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Regional analysis of the Philippine services sector

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DISCUSSION PAPER SERIES NO. 2019-25

Regional Analysis of the Philippine Services Sector

Ramonette B. Serafica and Jean Colleen M. Vergara



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Regional Analysis of the Philippine Services Sector

Ramonette B. Serafica
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PHILIPPINE INSTITUTE FOR DEVELOPMENT STUDIES

December 2019

Abstract

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

In the Philippines, services account for 60 percent of GDP and almost 57 percent of employment. Across regions and sub-sectors however, the contribution of services varies. To examine the patterns at the regional and sub-sector level, a simple shift-share technique is used which decomposes changes into three factors: the national share (growth effect), the industry mix (sectoral effect), and the 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. The sectoral effects were negative in a few industries, however, namely: Accommodation & 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. In terms of the regional shift effects, 109 out of the total 204 regional service industries (53.43 percent) displayed locational disadvantages.

Shift share is a purely descriptive tool and further analysis will be needed 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 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 of the country.

Keywords: services, regional distribution, employment, shift-share analysis

Table of Contents

1. Introduction	1
2. Overview of services	2
2.1 Significance of services in the economy	2
2.2 The classification of services	4
3. The Philippine services sector	7
3.1 Overall regional trends and patterns	7
3.2 Shift-share analysis	10
3.2.1 Methodology	10
3.2.2 Review of methodology	10
3.2.3 Application	12
3.2.4 Description of data	13
3.2.5 Results of shift-share decomposition	17
4. Summary and conclusion	31
5. Bibliography	35

List of Tables

Table 1. Significance of services in the economy	2
Table 2. Employment in services by sex (2018)	2
Table 3. Business Services as part of Producer Services	5
Table 4. Summary of KIBS activities	6
Table 5. Regional indicators (2018)	7
Table 6. Total employment in services sub-sectors	14
Table 7. Change in total employment in services by sector and region (2018-2012)	15
Table 8. Percent change in total employment in services by sector and region (2018-2012) (%)	16
Table 9. Sector G - Wholesale and retail trade; repair of motor vehicles motorcycles and personal and household goods	17
Table 10. Sector H -Transportation and storage	18
Table 11. Sector J - Information and communication	19
Table 12. Sector K - Financial and insurance activities	21
Table 13. Sector L - Real estate activities	22
Table 14. Sector M – Professional, scientific and technical activities	23
Table 15. Administrative and support service activities	24
Table 16. Sector I - Accommodation & food service activities	26
Table 17. Sector R - Arts, entertainment and recreation	27
Table 18. Sector S - Other service activities	28
Table 19. Education	29
Table 20. Sector Q - Human health & social work activities	30
Table 21. Distributive services: Regional Shift effects	32
Table 22. Producer services: Regional Shift	32
Table 23. Personal services: Regional Shift effects	33
Table 24. Social services: Regional Shift effects	34

List of Figures

Figure 1. Services value added as a share of GDP (%)	3
Figure 2. Employment in services (% of total employment) (modeled ILO estimate)	4
Figure 3. Share of GDP and Population, by region (%)	8
Figure 4. Share of the services sector in GDP/GRDP at current prices (%)	9
Figure 5. Gross value added in services by region (2018)	9
Figure 6. Share of services sector in total employment (%)	13
Figure 7. Sector G - Wholesale and retail trade; repair of motor vehicles motorcycles and personal and household goods	18
Figure 8. Sector H -Transportation and storage	19
Figure 9. Sector J - Information and communication	20
Figure 10. Sector K - Financial and insurance activities	21
Figure 11. Sector L - Real estate activities	23
Figure 12. Sector M – Professional, scientific and technical activities	24
Figure 13. Sector N - Administrative and support service activities	25
Figure 14. Sector I - Accommodation & food service activities	26
Figure 15. Sector R - Arts, entertainment and recreation	28
Figure 16. Sector S - Other service activities	29
Figure 17. Sector P - Education	30
Figure 18. Sector Q - Human health & social work activities	31

Regional analysis of the Philippine services sector

*Ramonette B. Serafica and Jean Colleen M. Vergara**

1. Introduction

The services sector is composed of a diverse range of industries from retail and business services to education and health.¹ Some services are used as inputs in production, while others have direct impacts on human capital development. With services such as transport, energy, financial services, and telecom and ICT services, playing a critical role in development, UNCTAD (2017) claims that achieving the 2030 Agenda for Sustainable Development is to a great degree a services agenda. Specifically, services can contribute to many Sustainable Development Goals (SDGs), including goal 1 on ending poverty - financial services in target 1.4; goal 2 on ending hunger - financial services in target 2.3; goal 3 on health services; goal 4 on education services; goal 5 on gender equality - financial services in target 5.a; goal 6 on water and sanitation services; goal 7 on energy services; goal 8 on economic growth and decent work - financial services in target 8.3 and 8.10; goal 9 on infrastructure - infrastructure services in target 9.1, financial services in target 9.3 and telecommunications and ICT services in target 9.c; goal 10 on reducing inequalities - financial services in target 10.c; goal 11 on human settlements - transport services in target 11.2; and goal 17 on means of implementation - ICT services in target 17.8.

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 Gross Domestic Product (GDP) and almost 57 percent of employment. At the regional level however, the share of services in Gross Regional Domestic Product (GRDP) varied 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 the NCR.

Given that the role of services varies across regions, a deeper understanding of services development of the different sub-sectors 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 be used to explain both the modernization processes of some regions as well as the existing and potential socioeconomic dynamics operating between them. In the Philippines, some regions have grown faster than others and identifying possible factors that led to these differences in productivity would be beneficial in promoting regional development especially to 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.

The next chapter provides an overview of the services sector. Its economic significance is discussed, and various classifications are also presented illustrating the heterogeneous nature of the sector. Chapter 3 analyzes the Philippine services sector in greater detail. It describes

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¹ In this paper, the terms sector, industry, and sub-sector are used interchangeably.

the overall trends and then examines the patterns at the regional and sub-sector level using a shift-share model. The final chapter summarizes the key results and offers some recommendations for future work.

2. Overview of services

2.1 Significance of services in the economy

The services sector accounts for a large share of the economy not just in advanced countries but across different income groups (See Table 1). They are crucial to agriculture, 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 (such as design, marketing, or distribution costs included in the value of a good) or as trade enablers (such as logistics services or e-commerce platforms). Thus, the productivity of services will be increasingly important for the feasibility of manufacturing-led development (Hallward-Driemeier and Nayyar 2018; Bamber et al. 2017).

Table 1. Significance of services in the economy

Country/Grouping	Services, value added (% of GDP), 2016	Employment in services (% 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

Notes: (1) The services sector consists of 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 (ISIC 2) or categories G-Q (ISIC 3) or categories G-U (ISIC 4). (2) Employment is defined as persons of working age who were 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 to working-time arrangement. Figures based on modeled ILO estimate. Source: <https://databank.worldbank.org/> accessed on April 15, 2019

Services also account for the largest share of employment particularly in high income countries, both for female and male workers. In the Philippines, 3 out of every 4 female workers are absorbed in the services sector. See Table 2.

Table 2. Employment in services by sex (2018)

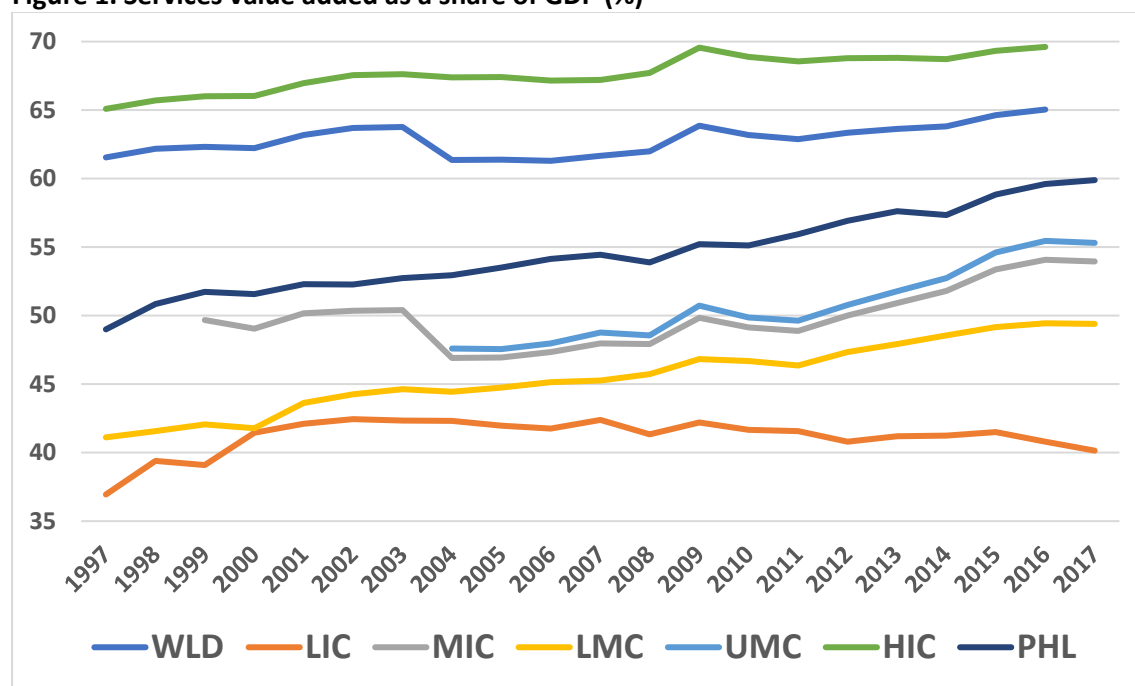
Country/Grouping	Female employment (%)	Male employment (%)
World	58.21	47.56
Low income	22.01	22.58
Middle income	55.17	46.56
- Lower middle	41.21	39.60
- Upper middle	64.92	54.16

High income	87.47	64.32
Philippines	74.19	45.35

Source: <https://databank.worldbank.org/> accessed on April 15, 2019

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

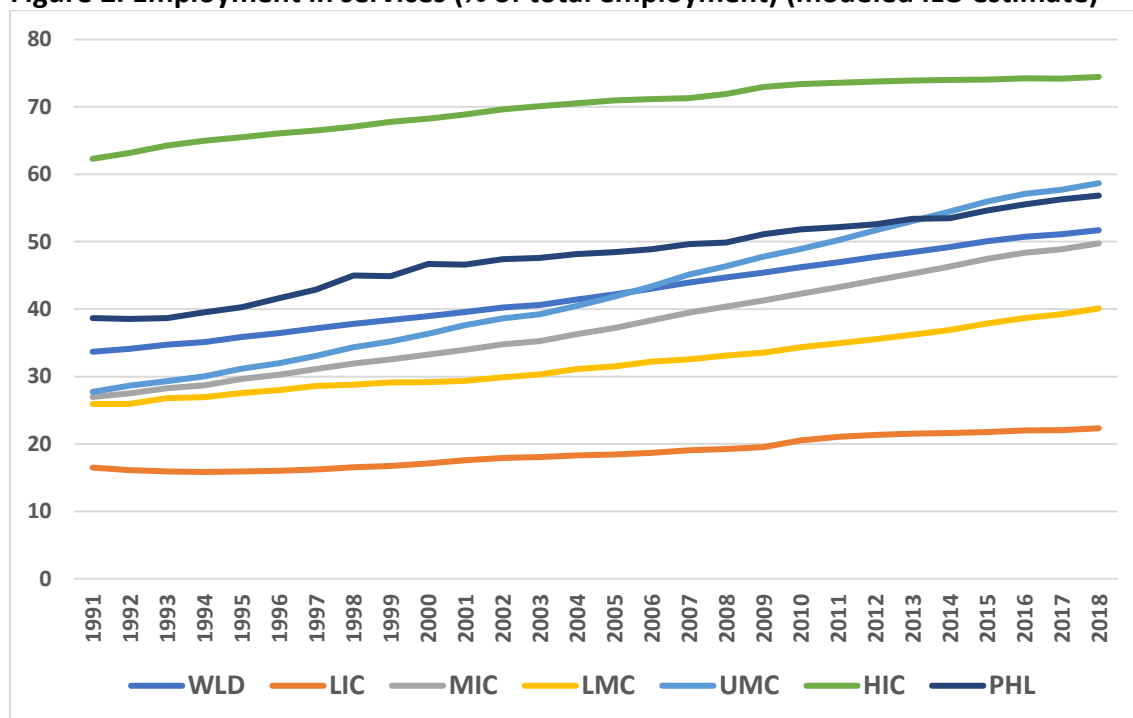
Figure 1. Services value added as a share of GDP (%)



Notes: 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: <https://databank.worldbank.org/> accessed on April 15, 2019

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



Notes: 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: <https://databank.worldbank.org/> accessed on April 15, 2019

The increasing share of services in the economy has been attributed to various factors (Schetkatt and Youmani 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 or other drivers that influence changes in the structure of household expenditure such as urbanization, the increase in labor force participation of women, and demographic changes. The inter-industrial demand of services by manufacturing which is linked to outsourcing processes is another factor. On the supply side, inter-industry productivity differentials between manufacturing and services with the former enjoying higher productivity (in terms of both level and growth) has been cited as the reason for increased employment in services.

2.2 The classification of services

According to Schetkatt and Youmani (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 the idea that service demand is related to the purpose of a service (consumer vs. business services) or to 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 the expansion of employment in services.

Browning and Singelman (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 involving a primary sector (agriculture, mining, fishing, forestry), a secondary sector (manufacturing, construction, and utilities), and a tertiary sector (transportation, commerce, and services). The six sectors include:

1. Extractive (identical with primary sector)
2. Transformative (identical with secondary sector)
3. Distributive Services (transportation, communication, wholesale and retail trade, excepting 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 they partly depend on government revenues for their operations. Finally, personal services are more heterogeneous although a common characteristic is an orientation to the individual consumer.

Scharpf (1990) as cited in Schetkatt and Youmani (2003) classified services into two broad groups – producer and consumer services. Producer services include Transport, Storage; Communication; Finance; Insurance; Real estate; Business services while 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 routine such as industrial cleaning services to the more sophisticated knowledge intensive services needed for R&D and innovation. Table 3 from Rubalcaba and Kox (2007) lists the various business and business-related services. Note that in this classification, distributive services as defined by Browning and Singelman (1975) are subsumed under Producer services.

Table 3. Business Services as part of Producer Services

Table 3: 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, opinion polling	
				Technical services, engineering	
				Personal training, 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, stock exchange			
		Telecommunication, couriers			
		Energy services			

	Consumer services partly used by enterprises (business travel, company health services, social insurance services)
--	--

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

Within business services, there are also Knowledge Intensive Business Services (KIBS) (See Table 4).

Table 4. Summary of KIBS activities

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)

In the latest International Standard Industrial Classification (ISIC) Revision 4 on which the Philippine Standard Industrial Classification (PSIC) 2009 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 defence; 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 post-harvest crop activities
- Class 0170 Hunting, trapping and related service activities

- Class 0240 Support services to forestry

Section B. Mining & 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 IMF (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, Alibaba) and their products is incomplete. Platform products covered by the Central Product Classification (CPC) include searches, content and media, and e-commerce but matching services (e.g. Airbnb) and cloud computing are not yet covered.

3. The Philippine services sector

3.1 Overall regional trends and patterns

The value of Philippine GDP in 2018 was about PhP 17.4 trillion. As Table 5 and Figure 3 reveal, the economic disparity across the regions is quite stark.

Table 5. Regional indicators (2018)

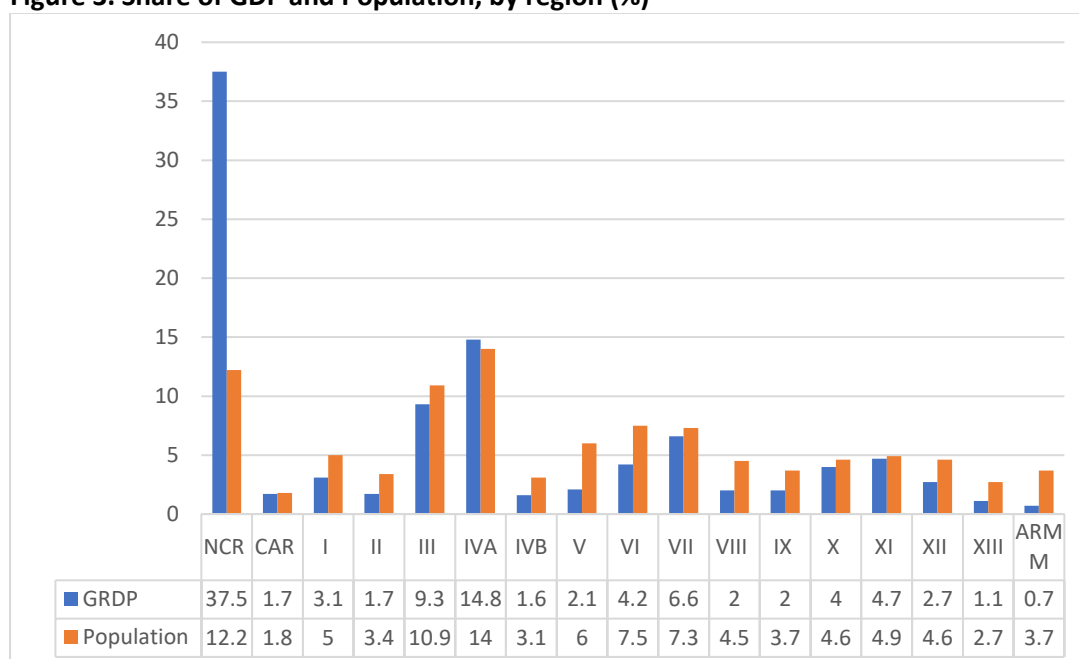
REGION		GRDP at current prices (in billion pesos)	Population (in thousand persons)	Per capita GRDP at current prices (in pesos)	Per capita index with reference to the national average, at current prices	Poverty Incidence among Families (%), First Semester
PHILIPPINES		17,426	106,599	163,475	100.0	16.1
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
	MIMAROPA REGION	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	32.4
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	SOCCSKSARGEN	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

Source: Philippine Statistics Authority 2009-2018 Gross Regional Domestic Product (at Current and Constant 2000 Prices, as of April 25, 2019) <https://psa.gov.ph/grdp/data-series> accessed on September 28, 2019

Table 1. First Semester Per Capita Poverty Threshold and Poverty Incidence among Families with Measures of Precision, by Region and Province: 2015 and 2018 <https://psa.gov.ph/poverty-press-releases/data> accessed on September 29, 2019

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

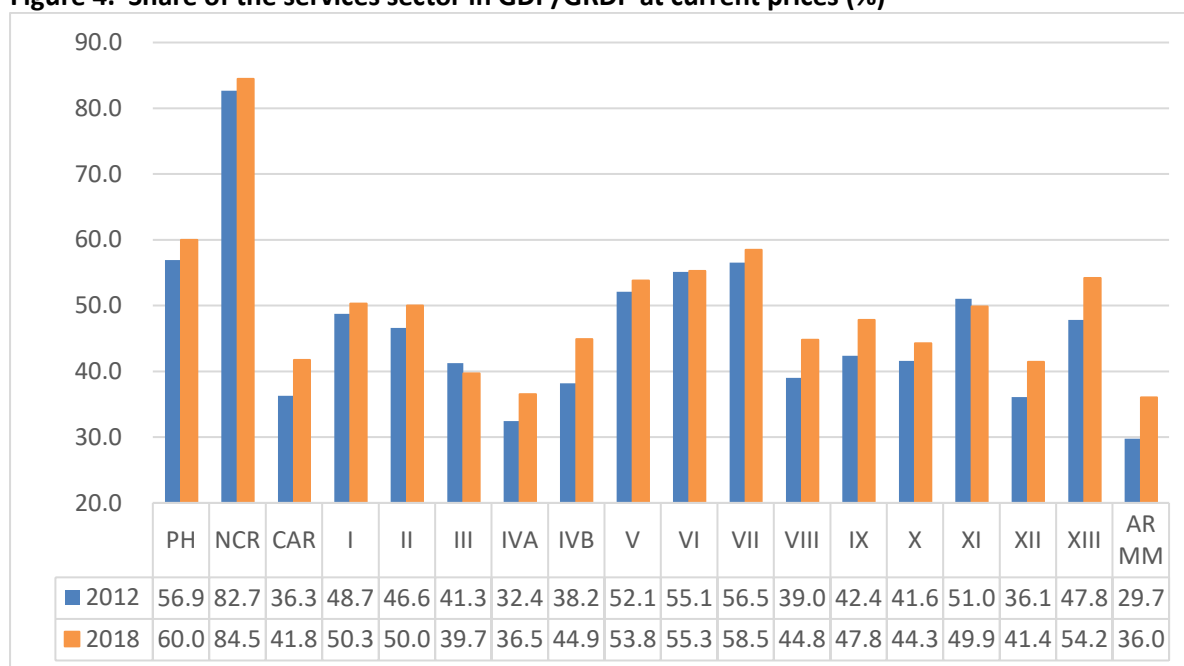


Source: Philippine Statistics Authority 2009-2018 Gross Regional Domestic Product (at Current and Constant 2000 Prices, as of April 25, 2019) <https://psa.gov.ph/grdp/data-series> accessed on September 28, 2019

Table 1. First Semester Per Capita Poverty Threshold and Poverty Incidence among Families with Measures of Precision, by Region and Province: 2015 and 2018 <https://psa.gov.ph/poverty-press-releases/data> accessed on September 29, 2019

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 the NCR and a low of 36 percent in ARMM and 36.5 percent in Region 4A, 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 3 and XII. (Figure 4)

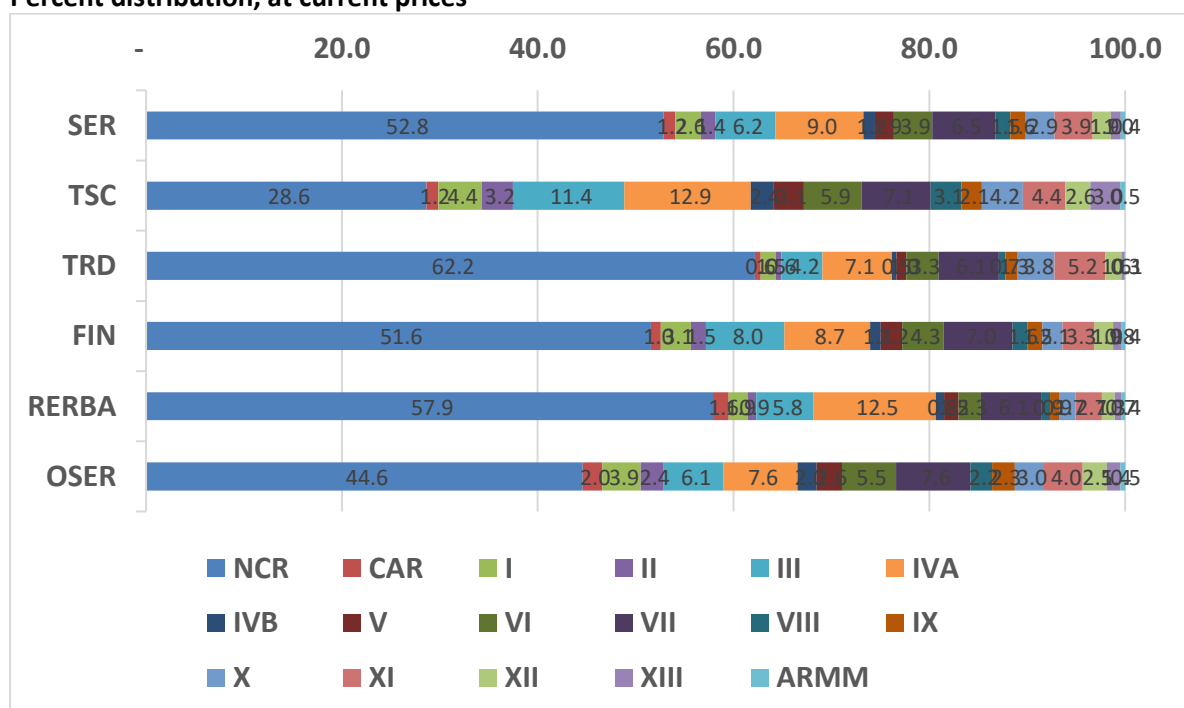
Figure 4. Share of the services sector in GDP/GRDP at current prices (%)



Source: Philippine Statistics Authority 2009-2018 Gross Regional Domestic Product (at Current and Constant 2000 Prices, as of April 25, 2019) <https://psa.gov.ph/grdp/data-series> accessed on September 28, 2019

In terms of spatial distribution, 53 percent of total services value added comes from the National Capital Region. The same concentration is observed in most services except in Transport, Storage and Communications services which appears to be more distributed to neighboring regions 3 and 4A. Figure 5.

Figure 5. Gross value added in services by region (2018)
Percent distribution, at current prices



Notes: 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

Source: Philippine Statistics Authority 2009-2018 Gross Regional Domestic Product (at Current and Constant 2000 Prices, as of April 25, 2019) <https://psa.gov.ph/grdp/data-series> accessed on September 28, 2019

3.2 *Shift-share analysis*

3.2.1 Methodology

To interpret the shares and growth of the various service sectors at the regional level, a shift-share model is used. A shift share is a standard regional analysis method that attempts to determine how much of regional growth can be attributed to national trends, industry factors, and to 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 will merely show the sectors in which region are out- or under-performing 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 (2018), **national share** represents factors common to all industries at the national level. It is the regional growth that would occur if the particular variable in all industries within the region grew at the same rate as that of the growth of the overall national economy. This component can signal an unrealized potential of a particular region had they only 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 a local area’s growth rate in an industry sector with the growth rate for that same industry 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 that affect the performance of particular industries. It reflects the competitiveness of a certain region in a specific sector.

A decomposition through shift-share analysis would allow the focus to be 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, straightforward approach to distinguishing 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 analysis the technique offers a valuable tool to better understand a region’s economic potential.

3.2.2 Review of methodology

Methodological description

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

$$\text{TEC} = \text{NS} + \text{IM} + \text{RS}$$

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. What would be mainly evaluated is 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 (2005) and Chilian (2012), the national effect would be reflected by the regional variable in a specific industry at the beginning of the period multiplied by the overall national growth rate of the variable that transpired for during the observation period. For the industry effect, the regional variable in a specific industry at the beginning of the period would be multiplied by the national growth rate in 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 in a specific industry at the beginning of the period with the difference of its corresponding regional growth less that of its experienced national growth during the duration of the entire observation period.

Theoretical criticism

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 on its absence of theoretical content, disregard of intra-regional 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 regions are independent of each other – a phenomenon that is possible only in self-sufficient economies. Therefore, the traditional model fails to consider the possibility of spatial interaction (Mayor and Lopez-Menendez 2005).

Campos (2018) reiterated this glaring flaw of shift-share in relation to the model's choice of weights. The classical model being 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 industry structure has not changed during the entire duration of the subject period of analysis. This could lead to bias results especially if there is a dramatic change in the variable concerned during 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 way for the theoretical advancements of the shift-share model.

Theoretical advancements

The development of a multi-factor partitioning model (MFP) is headed by Ray in 1990 and Lemarche et al. in 2003 (as cited in Campos 2018) which primarily corrected mathematical conceptual errors of its classical predecessor. Specifically, in MFP, the usage of static weights is corrected by a dynamic version which allows industry-mixes and growth rates to vary over time through the utilization of standardized growth rates. In the study of Toh, Khan, and Lim (2004), the major criticism pointed out for shift-share is its utter disregard for possible

interactions such as 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 they intend to account for interaction effects.

In the study of Margaritis et al. (2005), the shift-share methodology was also used to analyze sectoral productivity where a possible relation between biased technological change and changes in sectoral composition was explored. Here, shift-share analysis dissected aggregate productivity growth into three components, namely: an intersectoral or “within” sector component; an “in between” (static) component; and an interaction (dynamic) component. The “within” sector component tried to calculate the (counterfactual) contribution of each industry to overall productivity growth. The “in between” component estimated the effect of changes in industry employment shares on aggregate productivity. Lastly, it was the dynamic component that 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 OECD countries are mainly dominated by the “within” sector effects with few contributions from sectoral shifts (the “static” and “dynamic” effects). The said 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).

3.2.3 Application

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

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

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

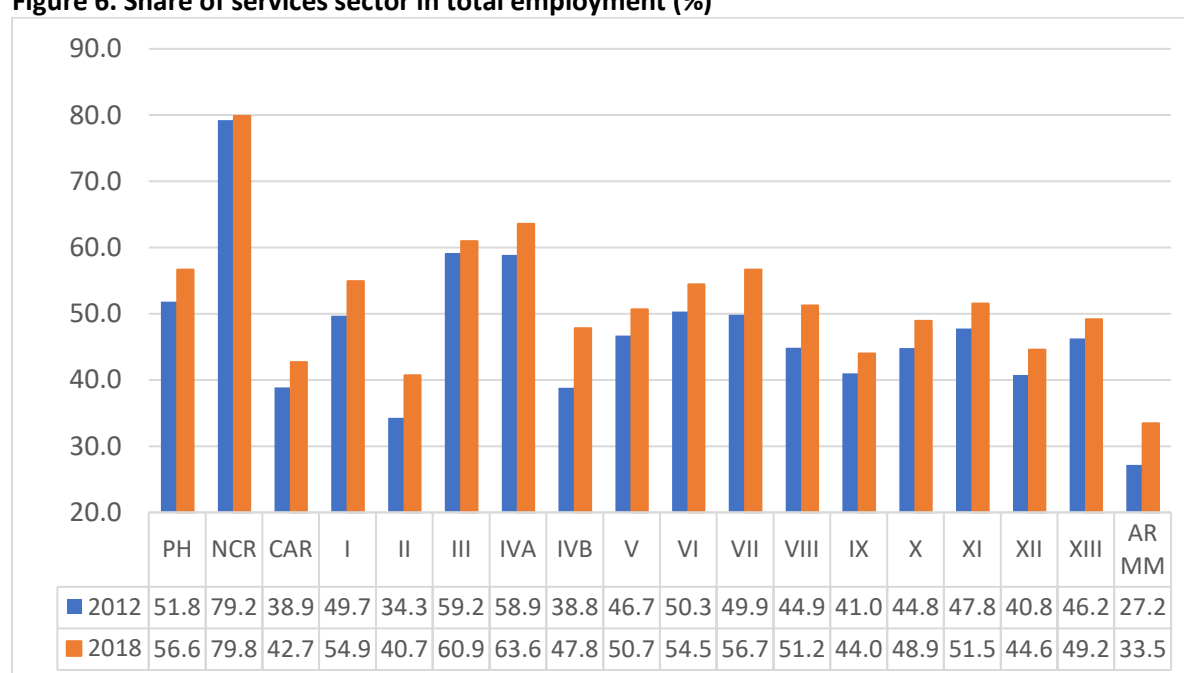
what the shift-share model merely does is to attribute a portion of change to the factor responsible for it.

3.2.4 Description of data

For this study, employment data from the Labor Force Survey (LFS) are used. The LFS was deemed suitable since it already adopts the PSIC 2009 (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 the aggregate or total Philippines and across all regions.² In the NCR where services already accounted for 79.2 of total employment, the increase in terms of percentage points was marginal. Figure 6.

Figure 6. Share of services sector in total employment (%)



From 2012 to 2018, employment in the services sector increased by 21.4 percent which was 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 6)

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

Table 6. Total employment in services sub-sectors

SERVICES SUB-SECTORS	2012	% of Total	2018	% of Total	% Change
G. Wholesale and retail trade; repair of motor vehicles 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 & 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 & 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

Sources: LFS 2018 and LFS 2012

In terms of regions, employment in the services sector increased across the board led by CALARBAZON or Region IVA with the highest growth rate of 37 percent. As Tables 7 and 8 reveal however, the results are mixed across industries and regions. In fact, the expansion of employment in all service industries occurred only in Region IVA. Moreover, other than public administration, only two service industries experienced an increase in employment in all regions. These sub-sectors 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.

Table 7. Change in total employment in services by sector and region (2018-2012)

	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
TOT	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

Notes:

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.

Sources: LFS 2018 and LFS 2012

Table 8. Percent change in total employment in services by sector and region (2018-2012) (%)

	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
TOT	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

Notes:

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.

Sources: LFS 2018 and LFS 2012

3.2.5 Results of shift-share decomposition

The results of the shift-share decomposition are presented in the following tables and figures. Note that the decomposition was done by region but are presented here by sector. Moreover, the sectors are grouped by cluster, following the classification of Browning and Singelman (1975).

DISTRIBUTIVE SERVICES

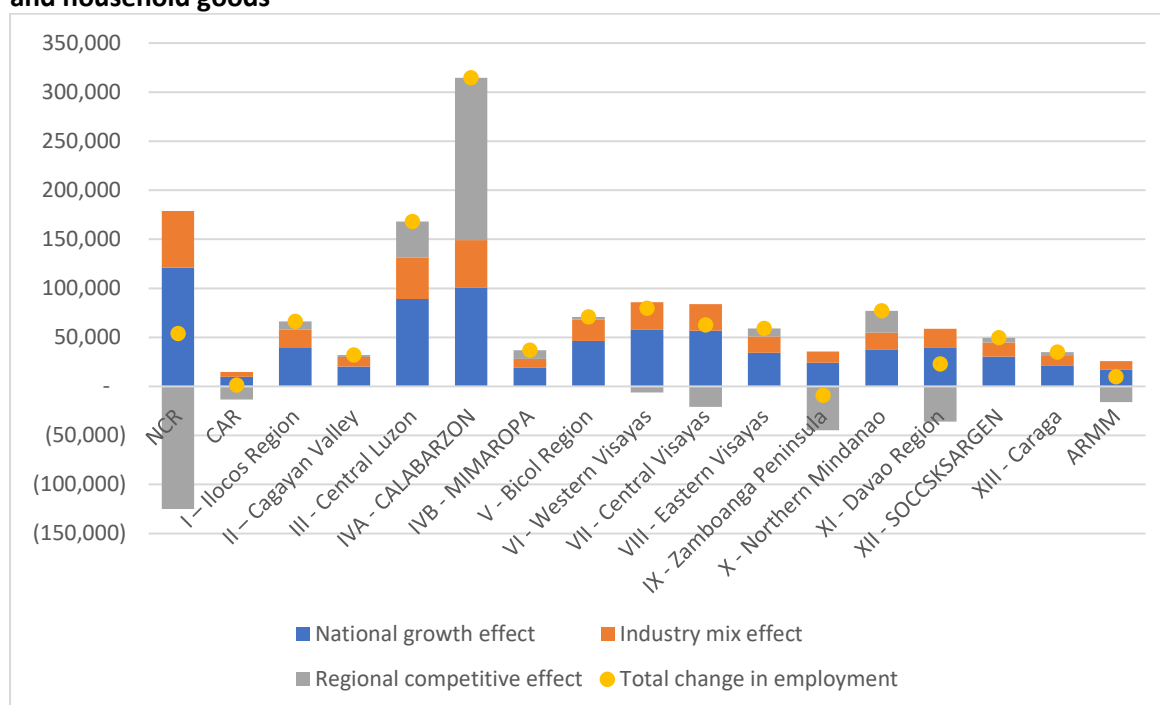
The cluster includes Wholesale and Retail trade, Transport and Storage, and Information and Communication. Distributive services could also be considered as part of producer services following Rubalcaba and Kox (2007).

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, 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. See Table 9 and Figure 7.

Table 9. Sector G - Wholesale and retail trade; repair of motor vehicles 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

Figure 7. Sector G - Wholesale and retail trade; repair of motor vehicles motorcycles and personal and household goods



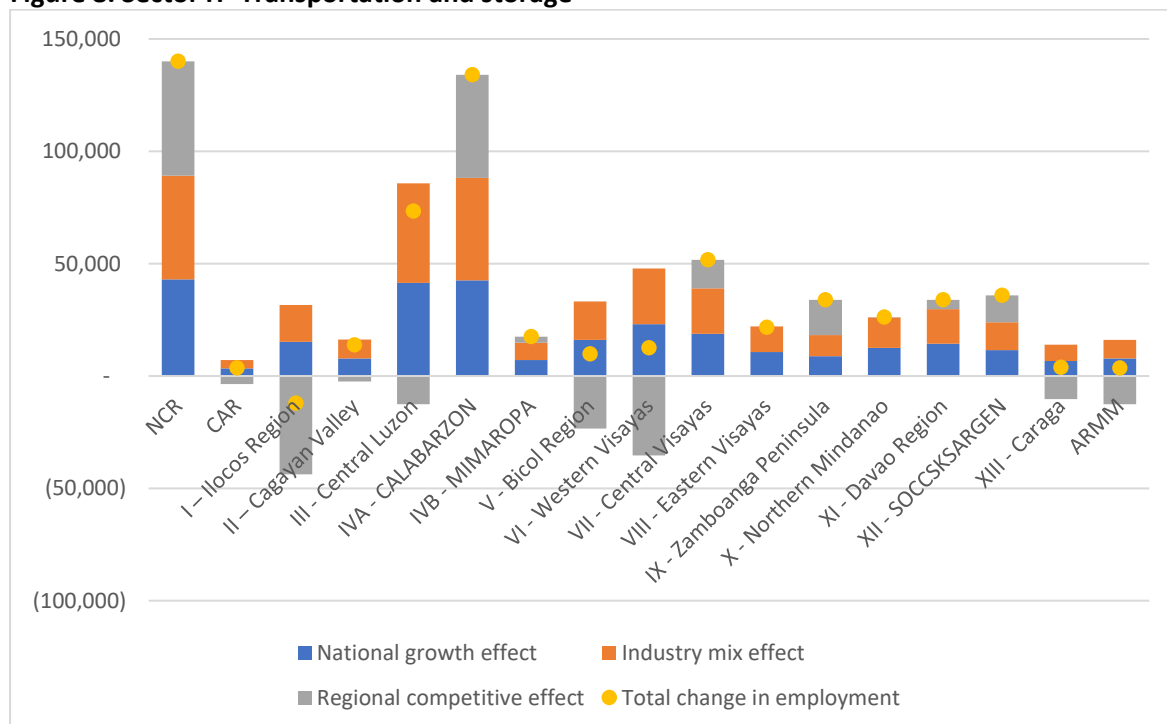
In **transportation and storage**, total employment increased by 23.05 percent or 603,312 from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. The competitive effect was positive in only 8 out of 17 regions. In the case of Region I or the Ilocos region, the regional shift was stronger than the other components resulting in a net decline in employment. See Table 10 and Figure 8.

Table 10. 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

Figure 8. Sector H -Transportation and storage



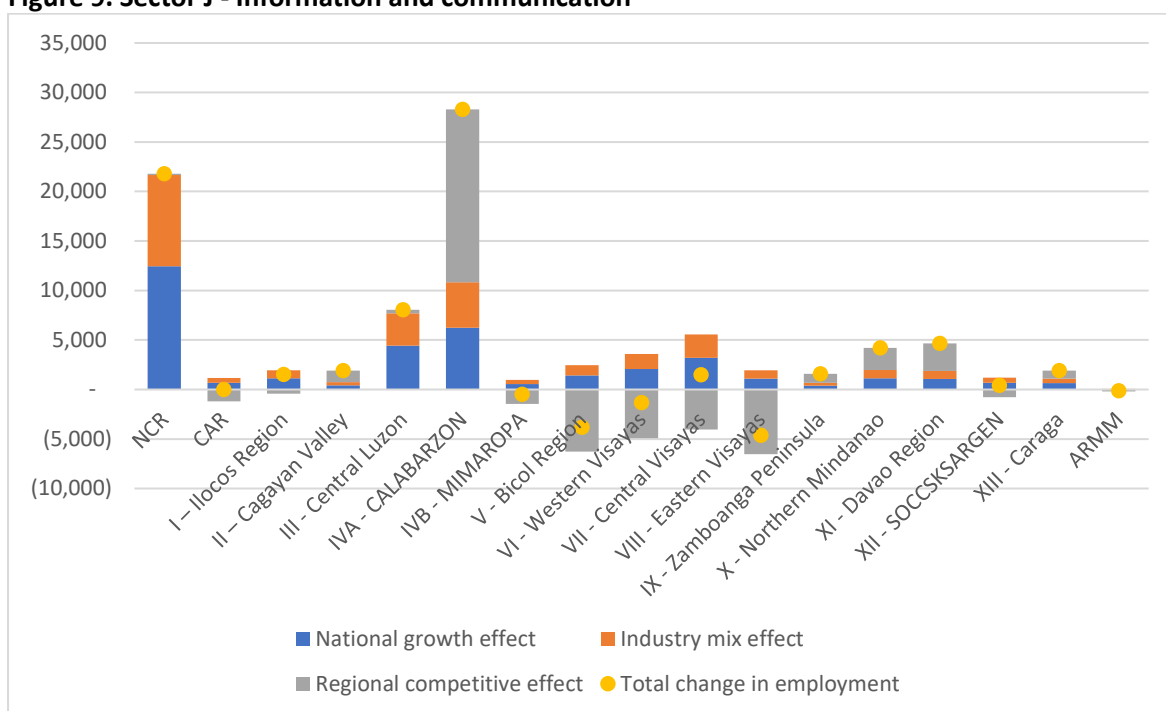
In the **information and communication** sector, total employment increased by 19.37 percent or 65,461 from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. At the regional level, 9 out of the 17 regions were not competitive. In the case of 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. See Table 11 and Figure 9.

Table 11. 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)

Figure 9. Sector J - Information and communication



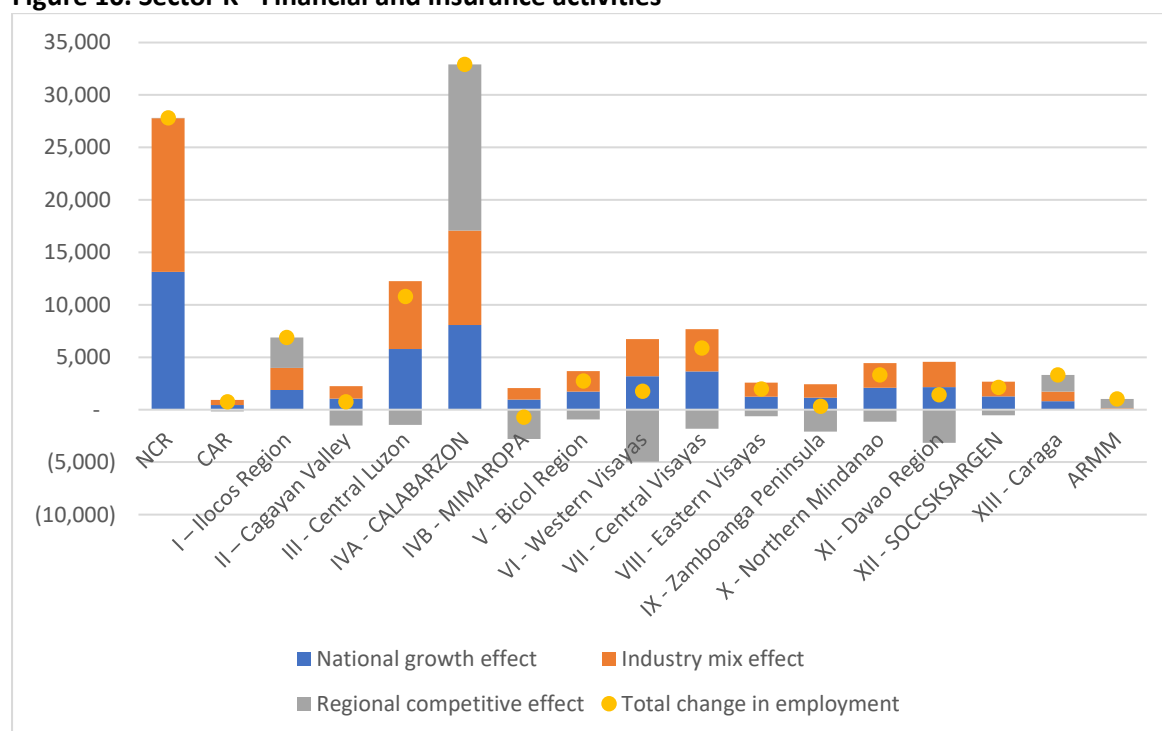
PRODUCER SERVICES

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

In **financial and insurance** services, total employment increased by 103,006 (23.55 percent) 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 the case of Region IVB or the MIMAROPA region, the regional shift was stronger than the other components resulting in a net decline in employment. See Table 12 and Figure 10.

Table 12. 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

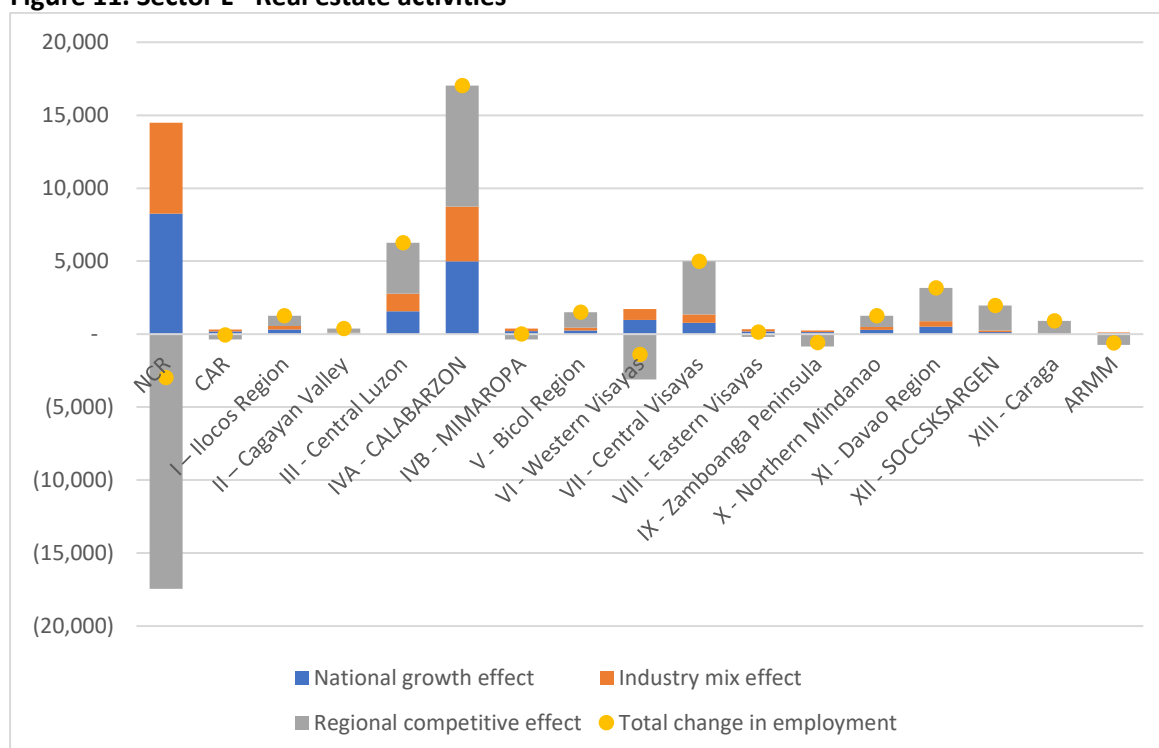
Figure 10. Sector K - Financial and insurance activities

Total employment in **real estate activities** was higher by 33,279 (19.53 percent) 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. See Table 13 and Figure 11.

Table 13. 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)

Figure 11. Sector L - Real estate activities



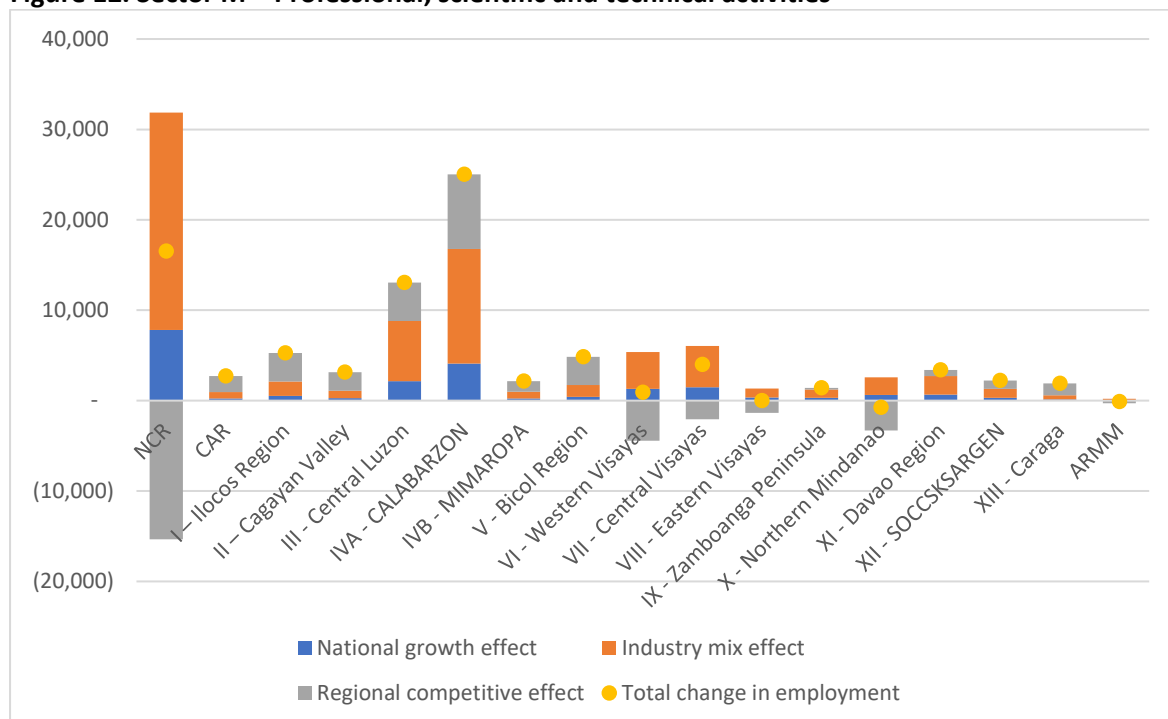
Total employment in **professional, scientific and technical activities** increased by 85,728 (45.38 percent) from 2012 to 2018, the second highest rate of expansion among all services sectors. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. However, 6 out of 17 regions had locational disadvantages. In Regions VIII, X, and in the ARMM, the regional shift was stronger than the other components resulting in a net decline in employment. See Table 14 and Figure 11.

Table 14. 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)

Figure 12. Sector M – Professional, scientific and technical activities



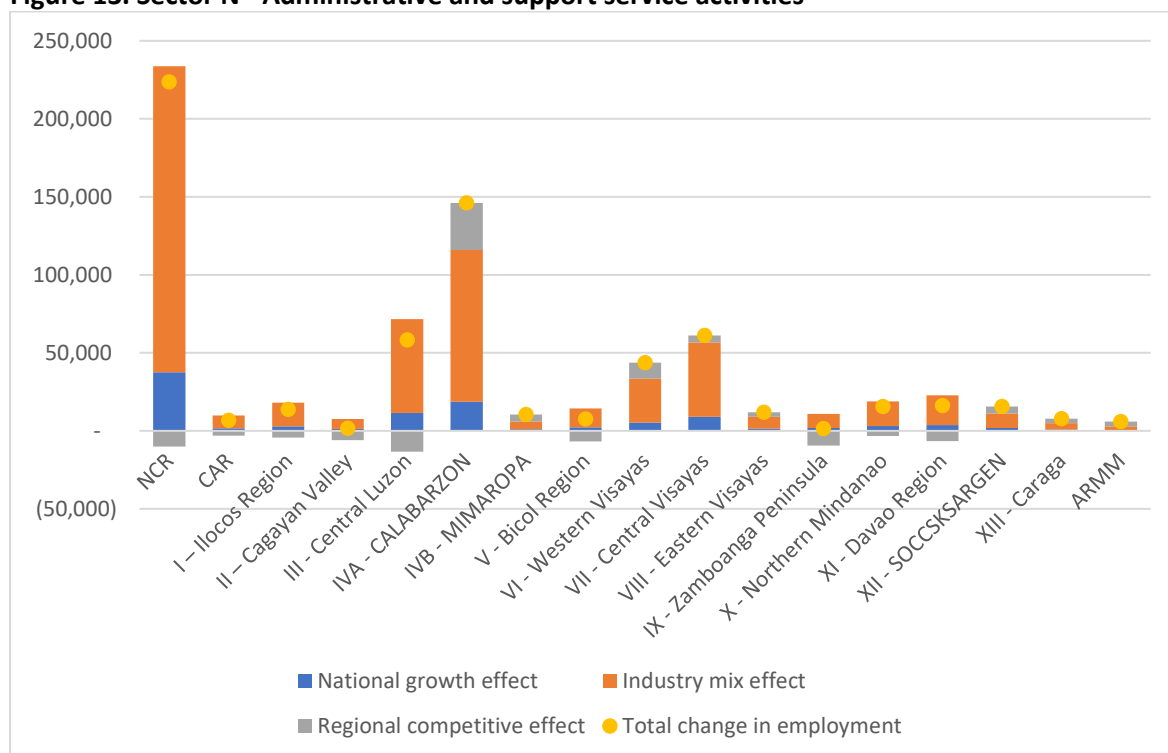
Total employment in **Administrative and support activities** increased by 647,329 (69.12 percent) from 2012 to 2019, the highest rate of expansion among all the service industries. In terms of the individual factors, both the national growth effect and the industry mix effect were positive while the regional shift was negative in 9 out of the 17 regions. However, the sectoral effect was so strong it was able to overcome locational disadvantages resulting a net improvement in employment in all regions. See Table 15 and Figure 12.

Table 15. 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

Figure 13. Sector N - Administrative and support service activities



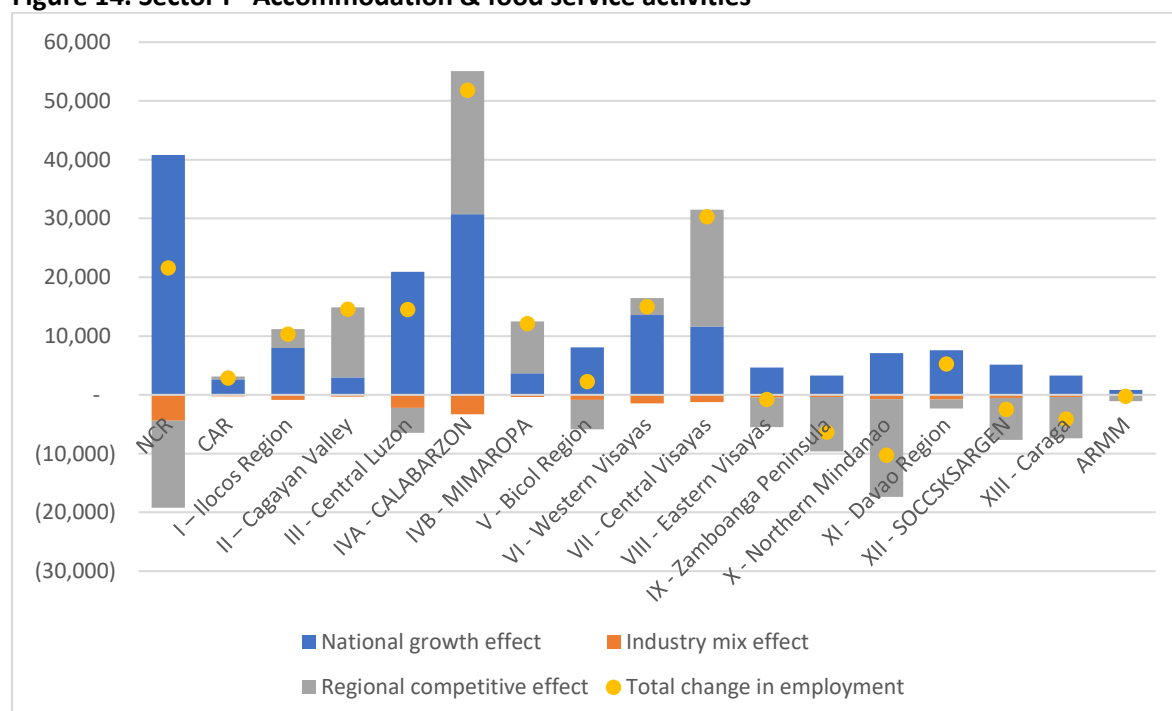
PERSONAL SERVICES

This cluster includes Accommodation and food service activities; Arts, entertainment and recreation; and Other service activities.

Total employment in **accommodation & food services activities** increased by 156,122 (9.94 percent) 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. See Table 16 and Figure 14.

Table 16. Sector I - Accommodation & 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)

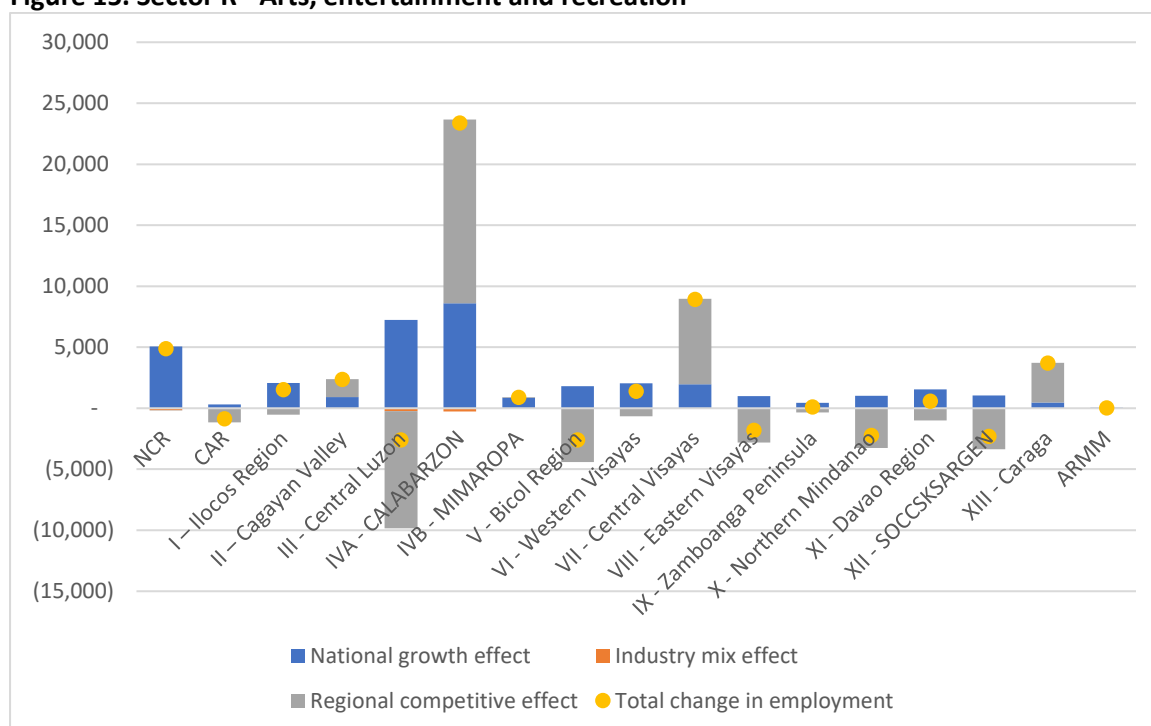
Figure 14. Sector I - Accommodation & food service activities

Total employment in **arts, entertainment and recreation** increased by 10.78 percent or 35,319 from 2012 to 2018. In terms of the individual factors, like the previous sector in this cluster, the national growth effect was positive while the sectoral effect was negative indicating industry-specific weaknesses. Only five regions had locational advantages in this sector. 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. See Table 17 and Figure 15.

Table 17. 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

Figure 15. Sector R - Arts, entertainment and recreation



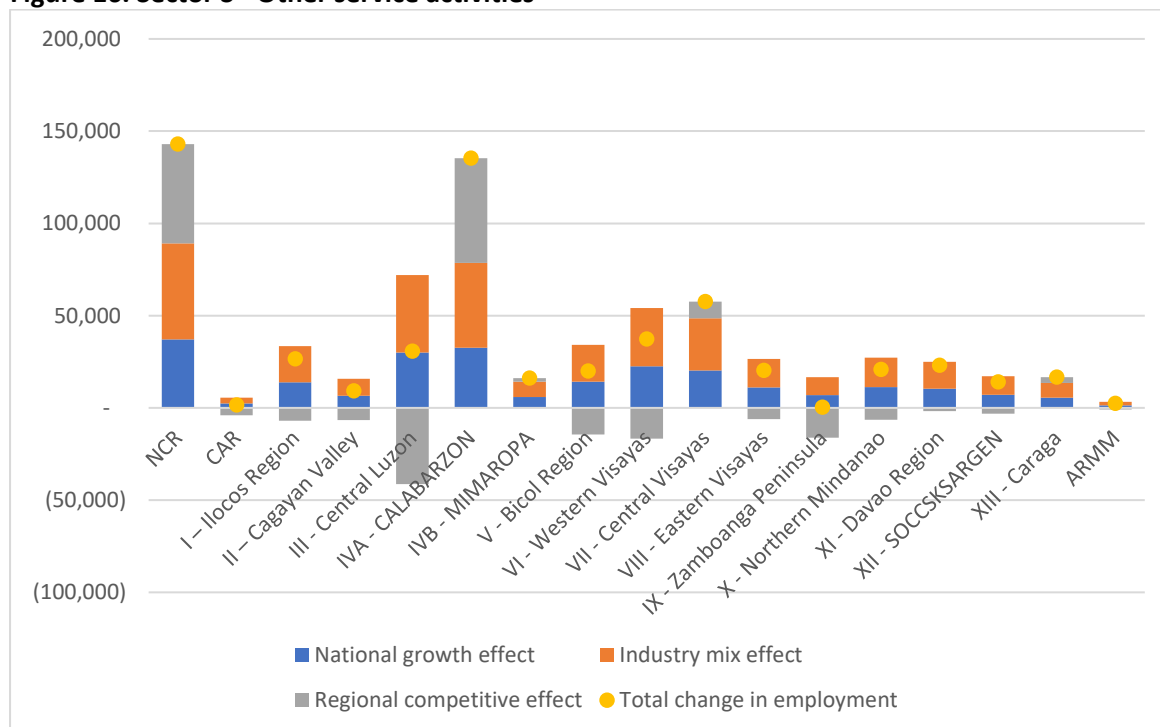
Total employment in **other service activities** increased by 574,769 (26.75 percent) from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. Even though the competitive effect was negative in 12 out of 17 regions, the other components were strong enough resulting in a net increase in employment in all regions. See Table 18 and Figure 16.

Table 18. 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

Figure 16. Sector S - Other service activities



SOCIAL SERVICES

This cluster includes Education services and Human health and social work activities.

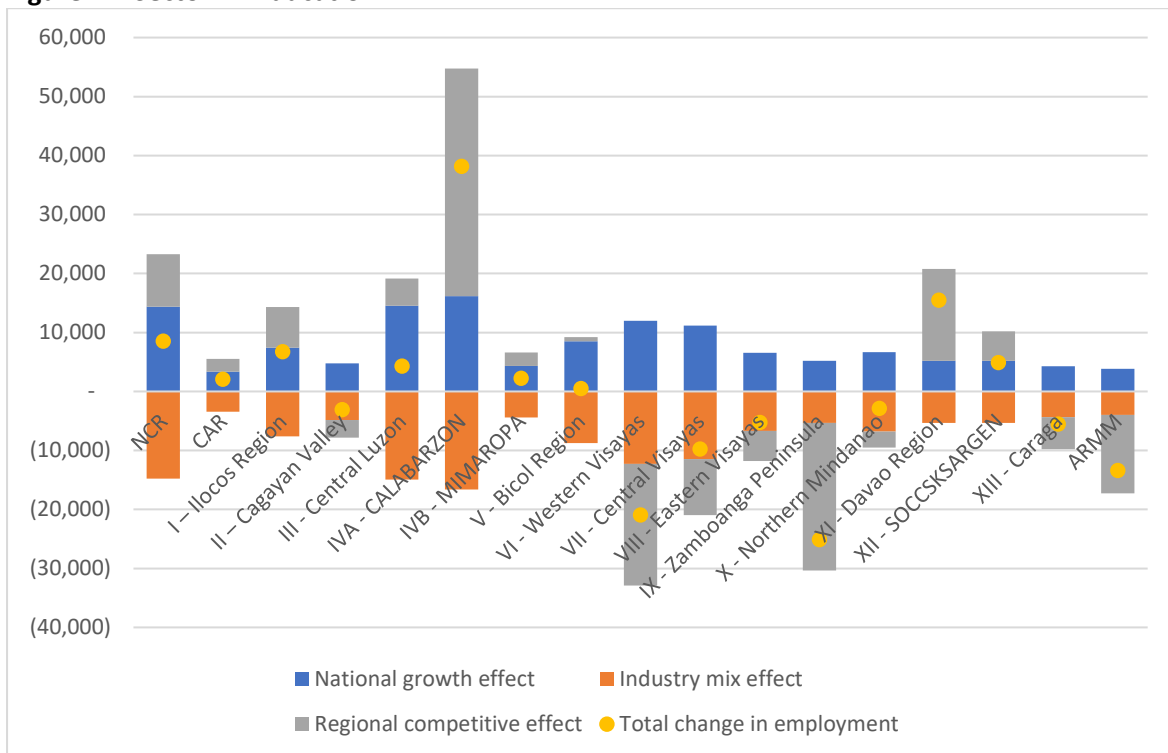
Total employment **education** services decreased by 3,382 (-0.28 percent) from 2012 to 2018, the only service industry that declined during the period. In terms of the individual factors, like all sectors the national growth effect was positive. However, the sectoral effect was negative indicating industry-specific weaknesses. Moreover, 8 regions had locational disadvantages in this sector resulting in a net decline in employment in these regions. See Table 19 and Figure 17.

Table 19. 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)

Figure 17. Sector P - Education



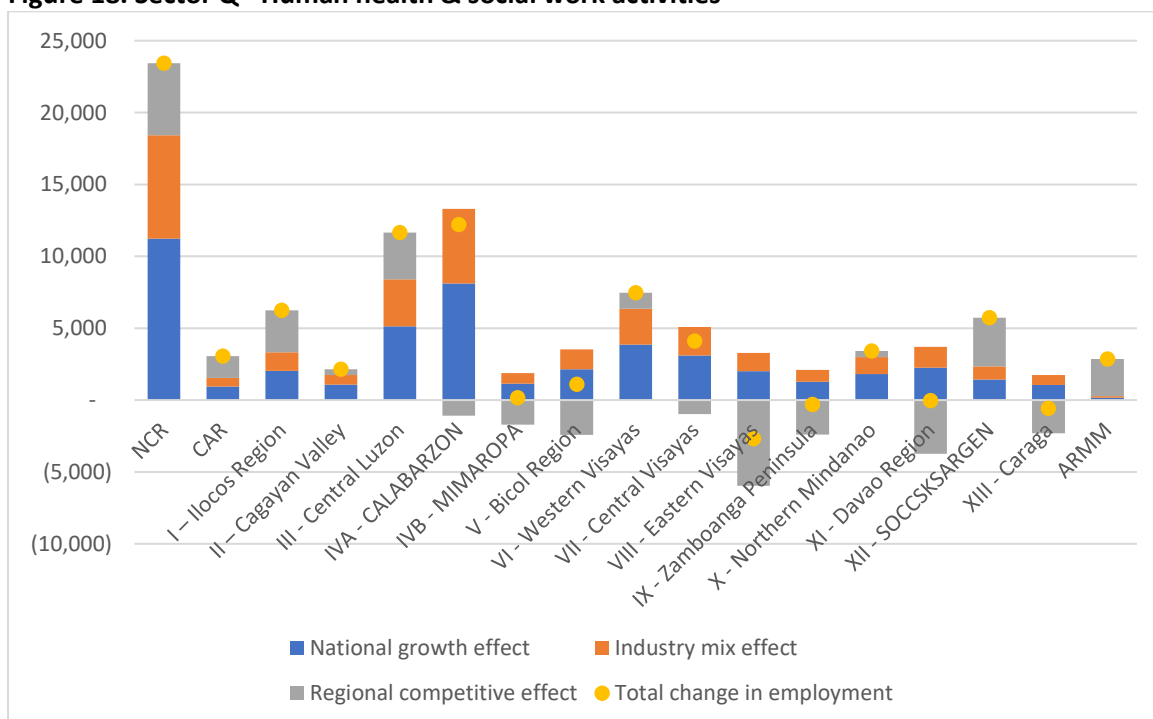
In **human health and social work activities**, total employment increased by 79,935 (18.26 percent) from 2012 to 2018. In terms of the individual factors, both the national growth effect and the industry mix effect were positive. The regional shift factor was negative in 8 out of 17 regions but in 4 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 23 and Figure 18.

Table 20. Sector Q - Human health & 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

Figure 18. Sector Q - Human health & social work activities



4. Summary and conclusion

The overall growth of the economy from 2012 to 2018 resulted a positive effect in all sectors and regions. However, some industries exhibited weaknesses, namely: Accommodation & 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 a lower total employment during the period.

Tables 21 to 23 display the results of the regional effects.

In distributive services, IVA (CALABARZON) and X (Northern Mindanao) stand out as being competitive across all relevant sectors, namely: wholesale and retail trade, transport and storage, and information and communications.

Table 21. Distributive services: Regional Shift effects

	Wholesale and retail trade; repair of motor vehicles motorcycles and personal and household goods	Transport and storage	Information and communication
NCR	(124998)	50846	117
CAR	(13234)	(3530)	(1184)
I – Ilocos Region	8374	(43729)	(425)
II – Cagayan Valley	2163	(2366)	1169
III - Central Luzon	36285	(12498)	357
IVA - CALABARZON	165176	45862	17449
IVB - MIMAROPA	8845	2609	(1439)
V - Bicol Region	2414	(23373)	(6271)
VI - Western Visayas	(6297)	(35293)	(4911)
VII - Central Visayas	(21048)	12742	(4049)
VIII - Eastern Visayas	8363	(406)	(6536)
IX - Zamboanga Peninsula	(44556)	15628	896
X - Northern Mindanao	21923	54	2242
XI - Davao Region	(35961)	4212	2767
XII - SOCCSKSARGEN	4870	11958	(786)
XIII - Caraga	3795	(10202)	814
ARMM	(16116)	(12514)	(209)

In producer services, IVA (CALABARZON) and XIII (CARAGA) exhibited locational advantages in all sectors.

Table 22. Producer services: Regional Shift

	Financial and insurance activities	Real estate activities	Professional scientific and technical activities	Administrative and support service activities
NCR	12	(17451)	(15345)	(10015)
CAR	(172)	(369)	1779	(3018)
I – Ilocos Region	2906	716	3134	(4254)
II – Cagayan Valley	(1522)	275	2033	(6007)
III - Central Luzon	(1462)	3494	4253	(13297)
IVA - CALABARZON	15854	8293	8269	30187
IVB - MIMAROPA	(2792)	(367)	1167	4501
V - Bicol Region	(933)	1035	3113	(6715)

VI - Western Visayas	(4969)	(3114)	(4448)	10271
VII - Central Visayas	(1826)	3641	(2053)	4585
VIII - Eastern Visayas	(625)	(183)	(1361)	2739
IX - Zamboanga Peninsula	(2087)	(844)	187	(9405)
X - Northern Mindanao	(1146)	759	(3318)	(3357)
XI - Davao Region	(3146)	2280	666	(6664)
XII - SOCCSKSARGEN	(547)	1718	951	4429
XIII - Caraga	1583	843	1278	2933
ARMM	872	(726)	(305)	3087

Personal services

In Personal services, Regions IVA (CALABARZON) and IVB (MIMAROPA) and VII (Central Visayas) stand out as the three regions that had positive shift effects across all services.

Table 23. Personal services: Regional Shift effects

	Accommodation & food service activities	Arts, entertainment and recreation	Other service activities
NCR	(14852)	(35)	53806
CAR	515	(1153)	(4032)
I – Ilocos Region	3244	(468)	(6890)
II – Cagayan Valley	11902	1494	(6602)
III - Central Luzon	(4225)	(9618)	(41338)
IVA - CALABARZON	24343	15062	56752
IVB - MIMAROPA	8821	57	1858
V - Bicol Region	(4976)	(4345)	(14378)
VI - Western Visayas	2887	(602)	(16738)
VII - Central Visayas	19904	7007	9038
VIII - Eastern Visayas	(4967)	(2786)	(6176)
IX - Zamboanga Peninsula	(9301)	(337)	(16187)
X - Northern Mindanao	(16594)	(3215)	(6381)
XI - Davao Region	(1537)	(941)	(1764)
XII - SOCCSKSARGEN	(7094)	(3316)	(3211)
XIII - Caraga	(7070)	3231	3181
ARMM	(1000)	(33)	(939)

Social services

Finally, NCR, CAR, III (Central Luzon), and SOCCSKSARGEN (XII) in the two social services.

Table 24. Social services: Regional Shift effects

	Education	Human health & social work activities
NCR	8857	5011
CAR	2138	1511
I – Ilocos Region	6906	2909
II – Cagayan Valley	(2971)	392
III - Central Luzon	4619	3260
IVA - CALABARZON	38542	(1085)
IVB - MIMAROPA	2302	(1709)
V - Bicol Region	691	(2418)
VI - Western Visayas	(20638)	1123
VII - Central Visayas	(9474)	(974)
VIII - Eastern Visayas	(5095)	(5967)
IX - Zamboanga Peninsula	(25009)	(2403)
X - Northern Mindanao	(2706)	431
XI - Davao Region	15574	(3725)
XII - SOCCSKSARGEN	4995	3382
XIII - Caraga	(5432)	(2310)
ARMM	(13299)	2576

Out of the total 204 regional service industries, 109 (53.43 percent) displayed negative regional shift effects.

As Manasan and Mercado (1999) point out, regional development strategies can be redesigned to factor in constraints unique to the region such as its typographic characteristics. Developing localized roadmaps can be useful in facilitating the structural transformation of regional economies.

Using a simple shift-share decomposition technique, this paper identified the regions with locational disadvantages in certain service industries. When used in combination with other analysis the technique 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 that influence sectoral changes at the regional level. Moreover, this paper adopted the standard shift-share model and examined only changes in employment due to data limitations. Future work can 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 of the country.

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