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Abstract

This paper examines the impact on employment and wages of liberalization in selected services subsectors (banking, distribution, and telecommunications) in the Philippines from 1991 to 2004. On the assumption that value-added effects arise from service liberalization that subsequently increase productivity in other sectors and influence changes in average wages across industries, results indicate that liberalization may have potentially harmed more vulnerable populations that are less educated, and created greater opportunities for employment in good jobs for higher-skilled males relative to females. This suggests the need for policies to support education, as the Philippine economic structure shifts away from primary and secondary sector production, which typically requires a higher skilled and more educated labor force. Greater disaggregation of the data along the lines of gender, education, occupation, and employment status highlights the usefulness of careful policy analysis in designing programs to redress distributional imbalances that accompany liberalization and structural transformation.

I. Introduction

During the period 1994–2000, trade protection in the Philippines declined while income inequality increased markedly. Merchandise trade as a proportion of gross domestic product (GDP) rose from 56% to over 100% and the Gini coefficient (based on Labor Force Survey [LFS] data for hourly wages) increased from 0.36 to 0.41. The period covers the bulk of the implementation of reforms carried out under the 1992–1998 Ramos administration.[1] This was also a period when the structure of the economy shifted noticeably toward the services sectors in both output and employment, as the reductions in protection led to a trade-induced reallocation of employment toward more protected sectors, and especially to services, where wage inequality was already relatively high (Hasan and Jandoc 2010).

Theory suggests that trade liberalization will raise the relative factor price of unskilled labor in developing countries (which presumably have relatively larger endowments of unskilled labor) and thereby lead to a decline in inequality. Goldberg and Pavcnik (2007) showed that this is not always the case in practice. Increasing inequality during a period of trade liberalization may follow from domestic barriers to factor mobility, varying degrees of sectoral liberalization, or skill-biased technical change. A positive impact of trade liberalization on reducing inequality is expected to result from removal of proportionately greater protection in capital- or skill-intensive sectors. However, in some developing countries with a history of populist policies, such as the Philippines, trade protectionism is higher among labor-intensive sectors (Hasan and Jandoc 2010).

During the same time as the Philippines eased its trade restrictions, deregulation (both domestically and in the trade context) in the services sector also influenced the shift in sectoral balance and employment. Employment in the services sector is much greater than in industry. In addition, service-oriented firms possess more human capital and focus more on intellectual capital creation than product-oriented companies (Kianto et al. 2010). The impact of services sector liberalization on inequality therefore deserves much greater policy attention than it has previously received.

This paper examines the impact of combined trade liberalization and domestic deregulation in the services sector on employment and wage inequality in the Philippines, using labor force survey data. We examine whether liberalization has helped people find better employment opportunities in full-time stable wage jobs and what has happened

[1] The period also includes the 1997–1998 Asian financial crisis, but its effects on the Philippines were relatively less than in other Asian countries and widely perceived as only temporary.

to wages. We are looking at the contribution of liberalization in services to different industries (rather than the contribution of liberalization in a particular industry to wages in that industry). The wage analysis focuses on all workers by correcting for the selection of only observing full-time salaried workers. We are concerned with increasing wage inequality as it can work to reduce incentives and retard economic growth.

II. Related Literature

The liberalization of trade in services, accompanied by the reform of complementary policies, can induce sectoral and economywide improvements in performance. Liberalization in a particular sector can lead to lower prices, improved quality, and greater variety, leading to enhanced welfare of consumers. Liberalization of trade in services can also bring about increased productivity from the resulting transfer of technology brought about by liberalization, while liberalizing services trade through permitting foreign establishments could lead to a more balanced output expansion (Konan and Maskus 2005).

Whalley (2003) noted that special features of individual services should influence the analysis of impacts of liberalization of those services. Moreover, the types and forms of liberalization also need to be carefully specified in assessing impacts of service liberalization on individual countries. As barriers to service provision may be complex, their effects could be multiple, and market structure, conduct, and performance need to be evaluated in assessing quantitative impacts of services liberalization.

Zhang et al. (2010) investigate impacts of service trade liberalization on manufacturing performance through the channel of service outsourcing in the People's Republic of China (PRC), using a panel dataset of manufacturing firms over 1998–2007. They find that total factor productivity of manufacturing plants is accelerated through specialization, compositional, and spill-over effects.

Results of a simulation study by Li et al. (2003) on the impact of service liberalization on employment and output in the PRC show that at the industry level, output will increase in almost all service industries, expanding significantly in telecommunications, finance, insurance, and real estate. However, slight employment loss would also occur due to productivity improvement in some service industries. Though the job loss could be offset by expansion of overall labor demand in nonservice industries, and by the liberalization-induced growth of aggregate demand in the long run, the structural adjustments would involve certain costs. Their study highlights the importance of implementing complementary policy measures to reduce strains on the labor market during service trade liberalization.

In India, Shastri et al. (2010) find that trade liberalization reforms may have given a boost to industrial productivity and brought in foreign investment in capital-intensive areas but had not created jobs. They recommend that policies and programs be developed for unorganized sectors, particularly those associated with export markets, and that effort is exerted to minimize the total social cost of trade liberalization.

Using panel data for about 4,000 Indian firms for 1993–2005, Arnold et al. (2008) find that policy reforms in banking, telecommunications, and transport services had significant positive effects on productivity of manufacturing firms, with the beneficial effects stronger for foreign-owned firms.

This paper adds a different dimension to the existing literature as it examines the specific effects of service liberalization on employment and wages in the Philippines. It assumes that there are possible value-added effects from service liberalization that subsequently increase productivity in other sectors, and can contribute to changes in the average wages across industries.

III. Service Liberalization in the Philippines

Cognizant of the critical role the efficiency of services play in the cost of production of many of its goods-producing export sectors, the Philippines has in recent years embarked on a series of liberalization and deregulation policies in various service sectors to improve the competitiveness of its manufacturing and agriculture industries in the world market. As Pasadilla (2004, 1) puts it, “Because an inefficient service sector acts like a prohibitive tax on the national economy, the economic cost of protecting inefficient service sectors even exceeds the cost flowing from protectionism in the goods sector.”

The export-led industrialization program in the Philippines has hinged on investment and trade reforms. Expansion of areas and industries open to foreign investors was affected with the enactment of Republic Act (RA) No. 7042, known as the Foreign Investment Act of 1991. This legislation permitted entry of foreign investments in key sectors of the economy including the service sector. Foreign investment was further facilitated by RA No. 8179, which allowed fully foreign-owned corporations to operate as a Filipino business (Dueñas-Caparas 2005). This led to a substantial increase in the average annual foreign direct investment (FDI) from $518 million over the period 1987–1992 to $1460 million during 1993–1998 (Austria 2001). However, legal constraints embodied in the Philippine Constitution limiting market access and national treatment continue to hinder greater FDI (Barrett and Lim 2009).

A. Banking

Reforms in the Philippine financial sector have occurred since the 1980s but restrictions on entry in the banking subsector have become a major stumbling block in achieving competition. The first half of the 1990s saw a significant change in the structure of the commercial banking subsector with the introduction of two major reforms: (i) reduced restrictions on domestic bank entry and branching; and (ii) liberalization of foreign banks in the country through RA No. 7721, which allowed foreign banks to hold up to a 60% share of existing domestic banks and allowed entry of new foreign bank branches (Austria 2001). This led to substantial consolidation through mergers and acquisitions due to increased competition from foreign banks through the latter half of the 1990s, resulting in less than half of the banks being Filipino-owned by 2003 (Pasadilla and Milo 2005).

Pasadilla (2004) maintains that despite some limitations faced by foreign banks in the Philippines, the reforms have greatly enhanced the banking subsector, contributing to the introduction of many new technologically advanced and innovative financial and banking products. It also resulted in (i) a substantial increase in the number of banks and branches, with most being privately owned and very small; and (ii) lower bank margins on spread of savings deposits and interest rates due possibly to competition and greater operational efficiency, providing benefits to consumers (Pasadilla and Milo 2005, Unite and Sullivan 2001). However, there are some adverse consequences to the banking reforms created by stiffer competition resulting in domestic banks taking on less creditworthy customers, and increasing operating expenses accompanied by decreasing noninterest incomes (Unite and Sullivan 2001).

B. Telecommunications

Reform in the telecommunications subsector kicked off under the Corazon Aquino administration, which allowed new franchises to be created through a competitive bidding process in certain segments of the market, most notably within mobile telecommunications services (Patalinghug and Llanto 2005). However, the largest impact occurred with the issuance of Executive Order No. 59 in 1993 under the Ramos administration, which dissolved the monopoly held by the Philippine Long Distance Telephone Company (PLDT) over all telecommunications activities (Austria 2001).

Moreover, RA 7925 was passed in 1995 to complement the two previous EOs and to lay down the foundation for the administration, conduct, and direction of the telecommunications industry. This required all telecommunications entities to list at least 30% of their shares on the public stock exchange, and privatized government-owned and government-operated telecommunications facilities (Patalinghug and Llanto 2005).

The liberalization and deregulation of the industry introduced new entrants and began the initial wave of investments in telecommunications infrastructure (Mirandilla 2007). It

resulted in a much larger telecommunications network with improvements in the quality of service and product offerings for consumers. Still even though there are almost 300 firms that provide telecommunications services, the market continues to be dominated by PLDT and has had relatively little impact on landline services compared to mobile and internet services, indicating that there are still significant restrictions within the sector that makes it difficult for the sector to become fully competitive (Patalinghug and Llanto 2005, Barrett and Lim 2009).

C. Distribution

Compared to other service sectors, liberalization in the distribution subsector—which includes the wholesale and retail sectors—did not occur until RA 8762 was signed in early 2000. This law allowed foreign entry into the industry that had previously been reserved only for Filipino companies under the Retail Trade Nationalization Law (Dueñas-Caparas 2005).

While foreigners can own large enterprises with capital over $7.5 million, or those that provide luxury products with capital over $250,000, there continues to be substantial constraints to foreign entry of enterprises of smaller sizes (APEC 2005). Prior to March 2002, foreigners could only own up to 60% of an enterprise that had capital between $2.5 million and $7.5 million, while after this date, foreigners could own up to 100% of an enterprise—provided that there was reciprocity in the foreigner's home country that allowed entry of Filipino retailers (Barrett and Lim 2009). Moreover the "Anti-Dummy Law" created substantial limits on foreign employment in the retail sector, and House Bill 260 passed in 1992 that limited domestic borrowing by foreign corporations may have created disincentives for FDI (APEC 2005). This is supported by the fact that only eight wholly foreign-owned companies have entered the Philippine retail market between 2000 and 2005 (APEC 2005).

D. Other Sectors (Energy, Maritime Industry, Civil Aviation, and Insurance)

A number of other bills were passed in other parts of the services sector that paved the way for increased competition within the energy sector. In energy, EO215 allowed independent power producers to generate electricity, effectively getting rid of the monopoly held in power generation by the National Power Corporation (NPC) (Pasadilla 2004). The petroleum industry was also deregulated allowing for competitive pricing of petroleum products in 1997 (Austria 2001).

To allow for the Philippines to play a greater role in maritime operations in the Asia and Pacific region, liberalization reforms occurred in 1994 that opened up entry of existing routes to new operators. Further reforms deregulated domestic shipping rates and privatized government ports, creating increased competition that has benefited consumers

by allowing them a wider set of options and cheaper rates (Austria 2001). Similar reforms also occurred in civil aviation. Finally, in the insurance industry, liberalization allowed for partial foreign ownership in nonlife insurance companies and resulted in greater FDI into this sector (Intal 1999).

IV. Data and Descriptives

This study first determines the level of restrictions in services, according to those affecting entry and those affecting ongoing operations, and then computes their impact on employment and wages. Once barriers have been identified and classified, the effect of changes in these barriers is estimated econometrically, controlling for factors affecting performance in the relevant sector.

In particular, we wish to see whether employment expanded or contracted in different industries with greater liberalization of services, and the effects of resulting greater competition on workers' livelihoods. Since there is no protection data for services that corresponds to that existing for agriculture and manufacturing, we first construct indices of restrictiveness by services sector (focusing on banking, distribution, and telecommunications, which provide important inputs to other industries); and by mode of supply as in the General Agreement on Trade in Services (cross-border trade, consumption abroad, commercial presence, and movement of natural persons). The indices are calculated separately for preliberalization and postliberalization periods, and then aggregated into a single service reform index using technical coefficients from a national input–output (I-O) matrix as weights to account for the contribution of services to that industry. In this manner every 2-digit industry has a corresponding service reform index based on the intensity with which the three service inputs are used in production of the 2-digit industry's output. This policy-based measure of liberalization is intended to account for changes in product prices as different industries experience different degrees of liberalization, transmitted through their use of services. We use a further set of weights that account for regional variation in the impacts of service liberalization on an industry based on the industry share of employment in a region.

Real wages are derived by deflating nominal wages as reported by individuals with their industrial occupation in the LFS by regional consumer price indices. Real wages are then regressed on the relevant service reform index, period (preliberalization or postliberalization) dummy variable, a dummy for broad industry of employment, educational attainment, age, and other individual characteristics.

A. Data Sample

This study makes use of the following sources of information and data:

(i) Wages and employment come from the LFS, which are conducted quarterly by the National Statistics Office.

(ii) Monthly basic pay and monthly basic allowance data from the Occupational Wages Survey (OWS) of the Bureau of Labor and Employment Statistics.

(iii) Government regulations and policies concerning banking, telecommunications, and distribution services enacted through RAs, EOs, and similar laws that serve as the basis for quantifying the extent of restrictiveness/liberalization in the country.

(iv) I-O matrix[2] of the National Statistical Coordination Board, which is used as the basis for deriving weights used for aggregating the banking, telecommunications, and distribution restrictiveness indices into a single service restrictiveness index by 2-digit industry codes.

Wages and employment status uses the micro records of the 1991 and 2004 LFS. Analysis on employment was restricted to those in the labor force. This includes all people who are working or are available for work, and thus captures people who are both job-searching or discouraged workers. We further restricted our sample to individuals who are 25–65 years of age to focus on the population set that has most likely completed their schooling. To examine wages, we limited attention to full-time salaried workers (i.e., workers who have worked more than 35 hours during the past week) and workers who are employers, assuming that all other types of workers had wages that are "unobserved." We consider contract workers and part-time workers to have missing wages as these workers have large fluctuations in their income due to uncertainty about how much work they will get, and what prevailing rate they will receive from one period to the next, thus making it difficult to accurately capture their wages and income in surveys. For consistency with the 2004 LFS data, we also use the past week reference period for 1991 in determining the hours worked and labor force status, although past quarter data on these are also available in 1991. For almost all questions, information in the 2004 LFS are obtained using the past week as a reference period. For wages, the past quarter's data from the 1991 LFS was used to derive the nominal wage per hour, since earnings were not gathered using the past week reference period. We focus attention only on the characteristics of the primary job, which should reflect the work where individuals

[2] The I-O matrix describes the interrelationships among the various producers in an economy. It presents the interrelationships between different industries in an economy in terms of the variety of product inputs used in production of the final outputs of an industry in a table format.

dedicate the majority of their time.[3] For 1991, the total wage and salary earnings from the primary job for the past quarter was divided by the total number of hours worked during the quarter to arrive at the nominal wage per hour. For 2004, since we only have data on basic pay—representing the pay for normal time prior to deductions and excluding other compensation such as bonuses—adjustments were made for consistency with the total earnings concept used in collecting the 1991 data. In the 1991 case, earnings was defined as gross remuneration in cash and in kind paid to employees, excluding employer contributions to social security and other benefits that are not explicitly considered as part of one's salary. The 2004 OWS of the Bureau of Labor and Employment Statistics provides data on basic pay and allowances separately by industry groups. Proportions derived from the OWS served as the basis for deriving the equivalent earnings/wages from the basic pay in the 2004 LFS. The consumer price indices at the regional level were used to convert the nominal wages into real terms.

B. Construction of Service Liberalization Index

The Service Liberalization Index (SLI) was calculated using the following broad steps:

(i) Calculate the restrictiveness index for each of the three services covered, namely, banking, telecommunications, and distribution.

(ii) To account for the varying importance or impact of each of the three services to the different industries, weights are applied to account for (a) the intensity in which each of the three covered services or subsectors is used in producing the output of a particular 2-digit industry group, which we term as "I-O weights" at a national level; and (b) the importance of a particular industry in employing workers in a given region, which is captured by hours worked in each of the three industries. These "hours worked weights" vary by region and are considered to better capture the local regional impact of service liberalization.

(iii) Standardize the indices by dividing each by the maximum computed index value.

(iv) Convert the standardized restrictiveness indices into liberalization indices by subtracting each restrictiveness index from 1.

The construction of the indices is described in the following subsections.

[3] Only 10.4% and 9.5% of those with primary jobs also reported a secondary job in 1991 and 2004, respectively. In only around half of these cases did the type of employment differ between the primary and secondary jobs.

1. Restrictiveness Index Methodology

Compared to restrictions on trade in goods, which are usually measured through tariff rates, measuring restrictions on trade in services is more difficult since they often take the form of government regulations that are often difficult to identify and quantify. The approach adopted was based on the Organisation for Economic Co-operation and Development (OECD) methodology of Dihel and Shepherd (2007), which builds on the methodology used by the Australian Productivity Commission. The advantage of the OECD methodology over the Australian Productivity Commission methodology is that it provides a more complete picture of modal coverage by calculating not only aggregate sectoral indices but also separate modal restrictiveness indices. There are four modes of supply identified in the literature where barriers can affect trade:

(i) Mode 1: Cross-border trade in services where physical services remain the same, but can affect where the services are bought

(ii) Mode 2: Consumption abroad where consumers physically travel outside of their home country to consume a service

(iii) Mode 3: Commercial presence where an outside or foreign company decides to physically locate in the domestic market

(iv) Mode 4: Presence of natural persons where people physically come from a foreign market to temporarily offer their professional services in the domestic market

The procedure for calculating the trade restrictiveness index described by McGuire (2008) is based on a series of scores and weights that differ depending on the sector for which we are constructing the index. The scores are assigned based on the perception of how stringent a restriction is perceived to be on trade, with higher scores representing more restrictive policies. Greater weights are then given on the basis of the perceived economic cost of a type of restriction relative to other types of restrictions.

The reader is referred to Dihel and Shepherd (2007), Kalirajan (2000), McGuire (2008), and Dee (2005) for the full details and underlying concepts in calculating the trade restrictiveness index. Scores and weights used in the trade restrictiveness index for the Philippines are available from the authors on request.

2. Application of Weights to the Restrictiveness Index

After the indices have been constructed for each of the service subsectors of interest, we combine these indices to come up with a single aggregated index of services restrictiveness. To account for the varying importance or impact of each of these services

to the different industries, a weighted average of services sector indices was derived using two kinds of weights: the national I-O matrix provided a quantitative measure of the value of services inputs used in the production of a given industry; and the proportion of total hours worked in each of the three services to the total hours worked in all industries and services, by region. In this way, we are able to construct indices that represent liberalization for each time, *t*, for industry, *I*, in region *r*. Calculated for each of the three service subsectors covered, the "I-O weight" is basically the proportion of value of service inputs used in producing the output of industry *i* (industry *i* corresponds to the 2-digit industry group based on the 1994 Philippine Standard Industrial Classification) to the total value of all inputs used in producing the output of industry *i*.

In equation form, if we let:

TEL_{ir} = restrictiveness index of telecommunications services for industry *i* and region *r*

$DIST_{ir}$ = restrictiveness index of distribution services for industry *i* and region *r*

$BANK_{ir}$ = restrictiveness index of banking services for industry *i* and region *r*

Then index, $IND_{t.}$ where $IND_t \in \{TEL_t, DIST_t, BANK_t\}$ is computed as

$$IND_{irt} \,.\, IOw_{(IND)i\,t} \times HRSw_{(IND)r\,t} \times IND_t \qquad (1)$$

where

$$IO_{w(IND)it} = \frac{VIO_{(IND)it}}{\sum_{j \in J} VIO_{(j)it}}$$

$$HRS_{w(IND)rt} = \frac{HRS_{(IND)rt}}{\sum_{r \in R} VIO_{(j)rt}}$$

The I-O weight for industry, *IND*, at time *t* is the value of inputs for industry at time *t* used in producing output of industry *i* as a proportion of all inputs used for producing outputs in industry *i* at time *t*, whereas *HRS* weights represent the proportion of total hours employed for the industry out of all industries in region *r* at time *t*.

The aggregate services restrictiveness index for industry *i* and region *r*, $SERVICES_{ir}$, is computed as the sum of TEL_{irt}, $DIST_{irt}$, and $BANK_{irt}$, that is,

$$SERVICES_{irt} = TEL_{irt} + DIST_{irt} + BANK_{irt} \qquad (2)$$

3. Liberalization Index

The weighted restrictiveness indices are standardized by dividing each by the maximum value. The standardized restrictiveness indices are then converted into liberalization indices by subtracting the standardized restrictiveness index from 1. In equation form:

$$LIB_{irt} = 1 - \frac{IND_{irt}}{\max(IND_{irt})} \quad (3)$$

where $IND_{irt} \in \{TEL_{irt}, DIST_{irt}, BANK_{irt}, SERVICES_{irt}\}$.

C. Descriptives

Given our sample of interest, from 1991 to 2004 we see that the overall labor force of the 25–65-year-old population increased by approximately 7.1 million, while the number of full-time workers in stable wage jobs increased by 3.3 million, meaning full-time salaried workers now account for a slightly larger proportion of the overall population (Table 1). Moreover, we see that restrictions on each of the industries of interest have decreased over time, but that telecommunications remains highly restrictive in terms of policies, while the distribution industry has the least restrictive policies.

Table 1: Selected Summary Statistics

	1991	2004
Labor force (number)[a]	17,085,769	24,221,977
Full-time salaried workers (number)[a]	6,616,708	9,874,002
Restrictiveness indexes		
Banking	0.5695	0.3241
Distribution	0.3818	0.2410
Telecommunications – fixed	0.7598	0.5078
Telecommunications – mobile	0.8410	0.6320

[a] Includes only those aged 25–65.

Sources: Authors' calculations based on Labor Force Surveys and Philippine government regulations and policies concerning banking, telecommunications, and distribution services.

Table 2 illustrates that there has only been about a 2 percentage point increase in the labor force share of female full-time workers from 1991 to 1994, but the average wages of females that are full-time workers in stable jobs by 2004 had surpassed the average wages of males. There appears to have been increasing returns to education in full-time, stable jobs between 1991 and 2004 for workers who are college graduates, especially in contrast to those with lower education levels. This is consistent with observed trends in other countries where wage differentials are thought to be due to skill-biased technological change. Moreover, growth of wages in services between 1991 and 2004 significantly exceeded wage growth in industry and agriculture. This is consistent with a

story of skill-biased technological change as services sector jobs tend to require higher educated and more skilled workers than other sectors.

Table 2: Descriptive Statistics of Key Variables

	All in the Labor Force		Full-Time Salaried Workers Only[1]					
	Percent in Each Group		Percent in Each Group		Real Hourly Wage			
					Mean		Standard Deviation	
	1991	2004	1991	2004	1991	2004	1991	2004
Education	**100.0**	**100.0**	**100.0**	**100.0**				
< High school	50.9	37.2	32.6	22.7	16.20	17.77	14.3933	10.4639
Some high school	11.0	12.0	10.0	10.4	20.36	20.76	20.4041	11.1128
High school graduate	16.6	23.1	19.8	25.4	23.69	24.74	14.9060	12.9636
Some college	8.9	12.7	12.6	15.4	28.11	30.54	18.5828	15.9952
College graduate	12.6	15.0	25.1	26.1	41.58	52.09	34.2303	27.5669
Sex	**100.0**	**100.0**	**100.0**	**100.0**				
Female	36.2	38.0	32.5	34.4	25.10	33.50	22.4054	24.7354
Male	63.8	62.0	67.5	65.6	26.41	29.91	25.0665	21.0631
Class of worker	**100.0**	**100.0**	**100.0**	**100.0**				
Worked for private employer	34.3	41.0	74.8	79.8	23.07	26.98	21.9984	19.6825
Worked for government	9.8	9.0	24.4	19.8	35.18	48.05	28.2921	25.0266
Self-employed without employees	43.0	35.7						
Employer in own family/business	3.4	5.6						
Worked with pay on own family/ business	0.4	0.3	0.8	0.5	18.92	22.61	19.3395	15.9012
Worked without pay on own family/ business	9.1	8.5						
Nature of employment	**100.0**	**100.0**	**100.0**	**100.0**				
Permanent	82.4	83.8	80.9	82.2	28.31	33.28	25.8083	23.4876
Short-term	13.8	13.6	13.7	14.6	17.08	22.11	11.9680	13.5654
Worked for different employer on a day-to-day or week-to-week basis	3.8	2.7	5.3	3.2	13.66	18.21	10.1063	11.8893
Industry	**100.0**	**100.0**	**100.0**	**100.0**				
Agriculture, fishery, and forestry	43.4	35.4	15.3	12.0	14.52	14.52	14.0240	9.3660
Industry	16.4	15.7	29.7	26.6	26.68	29.41	21.2314	16.5474
Services	40.2	49.0	55.0	61.4	28.80	35.07	26.9358	24.9813

[1] Include only those aged 25–65.
[2] Include those who worked for at least 35 hours during the past week, are engaged in wage or salaried work, and are between the ages of 25 years to 65 years.
Sources: Authors' calculations based on Labor Force Surveys and Occupational Wages Surveys.

V. Empirical Approach

Our goal is to examine the effects of service liberalization on the probability of being in full-time stable wage employment and on wages of workers after controlling for other major factors that can affect both employment and wages. Since we assume we can only accurately observe the wages of full-time wage employees, but want to estimate the impact of liberalization on all workers, we estimate a model that jointly estimates the employment probability in full-time work while simultaneously correcting for selection of the observed wages as follows:

$$\log W^*_{irt} = \beta LibIND_{irt} + \varphi X_{irt} + \gamma_r + u_{1irt}$$

$$VFT^*_{irt} = \alpha LIB_{irt} + \phi Z_{irt} + \gamma_r + u_{2irt} \quad (4)$$

where

$$W_{irt} = \begin{cases} W^*_{irt} \cdots if \cdots VFT^*_{irt} > 0 \\ missing \cdots if \cdots VFT^*_{irt} \leq 0 \end{cases}$$

VFT^*_{irt} indicates the latent "unobserved" value of employment in full-time salaried work, and X_{irt} and Z_{irt} are a vector of characteristics of an individual, *i*, in the labor force in region, *r*, at time *t*. We also include regional fixed effects, γ_r, to capture differences in standard of living and cost of living that are unlikely to have changed disproportionately over time. An indicator variable is used to indicate that an individual has a positive value for full-time work and thus is equal to 1 if the individual is observed as employed in a full-time salaried job and is equal to 0 otherwise. To control for the possibility that there is correlation between the probability that there are unobserved characteristics captured in the error terms u_{1irt} and u_{2irt}, which cause a person to self-select into full-time work and drives the observance of patterns of observed wages, we assume that the error terms follow a joint normal distribution where $\sum$ is the variance-covariance matrix of the errors:

$$\begin{pmatrix} u_{1rt} \\ u_{2rt} \end{pmatrix} \sim N(0, \Sigma) \quad (5)$$

Assuming that the distribution of the errors are jointly normal, we are able to correct for selection via maximum likelihood estimation of the Heckman model. We can also estimate the impact of liberalization LIB_{irt} on both the marginal probability that workers find themselves in full-time work and the arising log wages for all workers in the labor market.

The individual specific factors X_{irt} and Z_{irt} capture major characteristics that affect employment and wages such as age, education, and marital status. We estimate the models separately for males and females as there is strong evidence that education and age factors resulting in the observed employment and wages substantially differ

by gender. This likely arises due to females having a different employment and earning trajectory due to pregnancy and child rearing decisions that typically factor into females' decisions to work, but rarely come into play in the males' work decisions. In addition, we examine specifications where we replace LIB_{irt} with $LIB_{irt}*Z_{irt}$, which interacts liberalization with education indicator variables to examine approximate contributions to wage inequality depending on education groups.

VI. Results

Table 3 shows the general effects and distributional effects of aggregate services liberalization, while Tables 4 to 6 show the same for telecommunications, banking, and distribution services, respectively. In general, we see that in addition to age and education, the likelihood of employment in full-time salaried work is a function of being single.

In Table 3 after controlling for education, year, and age effects, liberalization on average has no significant effect on employment in stable jobs for males and females. It is, however, associated with decreased wages for females but has no significant effect on the wages of males. Liberalization also tends to significantly decrease employment in full-time salaried work of females who either have high school or some college education. There is a diminishing negative effect on women's wages as one goes up the ladder of educational attainment, providing evidence that there is increasing wage inequality where higher-educated workers are rewarded with higher wages under greater liberalization of services.

In the case of male workers, liberalization decreases the probability that lower-educated individuals (elementary graduate and lower) will have stable employment, while raising the probability that higher-educated individuals (at least high school level) find stable wage employment. Moreover, greater liberalization appears to have increased the wages of male workers who are high school-educated or below, while it is associated with a decrease in the wages of college-educated workers. Thus, for males it appears that liberalization may have lessened wage inequality assuming that people in informal unstable jobs generally have lower wages and overall has widened the disparities in wages between genders after controlling for educational status.

Table 3: General and Distributional Effects of Service Liberalization

Variables	Female				Male			
	Log of Real Wage	Employment in Full-Time Salaried Job	Log of Real Wage	Employment in Full-Time Salaried Job	Log of Real Wage	Employment in Full-Time Salaried Job	Log of Real Wage	Employment in Full-Time Salaried Job
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
Services liberalization (LIB)	-0.479***	-0.042	-1.716***	0.952	0.119	-0.084	0.391**	-1.161***
	[0.066]	[0.278]	[0.366]	[0.617]	[0.119]	[0.191]	[0.179]	[0.261]
High school × LIB			-0.005	-2.159***			-0.287***	1.389***
			[0.533]	[0.568]			[0.098]	[0.111]
College undergraduate × LIB			0.910**	-1.913***			-0.455***	1.581***
			[0.377]	[0.544]			[0.173]	[0.266]
College graduate × LIB			1.647***	-0.494			-0.425**	1.606***
			[0.379]	[0.421]			[0.186]	[0.443]
High school	0.376***	0.202***	0.360	2.294***	0.132***	0.301***	0.407***	-1.006***
	[0.048]	[0.041]	[0.541]	[0.552]	[0.027]	[0.038]	[0.075]	[0.105]
College undergraduate	0.857***	0.510***	-0.041	2.361***	0.277***	0.491***	0.704***	-0.988***
	[0.047]	[0.057]	[0.371]	[0.535]	[0.038]	[0.057]	[0.148]	[0.218]
College graduate	1.517***	1.412***	-0.083	1.898***	0.623***	0.953***	1.027***	-0.563
	[0.065]	[0.130]	[0.379]	[0.451]	[0.048]	[0.095]	[0.143]	[0.345]
Single		0.677***		0.679***		-0.152***		-0.154***
		[0.055]		[0.055]		[0.019]		[0.020]
Constant	-44.800***	7.587*	-44.247***	5.116	-20.844***	17.856***	-21.603***	20.837***
	[5.577]	[4.363]	[5.187]	[4.351]	[4.341]	[4.380]	[4.403]	[4.464]
Region fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	35,710	35,710	35,710	35,710	58,487	58,487	58,487	58,487

*** p<0.01, ** p<0.05, * p<0.1.

Note: Robust standard errors in brackets. Year, age, and age-squared are included in all regressions but not shown in the table. Columns a and b are estimated jointly using maximum likelihood estimation method.

Source: Authors' estimates.

Among the three services subsectors, liberalization in the distribution subsector appears to have no significant effect on employment in stable jobs for both males and females whereas in telecommunications and banking, liberalization has decreased the probability of employment in stable jobs. For female workers, liberalization in telecommunications has the largest impact in reducing wages for males. On average, however, liberalization in telecommunications and banking has raised the wages of males, while liberalization of the distribution subsector has no significant effect on wages (Tables 4, 5, and 6). For female workers with college degrees, liberalization in banking has increased employment in stable jobs and has contributed to higher wages. Telecommunications liberalization has also had a significant effect on wages of female workers with college degrees. However, liberalization of the different services subsectors has done little to increase employment in stable jobs and increase the wages of female workers with less education. In fact, in a number of instances, liberalization seems to have actually contributed to a reduction in stable wage employment and wages.

In the case of males, telecommunications and banking liberalization is associated with reduced employment but increased wages. Liberalization in distribution, on average, does not seem to have any significant effect on both employment in stable jobs and wages of workers. In contrast with distribution, in which we see some differences in the effect of liberalization across different levels of educational attainment, the effects of telecommunications and banking liberalization has decreased male employment in full-time salaried jobs both for low- and high-educated workers. While banking liberalization has no significant effect on the wages of low-educated and high-educated male workers, telecommunications liberalization has negatively affected the wages of lower-educated workers while benefiting those with at least high school education. In the case of distribution subsector liberalization, male workers with at most a high school education have gained the most as they have experienced an increase in both employment in stable jobs and wages. In general, lower-educated male workers have benefited from liberalization through an increase in wages, but this is mitigated by the fact that they have mostly experienced a decrease in full-time stable-wage employment. On the other hand, college-educated male workers face higher employment in stable jobs, but have generally experienced a decline in wages.

The general and distributional effects presented in Tables 3 to 6 are summarized in Table 7. From the above discussions, liberalization appears to have potentially harmed the more vulnerable populations that are the least educated, and may have shifted employment in good jobs more to higher-skilled males in comparison to females.

Table 4: General and Distributional Effects of Telecommunications Services Liberalization

Variables	Female				Male			
	Log of Real Wage (1a)	Employment in Full-Time Salaried Job (1b)	Log of Real Wage (2a)	Employment in Full-Time Salaried Job (2b)	Log of Real Wage (3a)	Employment in Full-Time Salaried Job (3b)	Log of Real Wage (4a)	Employment in Full-Time Salaried Job (4b)
Telecommunications liberalization (TEL)	-0.781***	-1.935**	-2.920***	1.415	0.379***	-3.175*	-0.362	-10.029**
	[0.260]	[0.929]	[0.438]	[1.197]	[0.139]	[1.881]	[0.223]	[4.281]
High school × TEL			0.774*	-5.625**			0.818***	6.702***
			[0.451]	[2.347]			[0.299]	[2.542]
College undergraduate × TEL			1.731***	-5.826***			0.939***	8.302**
			[0.477]	[2.108]			[0.299]	[3.543]
College graduate × TEL			3.216***	-1.327			0.538*	9.762**
			[0.583]	[1.348]			[0.290]	[4.020]
High school	0.371***	0.198***	-0.423	5.797**	0.141***	0.293***	-0.658**	-6.372**
	[0.050]	[0.042]	[0.428]	[2.326]	[0.027]	[0.041]	[0.284]	[2.540]
College undergraduate	0.850***	0.495***	-0.888**	6.284***	0.291***	0.481***	-0.624**	-7.761**
	[0.053]	[0.058]	[0.448]	[2.097]	[0.038]	[0.061]	[0.275]	[3.514]
College graduate	1.503***	1.390***	-1.682***	2.733**	0.647***	0.940***	0.121	-8.734**
	[0.068]	[0.134]	[0.555]	[1.345]	[0.046]	[0.098]	[0.261]	[3.951]
Single		0.676***		0.678***		-0.158***		-0.157***
		[0.059]		[0.059]		[0.020]		[0.020]
Constant	-41.246***	13.537***	-39.287***	10.083***	-23.454***	27.559***	-22.289***	35.603***
	[6.463]	[4.437]	[6.495]	[3.805]	[4.315]	[4.064]	[4.279]	[4.727]
Region fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	34,675	34,675	34,675	34,675	56,618	56,618	56,618	56,618

*** p<0.01, ** p<0.05, * p<0.1.

Note: Robust standard errors in brackets. Year, age, and age-squared are included in all regressions but not shown in the table. Columns a and b are estimated jointly using maximum likelihood estimation method.

Source: Authors' estimates.

Table 5: General and Distributional Effects of Banking Services Liberalization

Variables	Female				Male			
	Log of Real Wage (1a)	Employment in Full-Time Salaried Job (1b)	Log of Real Wage (2a)	Employment in Full-Time Salaried Job (2b)	Log of Real Wage (3a)	Employment in Full-Time Salaried Job (3b)	Log of Real Wage (4a)	Employment in Full-Time Salaried Job (4b)
Banking services liberalization (BANK)	-0.259***	-0.543***	-0.908*	-1.863*	0.232***	-2.473*	0.191	-11.320***
	[0.033]	[0.204]	[0.494]	[1.068]	[0.076]	[1.376]	[0.241]	[3.757]
High school × BANK			-0.210	0.530			0.167	7.704***
			[0.406]	[0.522]			[0.204]	[2.145]
College undergraduate × BANK			0.327	0.407			0.134	9.956***
			[0.521]	[0.914]			[0.238]	[3.218]
College graduate × BANK			1.004**	2.295*			-0.179	11.280***
			[0.481]	[1.241]			[0.275]	[3.817]
High school	0.377***	0.192***	0.577	-0.341	0.144***	0.280***	0.007	-7.363***
	[0.048]	[0.040]	[0.403]	[0.529]	[0.025]	[0.038]	[0.186]	[2.147]
College undergraduate	0.856***	0.487***	0.520	0.063	0.296***	0.457***	0.197	-9.389***
	[0.046]	[0.055]	[0.506]	[0.889]	[0.036]	[0.058]	[0.211]	[3.193]
College graduate	1.518***	1.376***	0.534	-0.891	0.667***	0.882***	0.865***	-10.237***
	[0.063]	[0.126]	[0.451]	[1.141]	[0.035]	[0.086]	[0.252]	[3.757]
Single		0.680***		0.684***		-0.155***		-0.156***
		[0.056]		[0.057]		[0.022]		[0.021]
Constant	-43.560***	7.731*	-42.603***	9.197**	-20.059***	20.275***	-19.540***	31.904***
	[5.827]	[4.341]	[6.055]	[4.462]	[4.164]	[3.882]	[4.124]	[5.093]
Region fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	34,930	34,930	34,930	34,930	56,014	56,014	56,014	56,014

*** p<0.01, ** p<0.05, * p<0.1.

Note: Robust standard errors in brackets. Year, age, and age-squared are included in all regressions but not shown in the table. Columns a and b are estimated jointly using maximum likelihood estimation method.

Source: Authors' estimates.

Table 6. General and Distributional Effects of Distribution Services Liberalization

Variables	Female				Male			
	Log of Real Wage (1a)	Employment in Full-Time Salaried Job (1b)	Log of Real Wage (2a)	Employment in Full-Time Salaried Job (2b)	Log of Real Wage (3a)	Employment in Full-Time Salaried Job (3b)	Log of Real Wage (4a)	Employment in Full-Time Salaried Job (4b)
Full-time salaried work (FT) × DIST	-0.472***	-0.023	-1.701***	0.964	0.115	-0.069	0.388**	-1.130***
	[0.066]	[0.275]	[0.364]	[0.614]	[0.118]	[0.191]	[0.176]	[0.259]
FT × High school × DIST			0.034	-2.123***			-0.289***	1.371***
			[0.525]	[0.566]			[0.096]	[0.109]
FT × College undergraduate × DIST			0.917**	-1.869***			-0.457***	1.559***
			[0.375]	[0.545]			[0.169]	[0.262]
FT × College graduate × DIST			1.629***	-0.511			-0.421**	1.573***
			[0.376]	[0.418]			[0.182]	[0.440]
High school	0.376***	0.202***	0.323	2.260***	0.132***	0.301***	0.408***	-0.989***
	[0.048]	[0.041]	[0.533]	[0.550]	[0.027]	[0.038]	[0.073]	[0.102]
College undergraduate	0.857***	0.510***	-0.046	2.318***	0.276***	0.491***	0.705***	-0.966***
	[0.047]	[0.057]	[0.368]	[0.535]	[0.038]	[0.057]	[0.145]	[0.214]
College graduate	1.518***	1.412***	-0.065	1.914***	0.622***	0.953***	1.023***	-0.531
	[0.065]	[0.130]	[0.377]	[0.449]	[0.048]	[0.095]	[0.140]	[0.342]
Single		0.677***		0.679***		-0.152***		-0.154***
		[0.055]		[0.055]		[0.019]		[0.020]
Constant	-44.812***	7.628*	-44.258***	5.184	-20.820***	17.812***	-21.581***	20.759***
	[5.578]	[4.368]	[5.189]	[4.359]	[4.337]	[4.383]	[4.397]	[4.464]
Region fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	35,710	35,710	35,710	35,710	58,487	58,487	58,487	58,487

DIST = distribution services liberalization.
*** p<0.01, ** p<0.05, * p<0.1.
Note: Robust standard errors in brackets. Year, age, and age-squared are included in all regressions but not shown in the table. Columns a and b are estimated jointly using maximum likelihood estimation method.
Source: Authors' estimates.

Table 7. Summary of General and Distributional Effects of Liberalization

	Female		Male	
	On Employment in Full-Time Salaried Work	On Real Wages	On Employment in Full-Time Salaried Work	On Real Wages
A. Overall Effect				
Services liberalization	ns	–	ns	ns
Telecommunications liberalization	–	–	–	+
Banking liberalization	–	–	–	+
Distribution services liberalization	ns	–	ns	ns
B. By Level of Educational Attainment				
Services Liberalization				
Low-educated	ns	–	–	+
High school-educated	–	–	+	+
College undergraduate	–	–	+	–
College graduate	ns	–	+	–
Telecommunications Liberalization				
Low-educated	ns	–	–	ns
High school-educated	–	–	–	+
College undergraduate	–	–	–	+
College graduate	ns	+	–	+
Banking Liberalization				
Low-educated	–	–	–	ns
High school-educated	–	–	–	ns
College undergraduate	–	–	–	ns
College graduate	+	+	–	ns
Distribution Services Liberalization				
Low-educated	ns	–	–	+
High school-educated	–	–	+	+
College undergraduate	–	–	+	–
College graduate	ns	–	+	–

ns means no significant effect, + means increases, – means decreases.
Source: Authors' estimates.

VII. Conclusions

The results highlight the importance of education for services sector workers, to maintain or raise real wages in the face of increasing competition. This suggests the need for policies to support education, as the Philippine economic structure shifts away from primary and secondary sector production toward greater services sector production, which typically requires a higher-skilled and more educated labor force.

There are disparate impacts by gender. Service liberalization is overwhelmingly negative for employment and wages of female workers, except in some cases for female college

graduates. For males, the impacts are more nuanced, but generally more positive on wages than employment.

Greater disaggregation of the data along the lines of gender, education, occupation, and employment status highlights the usefulness of careful policy analysis in designing programs to redress distributional imbalances that accompany liberalization and structural transformation. More detailed analysis may yield further insights. Another area for further exploration is the dynamic processes by which services sector liberalization influences other sectors in the process of structural transformation. Different lag structures and interaction terms may help to illuminate some of these processes. Disaggregation by mode of service delivery also holds potential for further policy-relevant analysis.

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About the Paper

Glenita Amoranto, Douglas H. Brooks, and Natalie Chun examine the impact on employment and wages of liberalization in selected services subsectors (banking, distribution, and telecommunications) from 1991 to 2004 in the Philippines. Results indicate that liberalization appears to have potentially harmed more vulnerable populations that are less educated, and may have shifted employment in good jobs more to higher-skilled males in comparison to females. This suggests the need for policies supporting education, as the Philippine economic structure shifts away from primary and secondary sector production toward greater services sector employment; as well as raising the skill levels in all sectors.

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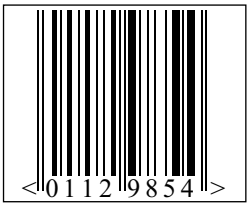

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