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Industry Career Guide: Construction

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INDUSTRY CAREER GUIDE: Construction¹

¹ This career guide was written by Maricon Latoja and Dickson Lim as part of the project *Career Guides for Selected Industries*, commissioned by the Bureau of Local Employment of the Department of Labor and Employment to the Angelo King Institute of De La Salle University.

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EXECUTIVE SUMMARY

This paper is a career guide on the Philippine construction industry. It provides a general overview into the nature and role of construction in the context of the general macroeconomy, highlights its employment-generating capacity and manpower development prospects, and gives jobseekers and other interested parties a peek into the industry's likely direction in terms of performance and labor market interface within the next short run cycle.

This paper is organized as follows: Part 1 discusses the nature of the industry and profiles the subsectors of the construction industry; Part 2 dwells on the employment profile of the industry from a macro point of view; Part 3 focuses on industry occupations and features working conditions, earnings, training and advancement, specific industry occupations, occupations in most demand, and industry organizations; Part 4 looks into the job outlook and prospects.

Definition

Construction covers a range of activities so vast it makes composing a single all-encompassing definition of construction a bit of a challenge. The construction process itself represents a network of transactions that can be as complex as the project being undertaken. In national income accounts, construction appears twice—first as a component of capital formation and second as one of the major industries. In the Annual Survey of the Philippine Business and Industry, a construction establishment is defined in the context of a contractor. Yet, these definitions fall short in giving a comprehensive picture of the actual total contribution of construction to production and income, underscoring the construction industry's enormous diversity: it is large in size; dispersed by geography and product-type; dependent on labor, materials and other inputs which are also widely used by other producing sectors; and associated with numerous auxiliary industries.

Construction and the Macroeconomy

As a key sector, the performance of construction is connected at the gut-level with the Philippine economy, which, in the period 2000-2010, registered an annual average growth of 4.7 percent. Within the same period, construction grew at an average rate of 5.5%, accounting for a 5% average annual GDP share and 15.2% of total industry output. In 2006-2010, when measured as an expenditure type to boost capital formation, construction's value in inflation-adjusted terms averaged PhP414 billion annually, accounting for 45% share of total capital formation expenditure and 8% of real GDP. On the other hand, when measured as an industry, it registers an average value of PhP269 billion

in real terms, accounts for 16% of total gross value added of the industry sector and approximately 5.2% of GDP.

Construction is also responsible for expanding an economy's stock of capital from which opportunities for further growth are created and provides a base from which industries could produce higher-value added goods. Quarterly figures in 2009 and 2010 record that the value added of the construction industry had expanded at rates that vary from 2.4% to 22.6%. At the same time, the growth rate of stockbuilding recorded an impressive performance, reaping a nearly 60% quarterly growth in the second quarter of 2010 from a negative 40% growth rate just four quarters earlier.

Construction accounts for approximately 15% of total industry output and, despite its key economic development value, has historically performed less than the manufacturing sector in terms of industry output share—the average share of manufacturing to total industry output averages 69% per quarter for the period 2008-2010. Quarterly figures for 2009 and 2010 indicate that the construction and mining industries have recorded stable growth rates, while the electricity, gas and water industry manifested aggressive performance in the last quarter of 2010.

In terms of actual physical construction output, construction statistics based on the number of approved building permits indicate a near doubling in the number of private construction projects from 70 thousand (and with a PhP70 billion value) in the year 2000 to 105 thousand projects worth PhP190 billion by the end of 2010. Posting negative growth for three consecutive years (in 2005–2007), the number of private construction projects picked up with a growth of 8.4% in 2008 and accelerated to 17% in 2009 before plunging to negative growth territory again in 2010. Meanwhile, the value of these projects have been growing, peaking at 33.2% in 2010 even as the number of projects contracted by 6.7 percent.

The private residential construction industry has blossomed from a PhP25-billion industry in 2000 to a PhP97-billion industry in 2010. Rapid urbanization was accompanied the tremendous expansion in residential projects, growing for most years during the period 2000 to 2010—from 48,000 projects in 2000 to a peak of 85,000 projects in 2009. Private non-residential construction has had a wavier pattern of industry value expansion. Valued at PhP37 billion in 2000, its total value bobbed up and down during the period 2001–2005 (with values ranging from PhP30 billion to PhP41 billion) despite a consistent increase in the number of projects from 7,600 buildings in 2000 to 11,500 buildings in 2005. It recorded its highest number of projects (14,100) in 2006 and its highest annual industry value was at PhP79 billion in 2010 with 12,200 projects.

The number of additions, alterations and repairs has come down from its 2005 peak of almost 20,000 projects. It has since taken on a downtrend, with only 13,100 projects recorded for 2010. The value, however, has climbed to PhP14.2 billion in 2010 from PhP8.2 billion in 2000.

Construction and Employment

As a very labor-intensive industry, construction should—theoretically—be a key generator of employment. However, it accounts for approximately only 5% of national employment. The annual growth in the number of employed workers in this sector averaged only 2.7% in 2001–2010. It was only in 2003, 2007 and 2010 that employment in this sector grew by at least 5 percent. In 2010, at least 2 million employees were employed in the construction industry, the highest recorded in the last 10 years.

The top three regions in terms of employment in the construction industry are the National Capital Region (NCR), Central Luzon and CALABARZON—combined employment level in these three regions increased from 498,000 (31% of total) in 2001 to 871,000 (46% of total) in 2009. As a sector that allegedly comprise a complex network of backward and forward linkages, the number of establishments in this industry has yet to break the 3,000-mark. The growth in the number of these establishments have been mostly negative for the past 10 years and it was only in 2009 that the number of establishments increased by 15%, pushing by 26% to 147 thousand employees.

In 2005, there were 2,480 construction establishments, of which 648 firms (26.1% of total) had a minimum ATE of 20 workers. In 2008, there were an even smaller number of these firms—629. Employment in these firms was at 131 thousand workers in 2001 and fell by 6.7% to 122 thousand in 2008. By industry sub-class, employment was generated the most by general engineering industry, accounting for an average share of 61 percent, followed by non-residential construction (18%) and building installation (14%). Meanwhile, site preparation and rental of construction or demolition equipment accounted for the least (less than 1%) number of jobs generated.

In terms of annual revenue per worker, the construction industry recorded a marked improvement—from an average of PhP630 thousand in 2001 to PhP1.38 million in 2008. Specific to industry sub-class, the highest revenue per worker is in site preparation and renting of construction equipment (PhP1.587 million), the same industry sub-class that employed the least number of workers in 2008. Among the sub-classes, growth in revenue per worker had been quite volatile, but subclasses registered positive growths in revenue per worker by at least

15%, with the exception of general engineering construction industry, which contracted by 23 percent.

On a per-worker basis, value per output in 2008 stood at PhP1.4 million, more than twice its 2001 value of PhP617 thousand. Specific to industry sub-class, the annual value of output per worker in 2008 was almost the same for the site preparation and rental of equipment and general engineering construction industries, approximately PhP1.58 million. The highest expansion in the annual value of output per worker occurred in 2005; in 2008, all industry sub-class registered positive growth albeit at moderate amounts relative to 2005.

The construction industry provides employment to workers in different types of occupations, from licensed professionals and executives to unskilled workers. Statistics indicate, however, that the industry's employment share according to occupation group has not changed significantly over the past 10 years. Almost **92%** of people working in this sector are employed as Trades and Related Workers; Plant and Machine Operators & Assemblers; and Laborers and Unskilled Workers. Only **6.7%** are Professionals; Technicians and Associate Professionals; and Officials of Government and Special Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors. Meanwhile Clerks; Service Workers and Shop and Market Sales Workers; and Special Occupation workers make up less than **2%** of employed workers in the construction industry.

Construction employment is concentrated on occupation groups where competition and substitutability among workers is strong and turnover rates are high especially for workers with little or no training and/or field of specialization. The characteristic dominance of the number of trades workers and laborers relative to professional workers also creates relevant implications for the alleged slow uptick in labor productivity indicators for the sector. Trades and related workers; plant and machine operators and assemblers; and laborers and unskilled workers are hired on a project basis and remain employed only as long as the project is ongoing. Once the project is completed, all these workers are automatically unemployed. This type of on-again-off-again employment makes it difficult to capture and assess the real value of output of all construction workers and renders suspect official statistics on productivity measures, especially from the point of view of key construction industry players who know the realities of the playing field better than any existing official statistics indicate.

Some industry insiders are of the opinion that the failure of official statistics to reflect the impact of project-based employment on the true economic profile of the construction industry severely discounts the real

contribution of the sector in terms of output, employment and value to the macroeconomy. There also exists an undercurrent of resentment related to inadequacies in data-capture methodology of official establishments which process and release construction industry information that tend to put the construction industry always in a prejudicial light, especially when compared with other major industries.

In 2001-2009, the average annual productivity of a construction worker was at PhP38,000—almost just one-third of a manufacturing worker's productivity. The productivity of workers in the mining and quarrying industry is estimated at PhP150,000 while workers in the electricity, gas and water supply industry have productivity value of approximately PhP312,000 per year. ***But despite it being on the low-end of the labor productivity scale in absolute terms, it is only the construction sector that consistently exhibited positive labor productivity growth rates from 2006 to 2009.*** The highest productivity growth was 16% in 2007, very close to the mining sector's 17.6% growth rate. In 2009, while labor productivity in the utilities and manufacturing sector took a nosedive, the construction industry posted a 6.5% labor productivity growth.

Occupations in the construction industry are mostly associated with challenging physical labor since at least 90% of its workers are construction trade workers. Construction workers assigned to work outside the structure are exposed to inclement weather conditions and those working with special tools (i.e., heavy equipment, machinery, sharp objects) run the risk of physical injury to themselves and to others. However, it also employs professional, technicians and even corporate executives and managers and other workers whose occupations do not require them to be on the construction site but these workers constitute a very small percentage of the entire construction work force.

Average monthly compensation per worker has improved markedly from its PhP7,800 average figure in 2001 to PhP14,500 in 2008. Statistics in 2008 indicated that in absolute terms, workers in general engineering construction have the highest monthly compensation (PhP15,400) while workers in residential construction industry earned the least at PhP9,400. The highest growth in compensation was recorded by building completion industry (141%) in 2005 while the site preparation and renting of construction equipment industry was the only one that recorded negative growth in 2008. Interestingly, this 32% decline in average monthly compensation per worker coincided with this same industry's 30% increase in revenue per worker for the same period.

Occupations in Construction

The most common occupations in construction are the following: architect; construction manager; carpenter; construction laborers; construction equipment operators; electricians; plumbers, pipelayers, pipefitters, steamfitters and sprinklefitters; brickmasons, stonemasons and blockmasons. Among these occupations, architects, civil engineers and construction managers face great demand while construction equipment operators and electricians are the occupations that are hard to fill. Construction employees who seek to improve their skills set and gain a competitive edge may take formal training and advancement courses at the Construction Manpower Development Foundation (CMDF) and the Technical Education and Skills Development Authority (TESDA). Industry organizations such as the Construction Industry Authority of the Philippines (CIAP) and its four Boards, the Philippine Constructors Association Incorporate (PCA) and various professional organizations by the Professional Regulation Commission (PRC) also provide support to industry workers and may be tapped as additional channels to help promote employment and job interest in construction.

Outlook and Prospects for the Industry

With tamer growth targets for much of the Asian region and Philippine GDP growth estimates of 4.8% in 2012 and 5% in 2013, the construction industry can capitalize on projected increases in per capita income, rising population, greater government allocation for fixed capital investments, a bullish attitude to undertake government infrastructure projects via public-private partnerships and an even more aggressive position of the private construction sector towards its residential construction projects, to keep its growth momentum dynamic enough to create sustainable increases in value, output and employment until 2016.

This anticipated positivity in the construction industry for the next five years should be matched by initiatives to lessen the impact of job losses (i.e. an estimated loss of 21,000 jobs in 2012) while increasing labor productivity to sustain the competitiveness of firms. Programs by the Construction Manpower Development and TESDA to upgrade skills and develop specialty construction courses should be promoted to cover more specific occupations. Satellite training centers where such programs may be undertaken should be established across the country to diffuse the concentration of a good bulk of skilled construction workers and employees in major cities and urban areas.

It would be ideal for major construction establishments, industry organizations (i.e. CIAP, CMDF, TESDA), accredited professional organizations and the academe to strengthen their links and foster greater cooperation to help redesign and upgrade construction courses, accreditation programs and knowledge-management modules; help tailor

academic output (graduates of schools and learning/training centers) to be equipped with the appropriate skill sets which are actually needed in specific construction works; and promote access to construction employment opportunities via job fairs and construction employment networking groups.

Hopefully, this would serve not only to narrow the gap between the demand for and supply of workers in the construction industry, but also lessen the need to export construction manpower while enhancing the quality and competitive edge of our domestic pool of workers, contractors and construction businesses.

INTRODUCTION

This paper is a career guide on the Philippine construction industry. It provides a general overview into the nature and role of construction in the context of the general macroeconomy, highlights its employment-generating capacity and manpower development prospects, and gives jobseekers and other interested parties a peek into the industry's likely direction in terms of performance and labor market interface within the next short run cycle.

This paper is organized as follows: Part 1 discusses the nature of the industry and profiles the subsectors of the construction industry; Part 2 discusses the employment profile of the industry from a macro point of view; Part 3 focuses on industry occupations and features working conditions, earnings, training and advancement, and specific industry occupations; Part 4 looks into the job outlook and prospects, highlighting occupations which are likely to be in-demand.

Statistical data used to profile the economic contribution, value and employment aspects of the industry is based on its traditional definition as it appears on the national income accounts. Information about wage and pay figures were sourced from official statistical sources as well as key industry participants. Most of the statistics used to feature the economic profile of construction industry in general and the private construction industry of the Philippines, in particular, are from the Bureau of Labor and Employment Statistics ([BLES](#)) of the Department of Labor and Employment ([DOLE](#)), and the National Statistics Office ([NSO](#)). Additional information was also obtained from CEIC Data Company Ltd., Oxford Economic Forecast ([OEF](#)). Statistics on variables featured in the outlook section of this paper were mostly from estimates of the Economist Intelligence Unit ([EIU](#)).

PART 1. NATURE OF THE INDUSTRY

1.1 DEFINITION

Construction covers a range of activities so vast it makes composing a single all-comprehensive definition of construction a bit of a challenge. The construction process itself represents a network of transactions that can be as complex as the project being undertaken. From scoping the feasibility of a construction idea to designing it, and later on executing those designs by erecting physical structures to maintaining such structures, the construction sector is responsible for the creation and maintenance of the “built environment”—structures that range from a simple housing project for average Filipino families to the design and

creation of vast urban malls, from basic engineering work to build a bridge that connects towns to major infrastructure undertaking such as building a dam or a nuclear power plant.²

In national income accounts, construction appears twice—first as a component of capital formation and second as one of the major industries. As a form of capital formation, construction refers to the **total construction expenditures by private and public firms**. As included in the industry sector—the others being manufacturing, mining and quarrying; and electricity, gas and water—**construction refers to the value of economic activities by establishments engaged in the creation of residential and non-residential structures; additions and alterations to existing structures and other land improvements; civil engineering works and related technical services; manufacture of construction materials by horizontally integration construction firms; and informal construction activities such as own-account construction**.³

In the Annual Survey of the Philippine Business and Industry, a construction establishment is defined in the context of a contractor: *A general contractor engaged in the construction, repair or demolition of buildings, highways, airports and other structures; land leveling; earth moving and land reclamation; specialty contractor engaged in only specialized trade or craft like electrical installation, plumbing, painting, air conditioning, well drilling, installation of doors and windows and other work on component parts of the structure*.⁴

Yet, these definitions fall short in giving a comprehensive picture of the actual total contribution of construction to production and income, underscoring the construction industry's enormous diversity: it is large in size; dispersed by geography and product-type; dependent on labor, materials and other inputs which are also widely used by other producing sectors; and associated with numerous auxiliary industries.

Unique characteristics of construction output

² Country Health Rankings (www.countryhealthrankings.org) defines the term **built environment** as human-made (versus natural) resources and infrastructure designed to support human activity, such as buildings, roads, parks, and other amenities.

³ *Country Report by the Philippine Constructors Association 2011* available at http://philconstruct.com/docs/industryperf/Philippine%20Construction%20Association%20Country%20Report%20vJun24%20_2_.pdf

⁴ This definition is contained in the Technical Notes section of the 2003 Annual Survey of Philippine Business and Industry at http://www.census.gov.ph/data/sectordata/aspb03_sectftx.html

Unlike a typically manufactured good or service, the output of the construction industry is unique from a product feature viewpoint. While most finished goods have standardized features, many construction products are custom-built in nature—i.e., a facility such as a house or a commercial complex is usually built based on the end user's (or owner's) preferences and specifications. Compared with manufactured products, which could easily be packed to go in one's bag, many construction products are immobile which demands that their final assembly take place at the exact location of ultimate use. This immobility feature has implications for a firm's tendency to build up inventory. While accumulating a certain level of inventory is *de rigueur* for manufacturing firms, stockpiling immobile products for future sale is not economically feasible, rendering almost orthodox a near-zero buffer between production and actual demand for construction output such as shelter and related facilities.

Another unique aspect of construction is the financing of the construction activity itself. In other industries, the business owner or entrepreneur finances production. In construction, it is mostly the customer himself who finances the production of a construction facility and often undertakes this by making periodic payments to the producer. Furthermore, the customer who undertakes a loan in order to finance a construction project usually puts the construction facility itself as collateral or security against the loan. In the period 2008-2009, the Philippine banking system loaned a total of Php374.93 billion to the construction industry.⁵

Construction output is also very project-oriented in nature, requiring collaboration from different groups of market players. These unique product features, the complexity of the construction process itself and the industry's seasonality render the construction sector's demand susceptible to economic fluctuations. The breadth and depth of the construction sector's production web within the real sector and its labor-intensity also makes regulation imperative—a factor that, depending on the business environment it creates, could encourage the growth of the construction industry as much as castrate it.

All enterprise facilities needed to produce goods and services and provide shelter to the population are products of the construction industry—this is what makes the construction sector a key component of the macroeconomy. The very notion of development brings images of infrastructure—wide and well-paved highways; modern ports and airports; industrial zones lined with factories, assembly plants and warehouses; commercial complexes; housing zones—all of which are

⁵ Based on data from CEIC Data Company Ltd.

products of construction. It contributes to growth by providing output, creating employment, and generating income. Through the production of goods, shelter and infrastructure, it makes development possible by providing the physical capital requirements of an economy. The sector is also the birth industry of institutional structures and is therefore present in nearly every facet of major development activities.

1.2 ECONOMIC PROFILE

The direct relationship between GDP and construction has been documented in the literature; a number of these studies have established the relationship between construction and per capita income while others have traced the link between the magnitudes of construction spending as an economy moves from one stage of development to another.⁶ As a key sector, the performance of the construction industry is connected at the gut-level with the Philippine economy. In 2000-2010, the Philippines performed moderately with an annual average growth of 4.7 percent (**Figure 1**). Although external shocks and the 2008 global financial crisis made a dent in some year's output performance (i.e. 2.9% in 2001 and 1.1% in 2009), robust domestic demand helped the economy get back in shape. In 2010, post-crisis recovery manifested in real GDP output growth of 7.6%, pushing real GDP value to PhP5.7 trillion and, with a little help from overseas remittances, boosted the country's GNI to PhP7.6 trillion. Within the same period, the construction industry grew at an average rate of 5.5%, accounting for a 5% average annual GDP share and 15.2% of total industry output.⁷

⁶ As indicated in Crosthwaite (2000), some of these studies have found a linear relationship between construction's value added share of GDP and per capita income while some studies found that as an economy moves from out of its agricultural status towards becoming a newly industrialized country, construction spending per capita declines and becomes gets further reduced with an economy becomes an advanced industrialized economy.

⁷ At constant 2000 prices; raw figures are from the National Statistical Coordination Board.



The vital role of construction is even more palpable in developing economies where primary measures of development are anchored on the production and presence of physical facilities such as housing and shelter, and basic infrastructure services such as power, communications, transportation, water supply, waste disposal systems, as well as a coterie of commercial, manufacturing and institutional services to meet society's wants and needs.

As a production and delivery channel for infrastructure, it is an indispensable component of economic activity, development and progress. The Global Competitiveness Report (2010), which identified infrastructure as the second of twelve pillars of competitiveness underscored the importance of the construction sector as a production center and delivery arm of infrastructure:

Extensive and efficient infrastructure is critical for ensuring the effective functioning of the economy, as it is an important factor determining the location of economic activity and the kinds of activities or sectors that can develop in a particular economy. Well-developed infrastructure reduces the effect of distance between regions, integrating the national market and connecting it at low cost to markets in other countries and regions. In addition, the quality and extensiveness of infrastructure networks significantly impact economic growth and affect income inequalities and poverty in a variety of ways. ”⁸

⁸ Global Competitiveness Report 2010-2011, World Economic Forum.

Construction projects simultaneously navigate through and fuel a web of backward and forward linkages. In the industrial sector alone, construction activities are inextricably linked to activities in manufacturing, mining, and electricity, gas and water industries. This interdependence with other major industries and numerous auxiliary industries further boosts the sector's growth importance by inducing further growth in these firms. Necessarily, this kind of inter-industry network impacts on the construction industry's job creation and income generation prospects.

The current Aquino administration's plan to boost infrastructure by engaging PhP740 billion worth of investment capital via public-private partnerships (PPP) until 2016 is expected to strengthen the volume of activity in the construction industry. And since the sector characteristically maintains a symbiotic relationship with backward and forward linkages, most of which are made up of small firms, the anticipated rise of construction activities would, therefore, not only provide income but also promote the redistribution of income. Real GDP per capita is expected to increase moderately by 2.8% in 2011 and by an annual average of 3.4% from 2012 until 2015.⁹

Construction both influences output and is influenced by the level of national output. It expands (contracts) vis-à-vis the country's real output growth and has often been referred in the literature as the first sector to promote economic recovery and the last sector to come out of an economic recession. For the period 2006-2010, when measured as an expenditure type to boost capital formation, construction's value in inflation-adjusted terms averaged PhP414 billion annually, accounting for an average 45% share of total capital formation expenditure and 8% of real GDP (**Figure 2**).

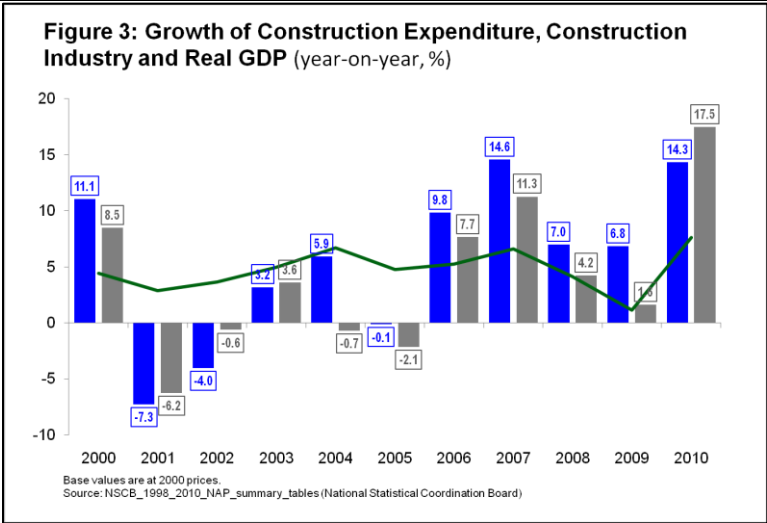
⁹ *Philippine Country Forecast August 2011* (Economist Intelligence Unit, 2011).

Figure 2: Growth of GDP and the Construction Industry, 2000-2010 (year-on-year. %)



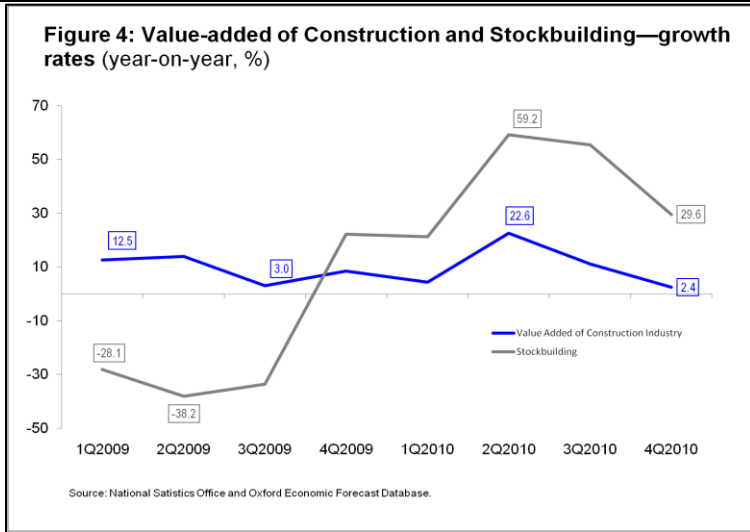
Source: NSCB_1998_2010_NAP_summary_tables (National Statistical Coordination Board)

On the other hand, when measured as an industry, it registers an average value of PhP269 billion in real terms, accounts for 16% of total gross value added of the industry sector and 5.2% of GDP. Both measures of construction exhibit similar patterns of growth relative to GDP growth though their magnitudes differ. To illustrate, in 2009, when real output grew by 1.1%, construction expenditure expanded by a mere 1.6% while construction's value added climbed by 6.8 percent. In 2010, the economic recovery record of 7.6% growth saw the construction industry's value added climb by 14% while construction expenditures increased by 17.5 percent (**Figure 3**).



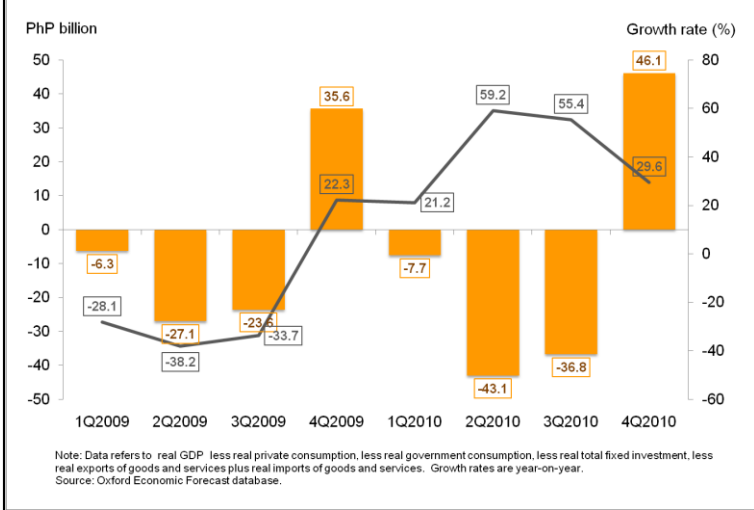
Construction contributes not just to production and income but to a necessary component of industrialization—the accumulation of capital stock. By expanding an economy’s stock of capital, opportunities for further growth are created, providing a base from which industries could produce higher-value added goods. Quarterly data in 2009–2010 show the value added of the construction industry had expanded at rates that vary from 2.4% to 22.6%. At the same time, the growth rate of stockbuilding recorded an impressive performance, reaping a nearly 60% quarterly growth in 2Q2010 from a negative 40% growth rate just four quarters earlier¹⁰ (**Figure 4**).

¹⁰ The definition of stockbuilding data used in this context refers to real GDP less real private consumption, less real government consumption, less real total fixed investment, less real exports of goods and services plus real imports of goods and services.

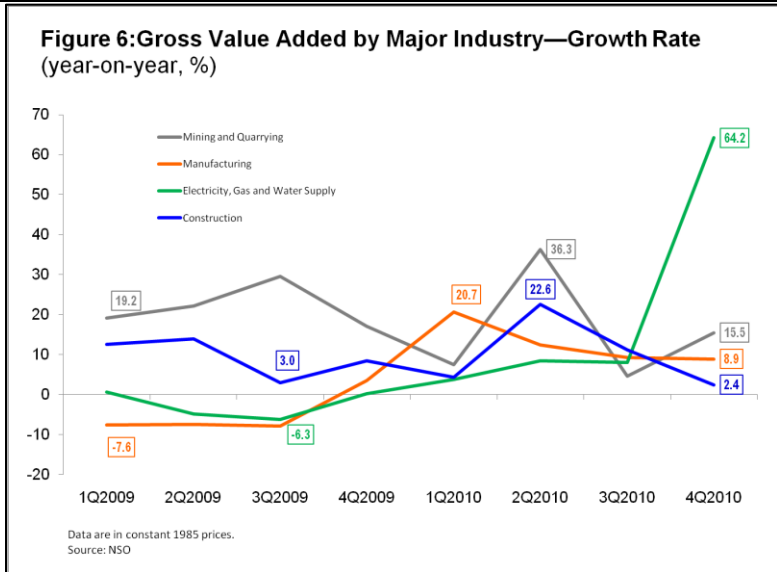


It appears that stockbuilding is sensitive to movements in construction value added. That is, rising levels of construction industry value added are accompanied by much higher rates of growth in stockbuilding (**Figure 5**). The outputs of the construction industry make up its direct contribution to national capital stockbuilding. Construction projects involving the development of various infrastructures in commercial, communication, transportation, housing and shelter and utilities-generation sectors foster a plethora of business opportunities, which in turn are harnessed for income-generation. The long shelf life of construction's capital stockbuilding components also helps ensure that the multiplier effect of the initial change in income is sustained.

Figure 5: Stockbuilding (at constant prices)

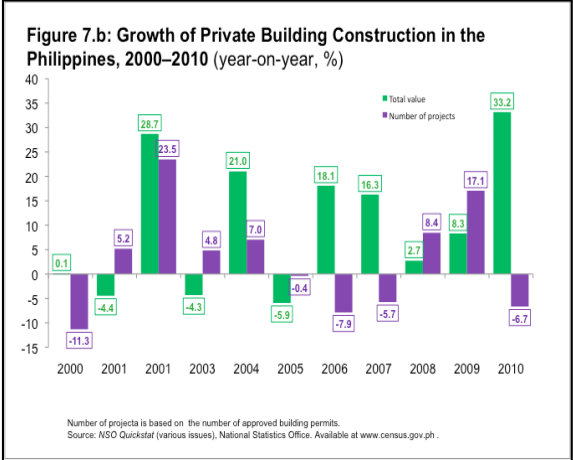
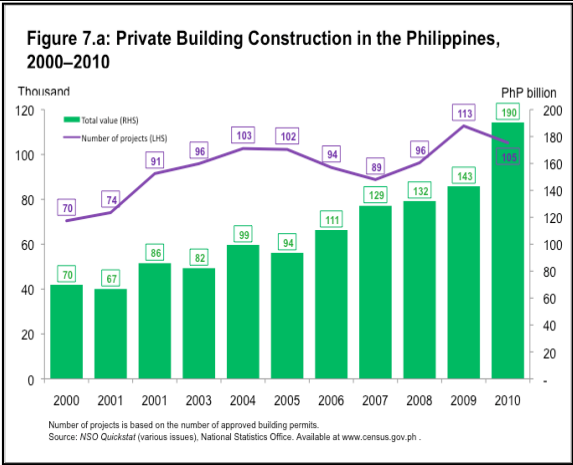


Construction accounts for approximately 15% of total industry output and, despite its key economic development value, has historically performed less than the manufacturing sector in terms of industry output share—the share of manufacturing to total industry output averages 69% per quarter for the period 2008-2010. Quarterly figures for 2009 and 2010 indicate that the construction and mining industries have recorded stable growth rates, while the electricity, gas and water industry manifested aggressive performance in 4Q2010 (**Figure 6**).



In terms of actual physical construction output, construction statistics based on the number of approved building permits¹¹ indicate a near doubling in the number of private construction projects from 70 thousand (and with a PhP70 billion value) in the year 2000 to 105 thousand projects worth PhP190 billion by the end of 2010. Posting negative growth for three consecutive years (2005–2007), the number of private construction projects picked up in 2008 with a growth of 8.4% and more than doubled its growth in 2009 (17%) before plunging to negative growth territory again in 2010 (**Figure 7a**). Meanwhile, the value of these projects have escalated in worth, peaking at 33.2% growth in 2010 even as the number of projects contracted by 6.7% (**Figure 7b**).

¹¹ A **building permit** is a written authorization granted by the Local Building Official (LBO) to an applicant allowing him to proceed with the construction of a specific project after plans, specifications and other pertinent documents have been found to be in conformity with the National Building Code (PD 1090). This definition is contained in the Technical Notes of the document entitled *Summary of Results Private Building Construction Statistics for the Year 2009* at www.census.gov.ph/data/sectordata/bp2009txt.html.



A quarterly view of the private construction industry reflects a rising trend for both the number and value of projects from one quarter to the next, although the projects' total value have historically exhibited a less stable growth pattern since the year 2000 (**Figures 7c and 7d**). Data for the most recent 2 years confirm this, with the number of projects expanding from 1Q2009 to 1Q2010 and then declining thereafter, with a sharp drop in growth (24.6%) in the last quarter of 2010. On a general note, things have started to pick up for the industry for 1Q2011, with the number of projects increasing in an absolute sense and its corresponding value rising by an even greater percentage (**Figure 7e**).

Figure 7.c: Private Building Construction in the Philippines, 1Q2000–1Q2011

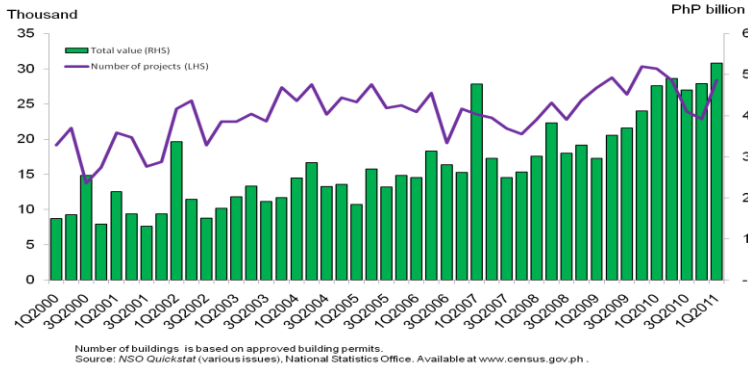


Figure 7.d: Growth of Private Building Construction in the Philippines, 1Q2000–1Q2011 (year-on-year, %)

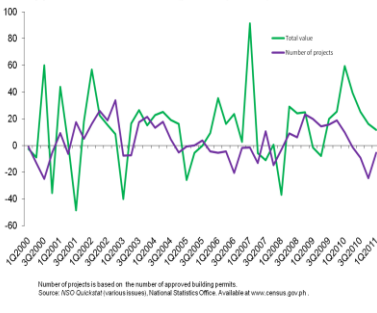
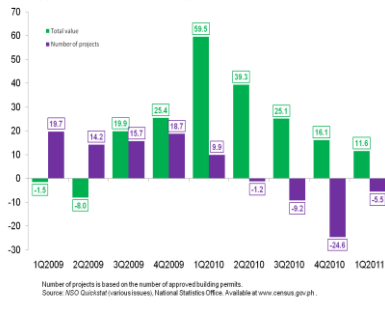


Figure 7.e: Growth of Private Building Construction in the Philippines, 1Q2009–1Q2011 (year-on-year, %)



1.3 INDUSTRY SUBSECTORS¹²

The private construction industry is divided into four major components: residential; non-residential; alterations; and additions and repair. **Residential construction** refers to the construction of buildings for which its major parts or more than half of its gross floor area is built for dwelling purposes. It can take the form of a single house, duplex, apartment, accesoría, residential condominium and other residential condominiums. A *single house* is defined as a complete structure intended for a single family or household such as a bungalow, a 2-storey residence or a nipa hut; a *duplex* is a structure intended for two households, with complete living facilities for each; an *apartment* is a structure, usually two-storey, made up of independent living quarters, with independent entrances from internal walls and courts; an *accesoría*

¹² The definitions found in this section of the paper are from the Technical Notes of *Summary of Results Private Construction Statistics for the Year 2009* at www.census.gov.ph/data/sectordata/bp2009.html.

is a one or two-floor structure divided into several dwelling units, each dwelling unit having its own separate entrance from the outside; a *residential condominium* is a structure, usually of several storeys consisting of multiple dwelling units; *other residential constructions* consist of school or company staff houses, living quarters for drivers and maids and guardhouses.

Non-residential construction refers to the construction of commercial, industrial, agricultural and institutional buildings. *Commercial buildings* are office buildings and all buildings which are intended for use primarily in wholesale, retail and service trades such as stores, hotels, banks and disco houses; *industrial buildings* are all buildings used to house the production, assembly, and warehousing of industrial establishments such as factories, plants, mills, repair shops, printing press, storage plant, electric generating plants; *institutional buildings* are all building which are primarily engaged in providing educational instructions and hospital/health care; ports, airports, and other government buildings such as schools museums, libraries, sanatoria, churches and hospitals; *agricultural buildings* are all buildings which are used to house livestock, plants and agricultural products such as barn, poultry house, piggeries, greenhouses and grain mill; *other non building constructions* include cemetery structures, street furniture, waiting sheds, communication towers, etc.

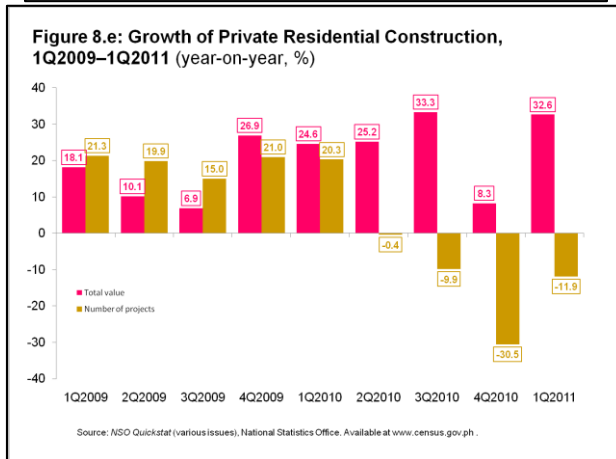
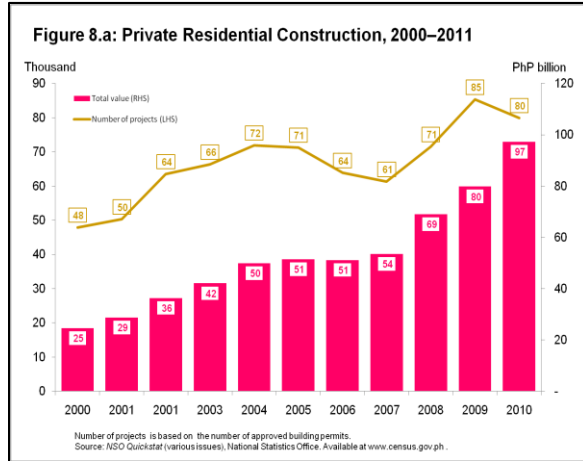
An **addition** is any new construction that increases the height or area of an existing building or structure. An **alteration** is a construction in a building/structure involving changes in the materials used, partitioning, location or size of openings, structural parts, existing utilities and equipment but does not increase the overall area thereof. A **repair** is remedial work done on any damaged or deteriorated portion of a building or structure to restore its original condition.

1.3.1 Private Residential Construction¹³

The private residential construction industry has blossomed from a PhP25-billion industry in the year 2000 to a PhP97-billion industry in 2010 (**Figure 8.a**). Rapid urbanization saw the number of residential projects grew for most years from 2000 to 2010—from 48,000 projects in 2000 to a peak of 85,000 projects in 2009. Although the industry contracted in 2005–2007 (with negative growth rates recorded for both value and number of projects), this was more than made up for by strong rebound growth performance in 2008 and 2009 (i.e., total value

¹³ **Figures 8.b to 8.d** in the Appendix depict the performance of the private residential construction industry in terms of total value, number of projects and corresponding growth rates using annual (2000-2010) and quarterly perspectives (1Q2000-1Q2011).

expanded by as much as 29% in 2008 while the number of projects increased by no less than 16% for both years) after which the number of residential projects started dipping again. Since the second quarter of 2010, growth has been negative but statistics for 1Q2011 indicated an uptick. The total value of residential construction has been consistently growing since the first quarter of 2009, posting a strong growth rate of 32.6% in 1Q2011 (**Figure 8.e**).

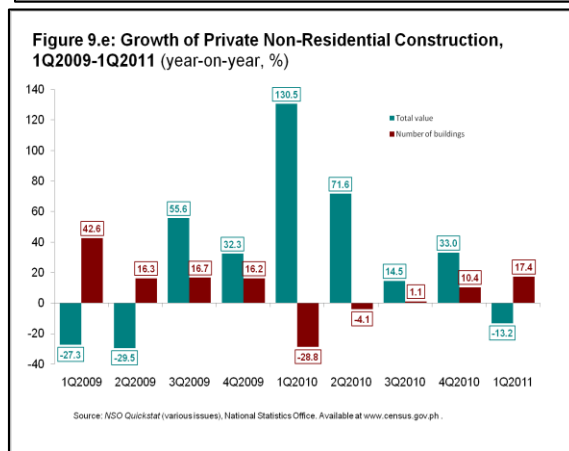
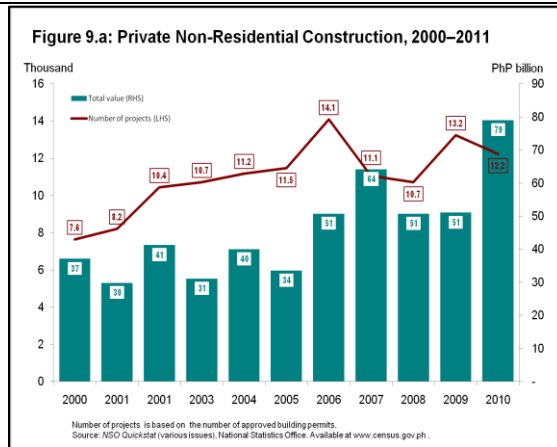


1.3.2 Private Non-Residential Construction¹⁴

¹⁴ **Figures 9.b to 9.d** in the Appendix depict the performance of the private non-residential construction industry in terms of total value, number of projects and corresponding growth rates using annual (2000-2010) and quarterly perspectives (1Q2000-1Q2011).

Private non-residential construction has had a wavier pattern of industry value expansion. With 7,600 projects worth PhP37 billion in 2000, its total value bobbed up and down from the period 2001 to 2005 (with values ranging from PhP30 billion to PhP41 billion) despite a consistent increase in the number of projects to 11,500 buildings in 2005. It recorded its highest number of projects in 2006 (14.1 thousand) and its highest annual industry value was at PhP79 billion in 2010 with 12,200 projects (**Figure 9.a**). Growth in the number of projects is not necessarily accompanied by a similar growth in total value. For example, growth rates of 2.6% and 2.5% in terms of the number of projects for 2003 and 2005 were accompanied by massive contractions in value—24.6% and 16.2%, respectively. Likewise, the 7.6% erosion in the number of projects in 2010 was witness to a stratospheric 54.8% jump in total peso value.

From a quarterly perspective, the variation in the growth in the number of buildings is less erratic than that exhibited by total market value, indicating the industry's susceptibility to swings in market prices. Recent quarterly figures point to a uptrend in the number of non-residential construction projects—from a sharp dive in growth of 28.8% in 1Q2010, the number of buildings have recorded positive quarterly growth since, recording a 17.4% climb in 1Q2011 (**Figure 9.e**).

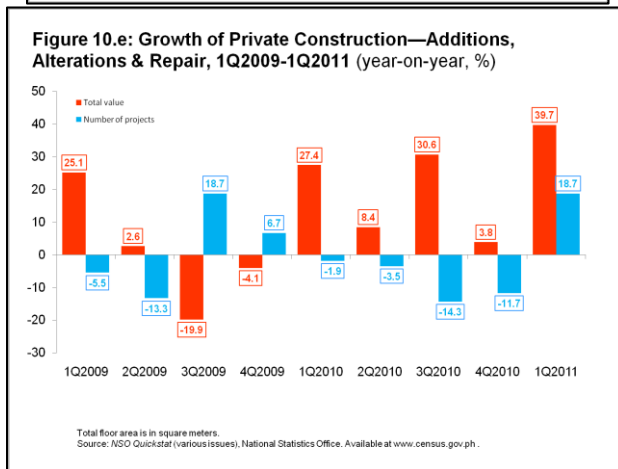
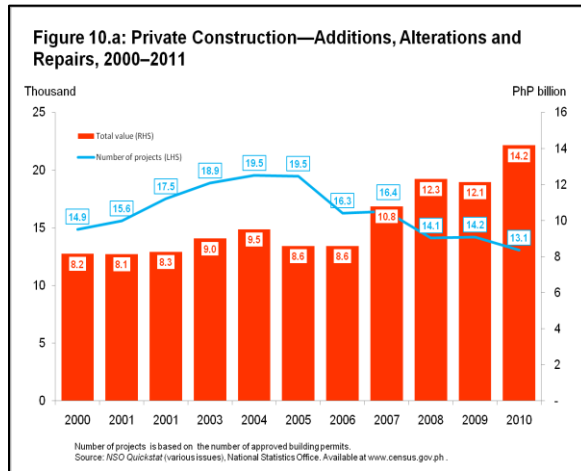


1.3.3 Additions, Alterations and Repairs¹⁵

The number of additions, alterations and repairs is coming down from its 2005 peak of almost 20,000 projects. It has since taken on a downtrend, with only 13,100 projects recorded for 2010. The value, however, has climbed to PhP14.2 billion in 2010 from PhP8.2 billion in 2000 (**Figure 10.a**). Since 2005, growth has been either marginal or deeply negative but due to rising prices, the value of alterations, additions and repair have been growing at significant levels. Quarterly growth patterns in the

¹⁵ **Figures 10.b to 10.d** in the Appendix depict the performance of the Addition, Alterations and Repair industry in terms of total value, number of projects and corresponding growth rates using annual (2000-2010) and quarterly perspectives (1Q2000-1Q2011).

number of projects and project value confirm this, with growth in project value outstripping the growth in the number of projects (**Figure 10.e**).



1.3.4 Value per project/building type¹⁶

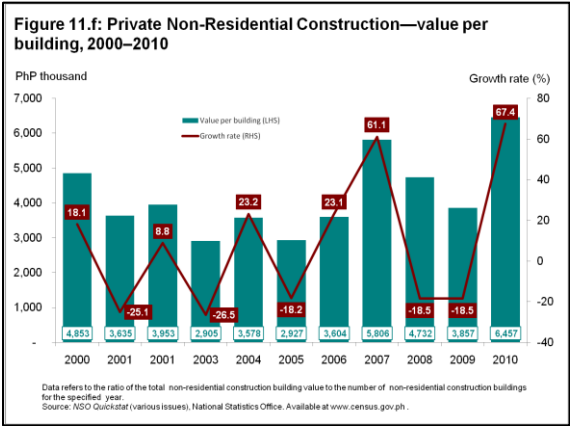
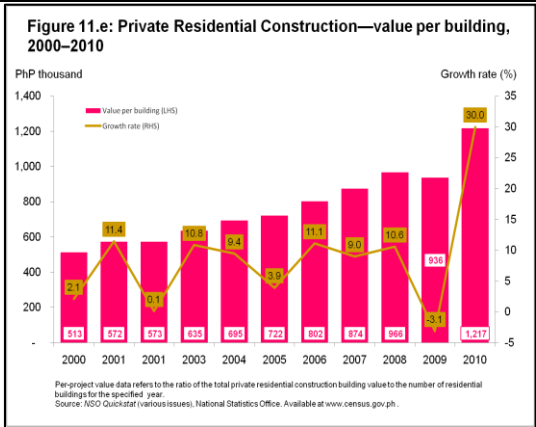
In 1Q2011, a residential building (project) cost around PhP1.4 million, nearly triple its PhP500 thousand value in early 2000. Back then, it cost only PhP2.8 million to have a non-residential building put up, but in 2007, this same building would cost you PhP8.3 million. Private construction projects have come a long way, value-wise. It ranged from PhP729 thousand to PhP2.09 million for the period 1Q2000 to 1Q2011, averaging

¹⁶ **Figures 11.a–11.d and 11.g** in the Appendix depict the trend in value or cost of buildings using annual (2000–2010) and quarterly perspectives (1Q2000–1Q2011).

PhP1.65 million since 2009. Growth in value per project peaked at 114% in 3Q2000 when the non-residential construction industry expanded by 190 percent. In annual terms, the value per project has nearly doubled—from PhP999 thousand in 2000 to PhP1.81 million in 2010. Annual growth has seesawed but the 42.6% growth in 2010 is the highest recorded, signaling a robust recovery from three previous years of declining growth.

The value per residential project has changed similarly (**Figure 11.e**). Quarterly data show how the value per residential building had swung from PhP460 thousand to PhP1.6 million in 2000–2011, averaging at PhP790 thousand per building. Quarterly growth has been relatively volatile, reaching as high as 56% and diving as low as negative 19 percent. In annual terms, the change in value is less volatile, with the lowest growth recorded in 2009 (-3.1%) and the highest at 30% in 2010—this brought the average cost of having a residential building built to PhP1.2 million, more than double its PhP513k cost in the year 2000.

The value of non-residential projects averaged PhP4.2 million per building during 1Q2010–1Q2011 (**Figure 11.f**). It was highest at PhP9.8 million (3Q2000) and lowest at PhP2.2 million (1Q2005). Annually, growth in the value of non-residential buildings averaged 8.6% in 2000–2010, with annual growth values ranging from negative 26.5% to 67.4 percent.

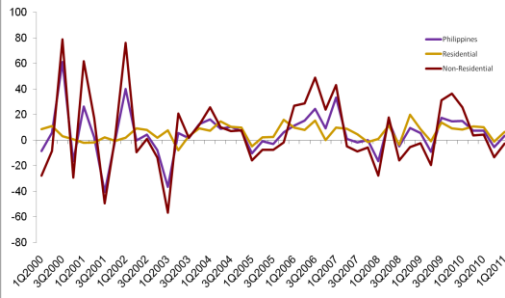


1.3.5 Value per square meter¹⁷

In terms of value per area, the value per square meter exhibited more volatile growth patterns from 1Q2000–2Q2003 and 1Q2007–4Q2008. Value per square meter was at PhP5,200 in 1Q2000. Eleven years later, this amount went up to PhP9,500. For residential buildings, the average square meter value is around PhP8,700 (in 1Q2011), up by 30% since four years ago. Non-residential buildings are now valued at PhP9,200 per square meter, slightly less than its PhP10,700 value in 1Q2007 but more than double its PhP4,500-per-square-meter value in 1Q2000 (Figures 12.a and 12.b).

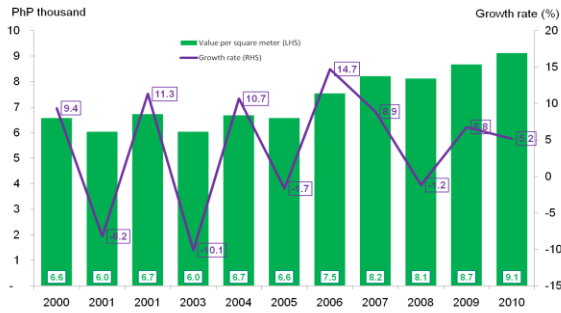
¹⁷ Figures 12.c to 12.e in the Appendix depicts the trend in value per square meter for 2000-2010.

Figure 12.a: Growth rate in value per square meter, 1Q2000–1Q2011 (year-on-year)



Data refers to the ratio of the total construction project value to the number of square meters covered for the specified quarter. The X-axis cuts the Y-axis at PHP7323, the average of all per-square-meter values per quarter from 1Q2000 to 1Q2011. Source: Author's computation using quarterly data from NSO Quickstat (various issues), National Statistics Office. Available at www.census.gov.ph.

Figure 12.b: Private Construction—value per square meter, 2000–2010



Data refers to the ratio of the total construction project value to the number of square meters covered for the specified year. Source: Author's computation using quarterly data from NSO Quickstat (various issues), National Statistics Office. Available at www.census.gov.ph.

PART 2. EMPLOYMENT PROFILE

Construction is a very labor-intensive industry and, theoretically, should be a key generator of employment. However, it accounts for approximately only 5% of national employment. The annual growth in the number of employed workers in this sector averaged only 2.7% in 2001–2010. It was only in 2003, 2007 and 2010 that employment in this sector grew by at least 5 percent. In 2010, at least 2 million employees were employed in the construction industry, the highest recorded in the last 10 years (**Figure 13**).

2.1 REGIONAL DISTRIBUTION

The top three regions in terms of employment in the construction industry are the National Capital Region (NCR), Central Luzon and CALABARZON where most construction projects are concentrated. The combined employment level in these three regions increased from 498 thousand in 2001 to 871 thousand in 2009 with shares rising from 31% in 2001 to 46% in 2009 (**Figure 14**).

Figure 13: Annual Employment in the Construction Industry

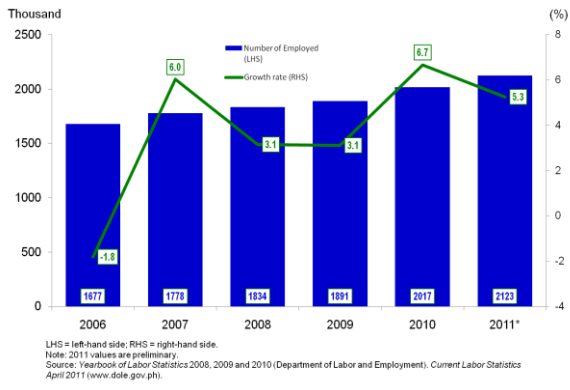
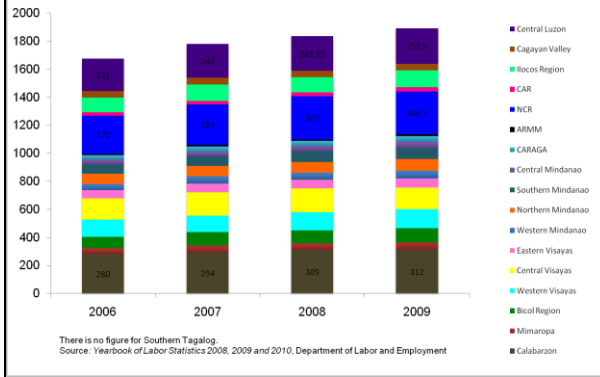
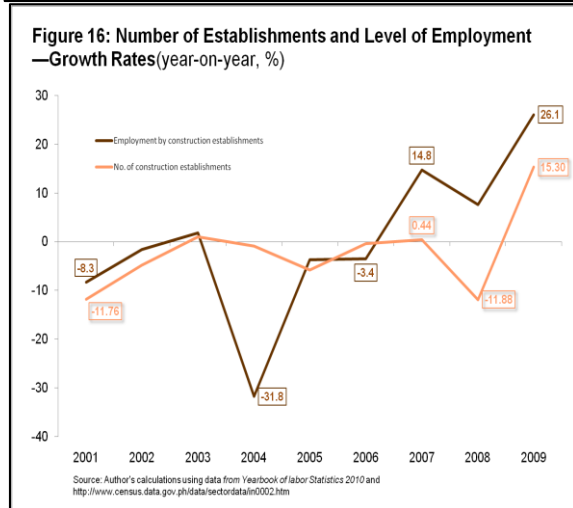
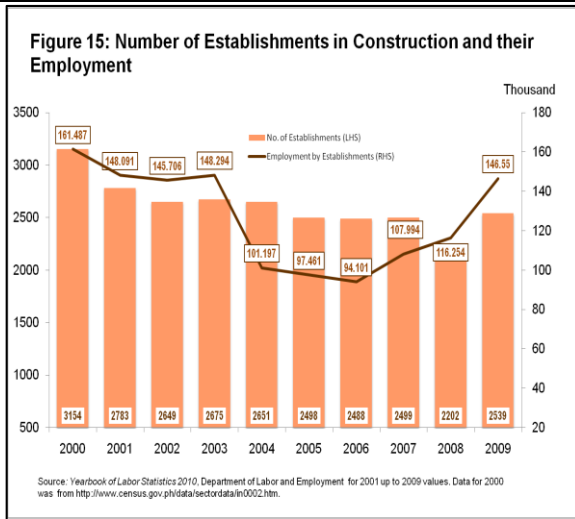


Figure 14: Employment in the Constuction Industry by Region (in thousand)



As a sector that allegedly comprise a complex network of backward and forward linkages, the number of establishments in this industry has yet to break the 3,000-mark. The growth in the number of these establishments have been mostly negative for the past 10 years and it was only in 2009 that the number of establishments increased by 15%, pushing the employment level by these firms by 26% to 147 thousand employees (Figures 15 and 16).



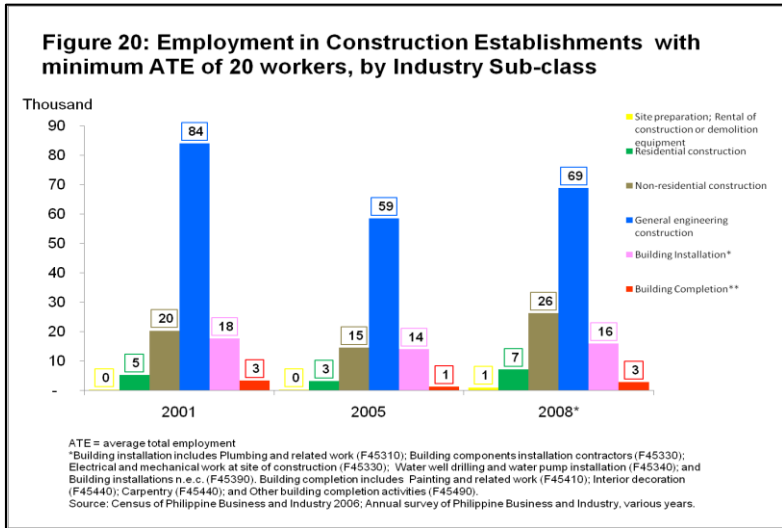
2.2 EMPLOYMENT ACCORDING TO TYPE OF CONSTRUCTION ESTABLISHMENTS¹⁸

The industry's employment profile may also be viewed from the kind establishments in the construction industry which is divided into the following **sub-classes**: Site Preparation that is often combined with Renting of Construction or Demolition Equipment with Operator; Residential (dwelling) Building Construction; Non-Residential Building

¹⁸ The employment figures featured in this section refer to construction establishments with a minimum average total employment (ATE) of 20 workers.

Construction; General Engineering Construction; Building Installation; and Building Completion.

In 2005, there were 2,480 construction establishments, of which 648 firms (26.1% of total) had a minimum ATE of 20 workers. These firms dropped in number to 629 by 2008. Employment in these firms was at 131 thousand workers in 2001 and fell by 6.7% to 122 thousand in 2008.¹⁹



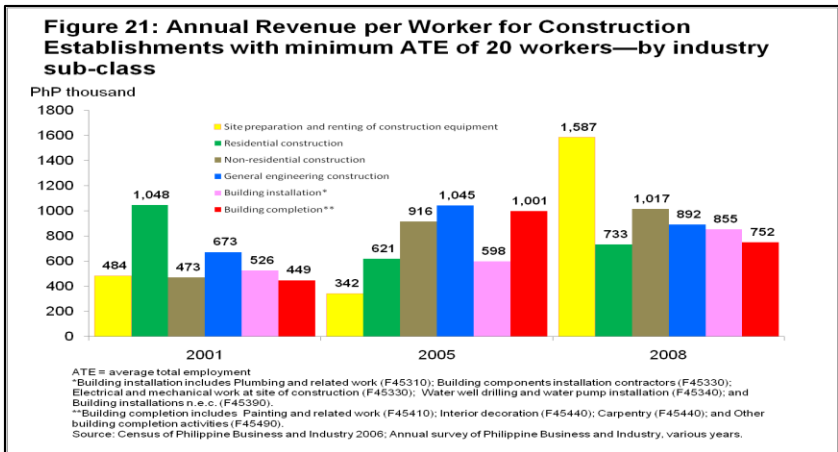
Among the industry sub-class, employment was generated the most by general engineering industry, accounting for an average share of approximately 61% of employment generated, followed by non-residential construction (18%) and building installation (14%). Meanwhile, site preparation and rental of construction or demolition equipment accounted for the least (less than 1%) number of employment.²⁰

2.3 ANNUAL REVENUES PER WORKER

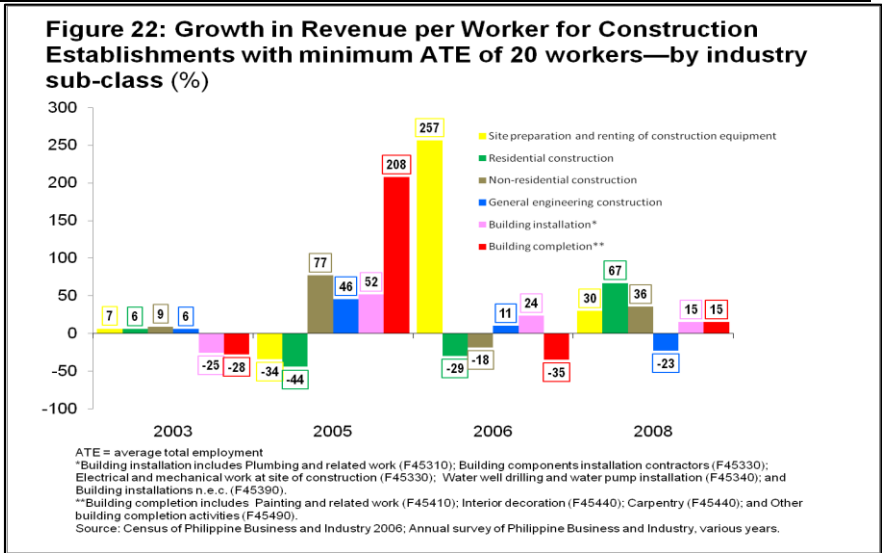
¹⁹ Refer to **Figure 20** in the Appendix for a distribution of construction establishments with a minimum ATE of 20 workers by industry sub-class for the years 2001, 2005 and 2008.

²⁰ The average employment share of per industry subclass refers to the average of the employment shares of the specified sub-class to total employment for the following years: 2001, 2003, 2005, 2006 and 2008. These are the years when either the CPBI or ASBPI was conducted.

Annual revenue per worker is the ratio of a firm's annual revenues (or sales) to the total number of its employees. A higher ratio is desired because it connotes higher productivity especially when ratios among companies are compared. In terms of annual revenue per worker, the construction industry recorded a marked improvement—from an average of PhP630 thousand in 2001 to PhP1.38 million in 2008. Specific to industry sub-class, the highest revenue per worker is in site preparation and renting of construction equipment (PhP1.587 million), the same industry sub-class that employed the least number of workers in 2008 (**Figure 21**).

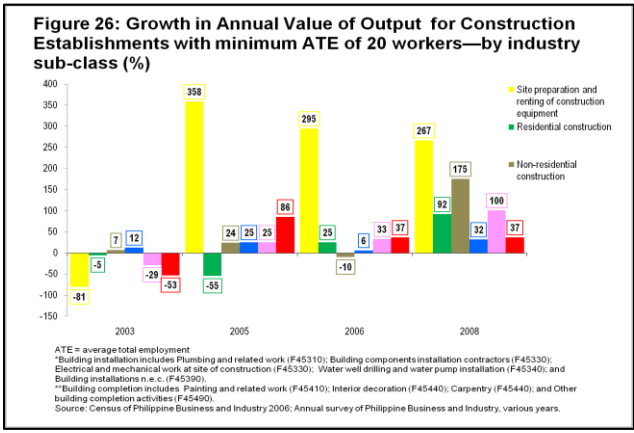
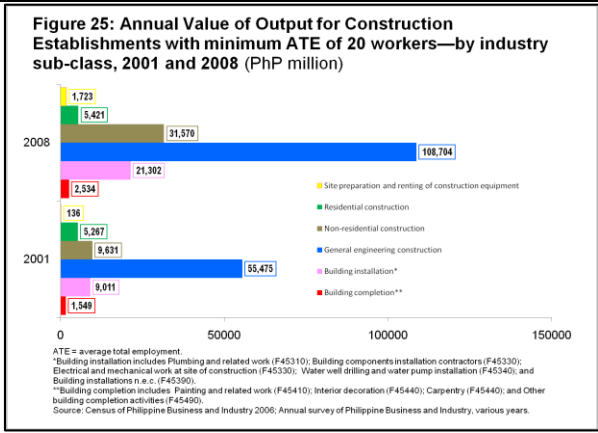


Among the sub-classes, growth in revenue per worker had been quite volatile, growing by 49% in 2005 after an almost zero growth in 2003 then slowing down to 5% in 2006 only to climb up by 40% in 2008. Peak growth was recorded by the site preparation and renting of equipment (257%) and building completion (208%) industries in 2005. All subclasses registered positive growths in revenue per worker by at least 15%, with the exception of general engineering construction industry, which contracted by 23 percent (**Figure 22**).



2.4 VALUE OF OUTPUT PER WORKER

Value of output per worker is the ratio of the total value of output of the construction industry to the total number of workers in construction. From PhP81 billion in 2001, the annual value of output in the construction industry grew by more than double (PhP171 billion) in 2008. In absolute terms, it was highest for general engineering construction at PhP108.7 billion and smallest for site preparation and rental of equipment industry at PhP1.7 billion. For each reference year, annual values of output have been growing positively for all industry subclass since 2005 (**Figures 25 and 26**).



On a per-worker basis, value per output in 2008 stood at PhP1.4 million, more than twice its 2001 value of PhP617 thousand. Specific to industry sub-class, the annual value in 2008 was almost the same for the site preparation and rental of equipment and general engineering construction industries, approximately PhP1.58 million. The lowest value was for residential construction industry at PhP755 thousand—this industry had the highest in 2001 (Figure 27). The highest expansion in the annual value of output per worker occurred in 2005; in 2008, all industry sub-class registered positive growth albeit at moderate amounts relative to 2005 (Figure 28).

Figure 27: Annual Value of Output per Worker for Construction Establishments with minimum ATE of 20 workers—by industry sub-class, 2001 and 2008

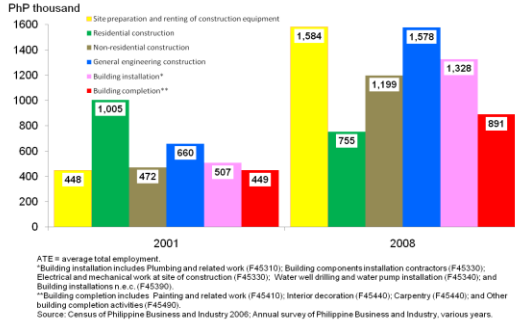
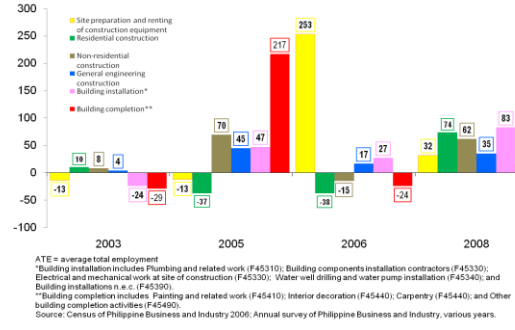


Figure 28: Growth in Annual Value of Output per Worker for Construction Establishments with minimum ATE of 20 workers—by industry sub-class (%)



PART 3. INDUSTRY OCCUPATIONS

3.1 OCCUPATIONAL DISTRIBUTION AND GROSS INDICATORS OF LABOR PRODUCTIVITY

The construction industry provides employment to workers in different types of occupations, from licensed professionals and executives to unskilled workers. However, statistics indicate that the industry's employment share according to occupation group has not changed significantly over the past 10 years. Almost **92%** of people working in this sector are employed as Trades and Related Workers; Plant and Machine Operators & Assemblers; and Laborers and Unskilled Workers. Only **6.7%** are Professionals; Technicians and Associate Professionals; and Officials of Government and Special Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors. Meanwhile Clerks; Service Workers and Shop and Market Sales Workers; and Special Occupation workers make up less than **2%** of employed workers in the construction industry.

Figure 17: Employed Persons in the Construction Industry by Major Occupation Group, 2009 (in thousand)

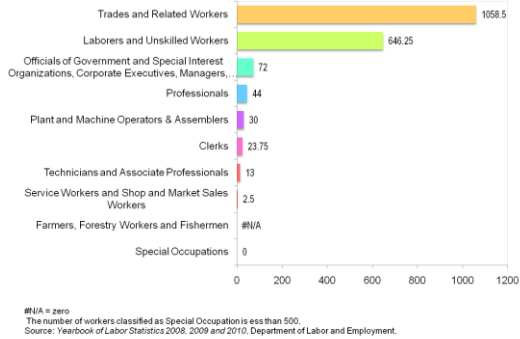
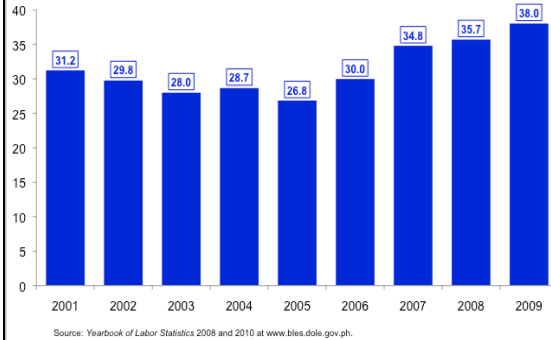


Figure 18: Labor Productivity in the Construction Industry, 2001–2009 (PhP thousand, at 1985 prices)



Construction employment is concentrated on occupation groups where competition and substitutability among workers is strong and turnover rates are high especially for workers with little or no training and/or field of specialization. The characteristic dominance of the number of trades workers and laborers relative to professional workers also creates relevant implications for the alleged slow uptick in labor productivity indicators for the sector. Trades and related workers; plant and machine operators and assemblers; and laborers and unskilled workers are hired on a project basis and remain employed only as long as the project is ongoing.²¹ Once the project is completed, all these workers are automatically unemployed. This type of on-again-off-again employment makes it difficult to capture and assess the real value of output of all construction workers and renders suspect official statistics

²¹ A representative of the Philippine Contractors Association noted that approximately only 5% of construction employees are regular employees; the rest are hired on a project-basis.

on productivity measures, especially from the point of view of key construction industry players who know the realities of the playing field better than any existing official statistics indicate.

Some industry insiders are of the opinion that the failure of official statistics to reflect the impact of project-based employment on the true economic profile of the construction industry severely discounts the real contribution of the sector in terms of output, employment and value to the macroeconomy. There also exists an undercurrent of resentment related to inadequacies in data-capture methodology of official establishments which process and release construction industry information that tend to put the construction industry always in a prejudicial light, especially when compared with other major industries.

A case in point is the standard measure of labor productivity which takes into account the gross value of the construction, which some industry insiders believe to be understated, and the total number of employees, which they are certain to be inaccurate. However, since this measure of productivity is usually found in official statistics, people who are not part of the industry who are faced with such official statistics on construction productivity would tend to think of the industry as a perennial loser, especially since data indicate that construction has consistently been at the bottom of the list in terms of labor productivity (in real terms), an observation which is not acceptable to construction industry insiders.

In 2001-2009, the average annual productivity of a construction worker is at PhP38 thousand, almost just a third of a manufacturing worker's productivity of PhP96 thousand. The productivity of workers in the mining and quarrying industry is estimated at PhP150 thousand while workers in the electricity, gas and water supply industry has a productivity value of approximately PhP312 thousand per year. ***But despite it being on the low-end of the labor productivity scale in absolute terms, it is only the construction sector that consistently exhibited positive labor productivity growth rates from 2006 to 2009.*** The highest productivity growth it recorded was 16% in 2007, very close to the mining sector's 17.6% growth rate. In 2009, while labor productivity in the utilities and manufacturing sector took a dive, the construction industry posted a 6.5% labor productivity growth.

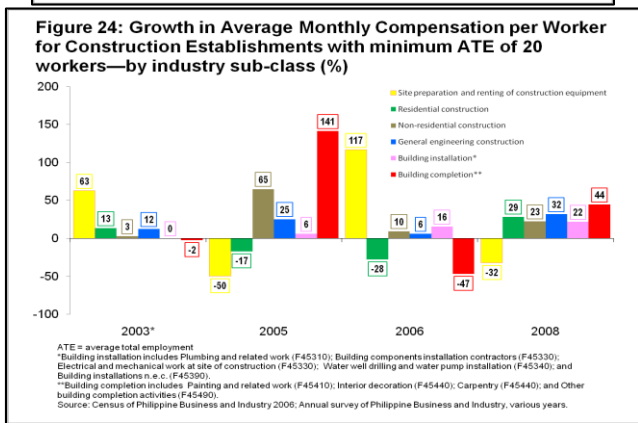
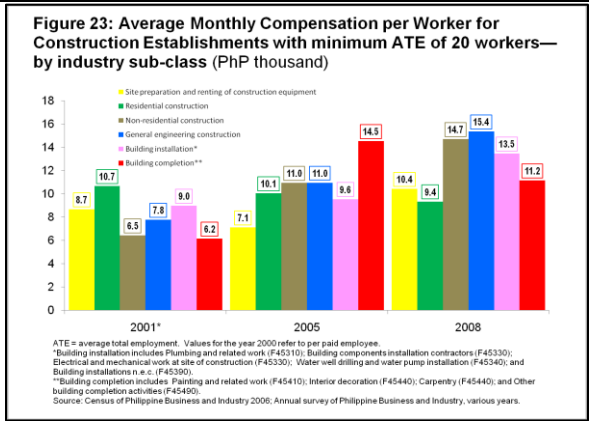
3.2 WORKING CONDITIONS

Occupations in the construction industry are mostly associated with challenging physical labor since at least 90% of its workers are construction trade workers. Construction workers assigned to work outside the structure are exposed to inclement weather conditions and

those working with special tools (i.e., heavy equipment, machinery, sharp objects) run the risk of physical injury to themselves and to others. However, it also employs professional, technicians and even corporate executives and managers and other workers whose occupations do not require them to be on the construction site but these workers constitute a very small percentage of the entire construction work force.

3.3 EARNINGS OR COMPENSATION PER WORKER

Average monthly compensation per worker has improved markedly from its PhP7.8 thousand average figure in 2001 to PhP14.5 thousand in 2008. In absolute terms, workers in general engineering construction have the highest monthly compensation (PhP15.4 thousand) while workers in residential construction industry earned the least with PhP9.4 thousand, based on 2008 data. The highest growth in compensation was recorded by building completion industry (141%) in 2005 while the site preparation and renting of construction equipment industry was the only one that recorded negative growth in 2008. Interestingly, this 32% decline in average monthly compensation per worker coincided with this same industry's 30% increase in revenue per worker for the same period.



3.4 TRAINING AND ADVANCEMENT

Construction employees who seek to improve their skills set and gain a competitive edge may take formal training and advancement courses at the Construction Manpower Development Foundation (**CMDF**) and the Technical Education and Skills Development Authority (**TESDA**).

Mandated to oversee the development of human resources of the construction industry, the CMDF envisions itself as *the leading instrument of change to enable construction industry to fulfill its share in nation building* and commits itself to *develop and sustain human resource capabilities for domestic and overseas needs to attain globally competitive construction industry*.²² It offers productivity training, orientation seminar for students and skills testing and certification. For productivity training, it offers construction management courses,

²²Information about the Construction Manpower Development Foundation is available at <http://www.dti.gov.ph/dti/index.php?p=179>.

supervisory development courses, construction safety seminars and courses and skills development and livelihood program. It conducts basic orientation seminar for engineering students and faculty on such courses as rebarworks, concrete works, formworks, electrical works and plumbing works. Skills testing and certification (TESDA-accredited) are also offered to construction skilled workers, foremen and engineering students.

TESDA formulates manpower and skills plans, sets appropriate skills standards and tests, coordinates and monitors manpower policies and programs, and provides policy directions and guidelines for resource allocation for the technical-vocational education and training (TVET) institutions in both the private and public sectors. TESDA helps ensure the productivity, quality and global competitiveness of middle-level workers by through its Philippine TVET Qualification and Certification System (PTQCS). It assesses whether a graduate or worker can perform to the standards expected in the workplace based on the defined competency standards and certifies those who meets the competency standards.

Specifically for construction-related occupations, TESDA has competency-based curriculum on heavy equipment operation (such as courses on container stacker, crawler crane, gantry crane, rough terrain crane, screed, truck mounted crane, tower crane, transit mixer), heavy equipment servicing, plumbing, welding, and tile setting.

3.5 SPECIFIC INDUSTRY OCCUPATIONS²³

Labor statistics list the following as the top five occupations perceived as vital in the business operations of construction firms: (a) civil engineer; (b) production and operations managers not elsewhere classified; (c) Production supervisors and general foremen; (d) construction and maintenance laborers: roads, dams and similar constructions; and (e) masons and related concrete finishers.

²³ The profile of specific occupations presented in this section were sourced from the *Career Guide to Industries (2010-2011)* of the United States Bureau of Labor Statistics available at www.bls.gov/oco/cg/ . The average wage figures indicated in the occupation matrices are based on Table 1 - Average Monthly Wage Rates of Time-Rate Workers on Full Time Basis in Selected Industries and Occupations of the Philippines as of August 2010; Table 23 – Average Daily Basic Pay of Wage and Salary Workers by Region, Philippines: 2009-July 2011; and Table 24—Minimum Wage Rates by Sector and Region as of December 2011 at <http://www.bles.dole.gov.ph/PUBLICATIONS/Current%20Labor%20Statistics/index.html>

The following features some of the most common occupations in the construction sector.

An **architect** is a licensed professional trained in the art and science of building design. He/She is primarily responsible for developing ideas for structures and turning those ideas into images and plans that form the foundation of the construction process. He/She is involved almost in the entire construction process and is the person behind the overall look of buildings.

Basic skills and related requirements	<ul style="list-style-type: none"> • Professional degree in architecture and licensure. • Internship and job experience requirements.
Tenure	<ul style="list-style-type: none"> • Mostly regular or full time employees • Some are employed on a project-basis.
Working Environment	<ul style="list-style-type: none"> • Relatively comfortable work environment as most aspects of the work (client consultation, meetings, report preparation and related documents) occur in an office setting. • Also visit construction sites regularly to check on the project's progress.
Advancement and Training	<ul style="list-style-type: none"> • Career advancement comes with gaining experience by engaging in more and increasingly complex projects. • Advancement to supervisory or managerial positions is possible and in some cases, architects may become partners in established firms or set up their own practice. • The CMDF offers courses in different aspects of construction management that adheres to training intervention based on internationally accepted standards and the courses are designed with reference to the Project Management Body of Knowledge in the United States. Fees range from PhP1,300 to PhP4,000 per course.
Working hours	<ul style="list-style-type: none"> • No less than 40 hours a week.
Average wage rate	<ul style="list-style-type: none"> • PhP21,208 (monthly).
Prospects	<ul style="list-style-type: none"> • Stable prospects due to a more infrastructure-driven business and economic environment.

A **civil engineer** is a professional engineer trained in the planning, design and construction of buildings, roads, tunnels, airports, seaports, flyovers, bridges and any other type of structure. He/She is involved in and also supervises all aspects of a construction project from conception to completion.

Basic skills and related requirements	<ul style="list-style-type: none"> • Engineering degree and licensure. • Analytical skills, attention to details, communication skills, leadership capabilities and ability to work in a team.
Tenure	<ul style="list-style-type: none"> • Mostly regular or full-time employees. • Some are employed on a project-basis.
Working Environment	<ul style="list-style-type: none"> • Common work environment includes office buildings, laboratories, or industrial plants. Others may spend time outdoors at construction sites to monitor or direct operations or solve onsite problems. • Some assignments may involve extensive travel.
Advancement and Training	<ul style="list-style-type: none"> • New engineers usually work with more experienced engineers and, in large companies, also may receive formal classroom or seminar-type training. • With more experience, one may become a technical specialist or a team supervisor. • Some may eventually become engineering managers or enter other managerial or sales jobs. • The CMDF offers supervisory development courses geared to improve productivity, costing from PhP1k to PhP2.5k per course.
Working hours	<ul style="list-style-type: none"> • At least 40 hours a week.
Average wage rate	<ul style="list-style-type: none"> • PhP18,597 to PhP26,704 (monthly).
Prospects	<ul style="list-style-type: none"> • Better than average prospects due to the government's drive to establish more and better infrastructure throughout the country. • More engineers are needed to design and construct or expand transportation, water supply, and pollution control systems, and buildings and building complexes; and

	repair or replace existing roads, bridges, and other public structures.
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A **construction manager** plans, directs, coordinates, and budgets a wide variety of construction projects, including the building of all types of residential, commercial, and industrial structures, roads, bridges, wastewater treatment plants, and schools and hospitals. The scope of their job may be just one part of the project or the entire project itself. Liaising and coordination work dominate the tasks of a construction manager, including the selection, hiring, and oversight of specialty trade contractors, such as carpentry, plumbing, or electrical. However, they usually do not do any actual construction of the structure.

Basic skills and related requirements	<ul style="list-style-type: none"> • Bachelor's degree in any construction-related field (but some types of construction workers could become construction managers after many years of experience). • Must understand construction contracts, plans, specifications and regulations. • Good oral and written communication skills; • Time- and task-flexible; computer literate.
Tenure	<ul style="list-style-type: none"> • May be regular or full time employees. • Some are employed on a project-basis.
Working Environment	<ul style="list-style-type: none"> • Office or field office for monitoring and managing activities of the construction project. • Considerable degree of travel.
Advancement and Training	<ul style="list-style-type: none"> • Opportunities for advancement and training vary with employee performance and the size of the company. • Advancement to top managerial positions for large firms. • Consultancy opportunities for highly experienced individuals. • Opportunities to engage in specialty contract or general contracting. • The CMDF offers courses in different aspects of construction management that adheres to training intervention based on internationally accepted standards and the courses are designed with reference to the Project Management Body of

	Knowledge in the United States. Fees range from PhP1,300 to PhP4,000 per course.
Working hours	<ul style="list-style-type: none"> At least 40 hours a week; most are on call 24 hours a day, depending on the urgency of attending to a project.
Average wage rate	<ul style="list-style-type: none"> PhP80,000 (monthly)— some packages include housing, service vehicle and gasoline allowance.
Prospects	<ul style="list-style-type: none"> Better than average prospects for job seekers who combine their construction-related degree with several years of relevant job experience.

A **carpenter** is someone who constructs, erects, installs, and repairs structures and fixtures made from wood and other materials.

Basic skills and related requirements	<ul style="list-style-type: none"> At least high school graduate. Manual dexterity, good eye-hand coordination, physical fitness, and a good sense of balance. Ability to solve mathematical problems.
Tenure	<ul style="list-style-type: none"> Mostly project-based.
Working Environment	<ul style="list-style-type: none"> Prolonged standing, climbing, bending, and kneeling. High potential for injury due to working with sharp or rough materials, using sharp tools and power equipment, and working in situations where they might slip or fall. Very high incidence of nonfatal injuries and illnesses. Those working outdoors are subject to variable weather conditions.
Advancement and Training	<ul style="list-style-type: none"> Carpenters can learn their craft through on-the-job training, vocational schools or technical colleges, or formal apprenticeship programs. More opportunities than most other construction workers to become general construction supervisors because of regular exposure to the entire construction process.

Working hours	<ul style="list-style-type: none"> Many carpenters work a standard 40 hour week; however, some work more.
Average wage rate	<ul style="list-style-type: none"> PhP9,705 (monthly). PhP227–PhP439 (daily, depending on the region).
Prospects	<ul style="list-style-type: none"> Demand for carpenters is been sustainably high and job prospects are good for skilled, specialized and trained carpenters.

Construction laborers are workers performing a wide range of construction-related tasks, from the very easy to the hazardous, in different areas of the construction site.

Basic skills and related requirements	<ul style="list-style-type: none"> No specific educational qualifications or entry-level training, but usually require a high school diploma or its equivalent. Manual dexterity, eye-hand coordination, good physical fitness, a good sense of balance, and an ability to work as a member of a team.
Tenure	<ul style="list-style-type: none"> None; largely project-based employment
Working Environment	<ul style="list-style-type: none"> Typically engaged in physically demanding work with exposure to great heights or outdoor weather conditions. Some jobs expose workers to harmful materials or chemicals, fumes, odors, loud noises, or dangerous machinery, lead-based paint, asbestos, or other hazardous substances during their work, especially when they work in confined spaces. To avoid injury, workers in these jobs wear safety clothing, such as gloves, hardhats, protective chemical suits, and devices to protect their eyes, respiratory system, or hearing. While working underground, construction laborers must be especially alert in order to follow procedures safely and must deal with a variety of hazards.
Advancement and Training	<ul style="list-style-type: none"> Laborers may earn certifications in welding, scaffold erecting, and concrete finishing.

	<ul style="list-style-type: none"> • Training and experience enables laborers can move into other occupations, such as construction supervisors or general contractors. • TESDA has a competency-based curriculum for scaffold erection.
Working hours	<ul style="list-style-type: none"> • A standard 40 hour work week is the most common work week for construction laborers. • In some parts of the country, construction laborers may work only during certain seasons. • Weather-related work stoppages at any time of the year is also possible.
Average wage rate	<ul style="list-style-type: none"> • PhP9,049 (monthly). • PhP227–PhP439 (daily, depending on the region).
Prospects	<ul style="list-style-type: none"> • Stronger competition for jobs among those requiring limited skills. • Better prospects for those with specialized skills or who can relocate near new construction projects. • Better opportunities for laborers specializing in road construction.

Construction equipment operators use machinery to move construction materials at construction sites. They operate equipment that clears and grades land to prepare it for construction of roads, buildings, and bridges, as well as airport runways, power generation facilities, dams, levees, and other structures. They use machines to dig trenches to lay or repair sewer and other utilities, and hoist heavy construction materials. Construction equipment operators also operate machinery that spreads asphalt and concrete on roads and other structures.

Basic skills and related requirements	<ul style="list-style-type: none"> • Formal apprenticeship experience or on-the-job training. • Manual dexterity, good eye and hand coordination, physical stamina.
Tenure	<ul style="list-style-type: none"> • None; mostly project-based employment.
Working Environment	<ul style="list-style-type: none"> • Workers are subject to outdoor weather conditions and work is often noisy, dirty, greasy, muddy and dusty. • Bulldozers, scrapers, and especially piledrivers are noisy and shake or jolt the

	<p>operator.</p> <ul style="list-style-type: none"> • Relatively high hazard risks due to operating heavy construction equipment.
Advancement and Training	<ul style="list-style-type: none"> • Employers of construction equipment operators generally prefer to hire high school graduates, although some employers may train non-graduates to operate some types of equipment. High school courses in automobile mechanics are helpful because workers may perform maintenance on their machines. Also useful are courses in science and mechanical drawing. With the development of GPS, construction equipment operators need more experience with computers than in the past. • Construction equipment operators can advance to become supervisors. Some operators choose to pass on their knowledge and teach in training facilities. Other operators start their own contracting businesses, although doing so may be difficult because of high startup costs. • The CMDF offers courses on heavy equipment operation and heavy equipment operation, which costs from PhP1.6k to PhP4k per course. • TESDA has competency-based curriculum for heavy equipment operation.
Working hours	<ul style="list-style-type: none"> • At least 40 hours a week; others work longer hours for projects on a 24/7 basis.
Average wage rate	<ul style="list-style-type: none"> • PhP9,358–PhP11,822 (monthly). • PhP227–PhP439 (daily, depending on the region).
Prospects	<ul style="list-style-type: none"> • Good prospects because there are usually not enough qualified candidates to fill jobs.

Electricians install and maintain electrical and power systems in homes, businesses, and factories. Those specializing in construction primarily install wiring systems into factories, businesses, and new homes while

those specializing in maintenance fix and upgrade existing electrical systems and repair electrical equipment.

Basic skills and related requirements	<ul style="list-style-type: none"> • Must be at least 18 years old and have a high school diploma. They also may have to pass a test and meet other requirements. • Manual dexterity, eye-hand coordination, good eyesight, physical fitness, and a good sense of balance.
Tenure	<ul style="list-style-type: none"> • None; mostly project-based employment.
Working Environment	<ul style="list-style-type: none"> • Work maybe indoors and out, at construction sites, in homes, and in businesses or factories and often include bending conduit, lifting heavy objects, and standing, stooping, and kneeling for long periods. • Susceptibility to risk injury from electrical shock, falls, and cuts, and must follow strict safety procedures to avoid injuries.
Advancement and Training	<ul style="list-style-type: none"> • Apprenticeship programs that combine on-the-job training with related classroom instruction. • Experienced electricians can advance to jobs as supervisors, construction project managers or construction superintendents. • Up-to-date with knowledge on changes on the electrical codes and often complete regular safety programs, manufacturer-specific training, and management training courses. • The CMDF has courses on orientation on testing materials (PhP1k); building electrical works (PhP2.5k); motor test and controls (PhP2.5k) and building wiring electrician (PhP2.5k).
Working hours	<ul style="list-style-type: none"> • Most electricians work a standard 40-hour week, although overtime may be required.
Average wage rate	<ul style="list-style-type: none"> • PhP10,280 (monthly). • PhP227–PhP439 (daily, depending on the region).
Prospects	<ul style="list-style-type: none"> • Better than average demand for electricians due to more jobs requiring this type of worker and the reduction in

	<p>current pool of electricians as the old one retire.</p> <ul style="list-style-type: none"> • Employment of electricians is sensitive to the fluctuations of the economy.
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Plumbers, Pipelayers, Pipefitters, Steamfitters and Sprinklerfitters.

Plumbers install and repair the water, waste disposal, drainage, and gas systems in homes and commercial and industrial buildings. They also install plumbing fixtures—bathtubs, showers, sinks, and toilets—and appliances such as dishwashers, waste disposers, and water heaters. Pipelayers prepare and grade the trenches either manually or with machines; lay clay, concrete, plastic, or cast-iron pipe for drains, sewers, water mains, and oil or gas lines; and weld, glue, cement, or otherwise join the pieces together. Pipefitters install and repair both high-pressure and low-pressure pipe systems used in manufacturing, in the generation of electricity, and in the heating and cooling of buildings. They also install automatic controls that are increasingly being used to regulate these systems. Steamfitters install pipe systems that move liquids or gases under high pressure. Sprinklerfitters install automatic fire sprinkler systems in buildings. Despite these differences, all plumbers, pipelayers, pipefitters, and steamfitters must be able to follow building plans or blueprints and instructions from supervisors, lay out the job, and work efficiently with the materials and tools of their trade.

Basic skills and related requirements	<ul style="list-style-type: none"> • At least high school graduate and in good physical condition.
Tenure	<ul style="list-style-type: none"> • None; mostly project-based employment only.
Working Environment	<ul style="list-style-type: none"> • Work settings differ: plumbers mostly work in commercial and residential settings; pipefitters and steamfitters most often work in industrial and power plants; pipelayers work outdoors, sometimes in remote areas, laying pipes that connect sources of oil, gas, and chemicals with the users of these resources; sprinklerfitters work in all buildings that require the use of fire sprinkler systems. • Work typically involves lifting heavy pipes, standing for extended periods and working in uncomfortable or cramped positions. • Workers assigned outdoors are subject to inclement weather; • Risks of possible falls from ladders, cuts

	from sharp tools, and burns from hot pipes or soldering equipment. Rates of nonfatal injuries and illnesses that are much higher than average.
Advancement and Training	<ul style="list-style-type: none"> • Most plumbers, pipelayers, pipefitters, and steamfitters train on the job through jointly administered apprenticeships and in career or technical schools. • With additional training, some plumbers, pipefitters, and steamfitters become supervisors for mechanical and plumbing contractors. • The CMDF has courses on plumbing works (PhP3.5k) and plumbing works for supervisors (PhP3.5k). • TESDA has a competency-based curriculum in plumbing.
Working hours	<ul style="list-style-type: none"> • At least 40 hours a week.
Average wage rate	<ul style="list-style-type: none"> • PhP10,849 (monthly). • PhP227–PhP439 (daily, depending on the region).
Prospects	<ul style="list-style-type: none"> • Job opportunities are expected to be very good, with demand for skilled plumbers, pipelayers, pipefitters, and steamfitters expected to outpace the supply of well-trained workers in this craft. • Traditionally, many organizations with extensive pipe systems have employed their own plumbers or pipefitters to maintain equipment and keep systems running smoothly. But, to reduce labor costs, a large number of these firms no longer employ full-time, in-house plumbers or pipefitters. Instead, when they need a plumber, they increasingly are relying on workers provided under service contracts by plumbing and pipefitting contractors.

Brickmasons , Stonemasons and Blockmasons. Brickmasons and blockmasons—who often are called simply *bricklayers*—build and repair walls, floors, partitions, fireplaces, chimneys, and other structures with brick, precast masonry panels, concrete block, and other masonry

materials. Stonemasons build stone walls, as well as set stone exteriors and floors. They work with two types of stone—natural-cut stone, such as marble, granite, and limestone; and artificial stone, made from concrete, marble chips, or other masonry materials.

Basic skills and related requirements	<ul style="list-style-type: none"> • Good physical condition.
Tenure	<ul style="list-style-type: none"> • None; mostly project-based employment.
Working Environment	<ul style="list-style-type: none"> • Work involves standing, kneeling, and bend for long periods and often has to lift heavy materials. • Common hazards include injuries from tools and falls from scaffolds, which can be avoided with proper safety equipment and proper safety practices.
Advancement and Training	<ul style="list-style-type: none"> • Masons usually start as helpers, laborers, or mason tenders. Skills are learned on-the-job and via apprenticeship programs. • The CDMF has technical skills training course on masonry works (PhP2.5k) and supervisory courses on concreting works (PhP1k) and masonry works (PhP1k).
Working hours	<ul style="list-style-type: none"> • 40 hours a week or more.
Average wage rate	<ul style="list-style-type: none"> • PhP9,744 (monthly). • PhP227–PhP439 (daily, depending on the region).
Prospects	<ul style="list-style-type: none"> • Better than average prospects due to the rising number of projects to cater to a bigger population; better prospects await those who could work on more complex structures.

3.6 OCCUPATIONS IN GREAT DEMAND (AND HARD-TO-FILL OCCUPATIONS)

Among the different types of occupations listed in the previous section, architects, civil engineers and construction managers are in great demand. The demand for architects and construction managers are increasing due to the accumulating density of construction projects as the current Aquino administration rolls out its public (infrastructure) construction menu via public-private partnerships and as the private construction sector becomes more aggressive with its residential and

non-residential projects to cater to expanding housing and tourism markets.

Meanwhile job slots as construction equipment operators and electricians remain hard to fill. The job requirement as a construction equipment operator may not necessarily require highly specialized technical skills, but the working environment for this type of occupation is typically hazardous, rendering workers constantly vulnerable to physical risks. The demand for electricians, on the other hand, is hard to fill as old and seasoned electricians retire and others move abroad. While basic skills as an electrician may be learned via classroom instruction and an apprenticeship program, the desirable qualities of an electrician is earned only via repeated exposure to different types of projects and takes years to accumulate.

3.7 INDUSTRY ORGANIZATIONS RELATIVE TO THE CONSTRUCTION INDUSTRY

One of the pillar organizations of the construction industry is the Construction Industry Authority of the Philippines ([CIAP](#)) which was created on 28 November 1980 to promote, accelerate and regulate the construction industry.²⁴ It has four implementing boards tasked to provide various regulatory and developmental services for the construction industry.

The Philippine Contractors Accreditation Board ([PCAB](#)) regulates the domestic contracting sector through the issuance of licenses to contractors and the contractors' registration and for government projects. For Philippine contractors and consultants in overseas projects, the Philippine Overseas Construction Board ([POCB](#)) undertakes the registration and issuance of project authorization as well as providing market information on project opportunities and country profiles to registered overseas contractors. The Philippine Domestic Contractors Board ([PDCB](#)) assists various government-tendering agencies and other concerned entities in establishing the Contractors Performance Evaluation System (CPES) to ensure quality and safety in their construction projects. It also accredits CPES evaluators and provides information on CPES ratings and blacklisted firms. The Construction Industry Arbitration Commission ([CIAC](#)), resolves construction contract disputes through arbitration and mediation/conciliation. It also subsidizes the costs for the resolution of small claims (P1 million and below) through

²⁴ CIAP was created by virtue of Presidential Decree (PD) 1746, as amended by Executive Order (EO) Nos. 677, 768, 1008, and 133.

the Arbitration Development Fund and accredits construction arbitrators.²⁵

Another relevant industry organization is the Philippine Constructors Association Incorporated ([PCA](#)), an organization started by a team of 8 contractors in the Second World War which has grown to a membership association of 1500 individuals in various fields of the construction industry. PCA envisions itself “*as a catalyst for the continuous improvement of standards and practices to achieve a sustainable and globally competitive construction industry to benefit primarily the Philippines, the Filipino people, and the world.*” PCA undertakes approximately 80% of government construction projects and is proactive in providing its members with knowledge-sharing and enhancement activities through seminars, conferences, meetings and events here and abroad.

Given the vast network of industry linkage of the construction industry, there are a number of accredited professional associations such as the United Architects of the Philippines ([UAP](#)), Philippine Institute of Civil Engineers ([PICE](#)), the Institute of Integrated Electrical Engineers of the Philippines, Inc. ([IIEE](#)), Geodetic Engineers of the Philippines ([GEP](#)), Philippine Institute of Interior Designers ([PIID](#)), Philippine Association of Landscape Architects ([PALA](#)), National Master Plumbers Association of the Philippines ([NAMPA](#)), and the Philippine Society of Sanitary Engineers ([PSSE](#)), as listed in the official website of the Philippine Regulatory Commission ([PRC](#)).

²⁵ This information about the CIAP and its four implementing boards is found in the website of the Department of Trade and Industry at <http://www.dti.gov.ph/dti/index.php?p=565>.

PART 4. JOB OUTLOOK AND PROSPECTS FOR THE INDUSTRY

GDP growth in the emerging Asian region, which is forecast to be moderate for 2012 and 2013, is expected to impact construction directly. Specifically for the Philippines, real output is estimated to increase by 4.8% for 2012 and 5% in 2013.²⁶ The industry sector as a whole is estimated to contribute to GDP at an annual average rate 6.5% for the period 2011 to 2015. Spending on gross fixed investments are estimated to escalate from PhP2 trillion to PhP3 trillion within the next 5 years.²⁷ These figures are certain to increase the volume of activity in the construction industry, providing bigger demand for such jobs as construction managers, architects, engineers, skilled carpenters, skilled construction equipment operators and other skilled construction laborers.

Since the current Aquino administration now appears to be concerned with attending to the country's substantial infrastructure deficit, the growth pattern in the construction industry shows strong potential for being sustainable. With public-private partnerships worth PhP740 billion being eyed until 2016, and with a strong activity volume from the private construction industry, prospects for the construction industry appear promising. Government expenditures, which finance large infrastructure (and therefore construction) projects, are estimated to account for 16.3% per year, on average, within the next 5 years.

The estimated increase in per capita GDP (in US\$ at market exchange rates) from US\$2,451 in 2012 to US\$3,355 in 2016 accompanied by a population that is seen to balloon to 112 million in 2015, and greater OFW remittances suggest higher purchasing power and rising demand for more private residential and nonresidential buildings will help sustain the demand for private construction at favorable growth rates within the next 5 years.

On the labor market front, the labor force is forecast to increase at estimated average of 2.16% a year, causing an improvement in general employment from 37 million in 2011 to 42 million in 2016. Unemployment rate is forecast to hover between 6.9% and 5.6% within the same period. In the construction industry, this could imply an estimated erosion of approximately 21 thousand jobs in 2012 alone.²⁸ Construction laborers

²⁶ *Asian Development Outlook 2012* (ADB, 2012).

²⁷ *Philippines Country Forecast March 2012* (Economist Intelligence Unit, 2012).

²⁸ This figure is based on the employment weight (est.1%) of the construction industry as of October 2011. The Economist Intelligence Unit forecasted a 6.9% unemployment for the Philippines in its March 2012 Country Forecast Update report.

who possess limited skills and others who tend to be relegated to job functions with high vulnerability to worker substitution would be severely affected. However, as indicated in an earlier section, the reality of the industry is that majority of workers are subject to on-again-off-again employment arrangements since most job assignments are assigned on a per-project basis rather than a long-term employment contract.

Average nominal wages are seen to increase between 5.6% and 6.2%, reflecting forecasted increase in labor costs per hour from PhP57 in 2012 to PhP72 in 2016. The rise in nominal wages is seen to outrun the rise in consumer prices from 3.7% in 2012 up to 4.7% in 2016. Meanwhile, labor productivity will improve at a slower pace than nominal wages—1.4% in 2012 up to 2.8% in 2016.²⁹ Construction workers with only the basic skills will continue to find themselves concentrated in the lower end of the salary spectrum while those with more years of experience and possess competitive skills training and formal apprenticeship experiences will have better rates and wider opportunities both here and abroad.

With tamer growth targets for much of the Asian region and Philippine GDP growth estimates of 4.8% in 2012 and 5% in 2013, the construction industry can capitalize on projected increases in per capita income, rising population, greater government allocation for fixed capital investments, a bullish attitude to undertake government infrastructure projects via public-private partnerships and an even more aggressive position of the private construction sector towards its residential construction projects, to keep its growth momentum dynamic enough to create sustainable increases in value, output and employment until 2016.

This anticipated positivity in the construction industry for the next five years should be matched by initiatives to lessen the impact of job losses (i.e. an estimated loss of 21,000 jobs in 2012) while increasing labor productivity to sustain the competitiveness of firms. Programs by the Construction Manpower Development and TESDA to upgrade skills and develop specialty construction courses should be promoted to cover more specific occupations. Satellite training centers where such programs may be undertaken should be established across the country to diffuse the concentration of a good bulk of skilled construction workers and employees in major cities and urban areas.

It would be ideal for major construction establishments, industry organizations (i.e. CIAP, CMDF, TESDA), accredited professional organizations and the academe to strengthen their links and foster greater cooperation to help redesign and upgrade construction courses,

²⁹ *Philippines Country Forecast March 2012* (Economist Intelligence Unit, 2012).

accreditation programs and knowledge-management modules; help tailor academic output (graduates of schools and learning/training centers) to be equipped with the appropriate skill sets which are actually needed in specific construction works; and promote access to construction employment opportunities via job fairs and construction employment networking groups.

Hopefully, this would serve not only to narrow the gap between the demand for and supply of workers in the construction industry, but also lessen the need to export construction manpower while enhancing the quality and competitive edge of our domestic pool of workers, contractors and construction businesses.

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PART 6. APPENDIX

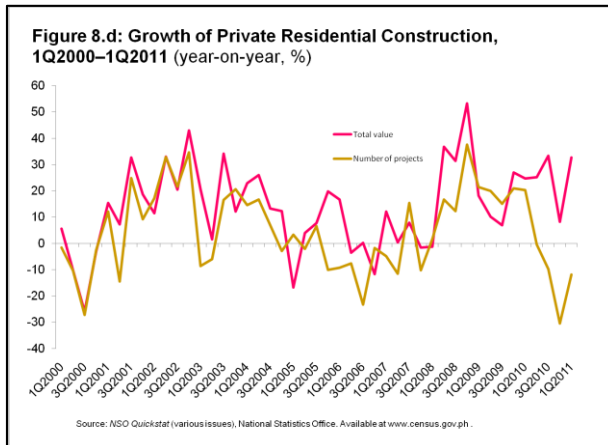
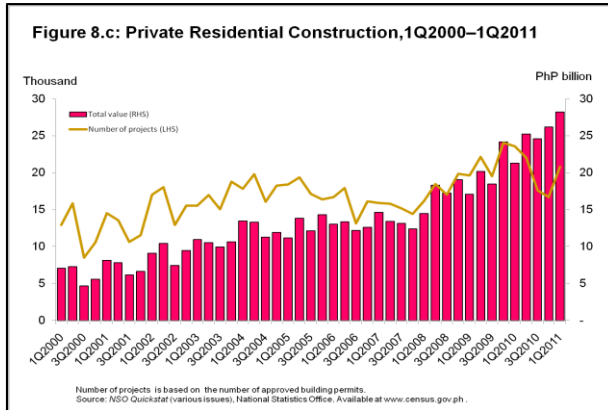
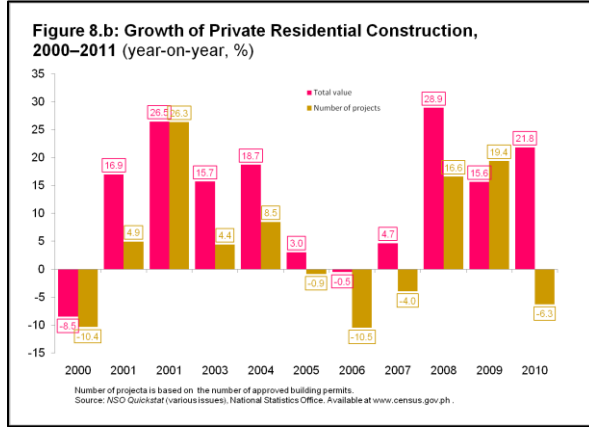


Figure 9.b: Growth of Private Non-Residential Construction, 2000–2011 (year-on-year, %)

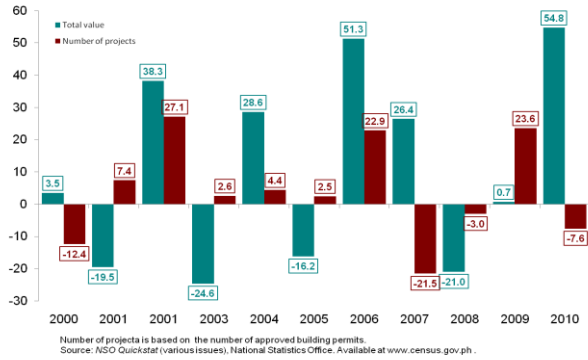


Figure 9.c: Private Residential Construction, 1Q2000–1Q2011

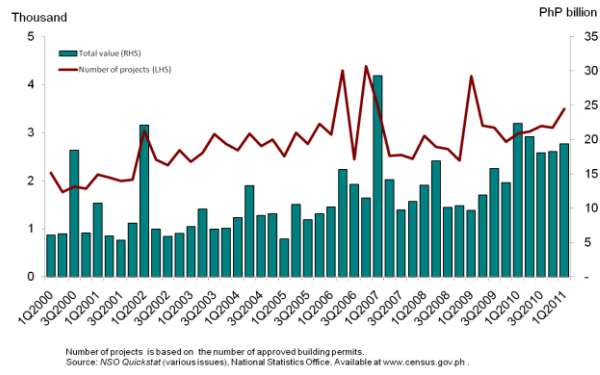


Figure 9.d: Growth of Private Non-Residential Construction, 1Q2000–1Q2011 (year-on-year, %)

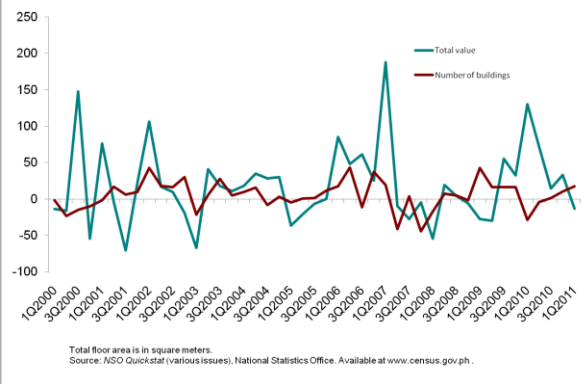


Figure 10.b: Growth of Private Construction—Additions, Alterations and Repair, 2000–2011 (year-on-year, %)

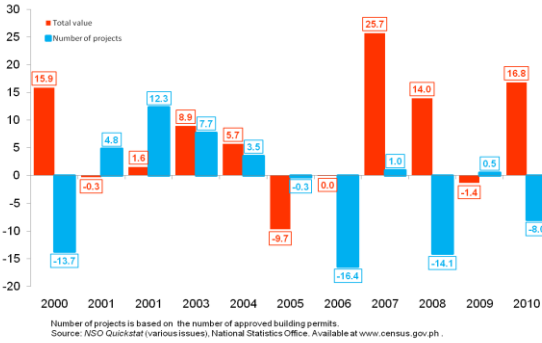


Figure 10.c: Private Construction—Additions, Alterations and Repair, 1Q2000–1Q2011

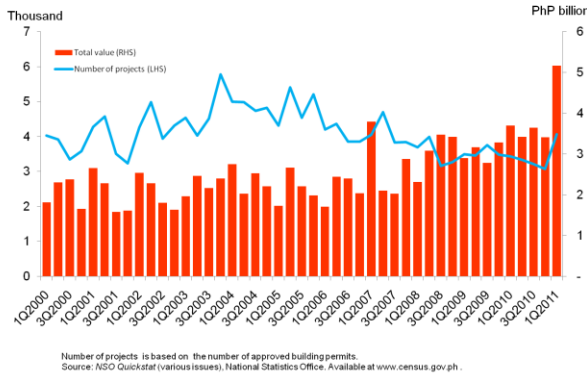


Figure 10.d: Growth of Private Construction—Additions, Alterations & Repair, 1Q2000–1Q2011 (year-on-year, %)

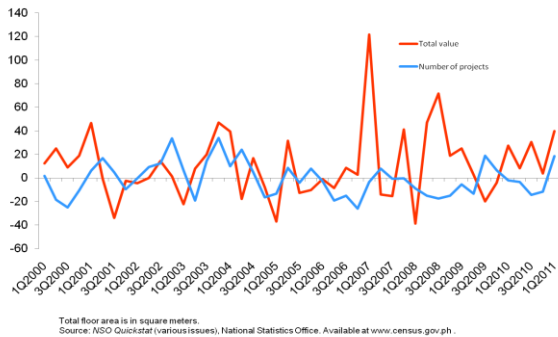


Figure 11.a: Private Construction—value per building, 1Q2000–1Q2011

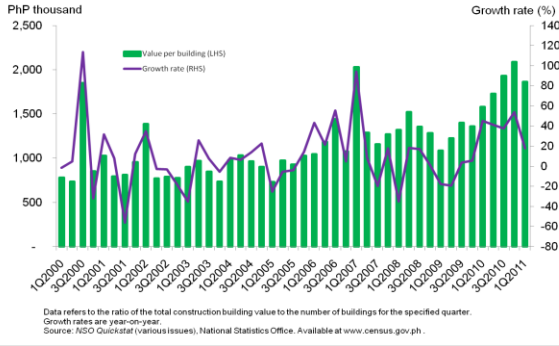


Figure 11.b: Private Residential Construction—value per building, 1Q2000–1Q2011

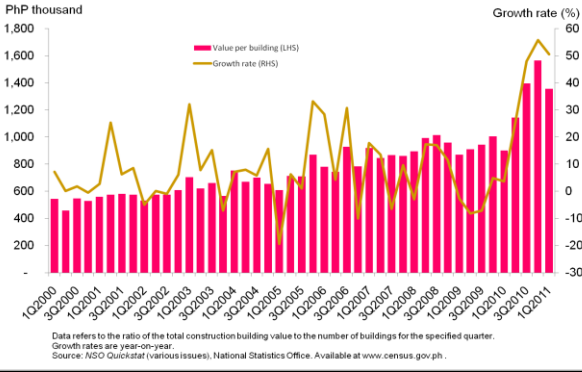


Figure 11.c: Private Non-Residential Construction—value per building, 1Q2000–1Q2011

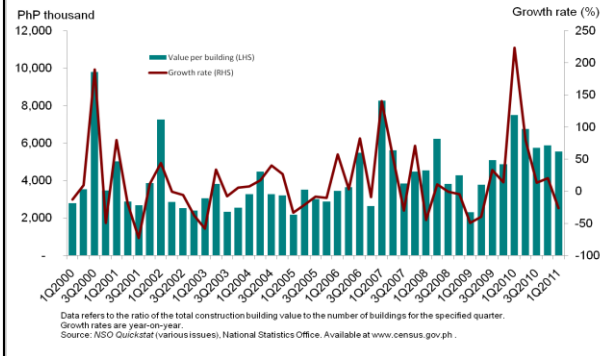


Figure 11.d: Private Construction—value per building, 2000–2011



Figure 11.g: Value per Private Construction building (selected quarters, PhP million)



Figure 12.c: Private Residential Construction—value per square meter, 2000–2010 (PhP thousand)



Figure 12.d: Private Non-Residential Construction—value per square meter, 2000–2011

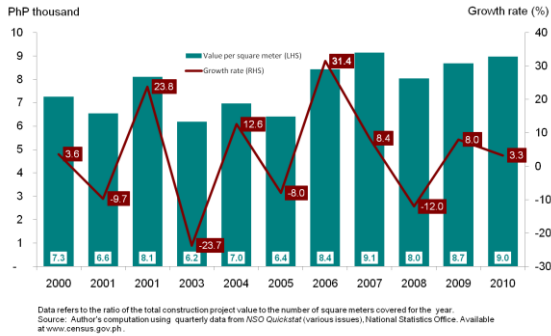


Figure 12.e: Value per square meter of private construction (selected quarters, PhP thousand)

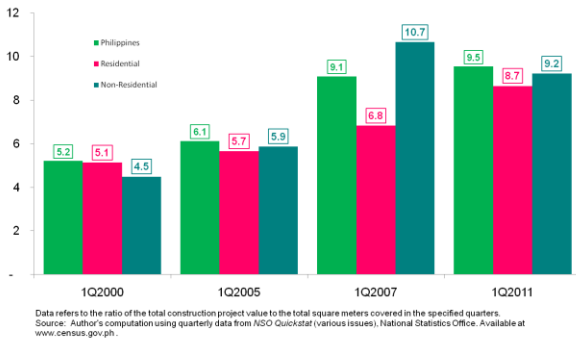


Figure 19: Growth of Labor Productivity in the Industry Sector, 2006–2009 (year-on-year, %)

