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**The Philippine Emigration State:  
Facilitating Labor Export as Economic Development Policy**  
**IHELG Monograph**

**14-12**

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# **The Philippine Emigration State: Facilitating Labor Export as Economic Development Policy<sup>1</sup>**

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## Abstract

This paper explains how the management of post-secondary educational institutions in the Philippines influences the continuation of the labor export program. Using region-level data for years 1989 to 2004, this paper shows a statistically significant relationship between an increase in tertiary enrollment and tertiary graduates, and the number of Filipinos leaving the country on an overseas contract labor. The flexible, unregulated nature of Philippine tertiary education continues to adjust and feed the labor export industry with Filipinos ready to work abroad. But on the other hand, the technical and vocational education developed by President Ferdinand Marcos under the Technical Educational and Skills Training Authority (TESDA) actually plays an important role in reversing this trend so Filipinos are trained for the domestic labor market. Using regional-level data for years 1989 to 2004, this analysis finds a statistically significant relationship between an increase in technical skills and vocational education instituted by TESDA and a decrease in the number of overseas Filipino Workers, controlling for other factors.

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<sup>1</sup> This paper is based on Chapter 5 of a book manuscript, *Made for Export: Labor Migration, State Power, and Higher Education in a Developing Philippine Economy*.

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“The realignment of educational output with the demands of the labor market is now a major focus of our concern. We have stressed the training of middle- and high-level technical manpower. I have ordered the conversion of public high schools into technical, vocational, and technological or agricultural high schools.”

-President Ferdinand Marcos, State of the Nation Address, 1981

“For us, overseas employment addresses two major problems: unemployment and the balance of payments position. If these problems are met at least partially by contract migration, we expect an increase in national savings and investment levels.”

-President Ferdinand Marcos, 1982<sup>3</sup>

## **I. Education for the Overseas Employment Industry**

Development scholars, heavily influenced by the cases of the four Asian Tigers (Hong Kong, Singapore, South Korea, and Taiwan), have attributed success in economic development to education. Although the Philippines seemed even more promising before the Asian Tigers began developing, the educational advances in the Philippines have led to an enormous exodus of labor. Failing to integrate its highly educated labor force in the domestic economy, the Philippine state focused its attention on exporting college-educated/highly-educated workers by creating a set of elaborate institutions to facilitate overseas employment. As a result, currently over 10 percent of its citizens live abroad in over 160 countries and about 4,600 Filipinos leave the country every day for overseas work. Why has the Philippine government’s labor export continued for the past four decades?

More than four decades after its 1974 labor export policy was established, the Philippines now ranks second in the world in the highest emigration of skilled migrants.<sup>4</sup> The policy of facilitating out-migration has evolved to an elaborate set of institutions that protect and ease the pathway for Filipinos to live and work abroad. Leaders around the world recognize the

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<sup>3</sup> As cited in Joaquin Lucero Gonzalez, *Philippine Labour Migration: Critical Dimensions of Public Policy* (Singapore: Institute of Southeast Asian Studies, 1998).

<sup>4</sup> Frederic Docquier and Abdeslam Marfouk, "International Migration by Education Attainment, 1990-2000," in *International Migration, Remittances, and the Brain Drain*, ed. Caglar Ozden and Maurice Schiff (Washington, DC: The World Bank, 2006), 175.

Philippine overseas employment program as a global model of how to manage the outflow of people from a migrant-sending state.<sup>5</sup> But what has been the major factor contributing to the perpetuation of the labor export industry? Using regional-level data from the Philippine Census and the Survey on Overseas Filipinos, this paper empirically tests the relationship between post-secondary education and Filipinos leaving the country to work as Overseas Filipino Workers (OFWs). It argues that the Philippines' management of higher education has led to a large exodus of Filipinos working in overseas labor markets. Specifically, the unregulated nature of Philippine tertiary educational institutions continues to develop a large Filipino population for labor export. Private tertiary schools continue to operate under a laissez-faire system with minimal government regulation that allows many of them, especially for-profit non-sectarian institutions, to create study programs specifically for the overseas labor markets. In contrast, the country's Technical Skills and Vocational Education Training System (TVET) has produced more Filipinos who stay in the domestic labor market. Although TVET is mostly provided by private schools, the Philippine government's Technical Education and Skills Development Authority (TESDA) has played a major role in shaping and regulating the programs involved in technical and vocation schools. Table 5.1 compares the two types of post-secondary educational institutions and their impact on the number of Overseas Filipino Workers (OFWs) leaving the country.

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<sup>5</sup> Global Forum on Migration and Development, "Roundtable 2: Secure, Regular Migration Can Achieve Stronger Development Impacts," Philippine Global Forum on Migration and Development Working Paper Roundtable Session 2.2, Manila, Philippines, October 30, 2008.

**Table 5.1 Comparison between the Management of Post-Secondary Education and Number of Overseas Filipino Workers (OFWs)**

<b>Dependent Variable</b>	<b>Independent Variable</b>	<b>Relationship</b>
Number of OFWs leaving the country (out-migration flow variable)	Tertiary Education  (High Autonomy, Voluntary Accreditation Associations and minimally regulated by Government)	Increase in tertiary enrollment 3-4 year earlier leads to increase in OFWs
Number of OFWs leaving the country (out-migration flow variable)	Technical Skills and Vocational Education Training  (Less Autonomy, and Highly Regulated by Government)	Increase in technical skills and vocational education training 1 year earlier leads to a decrease in number of OFWs

This paper begins with an overview of employment trends in the Philippines over time. The next section (III) focuses on an empirical analysis between Philippine tertiary education and overseas employment through four regression models. Section IV focuses on a regression analysis to test the relationship between technical skills and vocational education, and out-migration. Following these two empirical tests, the paper closes with a discussion of what these empirical results mean for education, migration, and economic development.

## **II. Employment Trends**

In the Philippines, employment patterns differ between domestic and overseas labor markets. Moreover, each market contains two sectors: those working in the primary labor market (“white-collar” jobs) and secondary labor market (“blue-collar” jobs). The more Filipinos obtain higher education, the more they expect to have more prestigious, higher-paying jobs and higher returns to their educational investment. As dual labor market theorists would

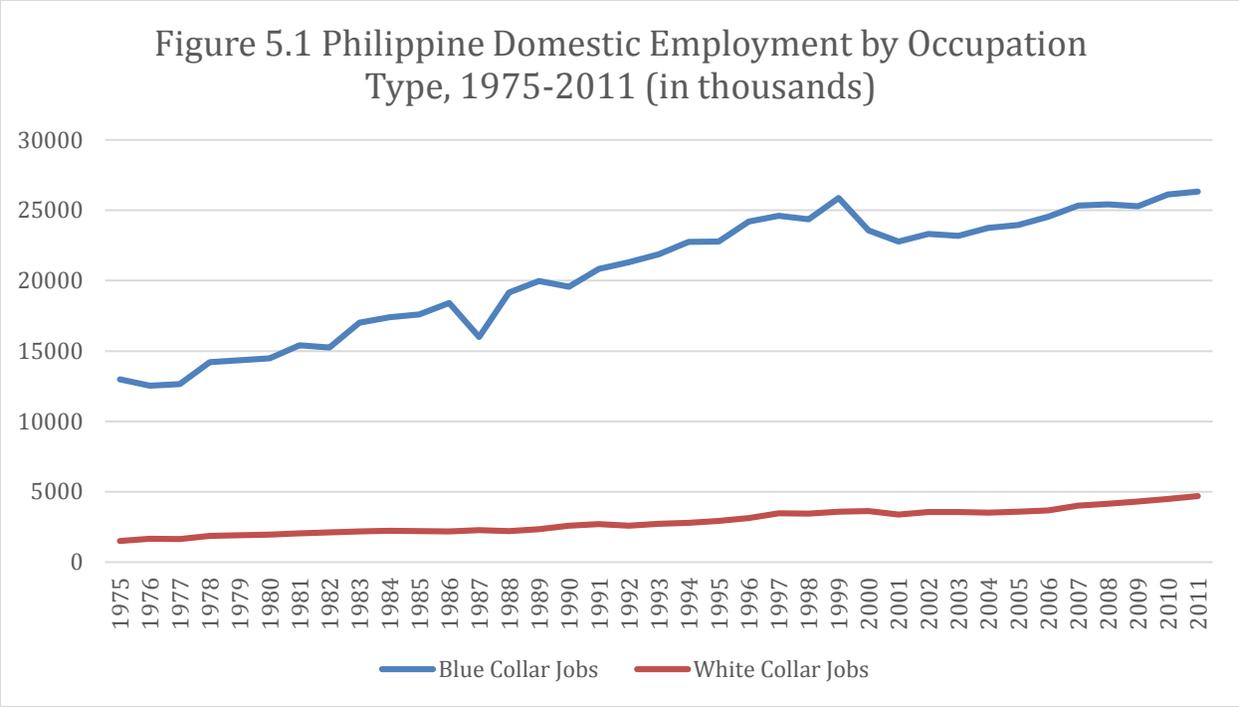
predict, the sociology of the educated population results in their unwillingness to take low-paying jobs that require manual labor.<sup>6</sup> This dual labor market not only plays a role in explaining in-migration to industrial societies, but also helps explain out-migration of educated labor in a developing country.

Figure 5.1 illustrates the dual labor market in the Philippines by categorizing employment into “white-collar” and “blue-collar” jobs for the years 1975 through 2011 (see appendix II for how the occupational groups were categorized). This time-series shows that there has been steady growth in employment with very marginal growth in domestic white-collar employment. In over three decades, the number of white-collar jobs grew from 1.5 million in 1975 to 4.7 million in 2011. On the other hand, blue-collar jobs grew from 13 million in 1975 to over 26 million in 2011. The ratio between white-collar and blue-collar jobs in the domestic labor market has stayed consistently between 0.12 in 1975 to 0.15 in 2011.<sup>7</sup>

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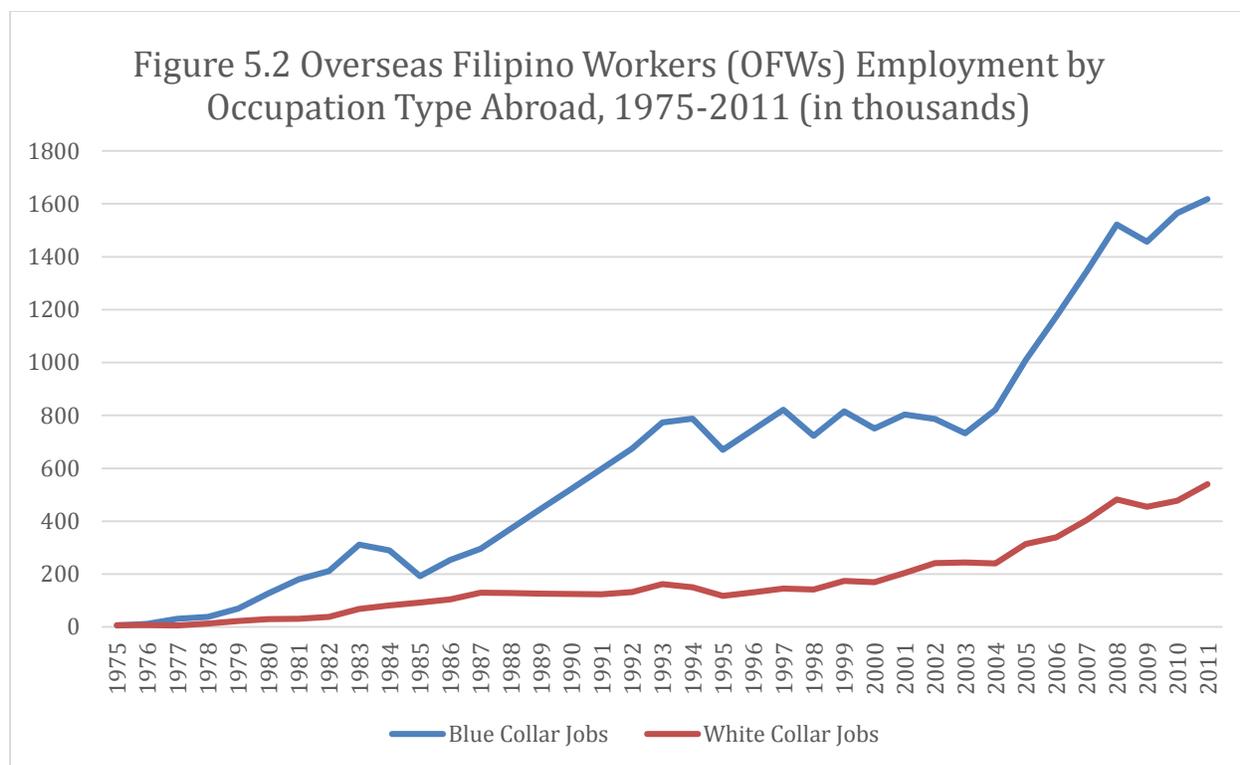
<sup>6</sup> Michael J. Piore, *Birds of Passage: Migrant Labor and Industrial Societies* (Cambridge: Cambridge University Press, 1980).

<sup>7</sup> This ratio consists of white-collar jobs in domestic employment as the numerator, and blue-collar jobs in domestic employment as the denominator.



Source: Philippine Statistical Yearbooks, various years

When juxtaposing domestic employment with overseas employment for the same time period (see figure 5.2) the trends differ between the types of job being taken abroad. When labor export began in the early 1970s, overseas white-collar jobs dominated with a ratio of overseas white-collar jobs to overseas blue-collar jobs of 1.27 in year 1975. Then quickly over time, more “blue-collar jobs” were taken by Filipinos working overseas with this same ratio being 0.17 in 1981 and then rising to 0.33 in 2011. For overseas employment there seems to be heavy growth of *both* blue-collar and white-collar jobs, especially from 2004 to 2011.



Source: Philippine Statistical Yearbooks, various years

For the Filipino investing in higher education, overseas employment in both blue and white-collar jobs are attractive since they pay higher wages abroad than their equivalents in the domestic labor market. For example, in 2002 Filipino nurses working abroad earned an average of USD\$1,063 per month compared to USD\$191 than those working within the Philippines.<sup>8</sup> Other occupational categories that fall under “white-collar” jobs include “other professionals” that earn on average USD\$796 a month abroad compared to USD\$320 in 2002.<sup>9</sup> Blue-collar jobs such as “service workers” earn on average USD\$407 per month in 2002 while those working domestically would earn USD\$192 per month.<sup>10</sup> In addition to higher wages, distance

<sup>8</sup> Edita A. Tan, “The Wage Structure of Overseas Filipino Workers,” University of the Philippines Discussion Papers, No. 0503 (Quezon City: University of the Philippines School of Economics, March 2005).

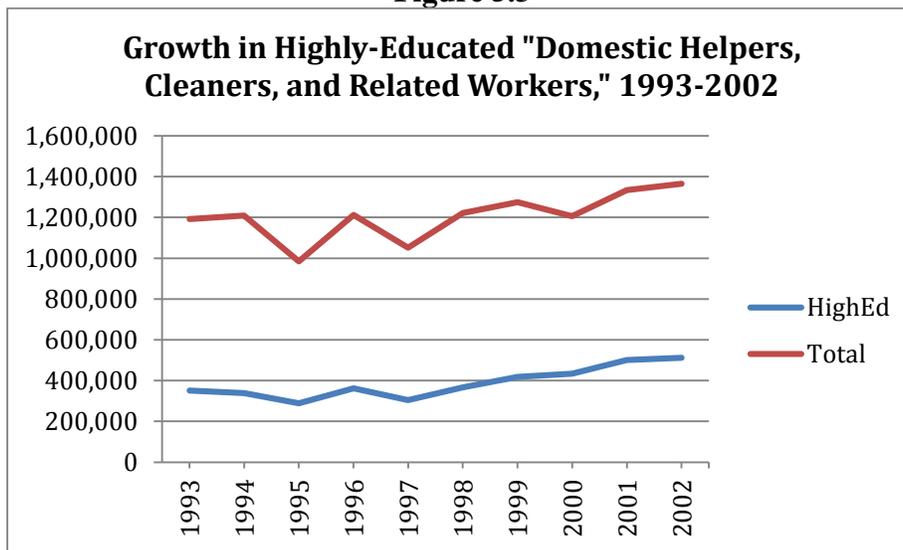
<sup>9</sup> Ibid. This is the latest data available done by Edita Tan that uses survey data from both the domestic and overseas labor markets to compare wage rates within the same occupational categories. There could be future comparisons of the wages of OFWs from the Survey on Overseas Filipinos, but there needs to be a comparable survey of the same occupations in the Philippines.

<sup>10</sup> Ibid.

from family while working on an overseas employment contract allows OFWs to take “blue-collar” jobs even though they may be highly educated. An educated Filipino working abroad in a blue-collar job would still have high stature in the community and household since she or he would earning a lot more than in the domestic labor market (in some cases, even in domestic white-collar jobs).

From 1993 to 2002, 95 percent of the growth in Overseas Filipino Workers (OFWs) consisted of those holding a bachelor’s degree or higher.<sup>11</sup> One example of highly educated OFWs taking blue-collar jobs abroad are OFW domestic helpers. Figure 5.3 shows the growth of highly educated Filipinos going into domestic help from 1993 and 2002.<sup>12</sup> The phenomenon of educated OFWs taking overseas domestic helper positions grew from 29.4 percent in 1993 to 37.5 percent in 2002 in terms of percentage of OFW domestic helpers with a bachelor’s degree or higher.

**Figure 5.3**



Source: Survey of Overseas Filipinos, 1993-2002

<sup>11</sup> Author’s analysis of data from the *Survey on Overseas Filipinos*, National Statistics Office, 1993-2004.

<sup>12</sup> Higher education is defined by having a bachelor’s degree or higher.

This growth coincides with the emergence of neighboring East Asian countries becoming powerful centers of economic growth with a high demand for English speakers who can also serve as teachers for their children. Table 5.2 shows that East Asian countries such as Hong Kong, Singapore and Taiwan have been hiring a large percentage of the highly educated OFW domestic helpers. On the other hand, countries like Saudi Arabia, Kuwait, and other Middle Eastern countries have a high percentage of their OFW domestic helpers with less than a high school degree. This is one example of how OFWs are willing to take overseas jobs that pay well, but are not typically positions they would take in the domestic labor market.

**Table 5.2 Top Destinations among those Working Abroad as Domestic Helpers, 2002**

<b>Bachelor's degree or higher</b>			<b>Under HS Degree</b>		
	<b>#</b>	<b>%</b>		<b>#</b>	<b>%</b>
Hong Kong	191,557	40.8	Saudi Arabia	125,520	22.3
Singapore	54,506	11.6	Hong Kong	112,903	20.0
Saudi Arabia	45,025	9.6	Singapore	68,827	12.2
Italy	33,394	7.1	Kuwait	56,731	10.1
Taiwan	22,273	4.7	Malaysia	36,228	6.4
UAE	16,616	3.5	Italy	25,075	4.4
Kuwait	14,422	3.1	Taiwan	20,354	3.6
Canada	14,407	3.1	UAE	19,161	3.4
USA	14,182	3.0	USA	14,433	2.6
Greece	12,001	2.6	Qatar	13,864	2.5

Source: Survey of Overseas Filipinos, 2002.

### III. Empirical Analysis of Tertiary Education and Overseas Employment

Now that there is an understanding of some of the types of employment OFWs are taking abroad versus the domestic labor market, this section empirically tests the relationship between tertiary education and overseas employment using regression analysis. Rooted in the American model of higher education that features minimal government regulation and high private sector participation, the Philippine higher education system continues to be second to that of the United States in the share of population who hold college credentials. The only government agency dealing with tertiary education, the Philippine Commission on Higher Education (CHED), exists more as a convening and data collection body that makes recommendations on development plans, policies, priorities, and programs on higher education and research.<sup>13</sup> Through CHED the government plays a minimal role in regulating the Philippine tertiary education system. Tertiary schools are guided more by voluntary accreditation associations.<sup>14</sup> Accreditation began in 1957 with the establishment of the Philippine Accrediting Association of Schools, Colleges and Universities.<sup>15</sup> Then after several decades, a number of other accrediting agencies exist including the Philippine Association of Colleges in 1973 and Universities and the Association of Christian Schools and Colleges in 1976. By 1989, a fourth accreditation agency was founded, the Accrediting Agency of Chartered Colleges and Universities in the Philippines. These four accrediting agencies are self-governing, voluntary, and not governed by CHED.<sup>16</sup>

This freedom allows tertiary educational institutions to offer flexible curricula. Over time, this flexibility allowed these institutions to adjust their curricula for market demands

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<sup>13</sup> Commission on Higher Education, "Powers and Functions," (Office of the President: Republic of the Philippines, 2012), available at <http://www.ched.gov.ph/index.php/about/powers-functions/> (accessed April 1, 2014).

<sup>14</sup> Manuel T. Corpus, "Historical Perspectives of the Philippine Quality Assurance System," *Journal of Philippine Higher Education Quality Assurance*, vol. 1 (1), January 2003: 1-7.

<sup>15</sup> *Ibid.*, 2.

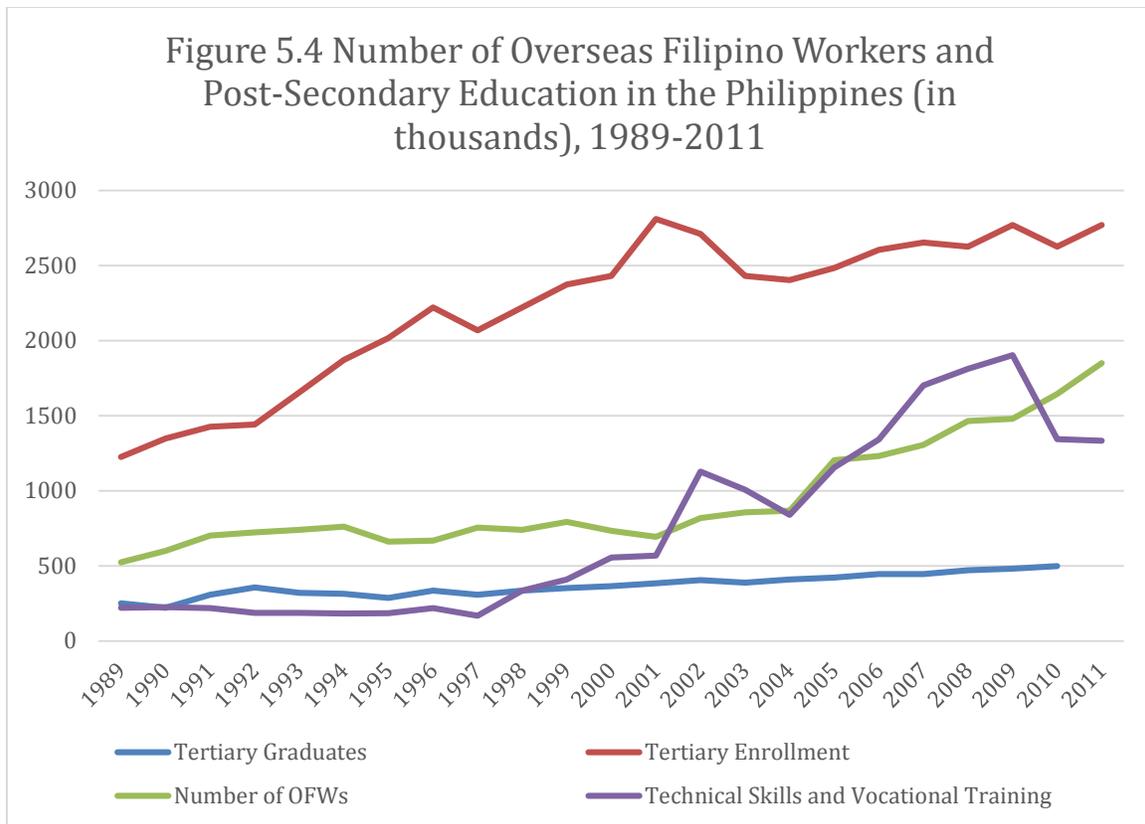
<sup>16</sup> *Ibid.*

abroad. Domestic unemployment rates are still higher for those with college or higher educational attainment. Throughout the 1990s, Philippine labor market surveys reveal that the “educated unemployment” problem that surfaced in the 1960s and 1970s persists but in a different form. Edita Tan, a Philippine labor economist, argues that an open education-labor market exists in the Philippines where educational institutions are making constant adjustments to training for both domestic and overseas labor markets.<sup>17</sup> Philippine tertiary schools respond quickly to overseas labor market demand since the educational system is highly unregulated and composed mostly of private schools. This implies that graduates of tertiary schools are looking first to enter the overseas rather than the domestic labor market producing a “brain overflow” rather than a “brain drain.” As overseas positions became the first-choice employment for a large number of Filipinos, tertiary schools adjusted their programs to supply what the overseas market required. Figure 5.4 shows the trend for the number of OFWs, tertiary enrollment, tertiary graduates, and technical skills and vocational training for the 1989 to 2011 period.<sup>18</sup>

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<sup>17</sup> Edita A. Tan, “Migration in an Open-Education Labor Market,” paper presented at the International Conference on Remittances organized by the Central Bank of the Philippines, March 30-31, 2009.

<sup>18</sup> No data exists to distinguish between private and public tertiary educational enrollment or graduates for the majority of this time period. But a large proportion (over 80% of all enrollment of tertiary schools are in private institutions).



Source: Philippine Statistical Yearbooks and Survey on Overseas Filipinos, various years

This trend shows some patterns of lagging growth and declines in tertiary enrollment that have an impact on the number of Overseas Filipino Workers (OFWs) over time. It also shows a steady, slow growth of tertiary graduates and a fluctuating number of Filipinos being trained at technical and vocational institutions (to be discussed in detail in section IV of this paper). To better understand these trends, this study exploits regional-level data on these variables to test if post-secondary education is influencing the number of Filipinos leaving the country as OFWs. This section uses quantitative methods to assess if enrollment in domestic tertiary education institutions in the Philippines is producing a population exclusively for employment abroad. By making use of a panel dataset on overseas employment and tertiary education enrollment and graduates in the Philippines, this section empirically tests whether tertiary education is a key

variable in determining the number of Filipinos who leave on overseas contracts. The hypothesis is that as more Filipinos become educated, the more likely Filipinos become OFWs when controlling for key economic variables such as unemployment, GDP per capita, urbanization, and population growth.

## **Data Sources**

The panel dataset was constructed from several Philippine government documents and surveys that were collected from archives in the Government Documents and Microforms Collections at Harvard University, the International Monetary Fund (IMF) Library, the National Statistics Office in the Philippines, and the Library of Congress. The data included in the panel for this analysis ranges from 1989-2004. There is available data for previous years (from as early as 1975) and later years (2005-2011), but the data was not consistent across all variables and regions.<sup>19</sup> And because this statistical model required to lag tertiary education by four years, it was important to have as many years at the regional-level as possible. The years 1989 to 2004 is the best possible consistent data available across time and within regions of the Philippines.

There are two sources for data on the number of OFWs: the Philippine Overseas Employment Administration (POEA) and the National Statistics Office (NSO). The POEA collects data on the “Deployment of Overseas Filipino Workers”: the actual number of OFWs who were processed through the Philippine government for their overseas contracts. The NSO publishes an annual *Survey on Overseas Filipinos* conducted in October of each year as part of

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<sup>19</sup> There reason why years 1989 to 2004 years were used for these regression analysis was because data on OFWs at the regional level was available for years 1993 to 2004 and tertiary educational enrollment was lagged four years prior to 1989. Unfortunately, there is no regional-level data for OFWs after 2004. Only national-level data is available which would not have enough variation to run a regression model.

the Philippine labor force surveys. It asks a representative sample of households in the Philippines about members of the household who left for overseas employment within the last five years. The NSO survey contains the number of OFWs by region, the types of jobs they obtain abroad, their highest educational attainment in the Philippines, the amount of remittances they send back to the Philippines, and the countries of destination where they are employed. This analysis in this paper uses the POEA data instead of the NSO, since the former is more consistent and consists of the “actual” numbers of OFWs rather than a survey-based estimate. The NSO data was used to see if the numbers were consistent by regions with the POEA’s. One of the regression models in this section uses the *Survey on Overseas Filipinos* since it is the only source data that disaggregates OFWs by age groups.

Data for enrollment rates in tertiary educational institutions was compiled from the *Higher Education Data* that is published annually by the Philippine Commission on Higher Education (CHE). The CHE collected regional data on tertiary enrollment rates, the number of students enrolled in specific discipline groups, and the graduation rates within each program for the years 1989-2011. Prior to 1993, the Philippine Department of Education and Culture collected the same type of data, as reported in the *Philippine Statistical Yearbooks*. The type of categories included in the collection is not consistent over time. Before 1993, the government distinguished between private and public tertiary educational institutions but ceased to do so after 1993. Ideally, a future analysis should test for differences between private and public enrollment, but this can only be done prior to 1993. But because there is no data on OFWs by regions before 1993, this model would be impossible to test. Certain discipline groups have also been combined, newly introduced, or merged, thus making it difficult to create a consistent dataset on enrollment in specific discipline groups. The other control variables (regional GDP

per capita, population growth rates, unemployment rates, and underemployment rates) were compiled from the annual *Philippine Statistical Yearbooks* for the years 1989-2004.

### **Unit of Analysis**

The unit of analysis in the regression models presented in this study is a Philippine “region”. There are a total of 17 regions, each made up of several provinces (of which there are a total of 79), which in turn are composed of cities (114 total); cities are made up of municipalities (1,496 total), which in turn contain *barangays*, or districts (41,945 total). Regional-level data provides enough variation to help to understand what is driving the number of OFWs. Descriptive statistics of the data used in this analysis is summarized in Table 5.3.

**Table 5.3: Descriptive Statistics**

<b>Variable</b>	<b>Mean</b>	<b>Min</b>	<b>Max</b>	<b>Std. Dev.</b>	<b>Observations</b>	<b>Unit</b>
Year	1996.5	1989	2004	4.62	256	Year
%Δ Overseas Filipino Workers (OFWs)	0.0003	-0.005	0.01	0.002	171	Percent change in OFWs
%ΔOFWs ages 24 years old	0.002	-0.009	0.09	0.01	141	Percent change in OFWs ages 24 years old and under annually
%ΔOFWs ages 25 to 49 years old	0.0005	-0.005	0.02	0.003	141	Percent change in OFWs ages 25 to 49 years old annually
%ΔOFWs ages 50 years old	0.004	-0.009	0.19	0.02	141	Percent change in OFWs ages 50 years old and over annually
%Δ Tertiary Enrollment	0.001	-0.007	0.05	0.006	126	Percent change in Tertiary Enrollment annually
%Δ Tertiary Graduates	0.001	-0.008	0.04	0.006	96	Percent change in Tertiary Graduates annually
%Δ Technical Skills and Vocational Education Training	0.003	-0.01	0.04	0.006	158	Percent change in number of students trained at Technical Skills and Vocational Education Schools
Unemployment Rate	0.08	0.006	0.178	0.03	156	Rate of Labor Force annually
GDP per capita	29.94	6.40	135.75	20.89	155	Php per capita at current prices (in 1000s)
Population Growth	0.02	0.01	0.04	0.006	145	Rate annually
Underemployment Rate	0.22	0.05	0.45	0.09	159	Rate of Employed Labor Force annually
	8.25	5.69	9.42	0.60	159	

Ln (Population)						Log Total Population annually (in 1000s)
Urban Regions	0.25	0	1	0.43	160	1=Region>50% urban 0=Region<50% urban

Php=Philippine Pesos (Philippine currency)

### Specification of the Regression Models

The challenge in testing for statistical significance between education and out-migration is how to deal with endogenous variables. Education and migration are highly correlated with one another, making it difficult to understand the direction of causality. To address these concerns, the regression models in this analysis employ panel data methods using first difference tests to see if percent increases or decreases of tertiary education in a region leads to increases or decreases in out-migration. Secondly, the regression models lagged tertiary education (*Enroll*) up to four years and tertiary graduates (*Graduates*) up to two years to realistically capture the direction of causality between education and migration. Tertiary students would not become out-migrants (*OFWs*) until after they graduate, which is usually between 2 to 4 years after initially enrolling in a tertiary school, finding a job and going through the Philippine Overseas Employment Administration’s labor contract processing. Tertiary graduates were lagged up to 2 years since there is a wide variation in the length of each tertiary degree program and model 2 helps to control for this variation. Thirdly, this study ran a seemingly unrelated regression model with age cohorts for overseas Filipino workers (*OFWs*) to see if tertiary education enrollment had different effects on *OFWs* by age groups. And lastly, a regression model was used to test for the reverse relationship to see if out-migration had an impact on tertiary educational enrollment. These regressions excluded high school graduates as a control variable since high school graduates have consistently made up between 23% and 27% of all *OFWs* during the 1993-2004

period—with a downward trend of high school OFWs over this period. On the other hand, OFWs with tertiary education has grown from 55.3% to 66.0% of all OFWs during the 1993-2004 period.<sup>20</sup>

**Model 1: First Differences Test**  
**Impact of Percentage Change in Tertiary Enrollment on the Percentage Change in**  
**Number of Overseas Filipino Workers (OFWs), 1989-2004**

The first model uses an ordinary least squares (OLS) regression model for estimating the impact of percent change in tertiary education enrollment on the percent change in the number of Overseas Filipino Workers (OFWs). This model exploits the variation of Philippine regions to see if percent changes in enrollment have an impact on the percent increases or decreases in number of Filipinos leaving on overseas employment. In this model, the dependent variable (*OFW*) is equal to the percent change in number of Overseas Filipino Workers between the current year (t) and the previous year (t-1):

$$\% \Delta OFW_t = [OFW_t - OFW_{t-1}] \text{ divided by } [OFW_{t-1} \times 100]$$

The independent variable of primary concern, *Enroll*, is equal to the percent change of enrollment in Philippine tertiary educational institutions between current year (t) and the previous year (t-1) lagged up to 4 years (t-2, t-3, and t-4):

$$\% \Delta Enroll_t = [Enroll_t - Enroll_{t-1}] \text{ divided by } [Enroll_{t-1} \times 100]$$

These lagged variables are important since current OFWs would not be affected by the current students at tertiary schools. Instead, tertiary enrollees (*Enroll*) three to four years earlier (depending on the length of their study program) would have an impact on the number of OFWs leaving if there is a statistically significant relationship. The control variables include the

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<sup>20</sup> Analysis of Survey on Overseas Filipinos data, 1993-2004.

following: 1 year lagged unemployment rate (*Unemploy*), 1 year lagged Gross Domestic Product per capita (*GDP*) in thousands of Philippine Pesos, population growth (*Pop*), 1 year lagged underemployment rate (*Underemploy*) and Log Population (*LnPop*). The full specification of this OLS regression model is the following:

$$\begin{aligned} \% \Delta OFW_t = & \alpha + \beta_1 \% \Delta Enroll_t + \beta_2 \% \Delta Enroll_{t-1} + \beta_3 \% \Delta Enroll_{t-2} + \beta_4 \% \Delta Enroll_{t-3} \\ & + \beta_5 \% \Delta Enroll_{t-4} + \beta_6 Unemploy_{(t-1)} + \beta_7 GDP_{(t-1)} + \beta_8 Pop_t \\ & + \beta_9 Underemploy_{(t-1)} + \beta_{10} LnPop + \epsilon_t \end{aligned}$$

This regression model includes the percent differences lagging *Enroll* up to 4 years to accurately capture the impact on the number of OFWs since on average tertiary educational programs last between 2 to 4 years. This 4-year lag gives a more accurate picture of the impact of tertiary education enrollment on *OFW* for a given year since current students enrolled would not migrate as an Overseas Filipino Worker (OFW) until after they graduate from school. Besides lagging the *Enroll* variable, another method is to obtain data on the number of tertiary graduates since there is variation in the length of the tertiary education enrollment program, which is done in model 2 (see model 2). The coefficient of *Enroll* is expected to be positive since there are more educated Filipinos than jobs available in the Philippine economy. As the percent change of tertiary enrollment goes up, there should be a percentage increase in the number of OFWs.

*Unemploy* is expected to be positive since the higher percentage of the labor force that is unable to find jobs in the domestic labor market, the more likely these unemployed people would seek jobs elsewhere. Underemployment (*Underemploy*) is defined as the percentage of the employed labor force that is willing to work more hours. This usually has a major impact on the adequacy of the current income levels of the employed. Its coefficient should be positive since the option of becoming an OFW becomes more attractive since people who are underemployed may be dissatisfied with the amount of income they are receiving from their current jobs. The

coefficient of *GDP* is expected to be negative since, as the economy performs better, the more likely people are able to find jobs in the domestic labor market. Lastly, the coefficient of *Pop* should be positive since the faster the population grows, the less likely the economy is able to produce enough jobs for this larger population and the more people will have to seek jobs abroad as OFWs.

**Model 2:  
Impact of Percentage Change in Tertiary Graduates on the Percentage Change in  
Number of Overseas Filipino Workers (OFWs), 1996-2003**

As an extension to the first model, model 2 uses the same control variables as model 1 but uses data on the number of tertiary graduates—those receiving degrees during year (t)—instead of tertiary enrollment. The independent variable of primary concern, *Graduates*, is equal to the percent change of graduates from Philippine tertiary educational institutions between current year (t) and the previous year (t-1) lagged up to 2 years (t-2):

$$\% \Delta \text{Graduates}_t = [\text{Graduates}_t - \text{Graduates}_{t-1}] \text{ divided by } [\text{Graduates}_{t-1} \times 100]$$

In this model, the dependent variable (*OFW*) is the same as model 1 equal to the percent change in number of Overseas Filipino Workers between the current year (t) and the previous year (t-1):

$$\% \Delta \text{OFW}_t = [\text{OFW}_t - \text{OFW}_{t-1}] \text{ divided by } [\text{OFW}_{t-1} \times 100]$$

The full specification of the regression model with control variables is the following:

$$\% \Delta \text{OFW} = \alpha + \beta_1 \% \Delta \text{Graduates}_t + \beta_2 \% \Delta \text{Graduates}_{t-1} + \beta_3 \% \Delta \text{Graduates}_{t-2} + \beta_4 \text{Unemploy}_{(t-1)} + \beta_5 \text{GDP}_{(t-1)} + \beta_6 \text{Pop}_t + \beta_7 \text{Underemploy}_{(t-1)} + \beta_8 \text{LnPop} + \varepsilon_t$$

This regression model controls for the variation in length of tertiary education degree programs since it uses (*Graduates*) instead of (*Enroll*). This model only lagged tertiary (*Graduates*) by 2

years since it takes into account the time it would take for a recent graduate to find employment. The coefficient of *Graduates* is expected to be positive since as the percentage of tertiary graduates goes up between year (t) and (t-1), there should be a percentage increase in the number of OFWs migrating abroad for employment opportunities.

**Model 3:  
Seemingly Unrelated Regression Equation  
Impact of the %Δ Tertiary Education Enrollment on the %Δ Number of OFWs  
by Age Cohorts**

The third model in this empirical analysis uses a seemingly unrelated regression equation (SURE) to run the dependent variable *OFW* by three different age cohorts (OFW ages 24 and under, OFW ages 20 to 49, and OFW ages 50 and over). This model provides a more specific understanding of the impact of tertiary education on the number of OFWs by age cohorts. Even though model 1 and 2 resolves the endogeneity problem by lagging tertiary enrollment and tertiary graduates and taking into account the percent differences between years, this regression provides further evidence that tertiary education has an impact on the working age population. The full specification for this model ran three regression equations for each age cohort using Zellner estimation technique<sup>21</sup>:

$$\% \Delta OFW_{\text{Ages 24 \& Under}} = \alpha + \beta_1 \% \Delta Enrollment_t + \beta_2 Unemploy_{(t-1)} + \beta_3 GDP_{(t-1)} + \beta_4 Pop_t + \beta_5 Underemploy_{(t-1)} + B_6 LnPop + \varepsilon_t$$

$$\% \Delta OFW_{\text{Ages 25 to 49}} = \alpha + \beta_1 \% \Delta Enrollment_t + \beta_2 Unemploy_{(t-1)} + \beta_3 GDP_{(t-1)} + \beta_4 Pop_t + \beta_5 Underemploy_{(t-1)} + B_6 LnPop + \varepsilon_t$$

$$\% \Delta OFW_{\text{Ages 50 \& Over}} = \alpha + \beta_1 \% \Delta Enrollment_t + \beta_2 Unemploy_{(t-1)} + \beta_3 GDP_{(t-1)} + \beta_4 Pop_t + \beta_5 Underemploy_{(t-1)} + B_6 LnPop + \varepsilon_t$$

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<sup>21</sup> Zellner, Arnold, “An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias,” *Journal of the American Statistical Association*, 57 (1962), pp. 348-368.

The full specification of the SURE model is to run all three equations in one model specified in the following way:

$$\% \Delta OFW^* = \alpha + \beta_1 \% \Delta Enroll^*_t + \beta_2 Unemploy^*_{(t-1)} + \beta_3 GDP^*_{(t-1)} + \beta_4 Pop^*_t + \beta_5 Underemploy^*_{(t-1)} + \beta_6 LnPop^* + \varepsilon^*_t$$

If there is a positive statistical relationship for only certain age cohorts (25 to 49 years old) over others (under 24 years old and 50 years and over), this model would show that tertiary educational enrollment is leading directly to Filipinos leaving the country on overseas labor contracts after completing tertiary education.

**Model 4: Reverse Regression--Impact of %Δ Number of Overseas Filipino Workers on the %Δ Tertiary Education Enrollment, 1989-2004**  
**Dependent Variable: %Δ Tertiary Education Enrollment**

To complement tests done in models 1 through 3 that produce conclusions that can imply the direction of causality, another OLS regression model was used to test for the reverse relationship. This model tests to see whether the number of OFWs leaving the country (lagged up to four years) has an impact on tertiary enrollment. First difference tests were used with the same control variables in the previous models. The full specification of the model is as follows:

$$\% \Delta Enroll = \alpha + \beta_1 \% \Delta OFW_t + \beta_2 \% \Delta OFW_{t-1} + \beta_3 \% \Delta OFW_{t-2} + \beta_4 \% \Delta OFW_{t-3} + \beta_5 \% \Delta OFW_{t-4} + \beta_6 Unemploy_{(t-1)} + \beta_7 GDP_{(t-1)} + \beta_8 Pop_t + \beta_9 Underemploy_{(t-1)} + \beta_{10} LnPop + \varepsilon_t$$

If there is a statistically significant relationship between the number of OFWs (lagged up to 4 years) on number of students enrolled in tertiary schools, it would be difficult to conclude that tertiary education is leading to more out-migration. Instead, out-migration can be leading to more Filipinos entering tertiary schools.

## Results

Tables 5.4 to 5.7 summarize the results of these four regression models that test for statistical significance between tertiary education and out-migration. The results clearly show that there is a highly statistically significant relationship between tertiary education and out-migration controlling for other factors. The specific results for each model are outlined below.

### ***Model 1 Results: Tertiary Enrollment 3-4 years earlier lead to increases in number of OFWs***

Model 1 results show a strong statistically significant relationship between the tertiary enrollment of 3 and 4 years earlier on the number of OFWs when using the full sample and running the model with only year fixed effects (table 5.4). This means that a percentage change in tertiary enrollment in a given year leads to an increase in the number of Overseas Filipino Workers (OFWs) leaving the country three years later by 0.23% on average per region at the 1% level. The 4-year effect is an increase in the number of OFWs by 0.16% on average per region at the 5% level.

There are notable differences between urban and non-urban regions. The urban regions provide the majority of employment opportunities in industry, while non-urban regions are dominated by the agricultural sector. The sample was split into two types: “urban regions” that include urban populations greater than or equal to 50 percent. This includes Region 3, 4, 7 and the National Capital Region (NCR) where the largest city, Manila, is located. The rest of the regions are “non-urban” that contain less than the 50 percent urban population threshold. Table 5.4 reports the regressions of models 1 with the following samples: “all regions,” “urban regions,” and “non-urban regions.” Since this analysis uses a panel dataset, a year dummy was created to control for the variation in time.

**Table 5.4:**  
**Impact of %Δ Tertiary Education Enrollment on the %Δ Number of OFWs, 1989-2004**  
*Dependent Variable: %Δ in Number of Overseas Filipino Workers (OFWs)*

	All Regions		Urban Regions		Non-Urban Regions	
%Δ in Tertiary Enrollment	0.16*** (0.04)	0.18*** (0.06)	-0.08 (0.29)	-0.12 (0.41)	0.17*** (0.04)	0.21*** (0.07)
%Δ in Tertiary Enrollment (t-1 year)	0.002 (0.04)	0.12 (0.10)	0.16 (0.13)	0.16 (0.23)	-0.009 (0.04)	0.02 (0.13)
%Δ in Tertiary Enrollment (t-2 years)	-0.02 (0.04)	0.004 (0.05)	-0.18** (0.09)	-0.20 (0.18)	-0.007 (0.04)	0.03 (0.06)
%Δ in Tertiary Enrollment (t-3 years)	0.20*** (0.04)	0.23*** (0.05)	-0.06 (0.09)	-0.06 (0.17)	0.23*** (0.04)	0.26*** (0.06)
%Δ in Tertiary Enrollment (t-4 years)	0.13** (0.07)	0.16** (0.09)	-0.06 (0.09)	-0.05 (0.16)	0.20** (0.10)	0.27** (0.12)
Unemployment Rate (t-1)		0.0003 (0.0004)		0.001 (0.001)		0.00001 (0.0005)
GDP per capita (t-1)		-4.06e-06 (0.00005)		-0.00003 (0.00007)		0.00005 (0.00008)
Population Growth		0.0004 (0.00005)		-0.001 (0.002)		0.0003 (0.002)
Underemployment Rate (t-1)		0.00002 (0.00007)		-0.00001 (0.0003)		0.00005 (0.00009)
Log Population		0.002 (0.003)		-0.005 (0.03)		-0.0002 (0.003)
Year Fixed Effects	N	Y	N	Y	N	Y
Observations	94	94	24	24	70	70
Adjusted R-Squared	0.32	0.34	0.31	0.05	0.40	0.42

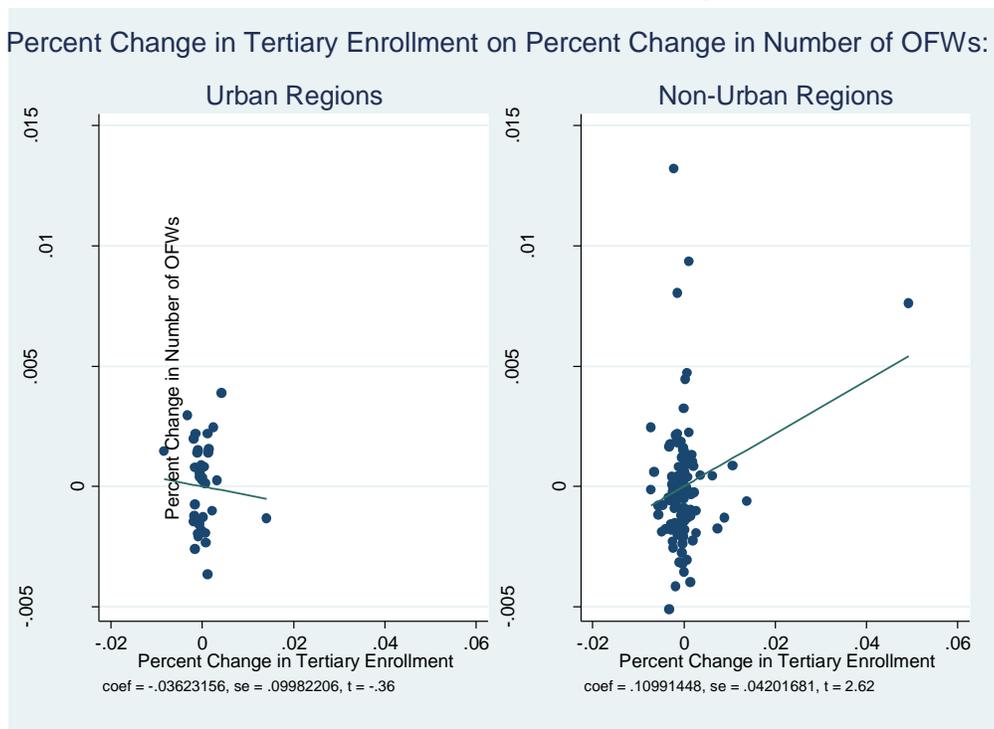
Y=Yes and N=No to indicate whether or not the Year Fixed Effects were taken into account in the model  
Urban Regions=Regions with 50% or greater urban population; Non-Urban Regions=Regions with less than 50% urban  
significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%; Standard Errors are in parentheses

Figure 5.5 illustrates these differences in an avplot function controlling for other variables in the regression model to produce predicted values between urban and non-urban regions.

**Figure 5.5**  
**Comparison of Effects of Percent Change in Tertiary Enrollment**  
**on the Percent Change in Number of OFWs,**  
**Urban versus Non-Urban Regions, 1989-2004**

**AVPLOT: Predicted Values from Regression**

Impact of Percent Change in Tertiary Enrollment on Percent Change in Number of OFWs: By Region



***Model 2 Results: Tertiary Graduates 1 year earlier lead to increase in number of OFWs***

When running a regression with the percent change in number of tertiary graduates instead of enrollment, the results confirm that tertiary education is having an impact on the number of OFWs. This regression controls for variation in the length of degree programs by focusing on data of those who graduated during a given year. Table 5.5 shows that there is a

statistically significant relationship for tertiary graduates lagged by 1 year on current year out-migration. This means that a percentage increase in tertiary graduates a year ago leads to a 0.13% increase in Overseas Filipino Workers on average per region at the 5% level. Building on regression model 1, this means that Filipinos graduating from 2 to 4-year tertiary degree programs are migrating abroad as OFWs a year after receiving their degree. Many programs such as nursing, allied health workers, and jobs in the maritime industry are 2 to 3-year educational programs, and it usually takes another year to find a job overseas and process their contract through the Philippine Overseas Employment Administration.

Taking a look at the percent change in tertiary enrollment and graduates by discipline group reveals increases in specific programs that are geared towards overseas employment.<sup>22</sup> Table 5.6 shows that enrollment in medical and allied courses grew the highest of any discipline group (1.23%) during the 1996 to 2004 period and had the second highest growth in number of graduates in this field (0.71%). Of all discipline groups, medical and allied groups made up 9.71% of all tertiary enrollment in 1996 and 18.55% in 2004. This was a dramatic increase that includes those attending nursing schools and other health-related fields (physical therapy, nursing assistant, medical technologists, and medical doctors).

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<sup>22</sup> For the analysis of tertiary education enrollment and graduates by discipline groups, this analysis only used years 1996 to 2004 instead of starting at 1989 since the Philippine Statistical Yearbooks changed the categories of discipline groups between years 1995 and 1996 making it difficult to compare over time for all years in the regression analysis.

**Table 5.5:**  
**Impact of %Δ Tertiary Graduates on the %Δ Number of OFWs, 1996-2003**  
*Dependent Variable: %Δ Number of Overseas Filipino Workers (OFWs)*

	All Regions		Urban Regions		Non-Urban Regions	
%Δ in Tertiary Graduates	-0.04 (0.05)	-0.06 (0.13)	-0.27 (0.25)	-0.60 (0.48)	-0.03 (0.05)	-0.04 (0.08)
%Δ in Tertiary Graduates (t-1 year)	0.11** (0.05)	0.13** (0.06)	0.28 (0.23)	0.25 (0.28)	0.11** (0.05)	0.13** (0.07)
%Δ in Tertiary Graduates (t-2 years)	-0.06 (0.05)	-0.04 (0.10)	-0.30 (0.19)	-0.19 (0.32)	-0.05 (0.05)	-0.04 (0.12)
Unemployment Rate (t-1)		0.0006 (0.0004)		0.002 (0.001)		0.0005 (0.0004)
GDP per capita (t-1)		-0.0004 (0.00007)		-0.00007 (0.0001)		-0.00001 (0.0001)
Population Growth		0.00004 (0.001)		-0.002 (0.003)		0.0003 (0.002)
Underemployment Rate (t-1)		0.00003 (0.00009)		-5.55e-05 (0.0003)		0.00005 (0.0001)
Log Population		-0.0003 (0.002)		-0.01 (0.04)		-0.0002 (0.003)
Year Fixed Effects	N	Y	N	Y	N	Y
Observations	80	80	20	20	60	60
Adjusted R-Squared	0.10	0.17	0.20	0.04	0.11	0.15

Y=Yes and N=No to indicate whether or not the Year Fixed Effects were taken into account in the model  
Urban Regions=Regions with 50% or greater urban population; Non-Urban Regions=Regions with less than 50% urban  
significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%; Standard Errors are in parentheses

Other disciplines that channel students into overseas labor markets are educational and teacher training programs (0.66% increase in tertiary graduates) and humanities programs (0.92% increase in tertiary enrollment and 0.72% increase in tertiary graduates) that account for the bulk of growth in the number of teachers heading abroad on overseas contracts. Tertiary-level maritime education is important training for Filipinos leaving as sea-based overseas contract workers and make up an average of over 3% of all tertiary enrollment in 2001 and 2002.<sup>23</sup>

**Table 5.6 Percent Change in Philippine Tertiary Enrollment and Tertiary Graduates between 1996 and 2004**

<b>Discipline Group</b>	<b>%Change in Tertiary Enrollment</b>	<b>%Change in Tertiary Graduates</b>
Agricultural, Forestry, Fisheries, and Veterinary Medicine	-0.01%	0.07%
Architectural and Town Planning	0.04%	0.55%
Business Administration and Related Programs	-0.16%	0.14%
Education and Teacher Training	0.22%	0.66%
Engineering	0.05%	0.27%
Fine and Applied Arts	0.12%	-0.30%
General	-0.68%	-0.77%
Home Economics	0.11%	-0.50%
Humanities	0.92%	0.72%
Law and Jurisprudence	0.23%	0.24%
Mass Communication and Documentation	1.11%	0.23%
Mathematics and Computer Science	0.56%	0.60%
Medical and Allied Courses	1.23%	0.71%
Natural Science	0.02%	-0.26%
Religion and Theology	-0.06%	-0.38%
Service Trades	0.70%	-0.02%
Social and Behavioral Science	0.59%	0.75%
Philippines	0.17%	0.22%

Source: Philippine Statistical Yearbooks, 1997-2005

<sup>23</sup> The Philippine Statistical yearbooks only created a separate maritime category for tertiary education for year 2001 and 2002, and did not have a separate category for previous and future years. Therefore, no calculations can be made for the percent growth between 1996 and 2004 since data is not available for maritime education.

### ***Model 3 Results: Tertiary Enrollment impacts OFWs in Age Groups 25 to 49 years old***

Regression model 3 utilizes data from the *Survey on Overseas Filipinos* that has the number of OFWs leaving the country at the regional-level by age. This allows for further breaking down of the dependent variable (percent change in number of OFWs) by age cohorts to understand if tertiary education has different impacts on OFWs by age groups. The analysis splits OFWs into three age cohorts to reflect typical educational ages (ages 24 years old and younger), working age (ages 25 to 49 years old), and the mature age population (ages 50 and over). This method uses Zellner's seemingly unrelated regression to simultaneously run three regression equations in one model.

The results show that for every percentage increase of tertiary enrollment, the number of OFWs ages 25 to 49 year old increases by 0.19% on average per region at the 1% level (see table 5.7). There is no statistical significant relationship for OFWs ages 24 years old and under, and OFWs ages 50 years and older. This regression result shows that tertiary education enrollment has a direct impact on the working age population (ages 25 to 49) rather than school age (those 24 and under) and those much older (50 and over). This regression provides further evidence about the direction of causality between education and out-migration. The reason why there is no statistical significance for school age population and OFWs is because this population is still in school and would not be in the job market until after they graduate. On the other hand, tertiary enrollment's effect on working age population means that after Filipinos complete their tertiary degrees, they would enter the job market and leave the country as overseas contract workers in the ages 25 to 49 year old age group. Furthermore, older OFWs ages 50 and over were not in school before they migrated abroad.<sup>24</sup>

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<sup>24</sup> The author collapsed the data into these three age cohorts to align with the Philippine National Statistics Office definition of "school-age" (under 24 years old) and "working-age" (25 to 49 years old). The seemingly unrelated

**Table 5.7**  
**Seemingly Unrelated Regression Estimates**  
**Impact of %Δ in Tertiary Education Enrollment on the %Δ in Number of OFWs, 1993-2002**  
*Dependent Variable: %Δ in Number of Overseas Filipino Workers (OFWs)*

Explanatory Variable	Equation for %Δ in Overseas Filipino Workers by Age Cohorts		
	Ages 24 years old and younger	Ages 25 to 49 years old	Ages 50 years old and older
%Δ in Tertiary Enrollment	0.23 (0.16)	0.18*** (0.04)	0.48 (0.31)
Unemployment Rate (t-1)	-0.0004 (0.0006)	-0.0001 (0.0001)	-0.001 (0.001)
GDP per capita (t-1)	0.00007 (0.00007)	0.00001 (0.00002)	0.0001 (0.0001)
Population Growth	0.0006 (0.002)	-0.00007 (0.00002)	-0.001 (0.003)
Underemployment Rate (t-1)	0.0002 (0.0001)	0.00001 (0.00003)	0.00005 (0.00005)
Log Population	0.0001 (0.002)	0.0006 (0.0005)	0.002 (0.004)
Year Fixed Effects	Y	Y	Y
Observations	123	123	123
R-Squared	0.04	0.15	0.70

Y=Yes and N=No to indicate whether or not the Year and Regional Fixed Effects were taken into account in the model  
significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%  
Standard Errors are in parentheses

regression did run this regression with 5 year intervals (e.g. ages 15-19, 21-24, etc) and found that the results showed statistical significance between tertiary education on number of OFWs leaving for ages 25-29, 30-34, and 35-39—which are the most productive years of a person’s working age life.

#### ***Model 4 Results: Out-Migration has No Impact on Tertiary Enrollment***

One method for ensuring that the direction of causality for the results of regression models 1 to 3 are correct is to run the reverse regression with the percent change of OFWs as the independent variable and the percent change in tertiary enrollment as the dependent variable. This regression lagged out-migration (% $\Delta$  of OFWs) for up to 4 years to see if out-migration 1 to 4 years earlier has an impact on the number of Filipinos enrolling in tertiary schools. The results of the regression show that there is no statistically significant relationship between out-migration (lagged from 1 to 4 years) on the number of Filipinos enrolling in tertiary schools (see table 5.8). There is a statistical significant relationship for percent change of current OFWs on the percent change of current year tertiary enrollment, but this is expected since the two variables are endogenous. Models 1-3 overcome the endogeneity problem by using first difference test and lagged variables, and a seemingly unrelated regression for splitting the dependent variable (out-migration) by age cohorts. This reverse statistical test in model 4 provides further evidence that prior year tertiary enrollment and graduation is having an impact on current year out-migration rather than vice versa.

**Table 5.8:**  
**Reverse Regression to Check for Endogeneity**  
**Impact of %Δ Number of Overseas Filipino Workers on the**  
**%Δ Tertiary Education Enrollment, 1989-2004**  
**Dependent Variable: %Δ Tertiary Education Enrollment**

	All Regions	
%Δ Number of Overseas Filipino Workers	0.63** (0.27)	0.52* (0.27)
%Δ Number of Overseas Filipino Workers (t-1 year)	-0.07 (0.29)	-0.04 (0.33)
%Δ Number of Overseas Filipino Workers (t-2 years)	0.03 (0.29)	0.03 (0.34)
%Δ Number of Overseas Filipino Workers (t-3years)	-0.19 (0.29)	-0.11 (0.32)
%Δ Number of Overseas Filipino Workers (t-4 years)	0.07 (0.32)	0.29 (0.36)
Unemployment Rate (t-1)		-0.001* (0.0007)
GDP per capita (t-1)		-5.77e-06 (0.0001)
Population Growth		-0.002* (0.002)
Underemployment Rate (t-1)		0.0002 (0.0002)
Log Population		0.003 (0.003)
Year Fixed Effects	N	Y
Observations	107	107
Adjusted R-Squared	0.07	0.15

Y=Yes and N=No to indicate whether or not the Year and Regional Fixed Effects were taken into account in the model  
significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%  
Standard Errors are in parentheses

#### **IV. Technical Skills and Vocational Education Deterring Overseas Employment**

The Technical Skills and Vocational Education and Training System (TVET) of the Philippines is the other key component of post-secondary education in the Philippines. The TVET program started when President Ferdinand Marcos and his technocrats developed the National Manpower and Youth Council (NYMC) and the Bureau of Technical Skills and Vocational Education in the early 1970s. This program was Marcos's attempt at aligning the educational system with local labor market needs and dealing with the educated unemployment problem. With Republic Act No. 7796 (the "Technical Education and Skills Development Act of 1994") these two agencies merged with the Apprenticeship Program of the Bureau of Local Employment to form the Technical Education and Skills Development Authority (TESDA), a government agency focused on training Filipinos in middle-level skills for the local domestic labor market.<sup>25</sup>

Compared to the highly unregulated "invisible hand" tertiary educational system, TESDA provided a "guiding hand" in technical skills and vocational education for the Philippines by: (1) direction setting, (2) development of standards and training systems, and (3) support to TVET providers.<sup>26</sup> The majority of TVET programs are offered by private schools. As of 2006, there are 4,510 TVET providers, of which 62% (or 2,786) are private and 38% (or 1,714) are public. Public TVET schools include 121 TESDA Technology Institutes, 15 regional training centers, 45 Provincial Training Centers and 4 Specialized training centers.<sup>27</sup> Public state universities and colleges as well as local colleges also offer non-degree programs.<sup>28</sup>

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<sup>25</sup> Augusto Boboy Syjuco, "The Philippine Technical Vocational Education and Training (TVET) System," (Manila: Technical Education and Skills Development Authority, 2006).

<sup>26</sup> Technical Education and Skills Development Authority, *The Philippine Technical Vocational Education and Training (TVET) System* (Manila: Republic of the Philippines, 2005).

<sup>27</sup> Augusto Boboy Syjuco, "The Philippine Technical Vocational Education and Training (TVET) System," (Manila: Technical Education and Skills Development Authority, 2006), 3.

<sup>28</sup> Ibid.

TESDA plays a major coordinating role with local employer and TVET providers to ensure that skills training are relevant to industry.<sup>29</sup> The universe of potential trainees in TVET programs include high school graduates, secondary school leavers, college undergraduates and graduates, and returning Overseas Filipino Workers (OFWs) who decided to stay and work in the country as part of the government's reintegration program. In the same way section III ran regressions to test for the impact of tertiary education on the number of Filipinos leaving the country as OFWs, this section focuses on two regression models to see the impact TVET has on out-migration.

### **Specification of the Regression Models**

#### **Model 5: Impact of % $\Delta$ Number of Technical Skills and Vocational Training on the % $\Delta$ Number of Overseas Filipino Workers, 1989-2004**

Statistical model 5 uses first differences to test if there is a significant relationship between a percent change in technical skills and vocational education (*Vocational*) lagged up to 2 years on the percent change in number of OFWs leaving the country of contract labor. This statistical model uses the same control variables as the previous models. The independent variable of primary concern, *Vocational*, is equal to the percent change of people trained in Philippine technical skills and vocational training (TVET) institutions between current year (t) and the previous year (t-1) lagged up to 2 years (t-2):

$$\% \Delta Vocational_t = [Vocational_t - Vocational_{t-1}] \text{ divided by } [Vocational_{t-1} \times 100]$$

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<sup>29</sup> Augusto Boboy Syjuco, "The Philippine Technical Vocational Education and Training (TVET) System."

The dependent variable, *OFW*, is the same as in the previous regression models; it equals the percent change of OFWs leaving the country between the current year (t) and the previous year (t-1). The full specification of the regression is:

$$\% \Delta OFW_t = \alpha + \beta_1 \% \Delta Vocational_t + \beta_2 \% \Delta Vocational_{t-1} + \beta_3 \% \Delta Vocational_{t-2} + \beta_6 Unemploy_{(t-1)} + \beta_7 GDP_{(t-1)} + \beta_8 Pop_t + \beta_9 Underemploy_{(t-1)} + \beta_{10} LnPop + \varepsilon_t$$

This study expects a negative relationship between *Vocational* and *OFW* since the TVET system focuses on employing Filipinos in the domestic labor market rather than overseas. A statistically significance relationship showing technical skills-vocational education decreasing the number of Filipinos leaving the country would also show that a more highly-controlled system regulated by TESDA is successful in training Filipinos for the local labor market.

**Model 6:  
Impact of %Δ Number of Technical Skills and Vocational Training on the  
%Δ Tertiary Education Enrollment, 1989-2004**

Model 6 tests for the statistical relationship between technical-vocational education (*Vocational*) and enrollment in tertiary schools (*Enroll*). It uses the same first differences test to understand if a percent change in *Vocational* lagged up to 2 years leads to a percent increase or decrease in tertiary enrollment. This is the full specification of the regression:

$$\% \Delta Enroll_t = \alpha + \beta_1 \% \Delta Vocational_t + \beta_2 \% \Delta Vocational_{t-1} + \beta_3 \% \Delta Vocational_{t-2} + \beta_6 Unemploy_{(t-1)} + \beta_7 GDP_{(t-1)} + \beta_8 Pop_t + \beta_9 Underemploy_{(t-1)} + \beta_{10} LnPop + \varepsilon_t$$

This study expects technical skills and vocational education to have a negative statistically significant relationship with tertiary enrollment. If this is true, as more Filipinos attend TESDA schools, there is a decrease in the amount of those enrolling in tertiary schools.

## **Data Sources**

The Philippine Statistical Yearbooks publishes annual data on the number of Filipinos trained in the Technical Skills and Vocational Education (TVET) system by regions. This is consistent with the other regional-level data used for the previous regressions. TVET data is available for years 1980 through 2011. This analysis uses TVET data for years 1989 to 2004 to be consistent with the regional-level data available for the other variables and also to be able to compare the same time period with tertiary education in the previous regression models. A summary of the descriptive statistics is outlined in table 5.3.

## **Results**

### ***Model 5 Results: Technical Skills-Vocational Training lead to decreases in Number of OFWs***

This model tests to see if TVET training has an impact on out-migration. The results show that a percentage increase in technical skills and vocational education training 2 years ago leads to a decrease in the number of Overseas Filipino Workers leaving the country by 0.06% on average per region at the 5% level (see table 5.9 for results). This means that vocational education is training Filipinos for the domestic labor market, rather than for out-migration as demonstrated in the previous models for tertiary education enrollment. The results also show that this relationship is significance for non-urban regions versus urban regions. Therefore, Filipinos living in non-urban regions that attend TVET programs are more likely to stay and work in the Philippines two years after enrolling in the program. The lag of two years takes into account the typical length of TVET programs (usually 2 years or less) and the amount of time it takes to secure employment in the domestic labor market.

**Table 5.9:**  
**Impact of %Δ Number of Technical Skills and Vocational Training on the**  
**%Δ Number of Overseas Filipino Workers, 1989-2004**

*Dependent Variable: %Δ Number of Overseas Filipino Workers (OFWs)*

	All Regions		Urban Regions		Non-Urban Regions	
%Δ in Technical Skills and Vocational Training	-0.02 (0.03)	-0.03 (0.03)	-0.04 (0.04)	-0.01 (0.05)	-0.02 (0.03)	-0.03 (0.04)
%Δ in Technical Skills and Vocational Training (t-1 year)	-0.01 (0.03)	-0.03 (0.03)	0.03 (0.04)	0.06 (0.06)	-0.03 (0.04)	-0.06 (0.04)
%Δ in Technical Skills and Vocational Training (t-2 years)	-0.05** (0.03)	-0.06** (0.03)	-0.04 (0.04)	0.001 (0.06)	-0.05* (0.04)	-0.09** (0.04)
Unemployment Rate (t-1)		0.0003 (0.0002)		0.0004 (0.0003)		0.0001 (0.0003)
GDP per capita (t-1)		-0.0003 (0.00002)		-0.00006 (0.00004)		0.00001 (0.00004)
Population Growth		0.0002 (0.0007)		0.001 (0.001)		-0.0009 (0.002)
Underemployment Rate (t-1)		0.00001 (0.00005)		-0.0002 (0.0001)		0.00006 (0.00006)
Log Population		0.004 (0.002)		-2.81e-06 (0.01)		0.005 (0.003)
Year Fixed Effects	N	Y	N	Y	N	Y
Observations	126	126	36	36	90	90
Adjusted R-Squared	0.03	0.07	0.08	0.31	0.03	0.10

Y=Yes and N=No to indicate whether or not the Year Fixed Effects were taken into account in the model

Urban Regions=Regions with 50% or greater urban population;

Non-Urban Regions=Regions with less than 50% urban

significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%; Standard Errors are in parentheses

***Model 6 Results: Technical Skills-Vocational Education lead to decreases in Tertiary Enrollment***

As an extension of model 5, this regression is used to test the relationship between the two types of post-secondary education: in other words, whether enrollment in TVET is a substitute for tertiary education. The results show that a percent increase in technical skills and vocational education training a year ago, leads to a decrease in tertiary education enrollment by 0.08% on average per region at the 5% level (see table 5.10). This means that Filipinos attending post-secondary schools are usually only attending one type of institution: either TVET, which leads to a higher chance of being employed in the domestic economy, or tertiary schools that lead to a higher chance of leaving the country on overseas employment.

**Table 5.10:**  
**Impact of %Δ Number of Technical Skills and Vocational Training on the**  
**%Δ Number of Tertiary Education Enrollment, 1989-2004**  
*Dependent Variable: %Δ Number of Tertiary Education Enrollment*

	All Regions	
%Δ in Number of Technical Skills and Vocational Training	0.02 (0.04)	0.02 (0.04)
%Δ in Number of Technical Skills and Vocational Training (t-1 year)	-0.08** (0.04)	-0.08** (0.04)
%Δ in Number of Technical Skills and Vocational Training (t-2 years)	-0.05 (0.04)	-0.05 (0.04)
Unemployment Rate (t-1)		0.0001 (0.0002)
GDP per capita (t-1)		-0.00002 (0.00002)
Population Growth		0.0004 (0.0002)
Underemployment Rate (t-1)		0.00002 (0.00003)
Log Population		-0.0003 (0.0006)
Year Fixed Effects	N	Y
Observations	126	126
Adjusted R-Squared	0.06	0.08

Y=Yes and N=No to indicate whether or not the Year Fixed Effects were taken into account in the model

Urban Regions=Regions with 50% or greater urban population;

Non-Urban Regions=Regions with less than 50% urban

significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%; Standard Errors are in parentheses

## **V. Education, Migration and Economic Development**

The empirical results presented in this paper show that management of post-secondary education matters in determining whether Filipinos will study to work in overseas or domestic labor markets. The paper argues that domestic tertiary educational institutions played a key role in the evolution of the Philippine labor exporting industry by gearing training towards overseas employment. Using regional-level data from the Philippine Statistical Yearbooks and the Survey on Overseas Filipinos from 1989 to 2004, this paper provides an empirical examination of the impact that Philippine tertiary education has on the number of Overseas Filipino Workers (OFWs) leaving the country on contract labor abroad. Using first differences tests and lagged variables to control for endogeneity, the regression results show a strong, statistically significant relationship between the increase in the number of Filipinos enrolling and graduating from tertiary schools and an increase in the number of OFWs, controlling for other factors. Furthermore, the results of a seemingly unrelated regression illustrate that there is a statistically significant relationship between tertiary enrollment and working age OFWs (ages 25 to 49) and no statistical significance relationship with school age OFWs (24 years and younger) and older OFWs (50 years and older). On the other hand, using regional-level data from the Technical Education and Skills Development Authority, technical skills and vocational training have a statistically significant negative impact on the number of OFWs leaving the country, controlling for other factors. As more Filipinos get training from TVET, the less likely they are to leave for work abroad. This difference in outcomes reveals that a more autonomous and largely unregulated tertiary educational system gears training towards out-migration, whereas the more state-controlled technical skills and vocational educational system focuses on local employment.

The Philippines' post-secondary education management has an impact on labor market outcomes. Both tertiary educational (62%) and vocational educational (75%) systems in the Philippines are dominated by private schools.<sup>30</sup> At the national-level, tertiary schools produced about 220,000 to 410,000 graduates annually during the 1989 to 2004 period (refer back to figure 5.3 for trend lines).<sup>31</sup> During the same time period, schools providing training for TVET produced between 182,000 to 1.1 million graduates a year. The tertiary system relies heavily on voluntary accreditation for quality control and a more “invisible hand” approach to education; in contrast, the curriculum and direction of the TVET system is managed by a “guiding hand” from the Philippine government's TESDA. Depending on the profession, tertiary graduates usually take a professional board exam to prove their competency in their field. Students are not required to pass the board exams in order to graduate, but passing scores are required to practice certain professions such as engineering, nursing, medicine, and law. These board exams are administered by the Philippine Professional Regulation Commission and passage rates vary by program. Public tertiary schools have a much higher passage rate than private ones, perhaps an indication that the quality of instruction for passing the board exams are higher in public universities. On the other hand, TVET graduates are required to pass competency examinations in order to be “certified” as a TVET graduate.<sup>32</sup> This certificate is used as proof that the TVET graduate is ready to work as a skilled worker. In 2001, about 145,000 out of the 185,000 or 78% of TVET enrollees were certified through the national competency assessment examination.<sup>33</sup>

Assessments of the TVET system show that over 60% of graduates eventually join the domestic

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<sup>30</sup> These statistics are both for 2010. Tertiary educational institutions data is provided by Philippine Commission on Higher Education and for Technical Skills and Vocational Education by the Technical Education and Skills Development Authority.

<sup>31</sup> For trend lines refer back to figure 5.3 Source for data is Philippine Statistical Yearbooks, various years.

<sup>32</sup> Augusto Boboy Syjuco, “The Philippine Technical Vocational Education and Training (TVET) System,” (Manila: Technical Education and Skills Development Authority, 2005), 11.

<sup>33</sup> Ibid.

labor force.<sup>34</sup> While the tertiary educational system continues to contribute to an educated unemployment problem that Philippine labor economist Edita Tan claims is an outcome of the flexibility of private higher educational institutions to quickly adjust their curriculum to train Filipinos for overseas labor markets.<sup>35</sup>

Tan's analysis is especially true for nursing. The Philippines has more trained nurses per capita than anywhere in the world.<sup>36</sup> About 60 percent of those trained for nursing eventually leave the country to work abroad, whereas the rest either are unemployed or employed in a non-nursing occupation (in Philippines or abroad).<sup>37</sup> Private schools in the Philippines are able to supply this market since there is no cap to the number of nurses that can be trained. Instead, the profession is regulated by the Philippine Regulation Commission for issuing licenses based on board examinations. Labor export continues to profit private tertiary schools that can provide for both labor markets simultaneously without restrictions from the government. The private tertiary educational system is globally responsive because it relies on private rather than public funds to finance the education of Filipinos working overseas, thereby allowing it the flexibility to meet the changing demands of overseas employers.<sup>38</sup>

While most of the literature on the nexus between migration and economic development focused on debates between "brain drain", "brain gain" or "brain circulation", this thesis provides evidence that a "brain overflow" is being created deliberately through a Philippine tertiary educational system that is training Filipinos for labor export. Tertiary education is

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<sup>34</sup> Augusto Boboy Syjuco, "The Philippine Technical Vocational Education and Training (TVET) System."

<sup>35</sup> Edita Tan, "Migration in an Open-Education Labor Market." Paper presented at the International Conference on Remittances, Manila, Central Bank of the Philippines, March 30-31, 2009.

<sup>36</sup> World Health Organization, *World Health Statistics 2005* (Geneva: World Health Organization, 2005).

<sup>37</sup> A. King, "Philippines," in Y. Atal and L. Dall'Oglio (editors), *Migration of Talent: Causes and Consequences of Brain Drain* (Bangkok: UNESCO: 15-118).

<sup>38</sup> Florian A. Albuero and Danilo I. Abella, "Skilled Labour Migration from Developing Countries: Study on the Philippines," *International Migration Paper Series*, no. 51 (Geneva: International Labour Office, July 2002), 20-21.

feeding the labor export market. When Filipinos attend tertiary educational institutions, there is an expectation for higher returns to investment in school. But the domestic labor market is limited in job offerings that can offer high returns to education. As discussed in section II, a dual labor market exists where tertiary graduates could gain higher returns to their education by going abroad working in the primary (white-collar) or secondary (blue-collar) jobs rather than staying in the domestic labor market. From 1975 to 2011, the growth trends in figures 5.1 and 5.2 show that white-collar employment in the domestic labor market grew slowly compared to the overseas labor market. On the other hand, the number of blue-collar jobs showed a much larger growth trend domestically and also abroad—about 50% of OFWs with a college degree or higher in 2001 take blue-collar jobs.<sup>39</sup> As discussed in section II, there has been a high growth of tertiary-educated Filipino domestic helpers working abroad. As dual labor market theorists propose, even though domestic work and blue-collar jobs would be considered “low-status and low-paying” jobs in the domestic economy, the distance away from their homes and higher-pay makes the job desirable among tertiary-educated Filipinos working abroad.<sup>40</sup>

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<sup>39</sup> Analysis of the *Survey on Overseas Filipinos 2002*.

<sup>40</sup> Dual labor market theorists have shown that social status is important in determining whether or not someone is willing to take a blue-collar job. Migrants, by their nature, are away from the social community they grew up with, and are more willing to take blue-collar jobs abroad because of this distance.

## Appendix I

### Detailed Description of Occupation Types Abroad

<b>Type</b>	<b>Broad Category</b>	<b>Specific Occupations</b>
Type 1	Professional, technical and related workers (includes entertainers)	-Medical, dental veterinary and related workers -Aircrafts and Ships' officers -Architects, Engineers and related technicians -Composers and performing arts -Sculptors, painters, photographers and related creative artists -Teachers (including supervisors and principals) -Mathematicians, statisticians, system analysts and related workers -Other
Type 2	Managerial, executive and administrative workers	-same as broad category
Type 3	Clerical workers	-Clerical and related workers NEC -Bookkeepers, cashiers and related workers -Computing machine operators -Telephone and Telegraph operators -Secretaries, stenographers, typist and card/tape-punching machine operators -Other
Type 4	Sales workers	-Salesmen, shop assistants and related workers -Sales supervisors and buyers -Others
Type 5	Service workers	-Helpers and related housekeeping service workers NECK -Cooks, waiters, bartenders and related workers -Building caretakers, cleaners and related workers -Service workers NEC -Hairdressers, barbers, beauticians and related workers -Protective Service Workers -Others
Type 6	Agricultural, animal husbandry, forestry workers and fisherman	-Agricultural, and animal husbandry workers, fishermen hunters and related workers -Others
Type 7	Production process workers, transport equipment operations and laborers	-Transport equipment -Bricklayers, carpenters and other construction workers -Electrical fitters and related electrical and electronics workers -Plumbers, welders, sheet-metal and structural metal preparers and erectors -Machinery fitters, machine assemblers and precision-instrument makers -Laborers NEC -Tailors, dressmakers, sewers, upholsterers and related workers -Material handling and related equipment operators -Painters -Production and related workers NEC -Production supervisors and general foreman -Blacksmiths, toolmakers and machine-tool operators -Food and beverages processors -Furniture makers and related workers -Stationary Engine and Related Equipment Operators

**Appendix II**  
**Categories of Blue-Collar and White-Collar Jobs**

<b>Job Type</b>	<b>Broad Occupational Category</b>
<b>Blue-Collar</b>	<p><u>For Years 1975-2000:</u></p> <ul style="list-style-type: none"> <li>• Type 4: Sales Workers</li> <li>• Type 5: Service Workers</li> <li>• Type 6: Agricultural, animal husbandry, forestry workers and fishermen</li> <li>• Type 7: Production process workers, transport equipment operations and laborers</li> </ul> <p><u>For Years 2001-2011:</u></p> <ul style="list-style-type: none"> <li>• Type 5: Service workers, shop, and market sales workers</li> <li>• Type 6: Farmers, forestry workers and fishermen</li> <li>• Type 7: Trade and related workers</li> <li>• Type 8: Plant and machine operators and assemblers</li> <li>• Type 9: Laborers and unskilled workers</li> </ul>
<b>White-Collar</b>	<p><u>For Years 1975-2000:</u></p> <ul style="list-style-type: none"> <li>• Type 1: Professional, technical and related workers</li> <li>• Type 2: Managerial, executive and administrative workers</li> <li>• Type 3: Clerical workers</li> </ul> <p><u>For Years 2001-2011:</u></p> <ul style="list-style-type: none"> <li>• Type 1: Officials of Government, Special-interest organizations, corporate executives, managers, managing proprietors and supervisors</li> <li>• Type 2: Professionals</li> <li>• Type 3: Technicians and associate professionals</li> <li>• Type 4: Clerks</li> </ul>

Note: The Philippine National Statistics Office changed categories of occupations in 2001, which means that there are different occupational types for years 1975-2000 and 2001-2011.

