DIRECTIONS IN DEVELOPMENT
Human Development

Skills for the Labor Market in the Philippines

Emanuela di Gropello, with Hong Tan and Prateek Tandon

THE WORLD BANK

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Currency Equivalents

(Exchange Rate Effective June 1, 2009)

Currency Unit	=	Peso
US$1	=	₱47
₱1	=	US$0.02

FISCAL YEAR

January 1—December 31

Abbreviations

AE	accreditation and equivalency
ALS	Alternative Learning System
ASEAN4	Indonesia, Malaysia, Thailand, and the Philippines
BALS	Bureau of Alternative Learning Systems
BPO	business, process, and outsourcing
CBT	competency-based TVET
CEO	chief executive officer
CHED	Commission on Higher Education
COE	Center of Excellence
CSI	Commission of Supervised Institutions
DTS	dual-training system
ER	employment rate
FDI	foreign direct investment
FIES	Family Income and Expenditure Survey
GCI	Global Competitiveness Index
GDP	gross domestic product
GER	gross enrollment rate
HEI	higher education institution
HR	human resources

ICS	Investment Climate Survey
ICT	information and communication technologies
IES	Impact Evaluation Study
IMF	International Monetary Fund
IP	industry premium
IT	information technology
LFS	Labor Force Survey
LGUs	local government units
LP	labor productivity
LSCS	Literacy Service Contracting Scheme
LSDS	Learning Support Delivery Schedule
LUCs	local universities and colleges
MTPDP	Medium-Term Philippine Development Plan
NCEE	National College Entrance Examination
NCR	National Capital Region
NFS	nonformal secondary schools
NGO	nongovernmental organization
NIE	newly industrialized economy
OJT	on-the-job training
OLS	ordinary least squares
OSY&A	out-of-school youth and adults
PESFA	Private Education Student Financial Assistance
PSIC	Philippines Standard Industrial Classification
PSOC	Philippines Standard Occupational Classification
PTCs	provincial training centers
PTQF	Philippines TVET Qualifications Framework
R&D	research and development
RPL	recognition of prior learning
RTCs	regional training centers
SBTC	skill-biased technological change
SNPLP	Study Now Pay Later Program
SP	skill wage premium
SUCs	state universities and colleges
SUR	skills utilization rate
TESDA	Technical Education and Skills Development Authority
TIMSS	Trends in International Mathematics and Science Study
TR	training regulations
TVET	technical and vocational education and training

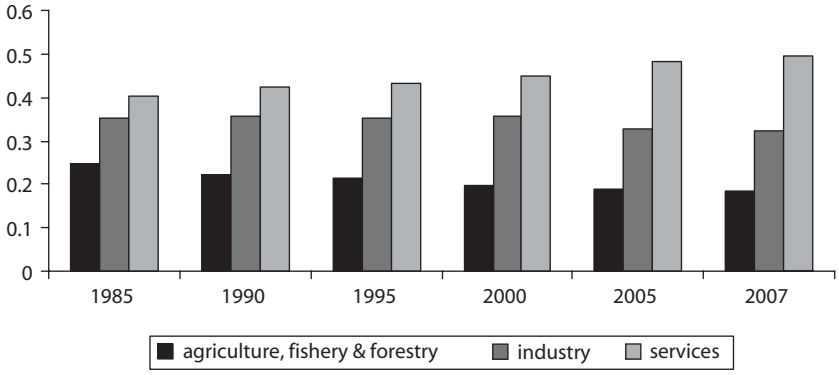
UIS	UNESCO Institute of Statistics
UTPRAS	Unified TVET Program Registration and Accreditation System
VET	vocational education training
YP4SC	Youth Profiling for Starring Career

Overview

This book investigates trends in skills demand and supply over the past two decades for insights into ways to build (and use) the critical skills needed to sustain competitiveness of the Philippine economy. The Philippines has experienced sustained growth—although at a slower rate than other East Asian countries and with a couple of significant recessions—over the last 20 years, while, at the same time, continuing its rapid integration into the world economy through sustained liberalization reforms. However, the growth of the manufacturing sector has been sluggish—replaced by the service sector as the main source of employment and gross domestic product (GDP) driver (figure O.1)—and the country seems to have lost innovation capacity. Regaining momentum will obviously depend on many factors, but skills have a key role to play: at a minimum to support the growing service sector, help improve the competitiveness of the manufacturing sector, and in general enhance the long-term ability of the country to innovate and adapt and assimilate new technologies.

There has been a dramatic increase in educational attainment in just under two decades, reflected in increasing shares of the workforce completing higher education. At the same time, however, there are initial indications that the demand for skills has kept on growing and that there may be emerging skills gaps, suggesting that skills are becoming a constraining factor for the

Figure O.1 GDP Composition by Sector, 1985–2007



Source: World Development Indicators, various years.

economy. In this context, the book seeks to investigate three main areas: the characteristics of the demand for skills in the Philippines, any evidence of emerging skills gaps, and the extent to which the education and training sector provides the skills required by the economy. The key related questions for the first area of investigation are: How is behavior changing the demand for skills and what are its key drivers? What are the critical skills most needed to support the changing demand and drive economic development? The key related questions of the second area of investigation are: Are there any emerging skills gaps? What are they and where are they? The key related questions of the third area of investigation are: To what extent is the education and training sector providing the skills relevant to labor market needs? What are the main deficiencies and challenges in the provision of skills? What are the possible measures to improve quality and responsiveness to labor market needs?

The report pays particular attention to the "functional" skills that workers need to be employable and support firms' competitiveness and productivity, and to the role of the education and training system in providing them. Skills can be broadly disaggregated into three main categories:

- Academic skills: skills associated with subject areas (math, literacy, English) and generally measured through standardized scores
- Generic (or life) skills: broader sets of skills transferable across jobs, generally including thinking (critical and creative thinking, problem solving, and so on), behavioral (typically communication, organization, teamwork, and leadership skills), and computing skills

- Technical (or job-specific) skills: skills associated with one's profession, generally a mix of specific knowledge and skills to perform jobs

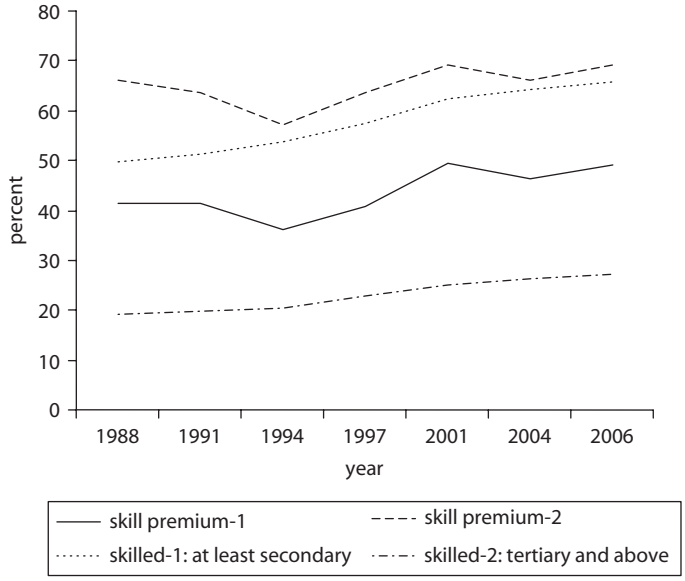
Skills acquisition is a complex process. While the book focuses on education and training, it is important to acknowledge that skills are produced in many different ways: preemployment education and training (formal and informal), on-the-job training (formal and informal), work and life experience, and learning from peers at school and work. Skills acquisition is fundamentally a cumulative dynamic process starting at birth with parental education and continuing through school education, training, and experience. While skills can grow over time, they can, however, also deteriorate if possibilities for lifelong learning are not well developed. Additionally, a share of the population can be excluded from effective skills acquisition if alternative "second-chance" skills development pathways do not exist for vulnerable youth.

Road map of the book. Part I of the book investigates trends in demand for skills in the country overall and by sectors, explores its possible determinants, and attempts to identify emerging skills gaps. Part II turns to the analysis of the supply of skills in the country with a focus on the ability of education and training to provide highly skilled labor, keeping workers' skills updated, and providing skills development opportunities for the unskilled. It explores employers' perceptions on the quality of institutions and provides detailed analysis of the main characteristics, outcomes, and challenges in four key (or growing) subsectors of the provision of skills in the country: higher education, postsecondary technical-vocational education, nonformal secondary education, and postemployment training. It concludes with a summary of policy recommendations.

Trends and Drivers of Demand for Skills

Skills demand has been growing and changing in the Philippines related to changes in output and employment structure (across and within sectors), openness to new technology, and pressures of international competition. An overall storyline emerges from this study. The Philippines workforce has become increasingly educated over these last 20 years, while at the same time the demand for education has been growing overall—as illustrated by an increase in the education wage premium (figure O.2)—and changing with a focus on the service sector. To the extent that education can be taken as an indirect measure of intermediate and advanced skills (academic, generic, and technical), evidence suggests that skills demand has been

Figure O.2 Trends in Education Wage Premium and Skilled Workforce



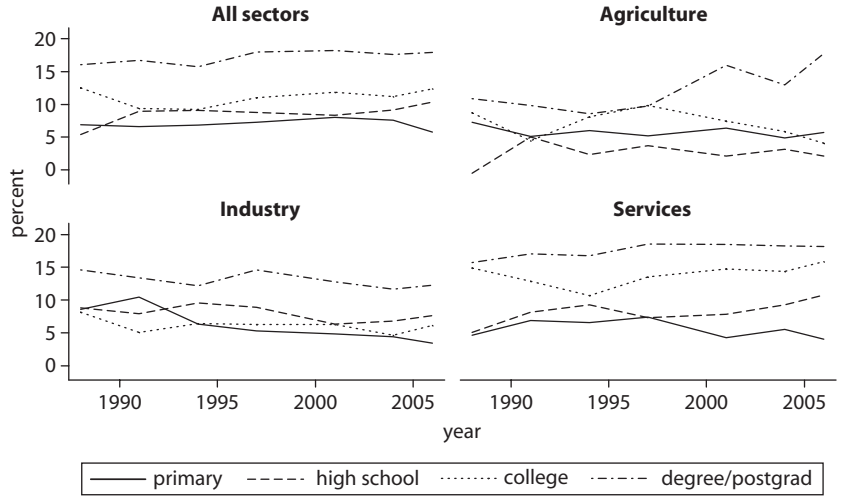
Source: Di Gropello and Sakellariou 2010.

growing and changing. Compared with the rest of East Asia, the Philippines' demand for skills is one of the most dynamic.[1] There is also the evidence that the demand for skills is positively related to technology and export intensity.

The growing demand for skills is driven by the service sector; education upgrading is less evident in and less focused on lower-skilled workers in manufacturing. The increasing demand for skills hides significant differences across sectors, with continuous and still-unfulfilled demand in most services subsectors, fulfilled or even decreasing demand in most manufacturing subsectors, and some rising demand for higher-level skills in the agriculture sector.

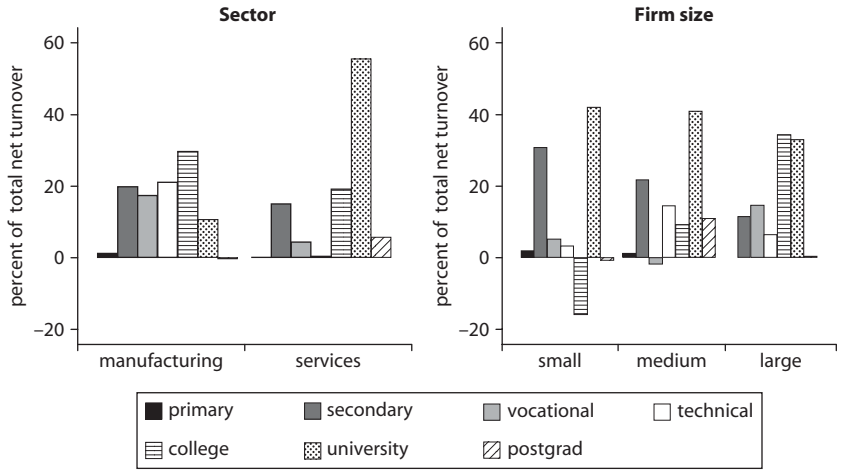
Higher demand for skills in the service sector is apparent from analyses of education wage premiums and the education profile of new hires,[2] calculated from a survey of a representative sample of firms in the manufacturing and service sectors (figures O.3 and O.4). Education wage premiums increase while educational attainment in the service sector increases, and education upgrading—with a focus on higher education—is strong compared with the increased educational attainment of the workforce. Both of these trends indicate increased demand. The most dynamic sectors are trade, tourism, transport and communication, and

Figure O.3 Rates of Return by Economic Sector



Source: Philippines LFS/FIES, various years.

Figure O.4 Education of Net Hires by Sector and Size, 2008



Source: Philippines Skills Survey 2008.

insurance/real estate/business. On the other hand, rates of return tend to decline and education upgrading (secondary and postsecondary) lags in the manufacturing sector.

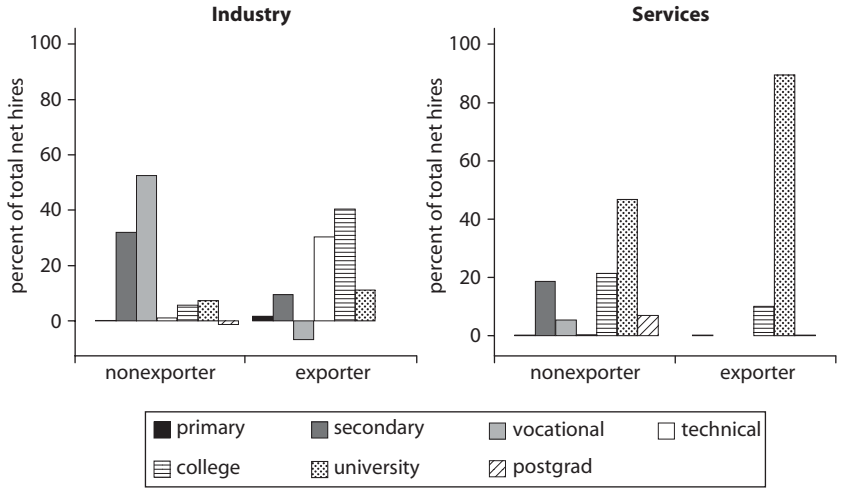
Education upgrading in the service sector may reflect a need for higher academic, generic, and technical skills, but also possibly some "education inflation."

To some extent, education upgrading in the service sector reflects an upgrading of the service sector itself toward more modern and skill-intensive subsectors—such as communication, finance, and business—that require higher-level and more varied technical skills. Education upgrading also likely reflects the service sector's need for higher-level academic and generic skills, such as communication and literacy skills, which higher education graduates are more likely to provide. However, there is, perhaps, an element of "education inflation": where educational attainment has been increasing and college graduates can hardly be considered equivalent to higher education graduates,[3] employers may use university graduation as a "screening" device, even if this high level of skills is not needed. (As a matter of fact, there may be potential for a larger use of good postsecondary graduates.)

As the service sector continues to develop and modernize and grow in terms of both overall GDP and employment, we can expect the demand for skills to continue changing and growing in the country. This is clearly the trend under way, as indicated by the increasing share of services in the GDP (from about 40 percent in 1985 to 50 percent in 2007) and employment (from 38 percent in 1988 to 49 percent in 2007), with particular focus on transport and communications, trade and finance, and business services. Although the manufacturing sector continues to absorb technical and vocational education and training (TVET) workers, a decreasing wage premium on secondary and higher education in the sector, accompanied by a decreasing share of manufacturing in the GDP and employment,[4] suggest that this sector is not a promising driver for demand for skills.

At this point, the service sector is the main driver of demand for skills, but other significant determinants include export orientation—in both manufacturing and services—and access to technology. This is indicated by an analysis of the determinants of demand for skills.[5] Even when controlling for size and the more technologically advanced manufacturing subsectors, analysis shows that the exporting sector consistently has a more highly skilled workforce and greater skills needs (in terms of both indirect and direct measures of skills). Figure O.5 illustrates the higher requirements of the exporting sector in terms of education levels. Technology adoption and innovation in particular are associated with higher-level skills, while export intensity is associated with higher-level skills in the service sector [to a large extent reflecting the high academic requirements of the business, process, and outsourcing (BPO) services] and intermediate-level skills in the manufacturing sector.

Figure O.5 Education of Net Hires by Export Status, 2008

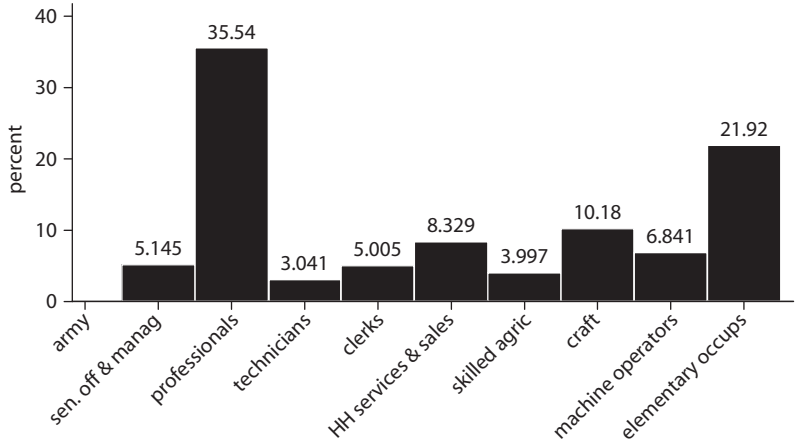


Source: Philippines Skills Survey 2008.

This finding points to the relevance of the pressure of international competition and skill-biased technological change in determining demand for skills, with little evidence of specialization in a low-skill exporting sector. How much of a driver these variables can be will depend on the continued integration of the Philippines in the world economy and the way in which it takes place.[6]

The relationship between exports and skills in the service sector together with the education and occupation profiles of Filipinos before emigration suggest that emigration is another driver of demand for skills. There are interactions between domestic and overseas demand. The analysis shows that most emigrating Filipinos are professionals, and there is reason to think that many of them may have become professionals to work abroad (figure O.6). The pressure or desire to emigrate happens even at the cost of a drastic occupation downgrading. This phenomenon has implications for the domestic market: it creates, on the one hand, excess supply in some service subsectors, such as medicine and education, where domestic absorption is low, and on the other hand, excess demand in other subsectors, such as trade and business, where domestic demand is growing. Given the relationship between education and occupation overseas, higher education requirements for Filipinos desiring to work overseas are likely to reflect a combination of a need for good generic

Figure O.6 Occupation of Emigrating Workers before Emigration



Note: HH = household; agric = agriculture; occups = occupations.

skills (transferable across jobs) and "education inflation," rather than a need for higher technical skills.

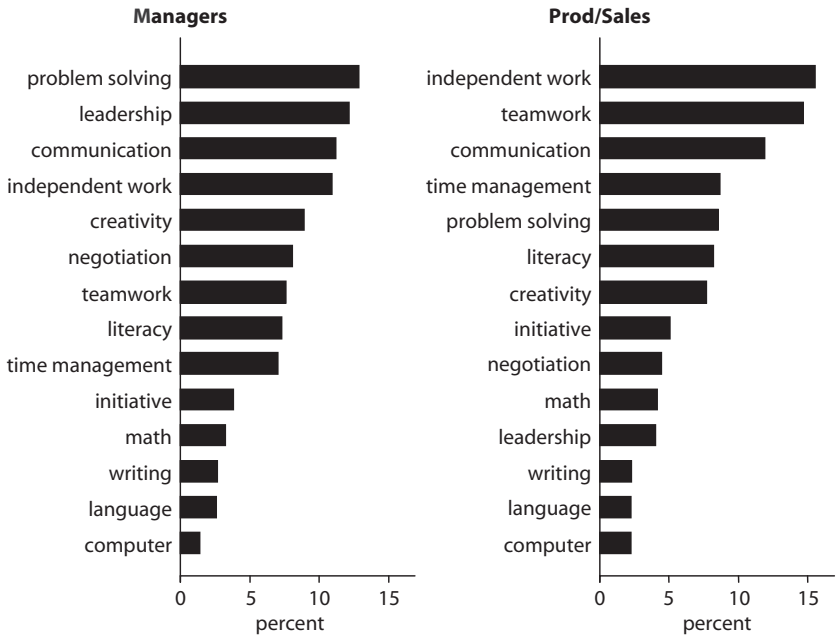
Beyond responding to the existing demand, adequate skills are central for improving the long-term innovation potential and competitiveness of the Philippine economy. The relationship identified (in the Philippines and elsewhere) between introduction/adaptation of new technologies and skills goes both ways in firms with higher shares of the highly skilled (university-educated) labor that is more apt to innovate. Similarly, firms with higher shares of skilled workers—at an intermediate or advanced level, depending on the sector—are more prepared to compete internationally. In this context, having adequate skills will be particularly important for innovation and competitiveness. Skills are likely to make an even bigger difference for higher value-added manufacturing subsectors such as electronics, chemicals, and high-tech agro-industry, and services such as finance and business (including the rapidly developing call centers), where being innovative and maintaining competitiveness are particularly crucial to the survival of the sector. As a matter of fact, lack of dynamism of the country's manufacturing sector, which translates into lower demand for some higher-level skills, is likely to have been in part induced by the lack of a quality workforce. A skilled workforce is now all the more necessary to relaunch the sector, starting with some critical subsectors such as agro-industry, chemicals, machinery, and electronics. The skills bottlenecks currently faced by some of these subsectors are indicative of this need.

In this context, a number of critical skills stand out as crucial for the Filipino workforce. Although the skills demand has been growing and changing in the Philippines as a result of the increasing role of the service sector, openness to new technology, and pressures of international competition, and the longer-term pressures to diversify the economic and productive structure may result in a further accentuation of some of these patterns, there is also a need to relaunch the manufacturing sector as an engine of growth. Overseas employment will probably also continue to be an important driver of demand for skills. Consequently, the analysis shows strong needs for critical skills in the following areas:

A combination of job specific and generic skills, including the capacity to work independently and communicate effectively; practical knowledge of the job, across all sectors and occupations; problem solving and leadership for managers and professionals; teamwork, time management, and better grounding in theory for skilled production and sales staff (figures O.7 and O.8).

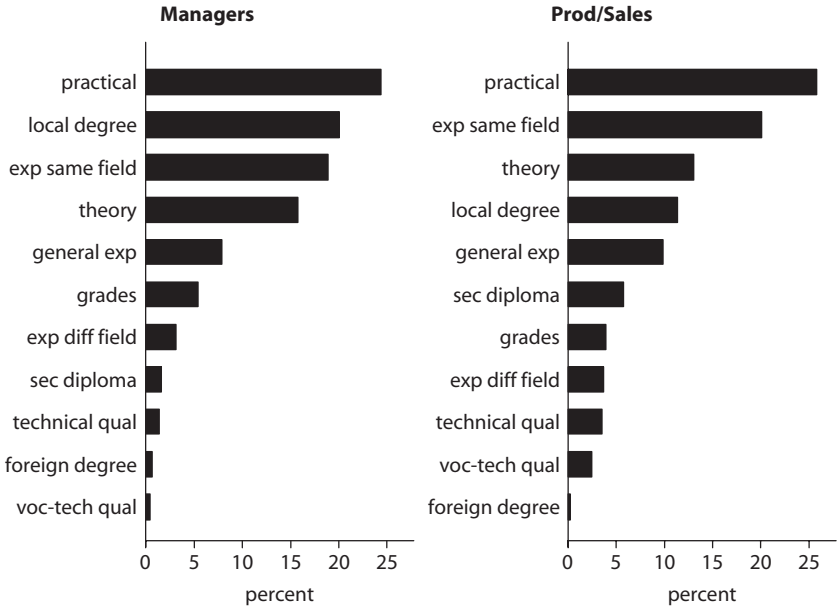
Higher-level skills applicable to the service sector, including training in business and finance (also provided at the postsecondary level); high-level

Figure O.7 Most Important Key Core Skills by Occupation



Source: Philippines Skills Survey 2008.

Figure O.8 Most Important Key Job-Specific Skills and Related Sources of Skills by Occupation



Source: Philippines Skills Survey 2008.

academic and behavioral skills particularly applicable to the sector, such as excellent literacy and client-orientation skills; and communication and foreign language skills. (The need for foreign language skills is currently underestimated by employers, but the latest findings on English skills suggest that this is an area with long-term implications for development and one that needs more attention.)

Skills supporting a more competitive manufacturing sector, including problem solving and creative thinking, which are particularly important in the manufacturing and export sectors; intermediate and higher-level technical skills related to some technologically advanced fields to help manufacturing firms adapt to technological innovations, face international competition, and improve their productivity and competitiveness.

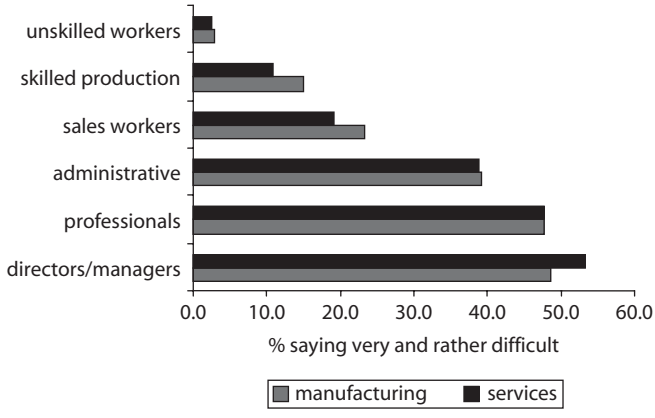
Emerging Skills Gaps

Unfortunately, many of the essential skills are underprovided: the economy is facing emerging skills gaps. Skills gaps and mismatches are evident through

employers' difficulties in finding workers with the right skills to fill skilled vacancies (figure O.9). An analysis of the process to fill skilled vacancies shows that the number of weeks it takes Philippine employers to fill professional positions is relatively high for the region, comparable to numbers for China, Malaysia, and Thailand (figure O.10). Difficulties in finding the right skills for the job are equally visible in the service and manufacturing sectors and particularly evident in the export sector and subsectors such as chemicals, trade, and finance.

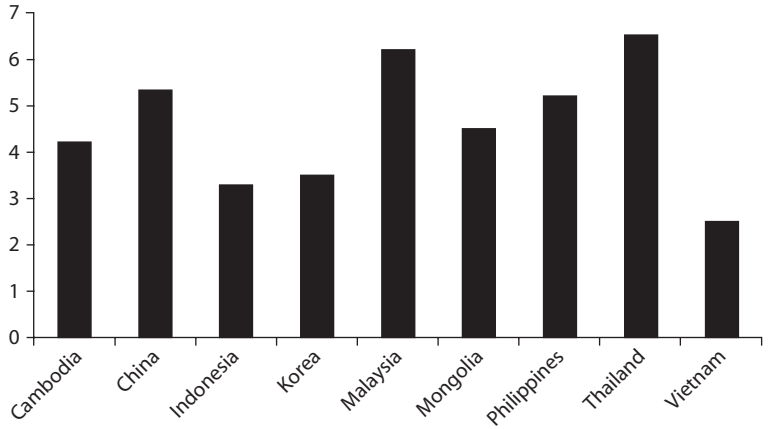
Causes for emerging skills gaps are multiple, including reasons related to overall skills supply (quantity and quality) and the labor market. The quality of workers' skills and the relevance of their education and training are the most significant constraint, and much more significant than overall quantity constraints. Difficulties finding people with the right skills for the job can be the result of both labor market and skills issues (figure O.11). While this report is not focused on labor market issues,[7] it does point to a few potential labor market factors in explaining skill mismatches for the domestic (and overseas) market: (a) some evidence of labor market segmentation—across formal/informal and also economic sectors (for example, lower salaries in manufacturing); (b) poor recruitment practices, weakening the job-matching process (in particular in manufacturing and for overseas placement); (c) emigration flows—in large part likely because of higher salaries abroad;[8] and (d) issues related to staff turnover. All of these different issues, which have been to some extent documented in this study, deserve more analysis to determine their impact on skills gaps.

Figure O.9 Difficulty Finding the Right Skills, by Occupation and Sector



Source: Philippines Skills Survey 2008.

Figure O.10 Number of Weeks to Fill Professional Vacancies in East Asia



Sources: Investment Climate Surveys, various years; Philippines Skills Survey 2008.

Figure O.11 Reasons for Skill Shortages, by Sector

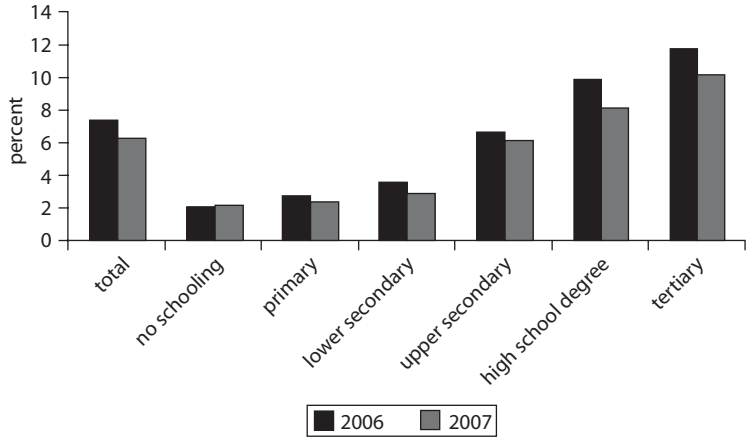
Source: Philippines Skills Survey 2008.

In particular, emigration of skilled workers is an important factor that can affect both the quantity and quality of available skills. Regarding skill supply, quality of education and training is confirmed to be a key constraint,[9] while quantity is only a secondary issue—although still relevant in relation to specific fields of education for the service sector. Lack of quantity-related issues for most manufacturing subsectors helps explain why rates of return are not increasing. Difficulties finding people with the right skills for the

job—resulting in persistent vacancies—combined with fairly high unemployment rates for educated workers (figure O.12) and youth are a further illustration of a skills gap in terms of relevant fields of education and quality more than overall quantity.

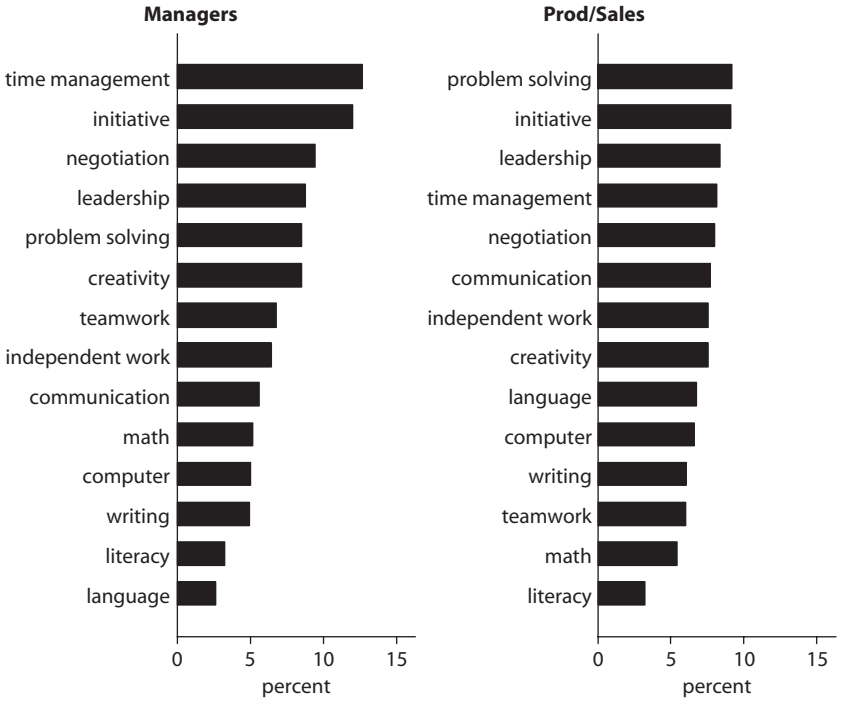
What are the main skill gaps? The quality of employed graduates is better than for the overall population—where even basic academic gaps are noticeable—but weaknesses persist in critical generic skills and, to a lesser extent, gaps in some job-specific/technical skills. Despite evidence of better education and training quality among the sample of newly hired recent graduates than for the overall population, suggesting possible improvements in the current education and training system and better youth skills, some persistent weaknesses in the current system are confirmed—especially in the secondary cycle and the postsecondary and higher education cycles, depending on the sector.[10] International assessments point to particular weaknesses in academic subjects, such as math and science, while employers' perspectives also highlight serious gaps in some generic skills, such as problem solving, initiative, and creativity (figure O.13). These findings further illustrate where some of the quality gaps lie in the education and training system[11] and beyond. (Generic skills are also acquired outside the traditional education and training system.) Gaps in technical/job-specific skills of employees are less evident (in comparison to the most demanded skills) but there is margin to improve the role of technical and higher education qualifications as providers of technical skills.

Figure O.12 Unemployment Rates, by Education Levels, 2006–07



Source: Lanzona 2008.

Figure O.13 Gaps in Core Skills by Occupation, according to Percentage of Respondents



Source: Philippines Skills Survey 2008.

The evidence for the service sector points to skill mismatch related to lack of relevant education fields, and insufficient quality of higher (and secondary) education, with persistent gaps in some key generic skills. Notwithstanding emigration flows, which contribute to the shortage of certain categories of professionals, many findings point to lack of relevance and quality of higher education and secondary graduates in relation to the needs of the service sector. The main findings include dissatisfaction of employers with the quality of some of the higher education and secondary graduates; low levels of certification in some higher education fields relevant to growing service subsectors (also a result of overregulation of some professions); rising unemployment of graduates, despite sustained demand for higher education; evidence of education upgrading within occupations (and strong education upgrading within occupations of Filipinos overseas), suggesting lack of relevance and quality of some university titles (but also some "education inflation"); and need for and duration of retraining of higher-level or

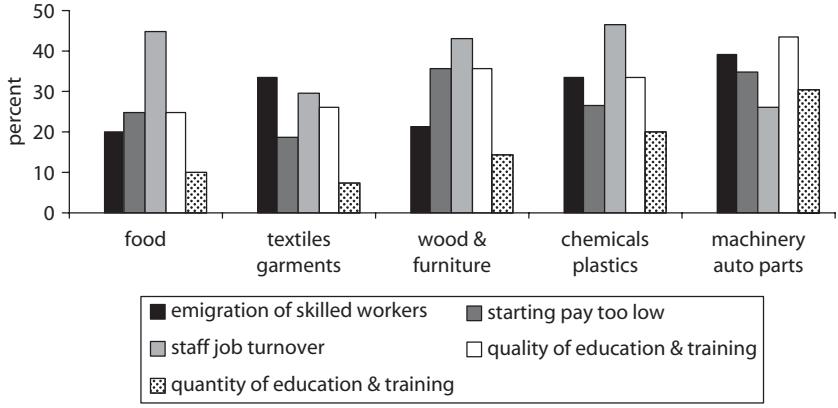
generalist staff, particularly strong in the service sector. Further analysis suggests that poor quality of some of the graduates employed in the service sector can also be related to gaps in generic skills such as capacity to negotiate (particularly weak), as well as initiative taking, time management, leadership, and problem solving.

The evidence for the manufacturing sector points largely to labor issues for managers and professionals, and quality and relevance issues of postsecondary vocational education for skilled production workers. In the manufacturing sector, difficulties filling vacancies for managers and professionals seem to be predominantly related to staff turnover, emigration of professionals,[12] low initial pay, and lack of diversification of recruitment practices, all of which intensify the skill gaps that are quite serious for medium-size firms. However, the quality of education and training is also likely to be a constraint in the manufacturing sector, judging from the perceived gaps in generic skills (in particular, problem solving and time management) and sources of job-specific skills (including lack of relevant technical and vocational experience for managers and professionals).

Difficulties filling vacancies for skilled production workers—the bulk of the workforce of the manufacturing sector—are less pronounced than for more-skilled positions (because of relatively greater supply[13]), but nonetheless are significant for medium-large manufacturing firms. The difficulties are mostly related to the quality and relevance of postsecondary TVET education: the not-always-good perception of manufacturing employers of postsecondary TVET graduates; lack of certified postsecondary TVET graduates in some technologically advanced fields;[14] employment of postsecondary TVET graduates in jobs and occupations of heterogeneous level and quality; and the need for and duration of retraining for skilled production workers in manufacturing, both of which are quite high. Further analysis suggests that poor quality of some of the TVET graduates employed in the manufacturing sector can also be related to gaps in generic skills such as problem solving and initiative.

Some of the skills gaps also have particularly strong implications for longer-term competitiveness and innovation. The significant quality gaps in the machinery and auto parts subsectors (even accompanied by some emerging quantity gaps—figure O.14) and chemical subsectors, as well as in finance and business, are particularly worrisome for the achievement of higher innovation and competitiveness of the economy as a whole. And the picture looks even bleaker if, beyond the current demand, the benchmark is the successful longer-term modernization and development of the manufacturing sector. Along the same line, higher difficulties filling skilled

Figure O.14 Reasons for Skills Shortage by Manufacturing Subsector

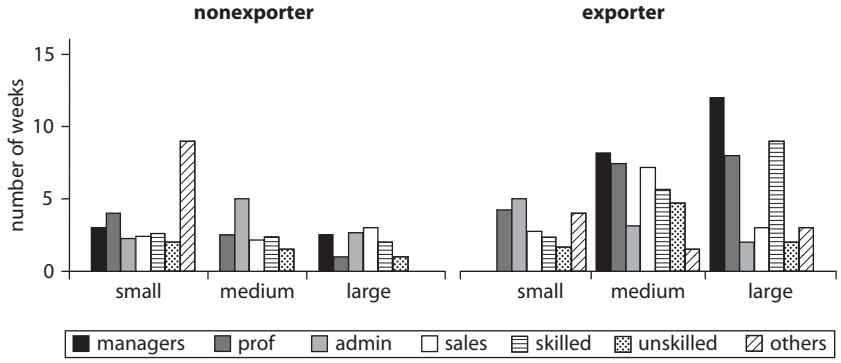


Source: Philippines Skills Survey 2008.

positions (figure O.15), lower perceptions of the quality of education graduates, and higher generic and job-specific skills gaps (creativity, practical skills, and experience being particularly weak) in the export sector—including electronics, agro-industry, and business—are particularly bad signs for the development of overall competitiveness. Urgent action is therefore needed to support skill provision and a better-quality education and training sector for competitiveness and innovation.

Finally, the results of the study also point to youth employability issues, with several possible underlying reasons and remedies. Although this report focuses on country and firm performance, some of the findings also have implications for youth employability. Significant youth unemployment rates suggest the presence of several employability constraints in the country. In combination with unfilled vacancies, they suggest issues related to the functioning of labor markets and quality of education and training, more than a lack of demand for skills (although sluggish demand in manufacturing may also play a role). Labor market constraints that can impact employability and that have been reviewed in this book include labor market segmentation across formal/informal and economic sectors, as well as poorly diversified recruitment practices weakening the job-matching process (in particular in manufacturing and for overseas placement). Skill-related issues include poor quality and relevance of education and training (reviewed in depth) and related academic and generic skills gaps, as well as gaps in relevant experience, which are particularly serious in the

Figure O.15 Time to Fill Vacancies in Manufacturing, by Size and Exports



Source: Philippines Skills Survey 2008.

context of the Philippines where practical experience is so important. This finding, together with the fact that generic skills are also partly acquired outside of the more traditional education and training system, points to the importance of managing more effectively the school-to-work transition of youth, including more opportunities for internships in firms and early contacts in general with the productive sector; more emphasis on work-related skills in the curricula; and more active labor policies, including job mediation services and complementary short-term training.

Weaknesses of Skill Supply and Main Policy Directions

While education and training is not the only determinant of skills gaps and employability in the Philippines, given the importance of labor market–related reasons and other channels through which skills can be acquired (such as experience), education and training is clearly the main source of academic skills and a key source of generic and technical skills, fundamental for a successful transition to the labor market and for fulfilling the needs of the economy. With particular focus on four key pillars of the system (higher education, TVET education, nonformal secondary education, and firm training), the book emphasizes the challenges education and training faces in producing the educational and workforce-related skills demanded by the economy and most promising policy directions. Beyond the analysis of higher and postsecondary education, a comprehensive approach is taken by also

touching on the sector's capacity to provide skill development opportunities for the unskilled ("second chance" programs) and on-the-job training. As such, emphasis is placed on three core aspects of skill production: the general ability of a system to produce a skilled labor force, the ability to continue updating these skills over time, and the ability to help the unskilled young adults and adults gain skills.

There is clear potential for improving the quality and relevance of higher education, in particular in relation to the needs of the service sector. Although the coverage of the system has drastically increased, performance remains mixed. The employer survey indicates weaknesses of the higher education system related to lack of relevance and adaptability to labor market needs, linkages with industry, qualities of facilities, and cost (table O.1). A more-detailed diagnostic of higher education and its basic outcomes—with emphasis on the coverage, efficiency, quality, and relevance of the system—is provided in the report; in a nutshell, although student enrollment in higher education has risen dramatically since 1970, access remains inequitable and performance is mixed judging, among other aspects, from declining pass rates for professional board certifications, insufficient teacher qualifications and serious deficiencies in the quality of facilities, and persistent graduate unemployment.

Similarly, there is potential to improve the quality and relevance of postsecondary TVET education in relation to the needs of the manufacturing and service sectors. According to the employer survey, main weaknesses of

Table O.1 Tertiary Level Educational Institutions: Strengths and Weaknesses (*)

	University		*Technical Institutes*		*Postsecondary Institutions*	
	Strength	*Weakness*	*Strength*	*Weakness*	*Strength*	*Weakness*
Length of studies	11.6	3.0	11.4	6.9	11.0	8.4
Teaching quality	11.5	3.6	11.0	7.6	10.9	8.6
Teacher qualification	10.8	6.6	10.9	7.9	11.7	7.3
Facilities quality	10.2	9.1	9.1	11.9	9.5	10.7
Research capacity	10.4	8.2	8.1	14.1	8.5	12.2
Fields of study	11.0	5.7	9.4	11.2	8.8	11.7
Labor market relevance	10.0	10.0	10.6	8.6	9.8	9.7
Industry linkage	9.3	12.8	10.7	8.5	9.7	10.3
Labor market adaptability	9.3	13.0	10.3	9.3	10.2	9.7
Cost	6.0	27.4	8.4	13.4	9.7	10.3
Other features	0.1	0.9	0.2	0.6	0.2	0.5

Source: Philippines Skills Survey 2008.
(*) Proportion of institutions identified by employers as having strengths or weaknesses by different areas.

postsecondary TVET education include quality of facilities, curriculum balance, and links with industry (table O.1). A detailed diagnostic of TVET education, with focus on its four major delivery methods, is provided. While significant reforms have been undertaken in the system, including moving to a competency-based approach and positive developments to enhance employability of TVET graduates, there are still inefficiencies and mixed employment performance, with particular urgency to improve school-based and privately run TVET programs. Beyond improving the relevance of TVET to manufacturing needs, there may also be scope for improving the relevance to service needs of TVET education, still little used in that sector, but well received by the sector's employers and already widely available in the country. An ascertained degree of education "inflation" suggests that postsecondary TVET graduates may be sufficient to fulfill some of the existing positions in the service sector.

While there are promising signals on the relevance to labor market needs of nonformal secondary education, there are still some unresolved critical issues. Employers' perspective on the relevance of the Alternative Learning System (ALS) to labor market needs is generally positive, but there are persistent issues, including a lack of coordination among providers, lack of coverage, unreliable information on the effectiveness and quality of programs, and insufficient funding.

Postemployment training could also be further improved in both its coverage and quality. The incidence of training in Philippine firms is quite high at the regional level, but lack of access to finance prevents many employees from being trained. There are also strong quality and cost differences between public and private training institutions (table O.2).

General Policy Recommendations

The main findings of the study subsector point to several policy implications for the supply of skills in the country, both overall and by subsector. Following are six general, across-sector recommendations—all aimed at eventually improving the responsiveness of the supply of skills to the demand and needs of the labor market:

(1) *More international benchmarking of institutions and students.* Higher education institutions are not part of any international ranking, and efforts to compare Filipino students and workers' competencies with those of other countries have remained limited. More international benchmarking is needed to address issues of quality and relevance for both the domestic and international labor markets.

Table O.2 Postemployment Training Institutions: Strengths and Weaknesses (*)

List of Strengths	*Public*	*Private*	*List of Weaknesses*	*Public*	*Private*
Not expensive	36.8	2.3	Little/no budget	8.7	81.8
Government funding	6.2	10.3	Trainers not lively	6.0	1.3
Global methodology	2.8	3.5	Limited discussions	22.9	7.1
Updated inputs/topics	6.2	6.3	Short training duration	9.6	3.6
Trainers are responsive	2.5	5.2	Out-of-date training	2.8	1.3
Experienced trainers	9.0	9.2	Little training variation	1.8	0.4
Helpful updates	6.2	6.0	Lack evaluation	6.4	1.3
Flexible training duration	1.9	1.4	Lack relevance	4.1	1.3
Efficient/relevant courses	15.0	23.0	Training too long	0.5	0.4
Focused on training	5.0	9.2	Lack materials/equipment	19.7	0.0
Well-organized programs	1.6	5.5	Training venue too small	4.1	0.4
Number of participants	0.6	0.0	Venue not conducive	2.8	0.9
High-tech facilities	4.1	14.1	Too many trainees	10.1	0.0
Conducive venue	1.3	3.7	Inconvenient schedule	0.5	0.0
Venue is accessible	0.3	0.3			
Government accredited	0.6	0.0			

Source: Philippines Skills Survey 2008.
(*) Proportion of institutions identified by employers as having strengths or weaknesses by different areas.

(2) *Strengthening generic, or life, skills in the curricula of all education and training levels.* Increased emphasis is needed on pedagogical practices that shape work habits, while making sure job-specific skills receive their due importance with particular focus on the continuous development and strengthening of practical skills through adequate pedagogical practices and school-industry links.[15]

(3) *Better articulation of the different pillars of the skill supply system through better overall governance, a strengthened skills certification and education and training quality assurance system, and appropriate pathways and bridges across different types of institutions.* Although progress has already been made in this direction, the need for better articulation and coordination of the skill development system in the country is real. More effective overall governance would address fragmentation and ensure that students and workers can move horizontally and vertically between education and training levels and the formal/nonformal education and training system, with different entry and exit points, through a strengthened skills certification and education and training quality

assurance system. The competency-based TVET (CBT) system is a good step in the right direction but applies only to postsecondary TVET education, while many other pillars of the skill development system (including postemployment training) are still far from adopting a competency-based approach.

(4) *More flexibility in curriculum and academic decisions.* Continuous participation of the private sector (under an improved quality assurance framework) would provide guidance for these decisions.

(5) *Closer links between postsecondary and tertiary education and industries.* This could be accomplished by intensifying collaboration in curriculum design, training, and research and development (R&D).

(6) *Improving the quantity and quality of the information on the labor market.* Better and more complete business and labor force surveys are one example.[16]

Specific Policy Recommendations

Below are more specific recommendations by education level based on the general and specific findings of this study.

Higher education

- *Improve funding and incentives for upgrading faculty qualifications.* Adequate resources have not been allocated to raise the number of faculty with master's degrees. Higher education institutions (HEIs) could be given more incentives to improve faculty qualifications, such as increased federal funding, and they could institute pay structures that reward postgraduate qualifications.

- *Improve university facilities.* A comprehensive survey could be undertaken by the government to identify which HEIs need facility upgrades. This survey could form the basis of a long-term investment plan to improve academic life. Long-term financing for these activities needs to be made available.

- *Improve precollege preparation to improve tertiary outcomes.* The Philippines could consider expanding the current 10-year basic education system to the more internationally accepted 12-year system, as

Mongolia has recently done. International evidence has shown that better-prepared students perform significantly better at the tertiary level. More analysis and evidence on this issue is needed, however, before taking a decision.

- *Institutionalize and systematize accreditation to promote quality of institutions and programs.* Philippine HEIs have traditionally been self-regulated, and accreditation has remained voluntary. Despite the creation of several national accreditation bodies and coordinating mechanisms, less than 20 percent of HEIs have even one accredited program. The Commission on Higher Education (CHED) could provide incentives for gaining accredited status, such as priority in grants and financial assistance and administrative and financial deregulation.

- *Consolidate or close nonperforming institutions and publish information on performance.* CHED could close several failing and nonperforming HEIs. This—together with regular publication and dissemination of outcomes of board exams and accreditation results—would signal a commitment to quality, guide and influence the behavior of tertiary education institutions, and inform students more clearly about which institutions provide a better education. It would also be important to enact appropriate transition measures to protect affected students.

- *Related to quality assurance, although outside the direct sphere of action of higher education, revise certification policies to improve the match between professions and labor market needs.* Part of the skill mismatch in professional needs is clearly related to overregulation of certain professions. Licensure examinations need to be revised or reoriented (possibly adopting multistage tests instead) to support better alignment with labor market needs.

- *Foster university-industry links by institutionalizing and accrediting on-the-job training (OJT).* OJT, practica, and internships vary in quality and participation. CHED could work with national accreditation agencies to develop minimum standards for OJT experiences and foster better links with the nation's industry.[17] Lessons from these experiences could feed back into creating more relevant curricula, possibly putting more emphasis on work-related generic skills such as decision making, entrepreneurial skills, and creative thinking.

- *Foster university-industry links by gathering more information and subsequently strengthening consultative mechanisms between industry and academia*. Currently, governing boards and technical panels are the main venues where private sector inputs in higher education are utilized. However, there is little knowledge of how these and other possible consultative mechanisms are really working and how they can be strengthened.

- *Foster university-industry links by including industry input into curriculum design for relevant fields, promoting use of university labs by industry, promoting joint R&D projects, and licensing university-held patents.* Such measures would not only help improve the relevance and quality of the system, but may also have long-term benefits for the national innovation capacity of the country.

- *Undertake a thorough set of tracer studies to follow graduates to learn lessons about the relevance of their education*. Such studies could interview both graduates and employers on a regular basis, ascertain what the most desirable skills for particular industries are, determine which fields of education are experiencing decreased demand, and identify where HEIs can benefit from this information and incorporate it into their curricula.

- *Improve funding mechanisms to expand access.* Lack of access to higher education will also hamper the relevance of education and training to the labor market. Despite its long history, public scholarship programs have remained limited in scope. Lamentable is the virtual absence of student loan programs. Expanding the coverage of the scholarship program and configuring a student loan program should be a priority. There are several experiences of student loan programs across the world[18] that are worth examining in detail to derive lessons for the Philippines.

Technical and vocational education

- *Induce greater participation of the private sector to reduce government expenditure while improving efficiency.* Grants and tax incentives can be given to private providers to better match the skills taught in TVET programs to the skills that firms desire. However, there needs to be a

mechanism to close nonperforming private providers—see below—because of the poor employer perceptions of some of the TVET graduates. Public-private partnerships with private financing and public provision could also be further supported.

- *Continue supporting community-based programs while reviewing the efficiency of some school-based ones.* Community-based programs have shown to be generally more efficient and relevant to labor market needs, while some school-based programs are both costly and underperforming and, therefore, need to be reviewed.

- *Reduce government costs through the rationalization of TVET providers.* Redundant costs may be trimmed by rationalizing or terminating unproductive programs, especially in state universities and colleges. In practice, this would mean the establishment of sanction mechanisms that would automatically remove the right of providers to receive government subsidies when performance is below acceptable standards. To facilitate this, the Technical Education and Skills Development Authority (TESDA) should develop multiple performance indicators for skill competencies and productivity with employer review and input.

- *Develop appropriate performance standards for TVET providers.* TESDA should broaden its leadership role in performance standards by investing in the design and demonstration of compatible performance outcome measures and performance standards systems for all employment and training programs. The role of TESDA needs to change from a direct service provider to an enabler of more effective providers.

- *Update and enforce accreditation standards.* For all of the administrative responsibilities that TESDA currently has, the continued updating of accreditation materials is one of the burdens that the agency must undertake.

- *Foster closer school-industry links, in particular for school-based programs, to improve the relevance of curriculum to labor market needs.* School-based programs have lower employment rates than other programs. Better links with industry in curriculum design and training may help reorient TVET offerings and skills as needed—possibly with more emphasis on technologically advanced fields, fields and skills applicable to the service sector, and practical skills. There is room to review and

strengthen the dual-training system (DTS), which combines in-plant training and in-school training based on a training plan collaboratively designed by an accredited educational institution or training center and an accredited firm.

- *Increase industry participation in the TESDA board.* Another strategy to improve links with industry is simply to increase its representation on the board of TESDA to ensure more continuous inputs.

- *Improve targeting of financial assistance for TVET.* While scholarships have been established to ease individual financial burden, they should be targeted to the most disadvantaged students. As currently implemented, scholarships are given to those unable to pass the qualifying exam, a system that results in substantial assistance to the nonpoor.

Alternative Learning System

- *Prioritize ALS efforts to young functionally illiterates.* Concentrating on this group, which numbers about 3 million, would allow the Bureau of Alternative Learning Systems (BALS) to develop more effective and targeted learning modules and delivery techniques. Currently activities are widely dispersed in many programs that cater to different groups with different needs. Perhaps nongovernmental organizations (NGOs) could fill the education needs of other groups.

- *Adopt information technology (IT) instruction on a larger scale.* This would help meet the needs of BALS's target population. Although BALS still uses teacher-based instructional technology, which is expensive and difficult to scale up, it could more effectively employ quality IT instructional packages that can reach a large number of people at any time.

- *Establish an effective planning and coordinating authority for the ALS subsector.* Lacking is a central authority that would plan ALS activities by all types of providers, perform research, set standards, and establish an information system. Currently there is no agency to undertake development work. BALS does not have the authority to govern private providers. Furthermore, a lack of research inhibits BALS from identifying effective programs, learning modules, and delivery systems.

- *Establish an information system to monitor and evaluate the performance of ALS graduates.* There is currently no way to assess the effectiveness of the different programs, the relevance of the curriculum, or the labor market outcomes of ALS graduates. An information system should be set up, including data collection on individual programs and participants and tracer studies. Impact evaluations of the programs should also be undertaken.

- *Devote a larger proportion of the education budget to BALS (in combination with evidence of improved effectiveness).* BALS is assigned an unrealistically large responsibility of eradicating illiteracy and raising the level of education of about 16 million people. However, with limited capacity and a budget that represents less than 1 percent of the education budget, prospects for improving the quality and outreach of BALS are modest. The budget should be increased, but in combination with better efforts to measure the effectiveness of the system.

- *Support closer links with industry.* Although industries hire ALS graduates, employers still do not fully recognize BALS certification, a situation that requires urgent action. Further collaboration in developing the learning modules may also be useful.

In-service training

- *Improve access to finance to support greater training coverage.* Access to finance is mentioned by firms as the number one constraint for not providing training. Additional financial incentives from the government would help. There is significant experience with training development funds in East Asia[19] on which the Philippines could build. Financial assistance would be particularly relevant for small firms, which are severely constrained in their ability to offer training.

- *Provide more incentives for employees to pursue outside training on their own.* Firms cannot provide all training, and therefore incentives for employees to pursue their own training are also useful. According to survey results, these training programs should cover improvement of career opportunities offered by firms (most often mentioned as an incentive), certification of new skills acquired, and free skill training opportunities in public institutions. Training vouchers may also provide a further motivation to seek training.

- *Plan the training courses around the job-specific skills weakly provided by the education sector.* There are needs for job-specific practical skills that are good candidates for complementary training at the firm level. Gaps in core skills such as problem solving and leadership are less likely to be provided at the firm level, given their high portability.

- *Improve the quality and relevance of public training institutions.* There is an urgent need to make pedagogy more interactive and provide more materials and equipment.

- *Make private training institutions more affordable.* While they provide more relevant training with better facilities than public institutions, private institutions are very costly, according to the vast majority of employers. Innovative payment schemes should be explored. Public-private partnerships, such as training vouchers to be used in public or private institutions, may be one possible strategy to make these institutions more affordable.

Notes

1. However, in absolute terms the education wage premium remains lower in the Philippines than in several other countries.
2. The dynamism of demand in the service sector is in line with the dynamism of the sector in most other countries of the region.
3. In fact, many colleges are just secondary schools "reclassified," which explains their poor quality.
4. Moreover, the composition of the manufacturing sector is stagnant. Few changes across manufacturing subsectors suggest the continuing low value-added of the sector.
5. These are generally in line with the results of pooled regressions on East Asian countries.
6. Initial evidence shows a change in the composition of exports and imports toward higher-value-added sectors, pointing to a potential for further increase in the demand for skills.
7. Labor market factors are dealt with in another World Bank report, *Shared Growth in the Philippines.*
8. This is also indicated by the lower-than-average education wage premiums in the Philippines.
9. This also reflects a pattern seen in Indonesia, Thailand, and Malaysia using firm surveys.

10. This is all the more true as the sample includes only already-selected and -hired graduates, and they are not necessarily representative of graduates overall—as indicated by the low competencies of secondary graduates according to international assessments.
11. The education and training system should be a key provider of noncognitive skills. See also Heckman and Lochner (1999).
12. More than constraining quantity, in the context of manufacturing, emigration of professionals seems to be constraining the quality of the available pool, which would explain the persistently low salaries. However, labor market segmentation issues may also be at stake, complicating the interpretation of the findings.
13. Also illustrated by the relatively low absorption rate of TVET graduates in the private sector.
14. The lack of certified TVET graduates suggests a lack of qualified skilled workers for certain limited manufacturing subsectors, pointing to quantity as well as quality issues.
15. Extensive internship programs should be built into the curriculum at different levels of schooling.
16. Business surveys should include detailed employment and skill modules.
17. Better OJT would also help address the issue of lack of certified professionals by ensuring they at least get trained according to the needs of industries and get increased employment opportunities.
18. The well-known cases of Australia and the United Kingdom are prime examples.
19. See the cases of Malaysia, Thailand, and Singapore, which set up training funds financed with general or payroll taxes to allow firms to buy training programs from different providers.

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Introduction

This introduction lays out the main motivation, context, and methodological approach and structure of the book.

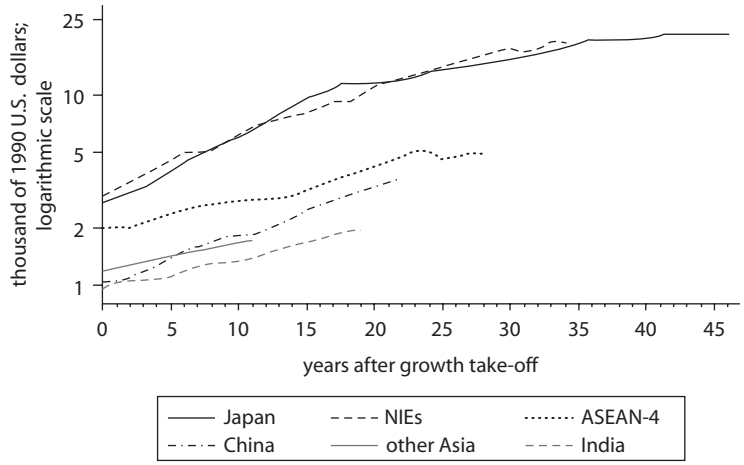
Motivation and Context

East Asian economies have been growing rapidly over the last several decades—even spectacularly for the newly industrialized economies (NIEs)—mostly driven by labor productivity. Asia's real income per capita rose sevenfold between 1950 and 2005, significantly reducing its gap relative to the fully industrialized countries. A 2006 International Monetary Fund (IMF) publication finds that Asia's strong growth performance between 1970 and 2005 was mostly driven by labor productivity, which, in turn, was related to strong total factor productivity growth as well as to rapid accumulation of both physical and human capital, in the context of generally favorable institutional and policy environments (including trade openness and macroeconomic stability). The same study also shows that the strong Asian labor productivity growth reflects both a sectoral shift and composition effect,[1] as well as pure within-sector productivity growth. Altogether, however, sectoral shifts and composition effects (to a large extent resulting from the decreased importance of the low-productivity

agriculture sector) accounted for only about 40 percent of Asia's catch-up, implying that most of the productivity growth was from within-sector productivity growth.

A key question now is how middle- and lower-income East Asian countries can sustain (or even accelerate) their growth rates to make it to an upper or at least middle-upper-income status, given an increasingly globalized world, the accelerated pace of technological change, and the current international crisis that may have implications for longer-term competitiveness and international integration. Globalization and technological progress may be both opportunities to make faster strides toward full development and sources of economic and social tensions if economies are not ready for them. There are still wide disparities in income per capita among countries in East Asia, with ASEAN4 (Indonesia, Malaysia, Thailand, and the Philippines) and China reaching only about 20 percent or less of the income per capita of Japan and the NIEs. This is largely due to a combination of later take-off[2] and start from a lower income basis (see figure I.1). Although the pace of growth does not appear to be very different in the late-comers than in the early-comers at a similar take-off stage, a key question is the extent to which the growth rate of the late-comers can be sustained, or even accelerated. Can the development path blazed by Japan and the NIEs be followed by the ASEAN4—including the Philippines—and by China

Figure I.1 Evolution in Output per Capita within Asia



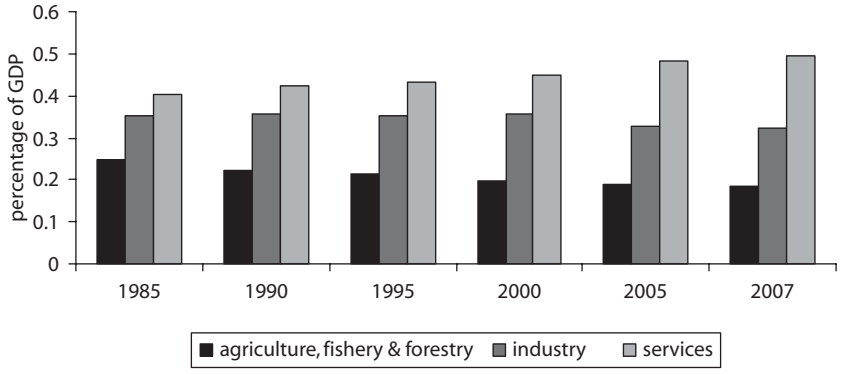
Source: IMF World Economic Outlook 2006.

and newly emerging economies such as Vietnam or even Cambodia? What is the role of skills in this process?

Some evidence suggests that continued convergence toward advanced economic status will require further improvements of the business climate, upgrading of education levels, and increased technological capability. Accomplishing this will help reap the benefits of globalization and rapid technological development and promote within-sector productivity growth, while providing the incentives for further labor reallocation toward high productivity sectors (IMF 2006; Yusuf 2003). In particular, in the context of the declining working age population, emerging East Asian countries will probably need to derive much more of the impetus for growth from higher productivity than from factor accumulation. If we define competitiveness as a country's ability to produce goods and services that meet the tests of international competition, we see that productivity and competitiveness are related concepts: only countries that maintain high productivity growth will ultimately be able to increase their share of world markets. The East Asian experience suggests that the level and quality of skills will be key in enhancing the long-term ability of countries to both create or adapt new knowledge and develop technological capability (innovation), and to assimilate and master technologies coming from a multitude of sources (foreign direct investment, import of capital goods, local research, and so forth) (adaptation), leading to productivity (and competitiveness) improvements.

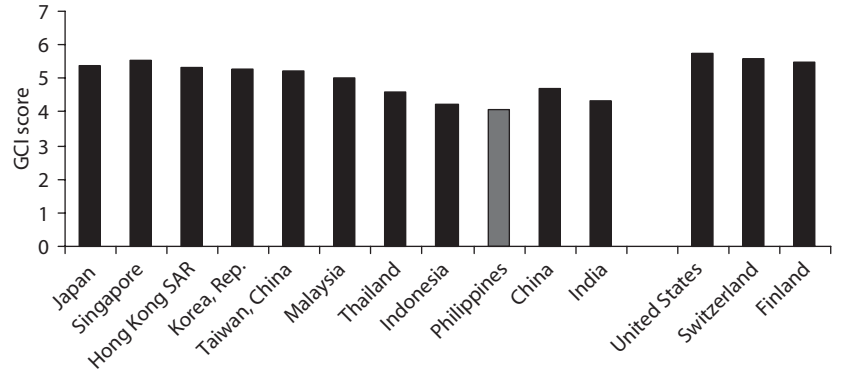
In this broader context, this book investigates trends in skills demand and supply over the past two decades for insights into ways to build (and use) the critical skills needed to sustain the competitiveness of the Philippines economy. The Philippines has experienced sustained growth—although more slowly than other East Asian countries and with a couple of significant recessions—over these last 20 years (see table A.1), while, at the same time, continuing its rapid integration into the world economy through sustained liberalization reforms. However, the growth of the manufacturing sector has been sluggish[3]—replaced by the service sector as the main employment and GDP driver (see figure I.2 and table A.2). Moreover, the Philippines seems to have lost innovation capacity, judging from its 71st place in the 2008–2009 Global Competitiveness Index (GCI) and last place among East Asian countries that have been assessed (see figure I.3 and table A.3). Regaining momentum will obviously depend on many factors, but skills have a key role to play: to support the growing service sector, help improve the competitiveness of

Figure I.2 GDP Composition by Sector, 1985–2007



Source: Table A.2.

Figure I.3 Country Ranking according to the GCI



Source: Table A.3.

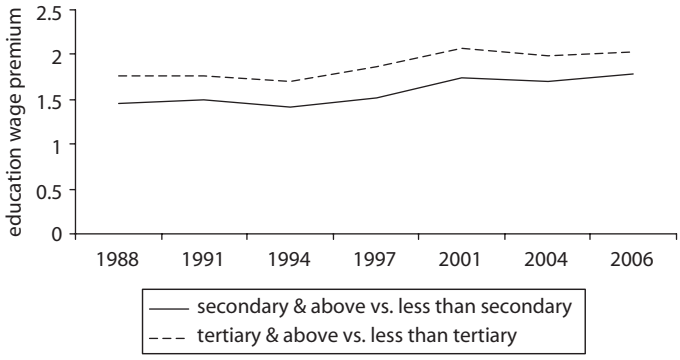
the manufacturing sector, and, in general, enhance the long-term ability of the country to innovate and adapt and assimilate new technologies.

There was a dramatic increase in educational attainment in just under two decades, reflected in higher shares of the workforce with higher education. Between 1988 and 2006 the share of the workforce with a primary education or less fell from 50 percent to 34 percent; the shares of those with a secondary and tertiary education rose from 30 percent and 19 percent in 1988 to 38 and 27 percent, respectively, by 2006.

At the same time, however, there are initial indications that demand for skills has kept on growing and that there may be emerging skills gaps,

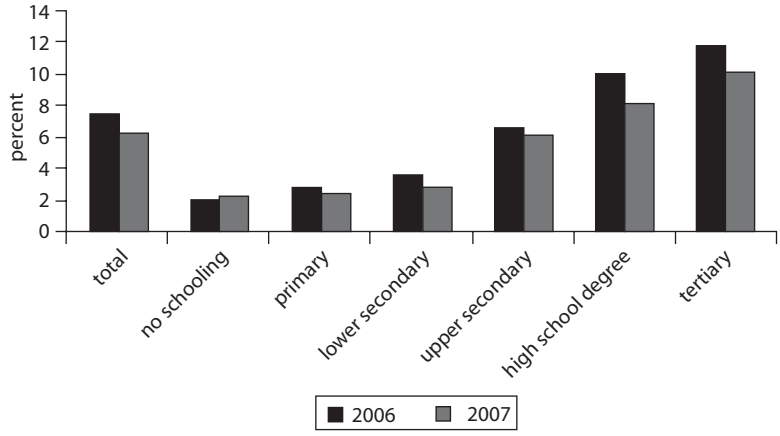
suggesting that skills are becoming a constraining factor for the economy. Wages for educated and highly educated workers have been growing in relation to wages for workers with less education (figure I.4), suggesting high returns to education in spite of increased educational attainment. Along this same line, recent measures of time to fill vacancies for professionals and managers (more than five weeks) put the Philippines on the higher end of East Asian countries. These two indicators in combination with significant unemployment rates for graduates with secondary and tertiary education (figure I.5) and poor results on international assessments

Figure I.4 Trends in Education Premiums, 1988–2006



Source: Table 1.2.

Figure I.5 Unemployment Rates by Education Levels, 2006–07



Source: Lanzona 2008.

point to skill gaps—possibly in terms of quantity, but more importantly in terms of quality—which can constrain the economic development of the country.

This study seeks to investigate three main areas: the characteristics of the demand for skills in the Philippines, any evidence of emerging skills gaps, and the extent to which the education and training sector provides the skills required by the economy. The key related questions for the first area of investigation are: How is behavior changing the demand for skills and what are its key drivers? What are the critical skills most needed to support the changing demand and drive economic development? The key related questions of the second area of investigation are: Are there any emerging skills gaps? What are they and where are they? The key related questions of the third area of investigation are: To what extent is the education and training sector providing the skills relevant to labor market needs? What are the main deficiencies and challenges in the provision of skills? What are the possible measures to improve quality and responsiveness to labor market needs?

Approach, Methodology, and Structure

The study pays particular attention to the "functional" skills that workers need to be employable and support firms' competitiveness and productivity, and to the role of the education and training system in providing them.

Functional skills include generic (or life) skills, technical skills, and subject-based (or academic) skills (see box I.1). These skills are central to perform well in the workplace and are the cumulative result of the education received, in-service training, experience, and so forth.[4] From

Box I.1

Skills Conceptual Framework

The study focuses on direct and indirect measures of functional skills.

(1) Actual measures

(a) Non-subject-based generic and technical skills

As described in the 2007 *World Development Report* and Stasz (2001), these include generic or life skills (transferable across jobs), which involve *thinking skills* (critical and creative thinking, problem solving, and so forth), *computing skills,* and *behavioral skills* (basic behavior,[5] leadership, time organization, teamwork,

(continued)

Box I.1 *(continued)*

the ability to negotiate conflict and manage risks, communication); and technical/vocational skills (associated with one's profession: a mix of specific knowledge and skills to perform specific jobs). These skills can be directly measured, usually assessed through employers' and employees' perceptions (although specific tests are also available)—but capturing only one side of overall skills (the non-subject-based/academic skills). These skills can be acquired through education (formal/nonformal),[6] on-the-job training, experience, and so forth.

(b) Subject-based skills

Academic skills are generally associated with subject areas (math, literacy, English) typically taught in schools, and directly measured through standardized tests. Employers' surveys allow us to get only some (imperfect) measure of them. International standardized tests at the secondary level allow us to measure some of these skills for Filipino students in a comparative way.

(2) Education and training levels

Identifying education levels attained or completed—such as secondary and tertiary education—and, when available, training programs completed (pre- or postemployment) is a widely available, but indirect measure of skills. Education and training achieved can potentially indicate a broad range of skills—from academic to generic and technical skills at a basic,[7] intermediate, and advanced[8] level, depending on the education and training level completed. However, while attaining a certain education and training level can "signal" skills, it is not necessarily synonymous with "possessing" those skills if education and training is of poor quality and poorly relevant to labor market needs. Moreover, skills can be acquired in other ways than by education and training. This is why measures of educational attainment and completion are often complemented with measures of quality and relevance to labor market needs of graduates, institutions, and programs to get a fuller picture of skills. This suggests that an analysis of different skill providers is necessary.

(3) Workers' occupations

Occupations included in this report are unskilled workers, skilled production workers, sales workers, administrative workers, professionals, and managers/directors. "Identified occupation" is an indirect measure of skills and is widely available in firm surveys. "Occupation" potentially captures both generic and technical/vocational skills (both important to getting and keeping occupations) and, to a lesser extent, some academic skills. Workers' occupations can be more or less aligned with education and training levels.

that perspective, education levels such as secondary and tertiary, which refer to the education received, can be useful proxies of academic and nonacademic skills at a basic, intermediate, and advanced level. Education levels achieved are also readily identifiable and widely available. However, they are only indirect measures because "signaling" skills is not necessarily synonymous with "possessing" those skills if education is of poor quality, and there are other ways besides formal education to acquire skills. Finally, workers' occupations, from unskilled workers to professionals and managers/directors, can be more or less aligned with education and training levels, and occupations can also potentially capture (although again only in an indirect way) nonacademic technical and generic skills. The labor force survey, existing firm surveys, the employer skill survey, and standardized testing jointly provide us with a detailed overview of labor force occupational composition and education, as well as most sought-after workers' actual skills. These surveys allow us to study these different skill-related dimensions in the Philippines.

The book is divided into two main parts. Part I investigates trends in demand for skills in the country overall and by sectors, explores its possible determinants, and attempts to identify emerging skills gaps. Each of the three chapters of this first part (trends in demand, drivers of demand, and skills gaps) includes available reviews of evidence and findings based on the three skill definitions. We generally start with the broader, but indirect, skill measure—education and training—and end with the most direct skill measure, to determine what skills matter most and where and what are the main skills gaps.

The quantitative-qualitative analysis of this first part is based on the long-term series of the Philippines labor force survey; the survey of overseas Filipino workers; the existing firm investment climate survey; and a new firm survey, specially undertaken for this report, focusing on demand and supply of skills. The labor force and firm surveys are used to explore trends in workforce composition, wage premiums/rates of return, and determinants of these; and the employer skill survey is used to explore the characteristics of new hires, their expected skills, and the main skills gaps.

Part II then analyzes the supply of skills in the country, exploring employers' perceptions on the quality of institutions and providing detailed analysis of main characteristics; outcomes (with particular focus on labor market outcomes, including employment performance); and

challenges in four key (or growing) subsectors of the provision of skills in the country: higher education, postsecondary technical-vocational education, nonformal secondary education, and postemployment training. Evidence and findings are based on the employer skill survey and secondary institutional data gathered through specific case studies. Part II concludes with general and specific policy implications to improve the responsiveness of the education and training system to the needs of the labor market.

Notes

1. The sectoral shift and composition effect on productivity growth is the increase in average labor productivity that results as labor and capital move over time from lower to higher productivity sectors, and the higher aggregate productivity growth that follows from having a greater share of sectors with intrinsically high productivity growth.
2. The timing of the take-off toward sustained growth was quite different across countries, with Japan taking the lead around the mid-1950s, followed by the NIEs around the mid-1960s, and ASEAN4 around the mid-1970s. China and Vietnam took off, respectively, in the early 1980s and 1990s.
3. The industrial sector has not experienced any rapid development since the 1970s. Its growth rate never reached the double-digit level enjoyed in all the tiger economies.
4. Skill acquisition is fundamentally a cumulative dynamic process starting at birth with parental education and continuing through school education, training, and experience. While skills can grow over time, they can also decay if possibilities for lifelong learning are not well developed. Additionally, a share of the population can be excluded from effective skills acquisition if alternative "second chance" skill development pathways do not exist for vulnerable youth.
5. Noncognitive personal traits that are generally not "shaped" by outside factors.
6. Literature has highlighted the ways in which the education and training system can support the development of these skills in the labor force. See Heckman and Lochner (1999).
7. At the basic level, skills can include the minimal abilities needed for further learning, work, and life, including numeracy and literacy and basic levels of behavioral skills such as perseverance, self-discipline, and self-confidence.
8. At the intermediate and advanced levels, skills can include thinking skills, higher-order behavioral skills (decision making, teamwork, the ability to

negotiate conflict and manage risks, and so forth), advanced academic skills, and technical/vocational skills.

Reference

Lanzona, L. 2008. "Technical, Vocational Education and Training in the Philippines." (Background study for this report.) Mimeo. World Bank, Washington, DC.

PART I

Skills Demand in the Philippines

CHAPTER 1

Skills Trends in the Philippines

This chapter investigates trends in demand for skills in the Philippines using microeconomic evidence from labor force and firm surveys and looking at skills defined in terms of level of educational attainment and direct measures of "functional" skills.

Trends in Skill Composition, Employment, and Relative Wages

We begin by painting a broad overview of evolving skills trends over the last two decades using a time series of Labor Force Surveys (LFSs) conducted by the Philippines National Statistics Office. We look at skills in terms of education levels. In the first two sections of this chapter, one measure defines intermediate skills as the completion of some secondary schooling and above; another measure defines advanced skills as the completion of some tertiary education and above. These skill definitions are used to investigate changes over time in both skills composition across sectors, and relative wages of skilled and unskilled workers in the labor force, to derive trends in demand for skills in the country. The next two sections look at educational attainment in terms of particular education levels.

The data for the analysis come from LFSs designed to provide statistics on levels and trends in employment for the country and for each of the administrative regions. More information on these data is provided in box 1.1.

There was a dramatic increase in educational attainment in just under two decades. Table 1.1 presents summary information on the numbers and educational attainment of the employed population of working age (15 to 65 years old) between 1988 and 2006. Over this period, the numbers of employed with a primary education or less stayed roughly constant, while those with secondary and tertiary education roughly doubled. This dramatic rise in educational attainment of the workforce in just short of two decades is reflected in the educational composition of the workforce. The

Box 1.1

The Philippines LFS Data

Conducted quarterly by the Philippine National Statistics Office, the LFS is a multistage, stratified, random survey of households that yields nationally representative samples of individuals. Between 1988 and 1996, about 26,000 households were surveyed, increasing to about 41,000 households from 1997 onward. Prior to 1997, the surveys covered between 106,000 and 135,000 individuals, of whom 60,000 to 78,000 were of working age, 15–65 years old. From 1997 on, sample sizes averaged about 200,000 individuals, of whom about 120,000 were of working age. The LFS samples can be expanded to yield national-level counts and estimates using survey weights adjusted for nonresponse.

The LFS elicits information on location; demographic attributes of individuals; their employment status; and, for those who are employed, a range of variables on the nature of their work. These include variables on industry, occupation, income or wages, and days and normal hours worked in a specified time period. In the LFS rounds (January) associated with enumeration of the triannual Family Income and Expenditure Survey (FIES), the reference period for employment, days worked, normal hours of work, and income is the past three months. In the other LFS rounds, the reference period is the past week. Up to the year 2000, these latter LFS rounds elicited only employment-related information but not income or wages; however, starting in 2001, the LFS added questions on daily pay and hours of work.

(continued)

Box 1.1 *(continued)*

The analysis in this book is based on the January rounds of 1989, 1992, 1995, and 1998 of the LFS (referring to October–December data for 1988, 1991, 1994, and 1997), plus the October rounds of the LFS for each year from 2001 to 2006.[1] Together, these LFSs provide comparable time series data on employment and on income and wages covering the 18 years from the late 1980s to the present. To keep the tabular analysis manageable, the report uses all of the January LFS years and selected years from the October LFS rounds: 2001, 2004, and 2006. Sample sizes for the working-age population are reported in table A.4, together with the sample sizes for those who reported working in the past quarter (1988–1997) or in the past week (2001–2006).

Considerable attention was given to defining three variables consistently over time: industry and occupation of employment, and hourly wages. In 2001, coding of the industry of employment in the LFS changed from using the 1977 Philippines Standard Industrial Classification (PSIC) to the 1994 PSIC; in that same year, occupational codes also changed from the 1977 Philippines Standard Occupational Classification (PSOC) to the 1992 PSOC. New industry and occupation variables were defined—with 34 industry and 6 occupation categories—that reconciled coding changes over time in the PSIC and PSOC information on the basis of two-digit details reported in the data.

The definition of the hourly wage variable warrants more discussion. As noted above, the October and January rounds of the LFS used different reference periods—the past week and the past three months. The October LFS rounds asked employed individuals age 15 years and older about daily pay in the past week as well as normal hours worked per day, from which an hourly wage can be simply calculated. In contrast, to meet the income information needs of the FIES, the LFS January rounds asked employed individuals of working age about cash and in-kind payments in the primary job over the past quarter. Separately, it asked about the number of full days and part days worked in each of the past three months, as well as normal hours for full and part days worked. An hourly wage variable consistent with that of the October LFS rounds may be calculated by dividing the past quarter's total cash and in-kind payments by the total hours worked in the past quarter, the latter defined as the product of full days and normal hours of full days worked.[2] To eliminate wage outliers, observations in each LFS year are dropped if they reported hourly wages less than the 1 percentile or greater than the 99 percentile of the hourly wage distribution in a given year. Hourly wages are deflated using the consumer price index and reported in real-year 2000 pesos.

Table 1.1 Number and Educational Composition of the Employed, 1988–2006

Education Categories	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Numbers of employed (1,000s)							
No formal education	715	741	695	660	571	620	557
Some elementary	4,812	4,749	4,823	4,673	4,746	4,945	4,944
Elementary graduate	5,140	5,423	5,824	5,691	5,517	5,302	5,361
Some secondary	2,770	2,996	3,290	3,517	4,077	4,199	4,385
High school graduate	3,663	4,062	4,878	5,526	6,678	7,438	7,921
Some tertiary	1,852	2,020	2,421	2,980	3,368	3,805	4,100
Degree and above	2,226	2,459	2,615	3,026	3,799	4,215	4,590
Total	21,178	22,449	24,546	26,073	28,756	30,523	31,858
Educational composition of the employed (percent)							
No formal education	3.4	3.3	2.8	2.5	2.0	2.0	1.7
Some elementary	22.7	21.1	19.6	17.9	16.5	16.2	15.5
Elementary graduate	24.3	24.2	23.7	21.8	19.2	17.4	16.8
Some secondary	13.1	13.3	13.4	13.5	14.2	13.8	13.8
High school graduate	17.3	18.1	19.9	21.2	23.2	24.4	24.9
Some tertiary	8.7	9.0	9.9	11.4	11.7	12.5	12.9
Degree and above	10.5	10.9	10.6	11.6	13.2	13.8	14.4

Source: Philippine Labor Force Survey.
Note: Reported figures are weighted using sampling weights.

share of the workforce with a primary education or less fell from 50 percent in 1988 to 34 percent by 2006; over the same period, the shares of those with secondary and tertiary education rose from 30 percent and 19 percent in 1988 to 38 percent and 27 percent, respectively, by 2006.

Overall skills demand has grown in the Philippines. Did this dramatic rise in the supply of educated workers affect the earnings of the more educated relative to the less educated? Table 1.2 reports the real hourly wages of the workforce by education level and associated wage premiums for skilled workers (defined either as those having some secondary education and above, or as those with some tertiary education and above). Three points emerge from table 1.2. First, consistent with much of the human capital literature on the positive returns to schooling investments, hourly pay generally rises with educational attainment in all years. Second, real wages increased between 1988 and 2001 but subsequently began to decline for all education groups, suggesting that nominal wage increases have not kept up with inflation at least since 2001. Finally, notwithstanding the recent fall in real wages, the table suggests that the returns to education have risen over time. The wage premium for those with some secondary education and above (relative to those with less education) rose from 145% in 1988 to 178% by 2006; for those with some tertiary

Table 1.2 Hourly Pay and Education Premiums by Level of Education (2000 Pesos)

Education	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Level of education							
No formal education	15.46	16.03	19.05	19.01	13.74	13.00	11.94
Some elementary	15.75	16.05	16.24	18.00	15.37	14.53	13.62
Elementary graduate	17.24	17.63	18.15	20.26	17.97	16.87	15.03
Some secondary	17.93	18.36	18.43	20.79	18.45	17.10	15.72
High school graduate	19.50	21.37	20.78	23.82	21.66	20.44	18.77
Some tertiary	24.82	25.60	25.61	29.78	27.85	25.84	24.38
Degree and above	35.42	37.39	36.70	47.38	46.42	42.05	39.50
Total	20.35	21.36	21.49	25.43	25.72	24.03	22.93
Education wage premium (percent)							
Secondary & above vs. less than secondary	145	150	142	152	174	171	178
Tertiary & above vs. less than tertiary	177	177	171	186	206	198	203

Source: Philippine Labor Force Survey.
Note: See box 1.1 for definition of hourly pay variable.

education and above, the corresponding increase over time was 177% to 203%. This increase in wage premiums despite an expanded supply of more educated workers suggests that overall skills demand in the Philippines economy has grown over time.

Services is the most skill-intensive sector, although all three sectors experienced increases over time in the share of skilled workers with secondary- or tertiary-level education. A large majority of workers with at least some tertiary education are employed in the services sector, and this proportion has increased over time. Table 1.3 reports the evolution of employment and skilled employment variables by sector for insights into whether these skills trends and associated wage premiums are economy-wide or sector-specific. The table indicates that agriculture and industry registered only modest employment gains from 1988 to 2006, but that employment in the services sector almost doubled and absorbed the lion's share of new additions to the workforce. In terms of skills—defined here as the share of the employed with some secondary education and above or, alternatively, the share with some tertiary education and above—the sector with the lowest share of the skilled is agriculture, industry is intermediate in skill intensity, and services tends to employ a higher share of the skilled, especially those with some tertiary education. Most workers with at least some tertiary education are employed in the services sector, and this proportion has

Table 1.3 Numbers and Education Composition of the Employed, by Sector

Sector	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Numbers employed (1,000s)							
Agriculture	9,648	10,015	10,752	9,969	10,448	11,039	11,357
Industry	3,375	3,720	4,002	4,681	4,592	4,782	4,804
Services	8,165	8,745	9,823	11,490	13,716	14,702	15,697
TOTAL	21,187	22,480	24,577	26,140	28,756	30,523	31,858
Share of employed with some secondary education and above							
Agriculture	0.296	0.31	0.326	0.344	0.383	0.398	0.41
Industry	0.585	0.617	0.653	0.673	0.717	0.722	0.739
Services	0.695	0.702	0.722	0.737	0.775	0.803	0.815
Total	0.496	0.513	0.537	0.576	0.623	0.644	0.659
Share of employed with some tertiary education and above							
Agriculture	0.052	0.055	0.056	0.063	0.075	0.074	0.078
Industry	0.191	0.198	0.214	0.221	0.238	0.242	0.25
Services	0.36	0.365	0.364	0.378	0.386	0.411	0.42
Total	0.192	0.199	0.205	0.23	0.249	0.263	0.273
Some secondary education and above by sector							
Agriculture	0.272	0.269	0.266	0.228	0.223	0.224	0.222
Industry	0.188	0.199	0.198	0.209	0.184	0.176	0.169
Services	0.540	0.532	0.537	0.562	0.593	0.601	0.609
Total	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Some tertiary education and above by sector							
Agriculture	0.123	0.123	0.120	0.104	0.109	0.102	0.102
Industry	0.158	0.165	0.170	0.172	0.153	0.144	0.138
Services	0.723	0.714	0.710	0.722	0.739	0.753	0.758
Total	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Source: Philippine Labor Force Survey.

increased over time. However, all three sectors experienced increases in the shares of skilled workers with secondary- or tertiary-level education.

These increases in skill intensity were associated with different sector-specific time paths in the evolution of hourly pay and education wage premiums, with demand exceeding supply in the services sector. As shown in table 1.4, in the agricultural sector, wage premiums for secondary- or tertiary-educated individuals fluctuated from year to year, but generally remained constant despite increases in education intensity over time, indicating a rough supply-demand skill balance. In industry, on the other hand, wage premiums declined as education intensity increased, suggesting that there was an oversupply of skilled labor relative to this sector's skills needs. This result holds whether skills are defined as some secondary education and above or alternatively as tertiary education. The services sector differs from the

Table 1.4 Hourly Pay and Education Wage Premiums of the Employed, by Sector (2000 Pesos)

Sector	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
A. Hourly pay							
Agriculture	18.293	18.492	18.870	20.564	14.159	13.673	12.725
Industry	20.927	23.399	23.749	26.793	25.728	24.192	22.902
Services	21.687	22.689	22.486	27.749	29.141	27.161	25.657
B. Education wage premiums – secondary and above versus less than secondary (percent)							
Agriculture	118.3	119.7	117.0	121.2	113.7	117.6	116.4
Industry	145.0	146.8	138.4	135.1	126.9	124.4	126.0
Services	170.1	173.5	161.5	168.2	187.1	186.5	206.1
C. Education wage premiums – tertiary and above versus less than tertiary (percent)							
Agriculture	156.3	150.3	157.3	162.1	148.5	150.7	147.4
Industry	172.5	161.0	159.8	161.3	152.2	141.5	145.0
Services	188.8	192.2	181.0	193.6	212.7	209.0	219.2

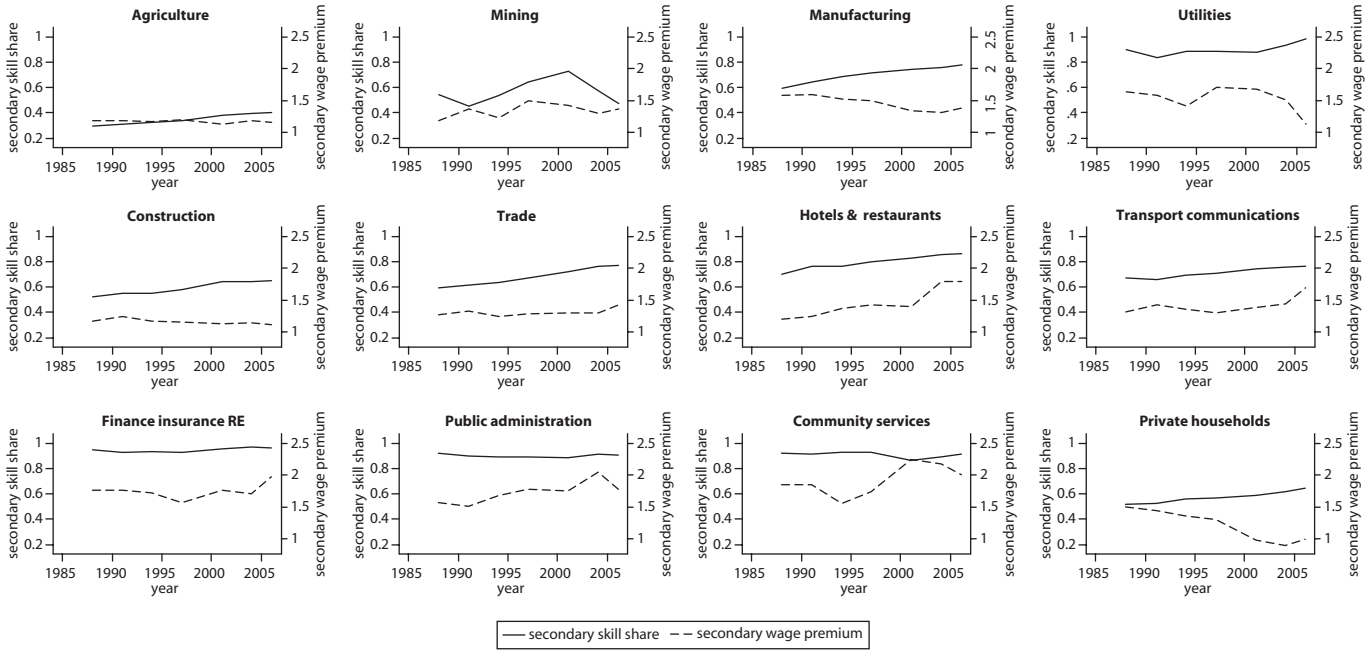
Source: Philippine Labor Force Survey.
Note: Figures were computed from the LFS with sampling weights.

other two sectors in the concurrent increase over time in both skill intensity and wage premiums, suggesting that in this sector, skills demand exceeded supply over much of this period. The relatively strong growth in skills demand in services is supported by evidence that real hourly pay in services increased faster than in agriculture or industry (table 1.4, panel A); by 1997, average real wages in services had overtaken those in industry.

Do these broad trends still hold up when the data are disaggregated by subsectors? The answer is that they do, broadly speaking, although differences across broad industry groups become apparent. The time paths of skills shares and premiums for 12 broad industry groups are reported in tables A.5 and A.6 in the appendix, focusing principally on the subsectors within industry and services. The same data are presented graphically to facilitate analysis: in figure 1.1 for skills defined as some secondary education and above, and in figure 1.2 for some tertiary education and above.

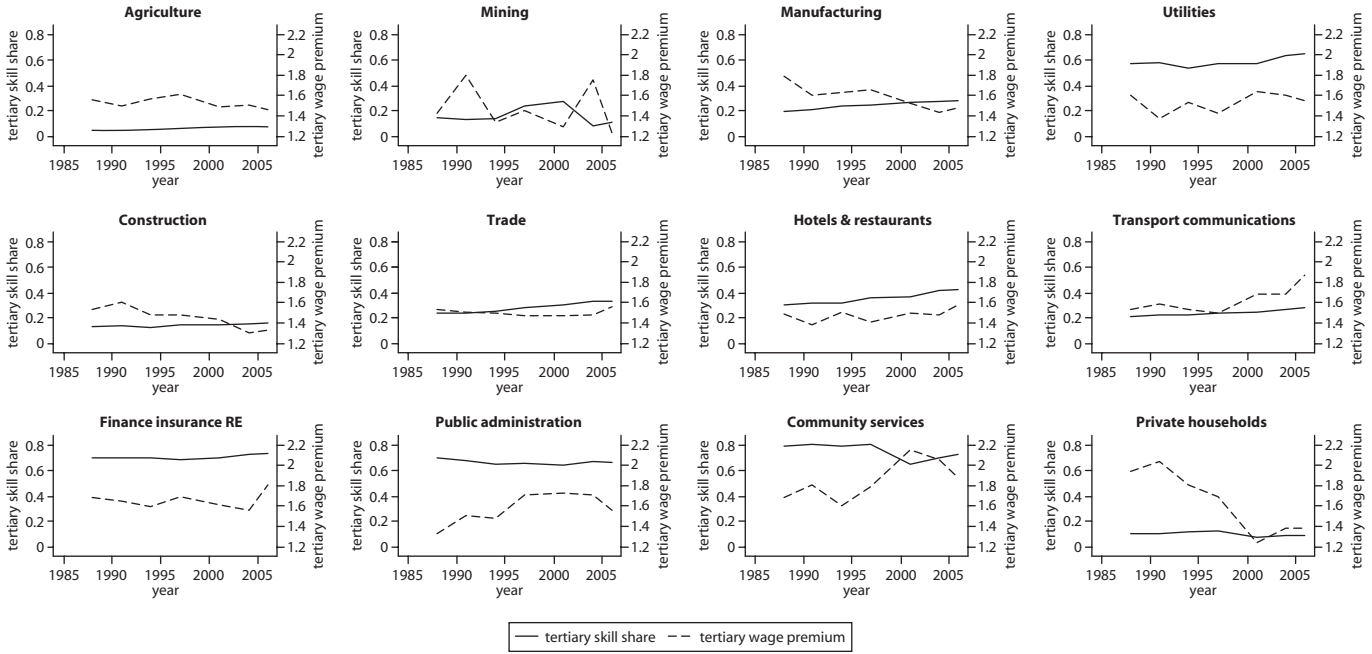
Within the industrial sector, utilities is the only subsector where demand for skills, and only at tertiary level, has consistently increased. Within manufacturing, only in the chemicals subsector and to a minor extent nonmetallic minerals and machinery subsectors has the education premium increased or stayed stable. Consider first the industries within the industrial sector in figures 1.1 and 1.2. Skills shares (both secondary and above and tertiary and above) of the employed workforce rose over time for manufacturing, utilities, and construction; for mining and quarrying, skills shares increased

Figure 1.1 Secondary Skills Share and Wage Premium



Source: Philippines Labor Force Survey.

Figure 1.2 Tertiary Skills Share and Wage Premium



Source: Philippines Labor Force Survey.

until 2001 and then declined thereafter. In the face of rising skills shares, wage premiums for the employed with secondary education and above declined in manufacturing and utilities, and stayed about constant in construction (figure 1.1); for the employed with tertiary education, wage premiums fell in manufacturing and construction, and increased in the utility industries. In mining, there is an indication that wage premiums increased after 2001, but only for the employed with tertiary education and above. Within manufacturing, only in the chemicals and to a minor extent nonmetallic minerals and machinery subsectors, has the wage premium increased or stayed stable (tables A.7–A.10).

Within the services sector, five groups of industries can be identified on the basis of time trends in skills shares and wage premiums, with tourism; transport and communications; finance, insurance, and real estate; wholesale and retail trade; and business services all showing rising demand for skills. On the other hand, government, community, and private household services are now showing declining demand (at least in the domestic market). In the first group—wholesale and retail trade—skills shares increased over time, albeit from relatively low initial levels, but wage premiums remained roughly constant, pointing to a rough skills supply-demand balance. The second group—hotels, restaurants, transportation and communications—experienced concurrent increases in both skills shares and wage premiums, suggesting that skills demand exceeded supply in these industries. The third group, comprising finance, insurance, and real estate and business services—industries with relatively high initial skills shares in 1988—showed little gain in skills shares over this period. However, this group experienced generally rising education wage premiums over time, indicating rising relative demand for skills. The fourth group—government and community services—has seen a recent decline in the education wage premium after a period of growth combined with a flat or even declining skills share. As we will see below, this excess supply for the domestic market is partly because of large numbers of workers studying these careers to be able to emigrate. Finally, the last services group—employment in private households—saw skills shares rising for secondary-educated workers and no change in tertiary-educated skills shares. Declining education premiums point to growing excess skills supply in this industry.

Estimates of Industry and Education Premiums

Thus far, the chapter has focused on describing time trends in skills shares and education wage premiums based on simple averages for groups of the

employed workforce, differentiated only by level of educational attainment and sectors or broad industries. This section turns to a regression framework to more precisely estimate education wage premiums at a finer level of industry detail (34 two-digit industries), controlling for individual attributes, geographic location, and broad occupations that are also correlated with wages.

Some summary statistics on these variables are reported in table A.11. The table presents selected summary statistics for seven cross-sections of the LFS over the 1988-to-2006 period. The key variable of interest is the logarithm of hourly pay that was the focus of the previous section. Individual attributes include an indicator variable for gender (male), a quadratic specification of age to capture the curvature of age-wage profiles commonly found in the human capital literature, and alternative skills indicators defined as having some secondary or tertiary education and above. Other indicator variables are defined for either 12 broad industry groups or 34 two-digit industries, 6 occupations, and 17 regions.

The regression framework for estimating industry and education wage premiums follows the approach used by Goldberg and Pavcnik (2005) and other researchers. Specifically, for each year the log of worker i's wage ($\ln(w_{ijt})$) is regressed on worker i's characteristics (H_{ijt}) such as gender and age; on whether, based on her education, the worker is skilled or unskilled (S_{ijt}); and on a set of industry j indicators (I_{ijt}) reflecting worker i's industry affiliation:

$$\ln(w_{ijt}) = H'_{ijt}\beta_H + S_{ijt} \cdot I_{ijt}\, sp_{ijt} + I_{ijt}\, wp_{ijt} + \varepsilon_{ijt} \qquad (1)$$

where sp_{jt} represents the sectoral return to education (or education premium) of sector j at time t, and wp_{jt} represents the industry premium. The estimated wage premiums are then presented as deviations from the employment-weighted average wage premium.

Table 1.5 reports the regression results from estimating different model specifications to explore the robustness of education wage premium estimates to inclusion of control variables for industry and occupation. For each year, the stripped-down wage model regresses the log of hourly pay on individual attributes, one of the two skill measures, and dummy variables for 16 regions (one is omitted). Other model specifications then add industry or occupation dummies, or both.

While the growth in overall skills demand is confirmed, the regression results suggest that a significant part of the average education premium is attributable to industry and occupation effects, and these effects become

Table 1.5 Returns to Individual Attributes and Education Levels

Dependent Variable: Log(hourly pay)	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
A. No controls for industry or occupation (secondary education)							
Constant	0.9500	0.9812	0.9812	1.4186	1.7154	1.6730	1.2720
Male	0.3292	0.3177	0.3177	0.2577	0.0571	0.0626	0.1283
Age in years	0.0697	0.0633	0.0633	0.0557	0.0419	0.0485	0.0576
Age-squared	–0.0007	–0.0007	–0.0007	–0.0006	–0.0004	–0.0005	–0.0006
Secondary vs. primary or less	0.4154	0.4126	0.4126	0.4069	0.4935	0.4632	0.4924
B. With industry and occupation dummies (secondary education)							
Constant	0.9830	1.0173	1.2086	1.4075	1.7818	1.6688	1.3354
Male	0.3577	0.3186	0.2961	0.2993	0.1126	0.0796	0.1029
Age in years	0.0537	0.0489	0.0431	0.0437	0.0212	0.0252	0.0317
Age-squared	–0.0006	–0.0005	–0.0004	–0.0004	–0.0002	–0.0002	–0.0003
Secondary vs. primary or less	0.2329	0.2505	0.2123	0.2273	0.1577	0.1489	0.1604
C. No controls for industry or occupation (tertiary education)							
Constant	1.1951	1.2265	1.4396	1.6622	1.9954	1.8990	1.6364
Male	0.3801	0.3629	0.3157	0.3019	0.1363	0.1376	0.1993
Age in years	0.0571	0.0514	0.0431	0.0440	0.0279	0.0333	0.0384
Age-squared	–0.0006	–0.0005	–0.0004	–0.0005	–0.0002	–0.0003	–0.0004
Tertiary vs. secondary or less	0.6602	0.6353	0.5723	0.6361	0.6928	0.6617	0.6928
D. With industry and occupation dummies (tertiary education)							
Constant	1.1505	1.2011	1.3740	1.5859	1.9219	1.8004	1.5034
Male	0.3656	0.3265	0.2989	0.2978	0.1141	0.0845	0.1048
Age in years	0.0492	0.0443	0.0385	0.0390	0.0177	0.0217	0.0271
Age-squared	–0.0005	–0.0005	–0.0004	–0.0004	–0.0001	–0.0002	–0.0003
Tertiary vs. secondary or less	0.3950	0.3907	0.3579	0.3851	0.2907	0.2774	0.2926

Source: Philippine Labor Force Survey.
Note: All regressions include controls for 16 regions and marital status, and are weighted.

stronger over time. Including industry and occupation dummies reduces estimated education premiums by more than 40 percent in the 1990s (compare the estimated wage premiums in panels A and B, or panels C and D). Furthermore, industry and occupation effects appear to become even more important over time, with greater percentage declines in estimated wage premium after 1997 than in the first part of the 1990s, when controls are included for industry and occupation. The returns to individual attributes are also not without interest. Note that the gender wage gap declines dramatically over time, from more than 32 percent in 1988 to

one-third to one-half of that gap by 2006. Finally, wage-age profiles have become progressively flatter over time, as evidenced by the decline in estimated age coefficients from the 0.05 to 0.07 percent range in 1988 to the 0.03 to 0.06 percent range by 2006. One plausible human capital interpretation of this finding (among others) is that postschool investments in on-the-job training have declined over time.

An estimation of the full model confirms declining education wage premiums after 1997, indicating increasing industry and occupation effects, while also confirming higher relative education wage premiums for services subsectors. This is an interesting result that indicates that reward to education has become more and more industry related in the Philippines, with concentration in the services and to a minor extent utility sectors. At the same time rising mean industry premiums may provide an indication of possible segmentation of the labor market. With these results as background, we estimate the full wage model specified in equation (1) with control variables for both industry and occupation, and for the full set of interactions between industry and the skills variable. The estimated coefficients of all variables are free to vary by year, and we implement this model by first estimating equation (1) separately for each year, and for each of the alternative skills measures. To make the results comparable across industries and over time, estimates of industry and industry-specific education premiums in each year are normalized and expressed as deviations (both positive and negative) from the employment-weighted mean premium of that year. These are reported in appendix tables A.7 and A.8 for the skilled with some secondary education and above, and in tables A.9 and A.10 for the skilled with a tertiary education and above. The results also suggest a declining trend in education wage premiums after 1997 when controlling for occupation, industry, and the full set of interactions, indicating stronger industry and occupation effects. The results also suggest higher relative education skills premiums in services subsectors (in particular in communications, real estate, and business) and a few industrial subsectors such as chemicals and nonmetallic minerals. Mean industry premiums are shown to be quite markedly on the rise and the main determinants of wage differentials, providing an indication of possible segmentation of the labor market.

When comparing the Philippines to the rest of East Asia, we see that the demand for skills in the Philippines is dynamic—although in absolute terms the education wage premium is lower than in several other countries. The dynamism of Philippines demand in the services sector reflects the dynamism of the sector in most other countries of the region. Its education

wage premiums tend to be more industry-specific than elsewhere. The increase in education wage premium is stronger in the Philippines than in Indonesia and Thailand, but weaker than in Vietnam, China, Cambodia, and the preliminary estimations for Mongolia. However, when comparing the trend in the education wage premium with the share of skilled labor, the Philippines is second only to Vietnam and China in the region for the dynamism of its demand for skills.[3] In spite of this increasing trend, the education wage premium remains lower than in several other countries, in part because of a different definition of education levels in the Philippines (figure 1.3) A disaggregation of the education wage premium by sector (World Bank 2010) shows that in most other countries of the region, the services sector has also become a key driver of demand for skills, although from a lower basis in terms of skilled labor in the sector than in the Philippines.[4] Overall, reward to skills tends to be more polarized in the Philippines than elsewhere.

Trends in Returns to Schooling

Along the line of the above analysis, we complement our analysis of trends by looking at estimates of the private rates of return to schooling at different educational levels, and how they have changed over time and across broad sectors of the economy.

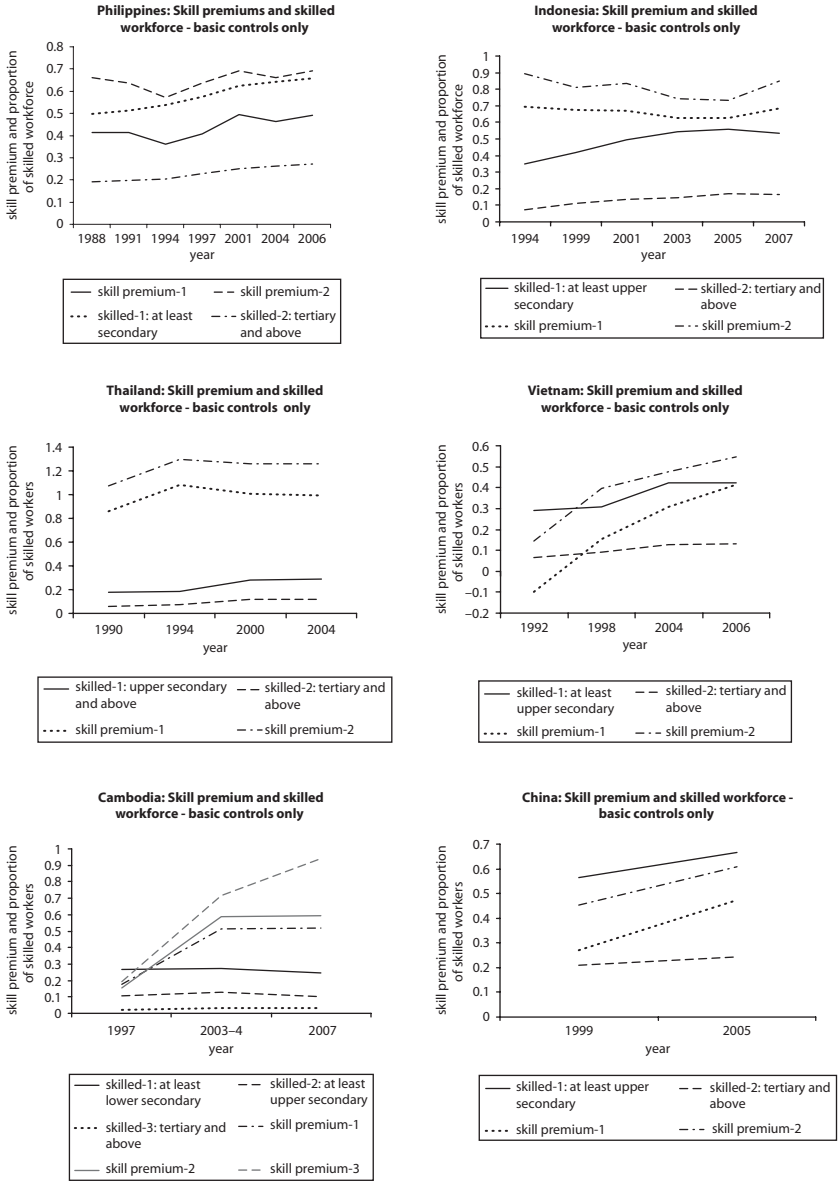
We first follow the standard methodology popularized by Mincer and estimate a simple cross-sectional wage model by ordinary least squares (OLS) for each of the years in table 1.6. The log-linear model is as follows:

$$\log(hourlywage_i) = fn(EDUC_{ij}, Age_i, Agesquared_i, Male_i)$$

where the dependent variable, the logarithm of hourly wage, is regressed on a j vector of education variables (EDUC), a quadratic measure of age (Age and Agesquared) as a proxy for years of experience, and an indicator variable for gender (Male). EDUC consists of six (0,1) indicator variables for different levels of educational attainment, with the omitted category being those with no formal education.

The estimated coefficients on the different educational categories allow us to calculate what the corresponding annualized private rates of return are to completing that level of education.[5] These rates of return calculations take into account the number of years that is "normally" required to

Figure 1.3 Education Premiums and Skilled Workforce in a Sample of East Asian Countries



Source: Di Gropello and Sakellariou 2010.

Table 1.6 Rates of Return by Level of Education and Sector, 1988–2006

	Returns to Additional Year of Schooling (%)						
Level of Education	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Whole economy							
Some elementary	2.3	1.3	–1.6	0.8	2.9	2.4	2.6
Elementary completed	6.9	6.6	6.8	7.3	8.0	7.6	5.8
Some high school	4.6	5.0	3.3	4.7	4.3	3.0	3.6
High school graduate	5.4	8.9	9.1	8.8	8.4	9.1	10.3
Some college	12.6	9.4	9.2	11.0	11.8	11.2	12.3
Degree/postgraduate	16.0	16.7	15.7	18.0	18.2	17.6	17.9
Agricultural sector							
Some elementary	0.8	0.8	–2.0	–1.3	–0.4	0.3	1.2
Elementary completed	7.3	5.1	6.0	5.1	6.4	4.9	5.7
Some high school	2.9	1.8	2.4	4.0	0.8	1.4	1.3
High school graduate	–0.5	5.0	2.3	3.7	2.1	3.1	2.1
Some college	8.7	4.5	8.1	9.8	7.4	5.9	4.1
Degree/postgraduate	10.9	9.8	8.6	9.8	16.0	13.0	17.7
Industrial sector							
Some elementary	9.3	5.3	-2.1	9.8	-4.9	2.1	0.8
Elementary completed	8.6	10.5	6.3	5.3	4.9	4.4	3.4
Some high school	4.8	7.7	5.4	3.2	2.2	1.7	1.6
High school graduate	8.8	7.9	9.6	8.9	6.3	6.8	7.6
Some college	8.1	5.1	6.4	6.3	6.3	4.6	6.1
Degree/postgraduate	14.6	13.4	12.2	14.6	12.8	11.6	12.2
Services sector							
Some elementary	3.4	2.8	0.7	3.4	6.0	3.2	1.3
Elementary completed	4.6	6.9	6.6	7.4	4.3	5.6	4.1
Some high school	5.9	5.4	2.4	4.3	4.2	2.7	4.9
High school graduate	5.1	8.1	9.3	7.3	7.8	9.2	10.8
Some college	14.9	12.9	10.7	13.5	14.7	14.3	15.9
Degree/postgraduate	15.7	17.1	16.8	18.5	18.5	18.2	18.2

Source: Philippines LFS/FIES various years.
Note: Rates of return calculated from education coefficients estimated from a simple Mincer-type log (hourly wage) model with age, age-squared, gender dummy, and indicator variables for six levels of educational attainment (no schooling as the omitted group).

achieve any particular level of education, conditional on having attained the previous educational level:

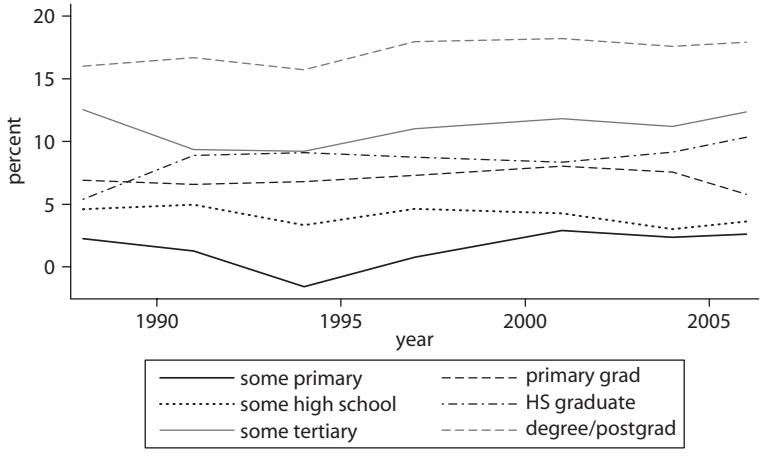
- Some elementary – coefficient/4 years
- Elementary graduate – coefficient minus coefficient of some elementary/2 years
- Some high school – coefficient minus coefficient for elementary graduates/2 years

- High school graduate – coefficient minus coefficient for some high school/2 years
- Some tertiary – coefficient minus coefficient for high school graduates/2 years
- Degree/postgraduate – coefficient minus coefficient for some tertiary/3 years

The resulting calculations are interpreted as the rate of return for one additional year of schooling at a given level of education.

The analysis of rates of return confirms that investing in education is profitable. Figure 1.4 shows the resulting estimates of annualized rates of return to education for the country as a whole between 1988 and 2006. (The detailed estimates are presented in table 1.6.) The analysis suggests that investing in formal education is profitable, and additional investment increases earnings substantially. Having some schooling—even without completing primary education—provides a positive wage gain of between 2 and 3 percent. The wage gains from completing higher levels of education—secondary and above—are significantly greater than for primary. Completing primary school yields annual returns of 6 to 8 percent, 5 to 10 percent for high school completion, 9 to 12 percent for some college, and 16 to 18 percent for completing a university degree or postgraduate studies. The one exception to the ordering of rates of return by level of

Figure 1.4 Rates of Return by Level of Education, All Sectors



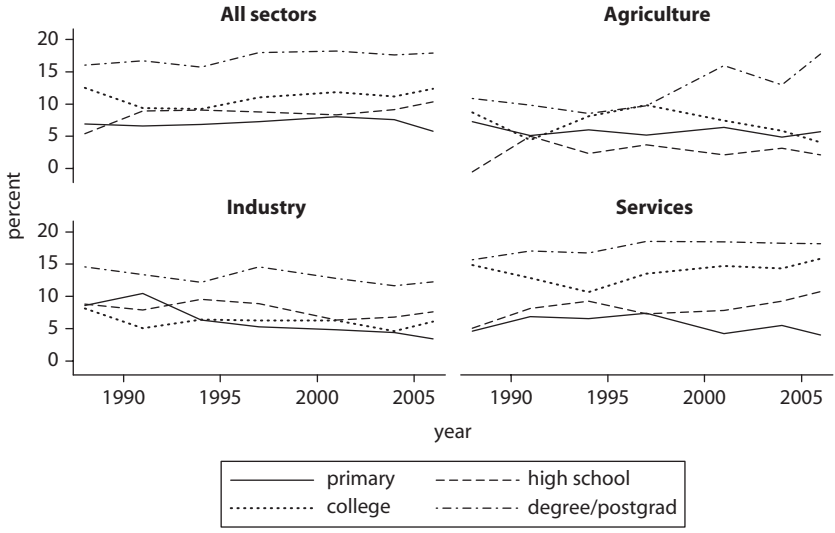
Source: LFS/FIES various years.

education is the group with some high school: although their rates of return of are higher than those with some primary, they are lower than those of primary school graduates.

The analysis also indicates that rates of return to lower levels of education (less than high school) stayed roughly constant over time while they rose for high school graduates from 2001 on, and for those with college, university degree, and postgraduate studies from the mid-1990s. These time trends resemble similar increases in the relative returns to higher education reported in other regions, including Argentina, Brazil, and Mexico in Latin America and India in Southeast Asia,[6] and may reflect the effects of globalization and skill-biased technological change (SBTC).

In addition to rates of return to schooling for the economy as a whole, table 1.6 reports annualized rates of return estimates separately by broad sector of employment. These estimates by sector are graphically depicted in figure 1.5 to see whether the trends in rates of return to schooling reported above are generalized for the economy as a whole or are sector-specific. For exposition, the figure focuses on four educational groups: primary school graduates, high school graduates, those with some tertiary education, and those with university degrees or postgraduate studies.

Figure 1.5 Rates of Return to Schooling by Sector, 1988–2006



Source: LFS/FIES, various years

There are trend differences by sector in the rates of return to different levels of schooling, with returns to high school roughly constant in industry and rising in services, and returns to tertiary education highest and rising in services. This analysis, in combination with increasing shares of skilled workers in the services sector, confirms the rising demand for skills in the services sector. Consider primary and high school completion. In agriculture, while the returns to completed primary education are unchanged over time, they are higher than the returns to high school completion. In the nonagricultural sectors, however, the returns to primary are declining over time; furthermore, these returns are lower than the returns to high school completion, which are roughly constant (in industry), or even increasing over time (in services). These trends in returns may offer a clue to the movement of high school graduates out of agriculture, the upgrading of the industrial workforce from primary to high school completers, and the rising demand for high school graduates in services.

Next, consider some tertiary (college) and a university degree or postgraduate studies. The returns to a university degree are highest in services (and rising) and lowest in agriculture; though interestingly, they have been rising too in agriculture at least since the mid-1990s to levels comparable to those of services by 2006. In industry, the returns to a university degree are in an intermediate range between the other two sectors, and there is evidence of a slight declining trend over time. Trends in the returns to some tertiary education are varied, typically in the same range as the returns to high school graduates, but consistently higher than the latter only in the services sectors, where the returns to some tertiary education are trending up since the mid-1990s.

Summing up, there is an upward trend in the demand for intermediate and advanced skills in the Philippines (indirectly measured by secondary and tertiary education), but this demand is very much sector-specific—with most of it now concentrated in some services subsectors. This evidence will be further confirmed below with an analysis of the new education requirements of employers in the manufacturing and services sector.

Education Requirements of Employers

What effects are these changes in demand having on the educational requirements of employers in the Philippines? These changes are perhaps most likely to be observed in the educational requirements of new hires and dismissals of existing workers. Of interest is whether these

changes vary systematically across sectors and export orientation, as suggested by the previous regression analyses.

To paint a broad-brush picture of changing educational requirements, we draw upon the 2008 Philippines Skills Survey (see box 1.2).

Workforce Needs: New Hires and Dismissals

The Philippine Skills Survey asked employers (specifically their human resources [HR] heads) about their new hires and dismissals over the past 12 months, with details about job titles, minimum educational qualifications, and numbers of workers involved. Seven schooling categories were considered: primary, general secondary (grade 10), postsecondary vocational, tertiary technical, college, university, and postgraduate. In this analysis, we compare the minimum educational qualifications of new hires and dismissals over the past year to examine the issue of whether employers are upgrading the educational skills of their workforce. We begin with figures 1.6 and 1.7, which show the numbers-weighted educational

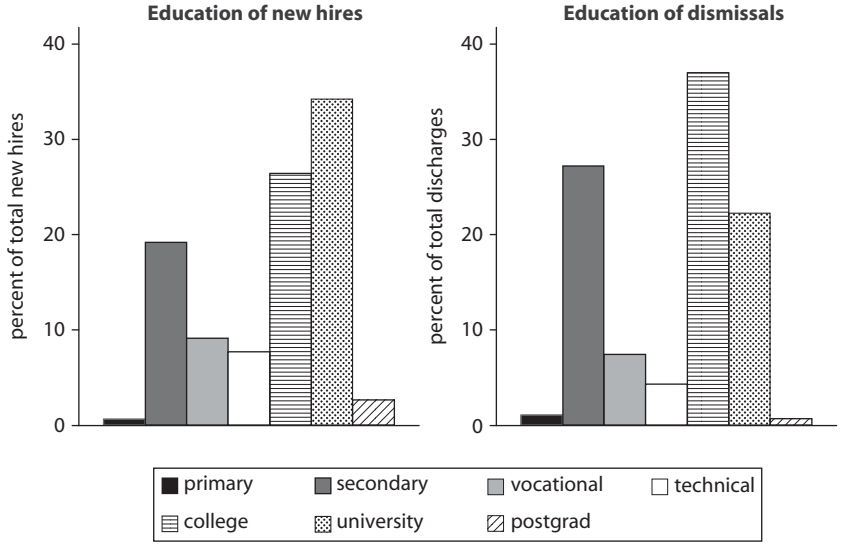
Box 1.2

The Philippines Skills Survey

The Skills Survey comprises a statistically representative, random, stratified (by firm size) sample of 300 companies in the manufacturing and services sectors from five geographical regions: Central Luzon (Region III), Metro Manila (NCR), Calabarzon (the industrialized Southern Tagalog region or Region IV-A), Central Visayas (Region VII), and Metro Davao (Region XII). Of the 300 companies, 107 (36 percent) are in manufacturing and 193 (64 percent) are in services;[7] in terms of employment, 142 companies are defined as small (with more than 20 but fewer than 50 workers), 126 are medium size (with 50 to 249 workers), and 32 are large (with 250 or more workers). Just under one-quarter of all companies reports positive export sales in one or more of the past three years; by sector, 48 percent of manufacturing companies report some exports, while just under 10 percent of services firms export.[8]

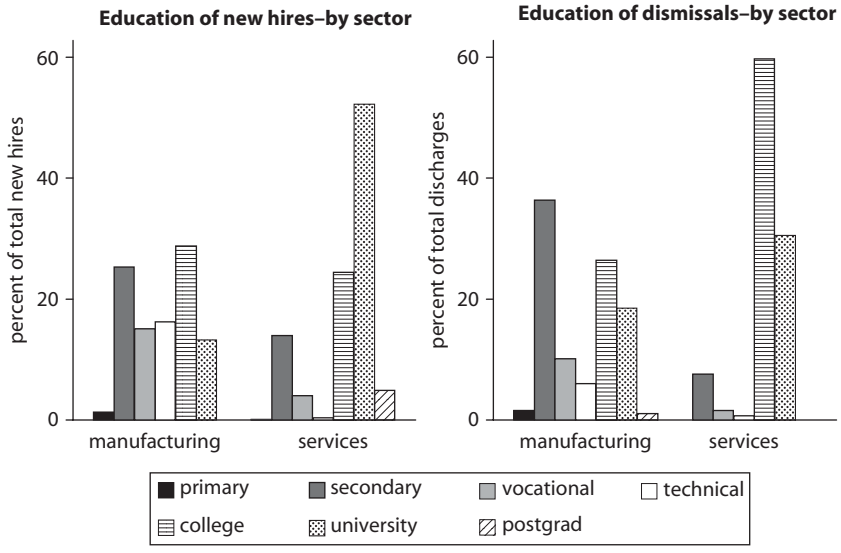
The survey covers questions on firms' basic characteristics, employment trends and patterns, demand for skills and skills gaps (in terms of education levels, workers' occupations, and noncognitive skills), characteristics of education and training institutions, and training.

Figure 1.6 Education of New Hires and Dismissals, 2008



Source: Philippines Skills Survey 2008.

Figure 1.7 Education of New Hires and Dismissals by Sector, 2008



Source: Philippines Skills Survey 2008.

distributions of new hires (left panel) and dismissals (right panel) for the overall sample, and separately by sector.

For all sectors combined, there is a strong trend toward hiring for jobs with higher minimum educational requirements. The left panel of figure 1.6 indicates that most of the past year's hiring is concentrated in jobs requiring a university degree (about 34 percent), followed by a college education (27 percent). Interestingly, discharges also include a high proportion of tertiary-educated workers, but they are concentrated in jobs requiring a college education (37 percent) and a much smaller share of university degree holders (22 percent). Compared with dismissals, a higher proportion of new hires are in jobs requiring a postgraduate degree and both vocational and technical education, and a lower proportion in jobs with a general secondary education. Together, these trends indicate a net increase in the share of jobs requiring a university degree or higher, and among jobs requiring a secondary or postsecondary education, a greater focus on vocational and technical education (which is not necessarily the case for net hires; see below). This strong increase within only one year goes beyond the increasing trend in the supply of a more educated workforce, pointing to increases in demand—and confirming the rate-of-return analysis.

However, the trend in educational upgrading is much more evident in the services sector. Figure 1.7 shows these educational distributions of new hires and dismissals by sector. The sector breakdowns of new hires and dismissals point to very different experiences in the two sectors. In manufacturing, new hires are spread relatively evenly across the major educational groups, unlike services sector firms, where the focus of new hires is on jobs requiring a university degree followed by jobs requiring a college education. On the other side of the ledger, dismissals in manufacturing appear to focus on jobs with general secondary education and college and university requirements, while services sector firms focus dismissals on jobs requiring college education. In other words, the trend toward educational upgrading is very evident in services (and together with increasing returns confirms increased demand); in manufacturing, the trend is away from jobs requiring a general secondary education toward jobs with a vocational and technical orientation.

Net Hires

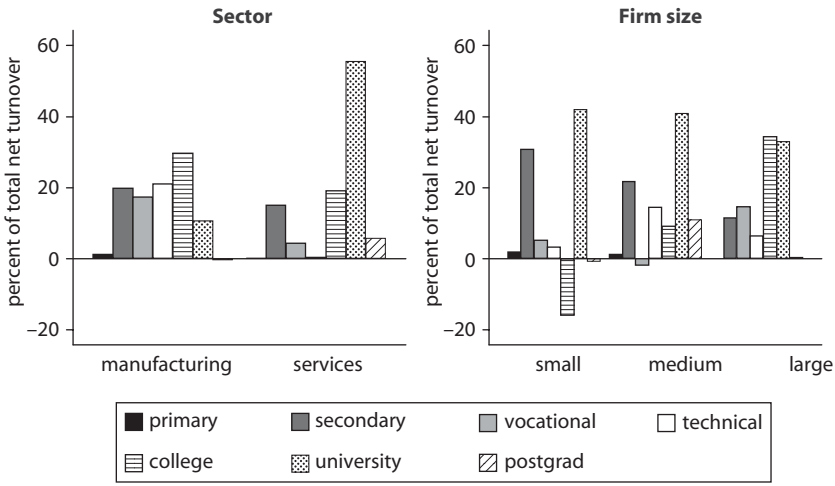
Looking at the difference between new hires and discharges—net hires—is another way of examining how educational qualifications are changing within firms. Looking at the educational distributions of new

hires separately from dismissals obscures whether employers are, on net, increasing or decreasing the numbers of each educational group. Figure 1.8 shows the educational distributions of net turnover by sector (left panel) and by firm size (right panel). More detailed data on net turnover by sector and region are shown in tables A.12 and A.13.

For both sectors, new hires exceed dismissals, with a focus on university graduates in services and on general and vocational education and college in manufacturing. In manufacturing, employers on net focus their hires equally (about 20 percent each) on workers with general secondary, vocational, and technical education, with just under 30 percent of net hires having a college education and 10 percent having university degrees. By contrast, services sector employers on net focus predominantly on university graduates (55 percent), followed to a lesser extent on general secondary education and those with a college education.

The educational distributions of net hires also reveal important differences by firm size (right panel of figure 1.8). For small employers, the figure shows a focus on increasing net hires with general secondary education (30 percent), and a substitution of university graduates (40 percent) for those with a college education, which declined in absolute terms by almost 20 percent. Among medium-size firms, net hires are focused on university education and general secondary education, with a small absolute decline in the share of those with vocational education. In large firms, net

Figure 1.8 Educational Distribution of Net Hires, 2008

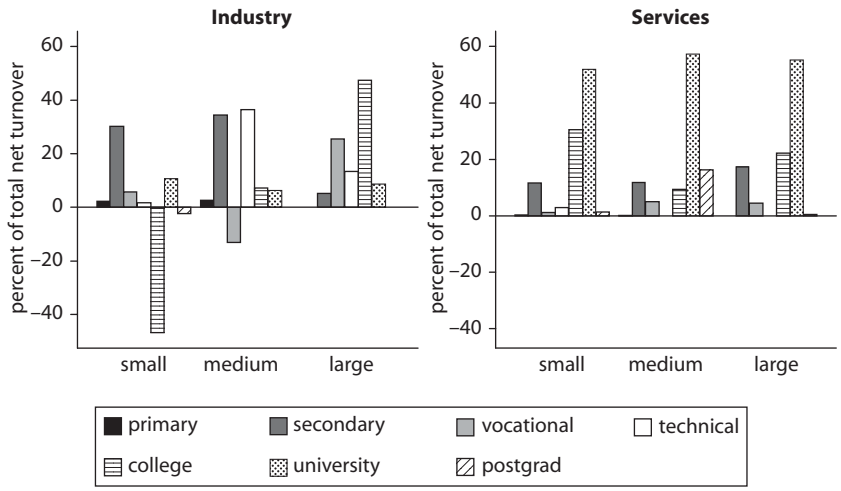


Source: Philippines Skills Survey 2008.

hires are focused on college and university education, and to a lesser extent, vocational and general secondary education.

There are marked differences by size in the profile of net hires in manufacturing—large firms have higher education requirements—while the profile of net hires is more homogenous across firm sizes in the services sector, with a focus on university graduates. Postsecondary vocational skills are more requested in large manufacturing firms, but general secondary education is more frequently desired across all other firm sizes and sectors. Are these size-related educational distributions of net hires similar in both manufacturing and services sector firms? To address this possibility, we graph these educational distributions by firm size separately for each sector. Figure 1.9 shows that patterns of net hires by size differ markedly across sectors. In manufacturing, small firms appear to be shedding those with college education (as well as postgraduates) and increasing the share of those with general secondary education; in medium firms, net hires favor general secondary and technical education, with an absolute reduction in those with vocational education; large firms in manufacturing appear to favor vocational education and those with a college education. In contrast, services sector employers of all sizes strongly favor university graduates and to a lesser extent those with some college, with a tendency for large services firms to increase net hires of general secondary graduates.

Figure 1.9 Educational Distribution of Net Hires by Sector and Size, 2008



Source: Philippines Skills Survey 2008.

Summing up, both labor force survey and firm data point to similar conclusions, with evidence of education upgrading across the board, although stronger in the services sector. The firm survey analysis confirms upgrading toward tertiary education in the services sector and secondary/postsecondary education in the manufacturing sector. Together with evidence of increasing demand in the services sector, this analysis may suggest that higher-order academic, technical/vocational, and generic skills may be very much needed and in demand in the services sector, while lower-order skills are enough for the current manufacturing sector—where they also appear to be in sufficient supply. The findings for the manufacturing sector reflect the continued low value-added of the sector, which has limited absorption capacity of higher education graduates.

Skill Requirements of New Hires

Beyond formal education and qualifications, what matters are the actual "functional" skills that workers possess to be employable and productive. The firm skills survey also looked at more direct measures of skills, such as employers' assessments of workers' generic and job-specific skills. The 2008 Philippines Skills Survey asked employers to separately rank the five most important generic skills and job-specific skills for two broad groups of employees—managers[9] and directors; and production, administration, and sales—as well as the three most important generic skills and job-specific skills for which gaps (compared with job requirements) were most noticeable. Employers' rankings drew upon lists of generic/academic and job-specific skills provided by survey enumerators, which are reproduced below. The most important skills are reported in table 1.7, while the gaps are reported in the skills gap section.

Table 1.7 The Most Important Employee Skills

Generic skills	*Academic skills*	*Job-specific skills*
Problem solving	Literacy skills	Job theoretical knowledge
Creative thinking	Writing skills	Job practical knowledge
Ability to work independently	Mathematics skills	
Risk taking/initiative	English	
Communication skills		
Negotiation skills		
Teamwork		
Time management		
Leadership skills		
Computer skills		

Employers rank highly the ability to work independently, communications, and problem-solving skills. Leadership and creativity are particularly important for managers, while teamwork and time management are particularly important for other skilled workers. Figure 1.10 shows the rankings of the most important core skills (see table A.14 in the appendix). In the left panel of figure 1.10 are the rankings for managers and directors, and in the right panel for production, administrative, and sales staff. For both groups, employers rank highly the ability to work independently, communications, and problem-solving skills. Reflecting the responsibilities of their separate occupations, employers also rank leadership and creativity as other key core skills for managers, and teamwork and time management for production, administration, and sales employees. The relative lack of importance of English is rather striking in a context where it is clearly essential for most businesses and probably reflects an overall perception that Filipino workers master this language well (as the section on skills gaps will confirm)—a perception not validated by the latest anecdotal facts and literature (Bautista,

Figure 1.10 Most Important Key Core Skills by Occupation

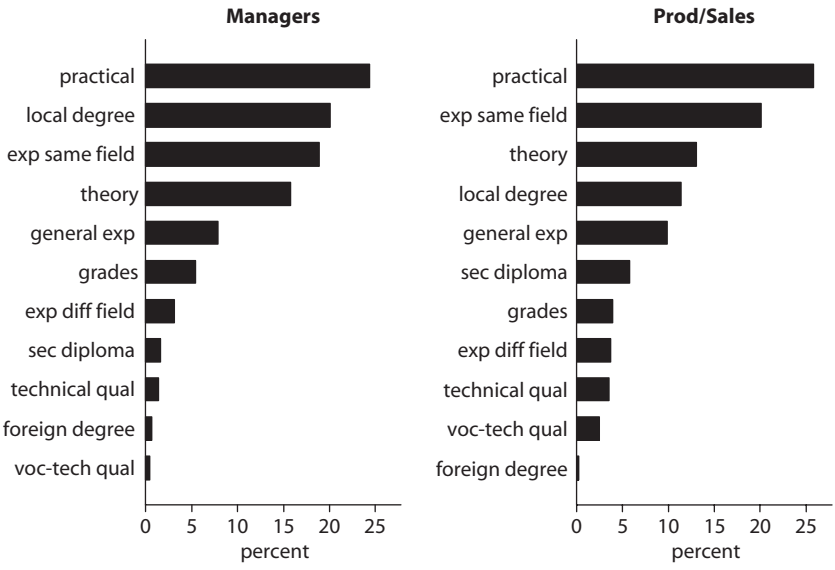
Source: Philippines Skills Survey 2008.

Bernardo, and Ocampo 2008), which point to a weakening of English skills in the population.

Practical knowledge is the most important job-specific skill according to employers. Main sources of job-specific skills are college/university degrees and experience in the same field. Figure 1.11 shows the importance of job-specific skills, as judged by employers, including the related education and training levels and work experience.[10] (See table A.15 in the appendix.) For both managers and skilled production workers, employers gave preeminence to practical knowledge about the specific job over theoretical knowledge. However, the sources of job-specific skills differ for these two occupations quite significantly, with university and experience in the same field being considered the most important source of technical skills for managers, and experience in the same field being by far the most important source for production workers.

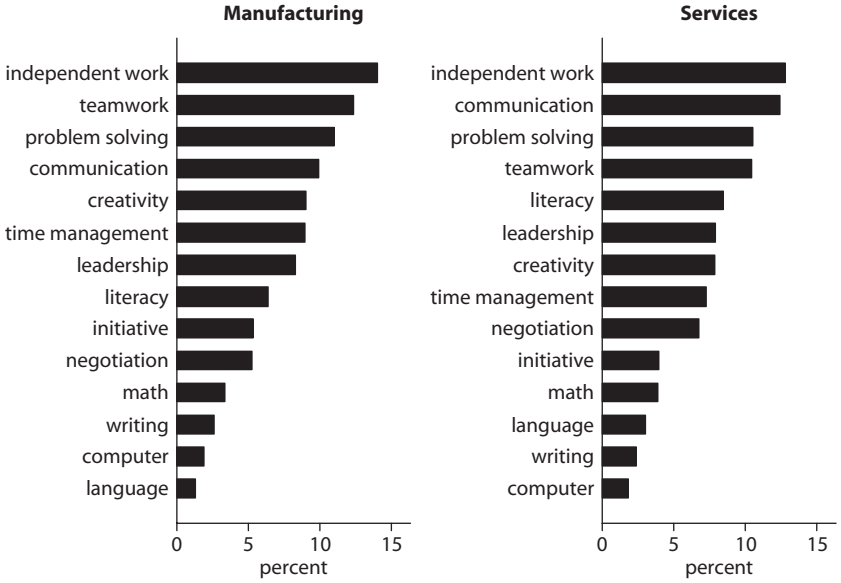
When disaggregating the information on skills required across sectors, we mostly find common trends but also a few differences. In particular, communication and literacy appear to be much more relevant as core skills in services than manufacturing (figure 1.12). But creativity is more important in manufacturing. Key job-specific skills are similar across both sectors,

Figure 1.11 Key Job-Specific Skills and Related Sources of Skills by Occupation



Source: Philippines Skills Survey 2008.

Figure 1.12 Key Core Skills by Sector



Source: Philippines Skills Survey 2008.

although theory and university degree as a source are more important in the services sector—pointing to higher technical requirements, along the lines of the upgrading of the services sector toward more modern and skill-intensive subsectors such as communications, finance, and business (see table A.2).

Summing up, these rankings suggest the importance of the following in both manufacturing and services: core skills such as capacity to work independently and communication, as well as practical knowledge and related job-specific work experience; problem solving; leadership and university education for managers; teamwork, time management, and better grounding in theory for production and sales staff. Some core skills—such as communication and literacy—and theoretical knowledge of the job and a university education are more important in services than manufacturing. This suggests that higher education requirements in the services sector may well be associated with an increased need for some specific higher-level academic, generic, and technical skills.

In combination with the previous findings on education levels, these additional findings on skills point to the importance that employers attribute to the

nonacademic skills dimension of education and training, suggesting that curricula should give enough space to generic and work-related skills—including emphasis on practical skills. Beyond education, it is also clear that experience in the same field is extremely valued as a means to acquire job-specific skills, which may raise school-to-work-transition issues for young graduates.

Notes

1. We thank the National Statistics Office for making available to us the 1997 to 2006 LFSs, and the Asian Development Bank for sharing data from the January rounds of the LFS from the 1980s and 1990s, which are no longer available from the National Statistics Office in machine-readable form.
2. A more expansive definition of hourly wage—dividing total cash and in-kind pay by total hours worked in full and part days over the past quarter—yields approximately similar values as a calculation that considers only total hours worked in full days worked.
3. Given the stagnant or even decreasing share of skilled workers in Cambodia and Mongolia.
4. Once again, some care needs to be taken in comparing Philippines absolute figures on share of skilled labor to those of other East Asian countries because of different definitions of education levels.
5. The usual caveats associated with this model are well known. Its interpretation of the coefficients as representing private rates of return to schooling does not include government spending on education and direct outlays by families, and instead assumes that forgone earnings represent the bulk of private costs in this investment. It also does not take into account class repetition, the quality of education, or unobserved ability of individuals. Despite these caveats, the estimates of private rates of return can provide useful first insights into the interaction between skills demand and supply, and into changes over time in this skills supply-demand balance.
6. For evidence from Brazil and Mexico, two countries with long time-series data on the returns to education, see Blom, Holm-Nielsen, and Verner (2001). For Argentina, see Giovagnoli, Fiszbein, and Patrinos (2005) for evidence on increasing returns to higher levels of education. For South Asia, see Riboud, Savchenko, and Tan (2007), which documents evidence from the rapidly growing Indian economy showing that between the early 1990s and 2004 the returns to higher secondary rose from 11 to 16 percent, and returns to tertiary education rose from 12 to 19 percent.
7. The services subsectors comprise wholesale and retail trade; transport and communications; finance and real estate; hotels and restaurants; and education, health, and social community services.

8. Exporting services subsectors include the BPO services, providing hints on the profile of Filipinos working abroad.
9. In the survey's definition, "managers" includes "professionals."
10. Clearly education, training, and experience are also a source of generic and academic skills, but we explore them here in the context of their relation with technical skills.

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CHAPTER 2

Drivers of Demand for Skills

This chapter investigates the main drivers of demand for skills in the country with an emphasis on the role of economic openness and technology. The aim is to derive further understanding on the nature of the demand for skills and what it can entail for the particular skills needed to support economic development. We look at skills in terms of indirect and direct measures.

Correlates of Industry and Education Premiums

Beyond the possible effects of the 1997 economic crisis on reducing the relevance of within-industry and within-occupation demand for skills, what structural factors are driving industry and education wage premiums, and to what extent do they reflect the impacts of increasing global integration? There is a growing literature on the effects of increasing trade orientation on increasing pay inequality between skilled and unskilled workers. The relative increase in skills demand is driven, it is argued, by the diffusion and adoption of skill-biased technologies intermediated by foreign direct investment (FDI), imports of machinery and equipment embodying new (and relatively skill-using) technology developed in high-income countries, exports to foreign markets, and links with foreign markets and buyers (see, for example, Berman, Bound, and Machin 1998).

The preponderance of empirical evidence appears to support the hypothesis that trade liberalization (and FDI) increases wage inequality between skilled and unskilled workers (Harrison and Hanson 1999; Sanchez-Paramo and Schady 2003). However, more recent research suggests that this is not always the case. Global integration in developing countries can either increase the relative demand for (and wages of) skilled workers, especially if it is accompanied by the adoption of skill-using technologies, or it can lead to international specialization (predicted by trade theory) and the increased use of the relatively abundant lower-skilled workforce. In several countries, the evidence seems to support the latter prediction. Fernandes and Sundaram (2008) find that exporting firms in Indonesia tended to use more less-skilled workers; Mirsha and Kumar (2005) also found a negative correlation between trade liberalization and wage inequality in India. Estimating the relationship between trade openness and wage inequality may also be complicated by the presence of industry-specific wage differentials created by political-economy factors (see Sakellariou 2009).

Following Goldberg and Pavcnik (2005), we pool the cross-section and time series of normalized industry and education wage premiums, IP and SP respectively, and regress them against several explanatory variables, as in equation (2):

$$\begin{aligned} IP_{jt} &= \beta T_{jt} + \alpha LP_{jt} + \varepsilon_{jt} \\ SP_{jt} &= \beta' T_{jt} + \alpha' LP_{jt} + \varepsilon'_{jt} \end{aligned} \tag{2}$$

where j indexes industry and t time, T is a vector of openness-related variables, LP is labor productivity, and ε is an error term. The openness variable is measured by the share of imports and exports as a proportion of gross value-added in the industry.[1] These trade measures, however, are available only for the manufacturing sector. In addition to trade, we include an aggregate labor productivity variable for each industry, measured as the logarithm of gross value-added (in constant 1985 pesos) divided by total employment, as well as a time trend variable. Monopoly rents, political-economic factors, and the use of capital-intensive production methods (which increases the marginal product of labor) may inhibit equalization across sectors of labor productivity. To the extent that these factors adjust only slowly over time, interindustry differentials in labor productivity (and hence the ability to pay wage premiums) may persist over time.

Equation (2) is estimated by OLS for all 23 sectors in agriculture, industry, and services combined, and separately by traded and nontraded sectors (not reported here, see appendix table A.16). We include a (1,0) indicator variable for nontraded industries, which acts as a control variable for the lack of export and import data in the nontraded industries. The results are reported in table 2.1.

Industry premiums are positively correlated with import penetration and interindustry differences in labor productivity. The results on industry premiums are broadly similar for models estimated using either skill definition (secondary education and above or some tertiary education and above). They suggest that industry premiums (principally in manufacturing) are significantly higher the greater the import penetration, while there is no association between industry premiums and export shares. The results also suggest that interindustry differences in labor productivity have an independent impact on industry premiums, controlling for the effects of trade variables. Industries with above-average labor productivity are significantly more likely to pay higher wage premiums, other things being equal. This result tends to suggest that at least part of the

Table 2.1 Correlates of Industry and Education Wage Premiums

	Industry Premium1	*Industry Premium2*	*Education Wage Premium1*	*Education Wage Premium2*
Import share	0.044*	0.048**	–0.016	–0.036*
	(2.04)	(3.19)	(–0.73)	(–2.35)
Export share	–0.014	–0.011	0.013	0.012
	(–0.53)	(–0.61)	(0.49)	(0.63)
Dummy untraded sectors	0.066	0.054*	–0.011	–0.028
	(1.78)	(2.08)	(–0.30)	(–1.04)
Log(labor productivity)	0.055***	0.070***	0.035**	0.009
	(4.76)	(8.77)	(3.05)	(1.08)
Time	0.001	–0.003*	–0.007***	–0.002
	(0.26)	(–1.97)	(–3.37)	(–1.28)
Constant	–0.238***	–0.220***	0.02	0.025
	(–3.87)	(–5.13)	(0.33)	(0.56)
Number of observations	238	238	238	238
R-squared	0.125	0.322	0.086	0.054

Source: Philippine Labor Force Survey.

Notes: 1. Premium 1 is based on the definition of skills as some secondary education and above, and Premium 2 on the definition of skills as some tertiary education and above.

2. t-Statistics in parentheses below estimated coefficients.

3. *, **, and *** are statistically significant at the 10, 5, and 1 percent levels, respectively.

4. See text for definitions of key variables. See appendix for regressions by traded and nontraded sectors.

industry segmentation may reflect labor productivity differentials, providing indications of a more competitive labor market than the evidence in "Estimates of Industry and Education Premiums" in chapter 1 would suggest.

Import penetration, however, is negatively correlated with education wage premiums (in line with regional evidence). Likewise, the results for education wage premiums are broadly similar for the two skill definitions, although the regression fit of both models is relatively weak. Import penetration is weakly (significant at the 10 percent level) associated with lower skill wage premiums using the skill definition of some tertiary education and above, while there is no association between exports and either skill wage premium. Interindustry differentials in labor productivity continue to have a positive effect on education wage premiums, but are statistically significant only for the skills definition of secondary education and above. The negative relation between import penetration and education wage premium is also confirmed within a broader analysis pooling together agriculture, mining, and manufacturing data across Indonesia, the Philippines, Thailand, and Vietnam over time, and undertaking both levels and first-difference estimations—confirming that this is a regional trend (see tables A.17 and A.18).

In sum, trade integration—through imports—has generally resulted in a positive impact on overall industry wage levels (which may reinforce segmentation) but has a weakly negative impact on education wage premiums. This confirms a lack of skill-biased technical change through this channel in driving demand for skills, possibly related to low skill intensity of the manufacturing sector and the low-tech nature of imports. The analyses of industry and wage premiums appear to suggest that growing trade integration in the Philippines has generally had a positive impact on overall industry wage levels, but that these effects were driven largely by increasing import penetration rather than through exports. The effects of trade on the relative returns to education (controlling for industry premiums) are not strong, and the evidence is that rising import penetration weakly reduces education wage premiums. The fact that industry premiums are found to be more responsive than education wage premiums to import penetration may suggest that trade reform should be accompanied by measures that reduce labor market segmentation and favor labor reallocation across sectors. The effect of import penetration on education wage premiums may suggest, among other factors, that the manufacturing sector is increasingly specialized in low-skill production, a result consistent with previous tabular and graphical analyses showing declining trends over time in education wage premiums

in manufacturing.[2] The analyses also show that industry and, to a lesser extent, education wage premiums are also shaped by interindustry labor productivity differentials.

These analyses using individual level data are suggestive but limited because labor force or household surveys provide no information about their employers or the trade and technology attributes of the companies in which they work. This makes it difficult to pin down more definitely the causal demand-side factors that are suggested above. To remedy this limitation, the analysis next turns to an investigation of these demand-side drivers using enterprise-level data.

Drivers of Demand for Skills in Manufacturing

In this section, we examine what drives demand for skills in the manufacturing sector using the 2003 Investment Climate Survey and the share of skilled workers as the dependent variable. In the next section, we use the employer skill survey for a more qualitative analysis of drivers of demand using both education and training and direct measures of skills.

This analysis complements the one above using education wage premiums to get a fuller picture of the drivers of the demand for skills in manufacturing.[3] As above, of particular interest is whether skills upgrading in the workplace is being driven by openness: the increased exposure of the Philippines economy to the international economy, whether through trade, FDI flows, or transfers of new technology.

Globalization of production and capital and the increased global flow of information made possible by new information and communication technologies (ICT) create demand for higher-level cognitive skills and for continuous learning over the work life; skills acquired in schools and in the workplace become obsolete more quickly, and new and more complex skills are needed to respond to accelerating technological change. The accumulating evidence from both high-income and developing countries is that greater openness is associated with skill-biased technological change (Berman, Bound, and Machin 1998). We investigate the role of openness and technology as possible drivers of demand for skills in the manufacturing sector by estimating a labor demand model on enterprise-level data from the 2003 Philippines Investment Climate Survey.

We follow Berman et al. (1994) Pavcnik (2003), and Fajnzylber and Fernandes (2004) and estimate a "relative demand for skilled labor" model. The model is derived from the assumption that firms chose their variable inputs—skilled and unskilled labor—by minimizing a restricted

variable cost function subject to an output constraint and using a translog functional form for logarithmic variable costs. Let Share_{is} represent the proportion of skilled labor in firm i from sector s (or, alternatively, let Share_{is} represent the share of skilled labor in the total wage bill); then the share of skilled labor can be decomposed as follows:

$$Share_{is} = \alpha + \gamma \frac{\ln(w^s)}{\ln(w^u)}\Big|_s + \gamma_k \frac{\ln(K_{is})}{\ln(K_{is})} + \gamma_y \ln(Y_{is}) + X'_{is}\beta + \varepsilon_{is} \quad (3)$$

where w_s/w_u is the relative wage of skilled versus unskilled workers, Y_{is} is value-added, K_{is} is capital, X_{is} are firm-specific characteristics, and ε_{is} is a firm-specific error term. Note that the way capital and value-added are entered into the equation allow us to estimate directly a parameter expressing returns to scale (γ_y), with a positive coefficient on the value-added term indicating increasing returns to scale. A positive coefficient of the capital to value-added ratio would indicate that capital and skills are complements.

The key variables of interest are the firm-specific characteristics. They will allow us to estimate how much labor demand is affected by characteristics such as sector, type of ownership (foreign versus national capital), the amount of inputs (outputs) imported (exported), and possibly proxy measures for use of new technology. Positive coefficients on the firm-specific characteristics related to openness and to use of new technology would be consistent with skill-biased technological change.[4]

The relative labor (or skills) demand model is estimated using the 2003 Philippines Investment Climate Survey (ICS). More details on the survey and the details of the estimation methodology of equation (3) are provided in box 2.1 for the interested reader.

A subsample of about 560 ICS firms with relatively clean data for the key variables described above was selected for analysis. The summary statistics for these enterprises are reported in table A.19. Table 2.2 reports the results of estimating the labor demand model for skilled labor, defined as including managers and professionals (columns 1–3) or alternatively as including managers, professionals, and skilled production workers (columns 4–6). For each skilled labor definition, three model specifications were estimated: (columns 1 and 4) the base demand model; (columns 2 and 5) the base model with the endogenous variables instrumented, the imported share of raw materials, and the share of exports in production; and (columns 3 and 6) the instrumented model, excluding relative skill wages.

Box 2.1

Overview of 2003 Philippines ICS and Methodology of Estimation

The relative labor (or skills) demand model is estimated using the 2003 Philippines ICS. Common to other ICSs fielded by the World Bank,[5] the Philippines ICS elicited information on the characteristics of the enterprise and its chief executive officer (CEO); its workforce, including skills composition and average wages paid by occupation; and production inputs and outputs needed to estimate a labor demand model. The ICS also reported information on several potentially useful measures of openness: foreign ownership (FDI), exports to foreign markets, use of imported raw materials, measures of technology such as use of computers, and recent introduction of new production processes.

The Philippines ICS included 716 enterprises from four manufacturing sectors: food and food processing (271 enterprises), textiles (61), garments (267), and electronics and electrical machinery (117). This sample was drawn from nine provinces[6] and covered enterprises in five size categories: enterprises with 10–19, 20–29, 50–99, 100–499, and 500 and more employees. The sample size of the ICS is thus relatively small, with the implication that the coefficients of the relative labor demand model will be estimated relatively imprecisely, especially with missing values for some of the key variables.

The Philippines ICS does not report employment or wages by level of education. These data are reported only by five occupational groups: managers, professional employees, skilled production, unskilled production, and nonproduction workers. However, there is a correlation with educational attainment. On average, managers and professionals have more than 14 years of education, skilled production workers have 11 years, unskilled workers have more than 9 years, and nonproduction workers have 11 years of education. We define skilled and unskilled workers in two ways. First, we treat managers and professional employees as "skilled workers" and the remaining occupations as "unskilled." A second, more expansive definition includes skilled production workers with managers and professionals in the "skilled worker" category. With these definitions in hand, we compute the skilled share of total employment and the skilled share of the total wage bill, separately for the two "skilled worker" variable definitions.

The definitions of the other economic variables in the labor demand model are relatively straightforward. The capital-output and value-added variables (in logarithms) are readily estimated from the detailed production input and output

(continued)

Box 2.1 *(continued)*

data elicited by the ICS. We calculate the value-added of the enterprise by subtracting the value of raw materials and energy use from the value of production, and use the book value of fixed assets as a proxy for capital stock. Finally, we calculate relative wages as the ratio of the logarithm of mean wages of skilled and unskilled workers for each of the two skill definitions.

We consider several firm characteristics. First, we characterize enterprises by whether they have foreign ownership using a (1,0) indicator variable for any FDI. We reflect the educational attainment of the CEO by including three categorical indicator variables for some university education, university degree, and postgraduate qualifications. (The omitted variable category is high school or less.) To test for skill-biased technological change, we include several measures of openness: exports as a share of total production and the share of imports in total raw materials used. We also directly test two measures of the firm's technological capacity—the share of workers using computers in the workplace, and an indicator variable for whether the enterprise introduced new technology over the past four years that substantially changed the firm's production.

Finally, we construct instrumental variables for relative wages and openness, variables that are thought to be potentially endogenous. Noting that wages vary systematically by sector and especially firm size, we compute industry-by-size mean wages for skilled and unskilled workers and impute the corresponding aggregate relative wage to each firm by industry and firm size. Similarly, in place of the firm-specific openness measures, we impute to each firm the corresponding industry-by-province mean values of export and import shares.

Table 2.2 Labor Demand Model – Skilled Worker Share of Employment

Dependent variable: Employment share of skilled workers	*Managers and Professionals*			*Managers, Professionals, and Skilled Production Workers*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Education of CEO						
Some university	–0.004	0.021	0.018	–0.111	–0.100	–0.099
	(0.11)	(0.62)	(0.53)	(1.75)	(1.80)	(1.77)
Degree	0.017	0.022	0.021	–0.117	–0.053	–0.053
	(0.80)	(0.95)	(0.89)	(2.70)**	(1.37)	(1.36)
Postgraduate degree	0.013	0.031	0.028	–0.038	0.009	0.006
	(0.48)	(1.04)	(0.93)	(0.72)	(0.18)	(0.12)

(continued)

Table 2.2 Labor Demand Model – Skilled Worker Share of Employment *(continued)*

Dependent variable: Employment share of skilled workers	*Managers and Professionals*			*Managers, Professionals, and Skilled Production Workers*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Firm is foreign-owned	0.015	–0.002	–0.008	0.027	–0.027	–0.027
	(0.73)	(0.08)	(0.35)	(0.65)	(0.68)	(0.68)
Relative skill wage	–0.026			–0.199		
	(2.15)*			(4.72)**		
Instrument - relative wage [a]		–0.425			–0.552	
		(2.29)*			(1.46)	
Log(capital/ value-added)	0.006	–0.012	–0.007	0.020	–0.003	–0.001
	(0.30)	(0.49)	(0.30)	(0.50)	(0.07)	(0.01)
Log(value-added)	–0.006	–0.005	–0.005	0.006	0.001	0.003
	(1.85)	(1.24)	(1.28)	(0.92)	(0.18)	(0.42)
Share of imported raw materials	–0.039			0.039		
	(1.97)*			(0.89)		
Share of sales exported	–0.025			0.121		
	(1.35)			(3.04)**		
Instrument - import share [b]		–0.052	–0.068		0.091	0.101
		(1.30)	(1.73)		(1.36)	(1.52)
Instrument - export share [b]		0.011	–0.005		0.226	0.241
		(0.37)	(0.20)		(4.70)**	(5.17)**
Technology proxies						
% workers using computers	0.146	0.165	0.169	–0.029	–0.009	–0.011
	(5.29)**	(4.81)**	(4.93)**	(0.49)	(0.15)	(0.19)
Introduced new technology	0.012	0.032	0.033	–0.032	–0.013	–0.012
	(0.99)	(2.16)*	(2.20)*	(1.23)	(0.52)	(0.47)
Constant	0.220	0.692	0.189	0.812	1.193	0.566
	(4.98)**	(3.08)**	(4.11)**	(8.67)**	(2.73)**	(7.36)**
Observations	422	508	508	355	508	508
R-squared	0.11	0.09	0.08	0.20	0.14	0.13

Source: 2003 Philippines ICS.

Note: Absolute value of t-statistics in parentheses. * significant at 5 percent; ** significant at 1 percent.
Omitted groups are domestic-owned firms with education of CEO less than university.
[a] Mean sector-by-size relative skill wage (four sectors and five firm-size categories).
[b] Mean province-by-sector import or export shares (nine provinces and four sectors).

Skills demand is not influenced by the educational attainment of the CEO or the foreign ownership of the firm. Several results emerge from table 2.2 that are common across model specifications and definitions of skilled labor. First, there is little evidence that skills demand is influenced either by the educational attainment of the CEO or by the foreign ownership of the firm. It was hypothesized that firms with more educated managers or with FDI might be more inclined to engage in international activities and thus hire more skilled labor, other things being equal. Second, the coefficients of the capital-output and value-added variables were never statistically significant. As such, there is no evidence (at least in this sample) that capital and skills are complements, and that there are increasing returns to scale in skills use. Finally, the skilled share of employment is negatively related to relative skill wages,[7] which is consistent with the prediction of price theory. When relative skill wages are instrumented, this negative price-quantity relationship persists and is actually quantitatively larger than in the base model.

With the caveat of endogeneity, the results also provide some evidence that relative skills demand is influenced by both use of technology and openness to trade. Technology- and export-intensive manufacturing firms demand more skilled labor, which could be associated with composition effects (export-oriented and technology-intensive manufacturing firms are more skill intensive) or skill-biased technological change through access to technology and exports. These results vary by definition of skilled labor, with technology being more important for the relative demand for managers and professionals—the most highly educated groups—and trade being more important for skilled labor defined more broadly to include skilled production workers.

This is apparent from a comparison of the signs and coefficients of the trade openness and technology measures for the two skilled labor definitions. For managers and professionals, the share of exports is never statistically significant, and the share of imports is either statistically insignificant or negative and significant (along the lines of the wage premium analysis), a result that persists when trade measures are instrumented. The technology measures, however, are positive and statistically significant for the share of workers using computers. (Recent introduction of new technology is also positive and marginally significant in one model specification.) In contrast, the export share is positively and significantly related to the relative demand for skilled labor, broadly defined (and significance is confirmed even after the inclusion of firm size to rule out that size, more than export orientation, is correlated with higher demand for skills). Neither

technology measure attains statistical significance for skilled labor broadly defined.

The analyses were also replicated using dependent variables defined in terms of the share of skilled labor in the total wage bill as opposed to total employment. The results (and conclusions) of estimating these alternative model specifications are broadly unchanged, and the estimates are simply reported without further comment in appendix table A.20.

The results on the effects of exports and technology on the demand for skills in the Philippines are generally in line with what is found in an analysis pooling the firm ICS data across all countries in the East Asia region to identify the effects of openness and technology adoption on demand for skills over a larger sample size. In this broader setting, however, the positive relationship between exports and demand for skills is valid only when China is excluded from the sample and industry fixed effects are controlled for. The set of relevant regressions is reported in table A.21.

Skills, Export Orientation, and Technology in the Employer Skill Survey

This section explores more qualitative relationships between demand for skills, technology, and export orientation using the results of the employer skill survey.

Respondents to the Philippines Skills Survey were asked to list the main reasons for their new hires and dismissals over the past year and for increasing skills requirements; employers were allowed multiple responses. The following tables and figures show the frequency distributions of reasons cited for new hires and dismissals, and skills requirements, separately by sector.

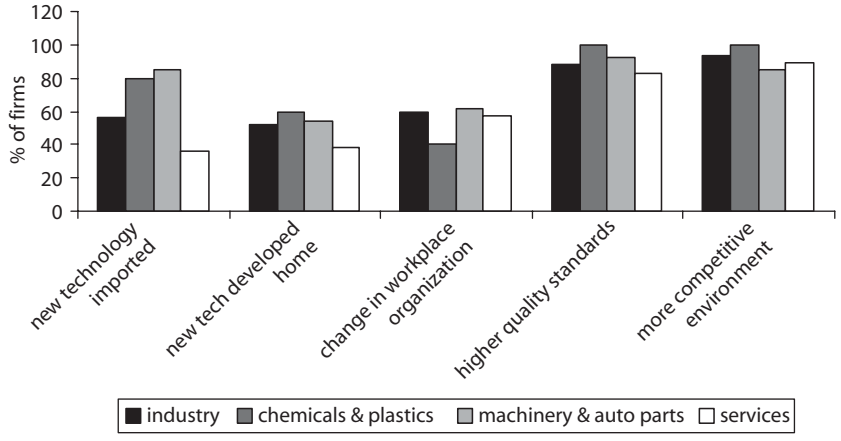
Hires are driven by the need to replace former employees and higher demand, but also by the skills requirements from new, higher-quality products and production methods, pointing to technology-related reasons. The principal reason for new hires (and for dismissals) is to replace former employees who resign or are let go, a rationale offered by most enterprises regardless of sector. Other than replacements, hiring is driven by higher demand, skills requirements of new production methods, and high-quality and new products (about 35 percent). This last set of factors points to demand for skills related to technology innovation and adoption. Dismissals are driven by declining demand; economic downturns; labor redundancies; and, for manufacturing firms, changing skills requirements from new products. The same ranking of reasons for hires and dismissals

Table 2.3 Main Reasons for New Hires and Dismissals in Past 12 Months

Reasons for New Hires and Dismissals	*New Hires (%)*			*Dismissals (%)*		
	Total	*Industry*	*Services*	*Total*	*Industry*	*Services*
New production methods	9.1	11.5	7.8	2.5	3.4	1.7
Resignation of employees	37.3	32.3	40.0	55.5	47.5	63.3
Increased/decreased demand	21.6	26.1	19.2	10.9	15.3	6.7
Demand – high-quality product	15.5	14.6	15.9	2.5	3.4	1.7
New skills from new products	9.9	9.2	10.2	3.4	6.8	0.0
Redundancy	1.6	0.8	2.0	8.4	8.5	8.3
New ownership	1.3	1.5	1.2	0.0	0.0	0.0
Economic upturn/downturn	3.7	3.8	3.7	16.8	15.3	18.3
Total	100	100	100	100	100	100

Source: Philippines Skills Survey 2008.

Figure 2.1 Reasons for Rising Skills Requirements by Sector and Subsector



Source: Philippines Skill Survey 2008.

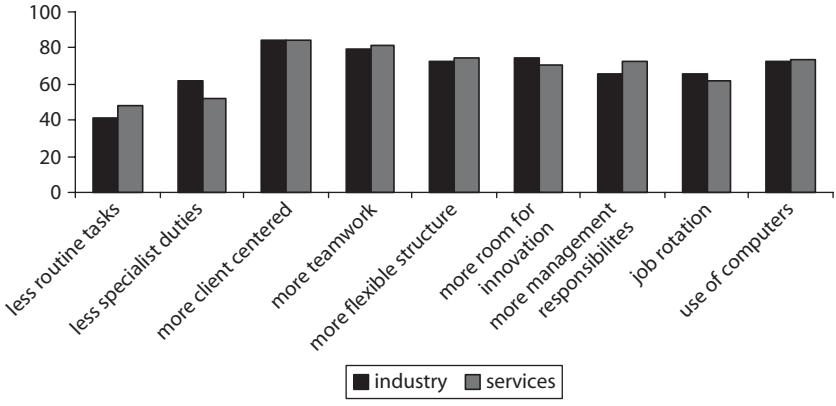
continues to hold broadly when the responses by sector are further distinguished by export orientation (not shown here).

Technology-related reasons are also considered to be strong determinants of the increasing skills requirements. There is also confirmation of the importance of generic skills. About 50 percent of manufacturing firms confirm the importance of technology (imported or developed at home) in driving skills requirements and 80 percent the importance of higher-quality standards. The role of imported technology and high-quality standards is particularly

strong in chemicals and machinery and electronics. While imported and locally developed technology are also associated with increased skills requirements for 40 percent of services firms, high-quality standards have a stronger relative role in the sector. Other reasons for increased skills requirements include the competitive environment (pointing to the role of globalization and competition in enhancing skills demand) and, to a lesser extent, changes in workplace organization. Interestingly, use of computers is one of the key changes in work organization leading to higher skills requirements, pointing again to technology-related reasons (figure 2.2). Teamwork and client orientation are additional strong reasons, pointing to the importance of generic skills.

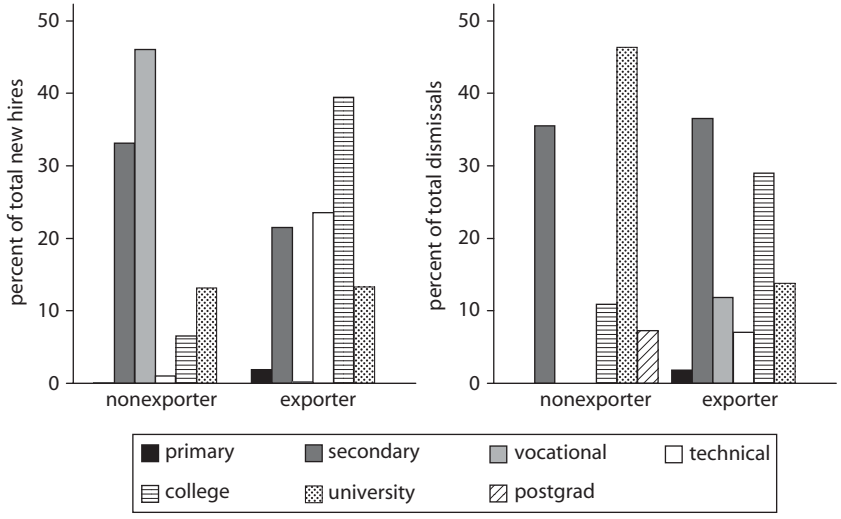
There appears to be further support that export orientation is associated with higher skills requirements in both the manufacturing and services sectors. In the services sector, this trend coincides with an increasing placement of university graduates abroad. Figures 2.3 and 2.4 disaggregate the educational distributions of hires and dismissals by export orientation to examine the proposition that exporting firms have higher skills requirements than nonexporters because of their greater exposure to new technologies, quality requirements, and international competition. There appears to be support for this hypothesis in both sectors. In manufacturing, hirings by exporters include a higher share of jobs with technical and college requirements than dismissals; however, discharges by nonexporting firms include higher shares of jobs with college, university, and postgraduate

Figure 2.2 Changes in Work Organization Leading to Rising Skills Requirements (% of firms)



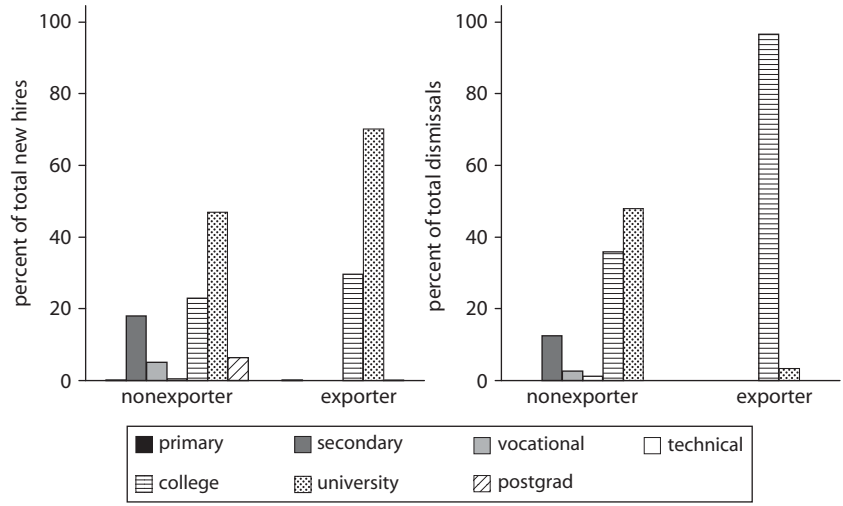
Source: Philippines Skill Survey 2008.

Figure 2.3 Education of New Hires and Dismissals by Exports – Manufacturing



Source: Philippines Skill Survey 2008.

Figure 2.4 Education of New Hires and Dismissals by Exports – Services



Source: Philippines Skill Survey 2008.

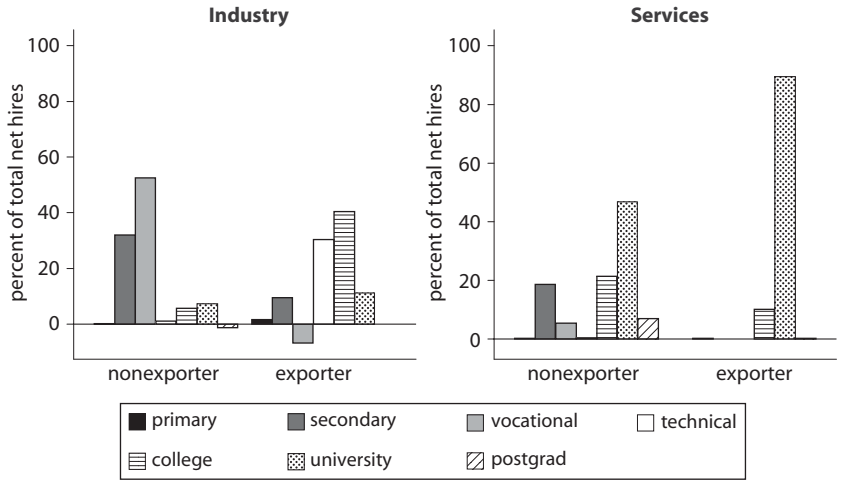
requirements than their hires. Similarly, in services, exporters' hiring is focused on jobs requiring university education, while their dismissals are concentrated on jobs requiring college; among nonexporting services firms, the educational distributions of hires and discharges are broadly

similar. This last finding can also illustrate the increasing tendency toward the placement abroad of university graduates coming from a variety of professions, including teachers, doctors, and nurses, which is further illustrated by an analysis in the next chapter of the profile of Filipinos working abroad.

This evidence is confirmed when looking at net hires. Exporters have higher educational requirements, with particular focus on tertiary technical education and college in manufacturing and on university in services. Figure 2.5 presents the educational distributions of net hires by sector and export orientation. In manufacturing, exporters on net are filling a higher proportion of new jobs with postsecondary technical, college, and university graduates as compared with nonexporters; in the services sector, net hires among exporters are predominantly focused on university graduates as compared with nonexporters, who, on net, fill positions from secondary graduates and those with some college and university degrees. The correlation between export orientation and skills intensity holds also after controlling for firm size (standardized comparisons). As can also be seen from a comparison of the disaggregations of educational distributions by size and figure 2.5, export orientation captures more than just size.

Finally, an analysis of core skills by export orientation shows commonalities but also some differences in desired skills by sector, including particular relevance of problem solving, creativity, and leadership skills in the export-oriented sector. An analysis of core skills by export orientation shows higher

Figure 2.5 Education Distribution of Net Hires by Export Orientation

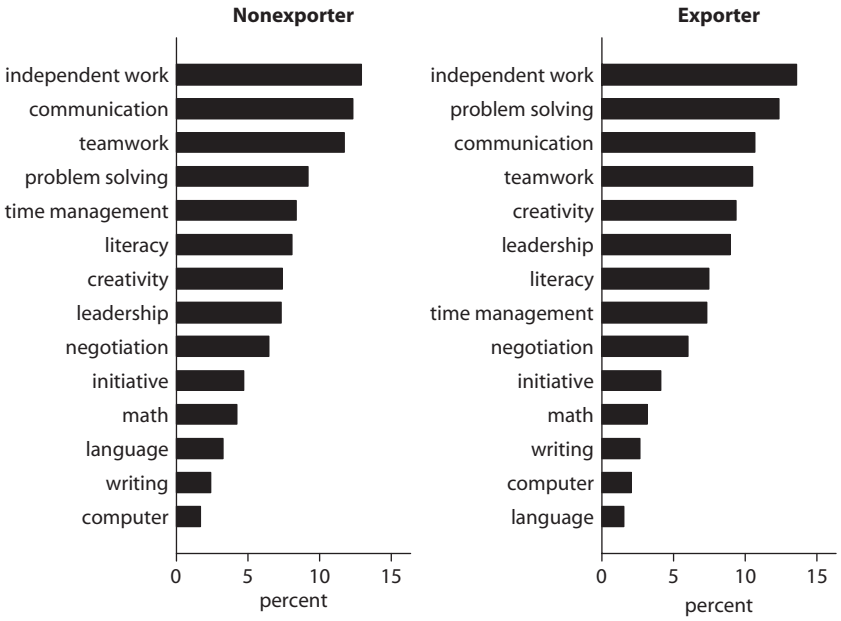


Source: Philippines Skill Survey 2008.

preeminence of problem solving, creativity, and leadership in the export-oriented sector, but more emphasis given to teamwork and communication in the nonexporting one (figure 2.6). Strangely, language is considered to be less important in the exporting sector, but this probably relates to higher knowledge levels in that sector (as also shown in the gap section), which makes English a taken-for-granted skill. Finally, practical skills and experience are particularly important for the nonexporting sector, while the exporting sector puts the highest value on practical skills, followed by equal value on theory, experience, and local degree.

Summing up, the regressions and more qualitative results indicate that more export and technologically intensive firms are associated with higher levels of skills—and the relationship with imports seems to go in the opposite direction. While export orientation in services and technology innovation and/or adoption overall seem to be associated with higher-level academic and nonacademic skills—as illustrated by the positive relationship with managers and professionals (technology) and university degrees (exports)—export orientation in manufacturing seems rather to be associated with intermediate academic and nonacademic skills—as illustrated by the

Figure 2.6 Core Skills by Export Orientation



Source: Philippines Skill Survey 2008.

positive relationship with skilled production workers and college/technical education.

The relationship identified (in the Philippines and elsewhere) between introduction/adaptation of new technologies and skills cuts both ways, with firms with higher shares of highly skilled labor more apt to innovate. Similarly, firms with higher shares of skills—intermediate or advanced, depending on the sector—are also more prepared to compete internationally. Skills are likely to make an even bigger difference for manufacturing subsectors with higher value-added—such as electronics, chemicals, and even agro-industry—and services such as finance and business services (including the rapidly developing call centers), where being innovative and maintaining competitiveness are particularly crucial to the survival of the sector. Unfortunately, in some of these subsectors, it is particularly difficult to find the right skills.

Nonacademic generic skills such as problem solving, creativity, and leadership are shown to be particularly important in the exporting sector, suggesting that, at an intermediate or advanced level, these are some of the key skills that the sector looks for when hiring workers with certain education and qualification levels. Beyond the importance of generic skills, it is logical to presume that certain fields of education such as science, technology, math, natural sciences, and electronics—particularly at master's and PhD levels—would also be particularly useful to support technological innovation and adaptation.

Notes

1. The time series data on trade flows by industry were taken from the World Bank's Trade, Production and Protection database assembled by Nicita and Olarreago (2006) on 28 three-digit ISIC manufacturing industries for more than 100 countries. The data on agricultural trade and gross value-added by industry came from the NSCB, and total employment by industry was computed from the time-series LFS.
2. And also with the declining employment share of transport and machinery since 1998 (International Labour Organization and labor force survey).
3. Working with education/industry premiums allows us to identify supply- and demand-side determinants of wage changes of different groups of individuals; the analysis of relative wage trends makes typical use of the more widely available household survey data, which measure skills as education characteristics. However, studies that try to explain trends in relative wages of skilled/unskilled labor must deal with the problem that wages are simultaneously determined by supply and demand, and thus, wage trends alone

are not enough to show what is happening with the demand for skills. On the other hand, labor force composition studies (using either skilled labor employment shares or wage-bill share of skilled workers) provide a direct measure of the changing skill mix of the labor force, which complements the observations on wage premiums: if both increase following globalization, we can say for sure that demand for skilled labor is increasing. Second, by making use of firm surveys or censuses, as they typically do, these studies allow for a rich representation of skills, based on job requirements more than attributes of individuals, and openness indicators (notably FDI), which can also be seen as a complement to the first approach. Finally, by taking the firm as the unit of analysis, these studies work with more observations, making it easier to do separate country analyses.

4. The above regression will need to be interpreted with caution as relative wages and firm-specific characteristics, such as amount of imports and exports, are likely to be endogenous. In particular, relative wages at firm level are likely to be a function of the share of skilled workers at firm level. To address this problem, we measure relative wages at sector and not firm level. Another option, followed in most of the related literature, is simply to exclude measures of relative wages from the regression. To address the likely endogeneity of the openness-related variables, we plan to follow three main strategies. First, following Pavcnik (2003), we will control for unobserved characteristics common to an area or industry, which could affect both the demand for skills and the openness-related firm-specific variables, by including area and industry indicators. Second, we will include as many control variables as possible to capture firms' characteristics. In particular, we will control for the quality of the firm manager (through his education level), assuming that more able managers would be more likely to engage in international activities, and at the same time be more prone to hire skilled labor. While these approaches solve part of the problem (the heterogeneity bias), we are left with suspected reverse causality, in which firms with more skilled labor are also more likely to be engaged in international activities in the first place. A third approach, commonly used in the literature, will therefore try to make use of instrumental variables, area- or industry-level openness-related variables such as tariff rates and export shares, to replace firm-level variables.
5. ICSs have been undertaken by the World Bank in more than 40 developing countries. Each ICS includes information on establishment size (number of employees, sales and assets); years in operation; sales, debt, and growth performance; sources of finance; and a mix of qualitative and quantitative assessments by employers of the business environment in the country, including indicators of governance, predictability of economic policy, the judicial system, access to finance, and general constraints to business operations.

6. The nine provinces are Batangas, Cavite, Cebu, Davao, Laguna, Manila, Quezon, Rizal, and the National Capital Region (NCR) excluding Manila.
7. The more skilled workers there are in a firm, the lower is their marginal product relative to that of unskilled workers.

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CHAPTER 3

Skills Gaps

In this chapter, we pursue the question of whether domestic firms and sectors are already facing skills gaps, and if so, what and where the main skills gaps are. Using vacancy data in the Philippines Skills Survey, we calculate several indicators of skills gaps and mismatches, including difficulties in recruitment of skilled labor, vacancies by job type and education level, and time taken to fill vacancies. We then move on to an analysis of reasons for the skills gaps—both education and noneducation reasons—and further analysis of skills gaps using measures of "functional" skills to get a better understanding of quality and relevance-related gaps in the country (that is, which skills are lacking the most).

Vacancies and Skills Gaps

The skills survey asked employers about both current job vacancies and their experiences with vacancies over the past year. The first question provides a snapshot of the stock of all current vacancies in considerable detail, while the second question is more concerned with the flow of job vacancies, job applications, and hiring over the past year. We use both types of data to tease out different results.

Current Job Vacancies

We start with a broad-brush picture of current vacancies: the key job titles reported by employers and their educational requirements, the employers' perceptions on the difficulties of filling job vacancies, and key reasons for skills shortages. Subsequently, we turn to vacancies over the past year, whether and to what extent they were filled over the past year, and any remaining skills gaps. We conclude with an analysis of the amount of time taken to fill vacancies.

Table 3.1 shows the most common job titles of current vacancies listed by frequency of citation by employers. Together, the most common job titles total about three-quarters of all current vacancies. They include vacancies in finance, sales and marketing, IT and system engineers, and management, as well as technicians, mechanics, warehousemen, machine operators, and unskilled jobs such as drivers, waiters, and cooks. We caution that these commonly cited job titles do not reflect the actual number of vacancies available, which can vary widely across each job title cited. (The subsequent analyses of vacancies over the past year take this into account.)

With this caveat, the tables below show the educational requirements of all job titles for which there are vacancies. Table 3.2 shows the unweighted distributions for seven educational categories, separately for

Table 3.1 Ranking of Most Common Job Titles in Current Vacancies

Job Titles of Current Vacancies	*Number of Enterprises Citing Vacancies*	*Percent of Total Job Titles Cited*
Treasurer/Accountant/Finance Officer	38	15.9
Sales Representative	31	13.0
IT/System Engineer	22	9.2
Manager/Executive/Supervisor	19	7.9
Marketing Assistant	13	5.4
Clerk	10	4.2
Technician/ Mechanic	10	4.2
Kitchen Staff	7	2.9
Driver/Conductor	6	2.5
Barista/Waiter	6	2.5
Teacher/Moderator/Guidance	6	2.5
Management Trainee	5	2.1
Cashier	5	2.1
Warehousemen/Machine Operator	5	2.1

Source: Philippines Skills Survey 2008.
Note: "Most common job titles" selected on the basis of totaling 75 percent of all job titles cited. They do not reflect the number of vacancies.

Table 3.2 Educational Requirements of Current Job Vacancies

	Manufacturing (%)			*Services (%)*		
Level of Education	*Small*	*Medium*	*Large*	*Small*	*Medium*	*Large*
Primary	0.0	0.0	0.0	0.0	0.0	0.0
Secondary	8.3	16.7	0.0	8.3	13.0	9.5
Postsecondary vocational	25.0	8.3	9.1	0.0	2.2	4.8
Tertiary technical	0.0	4.2	18.2	8.3	0.0	0.0
Any college	16.7	37.5	27.3	25.0	13.0	38.1
University	50.0	29.2	45.5	58.3	71.7	47.6
Postgraduate	0.0	4.2	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Philippines Skills Survey 2008.

manufacturing and services, and by firm size. As noted previously, firm size is defined by employment: small with fewer than 50 workers, medium with 50 to 250 workers, and large with more than 250 workers. Table 3.3 further disaggregates these distributions by firm export status to gain insights into whether current job vacancies and their educational requirements are shaped by firms' export orientation.

Services sector job vacancies are more likely to require higher educational qualifications than in the manufacturing sector, and in general, there is some evidence of education-level "inflation" in the country. A university education is required for between 30 percent and 50 percent of all job titles in manufacturing and between 50 percent and 72 percent of job titles in services. This is typically followed by jobs requiring a college education, although there are variations across sectors and by firm size. For example, small manufacturing firms tend to have vacancies in jobs requiring postsecondary vocational education, while their larger counterparts are more likely to have vacancies in tertiary technical education. In part, the high educational requirements—certainly high in comparison with the rest of the region—reflect the nonstandard definition of education levels and a certain degree of education-level "inflation" in the country. For example, the secondary education cycle in the Philippines is very short. Some postsecondary and tertiary institutions—notably colleges—could easily be reclassified as secondary or postsecondary institutions rather than tertiary ones. Perhaps as a consequence, employers often require university graduation even for positions that do not require such qualifications.

There is some evidence that export-oriented firms tend to have vacancies in jobs that have higher educational requirements than nonexporting firms. This

Table 3.3 Educational Requirements of Current Vacancies by Sector, Size, and Export Orientation

	Small (%)		*Medium (%)*		*Large (%)*	
Manufacturing	*Nonexporter*	*Exporter*	*Nonexporter*	*Exporter*	*Nonexporter*	*Exporter*
Primary	0.0	0.0	0.0	0.0	0.0	0.0
Secondary	0.0	12.5	30.0	7.1	0.0	0.0
Postsecondary Vocational	25.0	25.0	20.0	0.0	25.0	0.0
Tertiary technical	0.0	0.0	0.0	7.1	0.0	28.6
Any college	0.0	25.0	30.0	42.9	25.0	28.6
University	75.0	37.5	10.0	42.9	50.0	42.9
Postgraduate	0.0	0.0	10.0	0.0	0.0	0.0
Total	100	100	100	100	100	100
Services						
Primary	0.0	0.0	0.0	0.0	0.0	0.0
Secondary	8.8	0.0	15.4	0.0	6.3	20.0
Postsecondary vocational	0.0	0.0	2.6	0.0	6.3	0.0
Tertiary technical	8.8	0.0	0.0	0.0	0.0	0.0
Any college	26.5	0.0	12.8	14.3	43.8	20.0
University	55.9	100.0	69.2	85.7	43.8	60.0
Postgraduate	0.0	0.0	0.0	0.0	0.0	0.0
Total	100	100	100	100	100	100

Source: Philippines Skills Survey 2008.

trend generally holds across sector and by firm size. In manufacturing, for example, about 85 percent of vacant job titles in medium-size exporters require college or university education; however, nonexporting medium-size firms divide vacant jobs equally between college and university (50 percent) and secondary and postsecondary vocational education (50 percent). In services, a similar pattern emerges for medium-size firms. Among exporters, 100 percent of job titles with vacancies require college or university, as compared with 82 percent for nonexporters, which also require secondary and postsecondary vocational education for the remaining 18 percent of their vacant job titles. This analysis also confirms that the higher education requirements for exporting firms are not related to size, as shown by standardized (within size) comparisons of firms.

Difficulty Finding Skills

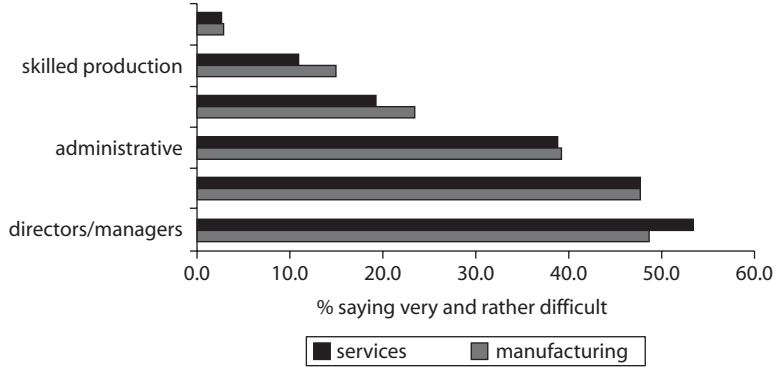
Employers were asked to rank the difficulty of finding the right skills to fill vacancies in six occupational categories: directors and managers, professionals, administrative personnel, sales workers, skilled production, and

unskilled workers. We define a (1,0) difficulty indicator variable with a value of 1 if their rankings were "rather difficult" or "very difficult," and 0 otherwise.

Firms in both the services and manufacturing sectors have difficulties finding the right skills for filling vacancies for administrative staff, professionals, and managers/directors. Chemicals, trade, and finance are some of the most constrained subsectors. Figure 3.1 shows the percentage of firms that ranked current vacancies in each occupational category as being difficult to fill, separately by sector. Employers in both sectors ranked the difficulty of filling job vacancies as being relatively low for sales, skilled production, and unskilled workers (generally less than 20 percent), and relatively high (more than 40 percent) for administrative staff, professionals, and directors/managers. However, employers in the manufacturing sector were more likely to have difficulty filling skilled production and sales staff, while services sector employers were more likely to have difficulty filling director and managerial positions. Within the manufacturing sector, firms in the chemicals subsector are the ones facing more difficulties hiring professionals, while it is more difficult to find the right skills for managerial positions in the textile and electronics subsectors. Within the services sector, the trade, real estate, and finance subsectors are the ones facing the greater challenges to find the right skills for managerial positions.

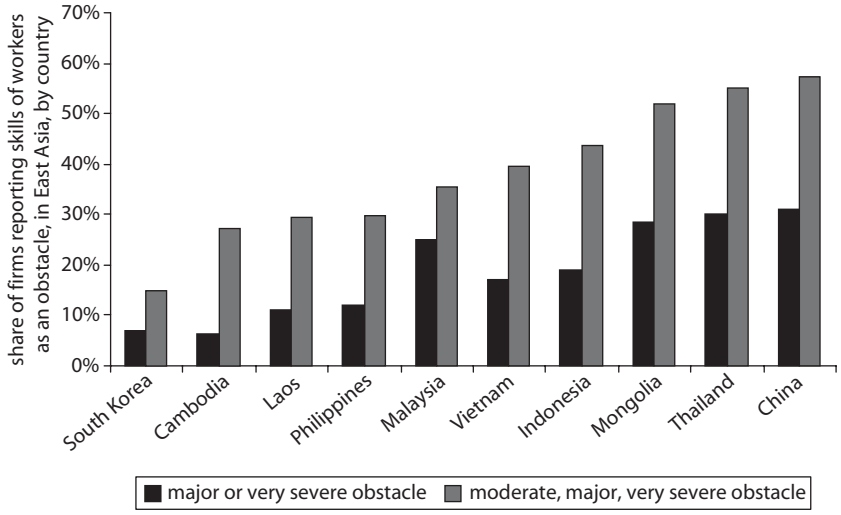
In comparison with the rest of Asia, workers' skills were still only a moderate obstacle in the Philippines in 2003, but the obstacle was more evident for professionals' and managers' skills. When comparing the share of firms

Figure 3.1 Difficulty Finding the Right Skills, by Sector



Source: Philippines Skills Survey 2008.

Figure 3.2 Skills Bottlenecks in East Asia

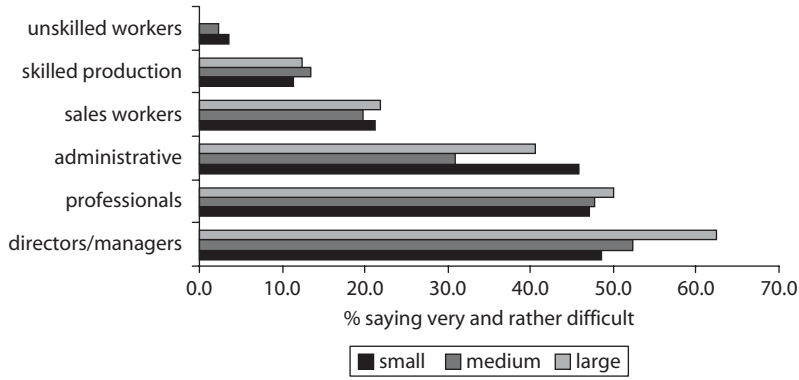


Source: Almeida 2009, using Investment Climate Enterprise Surveys (various years).

reporting skills of workers as an obstacle in the available firm ICSs, we find that about 30 percent of Philippines firms considered skills to be at least a moderate obstacle to firm business in 2003 (date of the last ICS), which is below average for the region. However, this share is likely to increase when focusing only on professionals' and managers' positions, as illustrated by the considerable time to fill professionals' positions (discussed below). Finally, we also expect overall skills to have become a more acute problem since that time, judging from the skills gaps–related indicators of the skills survey.

Large and small firms have more difficulty finding the right skills for administrative positions than medium firms. Large firms have more difficulties than all other firms filling vacancies for managers/directors and, to a lesser extent, professionals. The difficulty filling other positions is similar across firm sizes. The next two figures rank the difficulty of finding the right skills by two characteristics of employers: their firm size and export orientation. Figure 3.3 shows that small and large employers tend to have relatively greater difficulty finding the right skills for administrative positions, while large firms report greater difficulty than small and medium-size firms in finding the right skills for managerial and professional positions. One

Figure 3.3 Difficulty Finding the Right Skills, by Firm Size



Source: Philippines Skill Survey 2008.

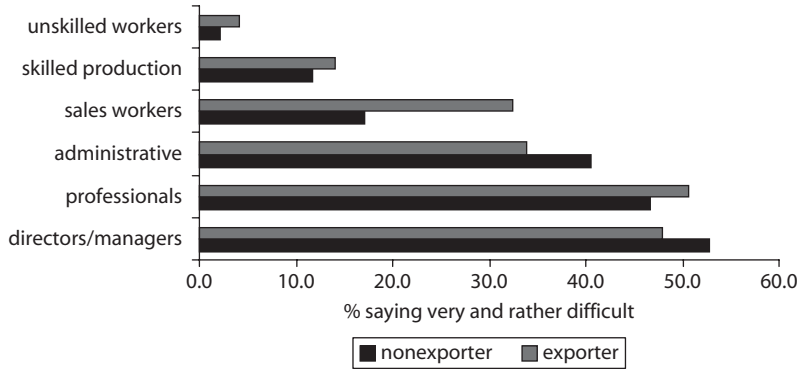
explanation is that larger firms have higher, and more demanding, skills requirements in these occupations.

Exporters generally have more difficulties than nonexporters in filling skilled vacancies. Figure 3.4 shows that exporters generally face greater difficulty than locally oriented firms in filling in most occupations—skilled production, unskilled workers, sales, and professional staff (but not administrative and managerial workers)—reflecting the skills needed to respond to more demanding clients/buyers in foreign markets. The Philippines is, in this respect, very much attuned with other East Asian countries, judging from the positive relationship between export orientation and skills as bottleneck revealed by a comparative analysis of firm surveys (figure 3.5).

Experience Filling Vacancies over the Past Year

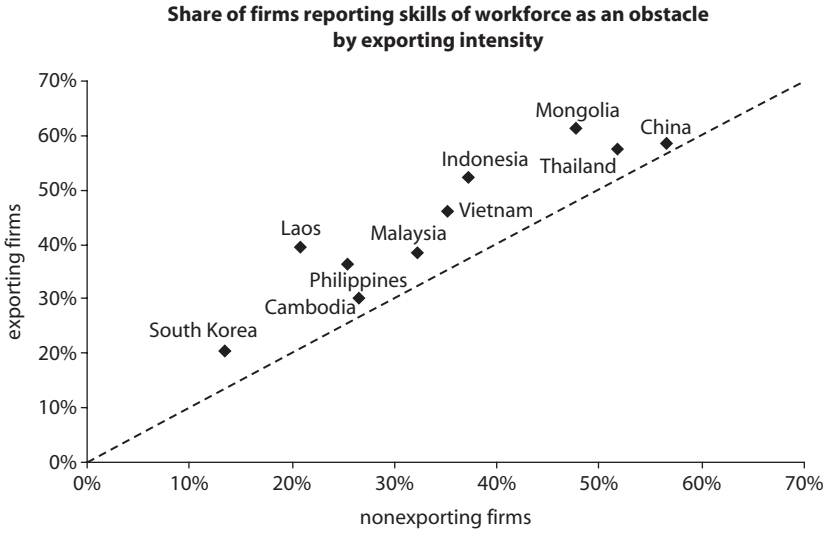
Other insights into skills shortages can be gained from employers' experience filling job vacancies over the past year. In this second set of questions, firms listed for each of seven occupational categories the number of vacancies, number of job applications for these vacancies, number of qualified applicants, vacancies filled, and the average number of weeks taken to fill these vacancies. This flow information allows us to ask questions about the extent of the skills gap and skills mismatch: What fraction of vacancies was not filled? Was this because of inadequate supply or an unqualified applicant pool? If the qualified applicant pool was large enough, was there a mismatch between skills offered and skills needed by employers?

Figure 3.4 Difficulty Finding the Right Skills, by Export Orientation



Source: Philippines Skill Survey 2008.

Figure 3.5 Skill Constraints and Export Orientation



Source: Almeida 2009, using Investment Climate Enterprise Surveys (various years).

These flows over the past year are reported in table 3.4 for each occupational group, separately by sector and for manufacturing and services combined. The first four columns of the table show the totals across firms of all vacancies, number of applicants, number qualified, and jobs filled. These data are used to calculate three measures: the ratio of qualified to

all applicants (the fraction of applicants who are qualified), ratio of qualified applicants to vacancies (size of the qualified applicant pool), and ratio of unfilled jobs to total vacancies (skills gap). Table 3.4 makes several points.

First, the data show that job vacancies are dominated by skilled (production) jobs in manufacturing firms and by skilled and sales occupations in services firms. These data, compared with the evidence on new hires and educational requirements by sector, confirm some educational upgrading within occupation for the services sector. Vacancies in the other occupations—directors and managers, professionals, and administrative staff—are numerically much smaller, although they are relatively higher in the services sector

Table 3.4 Flow Data on Vacancies, Applicants, and Vacancies Filled

	Vacant Jobs	*Number Applied*	*Number Qualified*	*Jobs Filled*	*Ratio of Qualified Applicants*	*Ratio Qualified to Jobs*	*Gap in Jobs Not Filled*
Manufacturing							
Managers, directors	30	79	32	21	0.405	1.067	–0.300
Professionals	92	392	126	67	0.321	1.370	–0.272
Administrative	57	201	75	43	0.373	1.316	–0.246
Sales	124	797	218	110	0.274	1.758	–0.113
Skilled	2,671	4,408	2,667	2,613	0.605	0.999	–0.022
Unskilled	329	689	500	313	0.726	1.520	–0.049
Others	17	113	32	17	0.283	1.882	0.000
Services							
Managers, directors	129	333	186	119	0.559	1.442	–0.078
Professionals	357	2786	1650	291	0.592	4.622	–0.185
Administrative	185	1049	623	149	0.594	3.368	–0.195
Sales	1,729	24,203	12,034	1,639	0.497	6.960	–0.052
Skilled	3,413	7,637	3,491	3,408	0.457	1.023	–0.001
Unskilled	103	272	158	133	0.581	1.534	0.291
Others	477	4304	525	467	0.122	1.101	–0.021
Total All Sectors							
Managers, directors	159	412	218	140	0.529	1.371	–0.119
Professionals	449	3178	1776	358	0.559	3.955	–0.203
Administrative	242	1250	698	192	0.558	2.884	–0.207
Sales	1,853	25,000	12,252	1,749	0.490	6.612	–0.056
Skilled	6,084	12,045	6,158	6,021	0.511	1.012	–0.010
Unskilled	432	961	658	446	0.685	1.523	0.032
Others	494	4,417	557	484	0.126	1.128	–0.020

Source: Philippines Skills Survey 2008.
Note: Figures computed from employer responses about vacancies over the past year.

where managers, directors, and professionals represent about 8 percent of overall vacancies, versus only about 3 percent in manufacturing. Although the incidence of skilled occupations is higher in services, in comparison with the data on education requirements, this trend suggests some education upgrading within occupation for this sector.

Second, qualification ratios vary across sectors and occupations. Table 3.4 suggests that between 45 percent and 60 percent of applications for vacancies in services firms are qualified, although it is unclear just how "qualified" is defined (possibly in terms of educational requirements). In manufacturing, the qualified ratio of applicants is bifurcated: more than 60 percent in the case of skilled and unskilled workers, but only between 27 percent and 40 percent in the case of sales, administrative, professional, and managerial vacancies. It is unclear whether lack of industry experience is the proximate reason for the relatively low proportion of qualified applicants in these occupations.

Third, with few exceptions (primarily skilled workers), the qualified applicant pool is usually larger than the number of vacancies, sometimes by a factor of 1.5 to 6, suggesting enough supply of qualified candidates and confirming that difficulties finding the right skills for the job are related to quality more than quantity. However, the definition of qualified candidates may be rather loose in the services sector. In other words, the numerical supply of qualified applicants is generally more than adequate to fill vacancies in most occupations. Outside of skilled and unskilled occupations, the multiples of qualified applicants to vacancies are significantly higher in services (1.4 to 6.9) than in manufacturing (1.1 to 1.7), possibly suggesting that employment in these occupations is more attractive in the services sector than in manufacturing. Nonetheless, high demand for university education in the services sector continues to keep the education wage premium up—as seen in previous analyses—suggesting that the definition of the "qualified pool" may be rather loose to help fulfill the urgent needs of the sector.

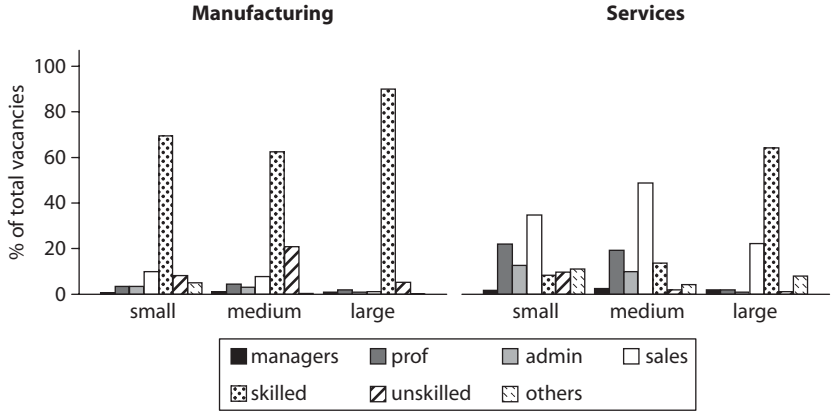
Finally, table 3.4 shows a systematic pattern of skills gaps by sector and by occupation. Skills gaps grow with the skill level of occupations, suggesting the presence of skills mismatches between skills offered and skills sought by employers. On average across occupations, skills gaps in services firms are generally a bit lower than those in manufacturing firms. The previous evidence on difficulties finding the right skills for professional and managerial jobs in the services sector may suggest a decrease in skills requirements at the moment of filling the job or more intense efforts in finding a match in the services sector. The difference in skills gaps by sector may be

attributable to the relatively larger qualified applicant pool available to services firms, which may reduce the intensity of skills mismatch. However, these data in combination with the evidence on difficulties finding the right skills for the job for professionals and managers in the services sector point to two possible explanations: (a) looser definition of "qualified" combined with the acceptance of lower-than-desired skills for the job under the pressure of filling vacancies; or (b) more intensive effort in finding the right skills profile, which is also consistent with more diversified recruiting practices (see below). In terms of occupation, the skills gap is virtually nonexistent for unskilled workers, just 0.1 percent to 2 percent for skilled workers, and 5 percent to 11 percent for sales personnel. The skills gap grows dramatically for higher-skill administrative, professional, and managerial positions—8 percent to 20 percent in services and 25 percent to 30 percent in manufacturing, in line with the evidence on the difficulty filling vacancies.

Graphical analysis confirms these findings. With the tabular results as background, we turn to a graphical exploration of these flow data and derived variables across sectors, firm size, and export orientation. Figure 3.6 shows the distribution of vacancies over the past year across occupations, separately by sector and firm size. It confirms the point made earlier that the largest share of all vacancies are in skilled production in manufacturing, while in the services sector they include vacancies in both skilled workers and sales, the latter especially in smaller firms.

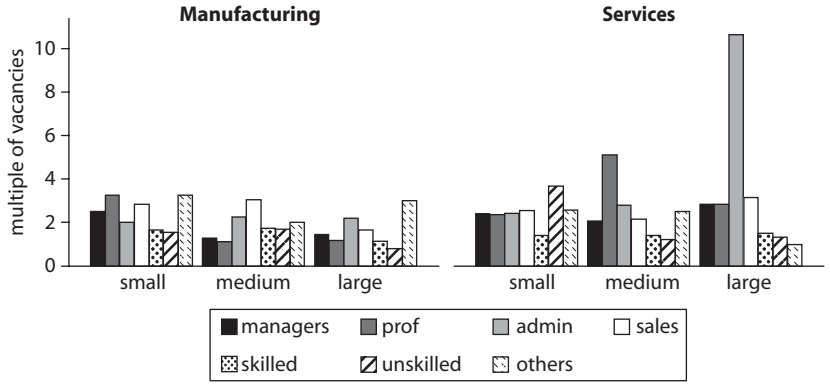
Figure 3.7 graphs the ratio of qualified applicants to vacancies in the seven occupational categories, separately by sector and firm size.

Figure 3.6 Vacancies over the Past Year, by Sector and Occupation



Source: Philippines Skill Survey 2008.

Figure 3.7 Qualified Applicants, by Occupation and Sector



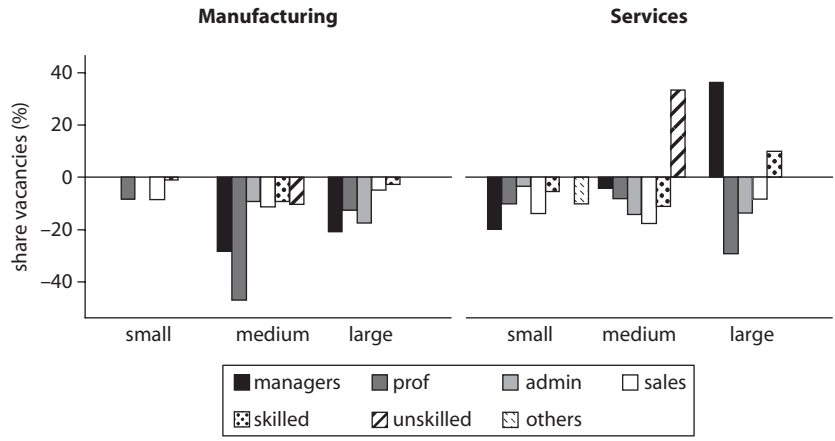
Source: Philippines Skill Survey 2008.

In manufacturing, the number of qualified applicants exceeds vacancies by a multiple that is typically between 1.5 and 3. There are exceptions by firm size; the ratio of qualified applicants is relatively low for managers and professional positions in medium and large firms, and in skilled and unskilled positions in large firms. In services, firms enjoy a larger pool of qualified applicants to fill vacancies as compared with manufacturing, though there are services occupations—skilled and unskilled workers—for which the qualified applicant pool is relatively small. These reiterate points made earlier in the tabular analysis. There are several noteworthy size differences in services: relatively large qualified applicant pools for unskilled occupations in small firms, for professional occupations in medium firms, and for administrative occupations in large firms.

Figures 3.8 and 3.9 show the skills gap in filling vacancies by occupation, first by sector and size, then by sector and export orientation. Recall that this skills gap is defined as the net difference between qualified applicants and vacancies as a share of vacancies in that occupational category.

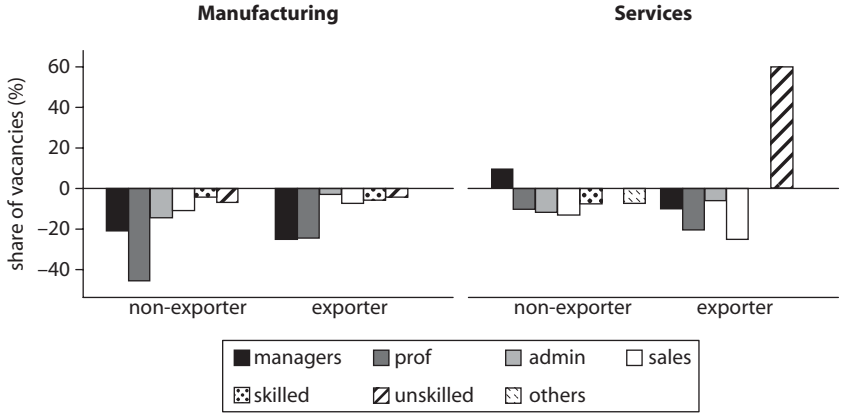
Medium, and to a lesser extent large, manufacturing firms face significant skills gaps in filling managerial and professional occupations. In figure 3.8, the skills gap in many manufacturing occupations is typically less than 10 percent. However, medium and large firms face relatively large skills gaps in filling managerial vacancies (25 percent in medium firms and 20 percent in large firms). The skills gap is especially big for professional positions in medium firms (about 45 percent). Large firms also face a relatively sizeable skills gap in filling administrative positions (less than

Figure 3.8 Gap Filling Vacancies, by Sector and Size



Source: Philippines Skills Survey 2008.

Figure 3.9 Gap Filling Vacancies, by Sector and Exports



Source: Philippines Skills Survey 2008.

20 percent). Small firms may face less of a skills gap because of lower demand for higher-level skills and lower requirements on the qualified pool of candidates and job-filling process.

The skills gap is more diverse in services firms, with significant skills gaps for managers in small firms and professionals in large firms. Overall, services firms generally face skills gaps in the 5 percent to 20 percent range. There is a relatively large skills gap in small firms for managers, in sales in small

and medium firms, in administrative positions in medium and large firms, and an especially large skills gap in professional occupations in large firms. Interestingly, some services firms actually filled more positions than they had vacancies for, including unskilled occupations in medium firms and managers in large firms.

Skills gaps are generally marked in both the nonexporting and exporting manufacturing sector, but more severe in the exporting than nonexporting services sector. In figure 3.9, the skills gaps by firms' export orientation appear to be very different by sector. In manufacturing, both exporters and nonexporting firms experience sizeable skills gaps of 20 percent or more in managerial and professional occupations. Outside of these highly educated positions, skills gaps are generally smaller for exporters than for nonexporting manufacturing firms. In services, the skills gaps are less in managerial positions and are instead focused on professional and sales positions (15 percent to 25 percent). In fact, nonexporting services firms actually hired more managers than they had vacancies, even while exporters faced skills gaps in managerial positions.

Number of Weeks to Fill Vacancies, by Occupation

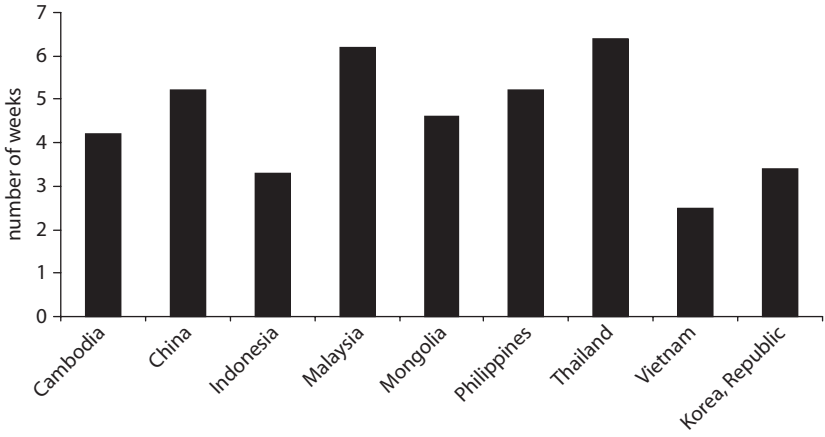
Time to fill vacancies is generally equivalent in the two sectors, although longer for sales positions in services. Employers' responses about the time taken to fill a vacancy provide another measure of the difficulty in finding the right skills and, indirectly, of the skills gap. Other things being equal, one might expect such jobs to take longer to fill. Table 3.5 and figure 3.10 present means of the number of weeks taken to fill vacancies in seven occupations by sector and size. On average, the table suggests that filling managerial vacancies takes six to seven weeks, professional positions

Table 3.5 Number of Weeks to Fill Vacancies, by Occupation, Sector, and Firm Size

	Manufacturing				*Services*			
Occupation	*Total*	*Small*	*Medium*	*Large*	*Total*	*Small*	*Medium*	*Large*
Managers, directors	6.9	3.0	8.2	5.7	6.2	4.6	8.3	4.0
Professionals	5.5	4.2	6.5	4.5	5.1	4.7	4.3	8.6
Administrative	3.3	3.4	3.5	2.5	3.2	2.7	3.5	3.1
Sales	3.6	2.6	4.5	3.0	5.8	4.7	5.0	10.6
Skilled	3.8	2.5	4.5	5.5	4.1	1.7	3.8	9.4
Unskilled	2.9	1.9	4.0	1.5	2.3	2.8	1.6	3.0
Others	3.8	6.5	1.5	3.0	3.6	2.4	6.5	8.0

Source: Philippines Skills Survey 2008.

Figure 3.10 Time to Fill Professional Vacancies in East Asia



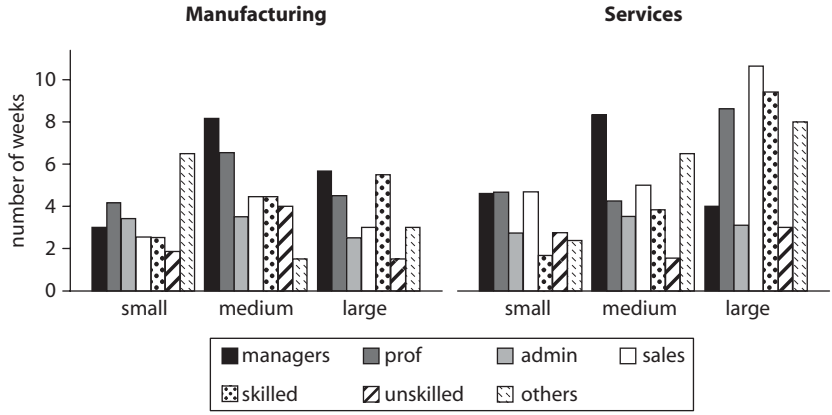
Sources: Investment Climate Enterprise Surveys and Employer Skill Surveys, various years.

about five weeks, administrative about three weeks, sales positions four to six weeks, skilled workers four weeks, and unskilled workers two to three weeks. The number of weeks to fill professional positions is on the high side in the region, comparable with numbers for China, Malaysia, and Thailand (figure 3.10). The data also confirm that firms in services take about the same time as manufacturing firms to fill skilled positions (with the exception of sales positions, which take more time).

Medium manufacturing firms and large services firms take more time to fill most positions. Figure 3.11 also suggests that time to fill vacancies can vary across sectors and firm size. Medium-size firms in manufacturing appear to take significantly longer to fill managerial and professional vacancies as compared with small or large firms, which is consistent with their relatively large skills gaps, while large firms take more time to fill skilled production positions. In services, with some exceptions, large firms take longer to fill the same positions as either small or medium-size firms. The exception is time taken to fill managerial positions, which is considerably shorter in large firms (four weeks) as compared with small firms (five weeks) and medium-size service firms (eight weeks). Again, this is consistent with the finding that large services firms actually hired more managers than they had vacancies for, that is, no skills gap.

Does time taken to fill vacancies vary systematically by the export orientation of firms? Recognizing that the difficulty of filling vacancies can vary by both sector and firm size, we address this question graphically by

Figure 3.11 Time to Fill Vacancies, by Firm Sector and Size



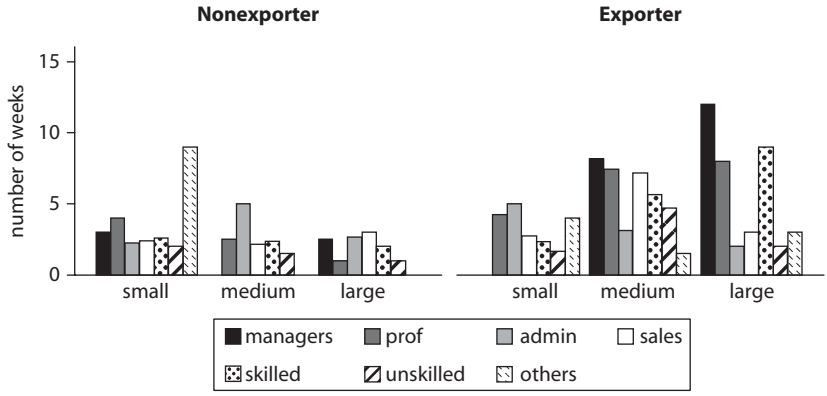
Source: Philippines Skills Survey 2008.

exploring the effects of export orientation on time to fill vacancies, controlling for both sector and firm size. Figure 3.12 shows the average number of weeks taken to fill vacancies in each occupation by size of the manufacturing firm—for nonexporting firms in the left panel and for exporters in the right panel. Figure 3.13 shows the same information for the services sector.

The time taken to fill skilled vacancies is higher for exporting firms than nonexporting firms, regardless of size of the firm. For manufacturing firms, figure 3.12 makes two noteworthy points. First, among nonexporting firms, the average number of weeks to fill vacancies in most occupations is low and relatively uniform across firm sizes—between two and four weeks—the exceptions being "other" unspecified occupations (nine weeks) and administrative workers in medium-size firms (five weeks). Second, the time taken to fill vacancies is much higher for exporting firms, averaging between four and eight weeks, with managerial, professional, and skilled workers typically taking longer than other occupations (seven to twelve weeks). What is also striking—and different from nonexporters—is that the larger the exporting firm, the longer it takes on average to fill most vacancies.

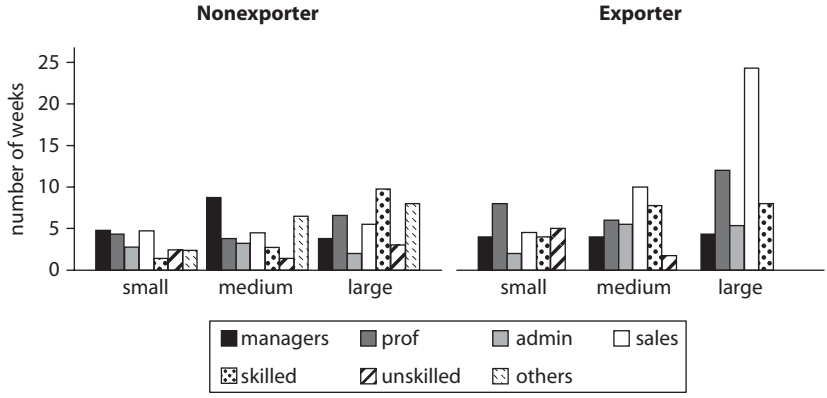
The same trends can be detected in figure 3.13 for the services sector. Time to fill vacancies is generally lower among nonexporting services firms, and higher on average among services firms that export. The larger the exporting services firm, the longer it takes to fill vacancies, just like their counterparts in the manufacturing sector. The difference from the

Figure 3.12 Time to Fill Vacancies in Manufacturing, by Size and Exports



Source: Philippines Skills Survey 2008.

Figure 3.13 Time to Fill Vacancies in Services, by Size and Exports



Source: Philippines Skills Survey 2008.

manufacturing sector is that there is also a slight, but perceptible, size-related rise in time taken among nonexporters in the services sector.

To summarize, the evidence suggests that export orientation (as a measure of global integration) is associated with an increase in the time it takes to fill vacancies—a measure of skills demand that reflects the difficulty in finding an appropriate match for the vacant position. This evidence is consistent with recent research by Almeida (2009) using firm-level data from the manufacturing sector of 10 East Asian countries, which found

a positive association between time to fill vacancies and both trade orientation and use of new technologies (see table A.22).

There is some evidence of skills gaps in the Philippines in terms of difficulties finding the right skills to fill skilled vacancies. These difficulties are evident in both the manufacturing and services sectors, with somewhat different intensity across subsectors, and particularly strong in the exporting sector. More detailed vacancy analysis suggests that the issue may not be so much about quantity—in terms of education levels and other minimum qualifications for the job—but rather about quality and relevance. More analysis is undertaken below to clarify this point.

Toward a Better Understanding of Skills Gaps

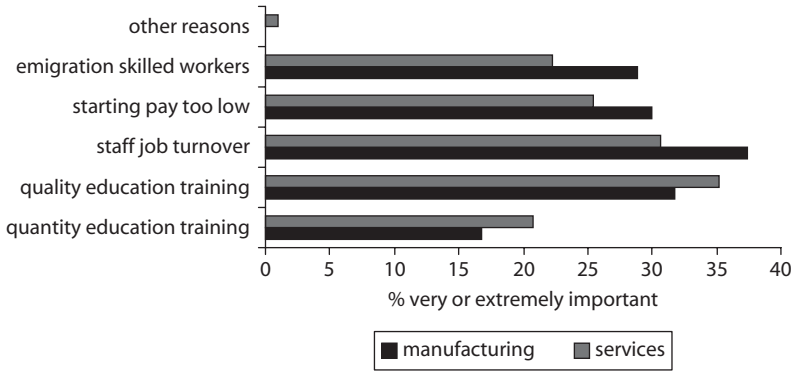
We further analyze skills gaps by first exploring the main reasons for them. We then look at quality issues by assessing employers' perceptions on the quality of newly hired education and training graduates and actual skills. We also examine some measures of academic skills.

Main Reasons for Skills Gaps

We review employers' opinions on the main constraints and recruitment practices contributing to skills gaps. We also explore the education and occupation profiles of overseas Filipinos to see how the international and domestic labor markets for skills interact.

Employers' perspectives on reasons for skills gaps. *Quality of education and training and staff turnover are the most important reasons for skills shortages across the board.*[1] However, low pay and emigration factors are also important in both sectors (with an edge in manufacturing). Employers were asked to rank the relative importance of several potential causes of skills shortages. The list of causes included insufficient supply by local education and training institutions, inadequate quality of this education and training, job turnover, emigration of skilled workers, and starting pay too low to attract the right workers. The following figures show employers' ranking of potential causes of skills shortages as being "very important" or "extremely important," separately by sector and by export orientation. Employers ranked the inadequate quality of education and training provided locally as the most important reason, followed by staff turnover. Beyond this general finding, figure 3.14 illustrates that firms in manufacturing tend to focus more on issues of high job turnover, low starting pay, and emigration of skilled workers (which

Figure 3.14 Reasons for Skills Shortages, by Sector



Source: Philippines Skills Survey 2008.

can limit the quantity and quality of available skills, even in the presence of sufficient graduates overall) as being the most important causes of skills shortages. Services firms tended to give more preeminence to the inadequate quality and, to a much lesser extent, quantity of education and training. The importance across the board of emigration of skilled workers and low pay seems to point to an interaction between the domestic labor market and the overseas market for workers, which is further explored below.

While quality is confirmed to be the key skills-related issue in manufacturing and services, there is some evidence that quantity is also a concern, although of more limited relevance, in services. It would be useful to get a better understanding of why pay remains so low across sectors, and more particularly why it is not increasing at least moderately for professionals in the manufacturing sector following shortages of supply created by emigration.[2] It may be that emigration of skilled workers constrains quality more than quantity for manufacturing. Increasing rates of return in the services sector, on the other hand, are likely to reflect largely increasing demand and, to a lesser extent, limited availability of some particular categories of professionals because of insufficient graduates in these fields overall (quantity-related issues) and emigration.

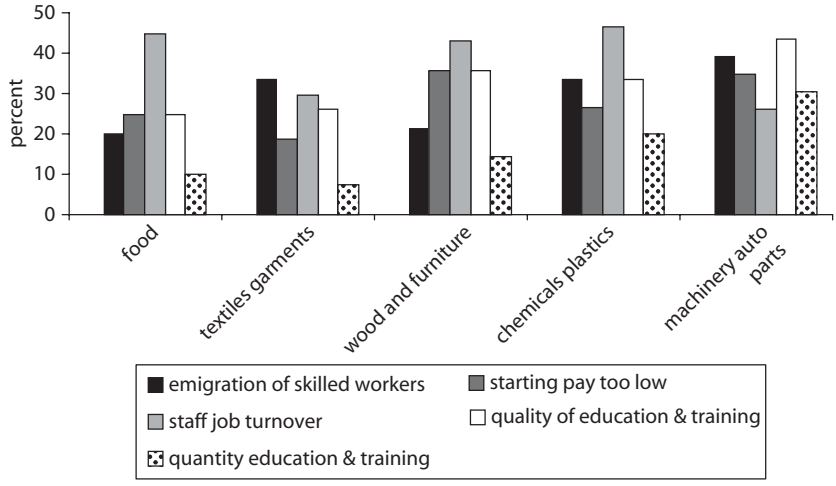
Quality of education and training is a particularly strong constraint in machinery and electronics, trade, tourism, real estate, and finance. Within the manufacturing sector, quality of education and training appears to be a particularly strong constraint in the machinery and electronics (where even quantity is still a bit of an issue), chemicals, and textile subsectors.

In the services sector, quality of education and training is a particularly strong constraint in trade, tourism, real estate, and finance (figures 3.15 and 3.16). Interestingly, emigration of skilled workers is a particularly serious constraint for machinery and electronics, real estate, and finance, adding to the quality/quantity constraints for these subsectors.

All reasons are more important for exporter than nonexporter firms. In figure 3.17, exporting firms as a group tend to rank all these reasons for skills shortages as being very or extremely important as compared with domestic-oriented firms, possibly because exporters are more likely to experience difficulty finding the right skills to fill job vacancies, as shown in figure 3.4.

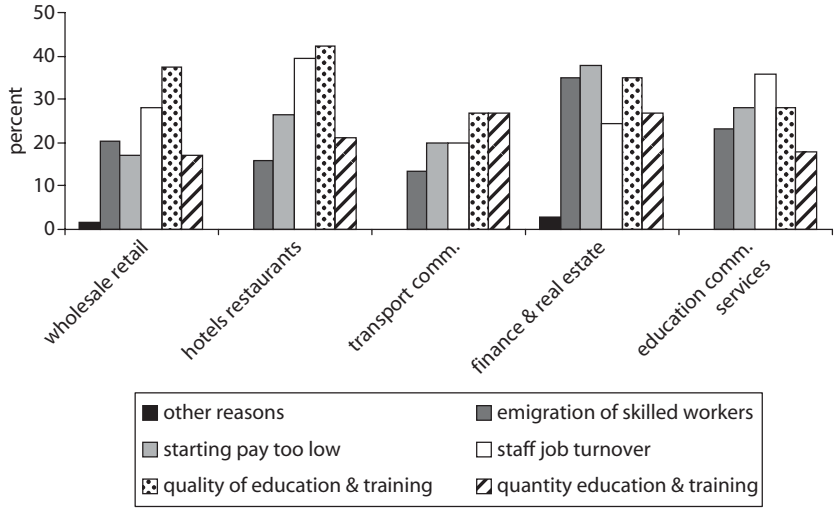
Vacancies and unemployment. *Difficulties finding the right skills for the job—resulting in persistent vacancies—combined with fairly high unemployment rates for educated workers and youth are a further illustration of a skills gap in terms of relevant education and quality, more than overall quantity.* Employers struggle to find the right skills for the job, yet a significant fraction of young secondary and higher education graduates are unemployed (see figures 3.18 and 3.19). This suggests that the skills gap is a result of mismatched education and poor-quality skills, rather than a lack of educated graduates.

Figure 3.15 Reasons for Skills Shortage, by Manufacturing Subsector



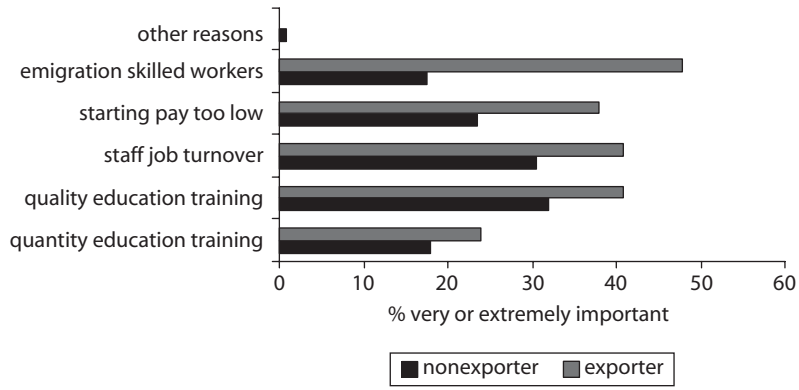
Source: Philippines Skills Survey 2008.

Figure 3.16 Reasons for Skills Shortages, by Services Subsector



Source: Philippines Skills Survey 2008.

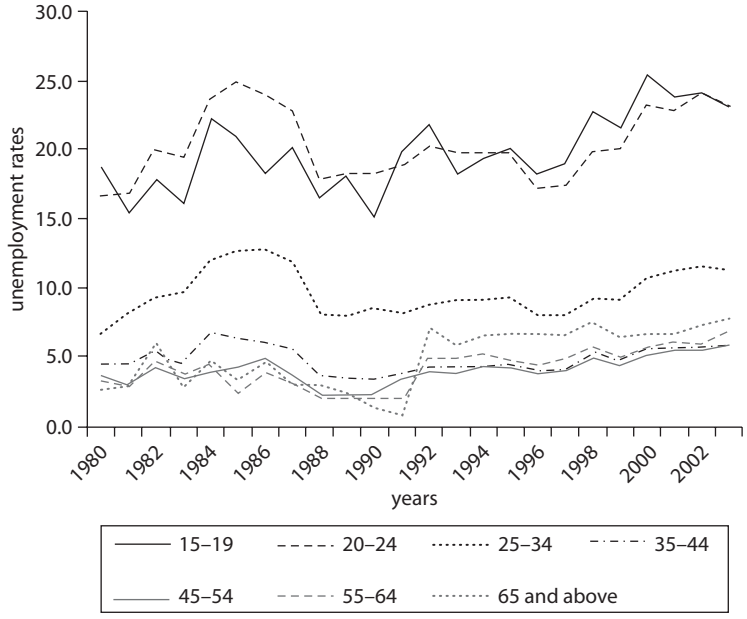
Figure 3.17 Reasons for Skills Shortages, by Export Orientation



Source: Philippines Skills Survey 2008.

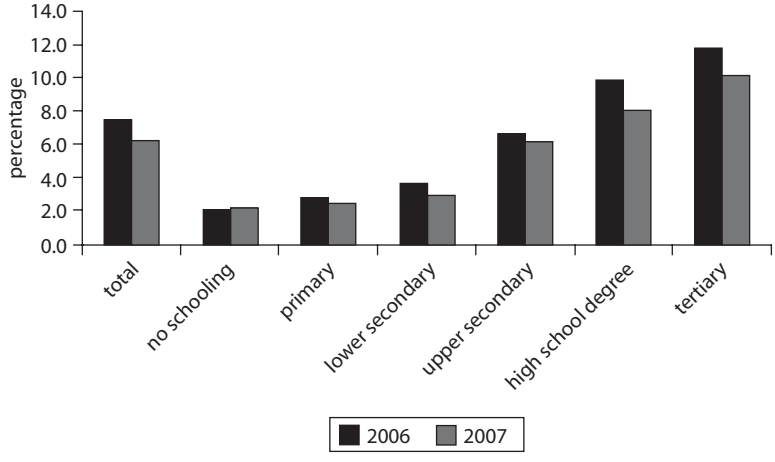
Job-matching process. *Can the job-matching process be another reason for the skills gap?* Table 3.6 shows the frequency distribution of multiple responses on all recruitment practices used by employers, separately by sector and firm size, with an aim to assess how firms look for the right skills.

Figure 3.18 Unemployment Rates by Age Groups, 1980–2003



Source: Philippines National Statistical Office, Labor Force Survey.

Figure 3.19 Unemployment Rates by Education Levels, 2006–07



Source: Lanzona 2008.

Table 3.6 Most Common Recruiting Practices

Recruiting Practices	*Manufacturing (%)*			*Services (%)*		
	Small	*Medium*	*Large*	*Small*	*Medium*	*Large*
Newspaper advertisement	8.7	11.2	8.8	11.8	8.4	13.0
Vacancy posted outside firm	18.0	15.2	13.2	10.6	10.6	8.0
Internet advertising of vacancy	4.7	8.5	10.3	9.2	10.8	10.1
Job fairs	4.0	5.4	7.4	4.0	6.8	10.1
Recommendation by current employees	28.0	21.0	14.7	27.0	19.2	13.0
Private networks (family, church, friends)	14.7	11.2	11.8	14.4	14.1	10.9
Public employment service	3.3	5.4	7.4	3.2	3.3	7.3
Private employment service	3.3	4.9	7.4	4.0	6.2	8.7
Direct contact with schools, training center	6.0	6.7	10.3	6.3	10.0	8.7
Promotion of junior staff within firm	9.3	10.7	8.8	8.6	10.6	10.1
Other ways	0.0	0.0	0.0	0.9	0.0	0.0
Total	100	100	100	100	100	100

Source: Philippines Skills Survey 2008.

Recommendations from previous workers are the most common recruiting practice, followed by vacancies posted outside firms, and private networks. The services sector uses a broader range of recruiting practices. Limited diversification of recruiting practices is likely to be another reason for the skills gaps, in particular for manufacturing. In the manufacturing sector, employers were most likely to recruit new workers using recommendations from current workers, followed by vacancy notices posted outside the premises, and private networks of family, friends, and church. Services firms also rely on employee recommendations and private networks, but they tend to use a broader range of practices than their counterparts in manufacturing. Although recruiting practices in the Philippines are more diversified than what is found with similar surveys in Indonesia and Vietnam, there is still significant room for further diversification in recruiting techniques, including making more use of employment services. Consistent with their well-documented informality, small firms tend to rely more on employee recommendations and private networks.

Larger firms rely more on the Internet to advertise vacancies, work directly with schools and training centers to hire their graduates, and use both public and private employment services.

When vacancies remain unfilled, employers focus on assigning tasks to other employees or enhancing skills of existing workers through training. Employers reported on the responses they would take should vacancies not be filled by the normal recruiting practices. The frequency of their responses is tabulated in table 3.7 by sector and firm size. With some exceptions, the most widely cited responses to unfilled vacancies were to assign tasks to other employees or to enhance skills of existing workers through training. Other commonly cited responses included work sharing, hiring and training undergraduates, and recruiting trained workers from other firms. (We address issues of in-service training in Part II of this report.)

Education profiles of Filipinos working abroad and interactions between domestic and overseas labor markets. The main focus of this book is on the education and skills requirements of the domestic economy. However, the interaction between the domestic labor market and the market for work overseas cannot be ignored, given the size of the Filipino population working overseas and the vast amounts that are

Table 3.7 Alternative Responses to Unfilled Vacancies

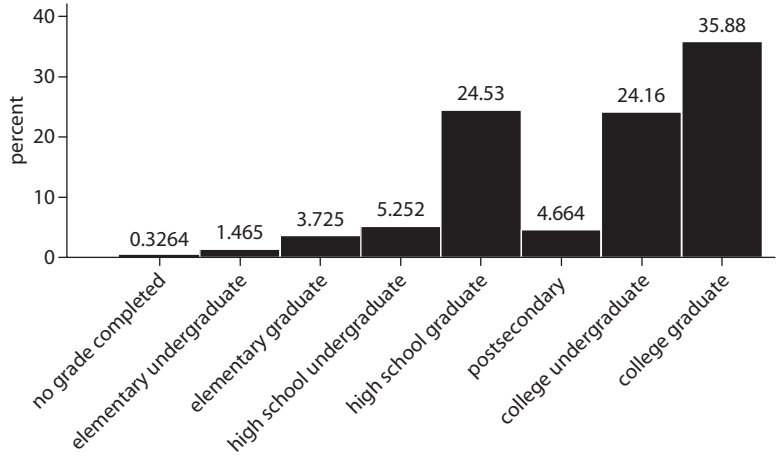
	Manufacturing (%)			*Services (%)*		
(most common)	*Small*	*Medium*	*Large*	*Small*	*Medium*	*Large*
Enhancing skills by training	21.4	28.7	25.6	26.5	25.7	28.8
Recruiting from other firms	7.7	7.4	12.8	9.2	15.7	15.3
Recruiting/new plants in other regions	3.4	2.9	7.7	4.2	6.2	8.5
Recruiting overseas	0.0	0.7	0.0	0.8	1.4	1.7
Hiring and training undergraduates	14.5	15.4	10.3	11.9	8.1	15.3
Subdividing work and hiring	15.4	6.6	10.3	10.8	7.1	3.4
Assigning tasks to other employees	27.4	27.2	25.6	27.7	26.7	22.0
Leaving position vacant	10.3	11.0	5.1	8.9	8.6	5.1
Other approaches	0.0	0.0	2.6	0.0	0.5	0.0

Source: Philippines Skills Survey 2008.

being remitted yearly by overseas workers. According to labor force data, some 1.9 million Filipinos were registered as working abroad in 2007, which represented 3.3 percent of the working-age population. We briefly look in this section at the education profiles and occupations of Filipinos working abroad to get a flavor, although superficial, of "international demand" and assess possible effects on the supply of skills offered domestically and, therefore, on any skills gaps for the domestic economy. Our analysis is based on the 2003 Survey of Overseas Filipinos.

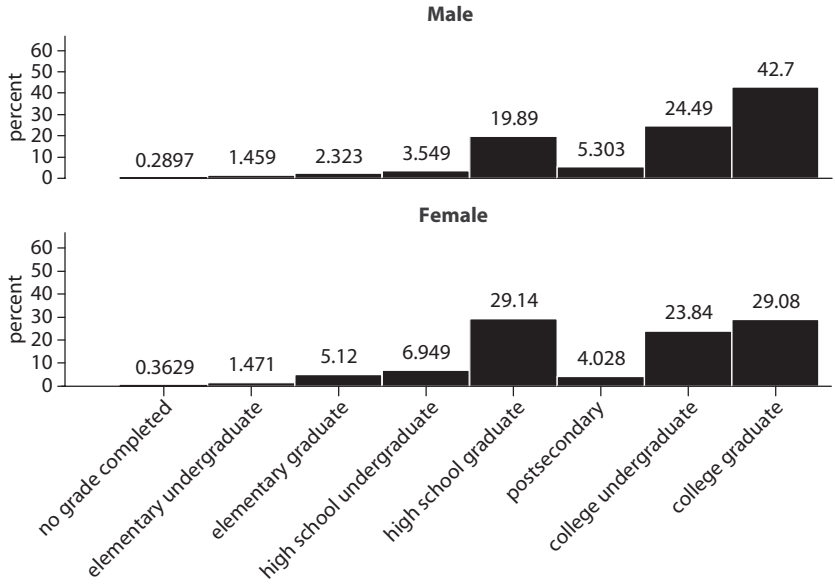
Filipinos working abroad tend to be significantly more educated than the population employed in the Philippines (see figure 3.20).[3] *Correspondingly they tend to work in relatively skilled occupations, at least in the period before emigration.* Almost 65 percent of Filipinos working abroad had postsecondary education (and more than 60 percent had some tertiary education). This is in stark contrast with the population employed in the Philippines, where only 27.3 percent of the employed population had at least some tertiary education. The skill ratio of emigrants is estimated to be 5 to 10 times higher than in the base population (Redaelli 2009). Overall, male emigrants tend to be more educated than female emigrants: some 67 percent of male emigrants have some tertiary education, compared with 53 percent of female emigrants (see figure 3.21). Along the same line, some 40 percent of future emigrants were working as professionals or senior managers (see figure 3.22).

Figure 3.20 Highest Grade Completed at Time of Departure



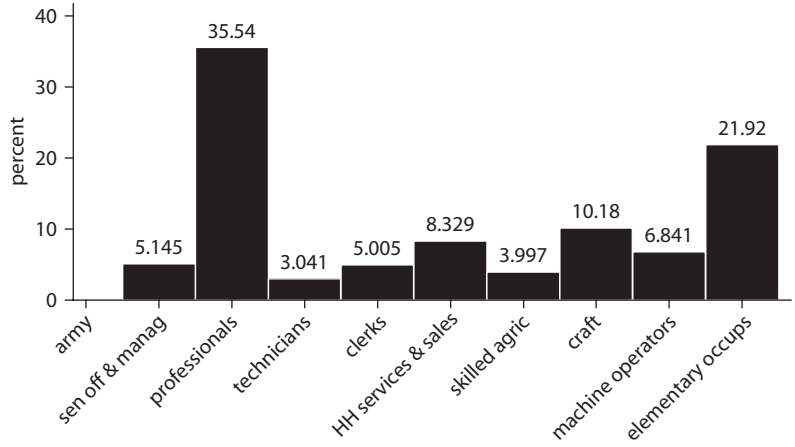
Source: Survey of Overseas Filipinos 2003.

Figure 3.21 Highest Grade Completed at Time of Departure, by Gender



Source: Survey of Overseas Filipinos 2003.

Figure 3.22 Occupation of Emigrants before Emigration

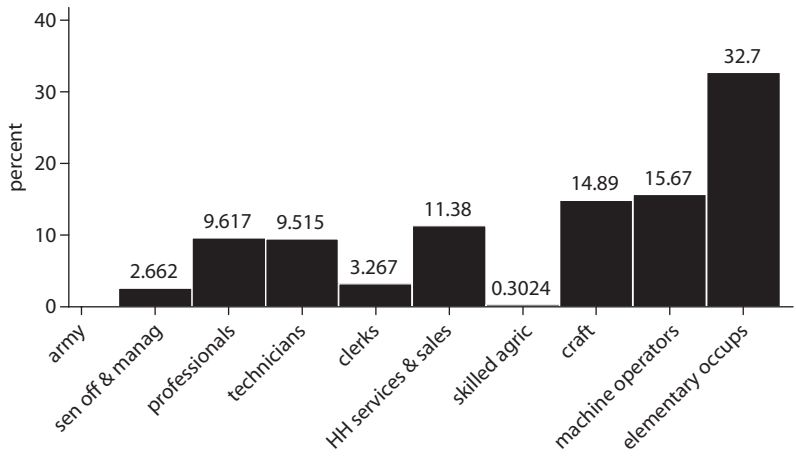


Source: Survey of Overseas Filipinos 2003.
Note: HH = household; agric = agriculture; occups = occupations.

On the other hand, it is quite clear that emigrants, particularly females, have to settle for a significant occupational downgrade when they work abroad. This skills mismatching persists when we look at the education profile. Most of the jobs available to emigrants are in relatively unskilled occupations: elementary occupations, jobs as machine operators and in crafts, and household services together account for more than 75 percent of jobs held by overseas Filipinos (see figure 3.23). This skills mismatching is particularly pronounced for female emigrants, who are overrepresented in the professionals category prior to emigration but also overrepresented in elementary occupations once abroad (see figures 3.24 and 3.25). Although not shown here, the skills mismatching persists when we look at the education profile. On balance more educated emigrants are relatively more likely to find skilled occupations, but many of them settle for elementary occupations for which they are overqualified based on their academic credentials.

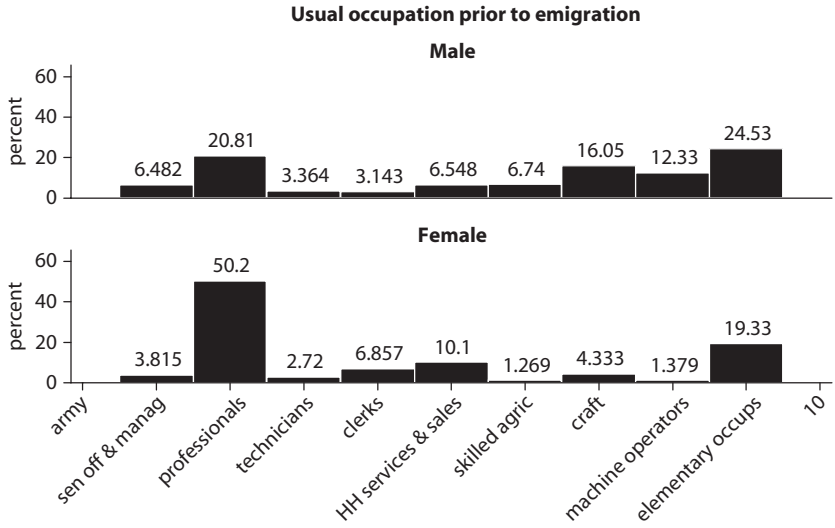
McDonald and Valenzuela (2009) have documented this skills mismatching and advanced several potential explanations, including human capital—pointing to significant quality gaps, which confirm the evidence on poor-quality education and training—and job competition. Another explanation is related to wage differentials. According to the human capital explanation, overqualification is only superficial: formal qualification

Figure 3.23 Occupation of Emigrants after Emigration



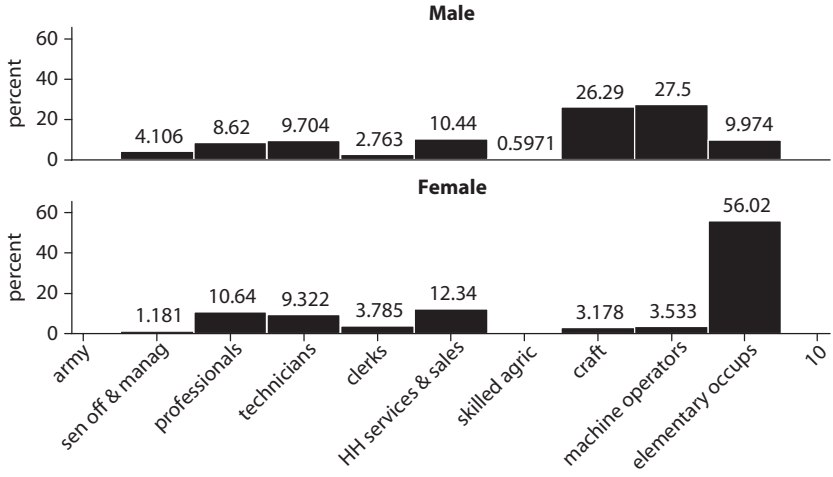
Source: Survey of Overseas Filipinos 2003.
Note: HH = household; agric = agriculture; occups = occupations.

Figure 3.24 Occupation of Emigrants before Emigration, by Gender



Source: Survey of Overseas Filipinos 2003.
Note: HH = household; agric = agriculture; occups = occupations.

Figure 3.25 Occupation of Emigrants after Emigration, by Gender



Source: Survey of Overseas Filipinos 2003.
Note: HH = household; agric = agriculture; occups = occupations.

does not reflect the real or full set of skills required for overseas jobs, pointing to quality gaps in the education and training system of the Philippines (and the possible use of education as a screening device in a context of generally poor quality of education qualifications). The job competition explanation points to cases whereby skills mismatching can result from oversupply of skilled workers (in certain occupations) in the domestic market or from imperfections in the matching process (that is, allocative rigidity in the job-matching market). Because most of the overseas jobs are regulated under a term contract, contracts are probably partly responsible for the phenomenon of overqualification. A third plausible explanation can be related to salary differentials between the Philippines and abroad, which make lower-level jobs abroad paradoxically more attractive than better jobs at home.

From the perspective of the domestic market, emigration of skilled workers can contribute to domestic skills gaps in certain sectors.[4] In others, such as education, health care, and personal services, emigration can probably explain the excess supply in the first place. Modern and developing services subsectors, where skills are in increasing demand, are probably in part suffering from emigration of skilled workers, as are some manufacturing subsectors ("brain drain"). The fact that most overseas jobs are regulated under a term contract and are therefore temporary in nature can probably alleviate this phenomenon. However, years of working in "underqualified" jobs are not particularly helpful in granting a successful reinsertion of emigrants in skilled positions upon their return to the Philippines. On the other hand, it is likely that the excess supply of some other professionals, such as teachers and nurses, is partly driven in the very first instance by the prospects of a job abroad.

Summing up, difficulties in finding the right skills for the job appear to have different possible explanations: from strictly labor market-related ones such as staff turnover, low wages, emigration of skilled workers, and lack of diversification of recruiting practices, to strictly skill-related issues. Emigration is an important factor that can condition both quantity and quality of available skilled workers. The quality of education and training is confirmed to be a key constraint, while quantity is only a secondary issue—although still relevant to some extent for the services sector.

Characterizing the Quality Gap

This section provides a further characterization of the quality gap by analyzing employers' perceptions on the quality of the newly hired graduates

(after selection)—for different education levels and types of institutions and by sector—and direct measures of academic and nonacademic skills.

Employers' perspectives on the quality of graduates. The skills survey asked employers that had hired employees over the past year to assess the quality of graduates from different educational and training institutions, both public and private. Employers were instructed to select up to three public and three private schools for each educational level from which they did most of their hiring, and up to five each in the case of training institutions to which they sent their employees for training.

Employers ranked the quality of graduates from each education or training institution as very poor, poor, average/fairly good, and good/very good. As the number of education and training institutions evaluated varied by employer, the data were reshaped so that each assessment of an institution by one firm constitutes a unit of observation. Table 3.8 summarizes the distribution of rankings of graduate quality for each level of education and postemployment training and the number of institution-firm observations.

Private institutions are confirmed to be an important source of graduates in the Philippines. Several points emerge from table 3.8. First, it is clear from the sample sizes (far right column) that private institutions are an important source of graduates and training for employers. While the survey did not ask how many of the hires were from public or private institutions, the numbers of private institutions used for the assessments are roughly comparable to those of public institutions, with public secondary schools and universities being cited more often, and private postsecondary institutions, polytechnics, and training providers being used more frequently as sources of hiring or in-service training.

Second, while the vast majority of employers rank the newly hired graduates from all levels quite favorably—discarding major quality issues in the candidates finally selected—many consider the graduates to be only average/fairly good and a sizable proportion of them to be poor. While the vast majority of graduates are considered quite favorably after they have been finally hired (after selection), a vast majority is considered only average/fairly good in secondary education and postemployment training institutions. Moreover, while employers tend not to rate graduate quality as "very poor" or "poor," between 5 percent and 10 percent of graduates of general and nonformal secondary schools and universities were assessed negatively.

Table 3.8 Employer Rankings of Graduate Quality by Education Level and Training (%)

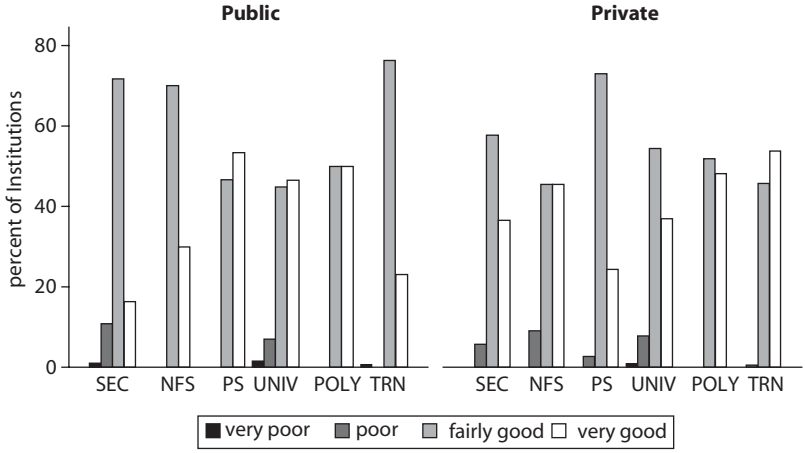
Public or Private Institution	*Very Poor*	*Poor*	*Average/ Fairly Good*	*Good/ Very Good*	*Number of Institutions*
Secondary schools					
Public	1.1	10.9	71.7	16.3	92
Private	0.0	5.8	57.7	36.5	52
Total	0.7	9.0	66.7	23.6	144
Nonformal secondary schools					
Public	0.0	0.0	70.0	30.0	10
Private	0.0	9.1	45.5	45.5	11
Total	0.0	4.8	57.1	38.1	21
Postsecondary schools					
Public	0.0	0.0	46.7	53.3	15
Private	0.0	2.7	73.0	24.3	37
Total	0.0	1.9	65.4	32.7	52
Universities					
Public	1.6	7.1	44.9	46.5	254
Private	1.0	7.7	54.4	36.9	103
Total	1.4	7.3	47.6	43.7	357
Polytechnics					
Public	0.0	0.0	50.0	50.0	8
Private	0.0	0.0	51.9	48.2	27
Total	0.0	0.0	51.4	48.6	35
Postemployment training institutions					
Public	0.6	0.0	76.2	23.1	160
Private	0.0	0.5	45.7	53.8	199
Total	0.3	0.3	59.3	40.1	359

Source: Philippines Skills Survey 2008.

Third, private delivery is often seen as superior to public delivery, but public delivery remains superior for postsecondary TVET education and universities. A higher proportion of employers rate as "very good" graduates from private general and nonformal secondary schools as compared with their public counterparts (36 percent versus 16 percent, and 45 percent versus 30 percent, respectively); similarly, more than twice as many employers rate graduate quality in private training institutions as being "very good" as compared with public training institutions, which are primarily rated as being "fairly good." However, public institutions are more likely to be rated "very good" as compared with private ones in postsecondary schooling and universities.

These points are more readily appreciated graphically. Figure 3.26 shows employers' rankings of graduate quality by level of education and training, comparing public sector institutions (left panel) with

Figure 3.26 Employer Quality Rankings of Public and Private Sector Graduates

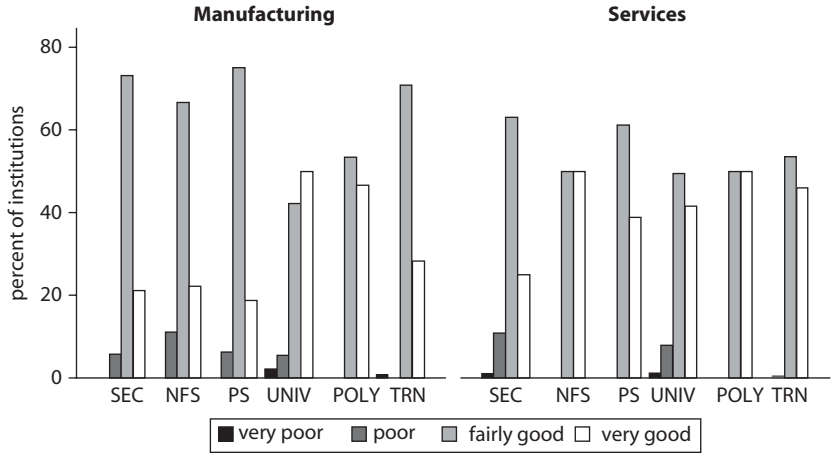


Source: Philippines Skills Survey 2008.

private sector ones (right panel). The levels of education are represented by the following acronyms: secondary schools (SEC), nonformal secondary schools (NFS), postsecondary schools (PS), universities (UNIV), polytechnics (POLY), and postemployment training institutions (TRN).

Perceptions on the quality of graduates vary across sectors and education levels. Manufacturing employers have less favorable opinions of secondary and postsecondary graduates, and services employers have less favorable opinions of secondary and higher education graduates. How do employers in different sectors rank the quality of graduates from the different education and training institutions? Figure 3.27 compares employer assessments in manufacturing (left panel) and services (right panel). In manufacturing, the majority of employers rate the quality of graduates from secondary and postsecondary schools and training institutions as "fairly good"; the proportion rating graduate quality as "very good" rises significantly at higher levels of education, namely universities and polytechnics. As the bulk of the manufacturing workforce is secondary- and postsecondary-educated workers, lower quality perceptions on these education levels may explain some of the difficulties in finding the right skills for the job and even filling some jobs, with high staff turnover explaining most of the difficulties for higher-level positions. In the services sector, employers split the "fairly good" and "very good" ratings about equally for all levels of

Figure 3.27 Employer Quality Rankings of Graduates, by Sector



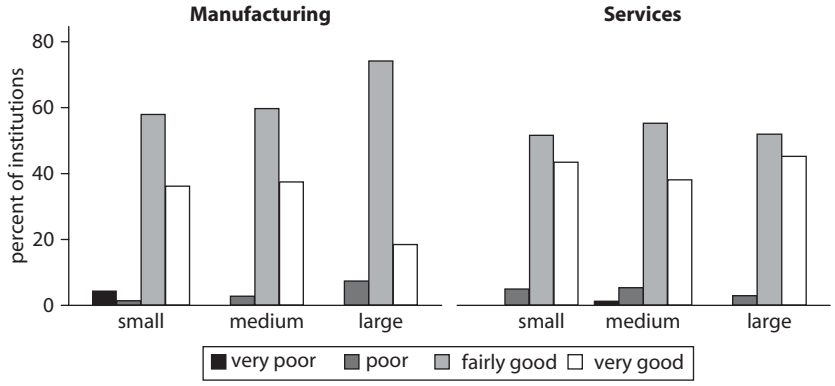
Source: Philippines Skills Survey 2008.

education and training, except for general secondary school graduates, for whom the most common rating is "fairly good" and a significant share of graduates considered to be "poor." Similarly, a significant fraction of the graduates from universities are also considered to be "poor." These graduates are altogether seen in a less favorable light by the services sector than by the manufacturing sector. These findings can explain some of the difficulties faced in the services sector to find the right skills for the job, including the significant time to fill some managerial, professional, and sales positions.

Are employer rankings of the quality of graduates determined in part by their characteristics? To address this question, we aggregate across levels of education and training and examine the distributions of rankings by several firm characteristics. Figure 3.28 shows rankings of graduate quality by firm size, separately for manufacturing and services sectors. Employers are defined as small if they have fewer than 50 employees, medium with between 50 and 249 employees, and large with 250 or more employees.

Large manufacturing employers are overall less happy about the quality of graduates, with less difference across size in services. In manufacturing, the most common rating is "fairly good," averaging about 60 percent of small and medium-size firms, followed by "very good" in under 40 percent of employers. Large employers, however, are more demanding, and a much

Figure 3.28 Employer Quality Rankings of Graduates, by Firm Size and Sector

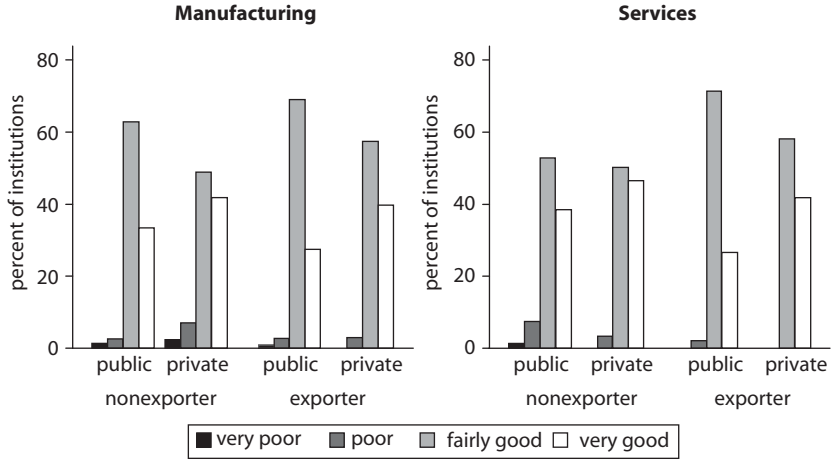


Source: Philippines Skills Survey 2008.

smaller proportion of them (less than 20 percent) rate graduates as "very good"; they are also more likely to judge graduate quality as "poor" compared with smaller firms, even though negative ratings tend to be low overall across firm sizes. More negative perceptions on the quality of graduates from large manufacturing firms is likely to explain the significant time to fill skilled production positions in these firms. In services, by contrast, the distributions of ratings are not very different across employers of different sizes.

Exporters are less happy overall about the quality of graduates. Figure 3.29 shows employers' rankings by sector, this time focusing on the firms' export orientation and whether graduates were hired from public or private education and training institutions. Export orientation is measured by a 1,0 indicator variable, with a value of 1 if the firm exported products or services abroad, and 0 otherwise. First, at an aggregate level, regardless of export orientation, a higher proportion of employers ranks graduates from private institutions as being "very good" as compared with public sector graduates. This confirms a point made earlier from a comparison of rankings of public versus private institutions at different levels of education and training. Second, employers that export goods and services appear to be more demanding in their assessments of graduate quality: they are less likely to judge graduates as being "very good" and, correspondingly, more likely to rank graduates as just "fairly good" as compared with nonexporters. This evidence is in line with the longer time it takes to fill vacancies in the exporting sector.

Figure 3.29 Employer Quality Rankings of Graduates, by Ownership and Export Status



Source: Philippines Skills Survey 2008.

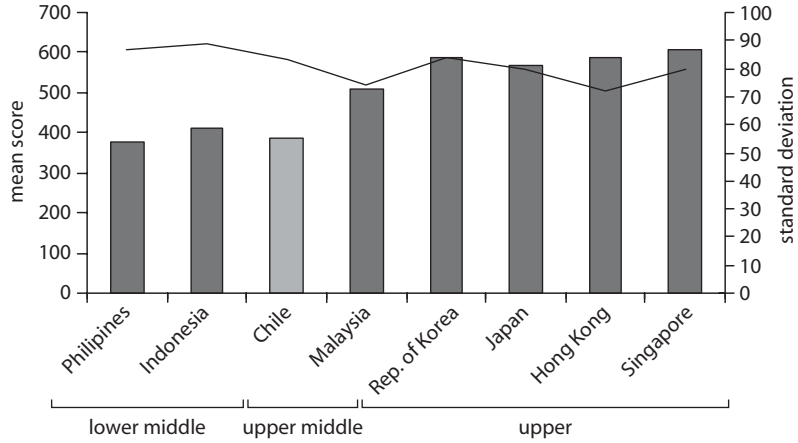
Gaps in academic skills. While weaknesses are confirmed in current education and training, we still do not know the exact skills the weaknesses entail since education and training, as already discussed, is a proxy for different types of skills. We therefore look at a direct measure of skills through international tests and employers' perspectives.

The few available results on tests of cognitive skills confirm the insufficient academic skills of Filipino students, but further international benchmarking of key academic skills is needed. Although focused only on secondary graduates (and before employment), international tests provide a severe diagnostic of education quality in the country by highlighting the low relative competencies of Filipino secondary students in topics such as math and science (see figures 3.30 and 3.31). The Philippines should participate in more international tests to get a clearer and more comprehensive benchmarking of academic skills. [The Philippines did not even participate in the 2007 Trends in International Mathematics and Science Study (TIMSS)[5] round.]

Gaps in core and technical skills of new hires. Employers were asked to rank the main weaknesses or skills gaps of their employees to provide a more complete picture on quality gaps.

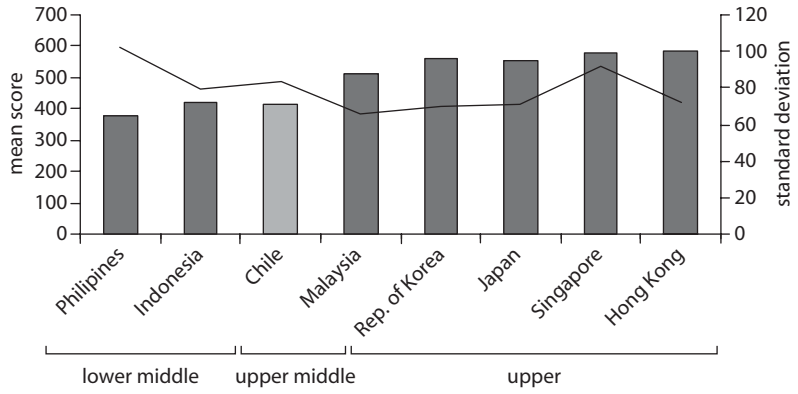
Time management and initiative are particularly weak skills for managers. Gaps are more homogenous for other skilled workers, but problem solving and

Figure 3.30 2003 TIMSS Math Scores across Countries of Different Income Levels



Source: TIMSS 2003.

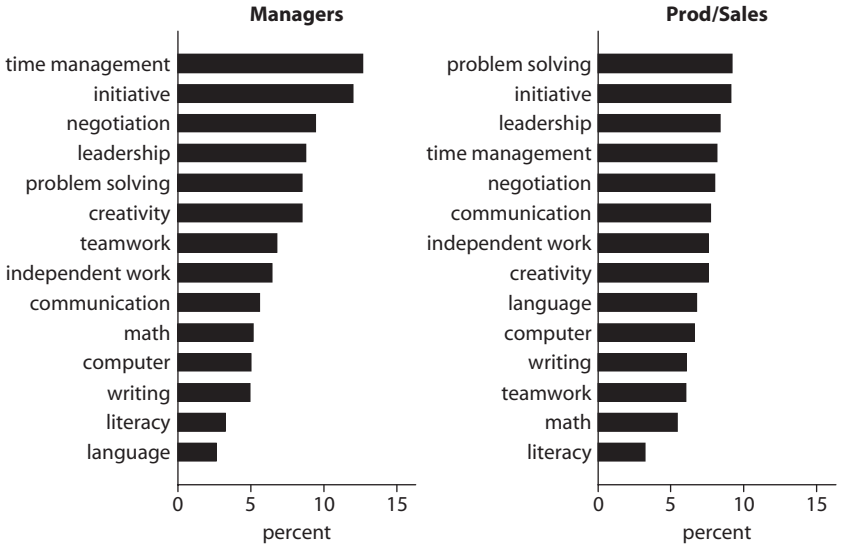
Figure 3.31 2003 TIMSS Science Scores across Countries of Different Income Levels



Source: TIMSS 2003.

initiative are relative weaknesses, and language skills show some deficiencies. Problem solving is weaker in manufacturing and creativity in the exporting sector. Figure 3.32 shows employer rankings of gaps in the core skills of new hires. For managers, time management and initiative are some of the most important gaps in core skills. No single gap in core skills stands out for production, administration, and sales employees, but problem solving and initiative are relative weaknesses. Language is a much more sizable

Figure 3.32 Main Gaps in Core Skills, by Occupation

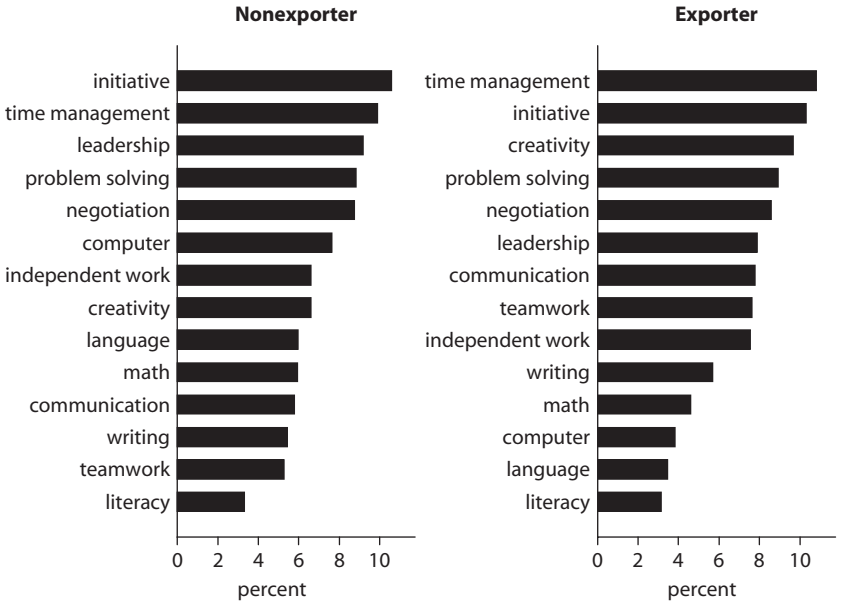


Source: Philippines Skills Survey 2008.

gap for this last category of workers than for managers. Problem solving is especially in demand by employers and requires particular attention. It is also particularly weak in the manufacturing sector, while capacity to negotiate is particularly weak in the services sector (in addition to several significant weaknesses in both sectors). When looking at export orientation, creativity is a much more important gap in the exporting sector and language in the nonexporting sector (figure 3.33).

The indicator on gaps in job-specific skills is more difficult to interpret but seems to indicate inadequate supply of foreign degrees relative to job requirements and gaps in technical and vocational degrees as a source of skills. Employees are faring relatively well in some of the most demanded job-specific skills—such as practical and theoretical skills—but results differ across occupations, sectors, and export orientation. On sources of job-specific skills (figure 3.34), it is sometimes unclear whether these "gaps" reflect actual weaknesses of these sources in supplying technical skills, or if the supply of skills is inadequate relative to job requirements. With this caveat, employers rank foreign university degrees as being the weakest source of technical skills for both managers and production/sales workers—which may suggest that firms believe that workers have too little exposure

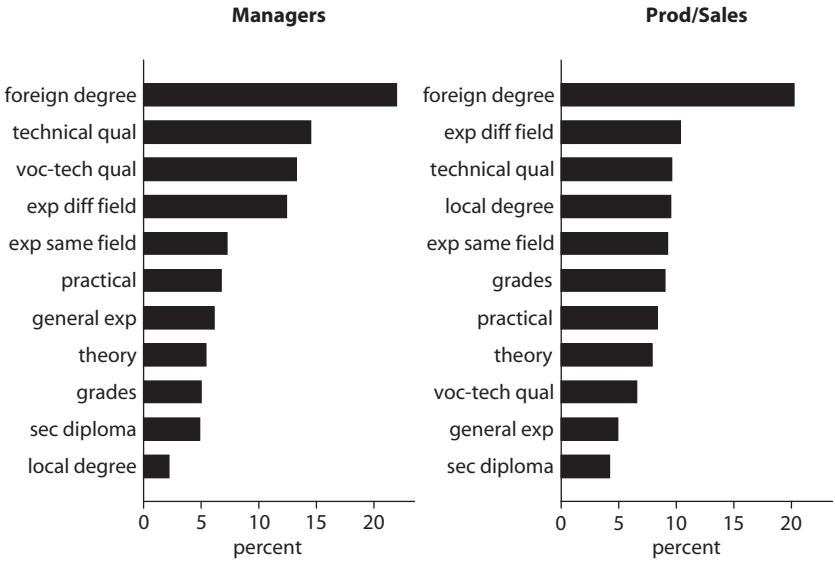
Figure 3.33 Main Gaps in Core Skills, by Export Orientation



Source: Philippines Skills Survey 2008.

to this source of skills. For managers and professionals, tertiary/postsecondary technical and secondary vocational-technical qualifications also stand out as weaknesses, suggesting too little exposure to or lack of quality/relevance of these degrees. Other than foreign degrees, no other gaps in job-specific skills sources stand out for production, administration, and sales employees, but technical qualifications, college/university, and experience seem to be relative weaknesses, once again in relation to either lack of supply or lack of quality/relevance. Overall, when comparing these results with the ones on the most demanded job-specific skills and skills sources, it appears that employees are faring relatively well in some of the most demanded job-specific skills, such as practical and theoretical skills, which is reassuring and may suggest a better relative capacity of education, training, and experience to provide job-specific skills (more than academic and generic skills). However, college/university qualifications are both important and weak as a source of job-specific skills for production and sales workers. Finally, practical skills and the role of experience in the same field as a skill provider become significantly more of a constraint in the exporting sector (figure 3.35).

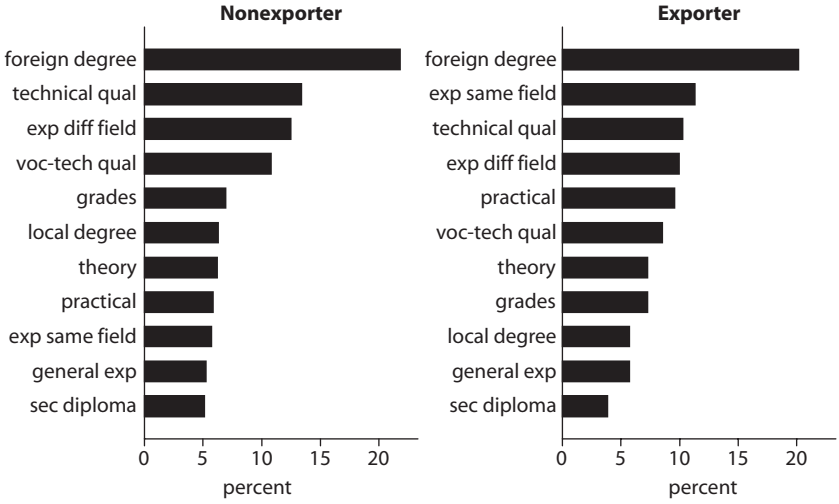
Figure 3.34 Key Gaps in Job-Specific Skills and Related Sources of Skills, by Occupation



Source: Philippines Skills Survey 2008.

The above evidence shows better results in terms of education and training quality on the sample of newly hired recent graduates, suggesting possible improvements in the current education and training system and better youth skills. But the evidence also confirms some persistent weaknesses in the current system, particularly at the secondary cycle and on the postsecondary and higher education cycles, depending on the sector. This is all the more true as the sample includes only already-selected and hired graduates who therefore are not necessarily representative of graduates overall—as further indicated by the low competencies of secondary graduates according to international assessments. The same assessments point to particular weaknesses in academic subjects, such as math and science, while employers' perceptions also highlight serious gaps in some generic skills such as problem solving, initiative, and creativity. These results further illustrate where some of the quality gaps lie in the education and training system (and beyond, in the case of generic skills, because these are also acquired outside the education and training system). Gaps in technical/job-specific skills of employees are less evident (in comparison with the most demanded skills), but there is a margin to improve exposure to and quality of technical and higher education, and enhance employees' practical skills for the exporting sector.

Figure 3.35 Key Gaps in Job-Specific Skills and Related Sources of Skills, by Export Orientation



Source: Philippines Skills Survey 2008.

Overall, this evidence provides grounds for—at a minimum—strengthening generic, or life, skills in the curricula of all education and training levels, while also ensuring job-specific skills receive their due importance, with particular focus on the continuous development and strengthening of practical skills through adequate pedagogical practices and school-industry links. We will see in the next chapter that current education and training institutions have both strengths and weaknesses that need to be evaluated and further analyzed to derive more specific directions and policy implications on how to improve the system and the skills of the overall workforce.

Notes

1. This also reflects a pattern seen in Indonesia, Thailand, and Malaysia based on firm surveys.
2. Is it that starting pay must be low to recoup the costs of on-the-job training because workers migrate once they are skilled? Is it a legal issue because firms cannot impose a long-enough period during which workers cannot resign because of training costs? Is it because of low productivity because the "best" have emigrated? Does some degree of labor market segmentation explain particularly low salaries in manufacturing?

3. This finding was also made by McDonald and Valenzuela (2009), who provide data on educational achievement of overseas Filipinos by destination country.
4. See also Redaelli (2009) for a similar hypothesis.
5. TIMSS is an international assessment that tests student ability in mathematics and science.

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PART II

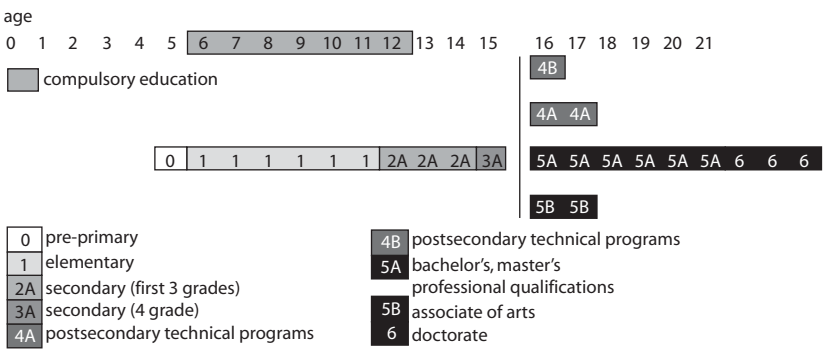
Skills Supply in the Philippines

Although education and training is not the only determinant of skills gaps and employability in the Philippines, given the importance of labor market-related reasons and other channels through which skills can be acquired (such as experience), they are clearly crucial, as shown in the analysis of Part I. They are the main source of academic skills and a key source of generic and technical skills, fundamental for a successful insertion in the labor market and fulfilling the needs of the economy. Unfortunately, the education and training system is failing to adequately fulfill this role, as shown by employers' perceptions on its quality and actual measures of skills, among other indicators. Part II of this book therefore focuses on skills supply, with particular emphasis on the challenges that the education and training system faces in producing the educational and workforce-related skills demanded by the economy. Beyond the analysis of higher and post-secondary education, a comprehensive approach is taken by also exploring the sector's capacity to provide skills development opportunities for the unskilled ("second chance" programs) and on-the-job training. These chapters emphasize on three core aspects of skill production: the general ability of a system to produce a skilled labor force, the ability to continue updating these skills over time, and the ability to help the unskilled young adults and adults gain skills.

The Philippines education and training system is divided into an elementary cycle of six years; followed by a secondary cycle of four years (divided into general and, to a much lesser extent, vocational secondary schools); and different alternative cycles thereafter, including postsecondary technical-vocational education, tertiary technical education (two-to-three-year programs), bachelor's degree programs, and postgraduate studies (see the box depicting the structure of the education system). The system includes a nonformal component (alternative learning system in elementary and secondary education) and participation of both public and private providers at all levels of education. (Private schools account for about 13 percent of basic education to as much as 70 percent of higher education.) Beyond preemployment education, the system also offers possibilities of postemployment training, both within and outside of firms, through public and private training institutions.

From a governance perspective, the Philippines education and training system is characterized by the trifurcation of basic education, higher education, and technical education and vocational training (TVET). This tripartite management of the system grew out of recommendations from reviews of the state of Philippines education and manpower development by the Congressional Commission on Education and was designed to reduce overlap in skills development by the different public and private sector agencies, and to better focus management, policy formulation, and development of each educational subsector. The reforms led to the creation in 1994 of the Department of Education (D_pED) with responsibilities for basic education (elementary + secondary), the Commission on

Structure of the Philippine Education System, according to International Standard Classification of Education, UNESCO



Source: UNESCO Institute for Statistics 2008.

Higher Education (CHED) to focus on higher education, and the Technical Education and Skills Development Authority (TESDA) to be responsible for TVET and middle-level skills development.

Enrollment in the different education cycles has been on the rise in the country [with a gross enrollment rate (GER) of over 100 percent in elementary education, about 80 percent in secondary education, and 28 percent in higher education] according to DpED sources. But these figures hide issues with the internal efficiency and quality of all cycles and relevance to labor market needs of the postelementary cycles—issues that warrant closer examination and analysis.

The second part of this book looks more in depth at some of the strengths and weaknesses of educational and training institutions, first by reviewing employers' perceptions of them, and then by undertaking a more detailed analysis of four central skills supply components of the system: (a) higher education, (b) postsecondary vocational education, (c) nonformal secondary education, and (d) postemployment training. Our analysis is centered on internal efficiency, quality, and relevance-related challenges. Chapter 6 presents concrete policy recommendations.

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CHAPTER 4

Strengths and Weaknesses of Education and Training Institutions

The Philippines Skills Survey asked employers to assess the strengths and weaknesses of education and training institutions. Provided that employers had hired graduates from each type of education institution or had sent employees for training outside the firm, employers were asked to identify up to three education and training institutions, including public and private, and to rank their strengths and weaknesses according to lists provided by the questionnaire. A natural way to tabulate these employer assessments is by named institutions. Collectively, the 300 employers surveyed identified a total of 968 individual (and overlapping) education and training institutions: 141 secondary schools, 21 nonformal secondary schools, 52 postsecondary education institutions, 357 universities, 35 polytechnics, and 359 training institutions. Their multiple-choice responses are tabulated in tables 4.1 and 4.2, separately for secondary- and tertiary-level institutions. Unfortunately, employers were not asked to compare the strengths and weaknesses of public versus private schools; the exception was for public versus private sector training organizations (table 4.3).

In secondary education, the poor quality of facilities and weak industry links are overall weaknesses, while teacher qualifications are generally seen as a strength. Limited labor market relevance and specific curricula are weaknesses of general secondary education, while general curriculum and

Table 4.1 Secondary Educational Institutions: Strengths and Weaknesses*

	Secondary Schools		*Secondary Vocational Schools*		*Nonformal Secondary Schools*	
Weaknesses	*Strengths*	*Weaknesses*	*Strengths*	*Weaknesses*	*Strengths*	*Weaknesses*
Cycle length	12.6	5.5	10.2	9.6	8.1	11.6
Teaching quality	11.1	8.1	10.7	8.8	9.5	10.3
Teacher qualification	11.3	7.7	10.6	8.9	10.6	9.4
Facilities quality	9.2	11.3	8.6	12.5	8.4	11.4
Curriculum balance	11.3	7.7	9.9	10.2	10.0	9.9
Curriculum general	12.1	6.3	9.8	10.3	10.5	9.5
Curriculum specific	9.3	11.2	11.6	7.2	11.4	8.6
Labor market relevance	7.6	14.0	10.5	9.1	10.2	9.8
Industry links	6.8	15.5	9.2	11.4	8.6	11.2
Cost	8.5	12.5	9.1	11.5	12.4	7.7
Other features	0.2	0.3	0.1	0.6	0.3	0.4

Source: Philippines Skills Survey 2008.
Note: * Proportion of institutions identified by employers as having strengths or weaknesses by different areas.

Table 4.2 Tertiary Educational Institutions: Strengths and Weaknesses*

Strengths/	*University*		*Technical Institutes*		*Postsecondary Institutions*	
Weaknesses	*Strengths*	*Weaknesses*	*Strengths*	*Weaknesses*	*Strengths*	*Weaknesses*
Length of studies	11.6	3.0	11.4	6.9	11.0	8.4
Teaching quality	11.5	3.6	11.0	7.6	10.9	8.6
Teacher qualification	10.8	6.6	10.9	7.9	11.7	7.3
Facilities quality	10.2	9.1	9.1	11.9	9.5	10.7
Research capacity	10.4	8.2	8.1	14.1	8.5	12.2
Fields of study	11.0	5.7	9.4	11.2	8.8	11.7
Labor market relevance	10.0	10.0	10.6	8.6	9.8	9.7

(continued)

Table 4.2 Tertiary Educational Institutions: Strengths and Weaknesses* *(continued)*

Strengths/ Weaknesses	*University*		*Technical Institutes*		*Postsecondary Institutions*	
	Strengths	*Weaknesses*	*Strengths*	*Weaknesses*	*Strengths*	*Weaknesses*
Industry links	9.3	12.8	10.7	8.5	9.7	10.3
Labor market adaptability	9.3	13.0	10.3	9.3	10.2	9.7
Cost	6.0	27.4	8.4	13.4	9.7	10.3
Other features	0.1	0.9	0.2	0.6	0.2	0.5

Source: Philippines Skills Survey 2008.
Note: * Proportion of institutions identified by employers as having strengths or weaknesses by different areas.

Table 4.3 Postemployment Training Institutions: Strengths and Weaknesses*

List of Strengths			*List of Weaknesses*		
	Public	*Private*		*Public*	*Private*
Not expensive	36.8	2.3	Little/no budget	8.7	81.8
Government funding	6.2	10.3	Trainers not lively	6.0	1.3
Global methodology	2.8	3.5	Limited discussions	22.9	7.1
Updated inputs/topics	6.2	6.3	Short training duration	9.6	3.6
Trainers are responsive	2.5	5.2	Out-of-date training	2.8	1.3
Experienced trainers	9.0	9.2	Little training variation	1.8	0.4
Helpful updates	6.2	6.0	Lack evaluation	6.4	1.3
Flexible training duration	1.9	1.4	Lack relevance	4.1	1.3
Efficient/relevant courses	15.0	23.0	Training too long	0.5	0.4
Focused on training	5.0	9.2	Lack materials/equipment	19.7	0.0
Well-organized programs	1.6	5.5	Training venue too small	4.1	0.4
Number of participants	0.6	0.0	Venue not conducive	2.8	0.9
High-tech facilities	4.1	14.1	Too many trainees	10.1	0.0
Conducive venue	1.3	3.7	Inconvenient schedule	0.5	0.0
Venue accessible	0.3	0.3			
Government accredited	0.6	0.0			

Source: Philippines Skills Survey 2008.
Note: * Proportion of institutions identified by employers as having strengths or weaknesses by different areas.

curriculum balance are weaknesses of vocational schools. Teaching quality and cycle length are specific weaknesses of nonformal education. Secondary-level institutions include general, vocational, and nonformal secondary schools. Table 4.1 highlights the five most commonly cited strengths and weaknesses for each class of secondary schools (the shaded numbers in the table). In common across all secondary-level institutions, teacher

qualifications were judged to be strengths, and poor-quality facilities and weak industry links (important to improve labor market relevance and sustain practical skills) were ranked as weaknesses. However, each class of secondary schools has its own strengths and weaknesses. Employers tended to rank the instructional cycle, teacher quality, and general curriculum as the strengths of general secondary schools; as weaknesses, employers tended to cite cost, specific curriculum (noncore subjects, technical subjects, and so forth), and limited labor market relevance (in terms of subjects taught and noncognitive generic and technical skills). For vocational schools, employers also cited as strengths instructional length and teacher quality, specific curriculum, and labor market relevance; weaknesses included general curriculum and cost. For nonformal secondary schools, employers tended to cite overall curriculum and labor market relevance as strengths, and the length of the instructional cycle and teacher quality as weaknesses.

Quality of facilities and cost are the main weaknesses of tertiary institutions; length of studies, teaching quality, and teacher qualifications are generally seen as strengths. Although the research capacity of universities is generally seen as a strength, universities have weak labor market relevance and adaptability, while the opposite is generally true for technical institutes and postsecondary institutions. Tertiary-level educational institutions include universities, technical institutes, and postsecondary institutions. In table 4.2, employers judged all these tertiary institutions to be strong in the length of studies, teaching quality, and teacher qualifications, but cited poor facilities and costs as their weaknesses. Other strengths of universities included their research capacity and the breadth of fields covered; universities were also judged to be weak in their labor market relevance (including the provision of noncognitive generic and technical skills), industry links, and ability to adapt to labor market needs. In contrast, tertiary-level technical institutes and postsecondary institutions tended to be stronger in their labor market relevance, adaptability, and industry links, and weaker in their research capacity and limited coverage of fields of study.

Although more expensive, private training providers are generally preferred to public ones. Finally, employers were asked about the strengths and weaknesses of public and private training institutes to which they send their employees for training. Their responses, reported in table 4.3, suggest that the principal strength of public training institutions is the low cost of sending an employee from the firm to be trained by them, followed by the relevance of their courses. By contrast, firms ranked the

principal strength of private training institutions to be their efficiently run and relevant training courses, followed by their high-tech facilities and government cofunding. As weaknesses, firms judged public institutions to offer trainees limited opportunities for discussion and noted the lack of materials and equipment. The principal and by far the most important limitation of private training institutions was their limited budgets, and by implication, the high cost of their training. While there is likely much heterogeneity among private training providers, one may assume that among the fairly good private providers, these perceptions hold.

These assessments of strengths and weaknesses of public versus private sector training organizations are consistent with employers' higher rankings of the quality of training provided to their employees. Their higher cost notwithstanding, employers appear to prefer private sector providers over public training institutions, judging the quality of their graduates to be higher because of the high-tech facilities and the efficiency and relevance of private sector training, as compared with the quality of public sector training with poor pedagogy, lack of materials and equipment, and crowded facilities.

Education and training institutions have different strengths and weaknesses, which largely contribute to the set of skills and skills gaps of the workforce. A further review of some of these levels and institutions is needed to enrich the diagnostic and provide policy recommendations on how to improve their relevance to labor market needs.

CHAPTER 5

In-Depth Analysis of Four Key Pillars of the Supply of Skills

This section discusses in more depth the supply of skills in the Philippines and the institutions that give rise to them. It assesses how the country's education and training system is performing, leading to a proposed menu of options to make it more responsive to growing labor market needs.

The first section of this chapter discusses the structure, governance, and basic outcomes of the higher education subsector and describes its main challenges and constraints in terms of improving its quality and relevance. The next section reviews the Philippines's rapidly expanding system of technical and vocational education and training (TVET) and examines its place in providing the country's workforce with adequate and relevant skills. The third section briefly summarizes the state of the country's Alternative Learning Systems (ALSs) as well as their effectiveness in allowing workers to update and improve their skills. The final section of this chapter reviews existing postemployment training practices with focus on firms. On the basis of this discussion, chapter 6 will identify a menu of possible options to improve the responsiveness of the country's education and training systems.

The Higher Education Subsector[1]

Demand for higher education has been increasing in the Philippines, particularly in the services sector; but at the same time the quality and relevance of universities is very much in question, as pointed out by employers. We describe below the structure, governance and financing, basic outcomes, quality, and relevance of the higher education system in the Philippines with the purpose of deriving some useful policy recommendations for improving the higher education system.

Structure

Higher education in the Philippines is notable for its high private sector participation. As of 2007, about 70 percent of all higher education institutions (HEIs) in the country were private. Along with Brazil, Chile, Colombia, and the Republic of Korea, the Philippines has one of the highest private sector participation rates in the world. Private institutions in the Philippines can be divided into roughly two broad categories: sectarian and nonsectarian. Sectarian institutions are private and nonprofit and aim to provide high-quality instruction. They are characterized by small student-teacher ratios, selective admissions, low enrollment, high tuition fees, and usually large grant funding from private religious organizations. As the name suggests, they are usually owned and operated by private religious organizations. Nonsectarian institutions, on the other hand, are for-profit and owned and operated by private entities that are not affiliated with religion. They cater to the mass market and are characterized by larger student-teacher ratios, less-selective admission, high enrollment, and low tuition fees. About 71 percent of all private HEIs in the country are nonsectarian, and the number of nonsectarian institutions has almost doubled in the last 12 years. This growth has been largely attributable to the easing of the procedures for establishing schools, as directed by the 1992 *Manual of Regulations for Private Schools*. The growth of sectarian institutions, however, has been far slower. Since 1994–1995, the growth rate has been 12 percent.

Despite the strong presence of the private sector in higher education, the number of public sector HEIs has gradually increased over the last decade, although government directives have limited the growth of several types of public institutions. In the Philippines, public sector HEIs can broadly be classified into three categories: state universities and colleges (SUCs), institutions that are supervised by the country's Commission on Higher Education (CHED) or Commission of Supervised Institutions (CSIs), and

local universities and colleges (LUCs). SUCs are chartered by law and administered and subsidized by the national government. CSIs are also supported financially by the national government, but are nonchartered. LUCs are established, administered, and supported financially by local government bodies. CHED commissioned a study in 2005 ranking the top 20 universities in the country. While the majority of the universities ranked in the top 20 (based on national board examination performance) were private, the top two universities were public: the University of the Philippines-Diliman and the University of Santo-Thomas.

In 1999 the government issued a moratorium on the establishment of SUCs; as a result, while the number of SUCs in and of themselves has not changed, many satellite campuses of SUCs have been established. At the end of 2007, there were 110 main SUCs, with 326 total satellite campuses. The number of CSIs, on the other hand, has significantly decreased since 1995 on account of government efforts to merge most CSIs with SUCs. In 2002, only 1 CSI remained in the country. The devolution of local services has led to an expansion of LUCs, however; they have increased from 28 in 1994–1995 to 70 in 2007. Table 5.1 provides further details about the numbers of HEIs operating in the country.

Governance and Financing

The governance arrangements of HEIs in the Philippines are complex, with the CHED as the main administrative and supervisory body. In 1991 the Congressional Education Commission divided administrative and supervisory responsibilities of the education sector among three bodies: the Department of Education oversees basic education; TESDA oversees technical and vocational training at the postsecondary level; and the CHED oversees public and private HEIs, as well as degree-granting programs in all postsecondary education.

Pursuant to RA 7722, the CHED was officially mandated to undertake the following tasks:

- Promote quality education
- Take appropriate steps to ensure that education shall be accessible to all
- Ensure and protect academic freedom for continuing intellectual growth, the advancement of learning and research, the development of responsible and effective leadership, the education of high-level professionals, and the enrichment of historical and cultural heritage[2]

Table 5.1 Distribution of Higher Education Institutions by Region, Sector, and Institutional Type
(as of December 31, 2007)

	PUBLIC								PRIVATE			GRAND TOTAL	
	SUCs						TOTAL (Public)						
Region	Main	Satellite campus	CSI	LUCs	Other gov't schools	Special HEIs	With SUCs satellites	W/O SUCs satellites	Non-sectarian	Sectarian	Total (private)	With SUCs satellites	W/O SUCs satellites
I	5	21	–	2	–	–	28	7	69	11	80	108	87
II	5	16	–	1	–	–	22	6	41	7	48	70	54
III	12	30	–	4	1	–	47	17	154	23	177	224	194
IVA (Calabarzon)	5	50	–	10	–	1	66	16	145	53	198	264	214
IVB (Mimaropa)	6	39	–	1	–	–	46	7	29	5	34	80	41
V	8	21	–	15	–	–	44	23	82	13	95	139	118
VI	11	44	–	9	1	–	65	21	42	30	72	137	93
VII	5	22	–	3	–	–	30	8	92	20	112	142	120
VIM	11	27	–	1	1	–	40	13	38	17	55	95	68
IX	5	7	–	–	–	–	12	5	34	14	48	60	53
X	6	7	–	5	–	–	18	11	46	16	62	80	73
XI	4	6	–	2	–	–	12	6	53	20	73	85	79

XII	4	5	–	–	1	–	10	5	49	15	64	74	69
NCR	8	6	–	16	–	3	33	27	237	39	276	309	303
CAR	6	12	–	–	–	1	19	7	26	5	31	50	38
ARMM	5	4	1	–	6	–	16	12	46	2	48	64	60
CARAGA	4	9	–	1	–	–	14	5	32	9	41	55	46
Grand total	110	326	1	70	10	5	522	1961	1,215	299	1,514	2,036	1,710
% of total (w/ SUCs satellites)	5	16	0	3	0	0	26	–	60	15	74	100	–
% of total (w/o SUCs satellites)	6	–	0	4	1	0	–	11	71	17	89	–	100
2002 Total	111		1	42	12	4		170	963	319	1,282		1,452
% of total	7.6	–	0.1	2.9	0.8	0.3	–	1.7	66.3	22.0	88.3	–	100
1994–95	97		110	28			235	235	684	266	950	1,185	1,185
% to Total	8.2		9.3	2.4			19.8	19.8	57.7	22.4	80.2	100	100

Source: CHED.
Notes: SUCs= state universities and colleges; LUCs = local universities and colleges; CSIs = CHED supervised institution.

In practice, this means that the CHED develops plans, policies, and programs on higher education and research; creates and enforces minimum standards for programs and institutions; recommends the allocation of resources to institutions and programs; and monitors the overall performance of the higher education system. Since 2007, the CHED has begun working with the Professional Regulation Commission to coordinate the regulation and licensure practices of HEIs.

There are some distinctions in terms of how the CHED provides governance to public and private institutions. Public HEIs, while being financially supported by the government, can retain all generated income from tuition and service fees. Private HEIs can be granted autonomous and deregulated status by the CHED.[3] This status confers several privileges, primarily being exempted from regular CHED monitoring and evaluation, gaining priority in grants and incentives from the CHED, exercising autonomy over the curriculum, and having the ability to establish satellite campuses. As of 2004–2005, 40 HEIs were granted autonomous status (CHED *Statistical Bulletin* 2004–2005).

Governance arrangements for HEIs also affect the sources of funding for these institutions. As described previously, SUCs are largely financed by federal government subsidies. SUCs have historically received about 14 percent of the annual education budget. James (1991) calculated that subsidies accounted for about 88 percent of revenues for SUCs, while tuition fees accounted for 8 percent of revenues. More recent data confirm that SUCs still receive the bulk of their revenue through federal subsidies, but this has become a declining share of their funding, as tuition and service fees are providing more revenue for SUCs. Table 5.2 provides further detail.

Aggregate figures obscure the range of variation in the financing structure of different SUCs. Examination of the 2006 revenue data from the Commission on Audit (COA 2006) of a select set of SUCs shows that the proportion of subsidies to total annual income ranged from about 69 percent to as much as 81 percent for a small state college, about 71 percent for a large SUC outside Metro Manila, and more than 75 percent for a large/premier SUC in Metro Manila. Continuing with these trends, there is also wide variation in the effectiveness of cost recovery, as tuition fees as a percentage of revenue vary from 3 percent for some institutions to 20 percent for others.

LUCs also heavily rely on government subsidies for their revenue. While figures vary across institutions, subsidies from urban areas represent 93 percent of total revenue for some LUCs, while for other LUCs, tuition

Table 5.2 Income and Expenses, SUCs
(in thousand pesos)

	2006		*2004*		*2002*	
	Level	*%*	*Level*	*%*	*Level*	*%*
Revenues	24,728,747.21	100.0	21,859,621.80	100.0	19,785,721.50	100.0
Subsidy from national govt	18,125,302.08	73.3	16,910,568.00	77.4	16,685,771.60	84.3
Income	6,603,445.13	26.7	4,949,053.80	22.6	3,099,949.90	15.7
Tuition fees	2,812,526.98	11.4	1,965,776.10	9.0	1,091,229.80	5.5
Grants and donations	306,800.47	1.2	534,671.10	2.4	95,882.70	0.5
Other income	3,484,117.68	14.1	2,448,606.60	11.2	1,912,837.40	9.7
Operating expenses	22,996,334.41	100.0	20,864,120.60	100.0	18,513,262.90	100.0
Personnel services	16,886,332.95	73.4	15,583,810.60	74.7	14,780,121.40	79.8
MOOE	6,055,429.73	26.3	5,237,146.00	25.1	3,702,984.30	20.0
Financial expenses	54,571.73	0.2	43,164.00	0.2	30,157.20	0.2
Net income/(loss)	1,732,412.80		995,501.20		1,272,458.60	

Source: Commission on Audit, Annual Financial Reports.

fees generate approximately 26 percent of revenue. Table 5.3 provides additional figures.

Finally, private HEIs in the Philippines are relying less on tuition fees as a source of income and more on capital investments and contributions. Medium-size private sectarian institutions, for example, generated only 69.1 percent of their revenue from tuition fees and a large degree of funding from private religious organizations.

Basic Outcomes

Student enrollment in higher education has risen dramatically since 1970 to a large extent through expanded capacity in the public sector. As the proliferation of satellite campuses has spread throughout the country to simultaneously cope with demand and satisfy Philippine law limiting the expansion of public HEIs, so too has student enrollment expanded. Table 5.4 provides historical information on enrollment in both public and private HEIs. Almost two-thirds of those pursuing higher education in the country do so in private institutions, a decline from the almost 90 percent who studied in private HEIs in 1970. The increasing trend of enrollment in public universities and colleges roughly correlates with the supply of public institutions in the country: from about 10 percent in 1970, public institutions now account for about 33 percent of all HEIs in operation. In terms of absolute numbers, the total number of students enrolled in tertiary

Table 5.3 Revenue, Expenditure, and Asset Structure of LUCs
(pesos - different units)

	Local Univ., MM (2000)		*Local Univ., MM (1999)*	
Total income (millions)	150.59	100.0	199.98	100.0
Subsidy from LGU	139.72	92.8	148.00	74.0
Tuition and fees	10.87	7.2	51.98	26.0
Other income			0.00	0.0
Total expenses (millions)	139.72	100.0	158.53	100.0
Personnel services	116.71	83.5	na	na
MOOE	21.99	15.7	na	na
Financial expenses		0.0	na	na
Capital outlay	1.02		na	na
Income over expenses	10.87		41.45	
Total assets (millions)	na		386.95	
Physical assets	na		na	
Per student cost	18,211		17,497	
Asset per student	na		42,707	
Physical assets per student	na		na	
Enrollment	7,616		18,121	

Source: Commission on Audit, Audit Reports.

Table 5.4 Tertiary Enrollment in Government and Private Schools, School Years 1970–71 to 2005–06

	Tertiary		
School year	*Total ('000)*	*Govt. (%)*	*Private (%)*
1970–71	651	10.3	89.7
1975–76	772	13.7	86.3
1980–81	1,254	14.8	85.2
1985–86	1,402	14.9	85.1
1990–91	1,709	14.8	85.2
1995–96	2,018	24.2	75.8
1996–97	2,061	26.7	73.3
1997–98	2,068	26.3	73.7
1998–99	2,279	28.8	71.2
1999–2000	2,373	30.2	69.8
2000–01	2,431	31.7	68.3
2001–02	2,466	32.8	67.2
2002–03	2,427	33.6	66.4
2003–04	2,421	34.3	65.7
2004–05	2,408	34.3	65.7
2005–06	2,484	34.2	65.8

Source: CHED 2006. *Philippine Statistical Bulletin*

education has risen almost fourfold since 1970, reflecting the increased demand for higher education.

When observing which types of public and private institutions students are enrolling in, an evident trend is that students are enrolling in SUCs in ever-growing numbers. In 1994–1995, 19 percent of students were enrolled in SUCs; in 2005–2006, 31 percent of students were. Enrollment in LUCs still accounts for a very small, though still increasing, proportion of total enrollment (from 1 percent in 1994–1995 to 3.6 percent in 2005–2006). LUCs also compose a very small share of total institutions. Since CSIs have been merged into other public institutions, and only one remains in operation, enrollment is miniscule.

Understandably, relative enrollments in private universities and colleges have declined over time, as has the share of private institutions. Rapid declines in relative enrollments can be seen among sectarian institutions. In 1995–1996, sectarian institutions accounted for 25.6 percent of enrollment; in 2005–2006, they accounted for only 15 percent. There has been only a slight decline in the share of students enrolled in nonsectarian institutions: from 53.1 percent in 1994–1995 to 51 percent in 2005–2006.

As expected, the trends for graduates follow a similar narrative. The share of graduates from private institutions fell from 78.4 percent in 1994–1995 to 65.8 percent in 2005–2006. The proportion of students graduating from sectarian institutions fell from 24 percent in 1994–1995 to 15 percent in 2005–2006, while those graduating from nonsectarian institutions fell from 54.5 percent to 50.8 percent during the same period. Table 5.5 provides further information.

Over the past 10 years, the most popular disciplines for graduates remain business administration, medicine, education and teacher training, engineering, and mathematics and computer science. While business administration is the most popular field of choice for graduates, the proportion of graduates from this field has declined over the last 10 years, from 27.4 percent in 1994–1995 to 25.2 percent in 2004–2005. About 15.1 percent of students graduate with degrees in medicine or allied fields, a slight decrease from the 15.9 percent in 1994–1995. Teacher training has increased its share of enrolled students and graduates over the last decade, as has the field of mathematics and computer science. Further information about other disciplines is given in table 5.6.

While the GER is about average by regional standards (although its relation to its regional neighbors has somewhat deteriorated over time and now lags after Mongolia and Thailand), data indicate that there are significant disparities in attendance rates by wealth, area, and gender. Recent data from

Table 5.5 Institutions, Enrollment, and Graduates by Institutional Type and Academic Year

Institutional Type	1994–1995						2005–2006					
	Institutions*		Enrollment		Graduates		Institutions**		Enrollment		Graduates	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Philippines	**1,185**	**100.0**	**1,871,647**	**100.0**	**312,667**	**100.0**	**1,943**	**100.0**	**2,483,645**	**100.00**	**389,568**	**100.0**
Public	**235**	**19.8**	**399,623**	**21.4**	**67,499**	**21.6**	**451**	**23.2**	**849,555**	**34.21**	**125,319**	**32.2**
SUCs	97	8.2	355,430	19.0	58,536	18.7	371	19.1	754,448	30.38	110,281	28.3
LUCs	28	2.4	18,165	1.0	3,593	1.1	65	3.3	89,315	3.60	14,078	3.6
CSIs	110	9.3	26,028	1.4	5,370	1.7	1	0.1	130	0.01	0	0.0
OGS***			–	–	0	–	14	0.7	5,662	0.23	960	0.2
Private	**950**	**80.2**	**1,472,024**	**78.6**	**245,168**	**78.4**	**1,492**	**76.8**	**1,634,090**	**65.79**	**264,249**	**67.8**
Sectarian	684	57.7	478,279	25.6	74,799	23.9	1134	58.4	372,730	15.01	64,373	16.5
Nonsectarian	266	22.4	993,745	53.1	170,369	54.5	358	18.4	1,261,360	50.79	199,876	51.3

Source: CHED, various years

Notes: * Main campus only.

**With satellite, campus.

*** OGS is Other Government Schools and enrollment includes Special Schools.

Table 5.6 Enrollment and Graduates, by Discipline Group

	Enrollment				*Graduates*			
	1994–95		*2004–05*		*1994–1995*		*2004–2005*	
Discipline Group	*Number*	*%*	*Number*	*%*	*Number*	*%*	*Number*	*%*
Agricultural, forestry, fisheries, vet med.	59,400	3.2	70,824	2.9	12,178	3.9	12,719	3.1
Architectural and Town Planning	21,665	1.2	23,225	1.0	1,947	0.6	2,810	0.7
Business Admin, and Related	545,982	29.2	516,928	21.5	85,781	27.4	103,421	25.2
Education and Teacher Training	236,464	12.6	366,941	15.3	43,674	14.0	70,193	17.1
Engineering and technology	287,821	15.4	321,660	13.4	46,090	14.7	51,700	12.6
Fine and applied arts	8,266	0.4	12,221	0.5	655	0.2	1,727	0.4
General	113,286	6.1	34,234	1.4	13,370	4.3	3,910	1.0
Home economics	2,577	0.1	5,342	0.2	362	0.1	1,196	0.3
Humanities	6,105	0.3	26,956	1.1	507	0.2	4,833	1.2
Law and jurisprudence	14,950	0.8	19,539	0.8	2,111	0.7	3,980	1.0
Mass communication and documentation	10,614	0.6	25,299	1.1	937	0.3	5,086	1.2
Mathematics and computer science	97,853	5.2	240,178	10.0	21,338	6.8	39,980	9.8
Medical and allied	274,941	14.7	445,729	18.6	49,802	15.9	61,951	15.1
Natural science	18,475	1.0	23,458	1.0	2,134	0.7	4,288	1.0
Religion and Theology	7,713	0.4	7,892	0.3	1,088	0.3	1,670	0.4
Service trades	7,134	0.4	13,878	0.6	626	0.2	1,864	0.5
Social and behavioral science	27,158	1.5	66,490	2.8	2,703	0.9	13,315	3.2
Trade, craft and industrial	195	0.0	14,946	0.6	14	0.0	–	0.0
Other disciplines	131,048	7.0	166,575	6.9	27,350	8.7	25,081	6.1
Grand total	1,871,647	100.0	2,402,315	100.0	312,667	100.0	409,724	100.0

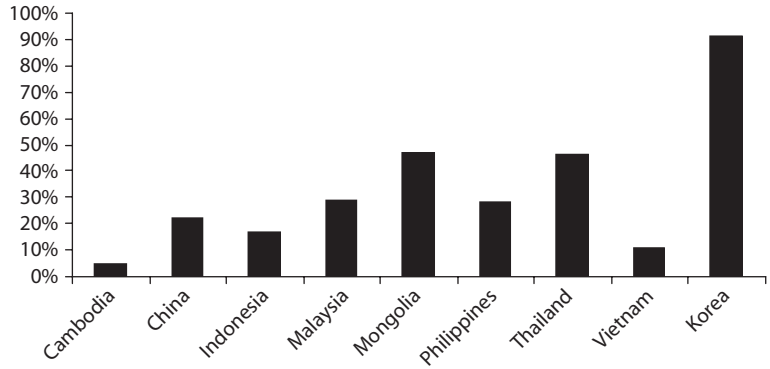
Source: CHED, various years.

the UNESCO Institute of Statistics (UIS) confirm a GER of about 28 percent in higher education in the Philippines, which is about average in the regional East Asian context (see figure 5.1), but higher than what is observed in economies of other countries with income similar to that of the Philippines. However, this average GER hides significant disparities in attendance rates by income, area, and gender. A background study used merged LFS and FIES data in 1988 and 2006 to examine school attendance by income decile, showing significant disparity of attendance at the tertiary level across income groups. In the case of the 2006 round, for instance, attendance rates for the poorest households was 24 percent, while that for the richest households was 46 percent. This disparity appears to have worsened across time and is most likely explained by differences in income.

The same study found that while females overall have higher attendance rates than males in tertiary education, there is significant variation across income deciles: females have higher attendance rates than males only until the seventh income decile. The same data set also indicated that higher attendance rates are higher in urban areas than in rural areas (37 percent compared with 32 percent), although higher attendance rates can be found among those in rural areas who are in higher income deciles.

In terms of affordability, higher education is beyond the means of most Filipino families. The effects of financial assistance instruments are limited. Since tertiary education is largely provided by private institutions that charge tuition fees, average costs are high. When surveying average costs of higher education and comparing it to GDP per capita, numerous

Figure 5.1 GER in Higher Education in East Asia, 2006



Sources: UIS (Malaysia: Data from 2004); Vietnam: Data estimates from VHLSS 2004.

authors have found that, in effect, only the richest 30 percent of families in the country can truly afford higher education for their children when choosing public institutions, and only 10 percent can afford private higher education. The CHED administers the Private Education Student Financial Assistance (PESFA) scheme. PESFA provides financial assistance to incoming college freshmen who are currently enrolled or intend to enroll in any of the CHED-priority courses and whose family income does not exceed ₱120,000 per year. The program is implemented directly by CHED-authorized private HEIs. Over the last three years, financial support was set at a maximum of ₱7,250 per semester or about ₱15,000 per year to defray the cost of tuition and other school fees, books, and living allowance. PESFA's tuition subsidy is inversely related to family income. A student whose family income is ₱120,000, for instance, receives the maximum PESFA subsidy, which is far below the average cost of tuition, and hence many families still pay a substantial amount in tuition fees.

CHED's Study Now Pay Later Program (SNPLP) is a student loan program that is implemented through selected private HEIs. It is made available to eligible college or incoming freshmen students whose family income does not exceed ₱150,000 per year. The maximum loan amount is set at ₱7,250 per semester to cover tuition and other school fees. Recipients of SNPLP are required to repay their loans at 6 percent interest starting 13 months after graduation.

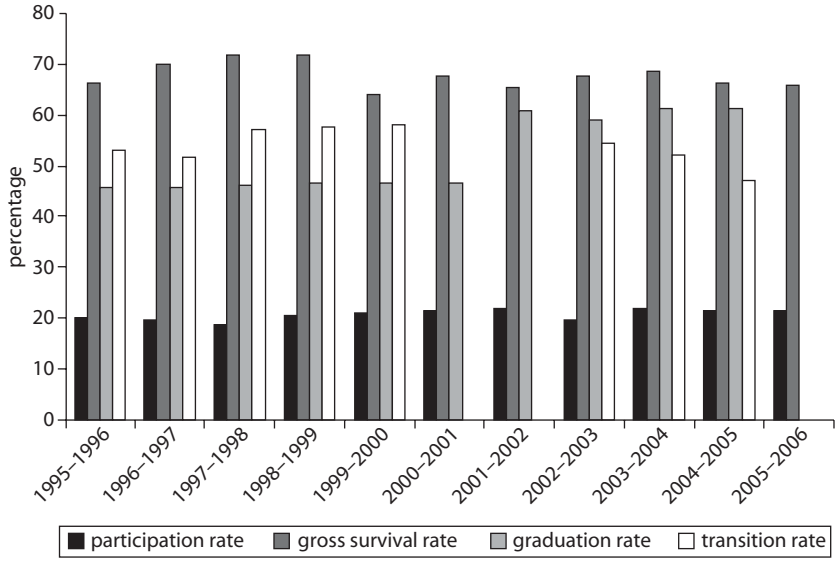
The scope and effect of both of these assistance programs is limited. Even the maximum subsidies for each program fail to cover the full cost of tuition, let alone living expenses. Moreover, coverage of this financial assistance scheme is limited: in 2005–2006 PESFA and SNPLP covered less than 3 percent of the tertiary student population. The employer survey also cited the excessive cost of tertiary education as the number one weakness of universities in the Philippines.

Quality

While there is debate about how quality of education, and particularly quality of higher education, should be measured, one can gain insight into the quality of Filipino HEIs by examining several useful complementary indicators on the supply side: the internal efficiency of the higher education sector, as measured by indicators such as the gross survival rate and graduation rate; the passing rate in professional board examinations; the qualifications of teachers; the quality of instructional facilities; and the quality-assurance mechanism.

Performance is mixed on key internal efficiency indicators, but the graduation rate has been improving significantly over these past 10 years. Beyond the GER, which was about 21 percent in 2005–2006 (but currently significantly more than that, according to the latest estimations, and higher than what is observed in economies of similar income as the Philippines), figure 5.2 shows key internal efficiency indicators of the higher education sector, where performance is mixed. For instance, more than half of high school graduates enroll in college education, which is quite a high transition rate, but the number appears to be declining in recent years; perhaps this is indicative of rising financial barriers and the increasing share of those entering the TVET sector. Similarly, the proportion of students who were able to reach the final years of the tertiary education cycle is apparently also declining, from more than 70 percent in 1996–1997 to 65 percent by 2005–2006. On the other hand, however, a welcome development is that the proportion of college entrants who are able to graduate is rising from 46 percent in 1996–1997 to 61 percent in 2004–2005, resulting in an overall increase in the proportion of high school graduates graduating from tertiary education despite the two previous decreasing trends. An open question is if the higher graduation

Figure 5.2 Higher Education Performance Indicators, 1995–1996 to 2005–06



Source: CHED, various years.

rates are reflecting a higher quality of graduates and institutions or lower graduation requirements.

Pass rates for professional board certifications have been declining over time, suggesting that the quality of higher education graduates may be decreasing in the Philippines, but could also reflect overregulation of certain professions. While it can be another crude indicator of quality, historical data on the pass rate for professional board certifications can provide useful insights on the quality of higher education graduates. Table 5.7 provides historical data on the pass rates in more than 40 different licensure examinations from 1985 to 2005. Passing rates are low across all professions and have declined over time. The overall average pass rate has declined from 45 percent in 1985 to about 35 percent in 2005. About one out of every three fields has pass rates below the overall average, with some fields as low as 9 percent. Customs brokerage and accounting have consistently had low pass rates, while medicine, engineering, mining, and natural sciences have historically had higher pass rates. There is also wide variation in pass rates by institutions. Some have very high pass rates, but a majority has low pass rates, and some even have a zero pass rate. The decline in pass rates is likely a combination of a decline in the quality of education provided by Filipino HEIs, a rise in the expected standard of competence, and overregulation of some professions with little connection to labor market needs.

When examining the quality of indicators of educational inputs, it is clear that the Philippines needs to improve the qualifications of its teachers. Most faculty members in HEIs do not have graduate degrees: in 2004–2005, only 31 percent had master's degrees, and only 9 percent had doctoral degrees, signifying only a 7 percent rise since 1997–1998 in the percentage of higher education faculty that who have the necessary qualifications. While the proportion of faculty with doctoral degrees is indeed very low, it is fair to note that they are needed only in comprehensive universities that conduct advanced research and have a postgraduate program. The proportion of faculty with graduate degrees is much higher in public universities than in private ones (table 5.8). The relative lack of qualifications among tertiary faculty is likely the result of a combination of factors. First, many lower-level schools were upgraded to HEIs and had faculty only fit to instruct at the secondary level. This has not only led to faculty with low levels of qualification and hence institutions of lower quality, but also provided a signaling mechansim of poor quality to the labor market. Second, low compensation of faculty members does not make teaching at the tertiary level particularly attractive, and hence is a disincentive to pursue graduate education.

Table 5.7 Number of Examinees and Qualifiers in Licensure Examinations, by Calendar Year

	1985			1996			2000			2005		
	No. of	Qualifiers		No. of	Qualifiers		No. of	Qualifiers		No. of	Qualifiers	
Licensure Examination	Examinees	Number	%	Examinees	Number	%	Examinees	Number	%	Examinees	Number	%
Accountancy	21,357	4,485	21.0	8,304	1,427	17.2	14,073	2,648	18.8	5,222	1,242	23.8
Aeronautical engineering	130	35	27.0	106	22	20.8	116	32	27.6			
Agricultural engineering	591	136	23.0	331	191	57.7	535	280	52.3			
Architecture	1,416	623	44.0	1,645	601	36.5	2,329	725	31.1	2,454	1,091	44.5
Interior design	38	32	84.0	76	30	39.5	125	81	64.8			
Landscape architecture	5	5	100.0	9	6	66.7	12	7	58.3	29	12	41. 4
Chemical engineering	1,980	911	46.0	1,156	363	31.4	1,218	536	44.0	459	229	49.9
Chemistry	554	205	37.0	341	134	39.3	530	234	44.2			
Civil engineering	12,253	5,575	46.0	9,340	3,171	34.0	9,298	2,800	30.1	3,265	1,166	35.7
Criminology				1,689	814	48.2	5,604	2,532	45.2	4,811	1,487	30.9
Customs broker				1,152	123	10.7	1,651	150	9.1			
Dentistry	2,873	1,566	55.0	4,897	1,516	31.0	3,489	1,329	38.1	2,772	971	35.0
Electrical engineering	3,834	2,818	74.0	4,507	1,329	29.5	4,201	1,667	39.7	3,330	1,411	42.4
Electronics and communication eng'g	1,259	403	32.0	3,667	1,693	46.2	5,304	2,337	44.1	2574	864	33.6
Forestry				989	320	32.4	544	645	118.6	561	197	35.1
Geodetic engineering	853	354	42.0	451	179	39.7	600	263	43.8	365	365	100.0
Geology	110	74	67.0	25	17	68.0	47	33	70.2	50	39	78.0
Library science				419	186	44.4	622	331	53.2	105	105	100.0
Marine deck officers				4,240	978	23.1	7,376	2,993	40.6			
Marine engineering				4,992	1,715	34.4	4,277	2,508	58.6			
Mechanical engineering	4,884	2,100	43.0	4,791	1,602	33.4	4,069	1,923	47.3	1,468	667	45.4

Medical technology				2,976	1,032	34.7	3,608	1,890	52.4	1,396	682	48.9
Medicine (physician)	3,790	1,895	50.0	2,969	2,225	74.9	3,366	2,189	65.0	1,990	1,084	54.5
Metallurgical engineering	35	17	48.0	40	21	52.5	31	20	64.5	59	35	59.3
Midwifery	5,323	2,475	47.0	8,725	4,515	51.7	2,697	1,398	51.8	2,063	1,098	53.2
Mining engineering	174	73	42.0	39	12	30.8	39	30	76.9	33	25	75.8
Naval architecture and naval eng'g	58	23	40.0	14	5	35.7	28	18	64.3			
Nursing	4,688	3,094	66.0	25,206	13,658	54.2	9,271	4,602	49.6	26,000	12,843	49.4
Nutrition and dietetics	943	330	35.0	878	490	55.8	634	349	55.0	470	235	50.0
Optometry	500	265	53.0	536	293	54.7	456	70	15.4	103	74	71.8
Pharmacy	780	476	61.0	2,081	1,170	56.2	2,670	1,681	63.0	2,907	1,629	56.0
Physical therapy				2,657	775	29.2	9,450	2,354	24.9	3,431	1,059	
Occupational therapy				145	38	26.2	714	251	35.2		126	
Radiologic technology				1,172	530	45.2	971	357	36.8	514	182	35.4
Sanitary engineering	–	–	51.0	78	40	51.3	105	53	50.5	34	10	29.4
Social work	625	425	68.0	1,000	568	56.8	1,323	770	58.2	1,152	597	51.8
Veterinary medicine	504	287	57.0	385	173	44.9	442	207	46.8			
Law (bar exam)**	2,719	707	26.0	3900	1,217	31.2				5,607	1,526	27.2
Teacher exam (PBET)***				97,560	26,830	27.5	123,499	44,100	35.7	128,909	34,462	26.7
Total	72,276	29,389	40.7	203,488	70,009	34.4	225,324	84,393	37.5	202,133	65,513	32.4

Sources: PRC; 1985 to 2000 data taken from the Philippine Regulation Commission, Manila; Philippine Statistical Yearbook, NSCB *Supreme Court, Manila ***Civil Service Commission, Quezon City EDCOMM.

2002 to 2005 data taken from http://www.gov.ph/cat_education/prcexam_2002.asp.

2002 to 2005 data taken from the **Philippine daily Inquirer website.

2002 to 2005 data ***Refers to elementary and secondary teachers. Exam results for the year 2005 was taken from the Manila Standard online newspaper.

Note:: Teacher Exam for the year 2000 refers TO elementary and secondary. Figures for 1985 and 1989 are from EDCOMM.

Table 5.8 Higher Education Faculty by Highest Educational Credential, Sector, 2004–05

	Public		*Private*		*Total*	
Highest Educational Credential	*No*	*%*	*Total*	*%*	*Total*	*%*
Baccalaureate[a]	19,428	54.1	47,614	63.2	67,042	60.3
Master's	11,869	33.1	22,209	29.5	34,078	30.6
Doctorate	4,587	12.8	5,518	7.3	10,105	9.1
Total	35,884	100.0	75,341	100.0	111,225	100.0

Source: CHED.
Note: [a.] Includes baccalaureate and lower.

In terms of instructional facilities in HEIs, such as library resources and instructional laboratories, there is a dearth of information, but the existing evidence points to some serious deficiencies in the quality of facilities, as also highlighted in our employers' survey. Though the Philippine Association of Academic and Research Librarians issued a set of detailed guidelines for HEIs interested in developing these facilities, there is no systematic monitoring and evaluation of facilities. Dated secondary studies do not paint an encouraging picture: a 1984 paper surveying libraries in HEIs in the Philippines noted small library collections and a low utilization rate of zero to five borrowings per year across selected universities.

Finally, the quality assurance system for higher education in the Philippines has several components that may help improve the quality of the system if working adequately. (Accreditation is still too little used.) Overall, however, the system still focuses too little on competencies and outcomes. One quality assurance component is that, by law,[4] all program curricula need to be recognized and approved by the CHED. To implement this, the CHED employs a Technical Panel to review the curriculum of program offerings. Another component is the identification of Centers of Excellence (COEs) and Centers of Development for each specific field to serve as banner institutions in the development of manpower and instructional materials and methodologies for that specific field. Finally, the CHED also recognizes the role of independent accreditation bodies, which already have a long history of reviewing programs under the spirit of self-regulation among higher education institutions.[5] Despite the long history of accreditation in the country, the extent of accreditation has been low. As of 2007, fewer than 20 percent of HEIs have at least one program accredited, and more than 65 percent of the 958 accredited programs are at most Level 2.[6] Finally, a weakness of the overall current quality-assurance approach is the focus on inputs and units rather than on

competencies and outcomes, which constrains the development of a broader skill-development framework.

Relevance

One of the best tests of quality of higher education is relevance to labor market needs, and we have seen above that employers face difficulties finding the right skills to fill highly skilled vacancies. Employers, especially in the services sector, attribute this difficulty to a significant extent to issues with the quality of education and training. The evidence below confirms these findings.

In terms of evaluating the skills of the labor force, data show that the average educational qualification of the labor force is indeed rising, but the percentage of unemployed with tertiary education has also been increasing. Mirroring the rise in enrollment and completion of higher education, the percentage of the labor force with some college education rose from 19 percent in 1985 to 27 percent in 2005. Likewise the percentage of those employed with some college education also rose: from 18 percent in 1985 to 26 percent in 2005. However, the percentage of those who are unemployed who have some college education has risen even more quickly in recent years: from 30.51 percent in 1990 to 38.91 percent in 2005. This proportion is much higher than other countries in East Asia;[7] however, it also reflects high levels of tertiary education graduates. The trend has been particularly sharp among females (table 5.9).

Unemployment among higher education graduates is higher than average unemployment for the Philippines as a whole and probably higher than average in the East Asia region. Historically, over the last 30 years, employment rates for college graduates have been slightly lower than overall employment rates, and unemployment rates for these graduates have been slightly higher than overall unemployment rates (table 5.10). The trend holds for both males and females. Unfortunately, lack of comparable data on labor force participants with tertiary education across Asian

Table 5.9 Percentage of College Graduates in the Labor Force, Employed and Unemployed, by Sex, 1985–2005

	Employed					*Unemployed*					*Labor Force*				
	1985	*1990*	*1995*	*2000*	*2005*	*1985*	*1990*	*1995*	*2000*	*2005*	*1985*	*1990*	*1995*	*2000*	*2005*
Both sexes	17.92	20.45	21.27	23.50	26.31	39.54	30.51	31.07	31.55	38.91	19.23	21.27	22.09	24.32	27.24
Mal	15.14	17.01	18.21	19.94	22.67	39.72	26.27	27.25	28.58	35.57	16.3	17.7	18.9	20.8	23.6
Female	22.61	26.47	26.47	29.35	32.12	39.37	35.72	36.44	36.68	44.30	23.97	27.38	27.41	30.08	33.01

Sources: LFS, NSO, various years.

Table 5.10 Employment and Unemployment Status of College Graduates, 1988, 1995, 2000, and 2005

	1988		1995		2000		2005	
	College Grad or more	Total	College Grad or more	Total	College Grad or more	Total	College Grad or more	Total
Both sexes								
Employed	90.7	94.9	92.9	95.4	91.0	93.7	86.8	89.7
Unemployed	9.3	5.1	7.1	4.6	9.0	6.3	13.2	10.3
Underemployed[a]	8.8	32.9	10.0	33.5	12.6	35.0	13.9	37.3
Male								
Employed	92.2	96.3	94.7	96.8	89.7	93.7	85.1	89.9
Unemployed	7.8	3.7	5.4	3.2	10.3	6.3	14.9	10.1
Underemployed[a]	10.2	30.3	10.7	31.0	15.3	33.8	16.0	36.6
Female								
Employed	89.6	92.5	91.7	93.3	92.1	93.7	88.2	89.5
Unemployed	10.4	7.5	8.3	6.7	7.9	6.3	11.8	10.5
Underemployed\[a]	7.8	37.3	9.5	37.7	10.6	36.8	12.3	38.5

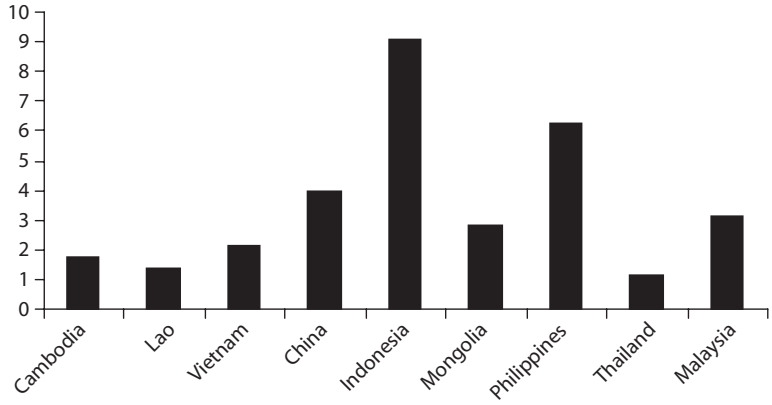
Sources: NSO LFS, various years.
Note: [a] Working fewer than 40 hours per week.

countries makes comparing unemployment rates for tertiary education graduates difficult—but a mere comparison of unemployment rates in the region (figure 5.3) places the Philippines as the country with the highest unemployment rate after Indonesia, suggesting serious unemployment issues for all education levels (including postsecondary, as we will see below).

One explanation for this trend may be the dualistic nature of the Filipino economy, where there are high-paying formal sector jobs and low-paying informal sector jobs. College-educated workers may tend to wait longer to find a formal sector opening, thus reflecting higher unemployment rates among their rank.

Another explanation can be related to the poor quality and relevance of the higher education system, combined with increasing professional standards. Only about 40 percent of graduates pass the professional board examinations. The reasons for this low pass rate are a mix of insufficient development of competencies in the professions and increasing professional standards. Thus, more than half of graduates end up not being able to practice the profession they were trained for. Some choose not to work (and instead wait for opportunities to emigrate). Others are unable to get hired (due to skills mismatch—see the skills gaps reported in the employer survey), get hired at the end of a long process (as illustrated by the time

Figure 5.3 Unemployment Rates in East Asian Countries
(most recent, in %)



Source: WDI, various years.

to fill skilled vacancies in the employer survey), or end up accepting jobs with lower qualifications (education upgrading within occupations, already happening in the services sector).

Related to the above there has been a decline in the overall quality of jobs held by college graduates. Along the line of accepting lower-qualification jobs, there has been a decline in terms of the distribution of college graduates across various professional and supervisory occupations over the last two decades, in some cases by almost 18 percent (table 5.11). When looking at administrative and managerial positions, there has been a rise by about 15 percent over the last 20 years or so in the number of college graduates holding these categories of jobs, but a decline in the proportion of college graduates holding clerical jobs. However, there does seem to be a decline in the overall quality of jobs that college graduates hold: a rising number of graduates are now in jobs that do not require a college degree.

When examining the data on underemployment in table 5.10, however, one can see a different trend among those who are college educated, with college graduates more likely to hold full-time jobs. Those who are college educated, both male and female, are underemployed at far lower rates than the overall population: 13.9 percent of college graduates were underemployed in 2005, compared with the total underemployment rate of 37.3 percent. Interestingly, male college graduates were slightly more underemployed than female college graduates. Thus the data suggest

Table 5.11 Distribution of Employed College Graduates by Major Occupations, 1985,1995, 2000, and 2005

	1988	*1995*	*2000*	*2005*
Both sexes				
Professional technical and related workers	44.1	40.6	36.9	38.4
Administrative, executive and managerial	4.7	6.8	8.7	20.6
Clerical	20.0	19.9	19.1	17.4
Sales	13.4	13.7	15.8	2.5
Service	4.2	4.4	5.3	9.6
Agriculture	5.6	6.1	5.4	4.9
Prod and related workers transport and equipment optr.	6.8	7.6	7.8	6.2
Others	0.9	0.8	0.8	0.4
Not reported	0.3	0.1	0.3	0.1
Male				
Professional technical and related workers	34.6	30.1	26.9	30.7
Administrative, executive and managerial	7.7	9.5	11.6	23.5
Clerical	13.8	14.6	14.1	11.0
Sales	13.6	13.5	14.2	2.5
Service	6.6	6.7	8.4	12.4
Agriculture	9.9	10.7	9.4	8.0
Prod and related workers transport and equipment optr.	11.3	13.2	13.6	11.0
Others	1.9	1.6	1.4	0.8
Not reported	0.5	0.2	0.4	0.1
Female				
Professional technical and related workers	51.7	48.6	44.6	44.6
Administrative, executive and managerial	2.2	4.8	6.4	18.2
Clerical	24.9	24.0	22.9	22.5
Sales	13.2	13.8	17.0	2.5
Service	2.3	2.6	3.0	7.3
Agriculture	2.2	2.6	2.4	0.0
Prod and related workers transport and equipment optr.	3.3	3.3	3.3	2.4
Others	0.0	0.2	0.3	0.1
Not reported	0.2	0.0	0.2	0.0

Sources: NSO, LFS various years.

that employed college graduates are more likely to hold full-time jobs than those without college degrees.

Another important developing trend is that there is a higher concentration of female college graduates who hold professional and technical positions than male college graduates. However, there are also a higher proportion of female college graduates who are employed in clerical positions.

When looking at which industries tertiary education graduates are entering, one observes a rising proportion of graduates entering the services sector, and a declining proportion entering agriculture and industry, with sustained demand in some key services where the supply of qualified workers may still be insufficient—findings that confirm the results of the employer survey. Transportation, storage and communications, finance and real estate, and wholesale and retail sectors are witnessing a steady rise in the number of college graduates employed within their ranks (table 5.12). While the distribution of fields of study seems to be fairly diversified in the Philippines, with adequate focus on business, finance, and engineering skills, the low ratio of pass rates at the professional examinations for business accounting, law, and some engineering fields may help explain why the demand for high-level skills in sectors such as trade, finance, insurance, business services, real estate, and transport and communications continues to rise. Financial intermediation, IT, call centers, and real estate (all industries where wage premiums for skilled workers is three to four times higher than for unskilled workers) may, in particular, face capacity constraints. At the same time, it seems clear that the medical-related professions are overly represented in a context where skill wage premiums in social services have been falling since 2000. However, as detailed above, graduates in these professions are looking very much at opportunities of employment in the overseas market.

Employers also highlight some skills gaps in their new hires and relevance-related weaknesses in universities. The employer survey has provided further evidence on employers' perceptions on the core and job-specific skills of their new skilled hires by stressing the importance of working independently, communications, problem-solving skills, and practical skills across the board. For managers, employers also value leadership, creativity, and the quality of the local degree. Employers also point to significant gaps in time management and initiative in managers and professionals. These noncognitive skills, then, need to be developed, and literature has highlighted the ways in which the education and training system can support the development of these skills in the labor force (Heckman and Lochner 1999). On average, higher education

Table 5.12 Distribution of Employed College Graduates by Industry, 1988,1995, 2000, and 2005

Industry	*1988*	*1995*	*2000*	*2005*
Both sexes				
Agriculture, Fishery and Forestry	**6.5**	**6.2**	**5.7**	**5.6**
Industry	**12.8**	**12.7**	**12.8**	**11.9**
Mining and quarrying	0.3	0.2	0.2	0.1
Manufacturing	8.6	9.0	9.1	8.2
Electricity, gas, and Water	1.6	1.3	1.0	0.9
Construction	2.3	2.3	2.5	2.6
Services	**80.7**	**81.1**	**81.4**	**82.5**
Wholesale and retail trade	14.3	14.3	17.4	19.6
Transportation, storage and communication	3.5	4.3	5.4	5.3
Financing, insurance, real estate, and business services	7.9	9.7	9.7	11.9
Community, social and personal services	55.0	52.8	49.0	45.7
Activities not elsewhere classified	0.0	0.0	0.0	0.0
Male				
Agriculture, Fishery and Forestry	**11.3**	**10.9**	**9.7**	**9.2**
Industry	**17.9**	**18.7**	**17.3**	**15.9**
Mining and quarrying	0.6	0.4	0.4	0.2
Manufacturing	10.3	11.9	10.9	9.4
Electricity, gas, and water	2.5	2.2	1.5	1.3
Construction	4.4	4.2	4.6	5.0
Services	**70.8**	**70.4**	**73.0**	**74.9**
Wholesale and retail trade	12.5	12.4	14.7	17.3
Transportation, storage, and communication	5.2	6.9	8.7	8.0
Financing, insurance, real estate and business services	9.0	10.6	9.0	12.2
Community, social, and personal services	44.1	40.5	40.5	37.5
Activities not elsewhere classified	0.0	0.0	0.0	0.0
Female				
Agriculture, Fishery and Forestry	**2.6**	**2.7**	**2.6**	**2.7**
Industry	**8.8**	**8.1**	**9.4**	**8.6**
Mining and quarrying	0.1	0.0	0.1	0.0
Manufacturing	7.2	6.8	7.7	7.3
Electricity, gas, and water	0.8	0.5	0.7	0.6
Construction	0.6	0.8	0.9	0.7
Services	**88.6**	**89.2**	**87.9**	**88.7**
Wholesale and retail trade	15.8	15.7	19.4	21.4
Transportation, storage, and communication	2.1	2.4	2.9	3.2
Financing, insurance, real estate, and business services	7.0	9.0	10.2	11.7
Community, social, and personal services	63.8	62.2	55.4	52.4
Activities not elsewhere classified	0.0	0.0	0.1	0.0

Sources: NSO, LFS.

graduates, once hired, are considered rather favorably by employers, but about 10 percent of them are considered to be poor or very poor. Perceptions are relatively less favorable in the services sector and on private universities. Importantly, universities were also judged to be weak in their labor market relevance, industry links, and ability to adapt to labor market needs.

Finally, employers have noted the need to improve and build upon current links between industry and academia, through both input into curriculum design and research. Currently, members of industry can provide input into curriculum development through the CHED. The CHED process of curriculum approval consists of convening a Technical Panel composed of members from academia, industry, and the Professional Regulation Commission. The Technical Panel reviews the proposed curriculum against existing policies and standards. The CHED then acts on the proposal in consultation with and based on the recommendation of the Technical Panel. However, informal evidence suggests that this process could be systematically strengthened and be informed by the outcomes discussed above. Likewise, secondary studies in the country have also noted the lack of academia-industry links in research collaboration. Common explanations given include the lack of administrative and financial support, the lack of full-time researchers, heavy teaching loads, and lack of research skills and experience.

Technical and Vocational Education[8]

While higher education has been a focus of government attention since the 1970s, it is only relatively recently that the Philippines has started to ramp up its efforts to reform and upgrade technical and vocational education. In 1994 the government created the Technical Education and Skills Development Authority (TESDA), signifying its commitment to improve industry and growth by developing and nurturing specific skills for those already in the labor force, as well as those about to enter. Since then, TVET has become a key component of the Medium-Term Philippine Development Plan (MTPDP). This section reviews the structure, governance and financing, quality, and relevance of the TVET system in the Philippines, with a focus on postsecondary (competency-based) TVET.

Structure

In the Philippines, there are four major methods of TVET delivery. First are school-based institutions, which offer TVET programs between one and

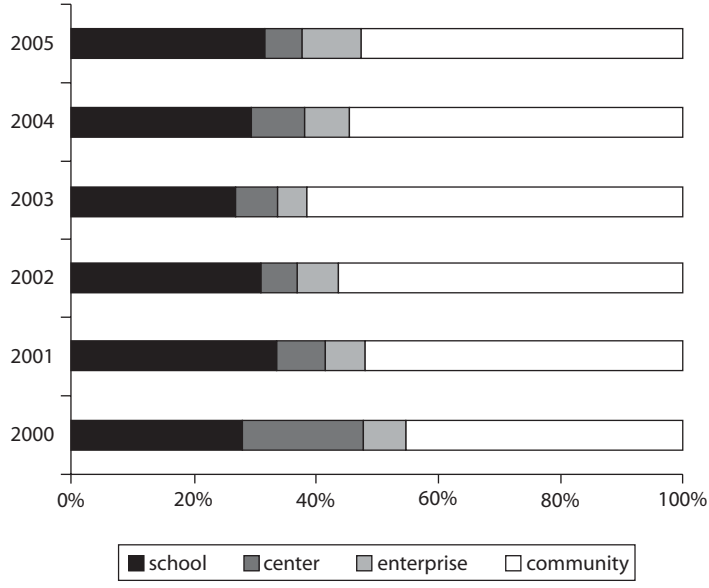
three years in length. Second are center-based units, which provide short-term training in TESDA centers throughout the country. Third are community-based training programs that specifically teach skills in particular communities that would lead to self-employment. And fourth are enterprise-based programs where apprenticeships and on-the-job trainings are delivered by firms or industries.

TVET programs are aimed at developing the competencies (knowledge, skills, and aptitude) of prospective members of the labor force to enhance their employability and be job ready when they enter into the labor market.

CHED and TESDA both heavily promote a variety of education programs. However, it is private organizations—schools, churches, civic organizations, and foundations—that have been the most active implementers of TVET in the country. They provide skills development through workshops, assemblies, television and radio broadcasts, and correspondence courses, among other activities.

Figure 5.4 presents information on the distribution of graduates among the four modes of TVET delivery.

Figure 5.4 Distribution of TVET Graduates by Delivery Modes, 2000–05



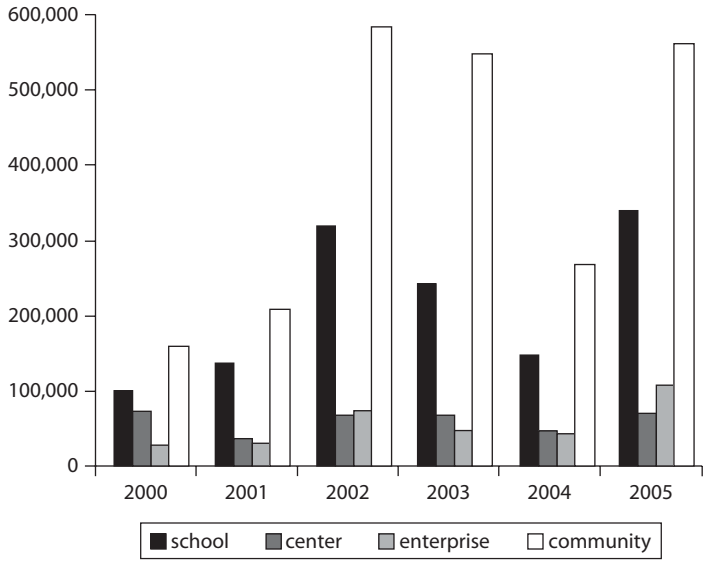
Source: TESDA Annual Report, various years.

Community-based training modes represent the largest share of graduates, followed by school-based programs. According to the data in 2005, 1.05 million TVET graduates were registered by TESDA. Approximately 32 percent of those graduates were trained in school-based programs, 6 percent were trained in center-based training programs, 53 percent were trained in community-based programs, and 10 percent of graduates participated in enterprise-based trainings.

As the government encourages community-based training modes, it is not surprising that these programs represent the largest share of trainings in which graduates participated. It is also apparent from figure 5.4 that the number of graduates who received training from center-based institutions has declined significantly since 2000. School-based training has stayed fairly stable as a preferred method of training for graduates: 33 percent of graduates in 2001 and 32 percent in 2005.

Figure 5.5 gives information on the number of graduates by delivery mode from 2000 to 2005. The data indicate that school-based and enterprise-based programs have increased their enrollments over time, while community-based programs have had smaller increases since 2002. Community-based programs, however, continue to have the highest enrollments.

Figure 5.5 Number of TVET Graduates by Delivery Mode, 2000–05



Source: TESDA Annual Report, various years.

These different types of TVET programs are delivered by a diverse and highly decentralized set of individual training providers. Table 5.13 gives information about the distribution of TVET providers by type of institution from 2000 to 2004. In 2004, there were 4,510 TVET providers, more than 60 percent of which were private. The public TVET providers for that period included 121 TESDA technology institutions, which included 59 schools, 15 regional training centers (RTCs), 45 provincial training centers (PTCs), and 2 specialized training centers.

From the table, one can see that the key providers of non-school-based TVET are the training centers of industries; NGOs; local government units (LGUs); national government agencies, including TESDA; and religious organizations. In 2004 there were 1,057 non-school-based, LGUs/NGOs-managed TVET providers, of which about 20 percent were private. This information thus indicates that much of TVET delivery is relatively informal in nature, which makes assessing quality difficult. Further, while the majority of providers of TVET in the country are private, most TVET graduates attended public programs. This may indicate that the supply of private TVET is underperforming in terms of its capability.

Governance and Financing

Beyond its direct training role through its technology institutions, TESDA provides legal guidance to the subsector; establishes priorities; and gathers data on graduates, institutions, and programs to inform the future direction of TVET in the country. The agency is composed of a TESDA board and a TESDA secretariat. The board establishes skills development policies, plans, and programs, while the secretariat is TESDA's implementing arm. TESDA's network of 121 technology institutions provides direct training in some instances, where private provision is either unavailable or unaffordable.

To ensure the quality of its programs, TESDA implements competency assessments and certifications of workers and providers. It develops competency standards for workers that correspond to various levels in the Philippines TVET Qualifications Framework (PTQF). For service providers, TESDA has developed national training regulations (TR) that serve as the foundation for the registration and delivery of TVET programs and curricula. In 2004, 3,294 public and private schools and training centers were accredited by TESDA, and 922 companies that participated in apprenticeship and learning programs were registered under TESDA's Unified TVET Program Registration and Accreditation System (UTPRAS).

Table 5.13 Distribution of TVET Providers by Type of Institution, 2000–04

Type of Training Institution	*2000*			*2001*			*2002*			*2003*			*2004*			*% Dist'n 2004 Data*
	Private	*Public*	*Total*	*Private*	*Public*	*Total*	*Private*	*Public*	*Total*	*Private*	*Public*	*Total*	*Private*	*Public*	*Total*	
Tech-voc schools	1,466	179	1,645	780		780	809		809	865		865	974	–	974	**21.60**
TESDA-schools		61	61		59	59	–	60	60	–	60	60	–	59	59	**1.30**
DepEd supervised schools			–		92	92	–	87	87	–	133	133	–	259	259	**5.70**
HEIs w/nondegree programs			–	615	130	745	617	123	740	610	129	739	578	146	724	**16.10**
TESDA training Ctrs.																**1.40**
-Nat'l Trng Ctrs.		2	2		3	3		3	3		2	2		2	2	
-PTC	–	45	45	–	45	45	–	45	45	–	45	45	–	45	45	
-RTC		15	15		15	15		15	15		15	15		15	15	
LGU/NGO	–	–	–	130	665	795	133	647	780	144	711	855	213	844	1,057	**23.40**
Enterprise			–	328	–	328	324	–	324	405	–	405	1,031	–	1,031	**22.90**
Others			–	23	211	234	25	215	240	21	257	278	–	344	344	**7.60**
Total	**1,466**	**302**	**1,768**	**1,876**	**1,220**	**3,096**	**1,908**	**1,195**	**3,103**	**2,045**	**1,352**	**3,397**	**2,796**	**1,714**	**4,510**	**100.0**
Percentage distribution	**82.92**	**17.08**	**100**	**60.59**	**39.41**	**100**	**61.49**	**38.51**	**100**	**60.20**	**39.80**	**100**	**62.00**	**38.00**	**100**	
Percent increase/ decrease				**28.00**	**304**	**75.10**	**1.70**	**2.00**	**0.20**	**7.20**	**13.10**	**9.50**	**36.70**	**26.80**	**32.80**	

Source: TESDA Annual Report, various years.

More recently, TESDA has been adopting the competency-based TVET (CBT) system. Under the CBT approach, the unit of progression is mastery of specific knowledge and skills and is learner/trainee centered. Thus, the formal and nonformal training system that is associated with the traditional educational system (the unit of progression is time and it is teacher centered) is not relevant anymore for TVET. The CBT system adheres to some principles to support labor market relevance of Filipino workers:

- Training is based on curriculum developed from the competency standards.
- Learning is modular in structure.
- Training delivery is individualized and self-paced.
- Training is based on work that must be performed.
- Training materials are directly related to the competency standards and the curriculum modules.
- Assessment is based on the collection of evidence on work performance consistent with the industry-required standards.
- Training is based on both on- and off-the-job components.
- Training allows for recognition of prior learning (RPL) or current competencies.
- Training allows for multiple entries and exits.
- Approved training programs are nationally accredited.

The TVET subsector is financed by both public and private funds. TESDA receives approximately 2 percent of the national education budget. Government sources contribute about 46.5 percent of total funds, and the private sector provides roughly 53 percent of the financing—highlighting the important contribution of private sources. However, as shown in table 5.14, this 53 percent of funding comes from a variety of private sources, that is, the trainees (28.6 percent), NGOs (6.8 percent), the companies (15.6 percent), and TESDA's own income generation (2.5 percent). Hence, it is still the government that provides the bulk of the funding.

There is clear separation between public provision and financing on the one hand, and private provision and financing on the other hand. When looking at the source of funds, several points can be noted. It is evident that a large amount of TESDA funding has been allocated to provincial training centers (PTCs), regional training centers (RTCs), and TESDA-administered schools. It is also clear that almost half of the funds for TVET generated

Table 5.14 Source of Funds of TVET Providers, 2002
(percentages)

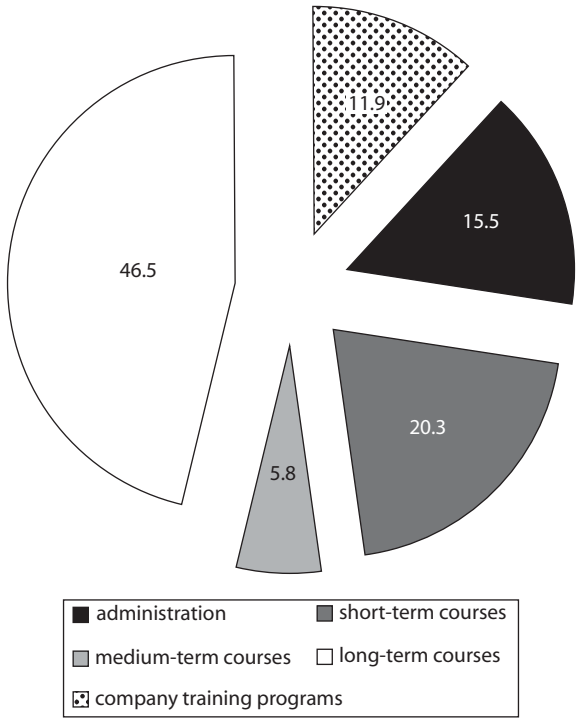
TVET Providers	*TESDA*	*LGUs*	*Other Govt*	*Official Development Assistance*	*Subtotal (government)*	*Trainees*	*NGOs*	*Companies*	*Income Generation*	*Subtotal (private)*	*Total*
LGUs	1.3	88.8	4.3	–	94.4	0.5	3.2	0.1	1.9	5.2	100
TESDA RTCs	61.6	1.5	–	27.7	90.8	4.6	–	–	4.6	9.2	100
TESDA PTCs	94.7	–	–	0.9	95.6	3.5	0.9	–	–	4.4	100
TESDA-adm. schools	94.1	–	0.1	2.1	96.3	2.2	0.7	–	0.8	3.7	100
ATI/other govt	–	0.4	97.7	–	98.1	–	1.1	–	0.8	1.9	100
SUCs	–	36.4	42.8	–	79.2	20.4	–	–	0.4	20.8	100
Subtotal (public providers)	26.4	44.0	21.6	1.0	93.0	4.0	1.7	0.0	1.3	7	100
NGOs	13.7	3.1	–	–	16.8	1.1	62.1	3.2	16.8	83.2	100
Private TVET	3.8	0.1	0.1	–	4.0	68.3	13.3	6.7	7.7	96	100
Private HEIs	5.6	0.3	0.0	–	5.9	74.8	17.3	0.3	1.7	94.1	100
Companies	–		–	–	–	0.1	–	99.9	–	100	100
Subtotal (private providers)	3.5	0.2	0.0		3.7	51.3	11.8	29.3	3.9	96.3	100
Administration	56.2	–	–	43.8	100.0	–	–	–	–	–	100
Total	18.8	13.8	6.8	7.1	46.5	28.6	6.8	15.6	2.5	53.5	100

Source: Péano et al. 2008.
Note: ATI = Agricultural Training Institutes.

from private sources have been spent on private training, thus indicating that the government subsidy to this type of training is very small in practice (about 4 percent of the funds received by private providers). Further, companies have, unsurprisingly, directed nearly all of their funds to their own training programs. Overall, there is clear segmentation between public provision and financing on the one side, and private provision and financing on the other, with little overlap.

Péano et al. (2008)[9] *also note that the courses of one to three years' duration constitute the majority of TVET expenditures* (figure 5.6). Long-term courses (one to three years) are generally offered by private and public schools and cofunded or funded through tuition fees. Short courses are more often offered by public providers, as 60 percent of short courses are funded by LGUs.

Figure 5.6 TVET Expenditures in the Philippines, 2002
(percentages)



Source: Péano et al. 2008.

Despite the strong emphasis the government has placed on the TVET subsector, there is still some inefficiency, judging from high unit costs, which requires some reexamination. When examining the high unit costs of short-, medium-, and long-term courses per trainee, it is not surprising that enrollment is relatively low compared to demand. Table 5.15 provides estimates of unit costs for providers offering short-term courses, medium-term courses, and long-term courses. Two measures are considered: the unit cost per batch and the unit cost per trainee. Costs are measured in terms of recurrent costs, which consist of staff salaries, student services, trainee allowances, and facility costs (including electricity and materials). A batch refers to the number of student sections organized per academic year, while the trainee points to an individual student.

When examining the data—and notwithstanding comparability issues across different courses—it appears that for both short and long courses, TESDA-administered schools have the highest unit costs, particularly compared with private providers. For long courses, the unit cost for TESDA-administered schools is nearly double what it is for other providers. For medium-courses of three to nine months, the PTCs and RTCs are the dominant training providers and also the most expensive. From this information, TESDA may wish to reexamine the efficiency of these expenditures. (The next section discusses this and other issues.) For short courses, community-based TVET seems particularly efficient.

Quality

While it is very difficult to gather an overall view of the quality of the TVET system, the section below attempts to provide some insights on the quality of the system by mostly analyzing internal efficiency indicators and TESDA certification rates.

Most dropouts occur in school-based TVET, more concentrated in private schools for medium-term courses. A secondary analysis of the dropout data has found that most dropouts occur in school-based TVET programs, and that medium- and long-term courses exhibit higher dropout rates than short-term courses. Further, there appears to be higher dropout rates among privately provided TVET for medium-term courses than for publicly provided courses. The opposite is true for short-term courses. These findings point to issues with internal efficiency, which may in turn point to issues with the quality of the school-based—especially the private school-based—TVET system.

TESDA certification rates have been increasing since 2005 but are still rather low for technologically advanced sectors. Another indicator of quality

Table 5.15 Unit Cost by Type of Course and TVET Provider, 2002 Survey
(pesos)

	TVET Providers								
Unit Costs	*Community-based LGUs*	*Community-based NGOs and Foundations*	*TESDA RTCs and PTCs*	*TESDA-administered Schools*	*Agriculture and Other Govt. Training Institutes*	*Public HEIs*	*Private Technical and Vocational Institutes*	*Private HEIs*	*Companies*
A. Short-term courses									
Unit recurrent cost per batch	74,629	35,514	36,492	240,156	97,967	75,240	57,584	10,371	92,083
Unit recurrent cost per trainee	3,027	1,411	2,276	12,586	2,120	6,080	11,401	1,473	5,864
B. Medium-term courses									
Unit recurrent cost per batch	–	–	182,193	69,941	132,285	95,384	129,383	77,290	–
Unit recurrent cost per trainee	–	–	8,715	2,245	5,080	4,746	6,404	2,171	–
B. Long-term courses									
Unit recurrent cost per batch	–	–	–	575,272	–	207,245	196,412	130,498	–
Unit recurrent cost per trainee	–	–	–	20,308	–	7,437	10,204	8,152	–

Source: Péano et al. 2008.

is the number of students whom TESDA certifies as being competent in his or her field (according to quality standards defined by industry) upon completing TVET training. Table 5.16 provides a record of the number of assessed persons and certified persons from 2000 to 2005. During those years, 519,675 Filipino skilled workers were certified out of the 874,162 assessed, representing a certification rate of 59.45 percent. Recent yearly trends show an increase in certification rates (figure 5.7). The technologically advanced sectors have, understandably, a lower certification rate, and of these sectors, IT had the lowest certification rate—only 19.13 percent—over the 2000–2005 time period.

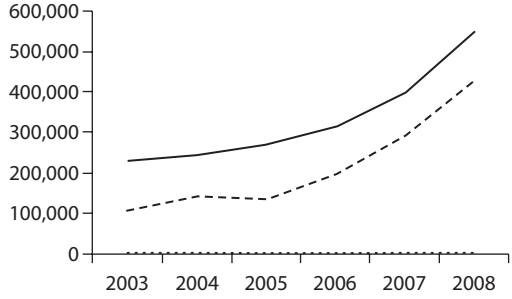
Regarding facilities, studies appear to indicate that there is a lack of available training centers for community-based programs. Only 53 percent of community-based training providers confirmed that they had their own training centers (Péanoet al. 2008). However, this may or may not be a binding constraint to quality: given the nature of community-based training, which tends to be mobile, it is highly possible that those without training facilities only bring simple tools and equipment to teach basic skills. Thus, depending on the type of activity being taught, the lack of facilities may either hinder or have no impact on quality.

Table 5.16 Assessment and Certification by Priority Areas, 2000–05

Priority Sector	*No. of Assessed Persons*	*No. of Certified Persons*	*Certification Rate (%)*
Automotive	71,522	25,083	35.07
Construction	86,171	36,838	42.75
Electronics	36,500	12,854	35.22
Metals and engineering	16,114	8,041	49.9
Heat, ventilation, and air-Conditioning	11,439	6,322	55.27
Tourism	44,368	20,221	45.58
Health, social, and other community services	30,817	19,604	63.61
Information technology	139,453	32,919	23.61
Garments	13,052	6,655	50.99
Furniture and fixtures	1,667	1,074	64.43
Processed foods	6,532	1,357	20.77
Agriculture	420	165	39.29
Maritime	214,315	200,567	93.59
Decorative crafts	370	364	98.38
OPAS	198,663	145,860	73.42
Others	2,759	1,751	63.47
Total	**874,162**	**519,675**	**59.45**

Source: TESDA, Annual Report, various years.

Figure 5.7 TESDA Assessment and Certification, 2003–08



	2003	2004	2005	2006	2007	2008
assessed	232	243	271	314	398	552
certified	109	140	135	195	293	431
certification rate	47%	58%	50%	62%	72%	78%

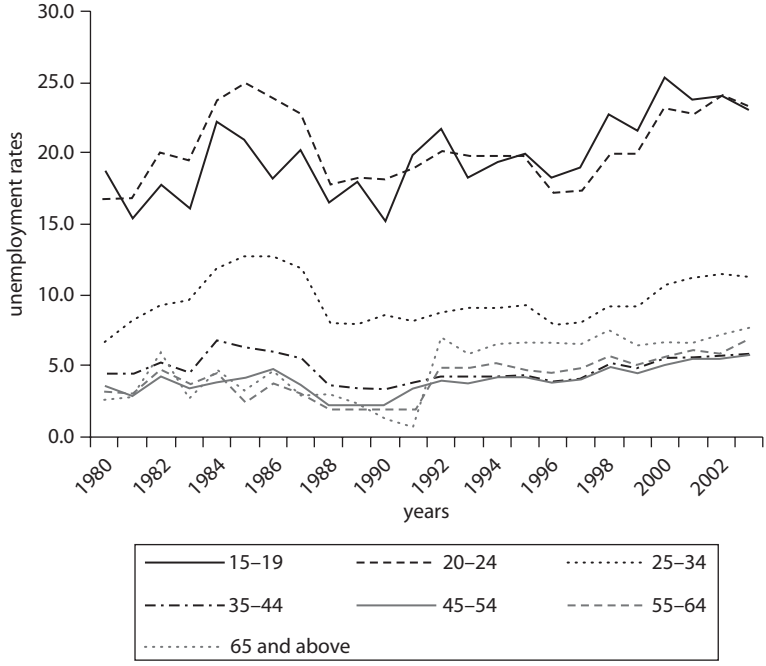
Source: TESDA, Annual Report, various years.

The variance of training delivery can also be seen in the case of significant differences in standards for personnel across regions and TVET providers. Péano et al. (2008) have written about the lack of standards in terms of personnel per institute. Certain regions of the country have significant numbers of institutes but have fewer personnel than other regions with smaller numbers of institutes. A key theme emerging from these patterns, then, is that efficiency and quality of the TVET system varies drastically across service providers. The apparent lack of a uniform application of standards is likely contributing to this problem.

Relevance

There is a high potential demand for TVET from youth in the country. The large numbers of unemployed youth[10] in the country imply a large market for TVET. Those ages 15–24 constitute the highest concentration of unemployed in the country (figure 5.8), and youth make up roughly 50 percent of those who are unemployed in the country. The large number of unemployed youth can partly be explained by the lack of access to quality schooling and the fact that most unemployed youth do not possess the requisite educational credentials (a high school or college diploma) for job openings in the labor market. Indeed the highest percentage of youth unemployment is among those who have only reached high school and dropped out of college, and this proportion has increased over the last decade. This fact, together with the fact that unemployment

Figure 5.8 Unemployment Rates by Age Groups, 1980–2003

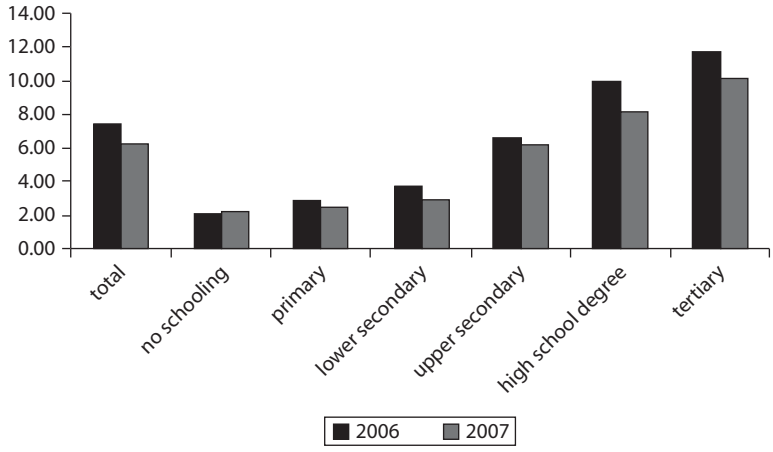


Source: Labor Force Survey, NSO.

rates tend to increase with the schooling level (as documented in the previous section and figure 5.9), suggests that there is a potentially strong demand for skills upgrading through TVET. In fact, as unemployment among more-educated youth has risen in recent years, greater numbers of workers are pursuing technical and vocational careers. Since 2003, enrollment in TVET courses has increased by 116.6 percent.

However, formal employment rates (ERs) of the different TVET programs are not very high and differ across TVET modes. Enterprise-based institutions have the highest ER, followed by community-based centers. Skills utilization rates (SURs) are generally higher, in particular in center-based programs. Table 5.17 lists the ERs and SURs for TVET graduates, based on the 2005 Impact Evaluation Study (IES) of TVET graduates. SURs are the percentage of employed graduates whose jobs are related to the skills acquired to the total number of employed graduates. Several features of the data are noteworthy. First, ERs of the different programs are not very high across the board. Second, enterprise-based institutions have the

Figure 5.9 Unemployment Rates by Education Levels, 2006–07



Source: Lanzona 2008.

Table 5.17 Employment and Skills Utilization Rates by Delivery Mode, 2004

	Employment Rate (ER)		*Skills Utilization Rate (SUR)*	
Delivery mode	*Total*	*Percent*	*Total*	*Percent*
School-based	37,016	46.4	24,085	65.1
Center-based	18,488	48.8	13,735	74.5
Enterprise-based	11,991	54.1	8,652	72.1
Community-based	26,432	49.7	17,735	67.1
All	93,847	48.7	64,205	68.4

Source: TESDA, 2005 IES Study of TVET Providers.

highest ER, followed by community-based centers. This can be expected because most of those attending the industry and community training programs are prospective employees of the companies in their respective communities. Third, center-based institutions have the highest SUR, with enterprise-based lagging only slightly behind. This may suggest that, for employed students, TESDA has been nearly as effective as companies in identifying the needed skills of the industry. The 2005 IES data show the highest SUR in the construction, transportation, automotive, furniture, ICT, and textile subsectors.

To get a sense of the changes over time in these rates, table 5.18 combines the results of the previous tracer studies by TESDA. It is important to note that since the 2005 sample data include all TVET providers, it is not comparable to the previous surveys, which include only TESDA

Table 5.18 Employment and Skills Utilization Rates of TVET Graduates, Survey

	2000 Graduate Tracer Study		*2002 Expanded Graduate Tracer Study*		*2005 IES of TVET Programs*	
Delivery Mode	*ER*	*SUR*	*ER*	*SUR*	*ER*	*SUR*
Center-based	54.11[a]	72.46[a]		80.04[a]	48.75	74.15
School-based	55.66[b]	37.00[b]		83.24[b]	46.42	65.11
Enterprise-based					54.13	72.10
Community-based					49.69	67.10
All	54.11	37	42.43	78.19	48.67	68.42

Sources: TESDA 2005 IES Study, 2000 Graduate Tracer Study, and 2002 Expanded Graduate Study.
Note: [a.] TESDA training centers only; [b.] TESDA-administered schools only.

schools or TESDA-administered schools.[11] However, the SUR increases quite drastically when incorporating non-TESDA schools in the sample.

Labor market absorption of TVET graduates is limited in manufacturing jobs and probably still unexploited in the services sector, contributing to a relatively high absorption in other occupations. Table 5.19 shows the distribution of TVET graduates by class of work, based on the 2005 IES tracer study. Only half of the graduates were able to acquire jobs in the private sector—possibly related to limited absorption in the manufacturing sector and unexploited employment potential in the services sector. The other half of the graduates were either self-employed or worked in the government or for a private household.

While employers' perceptions on TVET graduates are generally positive, there is still scope for improving the quality and relevance of TVET, in particular for school-based and privately run TVET programs. Relative weaknesses include quality of facilities, fields of study, and links with industry. Employers' perceptions on TVET graduates are generally positive, which is a notable and encouraging result. However, the above findings seem to indicate that TVET could be more effective in terms of significantly increasing employment and access to qualified jobs. In many cases, workers have not been able to find good jobs or have opted not to participate in the labor market. Beyond broader economic and labor market reasons, such as salary differentials with overseas employers, the skills survey has highlighted that part of the reason for such modest success in finding employment lies in the quality of postsecondary TVET education, in particular when it is provided by private providers. The main weaknesses of postsecondary TVET, according to employers, include quality of facilities, available fields of study, and links with industry, suggesting grounds for action around these lines. Comparing employers' perceptions with labor

Table 5.19 Employed TVET Workers by Class of Work, 2004

Class of Work	*TVET Graduates*	*Percentage*
Work for private household	10,764	11.5
Work for private establishment	46,886	50.0
Work for government	11,658	12.4
Work for own business or self-employed	14,321	15.3
Work for employer with at least one employee	2,525	2.7
Work with pay for own family	3,469	3.7
Work without pay for own family	2,054	2.2
Not indicated	2,169	2.3

Source: TESDA, 2005 IES Study of TVET Providers.

market outcomes and unit costs, school-based TVET, public and to an even larger extent private, appears rather less cost-effective than community-based TVET.

Too few certified students in some technologically advanced fields of study is becoming a constraint. The low certification of TVET students in some technologically advanced areas such as electronics and IT is becoming a constraint. This is all the more true as skill wage premiums for workers with at least secondary education in the chemical, metal, and machinery/electronics industry subsectors are high and increasing.

Industry links are central to an effective TVET and still underestimated, in particular for school-based TVET programs. Related to industry links, employers also stress the importance of practical skills and experience for skilled production workers, which suggests that links with industry is a particularly relevant variable, still underestimated. This also explains why enterprise- and community-based training have better employment rates than other TVET programs. Anecdotal evidence within the Philippines reiterates the fact that companies look more for experience than the ability to perform tasks. Given a choice between hiring experienced workers from other companies and fresh graduates from TVET schools, companies would most likely prefer the former over the latter. Again, this indicates a need for enhancing confidence in the way specific skills are being taught to the TVET students, very much related to intensifying links with the productive world.

Low cultural status of TVET remains an issue. Finally, according to another TESDA tracer study of TVET students, a significant portion of those who did not participate in the labor market said they would prefer to further pursue schooling (25.34 percent), while a greater proportion decided to stay home and perform household duties (28.22 percent).

Seven percent of graduates surveyed did not join the labor market because they were tired and no work was available. The tracer study also confirmed that TVET fundamentally suffers from low cultural status and negative impressions. High school graduates enroll at TVET centers only if they cannot go to college, and TVET tends to be seen as a last-choice option for students coming from poorer households. This antipathy has historical roots and was reinforced by the now defunct National College Entrance Examination (NCEE). If a student failed the NCEE, the only educational avenue left was TVET.

However, there have been recent positive developments to enhance employability of TVET graduates. Notwithstanding the above, it is important to acknowledge that there have been recent promising developments in TVET to enhance the employability of TVET graduates, such as Youth Profiling for Starring Career (YP4SC), strengthening labor market information, free assessment and certification, strong advocacy and marketing strategy, and scholarship programs to assist trainees/workers and capacitate the training providers.[12]

Alternative Learning System[13]

This section reviews the characteristics and outcomes of the Philippine Alternative Learning System (ALS). Key critical issues faced by ALS are a lack of coordination among providers, insufficient funding, lack of coverage, and unreliable information on the effectiveness and quality of programs. There are, however, some promising signals on their relevance to labor market needs from the employer perspective.

Structure, Governance and Financing

There are a variety of providers of ALS programs, although the Bureau of Alternative Learning Systems remains the main actor in the field for both certification and delivery. There is little coordination among different providers. The Department of Education in the Philippines has operated nonformal education programs under the Bureau of Nonformal Education since 1948. In 2004 the Bureau's name changed to the Bureau of Alternative Learning Systems (BALS) in conjunction with the Department of Education's renewed focus on literacy and education equivalency programs. The Department of Education sees ALS as a catch basin of those who were excluded from the formal system, that is, the children who did not enroll or who dropped out before completing the primary grades or high school and achieving basic or functional literacy, and the youth and

adults who desire to have the equivalent elementary or secondary education through BALS's accreditation and equivalency program so they can pursue further formal education or improve their productivity.

Additionally, LGUs and NGOs have been engaged in many nonformal education programs. The majority of NGOs offer livelihood-enhancing skills in agriculture, crafts, and trade. Some provide education and training in life skills such as adolescent reproductive health. The NGOs and LGUs operate rather independently of each other, and no government authority has been created to plan with, coordinate, or supervise the various providers.

The BALS operates two major ALS programs—literacy, and accreditation and equivalency (AE)—managed directly or through service contractors. BALS performs a wide variety of tasks related to these two programs, and it administers the equivalency tests. Within the federal government structure, BALS operates two major ALS programs: literacy and AE, both of which are administered by the Literacy and Continuing Education Division. The literacy program is carried out by mobile teachers and literacy service contractors. The AE program consists of two major activities: instruction to achieve the equivalency of primary and secondary education, and the development and administration of equivalency tests for the two levels. BALS's AE instruction is carried out by service contractors. BALS's staff implements the equivalency examination and certification. Service contracts are made with NGOs, LGUs, church-based organizations, and educational institutions. Service contractors usually hire instructors and manage the program.

BALS' 80 full-time staff members are responsible for running the BALS office, training mobile teachers and instructors under the service contracting scheme, developing or revising learning modules, organizing forums, developing and administering the equivalency tests, and monitoring field activities. A relatively large proportion of staff time and office resources has historically been devoted to the AE examination and certification process, which some believe may have crowded out developmental activities such as producing learning materials and expanding the outreach of its radio and video programs and research. The bureau has regional ALS offices that help implement its programs and coordinate the activities of ALS LGU and NGO subcontractors at the local level.

Although its budget has been rising, BALS has been historically underfunded, with possible consequences on the quality of the programs. BALS obtains a separate budget appropriation from Congress for the service contracting scheme for literacy and AE programs. Expenditure for mobile teachers and other functions, including the production of learning

materials, are derived from the Department of Education's basic education budget. Historically, BALS has not always been able to appropriate its share of the Department of Education's budget for its programmed expenditures. The BALS budget is very small given the large population that it is mandated to serve (see below), representing only about 0.4 percent of the Department of Education's budget in 2008. However, at least the budget has been increasing, from ₱83.6 million in 2006, to ₱237.5 million in 2007, and to ₱330.1 million in 2008 (an increase of 0.052 percent in 2006, 0.16 percent in 2007, and 0.392 percent in 2008). The still-low level of funding has resulted in the inability of BALS to carry out research and development and the printing of its learning modules. Its plans to conduct tracer studies of those who passed the AE tests and performance evaluation of its literacy and other instructional programs, for example, have been postponed indefinitely because of the lack of resources. Insufficient funding has also inhibited the expansion of radio-based and IT-based programs.

Coverage of ALS remains low in proportion to the potential target population. A comprehensive management information system does not yet exist for the ALS subsector, but table 5.20 provides some information about the reach of the ALS in the Philippines. The data indicate that coverage of ALS populations has been low. From 2004 to 2007, annual enrollment in all ALS programs served by BALS was less than 100,000, which is very low compared with a target of about 1.3 million young basic illiterates or about 3.2 million young functional illiterates—and even lower if the older population is included in these target groups. However, enrollments have been increasing at a rather rapid rate: 40.5 percent in 2004–2006 and 11.8 percent in 2006–2007.

It is important to note, though, that growth rates have differed between programs. The mobile teacher and the AE programs experienced relatively high growth, while the Balik Paaralan (return to school) did not. Also notable is the very small number of participants in the radio-based and Madrasah programs. Moreover, the Balik Paaralan program enrolled only 6,922 in 2007, the Basic Literacy Project had only 1,323 participants, and the Literacy Program for Indigenous People only 150. In terms of provision, LGUs and NGOs contributed more than 44,000 students or about 31 percent of total enrollment in ALS programs in 2007.

Quality and Efficiency

This section reviews the few available quality-related indicators of ALS focusing on internal efficiency and certification, some input-related indicators, and unit-cost analysis.

Table 5.20 Coverage of ALS Programs, Various Years

Program	*2001*	*2004*	*2006*	*2007*
Literacy program				
Mobile Teachers	14,637	20,450	31,291	32,996
LSCS*	39,839	32,430	34,638	15,362
Family-based Literacy	–	300	2,167	1,323
Indigenous Population	–	125		150
Balik-Paaralan for OSY&A	–	4,250	7,771	6,922
Accreditation & equivalency (AE)				
LSDS **	71,505	5,085	10,854	28,200
Radio-based instruction		300	350	149
4 Regions	–			
Strong Republic Distance Learning System	–		1,050	NA
launched	–			
Adolescent-friendly Literacy Enhancing Program	–		90	90
Madrasah Program			–	–
District ASL coordinators	–	–	–	13,415
Total served by BALS	125,981	62,940	88,211	98,607
Number served by NGO, LGU				
LSCS*	12,332			
Other	107,967	34,034	21,876	44,608[1]
Total BALS and NGO, LGU, GU	246,280	96,974	110,087	143,213
Completion rate				
Mobile teachers		76.8%	57.1%	61.5%
LSCS		72.8%	55.2%	81.1%
Balik-Paaralan for OSY&A		75.0%	na	27.9%

Source: Bureau of Alternative Learning System Annual Report, 2006, 2007.
Note: * Literacy Service Contracting Scheme; ** Learning Support Delivery Scheme.

Completion rates of literacy programs and the literacy service contracting scheme (LSCS) are quite high. While systematic data on the achievement of literacy and passing rates in AE certification tests divided by AE and other programs' learners (see below) have not been collected, there are some data on the completion rate of some ALS programs that can be used to assess at least part of the internal efficiency of the programs (table 5.21). The completion rate in the mobile teachers program was 61.5 percent in 2007, a drop from the 2004 figure of 76.8 percent, but still quite high. The completion rate in the literacy service contracting scheme (LSCS) was 72.8 percent in 2004 and rose to 81.1 percent in 2007. The Balik Paaralan program, however, had a completion rate of only 27.9 percent, despite its low enrollment.

BALS has been quite successful in attracting people to its AE certification process, but passing rates are low. Although there is some limited evidence that

Table 5.21 Number of Registered and Passed, Accreditation and Certification Program, 1999–2007

	Number Registered			*Number of Test Takers*			*Number Passing the Test*			*% Taking the Test*			*% Passing the Test*		
Year	*EL*	*SL*	*Total*	*EL*	*SL*	*Total*	*EL*	*SL*	*Total*	*EL*	*SL*	*Total*	*EL*	*SL*	*Total*
1999	6,945	25,142	32,087	3,216	16,615	19,831	93	1,271	1,364	46.3	66.1	61.8	2.9	8.2	6.9
2000	4,537	30,499	35,036	2,859	22,810	25,669	141	2,368	2,509	85.1	74.8	65.1	3.7	10.4	9.8
2001	729	7,949	8,678	471	6,267	6,740	63	1,015	1,078	64.6	78.9	72.2	13.4	16.2	16.0
2002	1,057	12,198	13,255	905	10,851	11,756	179	1,906	2,085	85.6	89.0	81.9	19.8	17.6	17.7
2003	1,655	17,268	18,923	1,139	13,335	14,474	184	1,690	1,874	68.8	77.2	76.5	16.2	12.7	12.9
2004	2,644	22,259	24,903	2,007	19,080	21,087	410	2,400	2,810	75.9	85.7	85.0	20.4	12.6	14.7
2005	4,481	29,051	33,532	2,502	18,732	21,234	652	3,304	3,956	55.8	64.5	63.3	26.1	17.6	18.6
2006	6,402	44,043	50,445	5,885	39,454	45,339	1,546	8,383	9,929	91.9	89.6	89.9	26.3	21.2	21.9
2007	8,974	59,753	68,727	5,688	46,291	51,979	1,538	10,887	12,425	63.4	77.4	75.6	27.0	24.0	23.9

Source: Bureau of Alternative Learning System, Department of Education.
Note: EL = elementary level; SL = secondary level.

passing rates are probably substantially higher for AE secondary instruction learners, more evidence is needed to assess the full performance of these programs. BALS appears to have greater success in attracting people to the certification process of the AE program than to its instructional component. The tests are open to all, not just to those who have enrolled in and completed the bureau's AE instructional programs, without clear indication of programs attended, which complicates the assessment of these programs. A fairly large number of out-of-school-youth participants register to take the test each year (table 5.21). The number of test takers for both elementary and secondary levels grew from 2001 to 2007; elementary test takers increased from 471 to 5,688, and secondary test takers grew from 6,267 to 46,291. The passing rate or the number passing relative to the number taking the test has been quite low but has shown a rising trend. The passing rate for the elementary level rose from 2.9 percent in 1999 to 13.4 percent in 2001 to 27.0 percent in 2007; the corresponding rates for the secondary level were 8.2 percent, 16.2 percent, and 24.0 percent. It could be that those who enrolled in the AE instructional program performed better than average on the AE test; however, there is no systematic information to corroborate this. Encouraging was the 2007 annual report of Region 3, which stated that of the 2,260 AE secondary education learners, 1,582 or 70 percent passed the AE test and enrolled in college. This is much higher than the national average of 23.9 percent. The BALS 2004 annual report noted that the majority of the secondary-level test passers pursued a college education.

Some input-based indicators of quality and efficiency suggest constraints in ALS programs. In 2006, BALS revised the curriculum for functional literacy. In 2007 it had 282 core modules reviewed by curriculum experts and its staff. Fifty-one elementary and 60 secondary core modules were edited as of August 2007. Only 150 modules are being used now in the field. The figures beg the question about the status and usefulness of the rest of the modules. Limited effort has been put into developing audio and video modules and skits. The radio-based instruction program was broadcast by the Southern Broadcasting Network. The program entailed listening to a half-hour broadcast three times a week for six months and a monthly meeting with a coordinator. In 2001, the TV program reached 1,050 learners in 42 learning groups. BALS stated in its 2007 annual report that the radio-based instruction would be expanded to four new sites. But it did not discuss any plan on using the radio and TV as a major delivery channel. The Philippines has a wide network of radio and TV outlets that can definitely be employed to deliver ALS programs.

Moreover, there are government-owned networks that can be tapped to broadcast radio and TV lessons.

Spending efficiency appears to be quite high, although it is difficult to assess the cost-effectiveness of ALS programs relative to formal education. The bureau appears to have been quite economical in its spending. The total direct cost per learner served (total budget allocated to a program divided by total learners served) was ₱1,221 in 2006 and ₱2,843 in 2007. The unit (per learner) cost rose because enrollment grew more slowly than the budget. Unit cost varies quite widely across programs (table 5.22). These costs are generally much lower than the average cost of formal education of ₱7,789 for the elementary level and ₱7,959 for the secondary level in 2007. The comparable effectiveness of ALS and formal programs cannot be assessed in the absence of qualitative indicators such as literacy or achievement gain in the various programs. However, the evidence from employers on the quality of formal and nonformal secondary graduates points to rather positive assessment on the cost-effectiveness of at least the secondary equivalent AE program.

Unfortunately, detailed aggregate information on the expenditure activities of NGOs is not available. Neither is information on NGO participants' achievements or learning outcomes to provide a comparison between these programs and BALS programs.

Relevance

Very few data exist on the labor market outcomes of ALS programs, in particular in the absence of tracer studies. However, there are some indications—in particular coming from the rate-of-return analysis and

Table 5.22 Budget per Learner in BALS's ALS Programs, 2007
(pesos)

Mobile teacher program	3,500
Salary per pupil charged to DepEd	3,120
District coordinator	1,640
Service contracting (Literacy and AE)	2,723
Radio-based instruction	2,400
Balik Paaralan for OSY&A	1,200
Mobile libraries 255,000/17 Libraries	15,000
Community Learning Centers 510,000/17 Centers	30,000
Overhead	726

Source: Bureau of Alternative Learning Systems.
Note: Total Budget/Total Served. For 2007 the per-learner budget is based on the estimate of the BALS target learners.

employer skills survey—that at least nonformal AE secondary equivalency programs may be quite relevant to labor market needs.

The secondary equivalency certificate is quite popular with the rest of the education system and the productive world. According to the institutional data reported above, it appears that getting a secondary equivalency certificate is far more attractive than pursuing one at the elementary level, considering how many more took the secondary test. This is most likely the result of the perception that the benefits of a secondary certificate tend to be higher than those of an elementary certificate, confirming the sustained demand for secondary education in the services and manufacturing sectors reported previously. Indeed, BALS has negotiated with the CHED, TESDA, and the Civil Service Commission to recognize the BALS secondary certificate, which has the advantage of qualifying the holder for admission to college and to TESDA technical and vocational training programs, as well as for nonprofessional jobs in government. While companies have not yet formally recognized BALS certification, which is a constraint that should be promptly addressed to raise the market value of the AE program and its attraction to out-of-school youth and adults (OSY&A), the employer skills survey has highlighted that firms have already begun hiring AE graduates.

Employers have a fairly favorable general opinion of nonformal secondary education graduates, and there are obvious strengths in the program, despite remaining notable weaknesses. Although they have some dissatisfaction with secondary education graduates across the board, employers tend to be fairly happy with the quality of nonformal secondary graduates, in particular coming from the public sector, if we consider the proportion of graduates considered poor in the private sector. In fact, employers in the services sector are happier with these graduates than the formal education ones. (Clearly this is subject to the caveats associated with the low number of hired nonformal secondary graduates.) As reiterated in table 5.23, nonformal secondary education is recognized as having notable strengths in specific curricula, labor market relevance, and cost relative to formal secondary schools. There are weaknesses in the nonformal secondary system that need to be addressed, in particular related to the cycle length and teaching quality.

Trends in In-Service Training

Finally, beyond the formal and nonformal education system, the training programs sponsored by employers are also an important source of workforce-related skills. Employers usually provide new hires with some initial

Table 5.23 Secondary-Level Educational Institutions: Strengths and Weaknesses

	Secondary Schools		*Secondary Vocational Schools*		*Nonformal Secondary Schools*	
Strengths / Weaknesses	*Strengths*	*Weaknesses*	*Strengths*	*Weaknesses*	*Strengths*	*Weaknesses*
Cycle length	12.6	5.5	10.2	9.6	8.1	11.6
Teaching quality	11.1	8.1	10.7	8.8	9.5	10.3
Teacher qualification	11.3	7.7	10.6	8.9	10.6	9.4
Facilities quality	9.2	11.3	8.6	12.5	8.4	11.4
Curriculum balance	11.3	7.7	9.9	10.2	10.0	9.9
Curriculum general	12.1	6.3	9.8	10.3	10.5	9.5
Curriculum specific	9.3	11.2	11.6	7.2	11.4	8.6
Labor market relevance	7.6	14.0	10.5	9.1	10.2	9.8
Industry links	6.8	15.5	9.2	11.4	8.6	11.2
Cost	8.5	12.5	9.1	11.5	12.4	7.7
Other features	0.2	0.3	0.1	0.6	0.3	0.4

Source: Philippines Skills Survey 2008.
Note: The highlighted entries are the top five strengths and weaknesses for each category.

training to familiarize them with the company's operating procedures and to give them practical skills not provided in the educational system. Employers may also periodically provide existing workers with training to upgrade their skills as new equipment and technology are installed or quality-control practices adopted. This in-service training can take many forms. It may be informal, involving on-the-job training under supervision by managers or coworkers, or it may be formal, with well-developed curricula and pedagogy involving both theoretical lectures within classroom settings and practical training on the shop floor. Training may be provided within the premises of the company, with in-house trainers or outside consultants, or outside the firm.

This section provides a broad overview of some of these employer training practices using information elicited from the 2008 Philippines Skills Survey. It examines employers' assessments of the training needs of different groups of employees and the training actually provided to workers. It looks at the duration of training and its cost; at in-house training practices; and at the different sources of internal and external training, including public and private training institutes, universities, industry associations, NGOs, and programs run by partner companies. It ends with a brief summary of the evidence on the quality and relevance of external training.

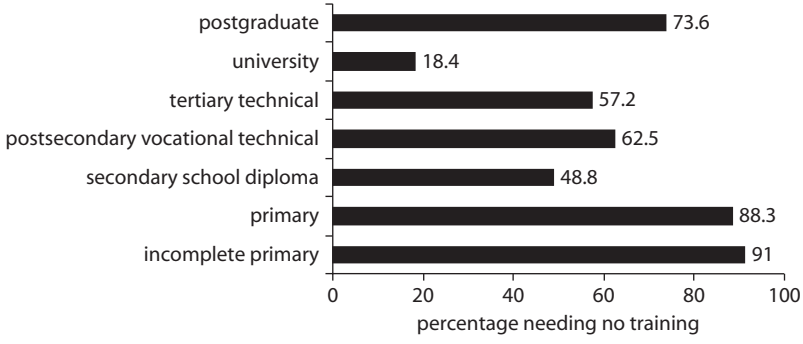
Training Needs of Employees

The skills survey asked employers to assess the training needs of their workforce by indicating the percentage in each group needing training or

retraining. The percentage requiring no training and the quartile distributions of the percentages requiring some training are tabulated in figure 5.10 and table 5.24 separately for seven levels of educational attainment and for seven occupational categories.

Education and postemployment training tend to be complementary with in-service training, which is seen more as a tool to provide complementary skills to already-educated workers. However, some skills mismatch is also evident from training data for university and secondary graduates. Figure 5.10 graphs the percentage of workers requiring no training in each educational group. (These data are also reported in table 5.24.) It makes evident that employees with the lowest levels of educational attainment are generally the ones requiring the least training or retraining. Virtually all workers with primary-level education require no additional training: 91 percent of those with incomplete primary, and 88 percent with primary. With one exception (those with postgraduate degrees), the proportion of workers needing no training declines with educational attainment—between 49 percent and 62 percent for secondary diplomas, postsecondary vocational and technical graduates, to 18 percent for university graduates—suggesting that the educated are also more likely to need training within employment. This result suggests that education and postschool training are complementary goods and not substitutes, and that in-service training will not make up for the low levels of schooling attainment that graduates bring to the workforce, but rather provide complementary skills to already-educated workers. To some extent, the result could also suggest a particularly serious skills mismatch for university

Figure 5.10 Percentage of Workers Needing No Training, by Education Level



Source: Philippines Skills Survey 2008.

Table 5.24 Distribution of Training Needs by Education and Occupation of Workers

	Level of Education of Workers						
Distribution of Training Needs	*Incomplete Primary*	*Primary*	*Secondary School Diploma*	*Postsecond. Vocational Technical*	*Tertiary Technical*	*University*	*Postgraduate*
None	91.0	88.3	48.8	62.5	57.2	18.4	73.6
1–25 %	4.7	9.4	18.7	22.1	27.8	28.8	23.8
26–50 %	3.7	2.3	17.4	12.7	10.7	17.4	2.0
51–75%	0.7	0.0	3.0	0.3	2.3	5.0	0.0
76–100 %	0.0	0.0	12.0	2.3	2.0	30.4	0.7
	Occupational Category of Workers						
	Managers	*Profess. Staff*	*Skilled*	*Unskilled*	*Nonproduction*	*Permanent*	*Temps*
None	47.2	39.8	34.1	58.5	43.8	55.9	66.6
1–25 %	44.2	39.1	30.1	28.4	36.1	23.1	24.8
26–50 %	6.0	14.7	24.4	11.0	13.4	17.4	4.4
51–75%	1.3	1.3	2.3	1.0	1.3	1.3	0.3
76–100 %	1.3	5.0	9.0	1.0	5.4	2.3	4.0

Source: Philippines Skills Survey 2008.

graduates (bachelor level), along the lines of the significant time needed to fill skilled positions. Gaps in quality of secondary graduates are, however, also confirmed by the relatively high proportion of workers with secondary education needing training.

When training is judged to be necessary, roughly 35 percent to 45 percent of secondary graduates, postsecondary vocational and technical graduates, and those with university degrees are assessed to need further training (table 5.24). Roughly the same percentages of different occupational categories require training across skilled occupations, with a smaller proportion of unskilled workers requiring training. Surprisingly, managers do not seem to require as much training as expected from previous observations; maybe this is related to the more intensive use of postgraduates for this occupation category. Reflecting their temporary job status, about two-thirds of temporary workers are judged not to require training.

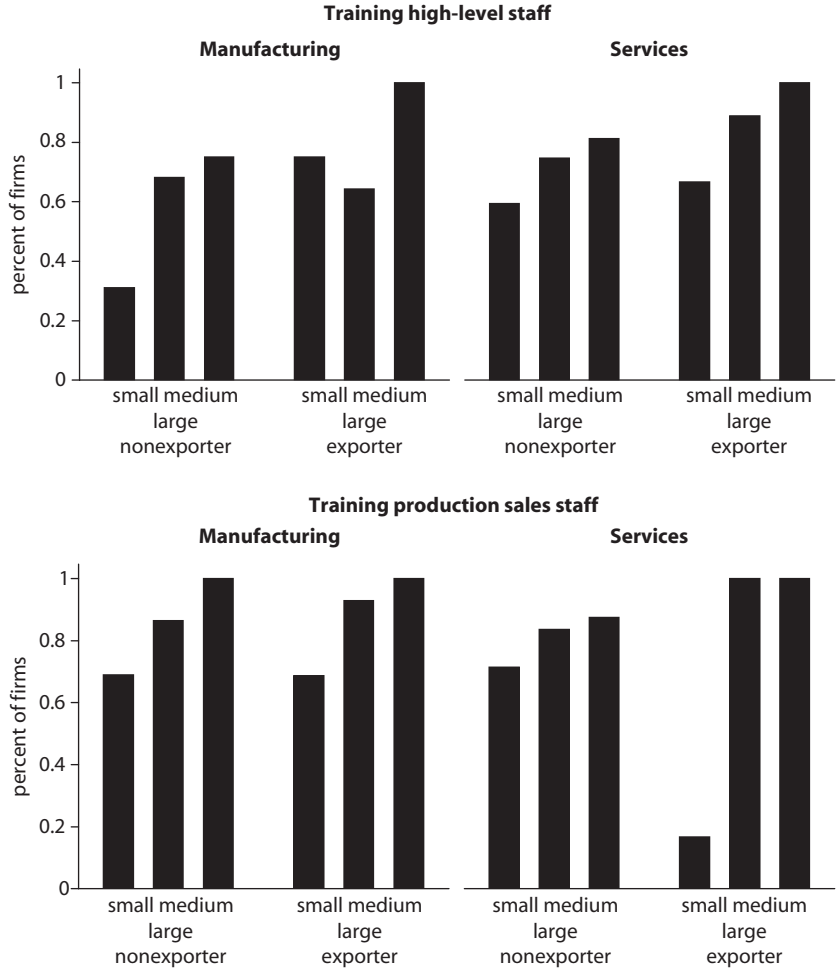
Incidence and Determinants of Formal Training Programs

What proportion of employers actually offer formal training programs to their employees, and does this percentage vary systematically across occupational groups, sectors, and firm characteristics? To gain insights into these questions, employers were asked about whether they provided formal training to each occupational group. Figure 5.11 shows the proportions of firms that provide formal training by type of employees, sector, firm size, and export orientation. (See also table A.23 in the appendix, which breaks down the formal training programs offered by categories of workers.)

Several points stand out in figure 5.11. First, as is well documented in numerous other countries, both developing and industrialized, the incidence of formal training rises with firm size. Smaller firms may be more constrained in training than their larger counterparts because of scale economies in training provision, poorer access to funding, and their use of less skill-using technologies and production or sales practices.

Second, the incidence of training is relatively similar across sectors—although higher in services for higher-level staff and higher in manufacturing for lower-level staff. The incidence of training appears to be high relative to the regional average, with the caveat of full comparability. The manufacturing and services sectors have a relatively similar incidence of training, but services firms are more likely to offer training to higher-level workers, and manufacturing firms are more apt to provide it for lower-level workers—which comports with the relative perceptions on quality gaps illustrated above. The similarity notwithstanding, the incidence of reported formal

Figure 5.11 Incidence of Training by Occupation Level, Sector, and Export Status



Source: Philippines Skills Survey 2008.

training appears to be rather high—between 40 percent and 90 percent for small and medium-size firms and nearly universal among large firms. This seems to position the Philippines favorably in the regional Asian context (table 5.25), although training definitions, sectors, and target group coverage may not be entirely comparable. It would also be useful to have comparable data on the actual proportion of employees trained across the different countries.

Table 5.25 Percentage of East Asian Firms Offering Formal Training for Permanent Employees

	All	*Skilled*	*Unskilled*	*Nonproduction*
Cambodia	22%	. . .	. . .	. . .
China	85%	. . .	. . .	. . .
Indonesia[a]	24%	64.22	29.88	. . .
Korea, Rep. of	57%	63.16	55.79	53.61
Malaysia	42%	. . .	. . .	. . .
Mongolia	47%	19.13	. . .	. . .
Thailand	76%	. . .	. . .	. . .
Vietnam	34%	45.19	28.37	27.88

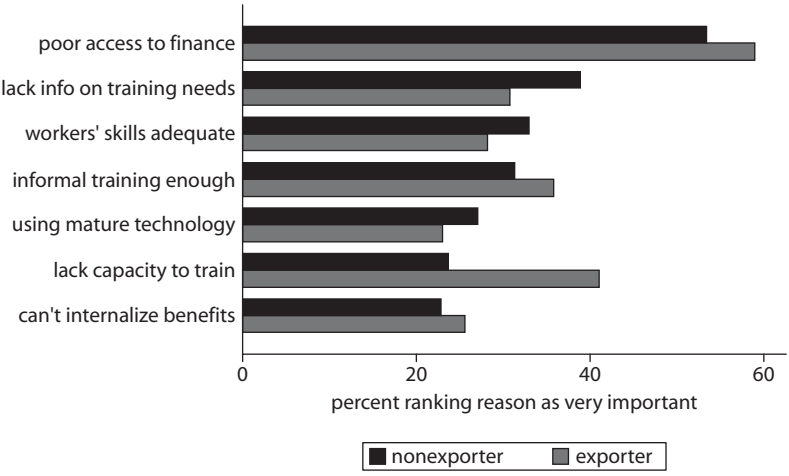
Sources: Enterprise Surveys (ICS). Vietnam 2005; Thailand and Korea 2004; Cambodia, China, Indonesia 2003; Malaysia 2002.
Note: [a.] Measure for Indonesia is percentage of employees receiving training.

Finally, in line with the fact that exporters are more demanding of their workforce, there is evidence that export orientation tends to be associated with a higher incidence of formal training provision. For lower-level staff, training incidence in manufacturing, controlling for size, is roughly similar among exporters and nonexporters; in the services sector, other than the smallest firms, export-oriented services firms have a much higher incidence of training than nonexporters. This training–export orientation correlation is most apparent for higher-level staff: in both sectors and across all firm sizes, exporters are much more likely to train higher-level staff than nonexporters.

Poor access to finance is the number one constraint to offering training. Employers offering little or no formal training to their workers were also asked to rank the relative importance of several reasons in this decision. Their rankings, reported in figure 5.12 separately by export status, suggest that both exporters and nonexporters are constrained principally by poor access to finance to pay for training. Other important constraints include poor information on training needs, and the perception that existing worker skills and informal on-the-job training provided by supervisors and coworkers are more than adequate. Interestingly, only exporters rank the lack of training capacity as their second-most-important constraint, perhaps reflecting the higher training needs of producing for, or serving, more demanding customers in foreign markets.

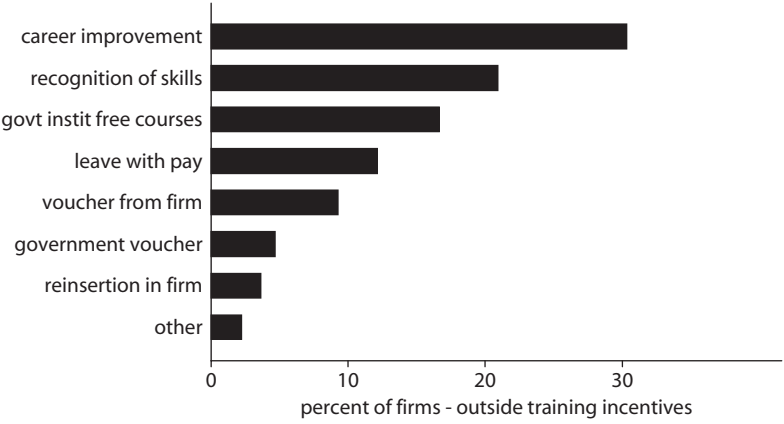
Career improvement is the strongest motivation for employees to seek training on their own. What incentives are there for workers wishing to pursue training on their own? Figure 5.13 shows several training incentives,

Figure 5.12 Reasons to Provide Little or No Formal Training



Source: Philippines Skills Survey 2008.

Figure 5.13 Incentives for Workers to Seek Own Training



Source: Philippines Skills Survey 2008.

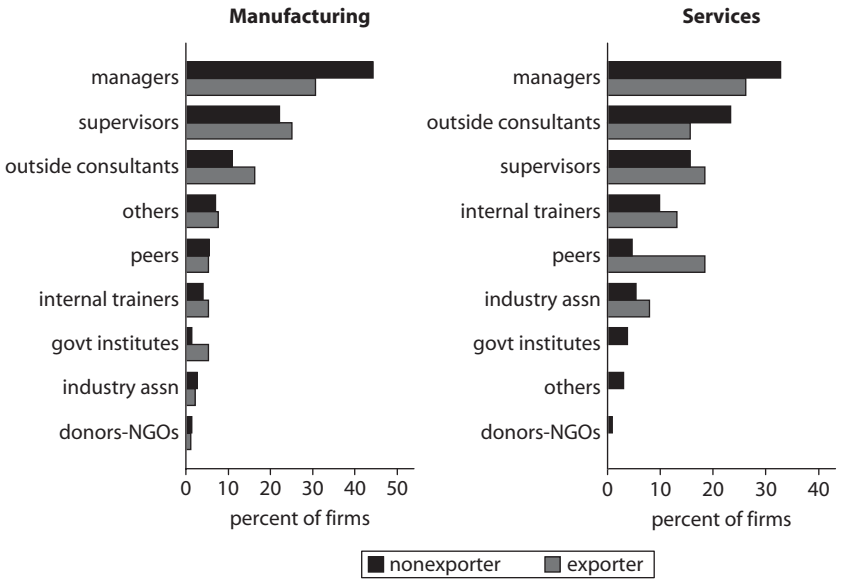
ranked by their importance as noted by employers. The three most important motivations are career improvement, recognition of skills, and the availability of free training courses offered by government training institutes. Other less important incentives are the company's HR policies—such as leave with pay, company training vouchers, and reinsertion after training—and government training vouchers.

Sources of Training

Sources of internal training differ somewhat between services and manufacturing, with higher relative importance of external consultants in services firms. Employers providing training for their employees do so either in-house or by sending workers to be trained outside the firm. Consider first the sources of in-house training in figure 5.14. In the manufacturing sector, in-house training programs offered within company premises are most commonly run by managers, supervisors, and outside consultants, in that order of importance. In services, managers continue to be the most important source, followed by outside consultants, supervisors, and internal trainers. Is export orientation associated with different training sources? Not in manufacturing. However, in services, exporters rely on a wider range of in-house sources—those noted above, plus peers who may have specific areas of knowledge or expertise.

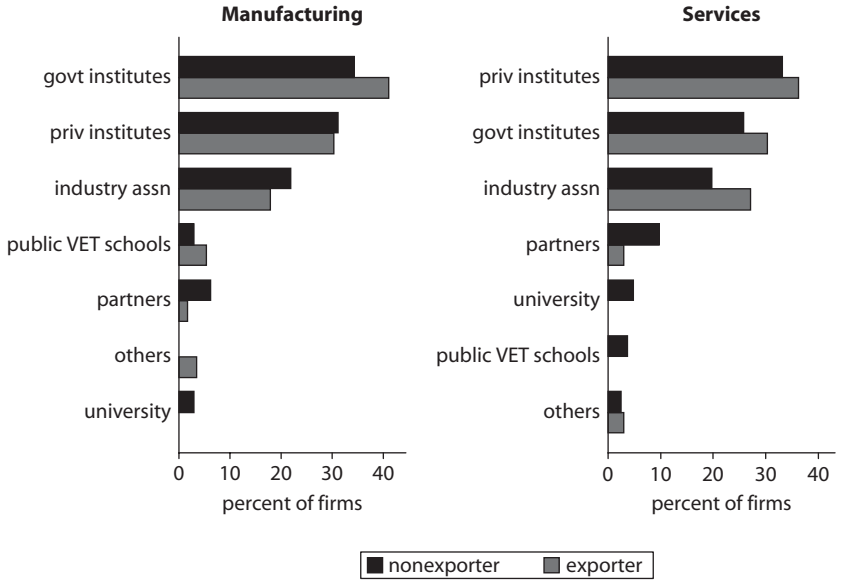
Sources of external training differ somewhat between services and manufacturing, with higher use of private institutes in service firms. Figure 5.15 shows the corresponding rankings of external sources of training, by sector and export orientation. As in in-house training, employers in the manufacturing and services sectors use a slightly different mix of training

Figure 5.14 Sources of In-House Training



Source: Philippines Skills Survey 2008.

Figure 5.15 Sources of External Training



Source: Philippines Skills Survey 2008.

providers for external training. In manufacturing, government institutes are ranked as the main source of external training, followed by private institutes and industry associations; in the services sector, private institutes are ranked first, followed by government institutes and industry associations. The other external sources—public vocational education training (VET) schools, partner firms, and universities—are cited much less frequently. There are no apparent differences in the sources of external training by export orientation.

Average Number of Days and Average Cost of Training

Who gets in-house and external training, what is the duration of training, and how much does it cost? Table 5.26 presents the conditional (on getting training) means of training duration and average cost per worker per year for both in-house and external training. The skills survey did not break down this information by training source. However, information on days of training and average cost was provided for different occupation groups, separately for in-house and external training. The table further disaggregates these data by sector and by firm size, given well-documented differences in training across firm size.

Table 5.26 Training Duration and Cost of In-House and External Training

Occupations	*Manufacturing*	*Services*	*Small*	*Medium*	*Large*
Days of training/year		*In-house Training*			
Managers	7.6	13.8	8.0	9.6	27.0
Professionals	7.2	9.5	6.9	9.1	12.0
Administrative	5.2	8.1	7.8	6.4	7.8
Sales	8.1	10.9	8.1	11.7	9.8
Skilled production	10.9	9.5	9.0	10.1	13.8
Unskilled workers	12.3	10.6	8.0	11.6	17.9
Average cost/worker (pesos)					
Managers	21,921	23,097	12,002	26,228	37,323
Professionals	10,594	19,399	7,552	22,050	21,406
Administrative	10,006	15,681	6,377	17,152	20,794
Sales	7,922	12,307	5,482	15,485	10,650
Skilled production	8,534	13,732	6,036	14,018	14,157
Unskilled workers	8,517	21,227	26,959	7,062	13,680
Days of training/year		*External Training*			
Managers	7.6	6.9	3.9	5.8	19.1
Professionals	5.3	7.1	4.0	7.7	9.6
Administrative & sales	4.0	8.5	4.4	7.4	9.2
Skilled production	8.6	6.9	5.3	10.0	5.3
Unskilled	4.0	19.0	3.0	12.8	7.0
Average cost/worker (pesos)					
Managers	22,361	21,690	13,145	31,530	17,708
Professionals	10,362	19,000	6,725	25,143	15,009
Administrative & sales	7,713	7,845	4,870	8,829	11,573
Skilled production	11,125	8,712	7,563	8,886	13,545
Unskilled	14,000	8,200	1,000	8,833	19,000

Source: Philippines Skills Survey 2008.

Conditional on training, the number of days of training received varies systematically across occupations by sector, whether received in-house or externally, and across firm sizes. Manufacturing firms put more emphasis on external training for highly skilled staff, while the opposite is true for services firms. Overall, average duration of training is longer for managers and unskilled staff in services and skilled production workers in manufacturing. In manufacturing, duration of in-house training is longest—11 to 12 days—for skilled and unskilled production workers; in services, in-house training is longest for managers, sales, and unskilled workers—11 to 14 days a year. By firm size, average duration of in-house training is roughly the same—about 8 days—for all occupational groups, but becomes longer—

11 to 18 days—for skilled and unskilled production workers and sales staff in medium and large firms. In large firms (more than 250 employees), in-house managerial training averages 27 days. The duration of training from external sources broadly resembles that of in-house training, except that managers, professionals, and skilled production workers tend to receive more days of external training than unskilled and sales workers in manufacturing, while the opposite is true in the services sector. This difference may suggest that services firms have more capacity than manufacturing firms to train higher-level staff in-house. Similarly, large firms also offer more days of in-house training across all occupation categories. Overall, the average duration of training, summing up in-house and external training, is longer for skilled production workers in manufacturing and for both managers and unskilled workers in services, confirming the quality gaps perception of the manufacturing sector for skilled production workers/postsecondary TVET graduates, and the quality gaps perceptions of the services sector for both managers/university graduates and "generalist" workers/secondary graduates.

The (normalized) cost of external training is generally higher than the cost of in-house training, with the exception of training for low-skilled and unskilled workers in the services sector. The average daily costs of training vary both across occupational groups and by in-house/external source (see table A.24 in the appendix). The costs of training, normalized by days of training, is typically higher (₱2,000–3,000 per day or about US$40–60) for higher-level staff—managers and professionals—than for skilled production, sales, and unskilled workers (₱700–1,500 per day or about US$15–30). The cost of in-house training per day is roughly comparable across sectors for higher-level staff, but higher for lower-level workers in services as compared with manufacturing. This is reversed when it comes to training from external sources. Here, the average cost of external training is higher in services for higher-level staff, and about equal across sectors for lower-level workers. This finding may also explain why unskilled workers are sent for longer training periods outside the firm in the service sector. The table also suggests that the (normalized) cost of external training is generally higher than the cost of in-house training; the exception is external training for lower-level skilled and unskilled workers in services, where average per day costs are lower than those of in-house training. Finally, the average cost of in-house training tends to be lower in small firms than in their larger counterparts, but it appears that the cost of training is highest among medium-size firms.

Table 5.27 Training Types for Different Occupations, by Sector and Export Orientation
(percentage of firms)

	Training from Any Source			
Training Type	*Manufacturing*		*Services*	
Managers & directors	No exports	Exports	No exports	Exports
Job specific	25.5	50	49.4	68.4
General thinking	23.6	48.1	50	68.4
General behavior	21.8	53.8	49.4	68.4
Computer	7.3	26.9	32.2	15.8
Professionals				
Job specific	36.4	61.5	53.4	73.7
General thinking	32.7	51.9	49.4	63.2
General behavior	29.1	51.9	49.4	68.4
Computer	20	38.5	37.4	10.5
Skilled production				
Job specific	63.6	73.1	39.1	52.6
General thinking	52.7	57.7	33.3	47.4
General behavior	47.3	59.6	35.1	42.1
Computer	14.5	28.8	22.4	26.3
Unskilled production				
Job specific	25.5	40.4	19.5	21.1
General thinking	21.8	34.6	16.7	21.1
General behavior	18.2	36.5	17.8	21.1
Computer	0	13.5	10.3	5.3
Nonproduction				
Job specific	52.7	65.4	70.7	73.7
General thinking	47.3	63.5	63.2	63.2
General behavior	43.6	65.4	66.1	63.2
Computer	29.1	48.1	44.8	36.8

Source: Philippines Skills Survey 2008.

Area of Training

There is significant training in job-specific and generic skills. Finally, an analysis of training by area and occupation indicates that training in job-specific skills is the most common area of training for professionals, skilled production, and nonproduction workers, followed by generic skills as a close second. Training in job-specific and generic skills is equally important for managers. Training in generic behavioral skills tends to be relatively more important in the services and export-oriented sectors.

Quality and Relevance of External Training

Quality and relevance of external training is generally satisfactory but more so in the private training institutions—which are more costly. Public training institutions are cheaper but show clear weaknesses in terms of pedagogy and facilities. Firm training is rather expensive compared with other skill-enhancing short-term courses, as reported in table 5.26. Do these training courses at least deliver the skills needed by employers? It seems so, judging from the rather high rating of the graduates from these courses reported in table 3.8. Up to 40 percent of employers consider them good or very good, with none considering them poor or very poor. However, perceptions are much more positive for private training institutions. Also, the services sector has generally a more favorable perception of external training than the manufacturing sector; in part this may be related to the services sector's larger use of private institutions.

When asked about the strengths and weaknesses of public and private training institutes to which they send their employees for training, the skills survey evidence—reported again in table 5.28—suggests higher quality of private training institutions because of the high-tech facilities and the efficiency and relevance of their training, as compared with the

Table 5.28 Postemployment Training Institutions: Strengths and Weaknesses*

List of Strengths			*List of Weaknesses*		
	Public	*Private*		*Public*	*Private*
Not expensive	36.8	2.3	Little/no budget	8.7	81.8
Government funding	6.2	10.3	Trainers not lively	6.0	1.3
Global methodology	2.8	3.5	Limited discussions	22.9	7.1
Updated inputs/topics	6.2	6.3	Short training duration	9.6	3.6
Trainers are responsive	2.5	5.2	Out-of-date training	2.8	1.3
Experienced trainers	9.0	9.2	Little training variation	1.8	0.4
Helpful updates	6.2	6.0	Lack evaluation	6.4	1.3
Flexible training duration	1.9	1.4	Lack relevance	4.1	1.3
Efficient/relevant courses	15.0	23.0	Training too long	0.5	0.4
Focused on training	5.0	9.2	Lack materials/equipment	19.7	0.0
Well-organized programs	1.6	5.5	Training venue too small	4.1	0.4
Number of participants	0.6	0.0	Venue not conducive	2.8	0.9
High-tech facilities	4.1	14.1	Too many trainees	10.1	0.0
Conducive venue	1.3	3.7	Inconvenient schedule	0.5	0.0
Venue is accessible	0.3	0.3			
Government accredited	0.6	0.0			

Source: Philippines Skills Survey 2008.
Note: * Proportion of institutions identified by employers as having strengths or weaknesses by different areas.

quality of public sector training with poor pedagogy, lack of materials and equipment, and crowded facilities. Cost is, however, the main weakness of private sector training institutions.

Notes

1. This paper is based on Orbeta 2008.
2. http://www.ched.gov.ph
3. The criteria for the granting of autonomous and deregulated status include (a) long tradition of integrity and untarnished reputation, which refers to adherence to existing laws, rules, and regulations, and officials, faculty, or staff not involved in anomalies; (b) commitment to academic excellence as indicated by being a Center of Excellence or Center of Development for a number of programs, accreditation, and international or national recognition; and (c) sustainability and viability of operations as indicated by financial soundness of operations and administrative competence (CHED MO 52, series 2006).
4. RA 7722.
5. There are currently five accrediting bodies, the first three catering to private HEIs and the last two geared toward public HEIs.
6. Accreditation criteria are defined as follows: Level 1: Granted initial accreditation for three years; Level 2: Reaccredited for three to five years; Level 3: Reaccredited and have met additional criteria involving standard of instruction and community extension and at least two of the following: research tradition, faculty development tradition, performance in licensure examinations, links with other schools and/or agencies, library and learning facilities for undergraduate programs; and for graduate programs standard of instruction, research tradition, and any two of the rest of the criteria.
7. Elsewhere in East Asia, the percentage of unemployed with some college education averages between 2 percent in Fiji and Thailand and 25 percent in Malaysia.
8. This section is based on Lanzona 2008.
9. New developments may not be considered in this study.
10. The youth unemployment rate—defined as the proportion of 15-to-24-year-olds unemployed—is second only to Indonesia in the region.
11. The 2005 IES was undertaken to include the enterprise-based and community-based training programs, in addition to the school-based and community-based training programs, to have a more complete assessment of the relevance and effectiveness of the TVET programs in different modes of delivery.
12. The scholarship programs provide grants for short-term courses in business, medical, and computer software fields; tuition assistance for those entering

private TVET education; and scholarships for those entering the "ladderized" program.

13. This section is based on Tan 2008.

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CHAPTER 6

Policy Implications

The evidence gathered across the two parts of this book points to skills gaps in the Philippines, which can be related to a large extent (although not exclusively) to the provision of education and training. These findings suggest several policy implications for the supply of skills in the country, both overall and by subsector, which we review below.

General Policy Implications

Several general, across-sectors recommendations—all aimed at improving the responsiveness of the supply of skills to the demand and needs of the labor market—can be derived from this report:

(1) *More international benchmarking of institutions and students.* Philippine HEIs are not part of any international ranking, and efforts to compare Filipino students' and workers' competencies with the ones of other countries have remained limited. More international benchmarking is urgently needed to address issues of quality and relevance for both the domestic and international labor markets.

(2) *Strengthening generic, or life, skills in the curricula of all education and training levels, including putting an increased emphasis on pedagogical*

practices that shape work habits, while making sure job-specific skills focus on the continuous development and strengthening of practical skills through adequate pedagogical practices and school-industry links.[1]

(3) *Better articulation of the different pillars of the skills supply system through better overall governance, a strengthened skills certification, an improved education and training quality-assurance system, and appropriate pathways and bridges across different types of institutions.* Progress has already been made in this direction through TESDA, BALS, and other bodies, but the need for a better articulation and coordination of the skills development system[2] in the country is real. More-effective overall governance must address fragmentation and ensure that students and workers can move horizontally and vertically between education and training levels and the formal/nonformal education and training system, with different entry and exit points, through a strengthened skills certification and education and training quality-assurance system. The competency-based TVET (CBT) system is a good step in the right direction, but it applies only to postsecondary TVET. Many other pillars of the skills development system (including postemployment training) are still far from adopting a competency-based approach.

(4) *More flexibility in curriculum and academic decisions and continuous participation of the private sector* (under an improved quality-assurance framework).

(5) *Closer links between postsecondary and tertiary education and industries by intensifying collaboration in curriculum design, training, and R&D.*

(6) *Improved quantity and quality of information on the labor market* (with, for instance, better and more complete business and labor force surveys).[3]

Specific Policy Recommendations

The findings of this report prompt a number of specific recommendations. We present them by education level.

Higher Education

For the higher education subsector, the challenge of improving quality and relevance needs to begin by upgrading essential inputs such as faculty qualifications and facilities. Other necessary actions include improving precollege preparation, supporting periodic assessment of testing and accreditation policies to monitor and evaluate quality, and incorporating effective strategies to improve adaptability to the labor market.

Operationally, the Philippines could enact the following measures:

- *Improve funding and incentives for upgrading faculty qualifications*. Although the government has recently issued a directive to raise the proportion of faculty with master's degrees from 30 percent to 70 percent, adequate resources have not been allocated to achieve this. The CHED's faculty development program could be more targeted to this concern, and HEIs could be given more incentives to improve faculty qualifications, such as increased possibility of federal funding. Finally, HEIs themselves could institute pay structures that reward postgraduate qualifications.

- *Improve university facilities*. A comprehensive survey could be undertaken by the government to identify which HEIs are in need of facility upgrades. This survey could form the basis of a long-term investment plan to improve academic life. Long-term financing for these activities needs to be made available.

- *Improve precollege preparation to improve tertiary outcomes*. The Philippines could consider expanding the current 10-year basic education system to the more internationally accepted 12-year system, as Mongolia has recently done. International evidence has shown that better-prepared students perform significantly better at the tertiary level. However, more analysis and evidence on this issue is needed before taking a decision.

- *Institutionalize and systematize accreditation to promote quality of institutions and programs*. Philippine HEIs have traditionally been self-regulated, and accreditation has remained voluntary. Despite the creation of several national accreditation bodies and coordinating mechanisms, less than 20 percent of HEIs have even one accredited program. CHED could provide incentives for gaining accredited status,

such as priority in grants and financial assistance and administrative and financial deregulation.

- *Consolidate or close nonperforming institutions and publish and disseminate information on performance* (while enacting appropriate transition measures to protect affected students). CHED could close several failing and nonperforming HEIs. This—together with regular publication and dissemination of outcomes (board exam results) and accreditation results—would signal a commitment to quality, guide and influence the behavior of tertiary education institutions, and also inform students more clearly about which institutions provide better education. It would be important to also enact appropriate transition measures to protect students attending institutions slated for closure.

- *Related to quality assurance, although outside the direct sphere of action of higher education, revise certification policies to improve the match between professions and labor market needs.* Part of the skills mismatch in professional positions is clearly related to overregulation of certain professions. Licensure examinations should be revised or reoriented (possibly adopting multistage tests) to support better alignment with labor market needs.

- *Foster university-industry links by institutionalizing and accrediting on-the-job trainings.* OJTs, practica, or internships vary in quality and participation. CHED could work with national accreditation agencies to develop minimum standards for OJT experiences and foster better links with the nation's industry.[4] Lessons from these experiences could feed back into creating more relevant curricula, possibly putting more emphasis on work-related generic skills such as decision making, entrepreneurial skills, and creative thinking.

- *Foster university-industry links by gathering more information and strengthening consultative mechanisms between industry and academia*. The governing boards and the technical panels are the current main venues where private sector inputs in higher educational are being used. There is, however, little knowledge on how these and other possible consultative mechanisms are really working and how they can be strengthened.

- *Foster university-industry links by including industry input into curriculum design for relevant fields, promoting use of university labs by industry,*

promoting joint R&D projects, and licensing university-held patents. Such measures would not only help improve the relevance and quality of the system but may also have long-term benefits for the national innovation capacity of the country.

- *Undertake a thorough set of tracer studies to follow graduates to learn lessons about the relevance of their education.* Such studies could interview both graduates and employers on a regular basis, ascertain what the most desirable skills for particular industries are, identify which fields of education are in decreased demand, and identify where HEIs can benefit from this information and incorporate it into their curricula.[5]

- *Improve funding mechanisms to expand access.* Lack of access will end up hampering relevance to the labor market. Despite their long history, public scholarship programs have remained limited in scope. Lamentable is the virtual absence of student loan programs. Expanding the coverage of the scholarship program and configuring a student loan program should be a priority. There are several experiences of student loans across the world[6] that would be worth looking at in detail to derive lessons for the Philippines.

Technical and Vocational Education

The government has made large investments in postsecondary TVET and many steps and reforms are going in the right direction, but quality and relevance to labor market needs could be further improved. Some of the following measures could be instituted to improve the efficiency, quality, and relevance of the system:

- *Induce greater participation of the private sector to reduce government expenditure while improving efficiency.* Grants and tax incentives can be given to private providers to better match the skills taught in TVET programs to the skills that firms desire. However, there needs to be a mechanism to close nonperforming private providers—see below—in view of the poor perceptions of employers of some of their graduates. Public-private partnerships with private financing and public provision could also be further supported.

- *Continue supporting community-based programs while reviewing the efficiency of some school-based ones.* Community-based programs have shown to be generally more efficient and relevant to labor market

needs, while some school-based programs are both costly and underperforming, and therefore need to be reviewed.

- *Reduce government costs through the rationalization of TVET providers.* Redundant costs may be trimmed by rationalizing or terminating unproductive programs, especially in unproductive state universities and colleges. In practice, this would mean the establishment of sanction mechanisms that would automatically remove the right of providers to receive government subsidies when performance is below acceptable standards. To facilitate this, TESDA should develop multiple performance indicators for skills competencies and productivity with employer review and input.

- *Develop appropriate performance standards for TVET providers.* TESDA should broaden its leadership role in performance standards by investing in the design and demonstration of compatible performance outcome measures and performance standards systems for all employment and training programs. The role of TESDA needs to change from a direct service provider to an enabler of more effective providers.

- *Update and enforce accreditation standards.* For all of the administrative responsibilities that TESDA currently has, the continued update of accreditation materials is one of the burdens that the agency must undertake.

- *Foster closer school-industry links, in particular for school-based programs, to improve the relevance of curriculum to labor market needs.* School-based programs have lower employment rates than other programs. Better links with industry in curriculum design and training may help reorient TVET offerings and skills as needed, possibly with more emphasis on technologically advanced fields, fields and skills applicable to the services sector, and practical skills. There is room to review and strengthen the dual-training system, which combines in-plant training and in-school training based on a training plan collaboratively designed by an accredited educational institution/training center and an accredited establishment.

- *Increase industry participation in the TESDA board.* Another strategy to improve links with industry is simply to increase its representation on the board of TESDA to ensure more continuous inputs.

- *Improve targeting of financial assistance for TVET.* Although scholarships have been established to ease individual financial burden, they should be targeted to the most disadvantaged students. As currently implemented, scholarships are given to those unable to pass the qualifying exam, a system that results in substantial leakage to the nonpoor.

Alternative Learning System

The ALS is facing significant coverage issues related to inadequate funding and little use of IT instruction. Although its quality is very difficult to measure and its relevance/adaptability to labor market needs is deemed to be generally satisfactory (more so than formal secondary education), teacher, facilities, and learning modules' quality as well as industry links remain a weakness. There is, therefore, scope for improved effectiveness and relevance of the system through the following measures:

- *Prioritize ALS efforts to young functional illiterates*. Concentrating on this group, which numbers about 3 million, would allow BALS to develop more effective and targeted learning modules and delivery techniques. Currently activities are widely dispersed in many programs that cater to different groups that have different needs. Perhaps NGOs could fill the education needs of other groups.

- *Adopt IT instruction on a larger scale*. This would help meet the needs of BALS's target population. BALS still uses teacher-based instructional technology, which is expensive and difficult to scale up. BALS could more effectively employ quality IT instructional packages that can reach a large number of people at any time.

- *Establish an effective planning and coordinating authority for the ALS subsector*. Lacking is a central authority that would plan ALS activities by all types of providers, perform research, set standards, and establish an information system. Currently there is no agency to undertake development work. Although BALS is a good provider, it does not have the authority to govern private providers. Furthermore, a lack of research inhibits BALS from identifying effective programs, learning modules, and delivery systems.

- *Establish an information system to monitor and evaluate the performance of ALS graduates.* There is currently no way to assess the effectiveness of the different programs, the relevance of the curriculum, or the labor

market outcomes of ALS graduates. An information system should be set up that includes data collection on individual programs and participants and tracer studies. Impact evaluations of the programs should also be undertaken.

- *Devote a larger proportion of the education budget to BALS (in combination with evidence of improved effectiveness)*. The ALS is assigned an unrealistically large responsibility of eradicating illiteracy and raising the level of education of about 16 million people. However, with limited capacity and a budget that represents less than 1 percent of the education budget, prospects for improving the quality and outreach of BALS are modest. The budget should be increased, but in combination with better efforts to measure the effectiveness of the system.

- *Support closer links with industry.* Although industries hire ALS graduates, employers still do not fully recognize BALS certification. Further collaboration with industry in developing the learning modules may be useful in improving the standing of BALS certification.

In-Service Training

The review of in-service training shows fairly active use of training (formal-informal/in-house and external) by firms in the manufacturing and services sectors, although it is fairly focused on already-skilled labor to complement their existing skills. There is some positive evidence on the quality of external training. However, there is still scope for improving the coverage and quality of postemployment training by working at four different levels: the government, the firms, the employees, and the training institutions. The main recommendations include the following:

- *Improve access to finance to enhance training coverage.* Access to finance is mentioned by firms as the number one constraint for not providing training. Additional financial incentives from the government would help. There is significant experience with training development funds in East Asia[7] on which the Philippines could nicely build. Financial assistance would be particularly relevant for small firms, which are severely constrained in offering training.

- *Provide more incentives for employees to pursue outside training on their own*. Firms cannot provide all training, and therefore, incentives for

employees to pursue their own training are also important. According to survey results, these incentives should mostly cover improvement of career opportunities offered by firms, certification of new skills acquired, and free skills training opportunities in public institutes. Training vouchers may provide a further motivation to seek training.

- *Plan training courses around the job-specific skills weakly provided by the education sector.* Needed job-specific, practical skills are good candidates for complementary training at the firm level. Core skills such as problem solving and leadership are less likely to be provided at the firm level, given their high portability.

- *Improve the quality and relevance of public training institutions.* There is an urgent need to make pedagogy more interactive and provide more materials and equipment.

- *Make private training institutes more affordable.* Although private institutes provide more relevant training with better facilities, these institutes are very costly, according to the vast majority of employers. Innovative payment schemes should be explored. Public-private partnerships, such as training vouchers to be used in public or private institutions, may be one possible strategy to make these institutes more affordable.

Notes

1. Extensive internship programs should be built into the curriculum at different levels of schooling.
2. "System" comes from the fact that we are looking at three interrelated dimensions: general ability to produce a skilled labor force, the ability to continue updating these skills over time, and the ability to help unskilled young adults and adults gain skills.
3. Business surveys should include detailed employment and skills modules.
4. Better OJTs would also help address the issue of a lack of certified professionals by making sure they at least get trained according to the needs of industries and get increased employment opportunities.
5. These studies could be modeled on the Public Investment Climate Surveys that have been repeatedly undertaken in the region, but only once in the Philippines, adding modules on skills and employees.

6. The well-known student loan programs of Australia and the United Kingdom deserve attention.
7. See the cases of Malaysia, Thailand, and Singapore, which set up training funds financed with general or payroll taxes to allow firms to buy training programs from different providers. For more information, see Malaysia – Ministry of Human Resources (2008); Kuruvilla, Ericskon, and Hwang (2001); and Seng (1996).

Appendix: Tables

Table A.1 Annual Real GDP Growth by Sector, 1985–2007
(percentages)

Sector	*85–90*	*90–95*	*95–00*	*00–05*	*05–06*	*06–07*
Agriculture, Fishery & Forestry	2.871	1.507	2.269	4.005	3.826	5.076
Agriculture industry	3.323	2.302	2.340	4.033	3.873	5.036
Forestry	–3.728	–15.139	–4.576	0.146	–4.052	12.217
Industry	5.485	2.216	4.311	3.005	4.548	6.609
Mining & Quarrying	–1.349	–1.904	1.590	16.983	–6.085	24.999
Manufacturing	5.572	2.104	3.345	4.726	4.603	3.336
Construction	8.831	1.259	8.939	–5.755	7.330	19.491
Utilities	3.687	7.910	4.988	3.135	6.386	7.210
Services	6.381	2.701	5.206	6.759	6.703	8.685
Transport & Communications	5.963	3.045	8.786	10.735	6.344	8.231
Trade	5.938	2.979	4.776	6.625	6.096	9.802
Finance	15.003	2.592	7.601	7.683	11.359	12.261
Dwellings & Real Estate	4.988	1.803	2.090	3.380	5.713	6.025

(continued)

Table A.1 Annual Real GDP Growth by Sector, 1985–2007 *(continued)*

Sector	*85–90*	*90–95*	*95–00*	*00–05*	*05–06*	*06–07*
Private Services	5.231	2.475	5.551	8.332	6.917	8.761
Government Services	6.093	2.878	3.281	1.765	4.707	3.293
Gross Domestic Product	5.204	2.263	4.257	4.883	5.447	7.332

Source: National Statistical Coordination Board.
Note: Annual growth rates calculated as simple averages over a five-year period.

Table A.2 GDP Composition by Sector, 1985–2007
(percentages)

Sector	*1985*	*1990*	*1995*	*2000*	*2005*	*2007*
Agriculture, Fishery & Forestry	0.2458	0.2230	0.2155	0.1978	0.1908	0.1839
Agriculture industry	0.2300	0.2129	0.2132	0.1964	0.1897	0.1829
Forestry	0.0157	0.0102	0.0022	0.0014	0.0011	0.0011
Industry	0.3507	0.3546	0.3538	0.3546	0.3279	0.3229
Mining & Quarrying	0.0208	0.0154	0.0125	0.0111	0.0165	0.0172
Manufacturing	0.2515	0.2552	0.2534	0.2439	0.2423	0.2314
Construction	0.0508	0.0581	0.0555	0.0662	0.0379	0.0429
Utilities	0.0276	0.0259	0.0325	0.0335	0.0311	0.0314
Services	0.4035	0.4224	0.4307	0.4476	0.4813	0.4932
Transport & Communications	0.0554	0.0570	0.0590	0.0701	0.0865	0.0880
Trade	0.1448	0.1491	0.1539	0.1572	0.1682	0.1731
Finance	0.0299	0.0416	0.0422	0.0480	0.0534	0.0590
Dwellings & Real Estate	0.0562	0.0557	0.0546	0.0497	0.0467	0.0462
Private Services	0.0684	0.0685	0.0691	0.0728	0.0829	0.0852
Government Services	0.0488	0.0505	0.0519	0.0498	0.0436	0.0416

Source: National Statistical Coordination Board.

Table A.3 Global Competitiveness Index and Rankings

	GCI 2008–2009		*Basic requirements*		*Institutions*		*Infrastructure*		*Macro-economic stability*		*Health & primary education*		*Efficiency enhancers*		*Higher education & training*		*Technological readiness*	
economy	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*	*Rank*	*Score*
Japan	9	5.38	26	5.36	26	4.99	11	5.80	98	4.53	22	6.11	12	5.22	23	5.08	21	5.11
Singapore	5	5.53	3	6.14	1	6.19	4	6.39	21	5.74	16	6.24	2	5.52	8	5.56	7	5.65
Hong Kong, China	11	5.33	5	6.05	9	5.78	5	6.32	3	6.26	43	5.82	6	5.43	28	4.78	10	5.60
Korea, Rep. of	13	5.28	16	5.71	28	4.95	15	5.63	4	6.15	26	6.10	15	5.15	12	5.51	13	5.51
Taiwan, China	17	5.22	20	5.53	40	4.67	19	5.46	18	5.82	20	6.16	18	5.06	13	5.46	15	5.34
Malaysia	21	5.04	25	5.42	30	4.91	23	5.25	38	5.43	23	6.11	24	4.82	35	4.63	34	4.41
Thailand	34	4.60	43	4.97	57	4.17	29	4.67	41	5.41	58	5.61	36	4.45	51	4.31	66	3.37
Indonesia	55	4.25	76	4.25	68	3.89	86	2.95	72	4.91	87	5.26	49	4.29	71	3.88	88	3.02
Philippines	71	4.09	85	4.17	105	3.44	92	2.86	53	5.21	90	5.17	68	4.02	60	4.10	70	3.26
China	30	4.70	42	5.01	56	4.18	47	4.22	11	5.95	50	5.71	40	4.41	64	4.05	77	3.19
India	50	4.33	80	4.23	53	4.23	72	3.38	109	4.32	100	4.99	33	4.49	63	4.06	69	3.27
United States	1	5.74	22	5.50	29	4.93	7	6.10	66	4.99	34	5.97	1	5.81	5	5.67	11	5.57
Switzerland	2	5.61	2	6.14	5	5.97	3	6.40	10	5.97	17	6.22	8	5.35	7	5.60	5	5.76
Finland	6	5.50	1	6.18	2	6.18	9	5.94	8	6.01	1	6.57	13	5.21	1	6.07	14	5.46

Source: Global Competitiveness Report 2010.

Table A.4 Sample Sizes of Time Series LFS

Labor force survey	*Year*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Sample age 15–65 years	60,382	77,207	78,180	120,518	122,377	126,420	77,825
Sample working	37,335	46,511	47,304	74,768	73,815	76,185	74,090

Source: January LFS rounds for 1988 to 1996 and October LFS rounds for 2001 to 2006.

Table A.5 Skill Composition of the Employed by Broad Industry Groups

Broad industry	*Year*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Share of employed with some secondary education and above							
Agriculture	0.2964	0.3101	0.3256	0.3439	0.3832	0.3983	0.4098
Mining	0.5456	0.4509	0.5383	0.6510	0.7297	0.5732	0.4772
Manufacture	0.5951	0.6419	0.6901	0.7183	0.7450	0.7548	0.7779
Utilities	0.8994	0.8398	0.8825	0.8841	0.8762	0.9326	0.9797
Construction	0.5291	0.5603	0.5613	0.5821	0.6529	0.6517	0.6598
Trade	0.6036	0.6175	0.6444	0.6739	0.7289	0.7648	0.7786
Hotels, restaurants	0.7052	0.7681	0.7661	0.8063	0.8331	0.8566	0.8695
Transport. & comm.	0.6745	0.6662	0.7005	0.7104	0.7501	0.7645	0.7750
Finance bus. services	0.9491	0.9307	0.9365	0.9302	0.9544	0.9718	0.9648
Public administration	0.9215	0.9043	0.8955	0.8908	0.8879	0.9170	0.9119
Community services	0.9235	0.9176	0.9245	0.9301	0.8674	0.8946	0.9181
Private HH workers	0.5181	0.5247	0.5584	0.5728	0.5887	0.6256	0.6473
Share of employed with some tertiary education and above							
Agriculture	0.0517	0.0546	0.0564	0.0627	0.0750	0.0743	0.0785
Mining	0.1527	0.1320	0.1427	0.2448	0.2770	0.0895	0.1092
Manufacture	0.1992	0.2151	0.2425	0.2503	0.2722	0.2749	0.2837
Utilities	0.5776	0.5800	0.5443	0.5710	0.5682	0.6399	0.6509
Construction	0.1318	0.1381	0.1285	0.1445	0.1500	0.1561	0.1630
Wholesale retail trade	0.2376	0.2387	0.2535	0.2805	0.3024	0.3278	0.3348
Hotels, restaurants	0.3073	0.3153	0.3167	0.3623	0.3696	0.4148	0.4227
Transport. & comm.	0.2124	0.2271	0.2259	0.2443	0.2457	0.2721	0.2838
Finance bus. services	0.7006	0.6981	0.7020	0.6858	0.6977	0.7224	0.7385
Public administration	0.6944	0.6776	0.6474	0.6556	0.6369	0.6686	0.6611
Community services	0.7930	0.8028	0.7854	0.8034	0.6472	0.6939	0.7264
Private HH workers	0.1018	0.1046	0.1196	0.1242	0.0768	0.0865	0.0887

Source: Labor Force Survey, Philippines National Statistical Office.
Note: Reported figures were calculated with sampling weights.

Table A.6 Skills Wage Premiums by Sector, 1988–2006

	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Secondary education & above versus less than secondary							
Agriculture	1.18	1.20	1.17	1.21	1.14	1.18	1.16
Mining	1.20	1.38	1.23	1.49	1.43	1.30	1.37
Manufacture	1.59	1.60	1.53	1.49	1.35	1.32	1.39
Utilities	1.64	1.59	1.41	1.71	1.67	1.52	1.14
Construction	1.18	1.25	1.18	1.17	1.15	1.16	1.13
Wholesale retail trade	1.29	1.34	1.26	1.30	1.31	1.32	1.45
Hotels, restaurants	1.22	1.25	1.39	1.45	1.41	1.81	1.80
Transportation	1.33	1.43	1.37	1.31	1.40	1.46	1.71
Finance bus. services	1.78	1.78	1.73	1.58	1.77	1.72	1.98
Public administration	1.58	1.52	1.68	1.79	1.76	2.06	1.79
Community services	1.85	1.85	1.56	1.75	2.25	2.17	2.01
Private HH workers	1.50	1.44	1.37	1.31	0.99	0.91	1.00
Tertiary education & above versus less than tertiary							
Agriculture	1.56	1.50	1.57	1.62	1.49	1.51	1.47
Mining	1.43	1.80	1.34	1.46	1.30	1.76	1.24
Manufacture	1.79	1.60	1.63	1.66	1.53	1.44	1.48
Utilities	1.61	1.38	1.54	1.43	1.64	1.60	1.55
Construction	1.53	1.60	1.48	1.48	1.44	1.31	1.33
Wholesale retail trade	1.53	1.51	1.50	1.47	1.47	1.48	1.56
Hotels, restaurants	1.49	1.39	1.51	1.41	1.50	1.48	1.58
Transportation	1.53	1.59	1.54	1.50	1.68	1.68	1.87
Finance bus. services	1.68	1.64	1.59	1.69	1.61	1.56	1.81
Public administration	1.33	1.51	1.48	1.71	1.72	1.71	1.56
Community services	1.68	1.81	1.60	1.79	2.15	2.05	1.87
Private HH workers	1.94	2.04	1.81	1.69	1.24	1.38	1.38

Source: Labor Force Survey, Philippines National Statistical Office.
Note: Skills wage premiums are calculated as the ratio of hourly pay of each skill group relative to the comparator skill group.

Table A.7 Industry Wage Premiums: Secondary versus Primary or Less Education

	Standardized industry wage premiums						
primary or less	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Growing of Crops	0.0549	0.0510	0.0185	–0.0135	0.0094	0.0768	0.0569
Farming Animals	–0.0590	0.0248	–0.0563	0.0257	0.0624	0.2294	0.0185
Agricultural Services	0.0358	–0.0714	–0.0185	–0.2470	–0.0510	0.1182	0.0692
Forestry, Logging, Hunting	0.0325	–0.0155	0.0429	–0.2447	0.1610	0.1057	0.3488
Fishing	0.1710	0.1454	0.1171	0.0544	0.0406	0.0273	0.1565
Metallic Ore Mining	0.3370	0.1738	0.1788	0.1315	0.2436	0.0736	0.0240
Nonmetallic Mining	0.0920	–0.0126	0.0280	–0.0539	0.0695	–0.0458	–0.0450
Food, Beverages, Tobacco	–0.0108	0.0616	0.0278	0.0728	–0.0224	–0.1490	–0.0254

(continued)

Table A.7 Industry Wage Premiums: Secondary versus Primary or Less Education *(continued)*

Secondary versus primary or less	*Standardized industry wage premiums*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Textiles, Apparel Leather	–0.1945	–0.2450	–0.1674	–0.0831	0.0838	–0.0431	–0.0848
Wood Products Furniture	–0.1216	–0.0769	–0.0050	–0.1492	0.0222	0.0625	–0.0559
Paper Publishing	–0.0621	0.3701	0.0829	0.0695	0.0646	–0.1552	0.0653
Chemicals Petroleum	0.2988	0.2724	0.1998	0.2642	0.1071	0.0593	0.0563
Nonmetallic Minerals	–0.1746	–0.0463	0.1733	0.0201	0.1422	0.0854	0.0629
Basic Metals	0.2158	0.0610	0.1591	0.3601	0.0920	0.2116	0.3287
Fab. Metals & Machinery	0.1479	0.2681	0.1691	0.2754	0.1972	0.2407	0.1453
Manufacture, nec	–0.2112	–0.1616	–0.1012	–0.0064	–0.0267	0.0624	–0.0203
Utilities	0.2284	0.1557	0.3156	0.4049	0.2958	0.2216	0.4442
Construction	0.1524	0.1683	0.2074	0.2403	0.1945	0.1517	0.1836
Wholesale Trade	0.0566	0.1475	0.0721	0.0770	0.0322	–0.0234	0.0088
Retail Trade	–0.1611	–0.1599	–0.1060	–0.1236	–0.0840	–0.0819	–0.1716
Hotels and Restaurants	0.1684	0.0745	–0.0459	0.0204	0.0400	–0.2484	–0.1449
Transportation	–0.0534	–0.0857	–0.0825	–0.0245	–0.0636	–0.0840	–0.0433
Communications	0.6869	0.3384	0.3606	0.3901	0.2340	0.0777	–0.1676
Banking Institutions	0.3174	0.7010	0.3098	0.2375	0.0114	0.3175	0.6847
Nonbank Finance	–0.9443	0.6411	–0.2638	0.3396	0.1110	0.3320	0.0357
Insurance and Pension	–0.2793	–0.2571	–0.2388	0.1754	0.2726	–0.2785	0.3964
Real Estate	0.2528	0.5177	–0.0293	0.3186	0.1720	0.2220	–0.6679
Business Services	0.0853	–0.0824	–0.0009	0.1372	0.0023	0.0676	–0.0247
Public Administration	0.0690	0.0866	–0.0142	–0.0133	0.0172	–0.0367	0.1185
Education	0.2370	0.2258	0.3771	0.3133	0.1081	–0.1125	0.1309
Health and Social Work	–0.1081	–0.1663	0.0406	–0.1411	–0.1796	0.0384	0.2391
Recreational, Cultural	–0.1546	–0.1547	–0.0466	–0.0160	–0.1202	–0.0591	0.2463
Sanitation Community	–0.2231	–0.3057	–0.2778	–0.2557	0.0388	0.0428	0.1264
Private Households	–0.3063	–0.3183	–0.2412	–0.2128	–0.2825	–0.3009	–0.3864
MEAN INDUSTRY WAGE PREMIUM	0.3063	0.3183	0.2412	0.2128	0.2825	0.3009	0.3864

Source: Labor Force Survey, Philippines National Statistical Office.
Note: Estimates are based on log hourly wage regressions controlling for individual attributes, 16 regions, 34 industries, and 5 occupations. Industry wage premiums are expressed as deviations from the employment–weighted average industry wage premium.

Table A.8 Skills Wage Premiums: Secondary versus Primary or Less Education

Secondary versus primary or less	*Standardized skills wage premiums*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Growing of Crops	–0.0546	–0.0685	–0.0556	–0.0474	–0.0485	–0.0396	–0.0730
Farming Animals	0.0919	–0.0409	0.0268	–0.0724	–0.1472	–0.2230	–0.0509
Agricultural Services	–0.0097	0.1659	0.0178	0.2902	–0.0770	–0.1186	–0.1372
Forestry, Logging, Hunting	0.1630	0.1965	–0.0132	0.3869	–0.0936	–0.0487	–0.2617
Fishing	–0.1916	–0.1739	–0.1416	–0.1207	–0.0753	–0.1084	–0.1798
Metallic Ore Mining	–0.0705	–0.0308	0.0090	0.0834	–0.0425	0.0280	0.0454
Nonmetallic Mining	0.0976	0.0695	–0.0351	0.1448	–0.0949	–0.0399	0.1156
Food, Beverages, Tobacco	0.1891	0.1255	0.1556	0.0367	0.0444	0.0962	–0.0017
Textiles, Apparel Leather	0.2526	0.3099	0.2644	0.1239	–0.0871	–0.0174	–0.0101
Wood Products Furniture	0.1200	0.0635	0.0636	0.1281	–0.0564	–0.1539	–0.0043
Paper Publishing	0.1301	–0.2235	0.0885	0.0353	0.0485	0.1823	–0.0673
Chemicals Petroleum	0.0205	0.0102	0.2043	0.0156	0.1008	0.0385	0.0595
Nonmetallic Minerals	0.2300	0.2074	0.0108	0.0769	–0.0886	–0.1465	0.0824
Basic Metals	0.2461	0.3021	0.0624	–0.1478	0.0811	–0.1407	–0.2753
Fab. Metals & Machinery	0.1527	0.0690	0.1528	0.0842	0.0027	–0.0607	0.0796
Manufacture, nec	0.3330	0.3602	0.2290	0.0472	0.0432	–0.0655	–0.0045
Utilities	0.0663	0.2244	0.1293	0.0751	0.0473	–0.0395	–0.1945
Construction	–0.1057	–0.0846	–0.0899	–0.1558	–0.1097	–0.1078	–0.1430
Wholesale Trade	0.2071	0.0415	0.1281	0.1321	–0.0257	0.0484	0.0132
Retail Trade	0.0036	0.0442	–0.0166	–0.0010	0.0652	0.0452	0.1556
Hotels and Restaurants	–0.1043	–0.0121	0.1680	0.1008	0.0505	0.2958	0.2118
Transportation	–0.0135	0.0202	0.0175	–0.0598	0.0109	0.0048	0.0267
Communications	–0.4479	–0.0192	–0.0556	–0.0272	–0.0150	0.1989	0.5355
Banking Institutions	0.1621	–0.0926	0.2518	0.3777	0.3049	0.0494	–0.2150
Nonbank Finance	1.3057	–0.3872	0.4224	0.0497	–0.0486	–0.2587	0.0835
Insurance and Pension	0.6115	0.7699	0.6531	0.2699	–0.1842	0.5125	–0.2150
Real Estate	0.2206	0.0102	0.5564	0.2094	–0.0495	–0.1642	0.8449
Business Services	0.0438	0.2582	0.2103	0.0416	0.0889	0.0364	0.1542
Public Administration	0.1660	0.1294	0.1953	0.3417	0.2265	0.2709	0.1869
Education	0.0336	0.0256	–0.1366	0.1179	0.2885	0.4345	0.1808
Health and Social Work	0.2835	0.2626	0.1386	0.3248	0.3258	0.0470	–0.1039

(continued)

Table A.8 Skills Wage Premiums: Secondary versus Primary or Less Education *(continued)*

Secondary versus primary or less	*Standardized skills wage premiums*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Recreational, Cultural	0.2309	0.1305	0.0715	0.1061	0.2563	0.0920	–0.1650
Sanitation Community	0.0155	0.1533	0.1368	0.1817	–0.0966	–0.0794	–0.1466
Private Households	–0.0403	–0.0307	–0.0480	–0.1033	–0.2076	–0.2735	–0.2310
MEAN SKILLS WAGE PREMIUM	0.2246	0.2350	0.2087	0.2366	0.1842	0.1929	0.2150

Source: Labor Force Survey, Philippines National Statistical Office.
Note: Estimates are based on log hourly wage regressions controlling for individual attributes, 16 regions, 34 industries, and 5 occupations. Skills wage premiums are expressed as deviations from the employment-weighted average industry-specific skills wage premium.

Table A.9 Industry Wage Premiums: Tertiary versus Secondary or Less Education

secondary or less	*Standardized industry wage premiums*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Growing of Crops	0.0239	0.0268	–0.0204	–0.0398	–0.0241	0.0515	0.0236
Farming Animals	–0.0104	0.0275	–0.0381	–0.0189	–0.0019	0.1456	0.0209
Agricultural Services	0.0473	–0.0028	–0.0525	–0.1581	–0.0849	0.0773	0.0170
Forestry, Logging, Hunting	0.0525	0.0238	0.0112	–0.2114	0.1023	0.0907	0.2668
Fishing	0.1100	0.1061	0.0668	0.0069	0.0097	–0.0184	0.0892
Metallic Ore Mining	0.3084	0.1205	0.2091	0.1954	0.2817	0.1102	0.0286
Nonmetallic Mining	0.1294	0.0006	0.0246	–0.0379	0.0123	–0.0943	0.0199
Food, Beverages, Tobacco	0.0606	0.1184	0.1064	0.0974	–0.0058	–0.0833	–0.0318
Textiles, Apparel Leather	–0.0676	–0.0500	0.0079	0.0299	0.0563	–0.0124	–0.0447
Wood Products Furniture	–0.0906	–0.0624	0.0158	–0.0761	0.0021	–0.0250	–0.0332
Paper Publishing	–0.0135	0.2211	0.1765	0.1279	0.1763	0.0196	–0.0142
Chemicals Petroleum	0.3155	0.2950	0.3593	0.2370	0.2146	0.0914	0.1012
Nonmetallic Minerals	–0.1271	0.0676	0.1911	0.0791	0.0922	0.0022	0.0879
Basic Metals	0.3461	0.3077	0.2141	0.3027	0.1343	0.1598	0.1384
Fab. Metals & Machinery	0.2725	0.3371	0.3173	0.4091	0.2778	0.2407	0.2867
Manufacture, nec	–0.0952	0.0395	0.0136	–0.0227	0.0176	0.0090	–0.0448
Utilities	0.2772	0.2971	0.3587	0.4749	0.3210	0.1236	0.2185

(continued)

Table A.9 Industry Wage Premiums: Tertiary versus Secondary or Less Education *(continued)*

Tertiary versus secondary or less	*Standardized industry wage premiums*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Construction	0.1064	0.1238	0.1763	0.1816	0.1454	0.1049	0.1131
Wholesale Trade	0.0906	0.1671	0.1128	0.1091	0.0081	–0.0070	–0.0015
Retail Trade	–0.1409	–0.1314	–0.1000	–0.1000	–0.0315	–0.0535	–0.0743
Hotels and Restaurants	0.1018	0.0773	0.0873	0.1259	0.0559	–0.0183	0.0153
Transportation	–0.0504	–0.0814	–0.0515	–0.0377	–0.0604	–0.0949	–0.0433
Communications	0.2148	0.2305	0.2572	0.3252	0.2648	0.2172	0.2264
Banking Institutions	0.1763	0.4525	0.2564	0.2726	0.2102	0.1953	0.3221
Nonbank Finance	–0.1904	0.3923	0.2263	0.4012	0.1194	0.1827	0.0812
Insurance and Pension	0.1220	0.1885	0.2432	0.2055	0.4515	0.1348	–0.3389
Real Estate	0.4574	0.5793	0.3994	0.3710	0.1023	0.0731	0.0607
Business Services	0.1687	0.1390	0.1534	0.1678	0.0981	0.1529	0.0852
Public Administration	0.1902	0.0660	0.0553	0.0575	0.0509	0.0143	0.1532
Education	0.1729	0.0990	0.2289	0.2765	0.1213	0.0641	0.0960
Health and Social Work	0.0783	0.0456	0.0230	–0.0355	0.0753	0.0412	0.0796
Recreational, Cultural	–0.0190	–0.1057	0.0128	0.0300	0.1584	0.0640	0.1626
Sanitation Community	–0.1831	–0.2004	–0.2441	–0.0943	0.0135	0.0148	0.0737
Private Households	–0.3275	–0.3456	–0.2694	–0.2572	–0.3809	–0.4467	–0.5204
MEAN INDUSTRY WAGE PREMIUM	0.3275	0.3456	0.2694	0.2572	0.3809	0.4467	0.5204

Source: Labor Force Survey, Philippines National Statistical Office.
Note: Estimates are based on log hourly wage regressions controlling for individual attributes, 16 regions, 34 industries, and 5 occupations. Industry premiums are expressed as deviations from the employment-weighted average industry wage premium.

Table A.10 Skills Wage Premiums: Tertiary versus Secondary or Less Education

Tertiary versus secondary or less	*Standardized skills wage premiums*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Growing of Crops	–0.0167	0.0016	0.0367	–0.0048	0.0191	0.0143	–0.0328
Farming Animals	–0.0974	–0.0540	–0.1852	0.0244	–0.1476	–0.2562	–0.1481
Agricultural Services	–0.1709	0.0310	0.3928	0.3587	–0.1783	–0.1757	–0.1005
Forestry, Logging, Hunting	0.0578	0.0677	0.0370	0.3931	0.1369	–0.0898	–0.5400

(continued)

Table A.10 Skills Wage Premiums: Tertiary versus Secondary or Less Education *(continued)*

	Standardized skills wage premiums						
secondary or less	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Fishing	–0.1830	–0.3087	–0.2194	0.0029	–0.1429	–0.1233	–0.1316
Metallic Ore Mining	–0.0866	0.1109	–0.1807	–0.0359	–0.2260	0.1324	–0.0853
Nonmetallic Mining	–0.2795	–0.1454	–0.1442	0.2235	–0.0789	0.1626	–0.1466
Food, Beverages, Tobacco	0.1569	0.0385	0.0790	0.0455	0.0851	0.0262	0.0330
Textiles, Apparel Leather	0.1038	0.0094	0.0516	–0.0261	–0.0976	–0.1109	–0.0627
Wood Products Furniture	0.1492	0.0454	0.0667	–0.0482	–0.0681	–0.0290	–0.0862
Paper Publishing	0.0775	–0.1447	–0.0569	–0.0191	–0.1205	0.0013	0.0552
Chemicals Petroleum	–0.0561	–0.0948	–0.0071	0.0588	–0.0521	0.0059	0.0525
Nonmetallic Minerals	0.3753	–0.0410	–0.0743	0.0184	–0.0440	–0.0827	0.1706
Basic Metals	0.1405	–0.1082	–0.0542	–0.1727	0.0060	–0.1999	–0.1506
Fab. Metals & Machinery	–0.1079	–0.0931	–0.0985	–0.1566	–0.1901	–0.1401	–0.1524
Manufacture, nec	0.4035	0.0213	0.1580	0.1572	0.0025	0.0012	0.1673
Utilities	–0.0351	–0.0152	0.0629	–0.0664	–0.0060	0.0658	0.0467
Construction	–0.1045	–0.0572	–0.1091	–0.1629	–0.0967	–0.1186	–0.1234
Wholesale Trade	0.2467	0.0240	0.1108	0.1342	–0.0118	0.0547	0.0304
Retail Trade	–0.0019	0.0226	–0.0400	–0.0391	0.0121	0.0368	0.0858
Hotels and Restaurants	–0.0385	–0.0265	–0.0145	–0.0653	0.0530	0.0484	0.0459
Transportation	0.0063	0.0282	–0.0423	–0.0647	0.0536	0.0555	0.0688
Communications	–0.0420	0.0512	–0.0089	–0.0297	–0.1042	0.0132	0.1176
Banking Institutions	0.2306	0.0768	0.2545	0.3015	0.0792	0.1464	0.1163
Nonbank Finance	0.5048	–0.2561	–0.1871	–0.1065	–0.0877	–0.1473	0.0262
Insurance and Pension	0.0889	0.2134	0.0474	0.1599	–0.4417	0.0919	0.5334
Real Estate	–0.1180	–0.2030	–0.0409	0.0854	0.0284	–0.0226	0.0891
Business Services	–0.0922	–0.0446	0.0203	–0.0093	–0.0249	–0.1002	0.0371
Public Administration	–0.0341	0.1075	0.0911	0.2930	0.2363	0.2408	0.1558
Education	0.0480	0.0995	–0.0387	0.1169	0.2652	0.2399	0.2078
Health and Social Work	0.0583	–0.0091	0.1420	0.2198	0.0722	0.0284	0.0522
Recreational, Cultural	0.1381	0.0992	0.0067	0.1077	–0.0415	–0.0555	–0.0842

(continued)

Table A.10 Skills Wage Premiums: Tertiary versus Secondary or Less Education *(continued)*

Tertiary versus secondary or less	*Standardized skills wage premiums*						
	1988	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Sanitation							
Community	0.0264	0.0457	0.1717	–0.0144	–0.1288	–0.0685	–0.1499
Private Households	0.0905	0.1026	0.0604	–0.0133	–0.1299	–0.0931	–0.0694
MEAN SKILLS WAGE PREMIUM	0.3568	0.3552	0.3398	0.3601	0.2571	0.2522	0.2587

Source: Labor Force Survey, Philippines National Statistical Office.
Note: Estimates are based on log hourly wage regressions controlling for individual attributes, 16 regions, 34 industries, and 5 occupations. Skills premiums are expressed as deviations from the employment-weighted average industry-specific skills wage premium.

Table A.11 Summary Statistics: Employed Individuals

Variables	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Hourly pay (2000 pesos)	20.357	21.375	21.502	25.486	25.716	24.029	22.929
Log (hourly pay)	2.707	2.750	2.771	2.915	3.024	2.964	2.908
Male	0.633	0.636	0.635	0.623	0.610	0.625	0.616
Age in years	35.28	35.94	36.41	36.16	36.98	36.37	36.51
Married indicator	0.645	0.652	0.640	0.649	0.633	0.660	0.653
Skill classification							
Secondary and above	0.496	0.513	0.537	0.576	0.623	0.644	0.659
Tertiary and above	0.192	0.199	0.205	0.230	0.249	0.263	0.273
Broad Industry							
Agriculture	0.455	0.446	0.437	0.381	0.363	0.362	0.356
Mining	0.006	0.005	0.003	0.003	0.002	0.002	0.002
Manufacture	0.107	0.108	0.106	0.107	0.100	0.098	0.094
Utilities	0.004	0.004	0.004	0.005	0.004	0.004	0.004
Construction	0.041	0.049	0.050	0.064	0.054	0.053	0.050
Wholesale retail trade	0.137	0.137	0.140	0.151	0.183	0.182	0.188
Hotels, restaurants	0.015	0.015	0.018	0.022	0.024	0.026	0.028
Transportation	0.050	0.051	0.058	0.067	0.075	0.079	0.077
Finance bus. services	0.017	0.021	0.020	0.026	0.029	0.032	0.037
Public administration	0.041	0.043	0.044	0.045	0.047	0.047	0.047
Community services	0.054	0.053	0.051	0.053	0.074	0.069	0.066
Private HH workers	0.071	0.070	0.068	0.075	0.046	0.047	0.050
Occupation							
Prof. and technical	0.056	0.058	0.055	0.059	0.074	0.073	0.073
Admin. and managers	0.103	0.105	0.108	0.111	0.100	0.110	0.114

(continued)

Table A.11 Summary Statistics: Employed Individuals *(continued)*

Variables	*1988*	*1991*	*1994*	*1997*	*2001*	*2004*	*2006*
Clerical	0.041	0.041	0.041	0.045	0.045	0.044	0.049
Sales and services	0.132	0.137	0.142	0.166	0.201	0.198	0.205
Agricultural workers	0.450	0.441	0.433	0.379	0.359	0.358	0.352
Operators & laborers	0.218	0.219	0.221	0.241	0.221	0.216	0.207
Sample size	37,335	46,511	47,304	74,768	73,815	76,185	74,090

Source: Labor Force Survey, Philippines National Statistical Office.
Note: The summary statistics were calculated for the sample of employed persons ages 15 to 65 years old using sampling weights.

Table A.12 Number of Net Hires by Region and Sector

Level of schooling	*Number of net hires*				
	NCR	*CALA*	*CLUZ*	*CVIZ*	*DAV*
All sectors					
Primary	1	0	2	23	0
Secondary	123	228	26	425	42
Vocational	366	55	50	0	8
Technical	166	267	4	–5	0
College	911	202	–4	45	15
University	1,649	109	16	87	14
Postgraduate	129	7	0	9	14
Manufacturing					
Primary	0	0	1	23	0
Secondary	86	173	8	125	5
Vocational	313	10	22	0	4
Technical	160	267	0	–5	0
College	345	200	0	51	0
University	117	38	0	58	1
Postgraduate	–10	0	0	0	0
Services					
Primary	1	0	1	0	0
Secondary	37	55	18	300	37
Vocational	53	45	28	0	4
Technical	6	0	4	0	0
College	566	2	–4	–6	15
University	1,532	71	16	29	13
Postgraduate	139	7	0	9	14

Source: Philippines Skills Survey 2008.
Note: NCR = National Capital Region, CALA = Calabarzon, CLUZ = Central Luzon, CVIZ = Central Visayas, DAV = Davao.

Table A.13 Number of Net Hires by Sector, Size, and Export Orientation

	Number of net hires								
	Small firms			*Medium firms*			*Large firms*		
Level of education	*Total*	*No export*	*Exports*	*Total*	*No export*	*Exports*	*Total*	*No export*	*Exports*
Manufacturing									
Primary	9	1	8	15	0	15	0	0	0
Secondary	122	54	68	194	55	139	81	160	–79
Vocational	23	22	1	–74	20	–94	400	400	0
Technical	7	0	7	205	0	205	210	10	200
College	–189	12	–201	40	21	19	745	15	730
University	43	36	7	35	25	10	136	1	135
Postgraduate	–10	–10	0	0	0	0	0	0	0
Services									
Primary	1	1	0	1	1	0	0	0	0
Secondary	40	39	1	112	112	0	295	295	0
Vocational	4	4	0	48	48	0	78	78	0
Technical	10	10	0	0	0	0	0	0	0
College	105	103	2	89	9	80	379	399	–20
University	178	168	10	542	440	102	941	509	432
Postgraduate	5	5	0	154	153	1	10	10	0

Source: Philippines Skills Survey 2008.

Table A.14 Employer Rankings of Core Skills: Importance and Gaps

	5 most important core skills			*5 weakest core skills*		
Class of personnel	*Manufacture*	*Services*	*Total*	*Manufacture*	*Services*	*Total*
A. Directors & managers						
Literacy skills	5.5	8.3	7.3	5.2	2.4	3.3
Writing skills	2.8	2.6	2.7	6.9	4.0	5.0
Math skills	3.2	3.3	3.3	5.4	5.1	5.2
Problem solving	14.2	12.2	12.9	9.3	8.2	8.6
Creative thinking	8.9	9.0	8.9	7.8	8.9	8.6
Work independently	10.8	11.0	11.0	6.4	6.5	6.5
Risk taking/initiative	4.4	3.5	3.8	11.3	12.3	12.0
Communication skills	10.2	11.8	11.2	4.9	5.9	5.6
Negotiation skills	8.1	8.0	8.1	6.9	10.7	9.4
Teamwork	8.1	7.3	7.6	6.9	6.8	6.8
Time management	7.6	6.8	7.1	12.8	12.7	12.7
Leadership skills	12.9	11.8	12.2	8.8	8.8	8.8
Computer skills	2.1	1.0	1.4	4.7	5.2	5.0
English language	1.3	3.3	2.6	2.9	2.5	2.6

(continued)

Table A.14 Employer Rankings of Core Skills: Importance and Gaps *(continued)*

	5 most important core skills			*5 weakest core skills*		
Class of personnel	*Manufacture*	*Services*	*Total*	*Manufacture*	*Services*	*Total*
B. Production, admin. & sales						
Literacy skills	7.3	8.7	8.2	4.2	2.7	3.3
Writing skills	2.5	2.3	2.3	7.4	5.4	6.1
Math skills	3.6	4.5	4.2	6.8	4.7	5.4
Problem solving	7.9	8.9	8.6	9.0	9.3	9.2
Creative thinking	9.2	6.9	7.7	7.6	7.6	7.6
Work independently	17.3	14.5	15.5	7.4	7.7	7.6
Risk taking/initiative	6.4	4.4	5.1	8.4	9.5	9.1
Communication skills	9.6	13.2	11.9	7.6	7.8	7.7
Negotiation skills	2.5	5.6	4.5	7.4	8.4	8.1
Teamwork	16.6	13.7	14.7	6.6	5.7	6.0
Time management	10.4	7.8	8.7	7.8	8.4	8.2
Leadership skills	3.8	4.2	4.0	7.4	9.0	8.4
Computer skills	1.7	2.6	2.3	6.8	6.6	6.6
English language	1.3	2.8	2.3	6.2	7.1	6.8

Source: Philippines Skills Survey.

Table A.15 Employer Rankings of Job-Specific Skills: Importance and Gaps

	Three most important job-specific skills			*Three weakest job-specific skills*		
Class of personnel	*Manufacture*	*Services*	*Total*	*Manufacture*	*Services*	*Total*
A. Directors & managers						
Secondary diploma	1.6	1.7	1.7	6.4	4.2	4.9
Voc-tech qualification	0.6	0.4	0.5	15.5	12.1	13.3
Tertiary tech qualification	1.9	1.2	1.5	17.5	13.1	14.6
Local college/ university degree	20.6	19.8	20.1	4.0	1.4	2.2
Foreign univ. degree	0.6	0.7	0.7	21.9	22.0	22.0
Grades/transcripts	6.5	4.9	5.5	5.6	4.8	5.1
Job theory know-how	15.6	16.0	15.8	5.2	5.6	5.5
Job practical know-how	24.0	24.7	24.4	4.4	7.9	6.8
Experience same field	17.5	19.8	19.0	3.6	9.1	7.3
Experience another field	3.1	3.1	3.1	10.8	13.3	12.5
General experience	8.1	7.8	7.9	5.2	6.6	6.1
B. Production, admin. & sales						
Secondary diploma	6.2	5.5	5.8	5.3	3.6	4.2
Voc-tech qualification	4.1	1.6	2.4	5.7	7.1	6.6

(continued)

Table A.15 Employer Rankings of Job-Specific Skills: Importance and Gaps
(continued)

	Three most important job-specific skills			*Three weakest job-specific skills*		
Class of personnel	*Manufacture*	*Services*	*Total*	*Manufacture*	*Services*	*Total*
Tertiary tech qualification	4.7	2.9	3.6	9.3	9.8	9.6
Local college/ university degree	7.5	13.5	11.3	13.3	7.5	9.5
Foreign univ. degree	0.0	0.4	0.2	20.3	20.2	20.2
Grades/transcripts	5.0	3.5	4.0	10.0	8.6	9.1
Job theory know-how	11.5	14.0	13.1	10.3	6.6	7.9
Job practical know-how	25.2	26.1	25.8	7.0	9.1	8.3
Experience same field	20.9	19.7	20.1	7.3	10.4	9.3
Experience another field	3.7	3.8	3.8	7.6	11.8	10.3
General experience	11.2	9.2	9.9	4.0	5.5	4.9

Source: Philippines Skills Survey 2008.

Table A.16 Correlates of Industry and Skills Wage Premiums Estimated Separately by Sector

	Industry premium 1		*Industry premium 2*		*Skills premium 1*		*Skills premium 2*	
	Traded industries	*Nontraded industries*	*Traded industries*	*Nontraded industries*	*Traded industries*	*Nontraded industries*	*Traded industries*	*Nontraded industries*
Import share	0.039**		0.050***		–0.001		–0.031*	
	(2.82)		(5.09)		(–0.10)		(–2.65)	
Export share	–0.008		–0.011		0.001		0.010	
	(–0.47)		(–0.95)		(0.04)		(0.67)	
Log (labor productivity)	0.073***	0.052***	0.069***	0.070***	–0.005	0.041**	0.00	0.01
	(3.89)	(3.86)	(5.17)	(7.55)	(–0.29)	(3.10)	(0.00)	(1.10)
Time	0.000	0.001	–0.006**	–0.002	–0.014***	–0.005*	–0.007**	–0.001
	(0.07)	(0.28)	(–2.93)	(–1.24)	(–4.82)	(–2.24)	(–2.82)	(–0.46)
Constant	–0.308***	–0.162*	–0.183**	–0.176***	0.251**	–0.034	0.113	–0.023
	(–3.61)	(–2.57)	(–3.03)	(–4.01)	(3.10)	(–0.54)	(1.56)	(–0.52)
Obs	54	184	54	184	54	184	54	184
R-squared	0.469	0.076	0.683	0.245	0.337	0.075	0.365	0.008

Source: Labor Force Survey, Philippines National Statistical Office.
Note: Premium 1 based on definition of skills as some secondary education and above, and premium 2 on the definition of skills as some tertiary education and above.
t-statistics in parentheses below estimated coefficients.
*, **, and *** = statistically significant at the 10, 5, and 1 percent levels, respectively.
See text for definitions of key variables.

Table A.17 Skills (Upper Secondary Education and Above) Premiums and Trade: Indonesia/Philippines/Thailand/Vietnam

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Share Exports	–0.0067	**–0.0335**	–0.0203	–	0.0127	–
	[0.521]	[0.002]	[0.071]		[0.176]	
Share Imports	–0.0115	**–0.0207**	–0.0084	–	**–0.0229**	–
	[0.131]	[0.008]	[0.291]		[0.000]	
Exports* Agriculture	–	–	–	**1.213** [0.000]	–	0.2045 [0.115]
Imports* Agriculture	–	–	–	–0.1145 [0.725]	–	**–0.1855** [0.000]
Exports*Mining	–	–	–	–0.0671 [0.628]	–	**1.623** [0.000]
Imports*Mining	–	–	–	0.0005 [0.957]	–	**–0.1046** [0.000]
Exports*FTB	–	–	–	–0.0332 [0.366]	–	0.0157 [0.621]
Imports*FTB	–	–	–	0.0548 [0.691]	–	–0.0025 [0.708]
Exports*Textile	–	–	–	–0.0152 [0.688]	–	0.0025 [0.963]
Imports*Textile	–	–	–	0.0240 [0.783]	–	0.0017 [0.991]
Exports*Wood	–	–	–	0.0006 [0.954]	–	–0.0029 [0.852]
Imports*Wood	–	–	–	–0.0115 [0.449]	–	0.0062 [0.762]
Exports*Paper	–	–	–	–0.0340 [0.424]	–	–0.0020 [0.887]
Imports*Paper	–	–	–	0.0011 [0.953]	–	0.0051 [0.811]
Exports*Chemicals	–	–		–0.0164 [0.499]	–	0.0036 [0.946]
Imports*Chemicals	–	–		–0.0029 [0.839]	–	0.0070 [0.854]
-sq adjusted	0.021	0.195	0.451	0.801	0.126	0.572
N	115	115	115	115	103	103
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	No	No	Yes	No	No	No
First differencing	No	No	No	No	Yes	Yes
Country indicators	No	Yes	Yes	Yes	Yes	No
Trade*Industry Interactions	No	No	No	Yes	No	Yes

Source: Sakellariou 2009.
Note: Numbers in brackets are p-values; bolded numbers indicate significant coefficients at the 5 percent level.

Table A.18 Skill (Tertiary Education and Above) Premiums and Trade: Indonesia/Philippines/Thailand/Vietnam

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Share Exports	–0.0147	–0.0657	–0.0405	–	0.0156	–
	[0.431]	[0.001]	[0.041]		[0.207]	
Share Imports	–0.0211	**–0.0341**	–0.0151	–	**–0.0306**	–
	[0.129]	[0.014]	[0.280]		[0.000]	
Exports* Agriculture	–	–	–	**2.120** [0.000]	–	**0.366** [0.025]
Imports* Agriculture	–	–	–	–0.2046 [0.712]	–	**–0.3254** [0.000]
Exports*Mining	–	–	–	–0.0727 [0.765]	–	**1.582** [0.000]
Imports*Mining	–	–	–	–0.0018 [0.914]	–	**–0.1123** [0.000]
Exports*FTB	–	–	–	–0.0564 [0.371]	–	0.0426 [0.429]
Imports*FTB	–	–	–	0.0638 [0.786]	–	–0.0036 [0.668]
Exports*Textile	–	–	–	–0.0175 [0.788]	–	0.0395 [0.559]
Imports*Textile	–	–	–	0.0109 [0.942]	–	–0.0874 [0.631]
Exports*Wood	–	–	–	0.0039 [0.825]	–	0.0051 [0.794]
Imports*Wood	–	–	–	–0.0305 [0.244]	–	–0.0067 [0.796]
Exports*Paper	–	–	–	–0.0653 [0.371]	–	–0.0045 [0.801]
Imports*Paper	–	–	–	0.0000 [0.999]	–	0.0061 [0.819]
Exports*Chemicals	–	–	–	–0.0190 [0.484]	–	0.0248 [0.707]
Imports*Chemicals	–	–	–	–0.0085 [0.728]	–	–0.0003 [0.995]
R-sq adjusted	0.027	0.210	0.471	0.815	0.139	0.600
N	112	112	112	112	103	97
Year indicators	Yes	Yes	Yes	Yes	Yes	Yes
Industry indicators	No	No	Yes	No	No	No
First differencing	No	No	No	No	Yes	Yes
Country indicators	No	Yes	Yes	Yes	Yes	No
Trade*Industry Interactions	No	No	No	Yes	No	Yes

Source: Sakellariou 2009.
Note: Numbers in brackets are p-values; bolded numbers indicate significant coefficients at the 5 percent level.

Table A.19 Summary Statistics of Subsample of Philippines ICS

Variable	*Sample size*	*Mean*	*Standard deviation*
Skill share of total employment			
Managers, professionals	543	.14762	.16698
Managers, professionals, skilled workers	543	.72036	.29343
Skill share of wage bill			
Managers, professionals	543	.25645	.22255
Managers, professionals, skilled workers	543	.76807	.25361
Log(capital/value-added)	552	.85484	.19524
Log(value-added)	559	8.3180	2.7883
Relative skill wages			
Managers, professionals	458	1.2634	.51680
Managers, professionals, skilled workers	376	1.1305	.29857
Relative skill wages – instrumented			
Managers, professionals	559	1.22553	.04997
Managers, professionals, skilled workers	559	1.09199	.06595
CEO educational attainment			
Some college	534	.08237	.27523
University degree	534	.63670	.48140
Postgraduate qualification	534	.13858	.34583
Foreign-Owned Indicator	535	.19252	.39465
Openness measures			
Share of imported raw materials	543	.36659	.41462
Share of exports in production	559	.32138	.44732
Openness measures – instrumented			
Share of imported raw materials	559	.59144	.25694
Share of exports in production	559	.52667	.36444
Technology measures			
Share of workers using computers	530	.12983	.22107
Recently introduced new technology	535	.41308	.49285

Source: 2003 Philippines Investment Climate Survey.

Table A.20 Labor Demand Model: Skilled Worker Share of Total Wage Bill

Dependent variable: skilled worker share of wage bill	*Managers and professionals*			*Managers, professionals, and skilled production workers*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
Education of CEO						
Some university	0.007	0.044	0.042	–0.134	–0.058	–0.058
	(0.14)	(1.01)	(0.95)	(2.34)*	(1.20)	(1.19)
Degree	0.039	0.053	0.052	–0.093	–0.027	–0.027
	(1.28)	(1.75)	(1.71)	(2.38)*	(0.81)	(0.80)
Postgraduate degree	0.029	0.058	0.055	–0.027	0.020	0.019
	(0.77)	(1.45)	(1.37)	(0.56)	(0.46)	(0.42)
Firm is foreign-owned	–0.005	–0.015	–0.021	–0.014	–0.037	–0.037
	(0.17)	(0.49)	(0.67)	(0.36)	(1.07)	(1.07)
Relative skills wage	0.076			0.015		
	(4.40)**			(0.39)		
Instrument – relative wage[a]		–0.376			–0.271	
		(1.53)			(0.82)	
Log(capital/value Added)	0.019	0.007	0.011	0.036	0.012	0.013
	(0.65)	(0.22)	(0.34)	(0.98)	(0.35)	(0.38)
Log(value added)	–0.006	–0.002	–0.002	0.010	0.003	0.004
	(1.17)	(0.41)	(0.43)	(1.55)	(0.57)	(0.71)
Share of imported raw materials	–0.021			0.039		
	(0.73)			(0.98)		
Share of sales exported	–0.021			0.116		
	(0.80)			(3.25)**		
Instrument – import share[b]		0.003	–0.009		0.081	0.086
		(0.06)	(0.18)		(1.39)	(1.48)
Instrument – export share[b]		–0.026	–0.039		0.191	0.197
		(0.70)	(1.08)		(4.56)**	(4.87)**
Technology proxies						
% workers using computers	0.212	0.242	0.246	–0.021	0.016	0.015
	(5.30)**	(5.38)**	(5.46)**	(0.39)	(0.31)	(0.29)
Introduced new technology	–0.003	0.022	0.022	–0.029	–0.009	–0.009
	(0.18)	(1.10)	(1.12)	(1.21)	(0.42)	(0.40)
Constant	0.177	0.658	0.213	0.582	0.905	0.597
	(2.79)**	(2.21)*	(3.51)**	(6.86)**	(2.38)*	(8.92)**
Observations	422	508	508	355	508	508
R-squared	0.12	0.09	0.08	0.15	0.12	0.12

Source: 2003 Philippines Investment Climate Survey.

Note: Absolute value of t-statistics in parentheses. * significant at 5 percent; ** significant at 1 percent.
Omitted groups are domestic-owned firms with CEO education less than university.

a. Mean sector-by-size relative skills wage (four sectors and five firm size categories).

b. Mean province-by-sector import or export shares (nine provinces and four sectors).

Table A.21 Openness, Technological Innovation, and the Demand for Skills: Robustness to Alternative Samples

	Cambodia	*China*	*Indonesia*	*Malaysia*	*Philippines*	*South Korea*	*Thailand*	*Vietnam*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
	Excluding One Country at a Time							
Exporter	–0.0683*	0.118***	–0.0888**	–0.0725*	–0.056	–0.061	–0.130***	–0.0776*
	[0.0386]	[0.0426]	[0.0397]	[0.0393]	[0.0395]	[0.0393]	[0.0475]	[0.0455]
Foreign Ownership	0.201***	0.186***	0.234***	0.216***	0.229***	0.208***	0.255***	0.0969**
	[0.0393]	[0.0448]	[0.0405]	[0.0411]	[0.0402]	[0.0401]	[0.0474]	[0.0441]
Technological Innovation	0.240***	0.123***	0.227***	0.234***	0.205***	0.232***	0.251***	0.250***
	[0.0322]	[0.0379]	[0.0326]	[0.0326]	[0.0324]	[0.0322]	[0.0363]	[0.0364]
Baseline Firm Characteristics?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Sector-Size Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7443	4931	7270	7427	7255	7261	6451	6184
R-squared	0.313	0.36	0.333	0.343	0.351	0.332	0.344	0.355

Source: Almeida 2009b.
Note: * Significant at 10%; ** Significant at 5%; *** Significant at 1%.

Table A.22 Determinants of Time to Fill Vacancies (10 East Asian Countries)

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
Technological Innovation	0.114 0.025***	0.083 0.026***	0.077 0.027***	0.082 0.026***	0.073 0.026***
Open	0.129 0.026***	0.084 0.028***	0.082 0.029***	0.084 0.028***	0.069 0.028**
Small	–	0.063 0.050	0.119 0.047**	0.074 0.049	0.078 0.048
Medium	–	0.138 0.057**	0.189 0.055***	0.155 0.056***	0.158 0.055***
Large	–	0.155 0.057***	0.190 0.055***	0.175 0.056***	0.195 0.056***
Very Large	–	0.231 0.057***	0.241 0.054***	0.256 0.056***	0.261 0.055***
Public Ownership	–	0.011 0.051	0.002 0.054	0.010 0.051	0.030 0.051
Age > 2 < 4 Years	–	–0.142 0.794	–0.136 0.792	–0.137 0.784	–0.094 0.792
Age > 4 < 6 Years	–	–0.192 0.793	–0.187 0.792	–0.191 0.784	–0.144 0.792
Age > 6 Years	–	–0.247 0.793	–0.242 0.7912	–0.245 0.783	–0.196 0.791
Average Years of Schooling of Workforce	–	–	–0.001 0.005	–	–
Share of Skilled Workers	–	–	–	0.158 0.060***	0.142 0.058**
Basic Firm Level Controls Included?	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects?	Yes	Yes	Yes	Yes	No
Country Fixed Effects?	Yes	Yes	Yes	Yes	Yes
Country-Industry Fixed Effects?	No	No	No	No	Yes
Observations	4,351	4,226	3,705	4,214	4,214
R-squared	0.098	0.102	0.094	0.103	0.107

Source: Almeida 2009a.

Note: Dependent variable is a dummy variable that assumes the value 1 if the firm fills skilled vacancies. Table reports the marginal effects (at mean values) on the firm's propensity to fill skilled vacancies from probit regressions. All variables are defined in Table A. 1. Micro firms (with less than 10 employees) is the omitted size group. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table A.23 Proportion of Employers Providing Training to Different Occupations, by Sector, Firm Size, and Export Orientation

	Manufacturing					*Services*				
Occupations	*Small*	*Medium*	*Large*	*Nonexport*	*Export*	*Small*	*Medium*	*Large*	*Nonexport*	*Export*
Directors	0.20	0.48	0.67	0.27	0.50	0.45	0.62	0.85	0.53	0.79
Professionals	0.31	0.55	0.75	0.33	0.62	0.49	0.65	0.75	0.56	0.74
Administrative	0.36	0.56	0.83	0.44	0.58	0.45	0.62	0.85	0.54	0.74
Sales	0.33	0.47	0.55	0.44	0.40	0.47	0.75	0.80	0.61	0.68
Skilled	0.56	0.84	0.83	0.67	0.77	0.33	0.45	0.60	0.40	0.50
Unskilled	0.22	0.42	0.67	0.29	0.44	0.13	0.31	0.37	0.21	0.33
Temporary	0.24	0.44	0.67	0.33	0.44	0.27	0.42	0.45	0.35	0.32
Age <30 yrs	0.53	0.76	0.92	0.67	0.69	0.65	0.80	0.85	0.72	0.79

Source: Philippines Skills Survey 2008.

Table A.24 Average Cost of Training per Day, by Sector, Firm Size, and Training Source (pesos)

Occupational groups	*Manufacturing*	*Services*	*Small*	*Medium*	*Large*
In-house training					
Managers	2,884	1,674	1,500	2,732	1,382
Professionals	1,471	2,042	1,094	2,423	1,784
Administrative	1,924	1,936	818	2,680	2,666
Sales	978	1,129	677	1,324	1,087
Skilled Production	783	1,445	671	1,388	1,026
Unskilled Workers	692	2,003	3,370	609	764
External training					
Managers	2,942	3,143	3,371	5,436	927
Professionals	1,955	2,676	1,681	3,265	1,563
Administrative & Sales	1,928	923	1,107	1,193	1,258
Skilled Production	1,294	1,263	1,427	889	2,556
Unskilled	3,500	432	333	690	2,714

Source: Philippines Skills Survey 2008.
Note: See text for definitions of in-house and external training. Computed by dividing average training cost per year by number of days of training.

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The Filipino economy has experienced overall growth over the last 20 years, but the growth of the manufacturing sector has been sluggish, and the country has lost innovation capacity. Regaining momentum will depend on many factors, but skills have a key role to play in supporting the growing service sector, improving the competitiveness of the manufacturing sector, and enhancing the long-term ability of the country to innovate and adapt and assimilate new technologies. *Skills for the Labor Market in the Philippines* analyzes the functional skills with which workers need to be equipped to be employable and support firms' competitiveness and productivity, and evaluates the role of the education and training system in providing these skills. Based on an innovative survey of employers, this book is the most comprehensive attempt thus far to review the skills that matter for the labor market. The book reveals that a dramatic increase in educational attainment occurred in just under two decades in the Philippines. However, in light of the growing demand for skills, the authors also make it clear that there are indications of emerging skills gaps, suggesting that skills are becoming a constraining factor for economic growth. The authors flesh out several policy implications, which should provide a valuable contribution to improving the country's education and training system. The book is primarily intended for the policy makers and researchers who shape the delivery of education and training in the Philippines and other middle-income countries.

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