After the reforms: Determinants of wage growth and change in wage inequality in Vietnam: 1998-2008

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After the Reforms: Determinants of Wage Growth and Change in Wage Inequality in Vietnam - 1998 -2008

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Abstract: The Vietnam "renovation" reforms were implemented during the 1990s, but their full effect was only felt many years later. We present evidence on the developments in real wage growth and inequality in Vietnam from 1998 to 2008. For men, wage growth was underpinned by both increases in endowments of productive characteristics (mainly education) as well as changes in the wage structure (mainly associated with experience) and residual changes. For women, the wage structure effect was the main contributor to wage growth and the most important determinant was the change in the pattern of the returns to experience: younger, less experienced workers enjoyed a premium compared to more experience workers, reversing the previous, opposite pattern. Conventional measures of inequality as well as background analysis show that wage inequality decreased sharply through the 1990s until 2006, but increased subsequently. Over the entire 10-year period, wage inequality increased slightly and more so for women.

JEL codes: D33, J31, J42
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1. Introduction

During Vietnam's central planning period (prior to 1986), policies were aimed at preserving an egalitarian income distribution. Development during this period was accompanied by misallocation of resources as a result of preserve incentives (see for example, Taylor 2004). The *Doi Moi* ("renovation") reforms were initiated in 1986 and aimed at establishing a market-based economy; however, these reforms actually started taking hold during the 1990s. The consequences of the reforms were dramatic, with output per person increasing significantly during the first decade of the reforms and the labor market particularly impacted.

Before the implementation of the reforms, public sector remuneration policy led to a compression of earnings differentials across groups with different education qualifications. The process of dismantling the old public sector wage system began in 1990[1]. The role of state-owned enterprises was lessened, salaries of public servants were set according to market rates and the salary wage structure would reward public sector workers according to education level, job responsibility and performance. Private firms were free to set wages without government interference; for foreign ventures, however, an effective minimum wage was set which was higher compared to the market wage and the minimum wage set for domestic firms.[2]

The full impact of these reforms probably came only years later, since those hired prior to 1994 were largely exempted (World Bank 1996). The implementation of these reforms led to an increase in the demand for certain types of labor, particularly in trade and services. This resulted in a shortage of high level technical experts, skilled technical workers, administrative and managerial experts and researchers, among others (Nguyen et. al 1991).

[1] Remuneration of public sector workers ceased to be based on length of service and jobs were no longer guaranteed for life (Hiebert 1993; Norlund 1993).

[2] Between 1993 and 1996, the minimum wage for all firms was 120,000 VND (about $12) per month, compared to a minimum wage for firms with foreign ownership of $35 in Hanoi and HCM city and $30 elsewhere.

There are several studies, using various methodologies, for the United States, several transition economies and some developing and Newly Industrialized Economies[3]. Studies in this context are lacking for Vietnam (along with most countries in S.E. Asia), especially studies using recent advances in methodology and recent data. Existing studies for Vietnam include those by Nguyen *et. al.* (2006) who decomposed the urban-rural inequality from 1993 to 1998 using a quantile regression approach, Pham and Reilly (2007) who analysed the gender pay gap along the earnings distribution from 1993 to 2002 and found a narrowing gender pay gap, Gallup (2002) who derived conventional measures of inequality in the 1990s and examined the contribution of wage employment to income growth and inequality and Glewwe *et. al.* (2002) who examined changes in poverty and inequality in the 1990s and found that poverty declined considerably during this period.

The objective of this paper is to establish the developments in wage growth and inequality in Vietnam during the 1998-2008 period, that is the period from when reforms started taking hold till when the Vietnamese economy and in particular the labor market had been transformed. This involves comparison of wage distributions over time at quantiles. We use Vietnam Living Standards and Vietnam Household Living Standards data from 1998 to 2008 and recent methodological advances which permit the identification of individual contributors to over-time wage growth at different points of the wage distribution, in other words implementing Oaxaca-Blinder decompositions at quantiles.

2. Methodology

2.1 Overview

In the last few years there has been an evolution and refinement of techniques used in examining distributional issues, specifically in evaluating wage differentials between sub-groups (and more generally the impacts of various programs) over the entire rage of the

[3] For example, Lukyanova (2006), Meng, (2004) and Fields and Yoo (2000).

earnings distribution. These new techniques were first used to analyse gender earning gaps (for example, Albrecht *et. al.* 2003) and later to examine changes in wage distributions over time, where the focal point is what contributes to the change in these distributions. This paper implements recent advances in methodology, in particular a two-stage procedure proposed by Firpo et. al. (2009; 2007), which allows the decomposition of changes or differences in wage distributions and assessing the impact of explanatory variables on quantiles of the unconditional wage distribution.

Oaxaca-Blinder decomposition techniques have been extensively utilized because they not only allow decompositions of group differences or changes in mean wages, but also permit further division of each component of the decomposition into individual contributions of each covariate. Two drawbacks of these decomposition techniques are first, that the contribution of each covariate is sensitive to the choice of the base group (see Oaxaca and Ransom 1999) and second, the consistency of the estimates of the two decomposition components depends on the linearity assumption (see Firpo et. al. 2007). Barsky et. al. (2002) proposed a non-parametric reweighting approach along the lines of DiNardo et. al. (1996) to deal with this problem. In the 1990s, procedures by Juhn et. al. (1993) and the re-weighting procedure by DiNardo et. al. (1996) received attention. Later on, the decomposition at quantiles method by Machado and Mata (2005)[4] gained popularity. However, none of these decomposition methodologies allowed for further subdivision of the characteristics (composition) component into its constituent components.

Recently, Firpo et. al. (2009) proposed a new, computationally simple regression method to evaluate the impact of changes in the distribution of explanatory variables (such as education, union status, etc.) on quantiles of the unconditional (marginal) distribution of an outcome variable (such as earnings). This method allows estimation of the effect of various explanatory variables on the unconditional quantiles of an earnings variable.

[4] Melly (2006) further improved the Machado and Mata procedure.

2.2 Methodological Approach

The method used in this paper differs from the *conditional* quantile regression (Koenker and Bassett 1978; Koenker 2005), as it is based on *unconditional quantile regression* methodology. It involves estimating a regression of a transformation of the unconditional quantile of the earnings variable on the explanatory variables (*Re-centered Influence Function* – RIF). This allows the estimation of standard partial effects (Unconditional Quantile Partial Effects – UQPE). This regression method is then used to generate Oaxaca-Blinder decompositions for quantiles of interest instead of the mean.

Consider differences in wage distributions between two groups, 1 and 0, in our case one group at time 1 and the other at time 0. Let Y_{1i} be the wage that would be paid to worker *i* in period 1 and Y_{0i} the wage that would be paid in period 0. In the case of Oaxaca-Blinder decompositions at the mean, given the assumption of linearity:

$$Y_{ti} = X_i\beta_t + \varepsilon_{ti}, \;\; T_i=1, 0 \text{ and } E[\varepsilon_{ti}|X_i, T=t] = 0 \qquad (1)$$

To decompose the overall wage gap at the mean, D^{μ}, into wage structure and composition effects we average over X, replacing the parameter vectors β_t with their OLS estimates and using the linearity assumption, we have:

$$\begin{aligned} D^{\mu} &= E[X|T = 1](\beta_1 - \beta_0) + (E[X|T = 1] - E[X|T = 0])\beta_0 \\ &= D^{\mu}_S + D^{\mu}_X \qquad (2) \end{aligned}$$

When considering decompositions of changes in distributional statistics other than the mean, most of the available techniques (for example, Juhn et. al. 1993; Donald et. al. 2000; Machado and Mata 2005; Melly 2005), have the shortcoming that they don't allow for further dividing the wage structure and composition effect into the contributions of the individual covariates. Firpo et. al. (2007; 2009) building on Firpo et. al. (2006) developed a regression-based approach which allows for such a detailed decomposition.

Consider wage distributions for the 2 groups, with an interest in their differences. Given a random sample of N individuals with N_1 and N_0 individuals in each group, wages

depend on a vector of observed characteristics, X_i, as well as unobserved characteristics, ε_i, depicted in the wage function:

$$Y_{ti} = g_t(X_i, \varepsilon_i), \quad t = 1, 0 \qquad (3)$$

Using the sample data (and assuming that (Y,T, X) have an unknown joint distribution), one can identify the distributions: F_1 for $Y_1|T = 1$ and F_0 for $Y_0|T = 0$. One needs to also identify the counterfactual distribution, F_C for $Y_0|T = 1$, that is the distribution that would have prevailed if we have combined the wage structure of group 0 with the distribution of characteristics of group 1. Comparing the wage distributions of the 2 groups by focusing on a particular functional, v (for example, the median), of the distributions the difference:

$$D^v = v(F_1) - v(F_0),$$

reflects the difference in wages (overall wage gap) measured in terms of the particular distributional statistic chosen. Given that the composition of the two groups with respect to characteristics, X, is generally different, the decomposition equation can then be written as:

$$D^v = [v(F_1) - v(F_C)] + [v(F_C) - v(F_C)] = D^v_S + D^v_X \qquad (4),$$

that is, as a sum of the wage structure and the composition effects.

In order to construct $v(F_C)$ one needs to identify F_C. For this as well as constructing the composition effect component[5] (D^v_X), a necessary assumption is that of conditional independence ("ignorability"). Firpo et. al. (2007) discuss why for the decomposition terms to have the appropriate interpretation and for identifying the counterfactual distribution (F_C), besides this assumption the assumption of "overlapping support" is also required. This assumption requires that there is an overlap in observable characteristics across groups; this is expected to be satisfied in our case, where we look at over-time changes in wage distributions.

[5] Since D^v_X reflect changes in the joint distribution of (X, ε), while we require this component to reflect only changes in the distribution of X, the conditional independence assumption (ε independent of T given X) is required.

In identifying the parameters of the counterfactual distribution F_C, and the two components in equation (4), a reweighting approach is employed using three relevant weighting functions: $\omega_1(T)$, $\omega_0(T)$ and $\omega_C(T, X)$, which transform features of the marginal distribution of Y into features of the conditional distribution of Y_1 given T=1 and Y_0 given T=0, as well as the re-weighting function which transforms features of the marginal distribution of Y into features of the counterfactual distribution of Y_0 given T=1. In deriving the re-weighting functions, the probability that a person belongs in group 1 conditional on X ("propensity score") is derived from a logit regression.

While what has been described above allows the estimation of the 2 components of the over-time changes in wage distributions, it does not permit estimation of the effect of individual explanatory variables. This is accomplished using a recently proposed procedure by Firpo et. al. (2009). This is a regression-based method that estimates the effect of explanatory variables on the unconditional quantiles of the dependent variable (in our case earnings). It involves estimating a regression of the rescaled (re-centered) influence function of the unconditional quantile of earnings on the explanatory variables. This procedure generates standard partial effects (unconditional quantile partial effects – UQPE).

Consider for example estimation of the direct effect of an increase in the proportion of skilled workers[6], p = Pr[X = 1], on a particular quantile of the wage distribution, where X takes the value of 1 if the worker is skilled and 0 otherwise. In the case of quantile τ, using the concept of the Influence Function (Hampel, 1974): $IF(Y; q_\tau, F_Y)$ of a distributional statistic $\nu(F_Y)$, which represents the influence of the individual observations on this statistic and adding the statistic to the influence function, results in the *Re-centered Influence Function* (RIF). Given that $IF(Y; q_\tau, F_Y)$ is equal to $(\tau - 1\{Y \leq q_\tau\}) / f_Y(q_\tau)$, the $RIF(Y; q_\tau, F_Y)$ is equal to $q_\tau + IF(Y; q_\tau, F_Y)$, while the conditional expectation of $RIF(Y; q_\tau, F_Y)$ as a function of the

[6] In their paper, Firpo et.al. focus on the effect of a change in the proportion of unionized workers in the United States.

explanatory variables (i.e., $E[RIF(Y; q_\tau, F_Y)|X=m_\tau(X))$, is the *unconditional quantile regression model*. Firpo et.al (2009) show that the average derivative of this regression ($E[m_\tau'(X)]$) corresponds to the marginal effect on the unconditional quantile of a small location shift in the distribution of covariates (holding everything else constant).

The decomposition components in equation (4) can now be re-written as:

$$D_S^{q}{}_\tau = E[m_1^{q}{}_\tau (X) \mid T=1] - E[m_C^{q}{}_\tau (X) \mid T=1]$$

$$D_X^{q}{}_\tau = E[m_C^{q}{}_\tau (X) \mid T=1] - E[m_0^{q}{}_\tau (X) \mid T=0]$$

Considering the linear projections (indexed by L) $m_L^{q}{}_\tau (x)$:

$$m_{t,L}^{q}{}_\tau (x) = x^T . \gamma_t^{q}{}_\tau \text{ and } m_{C,L}^{q}{}_\tau (x) = x^T . \gamma_C^{q}{}_\tau,$$

where: $\gamma_t^{q}{}_\tau = (E[X . X^T \mid T = t]^{-1} . E[RIF(Y_t; q_{\tau, t}) . X \mid T=t], \quad t = 0,1$ and:

$$\gamma_C^{q}{}_\tau = (E[X . X^T \mid T = 1]^{-1} . E[RIF(Y_t; q_{\tau, C}) . X \mid T=1]$$

These linear projections of the true conditional expectation have an expected approximation error of zero, hence:

$$E[m_{t,L}^{q}{}_\tau (X) \mid T = t] = E[m_t^{q}{}_\tau (X) \mid T = t], t = 0, 1$$

$$E[m_{C,L}^{q}{}_\tau (X) \mid T = 1] = E[m_C^{q}{}_\tau (X) \mid T = 1].$$

The decomposition is, then, rewritten as:

$$D_S^{q}{}_\tau = E[X \mid T = 1]^T . (\gamma_t^{q}{}_\tau - \gamma_C^{q}{}_\tau) \qquad (5)$$

$$D_X^{q}{}_\tau = E[X \mid T = 1]^T . \gamma_C^{q}{}_\tau - E[X \mid T = 0]^T . \gamma_0^{q}{}_\tau \qquad (6),$$

which is a generalization of the Oaxaca-Blinder decomposition through the projection of its rescaled influence function onto the covariates. Note that equation (6) can be re-written as:

$$D_X^{q}{}_\tau = (E[X \mid T = 1] - E[X \mid T = 0])^T . \gamma_0^{q}{}_\tau + R^{q}{}_\tau \qquad (6)'$$

where $R^{q}{}_\tau$ is an approximation error. An error is involved since this regression based procedure (as outlined in Firpo et.al. 2006) provides only a first-order approximation to the composition effect. The approximation error can be estimated as the difference between the estimate of the composition effect through re-weighting and the estimate obtained from the RIF-regression procedure. When the linear specification is used when estimating the RIF-

regressions, an error component linked to a potential specification error is added, thus changing the interpretation of the approximation error R^q_τ.

Thus, using the RIF- regression estimates we can estimate the effect of a small change in the distribution of X on a functional such as q_τ, or a first-order approximation of a larger change. Furthermore, Firpo et.al. (2006) show that in the case of quantiles, using a linear specification in estimating the RIF-regressions yield very similar estimates to other specifications, such as probit and logit.

3. Data and Estimation Samples

3.1 Summary Statistics

The data used draw on the household questionnaires from the 1997/8 Vietnam Living Standard Surveys (VLSS) and the 2008 Vietnam Household Living Standard Survey (VHLSS 2008)[7]. The VLSS 1997/98 comprised of a sample of nearly 6,000 households, while the VHLSS 2008 comprised of just over 9000 households From the wide range of questions included in the household questionnaire, we utilize information on household member's characteristics such as age, gender, place of residence, education qualifications, as well as employment information of workers employed for wages such as earnings, occupation and major industry of employment.

Since this study focuses on wage and salary workers and excludes the self- employed (for who there is no earnings information), the results are not representative of changes in overall income or consumption inequality. However, one should look at changes in the proportion of wage employment over the period examined. From the 1998 VLSS and 2008 VHLSS, the proportion of wage and salary employees in total non-farm employment was approximately 48 % (21 % of all employed, including farm employment); this proportion

[7] The surveys were conducted by the General Statistics Office, assisted by the World Bank and funded by United Nations Development Program (UNDP) and the Swedish International Development Cooperation Agency. These surveys are similar in design to the World Bank's Living Standard Measurement Surveys and are nationally representative.

increased slightly to 49 % in 2008 (slightly less than 23 % of all employed). Therefore, the proportion of wage and salary workers in non-farm and total employment did not change substantially during the decade examined.

The dependent variable is the logarithm of the hourly wage, deflated to 1998 prices using the CPI for Vietnam. The estimation samples include all those aged 15-65 who were employed for wages in the public or public sector, including cooperatives, foreign enterprises and joint ventures. Table A1 in the Appendix presents the mean characteristics of workers by year and gender. Mean earnings grew strongly for both men and women and more so for women. Real male wage earnings doubled, while female earnings increased by 140 %. During the entire 1998-2008 period education endowments increased substantially; however, there are significant gender differences. While the proportion of men with upper secondary education increased significantly more than the corresponding proportion for women (46 vs. 14 % for upper secondary general), while the corresponding increase for tertiary qualifications was 170 % for men vs. 110 % for women. Significant changes in the age composition of wage earners are evident. Thus, the proportion of young, inexperienced workers quadrupled for men and more than doubled for women; the proportion with 10 to 25 years of experience halved, while the corresponding proportion of older, more experience workers doubled for men and nearly tripled for women. With respect to the occupational composition of wage employment, the proportion of in professional and managerial occupations more than doubled for men and increased by more than 50 % for women. Finally, while primary sector employment remained approximately unchanged, the proportion of wage earners in industry declined moderately, with a corresponding increase in the proportion of workers in services.

3.2 Conventional Measures of Inequality

One way to characterize inequality is to compute various summary measures of inequality. Each measure of inequality has distinct properties[8]. Table 1 presents such measures, which reveal a sharp decrease in wage inequality in Vietnam from 1992 to 2006 and a subsequent rebound in the following years. Percentile ratios and their changes suggest that the inequality decline applies mostly with reference to the bottom decile.

[Table 1 about here]

The over-time developments in measured wage inequality in Vietnam could be related to the policy of imposing minimum wages and how it applies to various sectors. From 1993 to 1996, the minimum wage for all firms was 120,000 VND (about $12) per month, compared to a minimum wage for firms with foreign ownership of $35 in Hanoi and HCM city and $30 elsewhere. Since 1997, the minimum monthly wage for unskilled labor applicable to both the public and private sector was set at 144,000 VND per month; however, one important difference is that in the public sector, the minimum wage is used as a base to calculate actual salaries, which were set as a multiple of the minimum earnings; thus, an increase in the minimum wage led automatically to an increase in public sector wages (see for example, Belser, 2000).

While minimum wages in the domestic sector were modest for international standards (less than 30 % of mean earnings), they have been revised consistently over the years to 450,000 VND in 2006 (870,000 VND for unskilled workers in the foreign invested sector in Hanoi and Ho Chi Minh City) and 540,000 in 2008, all in nominal terms. At constant (1998) prices, the minimum wage increased by 125 % between 1998 and 2006; however, the corresponding increase between 1998 and 2008 was a little less than 100 %, because of high inflation in recent years.

[8] For example, the Gini coefficient, in comparison to the Theil index, is more sensitive to transfers between people near the middle of the distribution. Transfers from the top to the bottom of the distribution, on the other hand, tends to produce larger changes in the Gini coefficient in comparison to the Theil index.

Chart 1 illustrates the changes in the real minimum wage and four inequality indices: the Gini, along with the p90/p10, 90/50 and 50/10 percentile ratios from 1992 to 2008. The developments over time, while not conclusive, are at least suggestive. The period of declining inequality coincides with the sharp increase in the real minimum wage, until 2006. On the other hand, after 2006 the real minimum wage declined, while all inequality indices increased significantly.

[Chart 1 about here]

4. Estimation and Detailed Decomposition

4.1 RIF-Regressions

The unconditional quantile regression estimation consists of two steps. The first step is to derive the re-centered influence function (RIF) of the dependent variable and the second step involves estimating an OLS regression of the generated RIF variable on covariates. As shown in Firpo et. al. (2009), the estimated coefficients are in fact unconditional partial effects of small location shifts of the covariates.

Specifically, the RIF at quantiles is:

$$RIF(Y, q_\tau) = q_\tau + [\tau - I(Y \leq q_\tau)/f_Y(q_\tau)],$$

where q_τ can be estimated by the sample quantile and $f_Y(.)$ can be estimated using Kernel density. If the specification of the unconditional quantile regression is linear, the OLS estimates of the coefficients are consistent estimators of the unconditional partial effects: $d(q_\tau)/d(X)$.

A well-known drawback of Oaxaca-Blinder decomposition techniques is that the contribution of each covariate is sensitive to the choice of the base group (see for example, Oaxaca and Ransom 1999). In this paper I apply the *deviation contrast transform* procedure developed for use with such decompositions[9]. Applying the deviation contrast transformation

[9] In Stata we use the *devcon* procedure which follows the *rifreg* procedure.

to the estimates before conducting the decomposition is one solution to this problem (see Yun 2005). The transformation procedure can be used to transform the coefficients of 0/1 dummy variables so that they reflect deviations from the "grand mean" rather than deviations from the reference category. Consequently, the modified coefficients will sum up to zero over all categories.

Tables A2 and A3 in the appendix report coefficients for all categories (including the reference groups in the original model) with the constant modified accordingly. Some notable over time changes include the sharp increase in wage premiums for professional occupations, with a corresponding decrease in premiums for manual labor; the increase in the reward of experience for younger, less experience workers, with a corresponding decrease in premiums for older workers.

4.2 Detailed Decomposition Results

The outcome of the two-step procedure is estimates of the components of the total change in log-wage, namely the composition and the coefficients (wage structure) component, as well as the contribution of individual characteristics to these components and the total change (see Table 2 and charts 2a-5b)[10]. The composition effect can be further divided into a part explained by the vector of covariates in the model and a specification error; the error accounts for the fact that a potentially incorrect linear specification was used in estimating the RIF-regressions. Note that this does not affect the estimates of the two components (composition and wage structure), which were derived using the re-weighting approach. However, one can observe the size of the specification error and judge whether the method used (as proposed by Firpo et. al. 2009; 2006) results in an accurate enough approximation of the problem at hand. The wage structure effect can also be divided into the part explained by the RIF-regression models and the residual change associated with change in intercepts.

[10] For the detailed decomposition we use the *Oaxaca8* procedure.

Real earnings of both male and female wage employees showed strong growth over the 10-year period examined. However, the pattern differs between men and women. First, women enjoyed a higher increase in real earnings, with 2008 earnings higher by 2.3, 2.4 and 2.5 times compared to 1998 earnings at the 10^{th}, 50^{th} and 90^{th} percentiles, respectively (compared to about 2 times for men across the entire wage distribution). Second, the relative magnitude of the two components differs substantially between genders. For men, the composition (characteristics) component, while small at lower percentiles, increases at higher points of the wage distribution and at the top exceeds the wage structure component. In other words, over-time growth in earnings-generating characteristics play an important role in shaping male wage growth over the 10-year period. For women, on the other hand, the composition effect remains a small part of the total wage change at every point in the wage distribution. The substantial wage structure component is the main contributor to the rear wage growth of Vietnamese women. Furthermore, this component (as well as the total) increases at higher points of the wage distribution. That is, at least for women, wage growth has contributed to a moderate increase in wage inequality.

Turning to the contribution of individual covariates to the components of the overall decomposition, the main components influencing total wage growth (column 3 in Table 2), besides the component associated with change in intercepts[11] are: experience group, region and education. For men, the composition component is dominated by the growth in education qualifications and to a lesser extent changes in occupational composition. The contributors to the wage structure component, on the other hand, are: residual change (change in intercepts), and changes in the reward to experience which contributed significantly to wage growth. The effect of changes in the reward of experience is more evident at the bottom and at the very top of the distribution. Changes associated with the reward to occupation as well as "other"

[11] When the RIF-regression method results in a good approximation of the effect of large over-time changes in the distribution of characteristics (X) on quantiles, the residual change captured by the difference in intercepts, reflects the actual wage changes in the base (reference) group.

characteristics (marital status, ethnicity, urban/rural employment, sector of employment and region) are towards decreasing earnings.

[Table 2 about here]

Women benefited less from the accumulation of education endowments because of a slower growth in higher qualifications over the period examined compared to men; on the other hand, changes in female occupational composition contributed positively to earnings growth contrary to the case of men. The most important determinant of wage growth over the period examined is the labor market reward by (potential) experience group, followed by residual changes. Wage structure changes related to occupation and industry is also important, with occupational wage structure changes benefiting women at lower parts of the wage distribution.

To understand the effect of experience on wage growth in Vietnam, one needs to examine tables A2 and A3; over time, the pattern of returns to experience group totally changed at all points in the wage distribution. While in 1998 older, more experienced workers enjoyed a substantial wage premium as compared to the youngest/least experienced group, by 2008 the opposite is the case. In 1998, for the median female worker, the return increases with age/experience, peaking for the most experienced group. In 2008, on the other hand, the highest return is for the most inexperienced group (0-5 years) and the lowest for the most experienced (more than 40 years). The pattern varies slightly for other points in the distribution; however the overall picture doesn't change. Similar changes are observed for men, with increasing returns for younger workers; however, the change in pattern is less clear-cut.

In assessing the effect of wage growth on wage inequality over time in Vietnam, the conclusion depends on what time period is examined. Presented evidence of wage growth over the entire wage distribution from 1998 to 2008 suggests that wage inequality increased slightly and more so for women. However, results for the same exercise but over the 1998-

2006 period showed that wage inequality decreased drastically for both men and women. Considering the evidence on changes in summary measures of inequality (Table 1), one can conclude that wage inequality had been continuously decreasing from 1992 to 2006, but increased sharply in subsequent years.

From the perspective of policy, policy makers are aware that the Vietnamese reforms of the 1990s have the potential of increasing wage inequality, especially through changes in the return to skill. Developments in wage inequality over the entire period since the early 1990s until 2008 suggest that interventions have been successful in ensuring that the benefits of growth on wages are spread across all parts of the wage distribution. However, developments over the 2006-2008 period (for example, increase in the Gini by 5.4 percentage point or 15.5 % and in the Theil index by 9.7 percentage points or 42 %), may raise an alarm and prompt further intervention, including a sharper revision of the nominal minimum wage in Vietnam.

5. Conclusion

The Vietnam "renovation" reforms, initiated in 1986 and implemented during the 1990s aimed at establishing a market-based economy. The full impact of the reforms, especially in the labor market, was felt only in recent years. As a result, the role of state-owned enterprises was lessened, market forces were increasingly driving wages in both the private and public sectors and rewards were increasingly based on education level, job responsibility and performance.

In this paper we use recent advances in methodology and present evidence on the developments in wage growth and inequality in Vietnam from 1998 to 2008, as well as the contribution of individual covariates. Wage growth was strong over the 10-year period examined, with real earnings doubling for men and more than doubling for women. For men, growth in productive characteristics (composition effect) was a significant contributor to

wage growth, especially at higher points of the earnings distribution. For women, on the other hand, changes in the wage structure shaped wage growth.

The composition component is dominated by the growth in education qualifications and to a lesser extent changes in occupational composition. Women benefited less from the accumulation of education endowments compared to men, because of a slower growth in higher qualifications over the period examined. Besides residual changes, the most important component influencing wage growth through the wage structure effect for both men and women is associated with experience. This is the result of drastic over-time changes in the patter of returns to experience, especially for women; by 2008, younger workers enjoy the highest returns to labor market experience, reversing the opposite earlier pattern.

Finally, assessing changes in wage inequality hinges on the length of period examined. Over the whole 10-year period, wage inequality slightly increased; however, background analysis as well as the developments in summary inequality indices shows that wage inequality was decreasing continuously until 2006, and increased thereafter. The evidence presented is at least suggestive of a relationship between the real minimum wage and wage inequality in Vietnam's labor market.

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Table 1: Change in Various Inequality Measures over Time

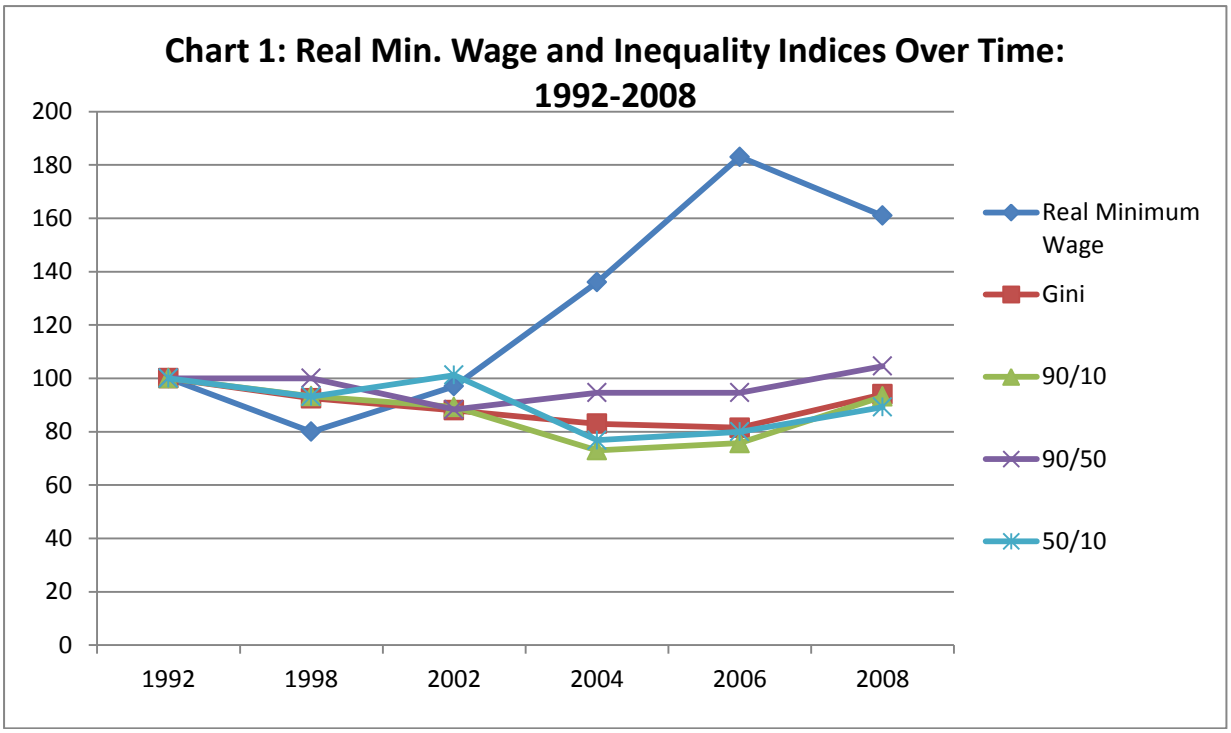
Inequality measure	1992	1998	2002	2006	2008	% change 1998-06	% change 1998-08	% change 2006-08
Relative Mean Deviation	0.303	0.282	0.263	0.249	0.288	-11.7	2.1	15.7
Coefficient of Variation	1.42	0.981	0.964	0.903	1.172	-8.0	19.5	29.8
Standard Deviation of logs	0.756	0.715	0.709	0.620	0.716	-13.3	0.1	15.5
Gini Coefficient	0.428	0.396	0.377	0.349	0.403	-11.9	1.8	15.5
Theil Entropy Measure	0.396	0.298	0.274	0.231	0.328	-22.5	10.1	42.0
Percentile Ratios								
p90/p10	6.00	5.60	5.36	4.54	5.59	-18.9	-0.2	23.1
p90/p50	2.40	2.40	2.12	2.27	2.51	-5.4	4.6	10.6
p75/p25	2.61	2.34	2.27	2.14	2.49	-8.5	6.4	16.4
p50/p10	2.50	2.33	2.53	2.00	2.23	-14.2	-4.3	11.5

Source: author's calculations.

Table 2: Detailed decomposition at percentiles, 1998-2008

Percentile/ Characteristic	Males			Females		
	Composition	**Wage Structure**	**Total**	**Composition**	**Wage Structure**	**Total**
P10	**0.078**	**0.602**	**0.681**	**0.114**	**0.718**	**0.832**
Education	0.128	0.040	0.168	0.094	-0.032	0.062
Experience group	-0.025	0.371	0.346	-0.002	0.485	0.483
Occupation	0.047	-0.059	-0.012	0.055	0.023	0.078
Broad Industry	-0.026	0.004	-0.022	-0.014	0.112	0.098
Other	-0.005	-0.072	-0.077	-0.008	-0.046	-0.054
Specification error	-0.040	-	-0.040	-0.012	-	-0.012
Residual (intercepts)	-	0.318	0.318	-	0.175	0.175
P20	**0.102**	**0.589**	**0.691**	**0.114**	**0.724**	**0.838**
Education	0.183	0.015	0.198	0.077	-0.030	0.047
Experience group	-0.038	0.356	0.318	-0.004	0.216	0.212
Occupation	0.071	-0.108	-0.037	0.060	0.052	0.112
Broad Industry	-0.019	0.029	0.010	-0.011	0.071	0.060
Other	0.008	-0.171	-0.163	0.008	-0.059	-0.051
Specification error	-0.103	-	-0.103	-0.015	-	-0.015
Residual (intercepts)	-	0.467	0.467	-	0.486	0.486
P30	**0.236**	**0.406**	**0.642**	**0.136**	**0.671**	**0.807**
Education	0.178	-0.011	0.167	0.068	-0.013	0.055
Experience group	-0.029	0.263	0.234	-0.004	0.518	0.514
Occupation	0.080	-0.091	-0.011	0.084	0.044	0.128
Broad Industry	-0.015	0.032	0.015	-0.013	0.074	0.061
Other	0.041	-0.169	-0.128	0.038	-0.144	-0.182
Specification error	-0.020	-	-0.020	-0.036	-	-0.036
Residual (intercepts)	-	0.382	0.382	-	0.194	0.194
P40	**0.242**	**0.414**	**0.656**	**0.149**	**0.657**	**0.806**
Education	0.137	-0.012	0.125	0.062	-0.016	0.046
Experience group	-0.019	0.184	0.165	0.010	0.502	0.512
Occupation	0.102	-0.091	0.011	0.073	0.051	0.124
Broad Industry	-0.017	0.020	0.003	-0.009	0.051	0.042
Other	0.049	-0.170	-0.121	0.018	-0.135	-0.117
Specification error	-0.010	-	-0.010	-0.024	-	-0.024
Residual (intercepts)	-	0.483	0.483	-	0.206	0.206
P50	**0.269**	**0.407**	**0.676**	**0.157**	**0.706**	**0.863**
Education	0.131	-0.028	0.103	0.082	-0.031	0.051
Experience group	-0.036	0.042	0.006	0.018	0.389	0.407
Occupation	0.156	-0.080	0.076	0.102	0.029	0.131
Broad Industry	-0.014	0.012	-0.002	-0.009	0.031	0.022
Other	0.061	-0.143	-0.082	0.053	-0.088	-0.041
Specification error	-0.028	-	-0.028	-0.088	-	-0.088
Residual (intercepts)	-	0.605	0.605	-	0.380	0.380
P60	**0.302**	**0.401**	**0.703**	**0.198**	**0.718**	**0.916**
Education	0.118	-0.022	0.096	0.070	-0.026	0.044
Experience group	-0.004	0.178	0.174	0.017	0.218	0.235
Occupation	0.125	-0.080	0.045	0.090	0.030	0.120
Broad Industry	-0.010	0.006	-0.004	-0.006	0.033	0.027
Other	0.082	-0.144	-0.062	0.039	-0.100	-0.061

Specification error	-0.008	-	-0.008	-0.013	-	-0.013
Residual (intercepts)	-	0.463	0.463	-	0.563	0.563
P70	**0.336**	**0.383**	**0.719**	**0.162**	**0.758**	**0.920**
Education	0.108	-0.006	0.102	0.071	-0.008	0.063
Experience group	0.020	0.140	0.160	0.010	0.430	0.440
Occupation	0.106	-0.062	0.044	0.087	-0.021	0.066
Broad Industry	-0.006	0.014	0.008	-0.004	0.031	0.027
Other	0.083	-0.074	0.009	0.022	-0.154	-0.132
Specification error	0.024	-	0.024	-0.023	-	-0.023
Residual (intercepts)	-	0.371	0.371	-	0.480	0.480
P80	**0.360**	**0.348**	**0.708**	**0.185**	**0.787**	**0.972**
Education	0.136	-0.015	0.121	0.072	-0.015	0.057
Experience group	0.013	0.133	0.146	0.020	0.588	0.608
Occupation	0.103	-0.092	0.011	0.120	-0.090	0.030
Broad Industry	-0.001	0.008	0.007	-0.008	0.018	0.010
Other	0.066	-0.078	-0.012	0.031	-0.056	-0.025
Specification error	0.042	-	0.042	-0.049	-	-0.049
Residual (intercepts)	-	0.393	0.393	-	0.343	0.343
P90	**0.409**	**0.308**	**0.717**	**0.103**	**0.829**	**0.932**
Education	0.046	0.060	0.106	0.019	0.009	0.028
Experience group	0.045	0.376	0.421	-0.008	0.474	0.466
Occupation	0.126	-0.101	0.025	0.115	-0.165	0.050
Broad Industry	-0.000	-0.008	-0.008	-0.013	0.009	-0.004
Other	0.055	-0.092	-0.037	0.043	-0.076	-0.033
Specification error	0.138	-	0.138	-0.053	-	-0.053
Residual (intercepts)	-	0.074	0.074	-	0.577	0.577



Source: author's calculations.

Appendix

Table A1: Summary Statistics by Year: Male Wage Employees 15-65 Years (%)

Characteristic	1998		2008	
	Male	**Female**	**Male**	**Female**
Hourly wage, 1998 prices (Viet Dong)	3,619	2,970	7,307	7,207
0-5 years of experience	5.85	8.93	22.79	20.15
6-10 years of experience	17.08	22.51	16.52	14.62
11-15 years of experience	19.48	17.04	8.40	8.79
16-20 years of experience	16.11	13.60	8.20	8.55
21-25 years of experience	15.84	14.67	9.11	8.01
26-30 years of experience	10.93	9.18	9.36	9.74
31-35 years of experience	7.02	6.57	9.88	10.19
36-40 years of experience	4.26	4.00	8.03	8.89
>40 years of experience	3.42	3.50	7.71	11.05
Married	63.01	49.18	63.52	64.63
Not Married	36.99	50.82	36.48	35.37
Majority	93.50	94.81	93.59	94.47
Ethnic Minority	6.50	5.19	6.41	5.53
Urban	40.53	48.85	49.28	51.30
Rural	59.47	51.15	50.72	48.70
Public sector	36.28	44.58	61.12	61.05
Private Sector	63.72	55.42	38.88	38.95
< Primary education	21.75	23.02	4.09	7.97
Completed Primary	26.05	23.23	11.36	17.08
Lower Secondary	24.78	19.72	22.44	21.78
Completed Secondary	12.49	15.18	18.93	17.33
Secondary Vocational/Tech	7.45	9.90	22.84	16.95
Completed Tertiary	7.49	8.94	20.34	18.89
Manager/Official	7.07	2.00	7.51	7.22
Professional/Assoc. Professional	15.99	31.52	45.65	45.06
Service/Sales	6.03	8.92	5.18	6.43
Skilled labor	38.02	24.09	27.00	26.32
Unskilled labor	32.89	33.48	14.65	14.96
Primary sector	20.56	18.44	18.37	19.64
Industry	41.19	36.01	32.87	31.08
Trade/Services	38.25	45.54	48.75	49.28
Red River Delta	22.80	16.88	28.74	27.57
North	17.54	17.44	19.62	19.05
Central	12.28	10.64	12.64	11.29
South-East	23.97	30.88	25.48	29.21
Mekong River Delta	23.41	24.16	13.52	12.88
N	1,852	1,207	1,547	1,582

Note: Excluded groups in RIF-regressions.are in bold.

Table A2: Transformed coefficients from RIF-Regressions on the Log of hourly Wage - Males

	1998			2008		
Explanatory Variables	**Q10**	**Q50**	**Q90**	**Q10**	**Q50**	**Q90**
0-5 years of experience	-0.110	-0.267	-0.627	0.411	-0.083	0.206
	(0.4)	(2.1)	(2.7)	(1.7)	(0.5)	(1.0)
6-10 years of experience	0.019	-0.121	-0.498	0.345	-0.202	-0.148
	(0.1)	(1.1)	(2.4)	(1.6)	(1.4)	(0.8)
11-15 years of experience	0.047	-0.057	-0.429	0.377	0.036	-0.022
	(0.2)	(0.6)	(2.4)	(1.9)	(0.3)	(0.1)
16-20 years of experience	0.199	0.002	-0.313	0.295	0.069	-0.172
	(1.1)	(0.0)	(2.3)	(2.0)	(0.6)	(1.2)
21-25 years of experience	0.113	0.010	-0.152	0.181	0.101	-0.029
	(1.1)	(0.2)	(1.6)	(1.8)	(1.3)	(0.2)
26-30 years of experience	0.045	0.062	0.124	-0.016	0.143	0.212
	(0.5)	(1.4)	(1.2)	(0.2)	(2.2)	(1.7)
31-35 years of experience	0.020	0.157	0.618	-0.294	-0.003	-0.029
	(0.1)	(2.2)	(3.7)	(1.8)	(0.0)	(0.2)
36-40 years of experience	0.041	0.217	0.421	-0.448	-0.063	-0.112
	(0.1)	(1.7)	(1.8)	(1.9)	(0.4)	(0.6)
> 40 years of experience	-0.374	-0.002	0.856	-0.849	0.002	0.094
	(0.7)	(0.0)	(1.8)	(2.0)	(0.0)	(0.3)
Experience squared	0.0000	-0.0001	-0.0005	0.0006	-0.0000	-0.0001
	(0.1)	(0.5)	(2.0)	(1.9)	(0.2)	(0.2)
Married	0.029	0.018	0.054	0.054	-0.041	-0.035
	(0.8)	(0.8)	(1.3)	(1.3)	(1.1)	(0.6)
Not Married	-0.029	-0.018	-0.054	-0.054	0.041	0.035
	(0.08)	(0.8)	(1.3)	(1.3)	(1.1)	(0.6)
Majority	0.101	0.045	0.078	0.050	-0.003	0.090
	(1.4)	(1.4)	(1.5)	(0.6)	(0.1)	(1.5)
Ethnic Minority	-0.101	-0.045	-0.078	-0.050	0.003	-0.090
	(1.4)	(1.4)	(1.5)	(0.6)	(0.1)	(1.5)
Urban	0.075	0.037	0.049	0.094	0.136	0.083
	(2.3)	(2.0)	(1.5)	(3.0)	(5.5)	(2.1)
Rural	-0.075	-0.037	-0.049	-0.094	-0.136	-0.083
	(2.3)	(2.0)	(1.5)	(3.0)	(5.5)	(2.1)
Public sector	-0.198	-0.136	-0.239	-0.030	0.074	0.048
	(4.6)	(6.2)	(5.9)	(0.8)	(2.5)	(0.9)
Private Sector	0.198	0.136	0.239	0.030	-0.074	-0.048
	(4.6)	(6.2)	(5.9)	(0.8)	(2.5)	(0.9)
< Primary	-0.361	-0.085	-0.206	-0.161	-0.241	0.078
	(3.9)	(2.0)	(2.1)	(0.8)	(2.5)	(0.6)
Completed Primary	-0.285	-0.142	-0.257	-0.172	-0.142	-0.137
	(4.3)	(4.2)	(3.8)	(1.7)	(2.2)	(1.8)
Lower Secondary	-0.203	-0.079	-0.153	-0.230	-0.135	-0.128
	(2.9)	(2.4)	(2.7)	(2.7)	(2.9)	(2.1)
Completed Secondary	0.247	-0.003	-0.040	0.138	0.080	-0.187
	(3.4)	(0.1)	(0.6)	(1.7)	(1.5)	(2.2)
Completed Vocational/Tech	0.207	0.003	0.059	0.201	0.124	0.016

	(2.2)	(0.1)	(0.6)	(2.9)	(2.5)	(0.2)
Completed Tertiary	0.397	0.306	0.597	0.224	0.314	0.358
	(3.4)	(5.4)	(4.5)	(2.8)	(5.8)	(2.9)
Manager/Official	-0.279	-0.109	-0.040	-0.069	-0.008	0.069
	(2.0)	(2.1)	(0.4)	(0.5)	(0.1)	(0.6)
Professional	0.013	-0.003	0.037	0.202	0.410	0.300
	(0.1)	(0.1)	(0.5)	(2.7)	(8.9)	(4.0)
Service/Sales	-0.190	-0.111	-0.195	-0.281	-0.204	-0.135
	(1.4)	(2.4)	(2.5)	(1.8)	(2.6)	(1.8)
Skilled labor	0.122	0.130	0.129	0.175	-0.054	-0.107
	(1.6)	(3.5)	(1.7)	(2.6)	(1.0)	(1.3)
Unskilled labor	0.334	0.092	0.069	-0.026	-0.144	-0.128
	(3.9)	(2.4)	(1.0)	(0.3)	(2.7)	(2.2)
Primary sector	-0.095	0.059	0.056	-0.110	0.000	0.097
	(1.4)	(1.9)	(0.8)	(1.7)	(0.0)	(1.6)
Industry	0.170	0.018	-0.022	0.214	0.076	-0.063
	(3.4)	(0.6)	(0.4)	(4.2)	(2.2)	(1.1)
Trade/Services	-0.075	-0.077	-0.034	-0.104	-0.075	-0.033
	(1.4)	(2.9)	(0.6)	(1.8)	(1.8)	(0.4)
Red River Delta	-0.360	-0.220	-0.234	-0.122	-0.066	0.030
	(5.0)	(6.9)	(4.8)	(1.9)	(1.7)	(0.4)
North	-0.134	-0.226	-0.143	-0.065	-0.056	-0.144
	(1.9)	(6.3)	(2.4)	(0.9)	(1.1)	(2.1)
Central	0.145	0.022	-0.132	-0.037	0.005	-0.199
	(2.8)	(0.6)	(2.3)	(0.5)	(0.1)	(3.0)
South-East	0.196	0.266	0.376	0.210	0.144	0.435
	(4.8)	(10.0)	(5.7)	(4.5)	(3.2)	(4.8)
Mekong River Delta	0.151	0.159	0.133	0.014	-0.037	-0.121
	(2.5)	(4.9)	(2.0)	(0.2)	(0.7)	(1.7)
Constant	-0.052	0.994	2.19	0.231	1.52	2.41
	(0.2)	(8.4)	(9.9)	(0.9)	(9.8)	(12.4)
N		**1,852**			**1,547**	

Note: Excluded group in RIF-regressions in bold; t-values in parentheses.

Table A3: Transformed coefficients from RIF-Regressions on the Log of hourly Wage - Females

	1998			2008		
Explanatory Variables	**Q10**	**Q50**	**Q90**	**Q10**	**Q50**	**Q90**
0-5 years of experience	-0.561	-0.379	-0.821	0.129	0.193	-0.100
	(1.5)	(2.5)	(2.8)	(0.7)	(1.4)	(0.7)
6-10 years of experience	-0.362	-0.349	-0.632	0.078	0.031	-0.314
	(1.1)	(2.6)	(2.4)	(0.5)	(0.2)	(2.4)
11-15 years of experience	-0.483	-0.287	0.635	0.114	-0.066	0.003
	(1.6)	(2.4)	(2.8)	(0.8)	(0.6)	(0.0)
16-20 years of experience	-0.094	-0.153	-0.413	0.057	0.148	-0.201
	(0.4)	(1.7)	(2.1)	(0.4)	(1.4)	(1.8)
21-25 years of experience	0.148	-0.085	-0.187	0.030	0.132	0.236
	(1.2)	(1.3)	(1.4)	(0.3)	(1.5)	(1.7)
26-30 years of experience	0.053	-0.009	-0.015	0.129	0.043	0.105
	(0.4)	(0.2)	(0.1)	(1.7)	(0.6)	(0.8)
31-35 years of experience	0.428	0.273	0.300	-0.189	-0.082	0.006
	(2.1)	(2.9)	(1.5)	(1.5)	(0.9)	(0.1)
36-40 years of experience	0.390	0.427	1.002	-0.084	-0.130	0.207
	(1.0)	(2.9)	(3.0)	(0.5)	(0.9)	(1.2)
>40 years of experience	0.481	0.564	1.401	-0.264	-0.270	0.064
	(0.6)	(1.8)	(2.2)	(0.8)	(1.1)	(0.3)
Experience squared	-0.0005	-0.0003	-0.0007	0.0002	0.0002	-0.0002
	(1.0)	(1.5)	(2.0)	(0.7)	(1.0)	(1.0)
Married	0.060	0.033	-0.035	0.032	0.100	0.088
	(1.4)	(1.4)	(0.7)	(0.9)	(3.3)	(1.9)
Not Married	-0.060	-0.033	0.035	-0.032	-0.100	-0.088
	(1.4)	(1.4)	(0.7)	(0.9)	(3.3)	(1.9)
Majority	-0.026	-0.011	0.038	-0.068	-0.086	0.001
	(0.3)	(0.2)	(0.5)	(0.9)	(1.6)	(0.0)
Ethnic Minority	0.026	0.011	-0.038	0.068	0.086	-0.001
	(0.3)	(0.2)	(0.5)	(0.9)	(1.6)	(0.0)
Urban	0.029	0.002	0.093	0.081	0.147	0.143
	(0.6)	(0.1)	(2.2)	(2.7)	(5.7)	(4.2)
Rural	-0.029	-0.002	-0.093	-0.081	-0.147	-0.143
	(0.6)	(0.1)	(2.2)	(2.7)	(5.7)	(4.2)
Public sector	0.011	-0.070	-0.149	0.003	0.104	0.030
	(0.2)	(2.9)	(2.6)	(0.1)	(3.4)	(0.6)
Private Sector	-0.011	0.070	0.149	-0.003	-0.104	-0.030
	(0.2)	(2.9)	(2.6)	(0.1)	(3.4)	(0.6)
< primary	-0.016	-0.151	-0.016	-0.304	-0.208	-0.013
	(0.1)	(2.5)	(0.1)	(2.2)	(2.1)	(0.1)
Completed Primary	-0.127	-0.040	-0.163	-0.199	-0.181	-0.015
	(1.4)	(0.9)	(1.9)	(2.6)	(3.3)	(0.2)
Lower Secondary	-0.125	-0.033	-0.039	0.000	-0.018	-0.089
	(1.4)	(0.8)	(0.5)	(0.0)	(0.4)	(1.4)
Completed Secondary	0.041	0.063	0.071	0.104	-0.033	-0.036
	(0.4)	(1.3)	(0.7)	(1.5)	(0.5)	(0.5)
Secondary Vocational/Tech	0.023	-0.048	-0.048	0.200	0.121	-0.117
	(0.2)	(0.8)	(0.4)	(2.9)	(2.1)	(1.4)
Completed Tertiary	0.204	0.208	0.196	0.198	0.320	0.270

	(1.7)	(3.1)	(1.3)	(3.1)	(5.4)	(2.2)
Manager/Official	-0.163	0.014	-0.153	-0.112	0.023	0.368
	(0.5)	(0.1)	(0.9)	(0.9)	(0.3)	(3.1)
Professional	0.341	0.233	0.573	0.252	0.512	0.375
	(2.8)	(4.5)	(5.1)	(4.4)	(10.2)	(4.9)
Service/Sales	0.095	-0.003	-0.219	-0.159	-0.112	-0.059
	(0.5)	(0.0)	(2.0)	(1.3)	(1.4)	(0.5)
Skilled labor	-0.107	-0.135	-0.075	0.144	-0.206	-0.350
	(0.9)	(2.3)	(0.6)	(2.1)	(3.6)	(4.5)
Unskilled labor	-0.166	-0.109	-0.126	-0.125	-0.217	-0.335
	(1.1)	(2.0)	(1.3)	(1.4)	(3.5)	(5.1)
Primary sector	0.303	0.139	0.167	-0.118	0.005	0.064
	(2.9)	(3.1)	(2.1)	(2.0)	(0.1)	(1.4)
Industry	0.173	0.050	-0.067	0.198	0.102	0.126
	(2.6)	(1.2)	(0.8)	(4.4)	(2.7)	(2.0)
Trade/Services	-0.475	-0.188	-0.099	-0.080	-0.107	-0.191
	(4.4)	(5.1)	(1.2)	(1.5)	(2.3)	(2.4)
Red River Delta	-0.271	-0.106	0.014	-0.196	-0.110	0.002
	(2.4)	(2.3)	(0.2)	(3.2)	(2.5)	(0.0)
North	-0.264	-0.231	-0.211	-0.215	-0.205	-0.148
	(2.5)	(5.5)	(3.1)	(3.2)	(4.3)	(2.2)
Central	0.147	-0.002	-0.149	0.147	0.040	-0.031
	(1.7)	(0.0)	(2.4)	(2.4)	(0.8)	(0.4)
South-East	0.316	0.203	0.230	0.318	0.267	0.221
	(5.2)	(5.8)	(3.1)	(7.2)	(5.7)	(2.9)
Mekong River Delta	0.072	0.136	0.116	-0.054	0.008	-0.044
	(0.8)	(3.2)	(1.4)	(0.7)	(0.2)	(0.6)
Constant	0.510	1.11	2.143	0.647	1.40	2.641
	(1.3)	(7.6)	(7.3)	(3.3)	(9.7)	(19.4)
N		**1,207**			**1,582**	

Note: Excluded group in RIF-regressions in bold; t-values in parentheses.

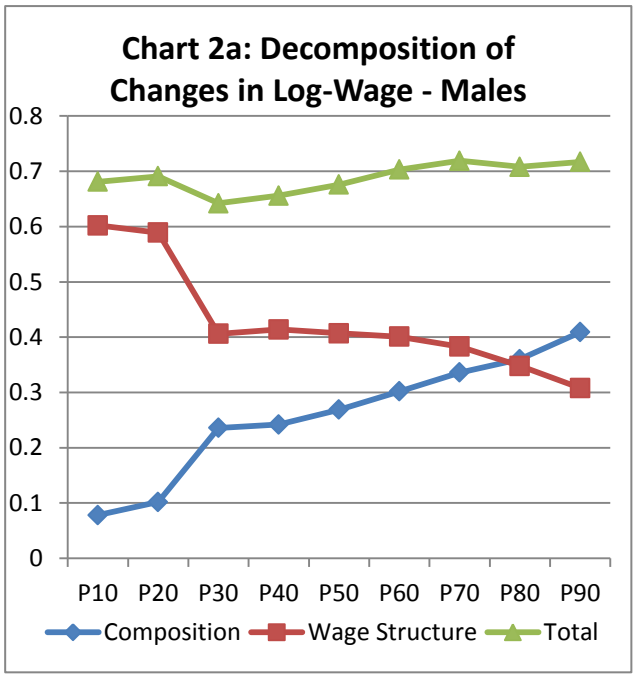


Chart 2a: Decomposition of Changes in Log-Wage - Males
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
P10 P20 P30 P40 P50 P60 P70 P80 P90
Composition
Wage Structure
Total

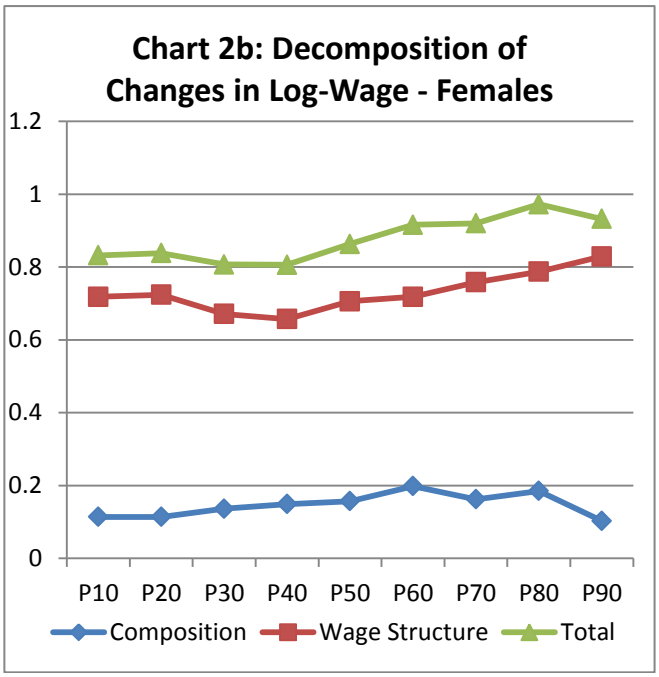


Chart 2b: Decomposition of Changes in Log-Wage - Females
1.2
1
0.8
0.6
0.4
0.2
0
P10 P20 P30 P40 P50 P60 P70 P80 P90
Composition
Wage Structure
Total

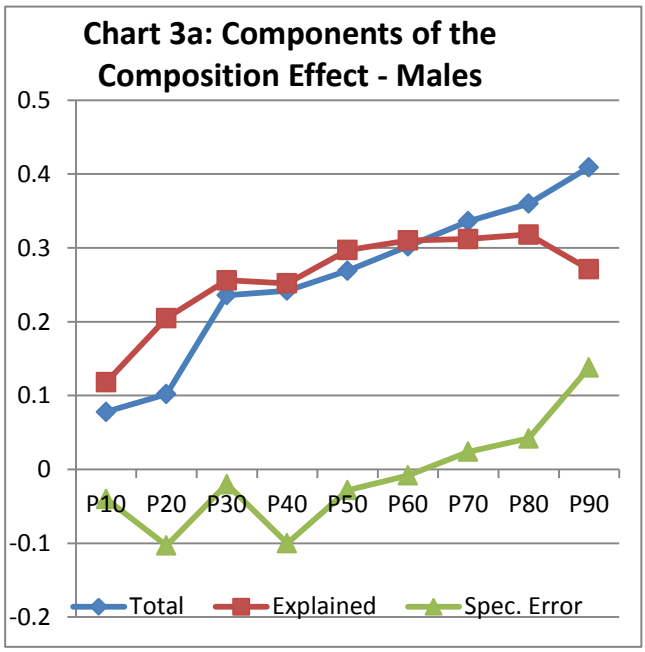


Chart 3a: Components of the Composition Effect - Males
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
P10 P20 P30 P40 P50 P60 P70 P80 P90
Total
Explained
Spec. Error

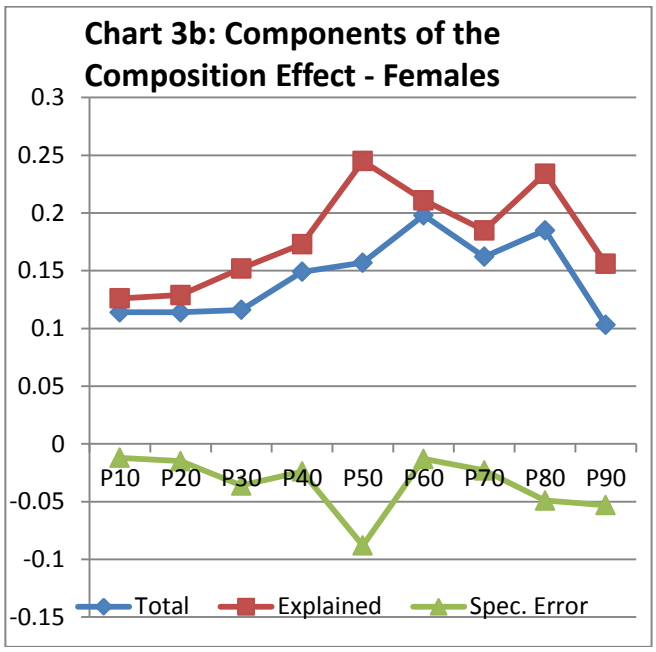


Chart 3b: Components of the Composition Effect - Females
0.3
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
P10 P20 P30 P40 P50 P60 P70 P80 P90
Total
Explained
Spec. Error

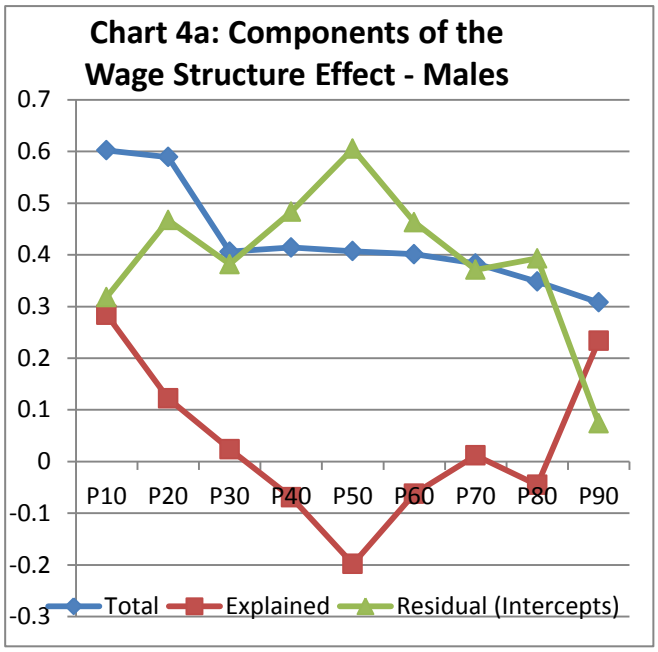


Chart 4a: Components of the Wage Structure Effect - Males
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
P10 P20 P30 P40 P50 P60 P70 P80 P90
Total
Explained
Residual (Intercepts)

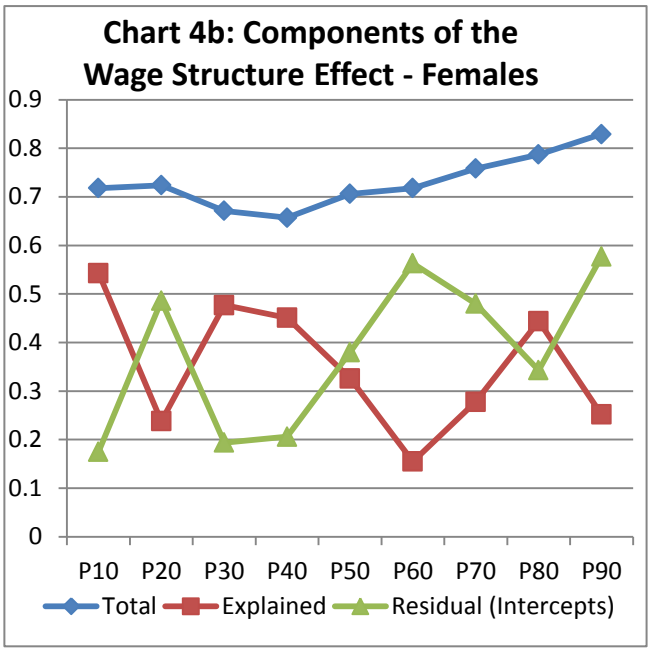


Chart 4b: Components of the Wage Structure Effect - Females
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
P10 P20 P30 P40 P50 P60 P70 P80 P90
Total
Explained
Residual (Intercepts)

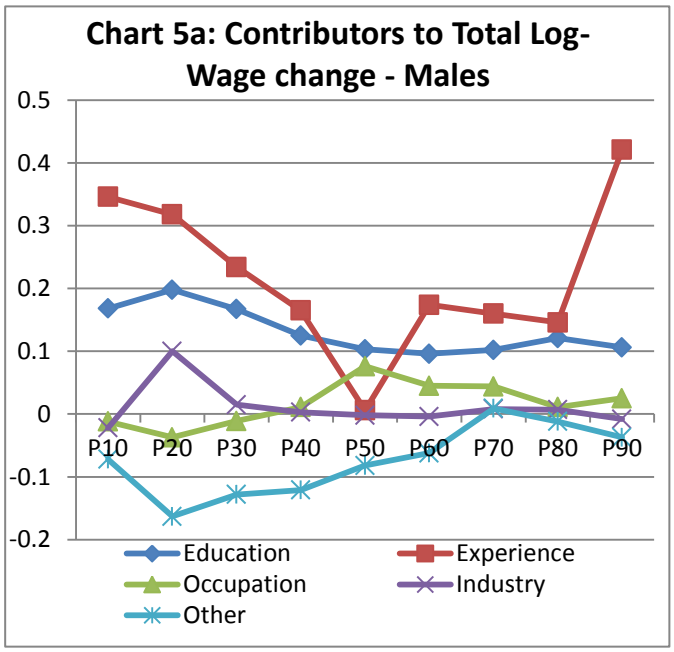


Chart 5a: Contributors to Total Log-Wage change - Males
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
P10 P20 P30 P40 P50 P60 P70 P80 P90
Education
Experience
Occupation
Industry
Other

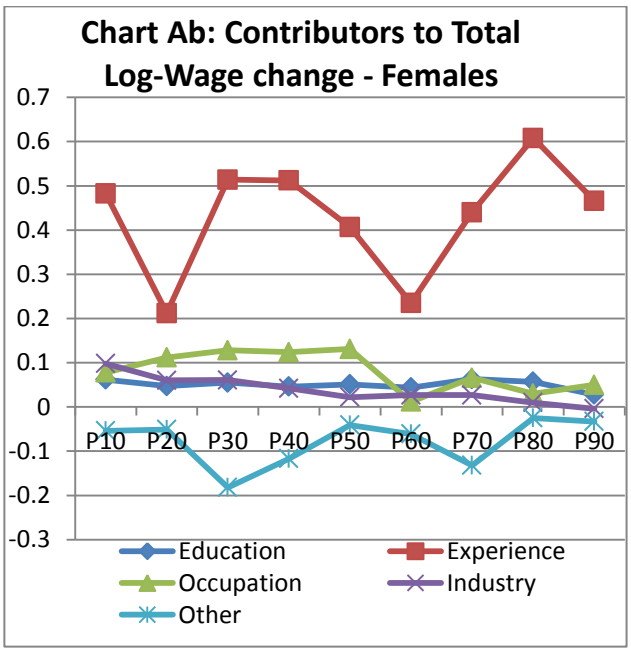


Chart Ab: Contributors to Total Log-Wage change - Females
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
P10 P20 P30 P40 P50 P60 P70 P80 P90
Education
Experience
Occupation
Industry
Other