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Decomposing the Public-Private Wage Gap for Nurses in the Philippines

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Abstract

In this study, we investigate the determinants of the public-private sector wage gap among nurses in Pampanga, Philippines. Using two estimation methods followed by a Oaxaca-Blinder decomposition of the wage differential, we study the extent to which this gap can be accounted for by differences in human and social capital endowments versus unexplained differences. Education, work experience, and active participation in the professional nursing association were found to have a significant effect on wages. Results of the Oaxaca decomposition highlight the bifurcated nature of the nursing labor market. Nearly 42% of the public-private wage differential was "unexplained" by differences in worker characteristics, suggesting that a significant portion of the gap may be attributed to differences in wage-setting regimes, market structures, and worker incentives between the public and private sectors.

Keywords: Nursing, Wage Gap, Public-private Wage

Introduction

The Philippines is the world's largest exporter of nurses (Walker, 2010; Lorenzo, Galvez-Tan, Icamina, & Javier, 2007, yet the country's health delivery system suffers from a lack of nurses serving especially the rural areas (NSO, 2005; as cited in Lorenzo et al., 2007. This may be explained by the oversupply of nurses that leads to relatively low wages in a situation that serves both domestic and global labor markets. The nursing labor market in the Philippines is bifurcated, characterized by a large wage gap between the public and private sectors. Data we collected in a survey sponsored by the Philippine Nurses Association (PNA of over 340 nurses in Pampanga, Philippines showed that nurses employed in the public sector earned more than those employed in the private sector by at least a third of the average monthly wage. In a singular market, much of the wage differential between individuals should be a result of differences in their endowments or levels of productivity (Mincer, 1974. When a substantial portion of the differential cannot be explained by differences in worker characteristics, then dual markets may exist. Such duality is characterized by a divide between advantaged and disadvantaged groups.

In this study, we investigated the segmentation of the nursing labor market between the public sector and the private sector in Pampanga, Philippines. The specific objectives of the study were as follows: (1 to determine the existence of a wage gap between the public and private sectors of the nursing labor market, and (2 to analyze the extent to which the public-private sector wage gap can be accounted for by differences in worker characteristics and endowments versus unexplained differences.

This is the first time that a bifurcated nursing labor market system is analyzed for the Philippines, the largest source of foreign nurses globally. The duality is used to explain why domestic policies should be adjusted to reflect a chaotic world that may not be completely receptive to foreign nurses; unemployed nursing professionals aggravate the mismatched skills problem of the Philippine economy.

Over the past 12 years, the Philippines had seen an upsurge in the demand for nursing education, which was met by enterprising nursing

education programs that expanded because of liberal regulation policies (Barawid, 2011). The Bachelor of Science in Nursing (BSN) program rose steadily to the top of the most in-demand college courses in the Philippines starting from the beginning of the 2000s, reaching a peak in enrollment rates in 2005 (Commission on Higher Education, 2007). This was however not because of strong local demand but rather because of an increase in demand for nurses in rich countries abroad, particularly Saudi Arabia and the United Kingdom in the early 2000s. Hundreds of thousands of young Filipinos embraced the prospect of working overseas, seeing nursing as their ticket to a better life for themselves and their families. But as immigration restrictions increased (Aiken, Buchan, Sochalski, Nichols, & Powell, 2004), the international demand for Filipino nurses plateaued and eventually weakened; after the 2007-2008 global crisis, foreign markets failed to absorb the growing supply of nursing graduates in the Philippines. By 2012, between 300,000 - 400,000 nurses could not find work (Dioquino, 2012). As a result of this oversupply, nurses, particularly new nursing graduates, found it very difficult to find job opportunities overseas or at home.

At home, working for the public sector in government hospitals or in community health clinics was the best option given the relatively better wages and job security provided by the government as mandated by law. Private sector employers enjoying the oversupply of nursing applicants generally paid lower wages and provided only contractual, temporary employment. Nevertheless, many young nurses were willing to work in the private sector as a "stepping stone" for better employment, particularly abroad. Until recently, some private hospitals actually even charged fees to new nurses interested in "apprenticeships" in their institutions. There was also an increase in the number of volunteer nurses who willingly work for no pay to gain job experience valuable to their future applications for foreign employment (Mateo, 2011; Howard, 2010). The result was a dualistic market divided into two distinct sectors, governed by different wage-setting regimes: a public sector that paid relatively higher wages and provided job security as mandated by law that standardized salaries of government workers, and a market-driven private sector that enjoyed the current glut of nurses, eager to gain work experience to pad their resumes for future overseas employment.

In order to better understand the drivers of the wage differential between the public and private sectors, we examine the factors of wage determination in the nursing labor market and decompose the wage gap into explained and unexplained components.

Review of Relevant Literature

There is a consensus among labor economists that schooling, age, gender, job experience, and professional background are meaningful factors that can explain part of the existing wage differentials among individuals (Rosen, 1972; Mincer, 1974; Spence & Stiglitz, 1975; Heckman and Sedlacek, 1985; Shultz, 1998. In their seminal work, Mincer (1974 and Becker (1975 provide the basic human capital endowments theory of wage determination, which postulates that heterogeneity of human capital (i.e. differences in the abilities of individual workers explains pay differentials among workers. Higher education and more work experience lead to better skills. Consequently, these enhanced skills lead to greater productivity and therefore higher wages (Willis, 1986. Investment in human capital is of course costly, both in terms of actual expenses and of forgone income during study or apprenticeship. Since greater human capital increases productivity, it is in the interest of employers to reward workers who invested in human capital with higher wages.

On top of human capital, social capital, in the form of personal or professional networks also contribute to an individual's earning capacity. The value of social capital has been highlighted by studies particularly among migrant workers that showed how those who had friend- or family networks generally earned more than those without them (Xue, 2008; Aguilera & Massey, 2003. Social capital tends to act as bridge between human capital and career development, facilitating job search and promotion (Lin & Huang, 2005.

These human and social capital theories of wage determination justify wage differentials on the basis of worker characteristics, but wage disparities may also be explained on the basis of characteristics of the jobs themselves (Constant & Massey, 2005. In many situations, people working in a particular sector earn more, enjoy better working conditions, and receive

greater opportunities compared to others with similar abilities or productivity. The theory of labor market segmentation (Cain, 1976; Doeringer & Piore, 1971; Piore, 1975; Reich, Gordon & Edwards, 1973 posits that in some cases the labor market may be separated into at least two markets, labeled as primary and secondary. Jobs in the primary labor market are characterized by higher wages, better working conditions, job security, and increased mobility whereas jobs in the secondary labor market are distinguished by the opposite: lower wages, bad working conditions, low job stability, and limited mobility. In addition, the labor turnover rate is high in the secondary sector.

Segmentation has been studied in terms of gender (Appleton, Hoddinott, & Krishnan, 1999; Blau & Kahn, 1992, locals versus migrants (Constant and Massey, 2005, formal versus informal sectors (Pages and Stampini, 2007; Pratap & Quintin, 2006; Hart, 1971, and private versus public sectors (Aslam & Kingdon, 2009; Adamchik & Bedi, 2000; Gindling, 1991.

In the case of the Philippine nursing labor market, we observe that an advantaged primary sector and a disadvantaged secondary sector exist, resulting in a sizable wage gap. Public sector nurses enjoy relatively higher wages, greater job security and tenure, increased chances of promotion, and better working conditions compared to their private sector counterparts who face low wages, contractual positions, limited opportunities for promotion, and poor working conditions leading to high turnover.

Methods

Analytical Framework

The standard human capital earnings function developed by Mincer (1974 stipulates that education and experience are the key determinants of a worker's wage. Adopting this framework, we first considered a simple dummy variable approach to model the monthly wage of nurses as a function of sectoral employment (whether public or private sector and individual characteristics including level of education and work experience. However, we recognized the possibility of sectoral employment being endogenously determined. To check this issue, we adopted a two-step estimation process

based on the Heckman-Lee approach (Heckman, 1979) that introduces a selection-bias correcting term in the estimation of the wage. As a final step, we then performed a Oaxaca-Blinder decomposition (Blinder, 1973; Oaxaca, 1973; Neumark, 1988) to identify the sources of the public-private sector wage gap.

We begin with a simple dummy variable approach, consisting of an OLS regression of log earnings on the nurses' observable characteristics and a dummy variable representing employment in the public sector. The wage equation is estimated as:

$$(1) \qquad \text{Ln } Y_i = a + b_{1i}X_i + b_2\text{PUBLIC}_i + \varepsilon_i$$

where *Ln* Y_i is the average monthly wage of individual *i*, *X* is a vector of observed worker characteristics (including age, sex, education, work experience, etc.), *PUBLIC* is a dummy variable taking the value "1" if the individual is employed in the public sector and "0" if employed in the private sector, *b* represents the corresponding vector of coefficients, b_2 specifically measures the "premium", if any, paid in the public sector, *a* is a constant term and ε is the error term for individual *i*.

This simple approach faces two issues. First, it assumes that the vector of coefficients, which represent the impacts of worker characteristics on wages, is the same across the two sectors. This may be problematic when, say, a particular characteristic is seen to be more important by employers in one sector compared to employers in the other sector. For example, government health institutions may or may not reward work experience more than their private counterparts. Second, as earlier mentioned, this approach faces the problem of endogeneity and sample-selection bias. This problem stems from the possibility that employment in either private or public sector may be partly determined by unobserved variables that also affect the level of wages being estimated. For example, nurses who intend to find work abroad may be more willing to take on employment in the private sector even at lower wages just to gain the relevant work experience required for overseas employment. And if private sector employers consider this intention in setting wages, this unobserved characteristic would be relegated to the error term. Any correlation between the PUBLIC dummy variable and the error term would then violate

the basic conditions of the classical linear model and would result in biased estimates.

To address these issues, we adopt a two-step estimation procedure. First, in order to address the potential endogeneity and selection-bias, we employ the Heckman-Lee procedure (Heckman, 1979; Lee, 1983) of including a selection-bias correcting term in the wage equation. This requires the estimation of the probability of an individual being employed in the public or private sector using a binary probit model. This is needed in order to obtain an inverse Mills ratio, which is then used as a selection-bias correcting term entered as an additional regressor in the wage equation. We estimate the probability of public sector employment following the standard probit model:

$$(2) \qquad \Pr (y = 1 \mid X) = \Phi (bX)$$

where *y* is a dichotomous variable taking the value of "1" when the individual is employed in the public sector, *X* is a vector of worker characteristics (including age, sex, level of education, and participation in the nursing association), *b* is the corresponding vector of coefficients, and Φ is the cumulative distribution function of the standard normal distribution.

Following the Heckman-Lee procedure, we then use the inverse Mills ratio derived from the results of the probit model as an addition regressor in the wage equation. In order to address the issue of worker characteristics possibly having different effects on wages depending on sectoral employment, two wage equations are estimated separately, one for each sector, thereby allowing the vector of coefficients to vary between the two sectors. The two equations are estimated as:

$$(3) \qquad \text{Ln } Y_{1i} = a + b_{1i}X_{1i} + \varepsilon_{1i}$$

$$(4) \qquad \text{Ln } Y_{2i} = a + b_{2i}X_{2i} + \varepsilon_{2i}$$

where *Ln Y* is average monthly income, *a* is a constant term, *X* is a vector of observed worker characteristics and the inverse Mills ratio obtained from the probit model, *b* is the corresponding vector of coefficients, ε are the i.d.d. error terms, and the subscripts 1 and 2 denote public and private sectors respectively.

Finally, in order to determine whether a public-private wage differential exists in the nursing labor market and whether it can be explained by differences in worker characteristics and endowments, we perform a Oaxaca-Blinder decomposition on public and private sector wages. This method, developed by Blinder (1973) and Oaxaca (1973) and later extended by Cotton (1988) and Neumark (1988), decomposes the pubic-private wage differential into an "explained" portion that is attributable to differences in the explanatory variables (i.e. worker characteristics as specified in the model) and a residual "unexplained" portion. The "unexplained" portion may reflect differences in wage structures or incentive systems between the public and private sectors (Bender, 1998); it may also reflect "economic rents" enjoyed by employers or by favored groups (Aslam & Kingdon, 2008; Kleiner, 2000; Blau & Kahn, 1996).

The Oaxaca-Blinder decomposition of the wage differential can be written as:

$$(5) \qquad Y_{public} - Y_{private} = \Delta X\beta_{private} + \Delta\beta X_{public}$$

where $\Delta X = X_{public} - X_{private}$ and $\Delta\beta = \beta_{public} - \beta_{private}$, or as

Differences in X represent differences in individual endowments, while differences in the coefficients represent differences in how these endowments affect the wages individuals receive. Such differences in the effects of endowments are influenced by whatever wage regime, reward system, or market structure is currently in place.

Numerous recent studies have used this decomposition method to analyze wage differentials between public and private sectors in various settings (Christofides & Michael, 2013; De Castro, Salto, and Steiner, 2013; Aslam & Kingdon, 2008; Hietmueller, 2006; Tansel, 2005).

Data and Sampling Methodology

Data used in the study are drawn from a 2009 survey by the Philippine Nurses Association of 342 registered nurses from the province of Pampanga, Philippines. For this survey, a three-stage sampling procedure was employed. The first step involved dividing the Province of Pampanga into five geographical

clusters, each composed of two to six towns and villages that formed a contiguous area connected by local public transportation. All institutions in the Province that employed nurses were identified using a list provided by the Bureau of Health Facilities and Services (BHFS of the Department of Health (DOH and Department of Labor and Employment (DOLE. Each of the five geographical clusters was assigned a quota sample of respondents based on the ratio of nurses per institution and number of institutions in each cluster.

The second step of the sampling procedure involved purposive selection of institutions within each cluster. Institutions were chosen to satisfy the condition of heterogeneity and variety of institutions in each cluster sample - i.e. there must be at least one respondent, whenever applicable, from each of the following categories: (1 primary, secondary and tertiary hospitals (both public and private, (2 military hospitals, (3 nursing schools, (4 community health offices, and (5 infirmaries/clinics of private companies. The third and final step of the sampling procedure involved convenience sampling of respondents in each of the selected institutions. A team of field researchers were commissioned to distribute our 8-page self-administered questionnaires among nurses in the selected institutions. The response rate was 59.3%.

Results and Discussion

Table 1 describes the variables used in our analysis and Table 2 presents descriptive statistics of our sample. We used the natural log of average monthly wage in Philippine pesos (LN_WAGE as our dependent variable. Following Mincer's (1974 earnings function, years of education (EDUC_YRS and age as a proxy for work experience were included in the wage equation model. Age (AGE and its squared value (AGE2 were used as proxy terms for quadratic work experience to capture the concavity of the relationship between experience and earnings - i.e. longer work experience is often observed to be positively correlated with earnings but at a diminishing rate. The dummy variable SEX1 was included to determine the impact of gender on the level of wages.

Dummy variables were used to represent each type of employer: hospitals as the base category, community health offices/clinics (COMMUNITY, nursing schools/colleges (SCHOOL, and private company clinics

(COMPANY). Dummy variables (PNAACTIVE2, PNACTIVE3, PNAACTIVE4) were also used to represent levels of participation in the Philippine Nurses Association as a proxy for social capital endowments through professional affiliation. The base category was inactivity or non-membership in the nursing association. Respondents were asked to describe the level of their participation according to the following choices: "inactive or not a member", "somewhat active", "active", and "very active". Years of service (YEARS_SERVICE) was also included as an explanatory variable since seniority was an important consideration for promotion of rank among nurses.

In the selection-bias correcting stage (binomial probit) of our two-step estimation, marital status (MARRIED1) and number of children (NUMCHILDREN) were used as exclusion restrictions — i.e. variables that determined sectoral employment choice (public versus private) but not wages. Having children and/or being married may partly determine whether an individual is employed in the public or private sector. For example, an unmarried individual without children may choose to work for lower wages in the private sector as a stepping stone to overseas employment in the future — something which a married individual with multiple children may not consider. Alternatively, a married individual may be encouraged by the "safety net" provided by other income earners in the family to take lower paying jobs in a particular sector. Also in the binomial probit model, we used a dummy variable (POSTGRAD) to represent postgraduate nursing education (master's degree or doctorate) instead of a continuous variable for years of schooling.

Table 2 shows considerable differences between nurses employed in the public versus private sectors. Nurses in the public sector earned significantly more than their private sector counterparts by more than a third of average private sector wages. The average monthly salary of nurses in the public sector is PHP14,646 (USD340) versus PHP10,594 (USD246) in the private sector. Their demographic profiles were also significantly different. Nurses employed in the public sector were much older (40 years old versus 27 in the private sector), more likely to be married, and with more children. The higher average age also meant that nurses in the public sector tended to have much longer years of service with their current employer. They also were more likely to be at least "moderately active" in the nursing association. There was no significant difference, however, in terms of years of schooling.

Table 1 Description of Variables

Variable Name	**Short description**
WAGE	gross basic monthly salary from primary employment
LN_WAGE	natural logarithm of the gross monthly salary
PUBLIC	=1 if working in a public institution, =0 otherwise
AGE	age of respondent
AGE2	squared value of respondent's age
SEX1	=1 if male, =0 otherwise
MARRIED1	=1 if married, =0 otherwise
NUMCHILDREN	number of children of respondent
COMMUNITY	=1 if working in a community health clinic, =0 otherwise
SCHOOL	=1 if working in a nursing school or college, =0 otherwise
COMPANY	=1 if working in a private company clinic, =0 otherwise
PNAACTIVE2	=1 if "somewhat active" in the professional nursing association
PNAACTIVE3	=1 if "active" in the professional nursing association
PNAACTIVE4	=1 if "very active" in the professional nursing association
EDUC_YRS	years of schooling
POSTGRAD	=1 if respondent had master's degree or doctorate.
YEARS_SERVICE	years of service in current institution

Table 2 Mean Characteristics by Sector

Variable	Public	Private	Difference
Wages	14646.63 (5807.70)	10593.7 (7020.00)	4,052.93***
Ln of wages	9.52 (0.40)	9.12 (0.55)	0.40***
Employed in Public sector (=1)	1.00 (0.00)	0.00 (0.00)	--
Age	40.32 (11.01)	27.39 (6.47)	12.93***
Square of age	1745.53 (882.14)	791.86 (428.57)	953.67***
Employed in community clinic (=1)	0.09 (0.29)	0.04 (0.21)	0.05
Employed in university (=1)	0.01 (0.10)	0.08 (0.28)	0.08***
Employed in company clinic (=1)	0.00 (0.00)	0.04 (0.33)	0.12***
Sex (Male=1)	0.18 (0.39)	0.27 (0.45)	0.09
Married (=1)	0.78 (0.83)	0.29 (0.54)	0.41***
Number of children	1.64 (1.50)	0.53 (1.04)	1.11***
Somewhat active in nursing association	0.18 (0.39)	0.16 (0.37)	0.06
Active in nursing association	0.15 (0.36)	0.04 (0.20)	0.11***
Very active in nursing association	0.06 (0.24)	0.02 (0.13)	0.04**
Years of education	14.24 (0.68)	14.14 (0.50)	0.11
Postgraduate degree (=1)	1.07 (0.29)	1.05 (0.22)	--
Years of service	12.92 (10.02)	2.88 (3.19)	10.04***
Inverse Mills ratio	1.21 (0.68)	1.23 (0.60)	--

***Significant at 99%
**Significant at 95%

Our analysis begins with the estimation of a "single equation" OLS model that pools together samples from the public and private sectors. We regress the log of average monthly wages on the variables described earlier. The dummy variable (PUBLIC) representing employment in the public sector is of particular interest here to ascertain if sectoral employment has had a significant influence on wages. Results in Table 3 confirm the hypothesis of a wage gap between the public and private sectors. Public sector employment had a significant positive impact on wages. Among demographic variables included, only AGE and AGE2 had significant effects. The values of the coefficients of the age variables were as expected. Where age is taken as a proxy for work experience, greater work experience resulted in higher wages but at a diminishing rate. Neither gender (SEX1) nor marital status (MARRIED1) had significant effects.

Employment in certain types of institutions also had a significant impact. Both being employed in private company clinic (COMPANY) and in a community health office or clinic (COMMUNITY) resulted in higher earnings compared to working in a hospital. Self-reported level of participation within the nursing association (PNAACTIVE2, PNAACTIVE3, PNAACTIVE4) also had significant positive effects. The pattern of participation level coefficients showed coefficients rising with increasing levels of participation, suggesting increasing influence on wages.

Level of education in terms of years of schooling (EDUC_YRS) was also found to be a significant factor. The use of log values for the dependent variable result in coefficients that are semi-elasticities, which means that coefficients can be interpreted as the percent change in the dependent variable, for every one unit change in the value of each explanatory variable. In this case, every additional year of schooling resulted in a 10.5% increase in the average monthly wage. Number of years of service with the current employer was also found to be a significant factor. Every additional year of service led to a 1.9% increase in average monthly wage.

Table 3 Results of 'Single Equation' OLS Model

Variable	Coefficient	Robust Standard Error	P-value
Employed in Public sector (=1)	0.144	0.056	0.010***
Age	0.061	0.019	0.001***
Square of age	-0.001	0.001	0.003***
Employed in community clinic (=1)	0.254	0.086	0.003***
Employed in university (=1)	0.050	0.087	0.565
Employed in company clinic (=1)	0.753	0.086	0.000***
Sex (Male=1)	0.015	0.049	0.757
Married (=1)	-0.010	0.075	0.892
Number of children	0.034	0.027	0.203
Somewhat active in nursing association	0.102	0.045	0.025**
Active in nursing association	0.216	0.084	0.010***
Very active in nursing association	0.338	0.125	0.007***
Years of education	0.105	0.041	0.010***
Years of service	0.019	0.005	0.001***
Constant	6.315	0.631	0.000***
N	343		
Prob > F	0.0000		
R-squared	0.5726		

***Significant at 99%

**Significant at 95%

To check the endogeneity issue of sectoral employment and to correct possible self-selection bias, we used a two-stage estimation procedure where we first estimate sectoral choice using binary probit and then separately estimate the average monthly wage for each sector. We begin with the binary probit model. The dependent variable is PUBLIC, which takes the value of 1 if the individual is employed in the public sector and 0 if employed in the private sector. Since this is mainly a selection-bias correcting procedure, we discuss only briefly the signs and significances of the regressors.

Table 4 Results of Sector-Selection Binary Probit Model

public	Coefficient	Robust Standard Error	P-value
Age	0.109	0.015	0.000***
Sex (Male=1)	0.219	0.201	0.277
Married (=1)	-0.128	0.285	0.652
Number of children	-0.080	0.107	0.454
Somewhat active in nursing association	-0.034	0.184	0.855
Active in nursing association	0.822	0.333	0.014***
Very active in nursing association	0.227	0.616	0.713
Postgraduate degree (=1)	-1.031	0.382	0.007***
Constant	-3.868	0.420	0.000***
N	343		
Prob > F	0.0000		
R-squared	0.3230		

***Significant at 99%

**Significant at 95%

We used marital status and number of children as exclusion restrictions and included age, gender, level of participation in the nursing association, and a dummy variable for post-graduate education as regressors. Age (AGE), being "active" in the nursing association (PNAACTIVE2), and having a post-graduate degree had significant effects on sectoral choice. We found that older nurses were more likely to be employed in the public sector. Likewise, being "active" in the nursing association increased the likelihood of public sector employment. On the other hand, having a post-graduate degree decreased such likelihood. This may be expected since nurses who completed master's degrees or doctorates tended to have academic careers in private nursing schools or colleges.

Following the estimation of the probit model, inverse Mills ratios are obtained using the standard formula and entered as a selection-bias correcting term in each of the two wage equations for the public and private sectors. The Inverse Miills ratio contains information on the unobserved factors that may be associated with the selection process. Table 5 shows the results of the wage equations for the two sectors estimated separately.

Table 5 Results of Selection-Bias Corrected Model

Private			
ln_salary	**Coefficient**	**Robust Standard Error**	**P-value**
Age	0.078	0.044	0.077***
Square of age	-0.001	0.001	0.099***
Employed in community clinic (=1)	0.229	0.150	0.128
Employed in university (=1)	0.003	0.098	0.975
Employed in company clinic (=1)	0.617	0.116	0.000***
Sex (Male=1)	0.033	0.079	0.675
Somewhat active in nursing association	0.127	0.061	0.039**
Active in nursing association	0.196	0.209	0.348

Table 5 Results of Selection-Bias Corrected Model (cont.)

Private			
ln_salary	**Coefficient**	**Robust Standard Error**	**P-value**
Very active in nursing association	0.536	0.238	0.026***
Years of education	0.220	0.101	0.031***
Years of service	0.023	0.011	0.040***
Inverse Mills	0.031	0.275	0.909
Constant	4.317	1.163	0.000***
N	226		
Prob > F	0.0000		
R-squared	0.5004		
Public			
ln_salary	**Coefficient**	**Robust Standard Error**	**P-value**
Age	0.022	0.033	0.497
Square of age	-0.000	0.000	0.308
Employed in community clinic (=1)	0.227	0.090	0.013***
Employed in university (=1)	0.928	0.277	0.001
Employed in company clinic (=1)	(dropped)		
Sex (Male=1)	-0.036	0.081	0.653
Somewhat active in nursing association	0.067	0.061	0.269
Active in nursing association	0.157	0.113	0.169
Very active in nursing association	0.330	0.127	0.011***
Years of education	0.039	0.053	0.460
Years of service	0.020	0.005	0.000***
Inverse Mills	-0.098	0.212	0.643
Constant	8.343	0.755	0.000***
N	117		
Prob > F	0.0000		
R-squared	0.5726		

***Significant at 99%
**Significant at 95%

Although results of the Heckman procedure show the Inverse Mills ratio to be insignificant, hence providing no statistical evidence that unobserved factors influenced the first stage selection process, we keep the Inverse Mills ratio in the second stage to ensure that coefficient estimates in the second stage are free from possible biases (Qian, 2013). For private sector wages, age (AGE) and age squared (AGE2) were found to be significant only at the level of 0.10. Nonetheless, signs of the coefficients were as expected. Gender was not found to have a significant impact. Working for private company clinics/ infirmaries resulted in higher wages compared to the base category of private hospital employment. Being "somewhat active" and "very active" in the professional nursing association also led to higher wages versus being inactive or not being a member. Years of schooling (EDUC_YRS) was significant at the level of 0.05, as well as years of service (YEARS_SERVICE). Both were positively correlated with monthly wages as expected.

In the case of public sector wages, neither age (AGE) nor age squared (AGE2) had a significant impact. Gender was also not found to be a significant factor. This result was consistent across all models estimated, suggesting the absence of gender bias in wage determination among nurses. Being employed in a community health office/clinic or in a nursing school/college resulted in higher wages compared to public hospital employment. The private company clinic category (COMPANY) had been dropped from this analysis of public sector wages.

Being "very active" in the professional nursing association resulted in higher wages compared to being inactive or not being a member. This pattern as observed across all models where active participation (whether "somewhat active", "active" or "very active") in the professional nursing association was found to be positively correlated to higher wages. This supported the hypothesis that social capital built on professional networks had a positive impact on earnings. These findings echo results of longer years of service (YEARS_SERVICE) also resulted in higher monthly wages. Contrary to expectations however, years of schooling (EDUC_YRS) did not have a significant influence on wages in the public sector unlike in the private sector where longer years of study earned a premium.

Finally, we used the Oaxaca-Blinder method on average monthly wages in the public and private nursing sectors to determine the existence of a wage gap and to decompose it into "explained" and "unexplained" portions. The "explained" portion of the wage differential can be attributed to differences in worker characteristics (i.e. human and social capital endowments as represented by the explanatory variables used in the model) while the "unexplained" portion can be attributed to differences in wage structures or incentives between sectors.

Table 6 Results of Oaxaca-Blinder Decomposition

	Unexplained	0.168
Mean prediction Public: 9.518	Explained	0.235
Mean prediction Private: 9.115	% unexplained	41.7
Raw differential: 0.403	% explained	58.3
Decomposition Results for Variables		
Variables	**Coefficients**	**Endowments**
Age	-1.088	0.453
Square of age	0.366	-0.401
Employed in community clinic (=1)	-0.000	0.011
Employed in university (=1)	0.077	-0.070
Employed in company clinic (=1)	-0.076	0.000
Sex (Male=1)	-0.013	0.002
Somewhat active in nursing association	-0.020	0.000
Active in nursing association	0.001	0.022
Very active in nursing association	-0.003	0.015
Years of education	-2.888	0.003
Years of service	-0.010	0.199
Constant	3.824	0.000
Total	0.168	0.235

Results of the Oaxaca decomposition presented in Table 6 show that only 58.3% of the public-private sector wage differential can be explained by differences in worker characteristics. An "unexplained" portion equal to 41.7% of the wage gap could not be explained by differences in human and social capital endowments. This unexplained portion may be attributed instead to differences in wage-setting regimes, worker incentives, and market structures between the public and private nursing sectors. Wages of nurses in the public sector are governed by pay scales specified by the Philippine Salary Standardization Law that is applied to all government workers. On the other hand, private sector wages are mainly market-driven.

The current oversupply of nurses has kept wages in the private sector low. To the same effect, nursing graduates have been willing to work in the private sector for relatively lower wages and without job security given that their ultimate objective was to find work overseas. Present employment in the private sector provided creditable work experience that was often required by overseas employers. At the same time, it provided enough subsistence income while waiting for overseas employment opportunities to come.

Table 6 also shows how far gaps in individual characteristics (endowments) contributed to the overall wage differential. As predicted by human capital endowment theory, differences in years of schooling (EDUC_YRS) and in total work experience, for which *AGE* was a proxy, widened the wage gap. Work experience in particular was found to have had the largest contribution to the "explained" portion of the wage differential. Our survey data showed that nurses in the public sector, who earned more than those in the private sector, were generally older and had more work experience. This can be expected since younger nurses, including fresh graduates, were the ones who typically found it difficult finding local employment opportunities and therefore had to settle for low-paying, often temporary jobs in the private sector. Years of service in current institution (YEARS_SERVICE) also increased the wage gap. This too is expected since most nurses employed in the private sector held short-term contractual positions, unlike their public sector counterparts who had secured tenure. Finally, higher levels of activity in the professional nursing association by public sector nurses also increased the wage differential. The only factor that worked in favor of those employed

in the private sector was employment in a nursing school or college as instructors/professors, which narrowed the wage gap.

Conclusion and Recommendations

The objectives of this study were to determine the existence of a wage gap between the public and private sectors of the Philippine nursing labor market, and to analyze the extent to which the public-private sector wage gap can be accounted for by differences in worker characteristics and endowments versus unexplained differences. Public sector wages were found to be nearly 40% more than the average monthly wage in the private sector.

Education and work experience (with age as proxy variable were found to be significant wage determinants as predicted by human capital endowments theory. Active participation in the professional nursing association was also found to have a significant influence on wages. This highlights the importance of building social capital through networking in the nursing profession. Regular participation in the professional association facilitates job searches and expands career opportunities. Interestingly, gender did not appear to have a significant impact on wages.

Results of the Oaxaca decomposition highlight the bifurcated nature of the nursing labor market. Nearly 42% of the public-private wage differential was "unexplained" by differences in worker characteristics (human and social capital endowments. This suggests that a significant portion of the differential can be attributed to differences in "other factors" such as wage-setting regimes, market structures, and worker incentives between the public and private sectors. Wages in the private sector are market-driven while those in the public sector are standardized according to Philippine Law. Given the current glut in the Philippine nursing labor market, private sector employers have had the power to keep wages low. For every nurse applicant being considered for a job, there were nine other applicants waiting in line, willing to take the job at a lower rate.

Most young nurses have been willing to accept low wages; some have been even willing to work as volunteers or even to pay "apprenticeship fees" just to gain work experience that was required for future overseas employment.

Worker incentives were very different between those who had secured jobs in the local public health sector and those who had to tolerate low-paying, contractual jobs in the private sector as a "stepping stone" to lucrative nursing jobs abroad. Sadly, demand for Filipino nurses overseas has plateaued, if not declined, since the Global Crisis. Thus more and more young nurses are trapped in a stepping stone they now seem to find themselves in.

Decomposing the public-private wage gap for nurses sheds light on the intensity of the factor that helps explain the global "pull" vs. the preference for service in the domestic labor market. The desire for foreign employment seems to be so pervasive, possibly explaining more of the wage gap than traditional human and social capital endowments suggest. This implies the need for local policy makers to be conscious of the chaotic conditions in global markets being sought by Philippine nurses and the corresponding adjustments in the education system of the country.

Appropriate short-medium term policies include developing new markets for hard-to-place local nursing school graduates, and the accompanying re-tooling based on industry requirements to obviate mismatched skills, e.g., disaster management that require forensic nurses, rural health and community-based nursing that focus on communicable diseases brought about by climate change, retirement facilities for foreigners who seek cost-effective old-age care, nurses for business process outsourcing that cater to hospital systems in advanced countries, and nurses for medical tourism and clinical trial testing industries – all of which have been discussed in many fora but mostly on exploratory basis.

This study underscores the urgency in addressing the absorption of local nursing school graduates who have passed the professional licensing examination; the sizeable public-private markets wage gap demonstrates this.

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