0 (thousand people)	Impact for 2010: L1 - L0 (thousand people)
<b><i>Agriculture, Forestry, Fishery</i></b>			<b>23,440</b>	<b>23,262</b>	<b>23,592</b>	<b>23,550</b>	<b>152</b>	<b>288</b>
Agriculture, Forestry	0.86	-0.412	21677	21417	21873	21796	196	379
Fishery	3.71	0.551	1763	1845	1719	1754	-44	-91
<b><i>Industry and Construction</i></b>			<b>10,026</b>	<b>10,711</b>	<b>9,603</b>	<b>9,873</b>	<b>-423</b>	<b>-838</b>
Mining	7.30	2.854	463	497	521	630	58	132
Manufacturing	1.09	0.572	6741	7205	6346	6385	-395	-820
Electricity, gas & water supply	5.25	1.091	254	287	238	251	-17	-36
Construction	8.74	0.500	2568	2721	2499	2608	-69	-114
<b><i>Services</i></b>			<b>12,680</b>	<b>13,398</b>	<b>12,432</b>	<b>12,983</b>	<b>-248</b>	<b>-415</b>
Trade	6.53	0.372	5535	5703	5502	5636	-33	-67
Hotel & restaurant	-0.90	0.203	851	872	829	828	-22	-44
Transport, warehouse & communication	8.28	0.038	1227	1232	1226	1229	-1	-2
Finance, credit	6.37	1.793	254	293	245	273	-9	-20
Scientific & technical activities	6.28	0.256	27	28	27	28	0	0
Activities related to property business & consultancy service	2.86	5.896	297	350	294	344	-3	-7
Education & training	6.10	0.515	1462	1525	1445	1491	-16	-34
Health & social aid service	6.13	0.484	415	431	412	424	-3	-7
Culture & sport	6.17	0.140	136	138	136	137	0	-1
Other services	6.06	1.988	2476	2828	2315	2594	-161	-234

*Source: Authors' calculations*

<sup>6</sup> As there are no forecast data for growth rates according to regional, ownership, or sectoral dimensions, this analysis will focus exclusively on using the growth rates obtained from GSO.

<sup>7</sup> The estimated impacts of the economic slowdown on employment using the other two methods (i.e. the regression-based methods and the EEG approach with the elasticity estimated from the Vietnam Enterprise Censuses data) are not reported here for brevity but available from the authors upon request.

Table 2 suggests that the impact of the economic slowdown on employment shortfall is more pronounced in the ‘industry and construction’ sector. When breaking this broad group separately into mining, manufacturing, construction, and production and distribution of electricity, gas, and water supply, the employment shortfall is largest in the manufacturing sub-sector. Interestingly, the effect of the slowdown on employment in the agricultural sector is positive. The fact that agriculture has shown to be more resilient to the effects of the crisis than other sectors, and therefore has shed off fewer jobs, doesn’t necessarily mean that employment generation efforts should focus on this sector. Historical data suggests that agriculture has been shedding workers for over two decades as part of the vigorous rural transformation process (see Pham 2008 for more details). The employment effect in the services sector is found to be nearly a half of that in the ‘industry and construction’. In the services sector, trade (i.e. retail and wholesale activities), hotel and restaurant exhibited the most significant employment shortfall.

Table A3 of the Appendix reported the figures on the employment effects according to types of ownership and spatial distribution. It is found that the economic downturn has a more harmful impact in the foreign sector. It is however as expected as the foreign-invested sector is more export-oriented and thus more vulnerable from the worsening external conditions. The employment effect of the crisis is found to be modest and this could be ignorable in the state economic sector. In terms of the regional dimension, the effect of the economic slowdown on employment is more significant in the areas with more concentration of industrial activities such as the Red River Delta and Southeast.<sup>8</sup> It is also desirable to calculate the employment impact of the downturn at more disaggregate than one-digit level as per Table 2 to inform the between sector differences. Further efforts to calculate the employment shortfall more disaggregate is however constrained by data availability.

### ***3.3 Impact of the Economic Slowdown on Unemployment***

This sub-section focuses on the second variable of interest – unemployment. It is found earlier that the economy has been unable to create enough jobs for the new labour force entrants. A higher level of unemployment is hence expected. Indeed, Table 3 reports the

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<sup>8</sup> It should be noted that the sum of the impacts on sectors in Table 2 is not equal to the impact on the whole country in Table 1, since the latter is estimated using the aggregate data. The impact on the whole country in Table 1 is equal to the sum of the sectoral impacts in Table 2 if all the sectors have the same economic growth rate as well as the same employment growth rate.

unemployment rates projected for 2009 and 2010 in the last two columns. Similar to the previous sub-section, we will focus our interpretation on the results obtained from the EEG approach. It is important to note that the unemployment rates reported here are calculated for the whole country rather than urban unemployment as published officially by GSO. To make a meaningful inference, it is necessary to derive an estimate for the unemployment rate for the whole country. In pursuing that we used the official GSO (urban) unemployment rate of 4.64 percent in 2008. For the rural areas, the Vietnam Living Standards Survey (VHLSS) 2006 was used in this study.<sup>9</sup> Using this survey, the rural unemployment rate was calculated at nearly one percent. Combining the calculated rural unemployment rate and the GSO's urban unemployment rate, we derive a weighted unemployment rate of 2.47 percent for the whole country in 2008.

**Table 3: Impact of the Economic Slowdown on Unemployment**

$G_{1Y}$ (GDP growth rate with slowdown - %)	Elasticity	Unemploy- ment rate in 2009 without slowdown (R0 - 2009)	Unemploy- ment rate in 2010 without slowdown (R0 - 2010)	Unemploy- ment rate in 2009 with slowdown (R1 - 2009)	Unemploy- ment rate in 2010 with slowdown (R1 - 2010)	Impact for 2009: R1 - R0	Impact for 2010: R1 - R0	
<b>Employment elasticity of growth approach with elasticity calculated from macro data</b>								
GSO six months 2009	3.9	0.26	3.16	2.85	4.30	5.22	1.14	2.37
ADB	4.5	0.26	3.16	2.85	4.15	4.93	0.99	2.07
World Bank	5.5	0.26	3.16	2.85	3.90	4.44	0.74	1.58
IMF	4.75	0.26	3.16	2.85	4.09	4.81	0.93	1.95
<b>Employment elasticity of growth approach with elasticity estimated from the Enterprises Censuses</b>								
GSO six months 2009	3.9	0.193	3.16	2.85	4.54	5.71	1.39	2.86
ADB	4.5	0.193	3.16	2.85	4.43	5.49	1.28	2.64
World Bank	5.5	0.193	3.16	2.85	4.25	5.13	1.09	2.28
IMF	4.75	0.193	3.16	2.85	4.39	5.40	1.23	2.55
<b>Regression-based method</b>								
GSO six months 2009	3.9	0.193	3.16	2.85	3.85	4.24	0.69	1.39
ADB	4.5	0.193	3.16	2.85	3.74	4.03	0.59	1.17
World Bank	5.5	0.193	3.16	2.85	3.57	3.67	0.41	0.82
IMF	4.75	0.193	3.16	2.85	3.70	3.94	0.54	1.08

*Source: Authors' calculations*

Given this, we now turn attention to the figures reported in Table 3. Using the GSO's growth rates in the first half of 2009, the unemployment rate is projected at between 4.3 to

<sup>9</sup> Unfortunately, the VHLSS 2008 has not been officially released at the time of this study. The VHLSS 2006 was thus used as the latest survey available.



4.5 percent in 2009. Compared to the normal state, this implies an increase by an order of more than one percentage point. Compared to the actual unemployment rate in 2008, this suggests an increase of between 1.5 to 1.7 percentage points. This means that the economic slowdown may increase the unemployment rate by an order of 60 percent. If the economic growth prospect is not improved after 2009, the unemployment pressure will be intensified in 2010. Indeed, it is projected that the unemployment rate could increase to between 5.2 and 5.7 percent in 2010. Compared to the benchmark rate in 2008, this implies an increase of the unemployment rate by at least 110 percent. Notably, the results using the forecasts of the other organizations suggest a relatively compatible impact of the current economic slowdown on unemployment in 2009 and 2010.

The figures reported in this section should be seen purely as a tentative and exploratory exercise that is aimed at proving some projections on the impact of the current economic downturn on (un)employment in Vietnam. Clearly, the actual figures could be different from those reported in the current study. However, the results provide some useful projected indicators on the potential impacts of the slowdown. The next section will provide some policy implications based on these findings.

#### ***4. Conclusions and Policy Implications***

This paper examines the impacts of the current economic slowdown on (un)employment in Vietnam using the employment elasticity approach and the regression-based approach. In addition to Warren-Rodriguez (2009), this study was among the first assessment of the effects of the slowdown on employment in the country. Using the macro data and the firm-level data available from the Vietnam Enterprises Censuses in the period 2004-2006, the study concludes the followings:

*First*, as the economy has experienced a slowdown and thus created fewer jobs than the counterfactual level, there would be an employment shortfall of around half million jobs in 2009. And if the growth prospect of 2010 is not improved compared to that of 2009, Vietnam would encounter a shortfall of more than one million jobs in 2010.

*Second*, as a consequence, our projected unemployment rates are higher than that of 2008 by nearly one and a half percentage point in 2009 and two percentage points in 2010. This

increase in the unemployment rate is largely attributed to the shortfall of employment caused by the slowdown.

*Third*, the results suggest that the impact of the economic downturn on employment generation is most severe in the manufacturing sector. The foreign-invested sectors are more likely to be harmfully affected than domestic sectors. Interestingly, the effect of slowdown on employment in the agricultural sector is positive while the effect is almost ignorable in the state economic sector.

*Fourth*, the findings above are relatively robust under different assumptions of the economic growth in 2009. Using the forecast growth rates released by WB, IMF, and ADB, the impacts of the current economic slowdown on job creation and unemployment are slightly lower than those obtained using the GSO's. However, the direction of the impacts remains intact and the magnitudes of the impacts do not change considerably.

With these findings, the study reveals a picture that is somewhat differently from what has suggested by the media – who highlighted jobs losses observed in certain cases. Unlike them, our research indicates that the problem is not job destruction but a situation in which the slowdown that the economy is currently experiencing has created less employment compared to the counterfactual level of without the slowdown. Notably, our findings suggest that government anti-crisis efforts should focus, as much as possible, on employment creation for new labour market entrants.

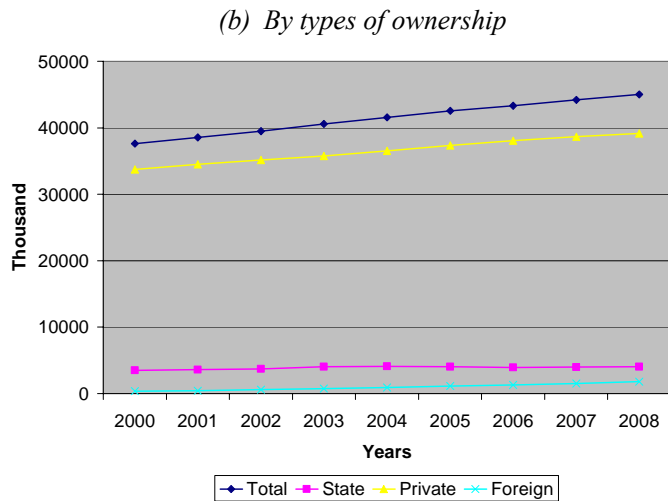
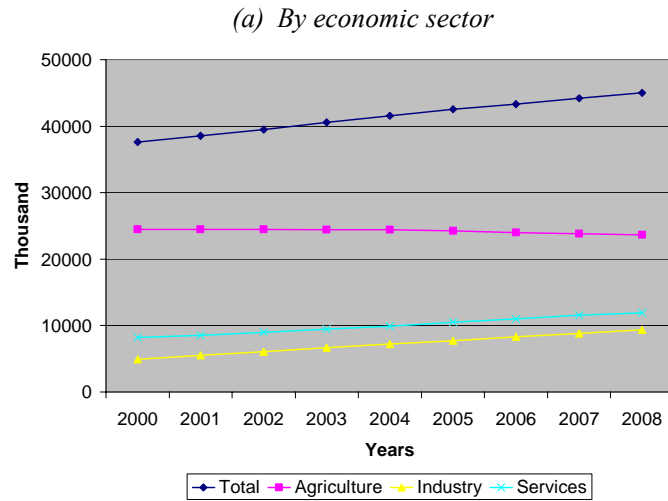
Finally, some limitations of this study should be discussed when interpreting the results and policy implications. Most importantly, the study assumed that the economic slowdown transmits its impacts to employment through output changes without fully taking into account the other possible channels. In fact, firms could respond to the slowdown by cutting down output without laying off workers if they anticipated a recovery in a short time horizon. In addition, the study was not able to provide insights on employment adjustments at a two-digit disaggregation level or further. While the economy as a whole could create more jobs, there could be sectors, especially export-oriented ones, which were seriously hit by the worsening internal and external conditions. Investigating the employment outcomes in these sectors would potentially provide better insights on the impacts of the current economic slowdown on employment and thus more useful to provide concrete policy recommendations.

## ***References***

- Cárdenas M., and R. Bernal (2001), “Determinants Of Labor Demand In Colombia: 1976 – 1996”, CID Working Paper No. 72, Center for International Development at Harvard University.
- Easterly, W. and A. Kraay (2000), “Small States, Small Problems? Income, Growth, and Volatility in Small States”, *World Development*, Vol. 28, n11, pp. 2013-27.
- Harrison, A. (2005), “Globalization and Poverty”, National Bureau of Economic Research Conference Report, edited by Harrison Anne, Chicago University Press.
- ILO (2009), “Global Employment Trends Report 2009”, International Labour Organization.
- Nguyen, Viet Cuong. (2008), “Can Vietnam Achieve Millennium Development Goal on Poverty Reduction in High Inflation and Economic Stagnation?”, unpublished manuscript.
- OECD (2008), “OECD Economic Outlook”, No. 84, December 2008, Organization for Economic Co-operation and Development.
- Pham, Thai Hung (2008), “Is Nonfarm Employment a Way out of Poverty for Rural Poor in Vietnam”, unpublished manuscript.
- Roberts M. J. and E. Skoufias (1997), “The Long-Run Demand for Skilled And Unskilled Labor In Colombian Manufacturing Plants”, *The Review of Economics and Statistics*, Vol. 79, No. 2 (May, 1997), pp. 330-334.
- Slaughter M. J. (2001), “International trade and labor–demand elasticity”, *Journal of International Economics* 54 (2001) 27–56.
- Teal, F. (1995), “Real Wages and the Demand for Labour in Ghana's Manufacturing Sector”, WPS/95-7, Centre for the Study of African Economies, Institute of Economics and Statistics, University of Oxford.
- Socialist Republic of Vietnam (SRV) (2005), *The Labour Code*, National Assembly, Hanoi.
- Warren-Rodríguez, A. (2009), “The impact of the global crisis downturn on employment levels in Viet Nam: an elasticity approach”, UNDP Viet Nam Technical Note.
- World Bank and International Financial Corporation (WB and IFC) (2008), *Vietnam Doing Business 2008*, a joint report by World Bank and International Financial Corporation.

# Appendix

**Figure A1: Structure of Employment by Sectors and Ownership**



Source: compiled from GSO data

**Table A1: Employment Elasticity of GDP growth using the EEG Approach**

	Years							
	2001	2002	2003	2004	2005	2006	2007	2008
<b>Total</b>	<b>0.368</b>	<b>0.346</b>	<b>0.368</b>	<b>0.320</b>	<b>0.268</b>	<b>0.232</b>	<b>0.227</b>	<b>0.315</b>
<b>By ownership</b>								
State	0.394	0.573	0.993	0.233	-0.229	-0.362	0.109	-0.387
Private	0.361	0.270	0.266	0.307	0.277	0.223	0.168	0.273
Foreign	2.775	4.411	2.987	1.981	1.431	1.233	1.209	0.382
<b>By sectors</b>								
Agriculture	-0.015	-0.014	-0.014	-0.012	-0.151	-0.321	-0.224	-0.196
Industry	1.221	1.007	0.919	0.801	0.678	0.741	0.554	0.949
Services	0.677	0.769	0.851	0.697	0.671	0.579	0.552	0.468
<b>By detailed sectors</b>								
<b>Agriculture, Forestry and Fishery</b>								
Agriculture, Forestry	-0.225	-0.229	-0.079	-0.104	-0.319	-0.517	-0.509	-0.304
Fishery	0.827	3.237	0.449	0.692	0.519	0.635	0.489	0.560
<b>Industry and Construction</b>								
Mining	1.517	3.915	0.721	1.075	2.786	14.504	-3.658	-2.215
Manufacturing	0.837	0.606	0.834	0.548	0.667	0.625	0.425	0.572
Electricity, Gas & water supply	1.952	0.901	0.812	0.757	0.841	1.204	1.141	1.179
Construction	1.891	1.718	1.001	1.540	0.363	0.624	0.511	367.520
<b>Services</b>								
Trade	0.606	0.741	0.858	0.663	0.418	0.429	0.401	0.238
Hotel & restaurant	0.317	0.312	0.663	0.258	0.095	0.166	0.307	0.245
Transport, warehouse & communication	0.071	0.038	0.175	0.080	0.052	0.046	0.028	0.026
Finance, credit	2.159	2.182	1.444	1.716	2.684	2.074	1.681	0.733
Scientific & technical activities	1.127	-1.031	0.810	3.113	-0.255	0.828	0.451	0.000
Activities related to property business & consultancy service	4.450	6.285	4.030	4.192	5.735	6.127	5.135	6.587
Education & training	0.742	0.628	0.673	0.438	0.510	0.640	0.500	0.410
Health & social aid service	2.466	1.355	1.154	1.485	0.561	0.461	0.390	0.526
Culture & sport	-2.219	0.691	0.322	-0.122	0.364	0.157	0.196	-0.159
Other services	1.436	1.844	1.459	1.580	2.841	1.446	1.306	2.360

Source: Authors' compilation using GSO's data

**Table A2: Fixed-effects Regression of the Labour Demand Functions**

Explanatory variables	All sectors	Economic sectors					
		Agriculture, forestry	Fishery	Mining	Manufacturing	Electricity, gas & water supply	Construction
Logarithm of total revenues	0.1930*** [0.0010]	0.1267*** [0.0107]	0.1776*** [0.0099]	0.2202*** [0.0118]	0.2140*** [0.0022]	0.1098*** [0.0063]	0.1807*** [0.0032]
Logarithm of average wage	-0.1502*** [0.0019]	-0.1575*** [0.0174]	-0.0911*** [0.0139]	-0.1449*** [0.0170]	-0.1593*** [0.0035]	-0.1455*** [0.0095]	-0.1351*** [0.0049]
Logarithm of avg. capita assets	-0.3170*** [0.0014]	-0.3407*** [0.0151]	-0.2730*** [0.0172]	-0.5041*** [0.0143]	-0.4281*** [0.0032]	-0.0660*** [0.0054]	-0.5636*** [0.0042]
Year 2005	0.0579*** [0.0018]	0.0398** [0.0160]	0.0336*** [0.0093]	0.0737*** [0.0165]	0.0694*** [0.0033]	0.0394*** [0.0080]	0.1214*** [0.0056]
Year 2006	0.1218*** [0.0019]	0.0409** [0.0173]	0.0267*** [0.0096]	0.1117*** [0.0174]	0.1248*** [0.0035]	0.0525*** [0.0089]	0.2202*** [0.0060]
Constant	3.1173*** [0.0094]	5.2362*** [0.1136]	2.8544*** [0.0936]	4.1921*** [0.0999]	4.1848*** [0.0214]	2.1317*** [0.0356]	4.8763*** [0.0293]
Observations	212203	2132	3176	2550	47640	5931	28924
Number of i	71625	722	1066	857	15989	1989	9832
R-squared	0.37	0.38	0.21	0.53	0.49	0.12	0.58

Note: Robust standard error in brackets; \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table A2: (cont.)**

Explanatory variables	Economic sectors						
	Trade	Hotel & restaurant	Transport. warehouse & communication	Finance. credit	Scientific & technical activities	Activities related to property business & consultancy service	Education & training
Logarithm of total revenues	0.1751*** [0.0014]	0.1720*** [0.0051]	0.2040*** [0.0036]	0.1131*** [0.0067]	0.1631*** [0.0048]	0.1349*** [0.0096]	0.1987*** [0.0155]
Logarithm of average wage	-0.1076*** [0.0029]	-0.1295*** [0.0076]	-0.1302*** [0.0060]	-0.1053*** [0.0123]	-0.0922*** [0.0084]	-0.2741*** [0.0254]	-0.0779** [0.0309]
Logarithm of avg. capita assets	-0.2340*** [0.0021]	-0.2406*** [0.0063]	-0.2556*** [0.0046]	-0.0764*** [0.0078]	-0.2385*** [0.0063]	-0.1415*** [0.0121]	-0.2277*** [0.0218]
Year 2005	0.0378*** [0.0026]	0.0278*** [0.0064]	0.0301*** [0.0055]	0.0555*** [0.0085]	0.0559*** [0.0095]	0.0544** [0.0230]	0.0068 [0.0342]
Year 2006	0.1048*** [0.0029]	0.0375*** [0.0067]	0.0558*** [0.0058]	0.1154*** [0.0099]	0.1279*** [0.0103]	0.1559*** [0.0254]	-0.018 [0.0354]
Constant	2.1879*** [0.0133]	2.7456*** [0.0423]	2.8109*** [0.0307]	1.9599*** [0.0604]	2.7572*** [0.0387]	3.1825*** [0.1002]	2.3134*** [0.1209]
Observations	92369	9258	19913	3780	9202	1871	769
Number of i	31095	3107	6700	1266	3169	684	271
R-squared	0.29	0.33	0.33	0.19	0.3	0.27	0.34

Note: Robust standard error in brackets; \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table A2: (cont.)**

Explanatory variables	Economic sectors			Ownership		
	Health & social aid service	Culture & sport	Other services	State	Private	Foreign
Logarithm of total revenues	0.1995*** [0.0282]	0.2163*** [0.0179]	0.1845*** [0.0075]	0.1972*** [0.0039]	0.1912*** [0.0011]	0.1903*** [0.0044]
Logarithm of average wage	-0.2585*** [0.0536]	-0.1780*** [0.0291]	-0.1581*** [0.0134]	-0.1763*** [0.0054]	-0.1465*** [0.0020]	-0.1336*** [0.0083]
Logarithm of avg. capita assets	-0.1837*** [0.0283]	-0.2608*** [0.0263]	-0.2155*** [0.0096]	-0.2083*** [0.0039]	-0.3289*** [0.0016]	-0.4107*** [0.0089]
Year 2005	0.0879** [0.0441]	0.0369 [0.0270]	0.0586*** [0.0139]	0.0130*** [0.0047]	0.0651*** [0.0020]	0.0691*** [0.0069]
Year 2006	0.1995*** [0.0502]	0.0488* [0.0289]	0.0995*** [0.0148]	0.0216*** [0.0052]	0.1386*** [0.0021]	0.1212*** [0.0073]
Constant	3.2547*** [0.1889]	3.3886*** [0.1748]	2.6738*** [0.0593]	3.5309*** [0.0329]	2.9720*** [0.0101]	5.5224*** [0.0651]
Observations	304	630	3556	24152	179795	8256
Number of i	104	215	1222	8596	61279	2787
R-squared	0.41	0.4	0.34	0.28	0.38	0.5

Note: Robust standard error in brackets; \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%



**Table A2: (cont.)**

Explanatory variables	Regions							
	Red River Delta	North East	North West	North Central Coast	South Central Coast	Central Highlands	South East	Mekong River Delta
Logarithm of total revenues	0.1755*** [0.0019]	0.2249*** [0.0048]	0.1833*** [0.0104]	0.1787*** [0.0047]	0.1973*** [0.0043]	0.2255*** [0.0065]	0.2097*** [0.0018]	0.1613*** [0.0026]
Logarithm of average wage	-0.1181*** [0.0036]	-0.1573*** [0.0067]	-0.0908*** [0.0118]	-0.1260*** [0.0073]	-0.1167*** [0.0071]	-0.1390*** [0.0094]	-0.2014*** [0.0034]	-0.1011*** [0.0048]
Logarithm of avg. capita assets	-0.3023*** [0.0028]	-0.2988*** [0.0053]	-0.6141*** [0.0129]	-0.3357*** [0.0063]	-0.3415*** [0.0058]	-0.3610*** [0.0081]	-0.3226*** [0.0024]	-0.2788*** [0.0038]
Year 2005	0.0706*** [0.0035]	0.0303*** [0.0067]	0.0833*** [0.0133]	0.0717*** [0.0068]	0.0764*** [0.0064]	0.0440*** [0.0098]	0.0496*** [0.0032]	0.0513*** [0.0040]
Year 2006	0.1318*** [0.0038]	0.0750*** [0.0072]	0.1291*** [0.0140]	0.1205*** [0.0073]	0.1142*** [0.0068]	0.0990*** [0.0108]	0.1344*** [0.0035]	0.1010*** [0.0044]
Constant	3.3147*** [0.0182]	2.9777*** [0.0390]	4.8751*** [0.0956]	3.2942*** [0.0422]	3.1018*** [0.0383]	3.0394*** [0.0557]	3.2009*** [0.0162]	2.4735*** [0.0230]
Observations	55582	15277	2666	13626	15398	7122	70954	31578
Number of i	18947	5099	907	4553	5139	2382	24050	10548
R-squared	0.36	0.37	0.64	0.33	0.35	0.4	0.41	0.29

Note: Robust standard error in brackets; \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table A3: Impact of the Economic Slowdown on Employment using the EEG Approach**

	$G_{1Y}$ (GDP growth rate with slowdown - %)	Elasticity (estimated using macro data)	Employment in 2009 without slowdown (L0 - 2009) (thousand people)	Employment in 2010 without slowdown (L0 - 2010) (thousand people)	Employment in 2009 with slowdown (L1 - 2009) (thousand people)	Employment s in 2010 with slowdown (L1 - 2010) (thousand people)	Impact for 2009: L1 - L0 (thousand people)	Impact for 2010: L1 - L0 (thousand people)
<b>By ownership</b>								
State	1.22	-0.217	4065.3	4057.4	4062.5	4051.8	-2.84	-5.66
Private	6.18	0.235	39813.1	40505.5	39700.8	40277.4	-112.30	-228.18
Foreign	3.66	1.064	2156.7	2539.7	1902.6	1976.7	-254.02	-563.03
<b>By region</b>								
Red River Delta	3.9926	0.302	9831.5	10037.6	9755.1	9872.7	-76.40	-164.91
North East	5.9374	0.177	5199.0	5306.8	5151.8	5206.0	-47.16	-100.87
North West	8.7023	0.215	1425.5	1464.9	1414.6	1441.0	-10.98	-23.87
North Central Coast	5.679	0.265	5247.9	5332.9	5247.2	5326.3	-0.71	-6.58
South Central Coast	10.1853	0.040	3622.5	3695.8	3568.6	3583.2	-53.88	-112.58
Central Highlands	5.9747	0.105	2412.8	2483.3	2361.1	2375.9	-51.62	-107.42
South East	2.3457	0.401	8210.8	8510.6	8003.7	8079.0	-207.05	-431.60
Mekong River Delta	3.7968	0.447	10085.2	10270.8	10080.7	10251.7	-4.49	-19.04

*Source: Author's estimation*