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Regional Analysis of the Philippine Services Sector

**Ramonette B. Serafica
Jean M. Vergara
Queen Cel A. Oren**

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*Ramonette B. Serafica, Jean Colleen M. Vergara,
and Queen Cel A. Oren*



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Please address all inquiries to:

Philippine Institute for Development Studies
18th Floor, Three Cyberpod Centris - North Tower
EDSA corner Quezon Avenue, 1100 Quezon City
Telephone: (63-2) 8877-4000
Fax: (63-2) 8877-4099
E-mail: publications@mail.pids.gov.ph
Website: <https://www.pids.gov.ph>

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List of Acronyms

AEC	actual economic change
ARMM	Autonomous Region in Muslim Mindanao
BLISTT	Benguet, La Trinidad, Itogon, Sablan, Tuba, and Tublay
BPO	business process outsourcing
CALABARZON	Cavite, Laguna, Batangas, Rizal, and Quezon
CAR	Cordillera Administrative Region
DIP	digital intermediation platform
GDP	gross domestic product
GRDP	gross regional domestic product
IM	industry mix
ICT	information and communications technology
ISIC	International Standard Industrial Classification
KIBS	knowledge-intensive business services
LFS	Labor Force Survey
MIMAROPA	Mindoro, Marinduque, Romblon, and Palawan
MFP	multifactor partitioning
NCR	National Capital Region
NEDA	National Economic and Development Authority
NEDA RO	NEDA Regional Office
NS	national share
OECD	Organisation for Economic Co-operation and Development
ONS	Office of National Statistics
PIDS	Philippine Institute for Development Studies
PSIC	Philippine Standard Industrial Classification
RS	regional shift
R&D	research and development

SOCCSKSARGEN	South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
SDG	Sustainable Development Goal
TEC	total economic change
UNCTAD	United Nations Conference on Trade and Development
UP	University of the Philippines

Abstract

The services sector is composed of a diverse range of services, including retail and business services, education, and health, among others. Some services are used as inputs in production, while others have direct impacts on human capital development.

In the Philippines, the services sector accounts for 60 percent of gross domestic product and almost 57 percent of employment. Across regions and subsectors, however, the contribution of services varies. Using a simple shift-share technique, this study examines the patterns at the regional and subsector level and decomposes the changes into three factors: national share (growth effect), industry mix (sectoral effect), and regional shift (competitive effect).

Focusing on changes in employment, the shift-share decomposition reveals that the overall growth of the economy from 2012 to 2018 had a positive impact in all sectors and regions. However, some industries showed negative sectoral effects, namely, accommodation and food service activities; arts, entertainment, and recreation; and education. Industry-specific factors in education services were quite strong that the economy's dynamism failed to offset the industry mix effect. It was the only sector that registered lower total employment during the period. In terms of the regional shift effects, 109 out of the total 204 regional service industries (53%) displayed locational disadvantages.

Shift-share is a purely descriptive tool, and further analysis must be done to explain the factors that influence sectoral changes and a region's economic potential and constraints. As services are critical for production, human capital development, and, more broadly, in the enhancement of the quality of life, understanding the drivers or inhibitors of services growth and addressing the locational weaknesses in the relevant service industries will be useful in promoting growth in the region and a more balanced economic development for the country.

Introduction

The services sector is composed of a diverse range of industries, including retail and business services, education, and health, among others.¹ Some services are used as inputs in production, while others have direct impacts on human capital development. With transport, energy, financial services, telecommunication, and information and communications technology (ICT) services sectors playing a critical role in development, the United Nations Conference on Trade and Development (UNCTAD 2017) claims that achieving the 2030 Agenda for Sustainable Development is to a great degree a services agenda. Fiorini and Hoekman (2018) mapped out some of the connections between services and the Sustainable Development Goals (SDGs) (Table 1). They noted that 11 of the 17 SDGs explicitly refer to (or imply) at least one distinct service sector as a means of attaining the particular goal. Moreover, services are also relevant for SDGs that do not explicitly refer to services. For example, the services sector plays an important role in gender equality (SDG 5) as it offers greater opportunities for employment and empowerment for women.

There is a common perception that the Philippines is a services economy because of the significant contribution of the sector. In 2018, services accounted for 60 percent of the country's gross domestic product (GDP) and almost 57 percent in terms of share in employment. At the regional level, however, the share of services in the gross regional domestic product (GRDP) ranged from 84.5 percent in the National Capital Region (NCR) to 36 percent in Autonomous Region in Muslim Mindanao (ARMM). In terms of spatial distribution, more than 50 percent of total services value-added came from NCR.

Given that the role of services varies across regions, a deeper understanding of services development in the different subsectors is needed. According to Cuadrado-Roura (2016), regional analysis is useful as sectoral changes in services determine a higher or lower growth capacity for regions. Moreover, the evolution of some specific service activities can explain both the modernization processes of some regions and the existing and potential socioeconomic dynamics operating between them. In the Philippines, some regions have grown faster than others. Identifying possible factors that led to these differences in productivity

¹ In this paper, sector, industry, and subsector are used interchangeably.

Table 1. Sustainable Development Goals and the role of services

Sustainable Development Goals	Services Sector and Activity
Goal 1: End poverty in all its forms everywhere	Health services (basic services) Education services (basic services) Sanitation services (basic services) Financial services (microfinance) ICT services (new technology)
Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	Financial services R&D services (seeds, climate resistance)
Goal 3: Ensure healthy lives and promote well-being for all at all ages	Health services/sexual and reproductive health services Financial services (Financial risk protection) R&D services (R&D of vaccines and medicines)
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Education services (preprimary/primary/secondary/vocational/tertiary education)
Goal 6: Ensure availability and sustainable management of water and sanitation for all	Sanitation services Water services (drinking water/water quality/water use and management)
Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all	Energy services (distribution of energy)
Goal 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	Financial services R&D services (technological innovation) Tourism (sustainable tourism)
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation	Financial services R&D services (scientific research/technological capabilities/innovation/R&D workers) Transport services (infrastructure) Construction services (infrastructure)
Goal 10: Reduce inequality within and among countries	Transport services (transport systems/public transport)
Goal 11: Make cities and human settlements inclusive, safe, resilient, and sustainable	Waste management services (waste management)
Goal 12: Ensure sustainable consumption and production patterns	Waste management services (recycling/reuse)

ICT = information and communications technology; R&D = research and development
Source: Adapted from Fiorini and Hoekman (2018)

would be beneficial in promoting regional development, especially for the lagging regions (Manasan and Mercado 1999). Additionally, Chapter 9 of the *Philippine Development Plan 2017–2022* on “Expanding Economic Opportunities in Industry and Services through *Trabaho at Negosyo*” aims to develop high value-added, competitive, and sustainable sectors to transform the economy and achieve broad-based growth.

Overview of services

Significance of services in the economy

The services sector accounts for a large share of the economy not only in advanced countries but also across different income groups (Table 2). Services are so crucial to industries, such as agriculture and manufacturing, and all other economic and social activities, such that an inefficient service sector is like a prohibitive tax on a national economy (UNCTAD 2004). Services are embodied in goods production, either as inputs (e.g., design, marketing, or distribution costs included in the value of a good) or as trade enablers (e.g., logistics services or e-commerce platforms). Thus, the productivity of the services sector will be increasingly important in determining the feasibility of manufacturing-led development (Hallward-Driemeier and Nayyar 2018).

Services also account for the largest share of employment for both female and male workers, particularly in high-income countries. In the Philippines, 3 out of 4 female workers are absorbed in the services sector (Table 3). Employment patterns in the service sectors are remarkably diverse. A wide range of skill intensities from low-skilled jobs, in retail and personal services, to high-skilled jobs, in professional, scientific, and technical activities, was observed. There are also sectors, such as transport and communications, which closely resemble parts of manufacturing with employment dominated by full-time male employees. In retailing or hotels and catering, many jobs are filled by part-time or casual labor, predominantly female holding basic positions (on-the-job training) with a few highly trained professionals holding key positions (Begg 1993).

Over time, services tend to assume a greater role in the economy in terms of both value-added and employment (Figures 1 and 2).

Table 2. Significance of services in the economy

Country/Grouping	Services ¹ , Value-added (% of GDP) 2016	Employment in Services ² (% of Total Employment) 2018
World	65.04	51.71
Low-income	40.79	22.32
Middle-income	54.07	49.75
- Lower-middle	49.44	40.11
- Upper-middle	55.45	58.68
High-income	69.61	74.44
Philippines	59.60	56.84

GDP = gross domestic product

Notes: ¹ The services sector includes wholesale and retail trade and restaurants and hotels; transport, storage, and communications; financing, insurance, real estate, and business services; and community, social, and personal services, in accordance with divisions 6–9 (International Standard Industrial Classification [ISIC] 2) or categories G–Q (ISIC 3) or categories G–U (ISIC 4).

² Employment is defined as persons of working age who are engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job or working-time arrangement. These figures are based on modeled estimates from the International Labour Organization.

Source: World Bank (n.d.)

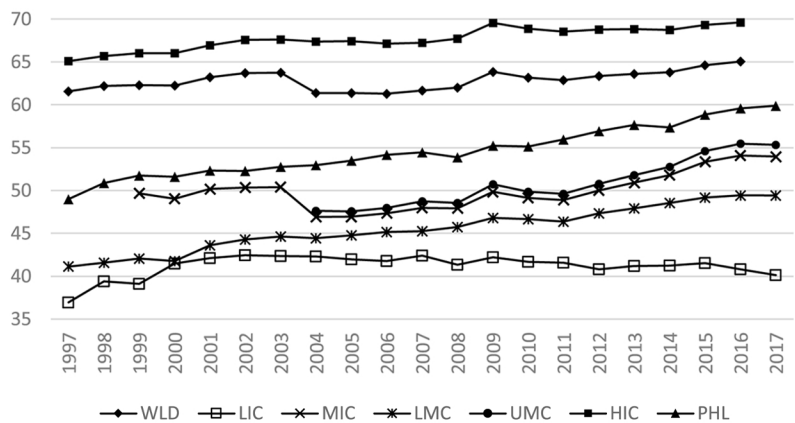
Table 3. Employment in services by sex (2018)

Country/Grouping	Female Employment (%)	Male Employment (%)
World	58.21	47.56
Low income	22.01	22.58
Middle income	55.17	46.56
- Lower middle	41.21	39.60
- Upper middle	64.92	54.16
High income	87.47	64.32
Philippines	74.19	45.35

Source: World Bank (n.d.)

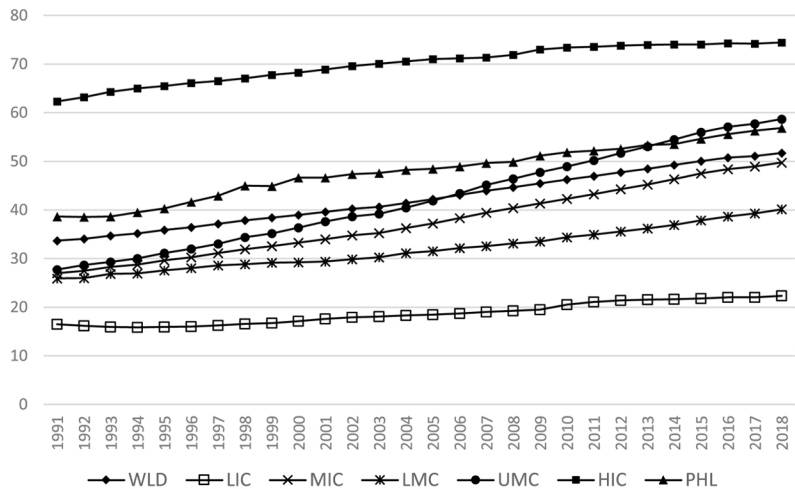
The increasing share of services in the economy has been attributed to various factors (Schettkat and Yocarini 2003; Cuadrado-Roura 2013, 2016). One explanation for the higher employment in services is the shift in the structure of final demand from goods to services due to higher incomes following Engel's law. Other drivers that influence the changes

Figure 1. Services value-added as a share of GDP (%)



GDP = gross domestic product; WLD = world; LIC = low-income countries; MIC = middle-income countries; LMC = lower-middle-income countries; UMC= upper-middle-income countries; HIC = high-income countries; and PHL = Philippines
Source: World Bank (n.d.)

Figure 2. Employment in services (% of total employment) (modeled ILO estimate)



ILO = International Labour Organization; WLD = world; LIC = low-income countries; MIC = middle-income countries; LMC = lower-middle-income countries; UMC= upper-middle-income countries; HIC = high-income countries; and PHL = Philippines
Source: World Bank (n.d.)

in the structure of household expenditures, such as urbanization, increase in labor force participation of women, and other demographic changes, also come into play.

The interindustrial demand for services in manufacturing, which is linked to outsourcing processes, is another factor. Increased use for services in the goods sector and other service industries has driven the demand. Servicification, a process where nonservices sectors in the economy (1) buy and produce and (2) sell and export more services than before, often as a package deal with the good, have been on the rise (National Board of Trade 2012, 2013). Pasadilla and Liao (2007) and Serafica (2016), for instance, examined the role of services in manufacturing production and trade in the case of the Philippines. Unlike other countries, the contribution of services to growth in manufacturing decreased from the 1980s to the 1990s (Pasadilla and Liao 2007). Moreover, the share of services embodied in Philippine manufacturing exports is among the lowest in the region (Serafica 2016).

Finally, rising international trade-in services and services demand in the government also contribute to the growth of the services sector.

On the supply side, interindustry productivity differentials between manufacturing and services, with the former enjoying higher productivity (in terms of both level and growth), have been cited as the reason for increased employment in services. Another factor explaining services growth from the supply side includes the nonmarket services produced by public administrations linked to welfare state development. Finally, innovations in the ICT sector are also either driving the creation of new services or transforming traditional services.

UNCTAD (2017) notes that the simple structural transformation model characterized by a steady progression from agriculture to manufacturing followed by services no longer holds. The main challenge for countries is how the services sector will be promoted to create exports and jobs in the sector (as escalator sector) while supporting other sectors in the economy. In this way, the services sector does not end up absorbing the low-skilled workers with few prospects, a phenomenon associated with premature deindustrialization.

The classification of services

According to Schettkat and Yocarini (2003), a number of studies have attempted to develop a better understanding of the expansion of service employment by regrouping or reclassifying service industries. The rationale behind the reclassification is that service demand is related to the purpose of a service (consumer vs. business services) or the form of its provision (market/private vs. public provision). The information and knowledge content of different services has also been considered to influence the economic effects of expanding employment in services.

Browning and Singelmann (1975) proposed a six-sector classification of industries which they believe provide a more meaningful representation of services, unlike the Fisher-Clark tripartite division of labor, which only divides the industries into three sectors: primary sector (agriculture, mining, fishing, forestry), secondary sector (manufacturing, construction, and utilities), and tertiary sector (transportation, commerce, and services). The six sectors include the following sectors:

1. Extractive (identical with primary sector)
2. Transformative (identical with secondary sector)
3. Distributive services (transportation, communication, wholesale and retail trade, except eating and drinking)
4. Producer services (financial, insurance, engineering, law, and business services)
5. Social services (health, education, welfare, and government)
6. Personal services (domestic, lodging, repair, and entertainment)

Distributive and producer services are goods-oriented services since they cater to goods or matters related to property. Moreover, they are intermediate between the first two “production” sectors and the last two “consumption” sectors. Social services are such because their industries partly depend on government revenues to operate. Finally, personal services are more heterogeneous, although a common characteristic is an orientation to the individual consumer.

Scharpf (1990), as cited in Schettkat and Yocarini (2003), classified services into two broad groups—producer and consumer services. Producer services include transport, storage, communication, finance, insurance, real estate, and business services. On the other hand, consumer services include trade (retail), restaurants and hotels, community, social,

and personal services. Business services cover a wide range of industries, from the relatively unsophisticated or routinary, such as industrial cleaning services, to the more sophisticated knowledge-intensive services needed for research and development (R&D) and innovation. Table 4 from Rubalcaba and Kox (2007) lists various business and business-related services. In this classification, distributive services, as defined by Browning and Singelmann (1975), are subsumed under producer services.

Within business services, there are also knowledge-intensive business services (KIBS) (Table 5).

In the latest International Standard Industrial Classification (ISIC) Revision 4, where the 2009 Philippine Standard Industrial Classification (PSIC) is based, the following are considered part of the services sector:

- Section G. Wholesale and retail trade; repair of motor vehicles and motorcycles
- Section H. Transportation and storage
- Section I. Accommodation and food service activities
- Section J. Information and communication
- Section K. Financial and insurance activities
- Section L. Real estate activities
- Section M. Professional, scientific, and technical activities
- Section N. Administrative and support service activities
- Section O. Public administration and defense and compulsory social security
- Section P. Education
- Section Q. Human health and social work activities
- Section R. Arts, entertainment, and recreation
- Section S. Other service activities

Other sectors also have a services component, for example:

- Section D. Electricity, gas, steam, and air conditioning supply;
- Section E. Water supply; sewerage, waste management, and remediation activities; and Section F. Construction
- Section A. Agriculture, Forestry, and Fishing
 - Division 01 Group 016 Support activities to agriculture and postharvest crop activities
 - Class 0170 Hunting, trapping, and related service activities

Table 4. Business Services as part of producer services

Producer services	Business-related services	Business services	Knowledge-intensive business services (KIBS)	Software and computer services Strategy and management consultancy Accountancy, tax, and legal advice Marketing services and opinion polling Technical services and engineering Personal training and headhunting
			Operational business services	Security services Facility management, cleaning Administration bookkeeping Temporary labor recruitment Other operational services (e.g., catering, photography, translating, call centers)
		Distribution and trade services Transport and logistics Banking, insurance, and stock exchange Telecommunication and couriers Energy services		
		Consumer services, partly used by enterprises (business travel, company health services, and social insurance services)		

Source: Rubalcaba and Kox (2007) as cited in Rubalcaba (2013, p. 273)

Table 5. Summary of activities under knowledge-intensive business services

Computing and related activities	Hardware consultancy Software consultancy and supply Data processing Database activities Maintenance and repair of office, accounting, and computing machinery Other computer-related activities
R&D	Research and experimental development on natural sciences and engineering Research and experimental development on social sciences and humanities
Other business activities	Legal activities Accounting Market research Business and management consultancy Architectural and engineering activities Technical testing and analysis Advertising Labor recruitment

Source: Huggins (2011, p. 1462)

- Class 0240 Support services to forestry
- Section B. Mining and Quarrying
 - Division 09 Mining support service activities
- Section C. Manufacturing
 - Class 1812 Service activities related to printing
 - Division 33 Repair and installation of machinery and equipment

New types of services have emerged with digitalization. According to International Monetary Fund (2018), however, international standard classifications have not kept up with the recent growth of digital activities and products. The coverage of online platforms (e.g., Google, Facebook, and Alibaba) and their products are incomplete. Platform products covered by the Central Product Classification include searches, content and media, and e-commerce but matching services (e.g., Airbnb) and cloud computing are not yet covered. The classification of digital intermediation platforms (DIPs) activities, which facilitate transactions in goods and services, is still an ongoing discussion. The provisional guidance is that DIPs should be classified to the activity they intermediate (if they intermediate services) and to ISIC 47.91 (part of retail trade) if they intermediate sales and purchases of goods (OECD, WTO, and IMF 2019).

The Philippine services sector

Overall regional trends and patterns

The value of the country's GDP in 2018 was about PHP 17.4 trillion. As Table 6 and Figure 3 reveal, the economic disparity across the regions is quite stark.

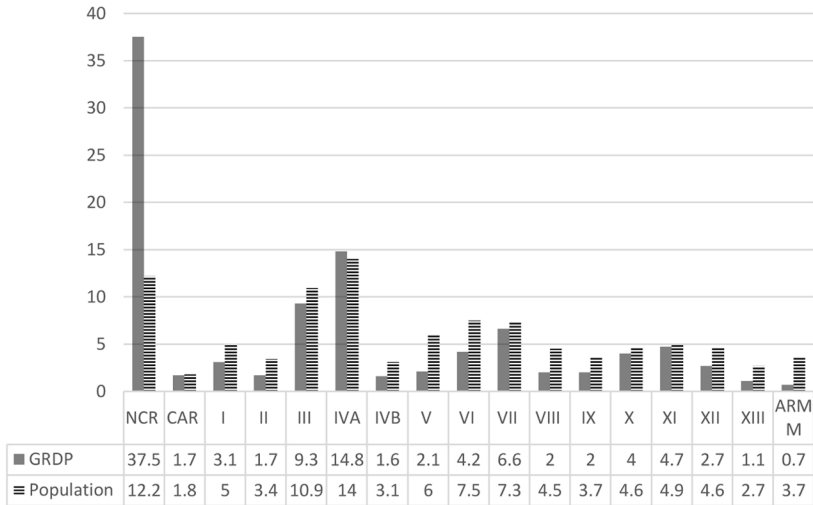
In 2018, the services sector accounted for 60 percent of GDP. At the regional level, the contribution of services in GRDP varied from a high of 84.5 percent in NCR to a low of 36 percent in ARMM and 36.5 percent in Region IVA, where agriculture and manufacturing dominate, respectively. Consistent with a stylized fact on structural transformation described earlier, the share of services in GDP increased from 2012 to 2018. The same can be observed in terms of GRDP, except in Regions III and XI (Figure 4).

Table 6. Regional indicators (2018)

	Region	GRDP at Current Prices (in PHP billion)	Population (in thousand persons)	Per Capita GRDP at Current Prices (in PHP)	Per Capita Index with Reference to the National Average, at Current Prices	Poverty Incidence among Families (%), First Semester
PHILIPPINES		17,426	106,599	163,475	100.0	16.1
NCR	National Capital Region	6,535	13,045	500,947	306.4	4.9
CAR	Cordillera Administrative Region	304	1,880	161,888	99.0	13.8
I	Ilocos	548	5,325	102,819	62.9	8.7
II	Cagayan Valley	303	3,644	83,158	50.9	15.3
III	Central Luzon	1,620	11,588	139,833	85.5	7.8
IVA	CALABARZON	2,571	14,922	172,310	105.4	7.6
IVB	MIMAROPA	274	3,281	83,614	51.1	15.0
V	Bicol	374	6,388	58,600	35.8	21.4
VI	Western Visayas	739	8,029	92,043	56.3	15.9
VII	Central Visayas	1,157	7,811	148,067	90.6	19.0
VIII	Eastern Visayas	355	4,792	73,996	45.3	30.4
IX	Zamboanga Peninsula	342	3,963	86,368	52.8	32.4w
X	Northern Mindanao	692	4,933	140,224	85.8	25.4
XI	Davao Region	817	5,248	155,657	95.2	17.7
XII	SOCCKSARGEN	473	4,871	97,034	59.4	27.2
XIII	Caraga	194	2,886	67,228	41.1	28.3
ARMM	Autonomous Region in Muslim Mindanao	129	3,995	32,220	19.7	55.4

GRDP = gross regional domestic product; CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Mindoro, Marinduque, Romblon, and Palawan;
SOCCKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos; PHP = Philippine peso
Source: Philippine Statistics Authority (n.d.-a, n.d.-b)

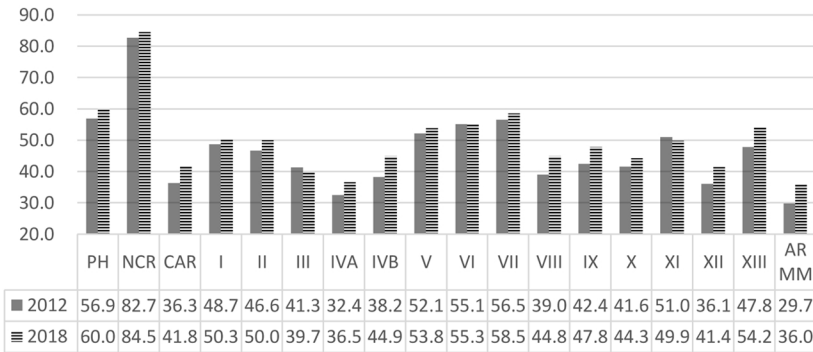
Figure 3. Share of GDP and population by region (%)



GDP = gross domestic product; NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao; GRDP = gross regional domestic product

Source: Philippine Statistics Authority (n.d.-a, n.d.-b)

Figure 4. Share of the services sector in GDP/GRDP at current prices (%)



GDP = gross domestic product; GRDP = gross regional domestic product; NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao; GRDP = gross regional domestic product; PH = Philippines

Source: Philippine Statistics Authority (n.d.-a)

In terms of spatial distribution, 53 percent of total services value-added came from NCR. The same concentration is observed in most services except in Transport, Storage, and Communications services, which appear to be more distributed to neighboring regions (Regions III and IVA) (Table 7).

Table 7. Gross value added in services by region: 2018 distribution at current prices (%)

Region	SER	TSC	TRD	FIN	RERBA	OSER	PAD
PHIL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NCR	52.8	28.6	62.2	51.6	57.9	44.6	51.9
CAR	1.2	1.2	0.6	1.0	1.6	2.0	1.5
I	2.6	4.4	1.5	3.1	1.9	3.9	3.1
II	1.4	3.2	0.6	1.5	0.9	2.4	2.3
III	6.2	11.4	4.2	8.0	5.8	6.1	4.9
IVA	9.0	12.9	7.1	8.7	12.5	7.6	5.2
IVB	1.2	2.4	0.5	1.1	0.8	2.0	1.9
V	1.9	3.1	1.0	2.2	1.5	2.6	3.6
VI	3.9	5.9	3.3	4.3	2.3	5.5	4.3
VII	6.5	7.1	6.1	7.0	6.1	7.6	4.5
VIII	1.5	3.1	0.7	1.6	0.9	2.2	3.0
IX	1.6	2.1	1.3	1.5	0.9	2.3	2.5
X	2.9	4.2	3.8	2.1	1.7	3.0	2.8
XI	3.9	4.4	5.2	3.3	2.7	4.0	2.4
XII	1.9	2.6	1.6	1.9	1.3	2.5	2.3
XIII	1.0	3.0	0.3	0.8	0.7	1.4	1.6
ARMM	0.4	0.5	0.1	0.4	0.4	0.5	2.1

SER = services; TSC = transport, storage, and communications; TRD = trade retail distribution; FIN = financial services; RERBA = real estate, renting, and business activities; OSER = other services; PAD = public administration and defense; PHIL = Philippines; NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao

Source: Philippine Statistics Authority (n.d.-a)

Shift-share analysis

Methodology

To interpret the shares and growth of the various service sectors at the regional level, a shift-share model is used. Shift share is a standard regional analysis method that attempts to determine how much regional growth can be attributed to national trends, industry factors, and unique regional factors. It is a purely descriptive tool and does not seek to explain the factors that influence the overall changes in local economies.

It merely shows out- or underperforming sectors per region relative to the national level. Furthermore, shift-share analysis is a ‘snapshot’ between two particular time periods and is, on occasions, sensitive to the time period chosen (Oguz and Knight 2010).

As explained in Quintero (2007), Oguz and Knight (2010), Otsuka (2016), and Loveridge (1995), **national share** represents factors common to all industries at the national level. It is the regional growth that would occur if a particular variable present in all industries within the region grew at the same rate as the growth of the overall national economy. This component can signal a particular region’s unrealized potential had they experienced the same growth enjoyed by the economy as a whole. The **industry mix** represents factors that are industry-specific at the national level. It is the structural effect reflected by the deviation of a particular industry’s national growth rate from the overall aggregate growth rate. Lastly, the **regional shift** compares the industry’s growth rate at the local level with its growth rate at the national level. It is essentially the extent of regional growth driven by local forces. Regions that have positive (negative) regional shift effects possess local advantages (disadvantages) for activities affecting the performance of particular industries. It reflects the competitiveness of a certain region in a specific sector.

A decomposition through shift-share analysis focuses on the structural changes occurring in the main sectors—rather than the usual overall growth evaluation—to highlight the structural changes at the regional level (Chilian 2012). Overall, shift-share analysis provides a simple and straightforward approach to distinguish national and industrial contributions from local growth effects. The ability to separate local growth factors from national growth factors is important in understanding local economies. When used in combination with other analyses, the technique offers a valuable tool to understand a region’s economic potential better.

Review of methodology

In conducting a classical shift-share analysis, the working equation for the total economic change (TEC) would be a simple summation:

$$TEC = NS + IM + RS$$

where *NS* is the national share (growth effect), *IM* is the industry mix (sectoral effect), and *RS* is the regional shift (competitive effect) component.

The shift-share model generally requires two time periods that would reflect the beginning and end of the whole period of analysis. The evaluation would mainly focus on the regional variable in a given industry while determining the possible contributory sources that could have led to its growth by the end of the observation period.

As explained by Quintero (2007) and Chilian (2012), the national effect is determined by multiplying the regional variable of a specific industry at the beginning of the period by the overall national growth rate of the variable that transpired during the observation period. For the industry effect, the regional variable of a specific industry at the beginning of the period is multiplied by the national growth rate of a specific industry of the variable net of the overall national growth rate of the variable that transpired during the observation period. Lastly, the regional effect could be deduced by multiplying the regional variable of a specific industry at the beginning of the period with the difference of the industry's regional growth rate and its national growth rate during the observation period.

Shift-share analysis gained popularity in regional analysis mainly for its simplicity in capturing the subject changes of a variable under consideration (Esteban-Marquillas 1972). Although the classic shift-share model has been widely used, it is heavily criticized for its lack of theoretical content, disregard of intraregional linkages, and sensitivity on the initial variable observation level, as well as on the temporal, spatial, and industrial aggregation (Knudsen 2000; Chilian 2012). A big assumption of the traditional model is that it assumes that the regions are independent of each other. Thus, it fails to consider the possibility of spatial interaction (Mayor and Lopez-Menendez 2005).

The United Kingdom's Office of National Statistics (ONS) (2018) pointed out the flaw of the shift-share model in relation to its choice of weights. In the classical model, which is static in nature, the weight used for each component for the entire observation period is the initial variable level at the beginning of the period. This presumes that the industry structure has not changed during the entire duration of the analysis period. This could lead to biased results, especially if there is a dramatic change in the variable concerned within the observation period. Specifically, the resulting calculations could be an underestimated

national growth and industry mixes with an overestimated regional shift (Loveridge 1995). Another criticism stems from the usage of mere crude growth rates. These considerations paved the way for the theoretical advancements of the shift-share model.

The development of a multifactor partitioning (MFP) model was introduced by Ray in 1990 and Lemarche et al. in 2003 (ONS 2018). The MFP primarily corrected the mathematical conceptual errors of its classical predecessor. Specifically, in MFP, the use of static weights is corrected using a dynamic version, which allows industry mixes and growth rates to vary over time through the utilization of standardized growth rates. In the study by Toh et al. (2004), the major criticism of the shift-share model is its disregard for possible interactions, for instance, between the industry mix and regional effects. To resolve this, they used Esteban-Marquillas' concept of homotheticity by extending the model with a fourth component—the allocation effect—which intends to account for the interaction effects.

In the study of Margaritis et al. (2005), the shift-share methodology was also used to analyze sectoral productivity exploring the possible relation between biased technological change and the changes in sectoral composition. In the study, shift-share analysis dissected aggregate productivity growth into three components: (1) intersectoral or “within” sector component; (2) “in-between” (static) component; and (3) interaction (dynamic) component. The “within” sector component tried to calculate each industry's (counterfactual) contribution to overall productivity growth. The “in-between” component estimated the effect of changes in industry employment shares on aggregate productivity. Lastly, the dynamic component captured the residual effect of changes in both industry productivity and employment shares. The results of the study showed that industry contributions to overall labor productivity growth for member-countries of the Organisation for Economic Co-operation and Development (OECD) are mainly dominated by “within” sector effects with few contributions from sectoral shifts (the “static” and “dynamic” effects). The study concluded that there is only minimal impact on overall productivity growth from lower productivity industries losing shares or higher productivity industries gaining employment shares (Margaritis 2005). This was also the decomposition used in an OECD working paper where they used the “within”

industry effect as the sum of labor productivity growth weighted by initial output shares. Their second component is the “shift-effect”, which is the sum of proportional shifts in labor input weighted by the initial relative productivity levels. The interaction effect, being their last component, is the product of changes in labor input and productivity (Sila et al. 2017).

Application

In this paper, the standard shift-share model is adopted, which decomposes the TEC that transpired for a particular region in a given sector for a given period through a simple summation of national share (*NS*), industry mix (*IM*), and regional shift (*RS*):

$$\begin{aligned}
 TEC &= NS + IM + RS \\
 NS &= e_0 * [(TE_1 - TE_0) / TE_0] \\
 IM &= e_0 * \{[(E_1 - E_0) / E_0] - [(TE_1 - TE_0) / TE_0]\} \\
 RS &= e_0 * \{[(e_1 - e_0) / e_0] - [(E_1 - E_0) / E_0]\} \\
 AEC &= e_1 - e_0 = TEC
 \end{aligned}$$

e_0 is the initial regional employment in a given sector of a period

e_1 is the latest regional employment in a given sector of a period

E_0 is the initial national employment in a given sector of a period

E_1 is the latest national employment in a given sector of a period

TE_0 is the initial total employment of a period

TE_1 is the latest total employment of a period

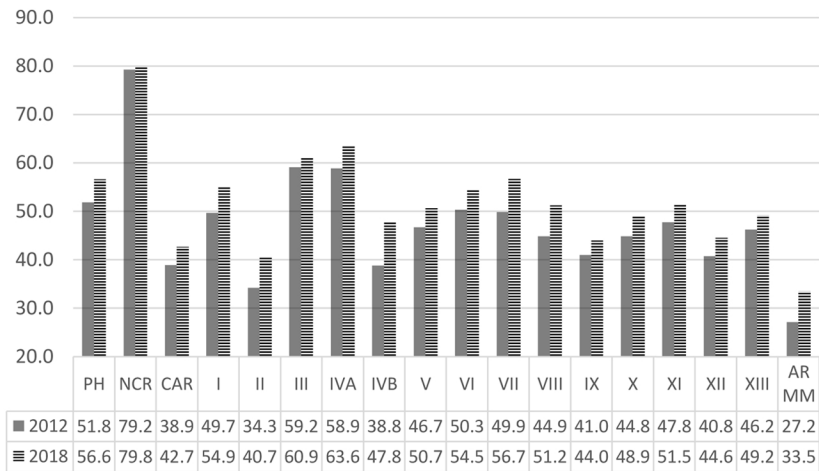
The actual economic change (AEC), which is merely the difference between the latest and initial levels of regional employment in a given industry, should be equal to the TEC since the shift-share model merely attributes a portion of change to the factor responsible for it.

Description of data

For this study, employment data from the Labor Force Survey (LFS) are used since it already adopts the 2009 PSIC (based on ISIC 4), which better reflects the industrial structure of modern economies, particularly in the services sector.

Consistent with the pattern in services value-added presented earlier, the share of services to total employment was higher in 2018 compared to 2012. This was observed in aggregate (total for the Philippines) and across all regions.² In the NCR, where services already accounted for 79.2 percent of total employment, the increase in percentage points was marginal (Figure 5).

Figure 5. Share of services sector in total employment (%)



PH = Philippines; NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao
Source: PSA (n.d.-c, n.d.-d)

From 2012 to 2018, employment in the services sector increased by 21.4 percent, significantly higher than the 11.13-percent increase in total employment. Except for education services, all sectors expanded with administrative and support service activities leading with a 69-percent jump (Table 8).

In terms of regions, employment in the services sector increased across the board, led by CALABARZON (Region IVA), with the highest growth rate of 37 percent. As Tables 9 and 10 reveal, however, the results are mixed across industries and regions. The expansion of employment in all service industries occurred only for Region IVA.

² The services sector classification reported in GDP/GRDP estimates is not exactly the same as the one used in the LFS because the former is still based on 1994 PSIC (old ISIC 3.1).

Table 8. Total employment in services subsectors

Services Subsectors	2012	% of Total	2018	% of Total	% Change
G. Wholesale and retail trade; repair of motor vehicles and motorcycles; and personal and household goods	6,863,970	18.54	7,993,913	19.43	16.46
H. Transport and storage	2,616,871	7.07	3,220,184	7.82	23.05
I. Accommodation and food service activities	1,571,319	4.24	1,727,440	4.20	9.94
J. Information and communication	338,034	0.91	403,495	0.98	19.37
K. Financial and insurance activities	437,438	1.18	540,444	1.31	23.55
L. Real estate activities	170,426	0.46	203,705	0.50	19.53
M. Professional scientific and technical activities	188,901	0.51	274,629	0.67	45.38
N. Administrative and support service activities	936,559	2.53	1,583,887	3.85	69.12
O. Public administration and defense; compulsory social security	1,957,989	5.29	2,559,454	6.22	30.72
P. Education	1,200,022	3.24	1,196,640	2.91	-0.28
Q. Human health and social work activities	437,648	1.18	517,583	1.26	18.26
R. Arts, entertainment, and recreation	327,779	0.89	363,097	0.88	10.78
S. Other service activities	2,148,827	5.80	2,723,597	6.62	26.75
Services total	19,195,783		23,308,068		21.42
Share of services in total employment	51.84		56.64		
Total employment	37,031,614	100.00	41,152,537	100.00	11.13

Source: PSA (n.d.-c, n.d.-d)

Table 9. Change in total employment in services by sector and region (2012–2018)

Sector Code	NCR	CAR	I	II	III	IVA	IVB	V	VI	VII	VIII	IX	X	XI	XII	XIII	ARMM	Total
G	53,920	1,405	66,256	32,066	167,942	314,445	36,745	70,768	79,570	62,813	59,131	(9,075)	76,889	22,921	49,676	34,838	9,632	1,129,942
H	140,067	3,547	(12,091)	13,849	73,323	134,092	17,472	9,846	12,511	51,729	21,694	33,915	26,154	33,946	35,913	3,773	3,573	603,312
I	21,600	2,839	10,333	14,558	14,474	51,800	12,097	2,250	14,998	30,267	(808)	(6,382)	(10,257)	5,233	(2,493)	(4,153)	(235)	156,122
J	21,789	(4)	1,529	1,900	8,062	28,295	(484)	(3,822)	(1,319)	1,499	(4,612)	1,575	4,207	4,647	418	1,918	(137)	65,461
K	27,810	752	6,885	736	10,799	32,921	(724)	2,740	1,755	5,863	1,968	329	3,304	1,426	2,117	3,308	1,018	103,006
L	(2,970)	(63)	1,269	382	6,260	17,038	6	1,494	(1,399)	4,990	148	(588)	1,258	3,164	1,970	917	(596)	33,279
M	16,522	2,730	5,259	3,139	13,059	25,032	2,164	4,841	928	3,988	(17)	1,415	(745)	3,382	2,241	1,888	(98)	85,728
N	223,697	6,730	13,723	1,547	58,250	146,040	10,491	7,661	43,648	61,152	11,815	1,514	15,530	16,196	15,522	7,790	6,022	647,329
O	34,098	17,697	32,790	33,319	39,367	48,723	14,864	40,143	55,954	31,022	64,651	60,858	29,275	27,297	25,428	32,293	13,686	601,465
P	8,493	2,052	6,718	(3,091)	4,250	38,132	2,193	475	(20,941)	(9,757)	(5,261)	(25,141)	(2,874)	15,442	4,864	(5,539)	(13,397)	(3,382)
Q	23,429	3,049	6,229	2,139	11,663	12,218	155	1,097	7,464	4,099	(2,683)	(314)	3,414	(32)	5,734	(572)	2,846	79,935
R	4,877	(857)	1,530	2,369	(2,602)	23,386	901	(2,598)	1,382	8,913	(1,813)	94	(2,237)	567	(2,307)	3,696	18	35,319
S	143,047	1,549	26,494	9,164	30,741	135,269	16,109	19,852	37,298	57,639	20,275	378	20,850	23,122	13,994	16,633	2,353	574,769
TOTAL	716,378	41,427	166,926	112,078	435,587	1,007,392	111,989	154,745	231,849	314,216	164,489	58,578	164,768	157,311	153,077	96,789	24,686	4,112,284

Note: Parts in gray are negative values.

NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao

Sectors: G. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; H. Transportation and Storage; I. Accommodation and Food Service Activities; J. Information and Communication; K. Financial and Insurance Activities; L. Real Estate Activities; M. Professional, Scientific, and Technical Activities; N. Administrative and Support Service Activities; O. Public Administration and Defense; P. Education; Q. Human Health and Social Work Activities; R. Arts, Entertainment, and Recreation; and S. Other Service Activities.

Source: PSA (n.d.-c, n.d.-d)

Table 10. Change in total employment in services by sector and region (2012–2018) (%)

Sector Code	NCR	CAR	I	II	III	IVA	IVB	V	VI	VII	VIII	IX	X	XI	XII	XIII	ARMM
G	5.0	1.6	18.8	17.7	21.0	34.7	21.7	17.0	15.3	12.3	19.2	(4.2)	23.0	6.4	18.3	18.5	6.2
H	36.2	11.6	(8.8)	19.7	19.7	35.0	27.1	6.8	6.0	30.6	22.6	42.8	23.1	26.3	34.6	6.2	5.1
I	5.9	12.1	14.5	54.5	7.7	18.7	36.7	3.1	12.3	29.0	(1.9)	(21.7)	(16.1)	7.7	(5.4)	(14.1)	(3.1)
J	19.5	(0.1)	15.2	50.3	20.3	50.5	(9.8)	(30.2)	(7.1)	5.2	(46.4)	44.9	41.5	47.9	6.7	33.6	(36.8)
K	23.6	19.2	40.7	7.7	20.7	45.4	(8.2)	17.6	6.1	18.0	17.9	3.2	17.5	7.3	18.7	45.2	164.7
L	(4.0)	(4.0)	44.8	69.9	44.2	38.0	0.3	63.6	(15.9)	72.2	8.8	(45.0)	49.2	69.9	152.6	238.9	(90.0)
M	23.5	130.2	112.3	128.8	67.3	67.8	98.6	127.2	7.8	30.0	(0.6)	52.3	(13.1)	56.5	78.8	140.5	(21.6)
N	66.2	47.7	52.8	14.2	56.3	87.1	121.1	36.8	90.4	74.7	90.0	9.6	56.8	49.0	96.7	110.8	141.8
O	13.7	37.3	34.1	48.4	22.4	22.4	19.4	32.2	34.6	20.0	56.8	74.9	28.1	33.0	29.7	44.0	30.8
P	6.6	6.8	10.1	(7.2)	3.3	26.2	5.7	0.6	(19.5)	(9.7)	(8.9)	(53.7)	(4.8)	32.9	10.4	(14.5)	(38.7)
Q	23.2	36.2	34.3	22.4	25.4	16.8	1.5	5.7	21.5	14.8	(14.9)	(2.7)	20.9	(0.2)	44.5	(6.0)	192.5
R	10.7	(31.2)	8.3	29.2	(4.0)	30.3	11.5	(16.0)	7.5	50.4	(20.1)	2.4	(24.6)	4.0	(24.6)	85.6	3.8
S	42.9	7.4	21.2	15.5	11.4	46.1	30.2	15.5	18.5	31.7	20.5	0.6	20.5	24.9	21.8	33.1	19.1
TOTAL	21.0	14.8	17.7	22.7	19.1	36.6	23.3	14.7	15.5	22.0	21.0	10.4	19.0	17.8	22.5	20.3	7.4

Note: Parts in gray indicate negative values.

NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao

Sectors: G. Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; H. Transportation and Storage; I. Accommodation and Food Service Activities; J. Information and Communication; K. Financial and Insurance Activities; L. Real Estate Activities; M. Professional, Scientific, and Technical Activities; N. Administrative and Support Service Activities; O. Public Administration and Defense; P. Education; Q. Human Health and Social Work Activities R. Arts, Entertainment, and Recreation; and S. Other Service Activities.

Source: PSA (n.d.-c, n.d.-d)

Moreover, other than public administration, only two service industries experienced an increase in employment in all regions. These subsectors are administrative and support service activities and other service activities. In the next section, the sources of growth or decline are examined using the shift-share decomposition method.

Results of shift-share decomposition

The results of the shift-share decomposition are presented in the following tables and figures. While the decomposition was done by region, data are presented by sector. Moreover, the sectors are grouped by cluster, following the classification of Browning and Singelmann (1975).

Distributive services. The cluster includes wholesale and retail trade, transport and storage, and information and communication. Distributive services could also be considered as part of producer services following Rubalcaba and Kox (2007).

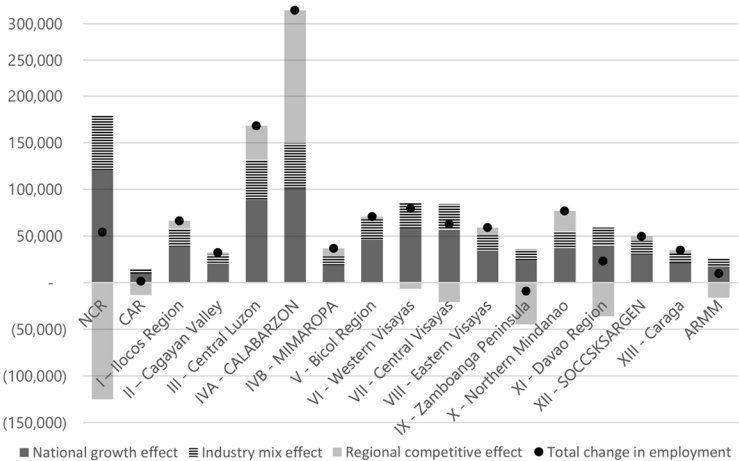
- **Wholesale and retail trade** is the biggest sector in services. From 2012 to 2018, total employment increased by 16.46 percent, or about 1.13 million. In terms of the individual factors, both the national growth and the sectoral effect were positive. In terms of the regional shift, NCR, the Cordillera Administrative Region (CAR), Regions VI, VII, IX, XI, and ARMM were not competitive. In the case of Region IX or the Zamboanga Peninsula, locational disadvantages were stronger than the other components resulting in a net decline in employment (Table 11 and Figure 6).
- In **transportation and storage**, total employment increased by 23.05 percent or 603,312 from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. The competitive effect was positive in only 8 out of 17 regions. In the case of the Ilocos region (Region I), the regional shift was stronger than the other components resulting in a net decline in employment (Table 12 and Figure 7).
- In the **information and communication sector**, total employment increased by 19.37 percent or 65,461 from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. At the regional level, 9 out of the 17 regions were not competitive. In

Table 11. Total change in employment and shift-share decomposition for Sector G: Wholesale and retail trade; repair of motor vehicles and motorcycles; and personal and household goods

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	120,947	57,971	(124,998)	53,920
Cordillera Administrative Region	9,896	4,743	(13,234)	1,405
I - Ilocos	39,128	18,754	8,374	66,256
II - Cagayan Valley	20,215	9,689	2,163	32,066
III - Central Luzon	88,999	42,658	36,285	167,942
IVA - CALABARZON	100,904	48,365	165,176	314,445
IVB - MIMAROPA	18,860	9,040	8,845	36,745
V - Bicol	46,206	22,147	2,414	70,768
VI - Western Visayas	58,045	27,822	(6,297)	79,570
VII - Central Visayas	56,689	27,172	(21,048)	62,813
VIII - Eastern Visayas	34,319	16,450	8,363	59,131
IX - Zamboanga Peninsula	23,985	11,496	(44,556)	(9,075)
X - Northern Mindanao	37,156	17,809	21,923	76,889
XI - Davao Region	39,804	19,078	(35,961)	22,921
XII - SOCCSKSARGEN	30,288	14,517	4,870	49,676
XIII - Caraga	20,985	10,058	3,795	34,838
Autonomous Region in Muslim Mindanao	17,406	8,343	(16,116)	9,632

Note: Parts in gray indicate negative values.
 CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
 Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 6. Total change in employment with its components for Sector G: Wholesale and retail trade; repair of motor vehicles and motorcycles; and personal and household goods



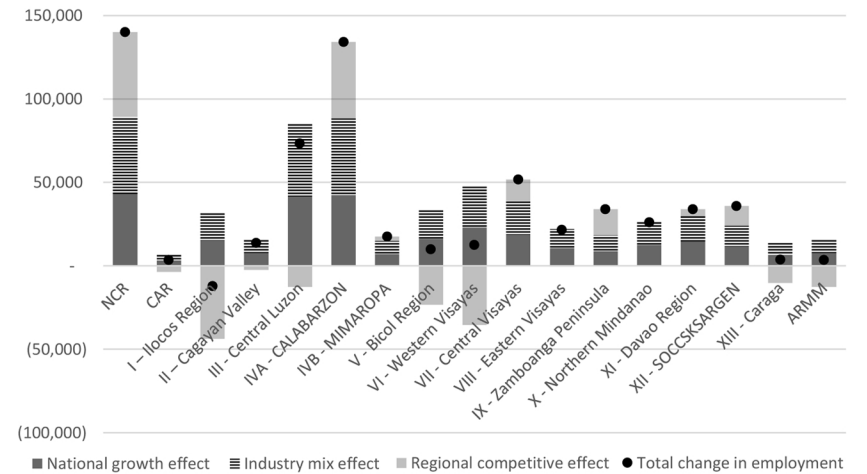
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
 Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 12. Total change in employment and shift-share decomposition for Sector H: Transportation and storage

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	43,065	46,155	50,846	140,067
Cordillera Administrative Region	3,416	3,661	(3,530)	3,547
I - Ilocos	15,271	16,367	(43,729)	(12,091)
II - Cagayan Valley	7,827	8,388	(2,366)	13,849
III - Central Luzon	41,424	44,396	(12,498)	73,323
IVA - CALABARZON	42,587	45,643	45,862	134,092
IVB - MIMAROPA	7,174	7,689	2,609	17,472
V - Bicol	16,034	17,185	(23,373)	9,846
VI - Western Visayas	23,074	24,730	(35,293)	12,511
VII - Central Visayas	18,818	20,168	12,742	51,729
VIII - Eastern Visayas	10,667	11,433	(406)	21,694
IX - Zamboanga Peninsula	8,827	9,461	15,628	33,915
X - Northern Mindanao	12,598	13,502	54	26,154
XI - Davao Region	14,352	15,382	4,212	33,946
XII - SOCCSKSARGEN	11,563	12,392	11,958	35,913
XIII - Caraga	6,745	7,229	(10,202)	3,773
Autonomous Region in Muslim Mindanao	7,765	8,322	(12,514)	3,573

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 7. Total change in employment with its components for Sector H: Transportation and storage



CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

CAR, ARMM, and Regions IVB, V, VI, and VIII, the regional shift was stronger than the other components resulting in a net decline in employment (Table 13 and Figure 8).

Producer services. The cluster includes financial and insurance activities; real estate; professional, scientific, and technical activities; and administrative and support services.

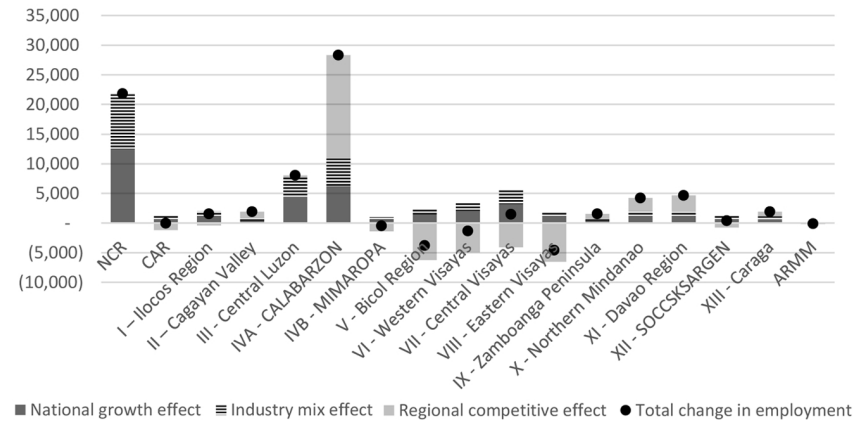
- In **financial and insurance services**, total employment increased by 103,006 (23.55%) from 2012 to 2018. In terms of the individual factors, both the national growth effect and the sectoral effect were positive. The competitive effect was positive in only 5 out of 17 regions. In MIMAROPA region (Region IVB), the regional shift was stronger than the other components, resulting in a net decline in employment (Table 14 and Figure 9).
- Total employment in **real estate activities** was higher by 33,279 (19.53%) in 2018 compared to 2012. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. At the regional level, 7 out of the 17 regions were not competitive. However, the growth and sectoral effects were able to overcome the local disadvantages in Regions IVB and VIII, resulting in a net improvement in employment (Table 15 and Figure 10).
- Total employment in **professional, scientific, and technical activities** increased by 85,728 (45.38%) from 2012 to 2018—the second-highest expansion rate among all services sectors. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. However, 6 out of 17 regions had locational disadvantages. In Regions VIII, X, and the ARMM, the regional shift was stronger than the other components resulting in a net decline in employment (Table 16 and Figure 11).
- Total employment in **administrative and support activities** increased by 647,329 (69.12%) from 2012 to 2019—the highest rate of expansion among all the service industries. In terms of the individual factors, both the national growth and the industry mix effects were positive, while the regional shift was negative in 9 out of the 17 regions. However, the sectoral

Table 13. Total change in employment and shift-share decomposition for Sector J: Information and communication

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	12,453	9,218	117	21,789
Cordillera Administrative Region	678	502	(1,184)	(4)
I - Ilocos	1,123	831	(425)	1,529
II - Cagayan Valley	420	311	1,169	1,900
III - Central Luzon	4,428	3,277	357	8,062
IVA - CALABARZON	6,233	4,613	17,449	28,295
IVB - MIMAROPA	549	406	(1,439)	(484)
V - Bicol	1,407	1,042	(6,271)	(3,822)
VI - Western Visayas	2,064	1,528	(4,911)	(1,319)
VII - Central Visayas	3,188	2,360	(4,049)	1,499
VIII - Eastern Visayas	1,106	818	(6,536)	(4,612)
IX - Zamboanga Peninsula	390	289	896	1,575
X - Northern Mindanao	1,129	836	2,242	4,207
XI - Davao Region	1,080	799	2,767	4,647
XII - SOCCSKSARGEN	692	512	(786)	418
XIII - Caraga	635	470	814	1,918
Autonomous Region in Muslim Mindanao	41	31	(209)	(137)

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 8. Total change in employment with its components for Sector J: Information and communication



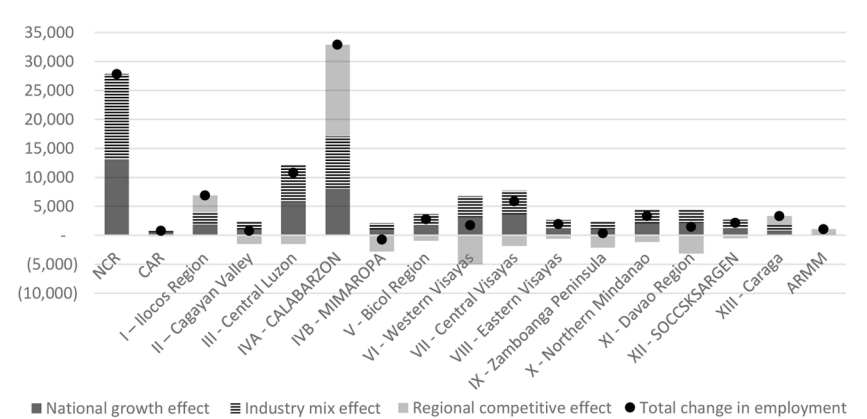
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 14. Total change in employment and shift-share decomposition for Sector K: Financial and insurance activities

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	13,137	14,661	12	27,810
Cordillera Administrative Region	436	487	(172)	752
I - Ilocos	1,880	2,099	2,906	6,885
II - Cagayan Valley	1,067	1,191	(1,522)	736
III - Central Luzon	5,794	6,467	(1,462)	10,799
IVA - CALABARZON	8,066	9,002	15,854	32,921
IVB - MIMAROPA	977	1,091	(2,792)	(724)
V - Bicol	1,735	1,937	(933)	2,740
VI - Western Visayas	3,178	3,547	(4,969)	1,755
VII - Central Visayas	3,633	4,055	(1,826)	5,863
VIII - Eastern Visayas	1,226	1,368	(625)	1,968
IX - Zamboanga Peninsula	1,142	1,274	(2,087)	329
X - Northern Mindanao	2,103	2,347	(1,146)	3,304
XI - Davao Region	2,161	2,411	(3,146)	1,426
XII - SOCCSKSARGEN	1,259	1,405	(547)	2,117
XIII - Caraga	815	910	1,583	3,308
Autonomous Region in Muslim Mindanao	69	77	872	1,018

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 9. Total change in employment with its components for Sector K: Financial and insurance activities



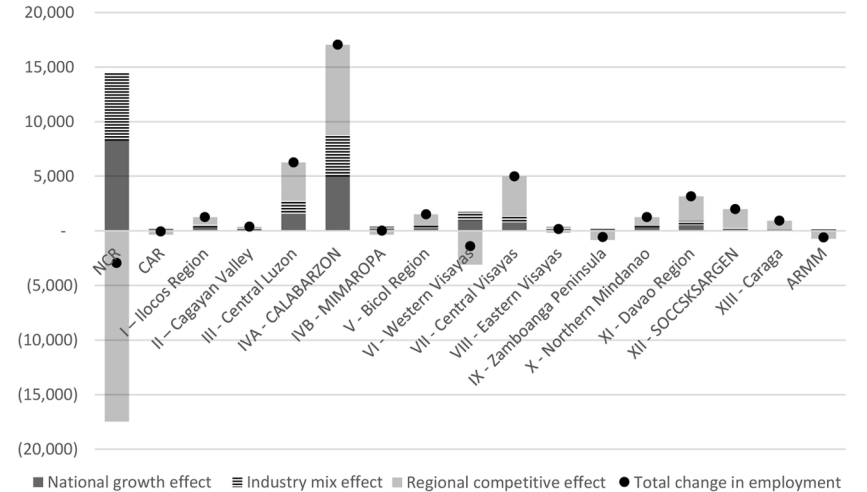
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 15. Total change in employment and shift-share decomposition for Sector L: Real estate activities

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	8,253	6,228	(17,451)	(2,970)
Cordillera Administrative Region	174	132	(369)	(63)
I - Ilocos	315	238	716	1,269
II - Cagayan Valley	61	46	275	382
III - Central Luzon	1,576	1,190	3,494	6,260
IVA - CALABARZON	4,983	3,761	8,293	17,038
IVB - MIMAROPA	212	160	(367)	6
V - Bicol	261	197	1,035	1,494
VI - Western Visayas	978	738	(3,114)	(1,399)
VII - Central Visayas	769	580	3,641	4,990
VIII - Eastern Visayas	189	142	(183)	148
IX - Zamboanga Peninsula	145	110	(844)	(588)
X - Northern Mindanao	285	215	759	1,258
XI - Davao Region	504	380	2,280	3,164
XII - SOCCSKSARGEN	144	108	1,718	1,970
XIII - Caraga	43	32	843	917
Autonomous Region in Muslim Mindanao	74	56	(726)	(596)

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors' computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 10. Total change in employment with its components for Sector L: Real estate activities



CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors' computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 16. Total change in employment and shift-share decomposition for Sector M: Professional, scientific, and technical activities

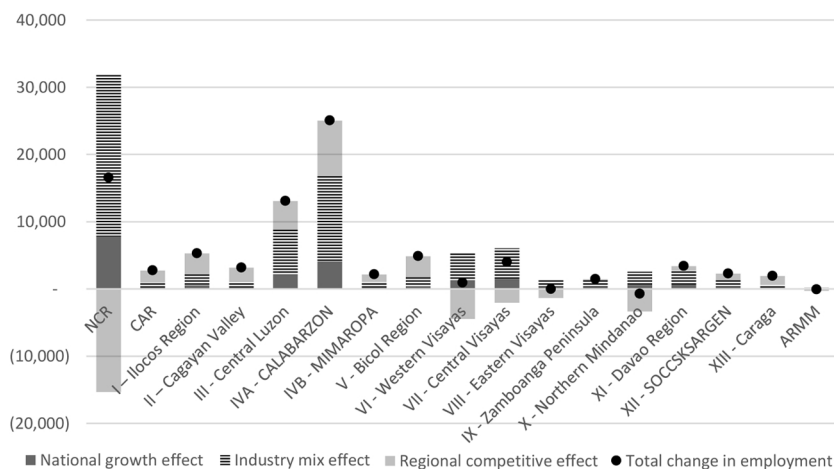
Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	7,814	24,053	(15,345)	16,522
Cordillera Administrative Region	233	718	1,779	2,730
I - Ilocos	521	1,604	3,134	5,259
II - Cagayan Valley	271	835	2,033	3,139
III - Central Luzon	2,159	6,647	4,253	13,059
IVA - CALABARZON	4,111	12,653	8,269	25,032
IVB - MIMAROPA	244	752	1,167	2,164
V - Bicol	424	1,304	3,113	4,841
VI - Western Visayas	1,318	4,057	(4,448)	928
VII - Central Visayas	1,481	4,559	(2,053)	3,988
VIII - Eastern Visayas	330	1,015	(1,361)	(17)
IX - Zamboanga Peninsula	301	927	187	1,415
X - Northern Mindanao	631	1,942	(3,318)	(745)
XI - Davao Region	666	2,050	666	3,382
XII - SOCCSKSARGEN	316	974	951	2,241
XIII - Caraga	150	460	1,278	1,888
Autonomous Region in Muslim Mindanao	51	156	(305)	(98)

Note: Parts in gray indicate negative values.

CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos

Source: Authors' computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 11. Total change in employment with its components for Sector M: Professional, scientific, and technical activities



CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos

Source: Authors' computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

effect was so strong that it was able to overcome locational disadvantages resulting in a net improvement in employment in all regions (Table 17 and Figure 12).

Personal services. This cluster includes accommodation and food service activities; arts, entertainment, and recreation; and other service activities.

- Total employment in **accommodation and food services activities** increased by 156,122 (9.94%) from 2012 to 2018. In terms of the individual factors, the national growth effect was positive, as expected. However, the sectoral effect was negative, indicating industry-specific weaknesses. In addition, only seven regions had locational advantages in this sector. The combination of the national share and the regional shifts still resulted in a net improvement in employment in 11 out of 17 regions (Table 18 and Figure 13).
- Total employment in **arts, entertainment, and recreation** increased by 35,319 (10.78%) from 2012 to 2018. In terms of the individual factors, the national growth effect was positive as in the previous sector in this cluster. The sectoral effect, however, was negative, which indicates industry-specific weaknesses. Only five regions had locational advantages in this sector. Results also show that the economy-wide effect was not enough to overcome the combined industry and the regional effects resulting in a net decline in employment in 6 out of 17 regions (Table 19 and Figure 14).
- Total employment in **other service activities** increased by 574,769 (26.75%) from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. Even though the competitive effect was negative in 12 out of 17 regions, the other components were strong enough to increase net employment in all regions (Table 20 and Figure 15).

Social services. This cluster includes education services and human health and social work activities.

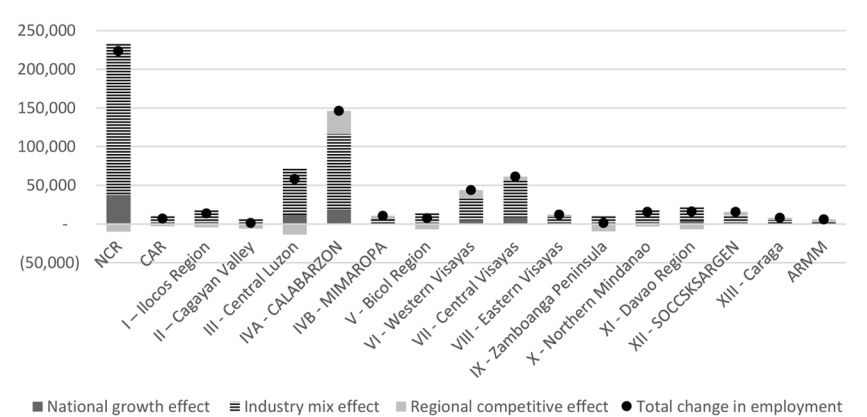
- Total employment **education services** decreased by 3,382 (-0.28%) from 2012 to 2018. This is the only service industry that declined during the period. In terms of the individual

Table 17. Total change in employment and shift-share decomposition for Sector N: Administrative and support service activities

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	37,628	196,084	(10,015)	223,697
Cordillera Administrative Region	1,570	8,179	(3,018)	6,730
I - Ilocos	2,894	15,083	(4,254)	13,723
II - Cagayan Valley	1,216	6,338	(6,007)	1,547
III - Central Luzon	11,519	60,027	(13,297)	58,250
IVA - CALABARZON	18,653	97,200	30,187	146,040
IVB - MIMAROPA	964	5,025	4,501	10,491
V - Bicol	2,315	12,061	(6,715)	7,661
VI - Western Visayas	5,374	28,003	10,271	43,648
VII - Central Visayas	9,107	47,460	4,585	61,152
VIII - Eastern Visayas	1,461	7,614	2,739	11,815
IX - Zamboanga Peninsula	1,758	9,161	(9,405)	1,514
X - Northern Mindanao	3,041	15,847	(3,357)	15,530
XI - Davao Region	3,680	19,179	(6,664)	16,196
XII - SOCCSKSARGEN	1,786	9,308	4,429	15,522
XIII - Caraga	782	4,075	2,933	7,790
Autonomous Region in Muslim Mindanao	472	2,462	3,087	6,022

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 12. Total change in employment with its components for Sector N: Administrative and support service activities



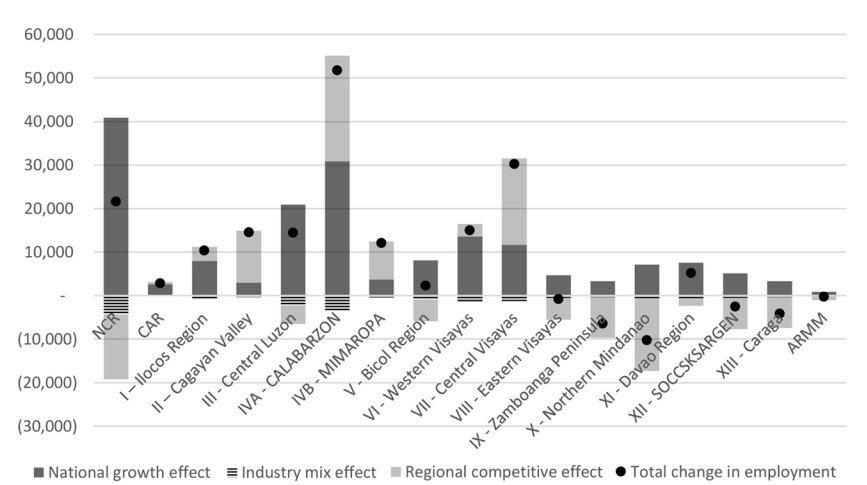
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 18. Total change in employment and shift-share decomposition for Sector I: Accommodation and food service activities

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	40,827	(4,375)	(14,852)	21,600
Cordillera Administrative Region	2,603	(279)	515	2,839
I - Ilocos	7,939	(851)	3,244	10,333
II - Cagayan Valley	2,975	(319)	11,902	14,558
III - Central Luzon	20,943	(2,244)	(4,225)	14,474
IVA - CALABARZON	30,752	(3,295)	24,343	51,800
IVB - MIMAROPA	3,669	(393)	8,821	12,097
V - Bicol	8,094	(867)	(4,976)	2,250
VI - Western Visayas	13,565	(1,453)	2,887	14,998
VII - Central Visayas	11,607	(1,244)	19,904	30,267
VIII - Eastern Visayas	4,658	(499)	(4,967)	(808)
IX - Zamboanga Peninsula	3,269	(350)	(9,301)	(6,382)
X - Northern Mindanao	7,097	(761)	(16,594)	(10,257)
XI - Davao Region	7,583	(812)	(1,537)	5,233
XII - SOCCSKSARGEN	5,154	(552)	(7,094)	(2,493)
XIII - Caraga	3,266	(350)	(7,070)	(4,153)
Autonomous Region in Muslim Mindanao	857	(92)	(1,000)	(235)

Note: Parts in gray indicate negative values.
 CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
 Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 13. Total change in employment with its components for Sector I: Accommodation and food service activities



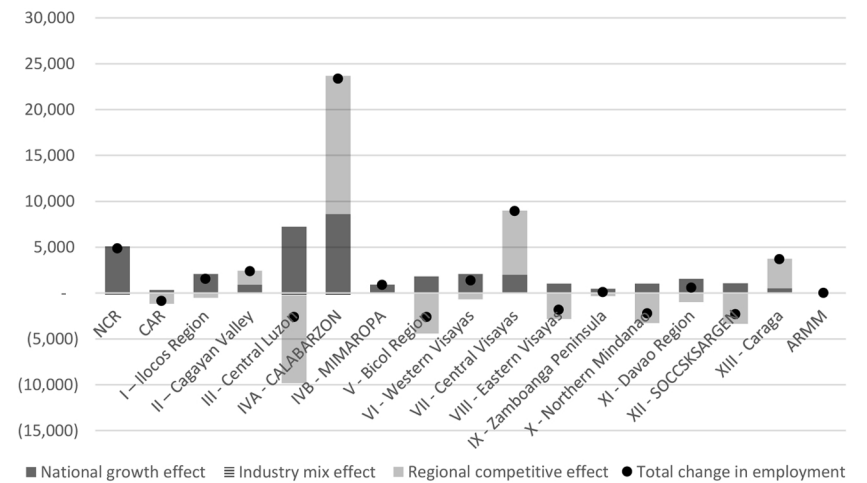
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
 Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 19. Total change in employment and shift-share decomposition for Sector R: Arts, entertainment, and recreation

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	5,073	(161)	(35)	4,877
Cordillera Administrative Region	306	(10)	(1,153)	(857)
I - Ilocos	2,063	(65)	(468)	1,530
II - Cagayan Valley	904	(29)	1,494	2,369
III - Central Luzon	7,245	(230)	(9,618)	(2,602)
IVA - CALABARZON	8,596	(273)	15,062	23,386
IVB - MIMAROPA	872	(28)	57	901
V - Bicol	1,805	(57)	(4,345)	(2,598)
VI - Western Visayas	2,049	(65)	(602)	1,382
VII - Central Visayas	1,968	(62)	7,007	8,913
VIII - Eastern Visayas	1,004	(32)	(2,786)	(1,813)
IX - Zamboanga Peninsula	446	(14)	(337)	94
X - Northern Mindanao	1,010	(32)	(3,215)	(2,237)
XI - Davao Region	1,557	(49)	(941)	567
XII - SOCCSKSARGEN	1,043	(33)	(3,316)	(2,307)
XIII - Caraga	481	(15)	3,231	3,696
Autonomous Region in Muslim Mindanao	53	(2)	(33)	18

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors' computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 14. Total change in employment with its components for Sector R: Arts, entertainment, and recreation



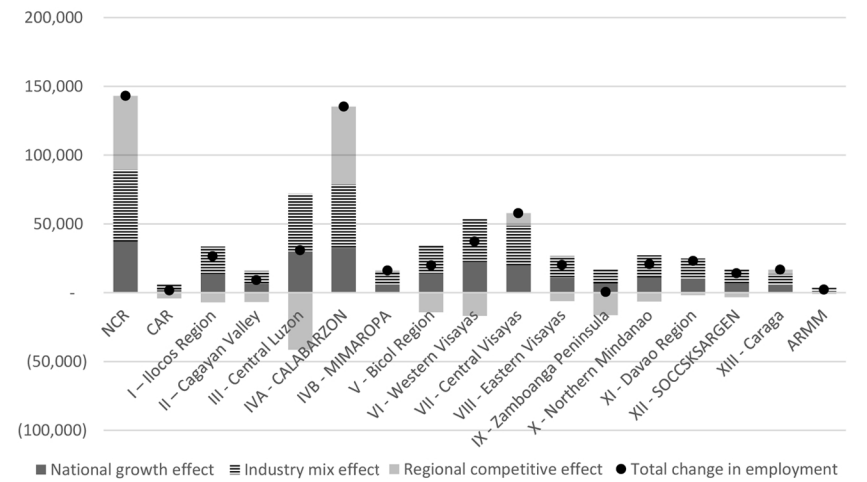
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors' computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 20. Total change in employment and shift-share decomposition for Sector S: Other service activities

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	37,127	52,113	53,806	143,047
Cordillera Administrative Region	2,322	3,260	(4,032)	1,549
I - Ilocos	13,889	19,495	(6,890)	26,494
II - Cagayan Valley	6,559	9,207	(6,602)	9,164
III - Central Luzon	29,987	42,092	(41,338)	30,741
IVA - CALABARZON	32,666	45,851	56,752	135,269
IVB - MIMAROPA	5,929	8,322	1,858	16,109
V - Bicol	14,241	19,989	(14,378)	19,852
VI - Western Visayas	22,481	31,555	(16,738)	37,298
VII - Central Visayas	20,220	28,381	9,038	57,639
VIII - Eastern Visayas	11,005	15,446	(6,176)	20,275
IX - Zamboanga Peninsula	6,892	9,674	(16,187)	378
X - Northern Mindanao	11,329	15,902	(6,381)	20,850
XI - Davao Region	10,353	14,533	(1,764)	23,122
XII - SOCCSKSARGEN	7,158	10,047	(3,211)	13,994
XIII - Caraga	5,596	7,855	3,181	16,633
Autonomous Region in Muslim Mindanao	1,370	1,922	(939)	2,353

Note: Parts in gray indicate negative values.
 CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
 Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 15. Total change in employment with its components for Sector S: Other service activities



CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
 Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

factors, the national growth effect was likewise positive. However, the sectoral effect was negative, indicating industry-specific weaknesses. Moreover, eight regions had locational disadvantages in this sector, resulting in a net decline in employment in these regions (Table 21 and Figure 16).

- In **human health and social work activities**, total employment increased by 79,935 (18.26%) from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. The regional shift factor was negative in 8 out of 17 regions, but in 4 of these, the effects of the other components were strong enough, resulting in a net increase in employment. Thus, a net decline in employment occurred in only 4 regions. See Table 22 and Figure 17.

In summary, the overall growth of the economy from 2012 to 2018 resulted in a positive effect in all sectors and regions. However, some industries exhibited weaknesses, namely, accommodation and food service activities; arts, entertainment, and recreation; and education. Industry-specific factors in education services were quite strong that the dynamism of the economy failed to offset the industry mix effect. It was the only sector that registered lower total employment during the period, which could be due to the interim impact of the reforms introduced in this sector (see Brillantes Jr. et al. 2018; Ortiz et al. 2019). Finally, 109 out of the total 204 regional service industries (53.43%) displayed negative regional shift effects.

Harnessing services for regional development

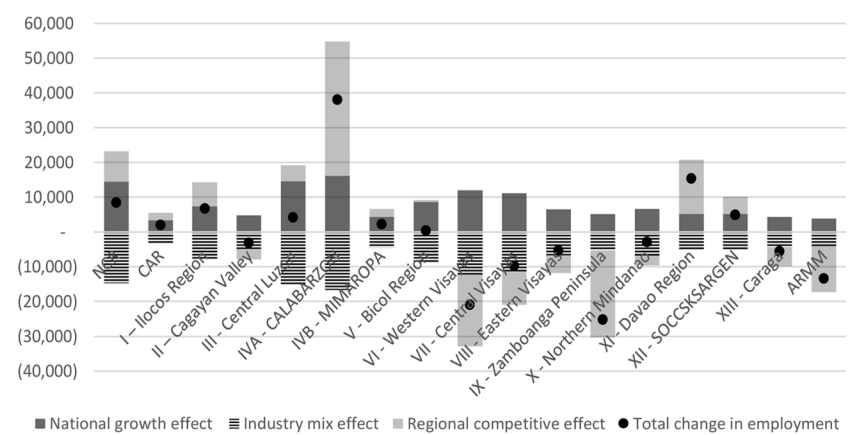
Services play different roles in the economy. Certain types of services are critical to industries, as well as in the efficient functioning of markets. Others have direct impacts on human capital development. Services may not be tangible, but they affect an individual's economic and social lives in all aspects. As such, they can play a crucial role in meeting the SDGs and the overall aspiration of "leaving no one behind". Access to efficient and affordable services will contribute towards meeting the overarching SDG, while uncompetitive and inadequate basic services will make it impossible for families, regions, and even nations to catch up.

Table 21. Total change in employment and shift-share decomposition for Sector P: Education

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	14,388	(14,753)	8,857	8,493
Cordillera Administrative Region	3,362	(3,447)	2,138	2,052
I - Ilocos	7,399	(7,586)	6,906	6,718
II - Cagayan Valley	4,745	(4,865)	(2,971)	(3,091)
III - Central Luzon	14,548	(14,916)	4,619	4,250
IVA - CALABARZON	16,184	(16,594)	38,542	38,132
IVB - MIMAROPA	4,305	(4,414)	2,302	2,193
V - Bicol	8,533	(8,749)	691	475
VI - Western Visayas	11,959	(12,261)	(20,638)	(20,941)
VII - Central Visayas	11,183	(11,466)	(9,474)	(9,757)
VIII - Eastern Visayas	6,544	(6,710)	(5,095)	(5,261)
IX - Zamboanga Peninsula	5,212	(5,344)	(25,009)	(25,141)
X - Northern Mindanao	6,648	(6,816)	(2,706)	(2,874)
XI - Davao Region	5,217	(5,350)	15,574	15,442
XII - SOCCSKSARGEN	5,203	(5,334)	4,995	4,864
XIII - Caraga	4,257	(4,365)	(5,432)	(5,539)
Autonomous Region in Muslim Mindanao	3,852	(3,949)	(13,299)	(13,397)

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 16. Total change in employment with its components for Sector P: Education



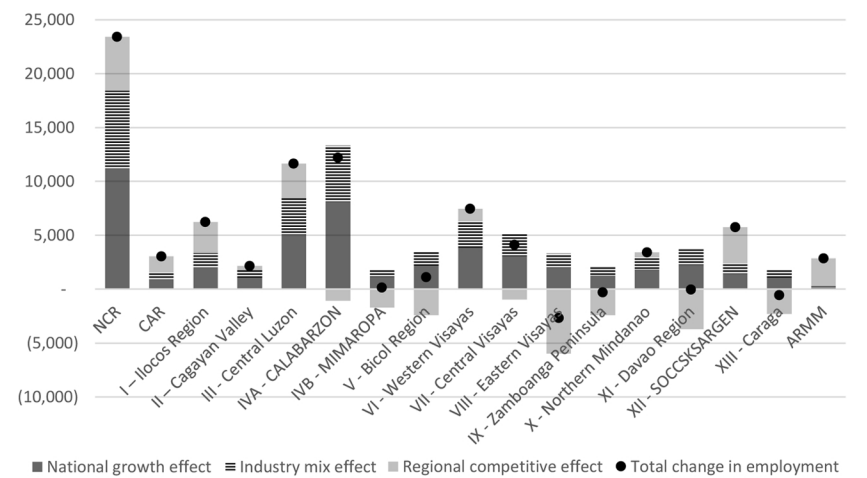
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Table 22. Total change in employment and shift-share decomposition for Sector Q: Human health and social work activities

Region	National Share	Industry Mix	Regional Shift	Total Change in Employment
National Capital Region	11,221	7,196	5,011	23,429
Cordillera Administrative Region	938	601	1,511	3,049
I - Ilocos	2,023	1,297	2,909	6,229
II - Cagayan Valley	1,065	683	392	2,139
III - Central Luzon	5,120	3,283	3,260	11,663
IVA - CALABARZON	8,105	5,198	(1,085)	12,218
IVB - MIMAROPA	1,136	729	(1,709)	155
V - Bicol	2,141	1,373	(2,418)	1,097
VI - Western Visayas	3,864	2,478	1,123	7,464
VII - Central Visayas	3,091	1,982	(974)	4,099
VIII - Eastern Visayas	2,001	1,283	(5,967)	(2,683)
IX - Zamboanga Peninsula	1,273	816	(2,403)	(314)
X - Northern Mindanao	1,817	1,165	431	3,414
XI - Davao Region	2,250	1,443	(3,725)	(32)
XII - SOCCSKSARGEN	1,433	919	3,382	5,734
XIII - Caraga	1,059	679	(2,310)	(572)
Autonomous Region in Muslim Mindanao	165	106	2,576	2,846

Note: Parts in gray indicate negative values.
CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

Figure 17. Total change in employment with its components for Sector Q: Human health and social work activities



CALABARZON = Cavite, Laguna, Batangas, Rizal, and Quezon; MIMAROPA = Occidental Mindoro, Oriental Mindoro, Marinduque, Romblon, and Palawan; SOCCSKSARGEN = South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos
Source: Authors’ computation using data on employment for 2012 and 2018 from PSA (n.d.-c, n.d.-d)

As earlier shown in Table 6, there is a great economic disparity among the regions. While GRDP per capita in the NCR is three times the national average, it is barely a fifth in the case of ARMM. As Figures 18 and 19 show, services employment is positively associated with output while negatively associated with poverty incidence. Although they do not indicate the direction of causality, they illustrate how a growing services sector, measured here in terms of employment, is correlated with key economic outcomes.

The previous section revealed the regions that exhibited locational disadvantages in specific services. These regions showed negative shift-share effects that cannot be attributed to general macroeconomic conditions or industry-specific factors. Out of the total 204 regional service industries, 109 (53.43%) displayed negative regional shift effects. While this might reflect a restructuring of the local economies rather than an actual disadvantage, it is useful to discuss the implications of these results in the context of the region's economic characteristics (Table 6) and development goals.

National Capital Region (NCR)

The NCR recorded the highest contribution to the economy with a GRDP of PHP 6.54 trillion or 37.5 percent of GDP. It is also the second most populous region with 13 million inhabitants—CALABARZON being the highest. It enjoys the highest GRDP per capita of PHP 500,947 and the lowest poverty incidence of 4.9 percent.

The sectors with the highest positive shift effects were other service activities and transport and storage. These are followed by education, human health, and social work activities, information and communication, and financial and insurance activities. In industries, such as wholesale and retail trade, real estate activities, professional scientific and technical activities, accommodation and food service activities, administrative and support service activities, and arts, entertainment, and recreation, NCR showed locational disadvantages.

The negative regional shift effect in administrative and support service activities may be due to the deliberate strategy of the government to shift business process outsourcing (BPO) activities to cities outside Metro Manila. Other sectors could be experiencing the market pressures to move out of the capital region. The negative regional shift effect in

Figure 18. Employment in services and GRDP

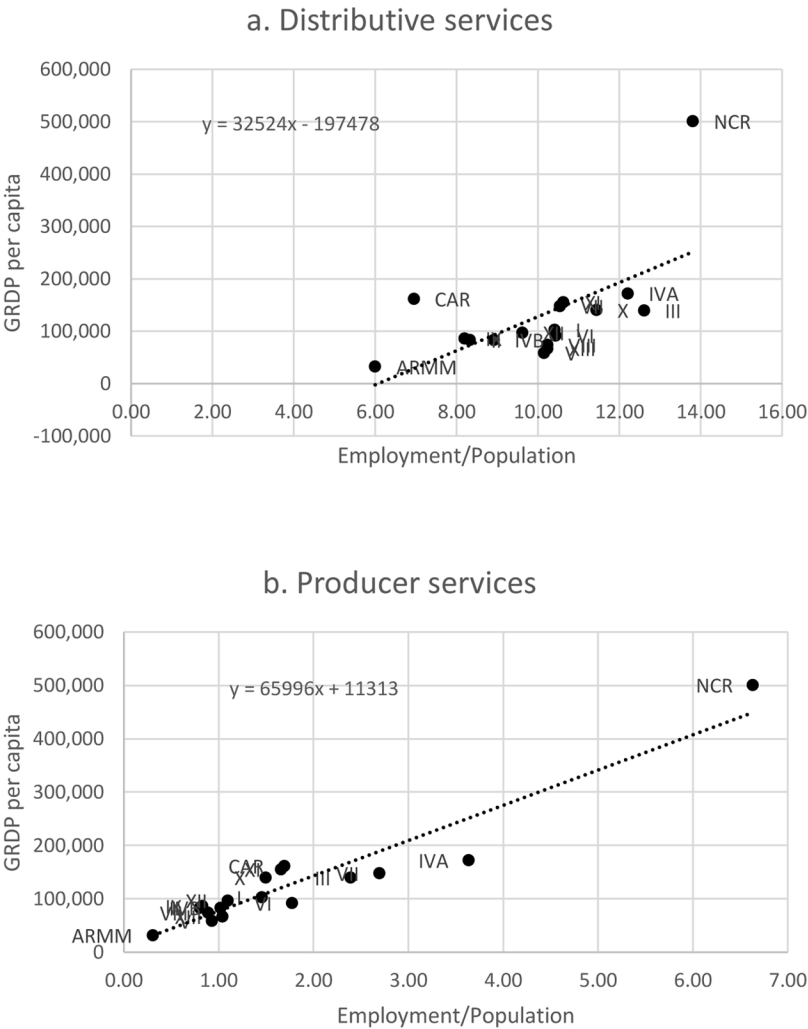
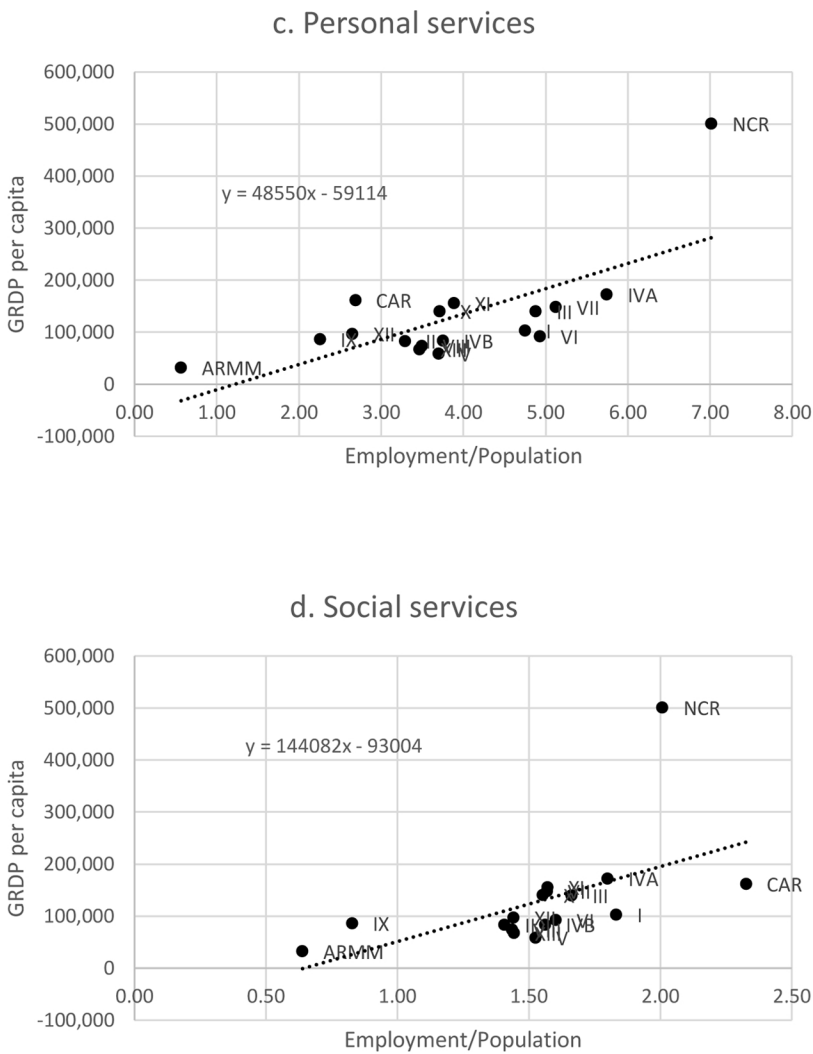


Figure 18. (continued)



GRDP = gross regional domestic product; NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao
Source: Authors' computation using data from PSA (n.d.-a, n.d.-d)

Figure 19. Employment in services and poverty incidence

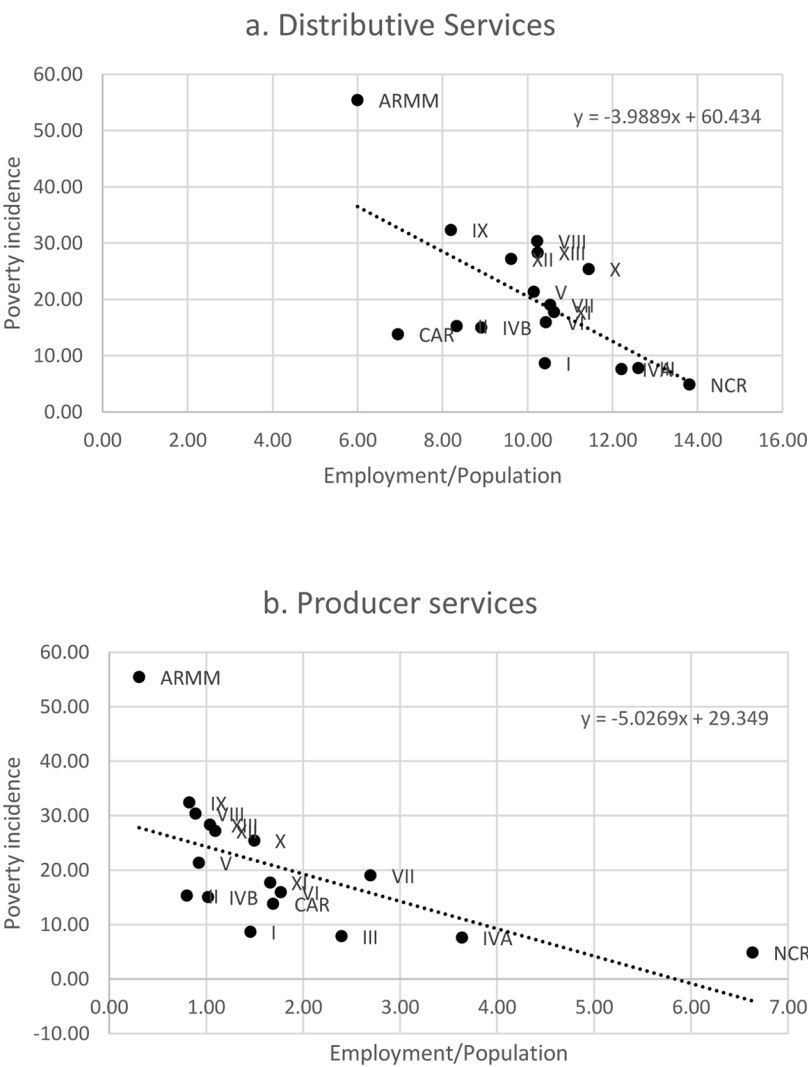
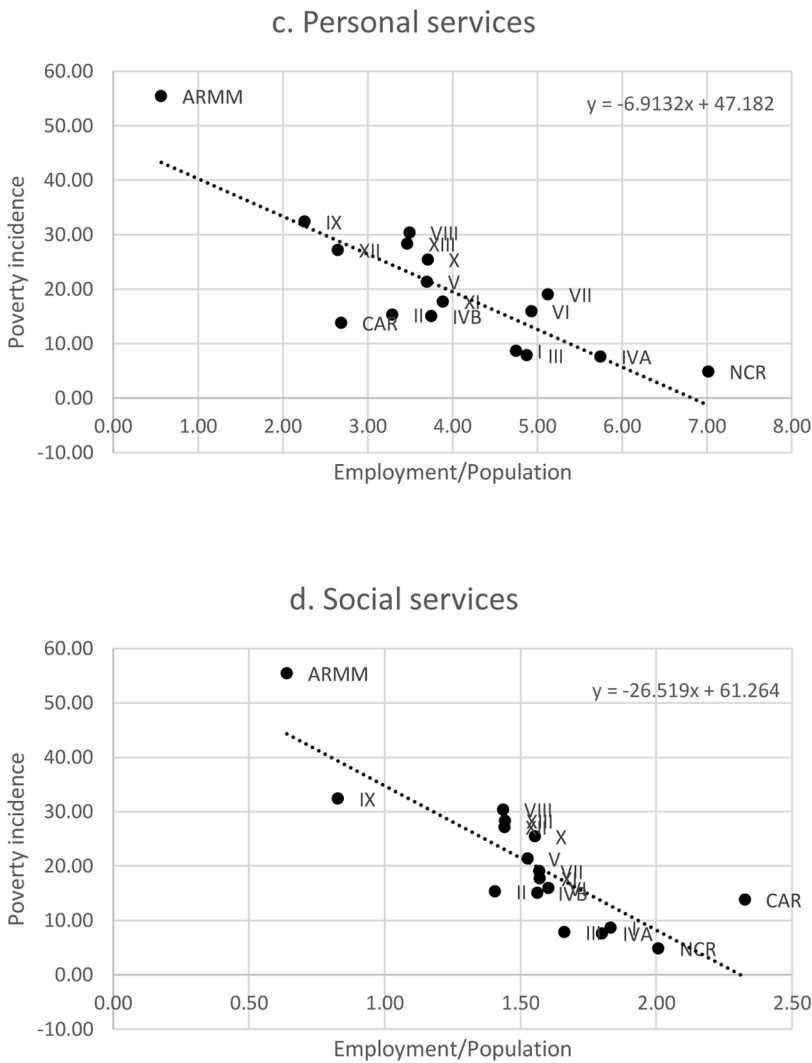


Figure 19. (continued)



NCR = National Capital Region; CAR = Cordillera Administrative Region; ARMM = Autonomous Region in Muslim Mindanao
Source: Authors' computation using data from PSA (n.d.-b, n.d.-d)

wholesale and retail combined with the positive regional shift effect in transport and storage may be due to the rise of e-commerce, which requires less manpower in brick and mortar stores and more towards delivery and logistics. The positive shift effect in other service activities is not necessarily beneficial to the region as jobs in this sector tend to be low-skilled. Since the NCR is the services center of the country (Table 7), economic activity in the region should be encouraged to shift towards high value-adding industries with high-skilled jobs.

Cordillera Administrative Region

The region has the least population with only 1.88 million. Though it has the fifth-lowest GRDP in the country (PHP 304 billion), its poverty incidence of 13.8 percent is below the national average of 16.1 percent.

Only 4 out of 12 services subsectors displayed locational advantages in the region, namely, education; professional, scientific, and technical activities; human health and social work activities; and accommodation and food service activities. The highest negative regional shift effect is observed in wholesale and retail trade followed by other service activities; transport and storage; administrative and support service activities; information and communication; arts, entertainment, and recreation; real estate activities; and financial and insurance activities.

Expanding distributive and producer services will help increase productivity, particularly in agriculture, as it employs almost half of the workforce of the region. The designation of BLISTT³ and Eastern Kalinga as regional growth centers should help boost the services sector. Successful implementation of local culture and arts council activities and initiatives should contribute to growing the personal services in the region. These will assist CAR's vision toward being a self-reliant region rooted in its rich culture and heritage (NEDA RO CAR 2017).

Ilocos (Region I)

In 2018, the GRDP of Ilocos region was recorded at PHP 548 billion. With a population of 5.33 million, the region has a per capita GRDP of PHP 102,819. Its poverty incidence of 8.7 percent ranks fourth to the lowest across all regions in the Philippines.

³Also known as Metro Baguio. It is an agglomeration of the city of Baguio and five municipalities of Benguet province, namely, La Trinidad, Itogon, Sablan, Tuba, and Tublay.

In terms of regional shift, the region is competitive in wholesale and retail trade; accommodation and food service activities; professional, scientific, and technical activities; social services (education and human health and social work activities); financial and insurance activities; and real estate activities. The region also showed negative effects in services such as transport and storage; other service activities; administrative and support service activities; arts, entertainment, and recreation; and information and communication.

Since the region envisions to be the agribusiness, industrial, and tourism hub of the Northern Philippines (NEDA RO I 2017), efficient distributive and producer services, as well as competitive personal services, will be needed. Prioritizing services such as transportation and storage, information and communications, and arts and entertainment will help in achieving the region's goals.

Cagayan Valley (Region II)

The Cagayan Valley region ranks fourth to the lowest in terms of both GRDP and population, with PHP 303 billion and 3.64 million, respectively. Its per capita GRDP is PHP 83,158, while poverty incidence is recorded at 15.3 percent.

It is competitive in accommodation and food service activities; wholesale and retail trade; professional, scientific, and technical activities; arts, entertainment, and recreation; information and communication; human health and social work activities; and real estate activities while shows locational disadvantage in other service activities; administrative and support service activities; education; transport and storage; and financial and insurance activities.

In the medium-term, the region seeks to establish itself as the “prime water resource, agro-industrial hub, and emerging tourism destination” (NEDA RO II 2017) in the country. Producer and distributive services will add value to the region through improved agricultural productivity. Transport and storage, as well as financial services, will need to grow not only to support tourism but also to strengthen market connectivity. To enhance the human resources of the region, access to education services will also need to increase.

Central Luzon (Region III)

Central Luzon has the third-highest GRDP of PHP 1.62 trillion in 2018 and a population of 11.59 million. Its strategic location links the abundant resources of Northern Luzon to the market consumers in NCR. With a poverty incidence of 7.8 percent, it ranks third to the lowest across all regions in the Philippines.

In terms of regional shift, the region is competitive in services, such as wholesale and retail trade; education; professional, scientific, and technical activities; real estate activities; human health and social work activities; and information and communication sectors. In contrast, it has displayed locational disadvantage in financial and insurance activities; accommodation and food service activities; arts, entertainment, and recreation; transport and storage; administrative and support service activities; and other service activities. The region will need to address the weaknesses in these industries to achieve its vision of having “a globally competitive human resources, a highly productive and profitable agricultural sector, seamless and integrated physical access, and a transshipment and logistics hub in the Asia-Pacific region” (NEDA RO III 2017). It should take advantage of its strategic position as the only region that can be accessed through three international gateways with another international airport on the rise. Focusing on distributive services, particularly transport and storage, can help propel the region to become a major logistics hub.

CALABARZON (Region IVA)

CALABARZON is the most populous region in the Philippines with an estimate of 14.92 million in 2018. With advantages, such as having a huge population size, a hub for manufacturing industry, an abundance of agricultural products, a close proximity to NCR, and a strategic location connecting to the south part of the Philippines, the region was the second-highest contributor of the Philippine economy. In 2018, its GRDP reached PHP 2.57 trillion (14.76% of GDP). It also has the second to the lowest poverty incidence of 7.6 percent.

Except for human health and social work activities, all services sector has been thriving with wholesale and retail trade as leading

subsector followed by other service activities; transport and storage; education; administrative and support service activities; accommodation and food service activities; information and communication; financial and insurance activities; arts, entertainment, and recreation; real estate activities; and professional, scientific, and technical activities.

With its proximity to NCR, a large population, and thriving manufacturing industries, the region remains an attractive investment destination (NEDA RO IVA 2017). Distributive and producer services, such as wholesale and retail trade, transport and storage, and administrative and support service activities, continue to add value to the manufacturing sector. Apart from these services, the information and communications service sector is also seen to provide solutions that will boost the region's agricultural sector and help it transform towards agribusiness, agro-ecotourism, and organic product production. The knowledge economy has also been flourishing through multinational investments in BPO, information technology, and creative industry sectors. Such may also be attributed to the growth of the education sector, which implies the provision of competent human resources. Accommodation and food service activities should also be utilized to achieve the region's goal of becoming a world-class destination for tourism. Human health and social work activities will need to expand to ensure that the quality of life in the region will not deteriorate with industrialization.

MIMAROPA (Region IVB)

The MIMAROPA region has the third to the lowest GRDP of about PHP 274 billion. It is also the third least populous region at 3.28 million. The region's per capita GRDP is PHP 83,614, while its poverty incidence is at 15 percent.

In terms of regional shift effects, it is competitive in wholesale and retail trade; accommodation and food service activities; administrative and support service activities, as well as transport and storage; education; other service activities; professional, scientific, and technical activities; and arts, entertainment, and recreation. The region exhibited locational disadvantage in financial and insurance activities; human health and social work activities; information and communication; and real estate activities.

The region was also the second-fastest growing economy in 2018 (PSA 2019). The region aims to achieve sustainable growth through

tourism and agricultural sector, which are the drivers of the economy (NEDA RO IVB 2017). Expanding services, such as wholesale and retail trade, accommodation and food service activities, as well as transport and storage, will help boost the tourism sector. Access to affordable financial services and information and communication services will be needed to support the agriculture sector.

Bicol (Region V)

The Bicol region, with an estimated population of 6.39 million, experienced the fastest economic growth rate of 8.9 percent among all the regions in the country in 2018. However, it is still ranked second to the lowest among the regions in terms of per capita GRDP of PHP 58,600. Moreover, 1 out of 5 (21.4%) families experience poverty.

Professional, scientific, and technical activities; wholesale and retail trade; real estate activities; and education exhibited positive regional shift effects. However, locational disadvantages were displayed in transportation and storage; other service activities; administrative and support activities; information and communication; accommodation and food services activities; arts, entertainment, and recreation; human health and social work activities; and financial and insurance subsectors.

As the region is dependent on tourism, it is important to develop other industries to sustain and diversify its drivers of growth. Thus, the region aims to pursue more value-adding activities, particularly in the agriculture and fisheries sector (NEDA RO V 2017). The modernization of agriculture will also need distributive and producer services, such as transportation and storage, information and communications, and financial and insurance services.

Western Visayas (Region VI)

Western Visayas is the sixth highest contributor to the country's economy, with a GRDP of PHP 739 billion in 2018. Its population of 8 million makes it the fourth most populous region in the Philippines. The region's GRDP per capita is PHP 92,043, and its poverty incidence is at 15.9 percent.

Only 3 out of 12 subsectors have shown positive regional shift effects, namely, administrative and support service activities, accommodation and food service activities, and human health and social work activities.

Other services, such as transport and storage; education; other service activities; wholesale and retail trade; financial and insurance activities; information and communication; professional, scientific, and technical activities; real estate activities; and arts, entertainment, and recreation, have shown locational disadvantage.

Western Visayas depends mainly on its agriculture and the tourism sectors. Its typography, however, poses a disadvantage to its growth. Hence, strengthening its transport and storage, as well as information and communications subsectors, will help link the various islands that comprise the region (NEDA RO VI 2017). Education services, which is critical for human capital development, must also be accessible throughout the region.

Central Visayas (Region VII)

The region's GRDP is PHP 1.16 trillion, making it the fourth-biggest contributor to the Philippine economy. With a population estimate of 7.8 million, its per capita GRDP is PHP 148,067. Although it is regionally competitive in the economy, 1 out of 5 (19%) families still experience poverty, which is mainly attributed to the geographical disadvantages and concentration of the economy and population in Metro Cebu.

In terms of regional effects, Central Visayas is competitive in accommodation and food service activities; transport and storage; other service activities; arts, entertainment, and recreation; administrative and support service activities; and real estate subsectors. On the other hand, the wholesale and retail trade sector experienced the highest locational disadvantage, followed by education; human health and social work activities; financial and insurance activities; professional, scientific, and technical activities; and information and communication.

Central Visayas aims to achieve geographically balanced development. As such, the government has been strengthening the country's transport system by building roads and ports (NEDA RO VII 2017). In addition to investment in infrastructure, distributive and producer services will need to expand for the region to remain competitive. Social services, such as education and human health, and social work activities, are also important for long-term development.

Eastern Visayas (Region VIII)

Eastern Visayas recorded a GRDP of PHP 355 billion in 2018. With a population of 4.79 million, it ranked fourth to the lowest in per capita GRDP (PHP 73,996). The region also has the third to the highest rate of poverty incidence (30.4%) among all the regions in the country.

Wholesale and retail trade was the only sector with a positive regional shift effect, with all the other service sectors displaying locational disadvantages.

Leyte has one of the biggest geothermal power plants in the Visayas region and is home to the copper smelting and refining operations of the Philippine Associated Smelting and Refining Corporation—the country’s only copper smelting and refining firm and also one of the biggest in Asia. Distributive and producer services are necessary for creating a competitive downstream copper industry and other business activities in agriculture and fishery to support the economic rehabilitation of the region that was devastated by Super Typhoon Yolanda (NEDA RO VIII 2017). Improving connectivity and the availability of personal services will help boost tourism, particularly ecotourism. Strengthening the human resources of the region through education and health services is also important to reduce poverty in the medium to long term.

Zamboanga Peninsula (Region IX)

In 2018, the GRDP of the Zamboanga Peninsula reached PHP 342 billion. In the same year, its population reached 3.96 million, resulting in a per capita GRDP of PHP 86,368. It has a poverty incidence of 32.4 percent—the second-highest in the country.

In terms of regional shift effects, the region was competitive in transport and storage; information and communication; and professional, scientific, and technical activities. However, it showed locational disadvantages in wholesale and retail trade; education; other service activities; administrative and support service activities; accommodation and food service activities; human health and social work activities; financial and insurance activities; real estate activities; and arts, entertainment, and recreation.

As the region envisions to become the “center of Sustainable Agri-Fishery Industries of the Philippines” in the medium

term (NEDA RO IX 2017), it cannot ignore its distributive and producer services, such as wholesale and retail trade and financial and insurance services. Expansion in personal service activities would create jobs for low-skilled workers, while investments in education and health would contribute to human capital development.

Northern Mindanao (Region X)

Northern Mindanao was the seventh biggest regional economy in 2018. Its GRDP and population reached PHP 692 billion and 4.93 million, respectively, resulting in a per capita GRDP of PHP 140,224. Moreover, 1 in every 4 families in the region lives below the poverty threshold.

The region exhibited a positive shift effect in wholesale and retail trade, information and communication, real estate activities, human health and social work activities, and transport and storage. While locational disadvantage was observed in accommodation and food service activities; other service activities; administrative and support service activities; professional, scientific, and technical activities; arts, entertainment, and recreation; education; and financial and insurance activities.

Distributive services will help meet the region's vision to become the gateway and leading industrial base and trade center in Southern Philippines (NEDA RO X 2017). However, competitive producer services, such as financial and insurance activities; professional, scientific, and technical activities; and administrative and support service activities are also necessary for industrialization.

Davao (Region XI)

Together with MIMAROPA, Davao was also named as the second fastest-growing region in 2018. In the same year, the region contributed 4.69 percent of the country's total GDP (PHP 817 billion). Its population was estimated at about 5.25 million in 2018, resulting in a GRDP per capita of PHP 155,657—the fourth highest in the country. The region's poverty incidence was at 17.7 percent.

Positive regional shift effects were highest in education, followed by transport and storage; information and communication; real estate activities; and professional, scientific, and technical activities. Locational disadvantages were observed the most in wholesale and retail trade followed by administrative and support service activities; human health

and social work activities; financial and insurance activities; other service activities; accommodation and food service activities, and in arts, entertainment, and recreation.

Most of the priority industry clusters of the region are agriculture and fisheries-based (14 out of the 18). These industries, however, face several challenges, such as inadequate logistics and infrastructure, weak market linkages (including insufficient market information), and inadequate technical or extension services (NEDA RO XI 2017). While the region has displayed locational advantages in a number of distributive and producer services as earlier identified, further expansion of these services will be needed to support the growth of priority industries.

SOCCKSARGEN (Region XII)

The provinces of South Cotabato, Cotabato, Sultan Kudarat, Sarangani, and General Santos, collectively called SOCCKSARGEN, had an estimated population of 4.87 million in 2018. It also generated PHP 473 billion in GRDP in the same year or a GRDP per capita of PHP 97,034. Poverty remains the major concern of the region, with a 27.2 percent poverty incidence.

In terms of regional shift effects, locational advantages were exhibited in transport and storage; education; wholesale and retail trade; administrative and support service activities; human health and social work activities; real estate activities; and professional, scientific, and technical activities. In contrast, the region was not competitive in accommodation and food service activities; arts, entertainment, and recreation; other service activities; information and communication; and financial and insurance activities.

The region adopts a sustainable agri-industrial development strategy to realize its vision of being an agri-industrial hub and ecotourism center in Southern Philippines (NEDA RO XII 2017). Given its aspirations, there is a need for efficient distributive services and producer services to support the region's goal—becoming an agri-industrial hub. Information and communications services and financial and insurance activities must be specially strengthened given the locational disadvantage exhibited by the region in these services. Competitive personal services will also need to be made available to develop ecotourism in the region.

Caraga (Region XIII)

Caraga's contribution to the economy was the second-lowest among the regions, with just PHP 194 billion in 2018. It is also among the least populous with only 2.89 million people, resulting in a GRDP per capita of PHP 67,228—the third-lowest in the country. Moreover, it has a high poverty incidence at 28.3 percent.

The region displayed locational advantages in administrative and support service activities; financial and insurance activities; real estate activities; professional, scientific, and technical activities; wholesale and retail trade; arts, entertainment, and recreation; other service activities; and information and communication. However, Caraga region did not show competitiveness in transport and storage; accommodation and food service activities; education; and human health and social work activities.

As the region aspires to be the fishery, agro-forestry, mineral, and ecotourism center of the country, it will be important to increase the productivity of these industries through processing and value-adding activities (NEDA RO Caraga 2017). While locational advantages have been displayed in most distributive and producer services, further growth of these sectors must be ensured, and the weakness in transport and storage be addressed. Personal services would also need to expand to support ecotourism. Investment in human capital through education and health services is needed to sustain the region's development and growth.

Autonomous Region in Muslim Mindanao (ARMM)⁴

The ARMM recorded a GRDP of PHP 129 billion in 2018. With a population of almost 4 million, its per capita GRDP was recorded at PHP 32,220. Around half (55.4%) of the families live below the poverty threshold.

The region displayed positive shift effects in administrative and support service activities, human health and social work activities, and financial and insurance activities service sector. In wholesale and retail trade, the region had locational disadvantages. In addition, negative regional shift effects were observed in education; transport and storage; accommodation and food service activities; other service activities;

⁴It should be noted that the shift-share analysis used data for the years 2012 and 2018, which were generated before the creation of the Bangsamoro Autonomous Region in Muslim Mindanao.

real estate activities; professional, scientific, and technical activities; information and communication; and arts, entertainment, and recreation.

Agriculture, forestry, and fishing industries account for 60 percent of the local economy. Making sure that distributive and producer services, such as wholesale and retail trade; transport and storage; real estate activities; professional, scientific, and technical activities; and information and communication, are available throughout the whole region will help improve productivity in the agriculture, forestry, and fishing industries. Expanding education services must also be a priority for the long-term development of the region.

Conclusion

Using a simple shift-share decomposition technique, this paper identified the regions with locational advantages and disadvantages in terms of their service industries. When used in combination with other analytical techniques, shift-share can help better understand a region's economic potential and constraints.

Since it is purely a descriptive tool, further studies will be needed to explain the factors influencing sectoral changes at the regional level. Moreover, this paper adopted the standard shift-share model and examined only the changes in employment due to data limitations. Future work may either explore more sophisticated techniques and other economic variables or further disaggregate the sectors of interest.

Both demand-side and supply-side factors influence the expansion of services. As services are critical for production, human capital development, and enhancing the quality of life more broadly, understanding the drivers or inhibitors of services growth and addressing the locational weaknesses in the relevant service industries will be useful in promoting regional growth and a more balanced economic development for the country.

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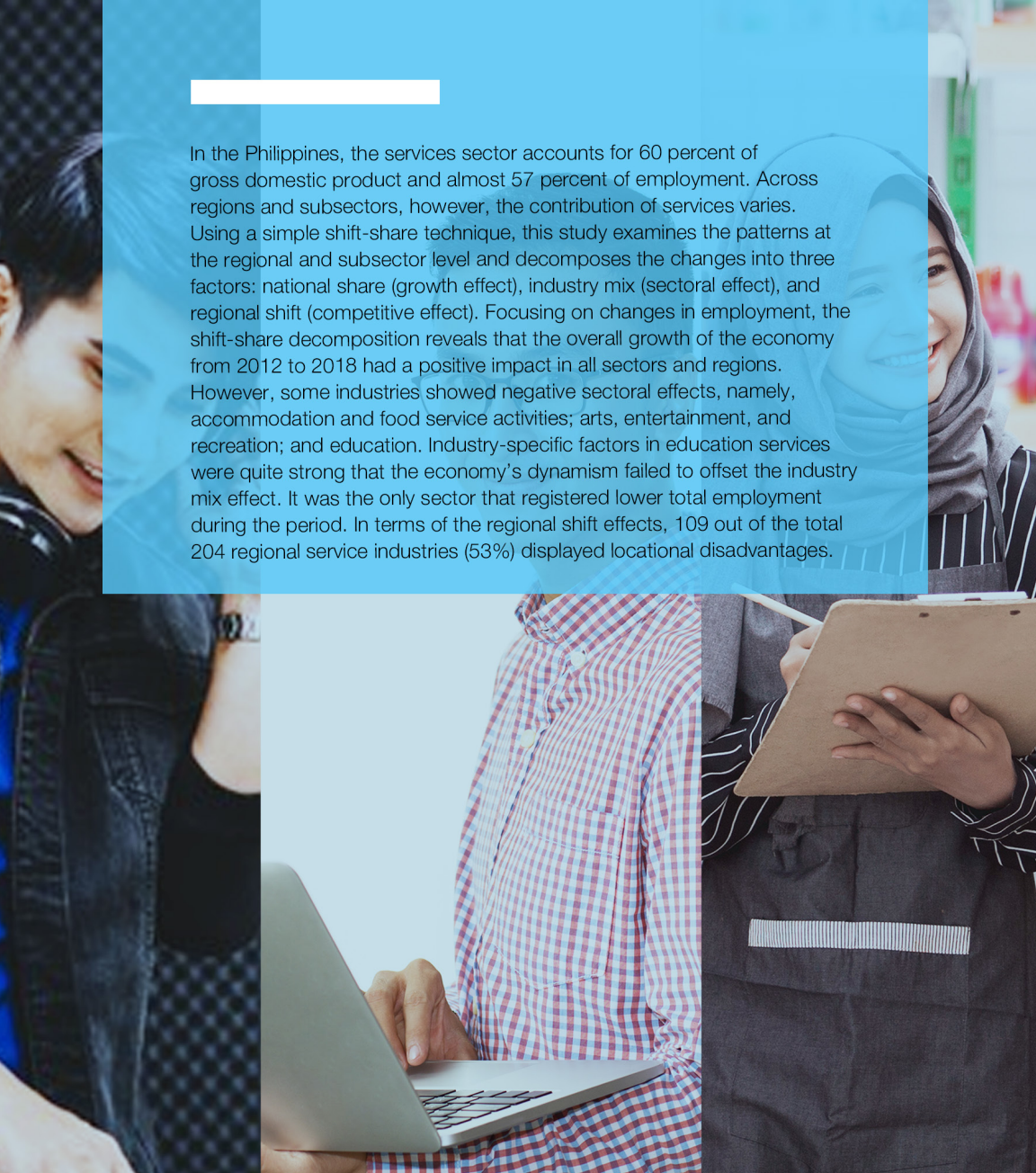
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The Authors

Ramonette B. Serafica is a senior research fellow at the Philippine Institute for Development Studies (PIDS). She has a PhD in Economics from the University of Hawai'i at Manoa and has worked on several researches in the field of services policy, regulation, and trade in services.

Jean Colleen M. Vergara is a former research analyst at PIDS. She has a BS in Business Economics from the University of the Philippines (UP) Diliman and is taking her Juris Doctor degree at the San Beda University in Manila.

Queen Cel A. Oren is a research analyst at PIDS. She has a BS in Statistics from UP Diliman and is studying MA Psychology at the same university.



In the Philippines, the services sector accounts for 60 percent of gross domestic product and almost 57 percent of employment. Across regions and subsectors, however, the contribution of services varies. Using a simple shift-share technique, this study examines the patterns at the regional and subsector level and decomposes the changes into three factors: national share (growth effect), industry mix (sectoral effect), and regional shift (competitive effect). Focusing on changes in employment, the shift-share decomposition reveals that the overall growth of the economy from 2012 to 2018 had a positive impact in all sectors and regions. However, some industries showed negative sectoral effects, namely, accommodation and food service activities; arts, entertainment, and recreation; and education. Industry-specific factors in education services were quite strong that the economy's dynamism failed to offset the industry mix effect. It was the only sector that registered lower total employment during the period. In terms of the regional shift effects, 109 out of the total 204 regional service industries (53%) displayed locational disadvantages.



18th Floor, Three Cyberpod Centris - North Tower
EDSA corner Quezon Avenue, Quezon City, Philippines
Tel.: (+632) 8877-4000
Email: publications@mail.pids.gov.ph
Website: <http://www.pids.gov.ph>

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