

Regional Economic Development of Pabna District in Bangladesh: A Shift Share Approach

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ABSTRACT

Shift share analysis is an effective regional planning tool to explore the regional competitiveness and industrial structure in a region. The aim of this study is to make a comparative analysis in regional employment of Pabna district for sustainable development through the contribution of shift share components. Pabna district is selected as the study area because it is economically important in Bangladesh. In recent years, there are several factories such as weaving, pharmaceuticals, textile industries, and many business and service sectors have been grown in the region and transforming the agricultural economy of Pabna to an industrial society. The three shift share components i.e. national shift share, proportionality shift component and differential shift component analyzes the employment data of two periods 2003-2013 and 2013-2023 and found out positive results in each components. From this study, it is also cleared that, the total employment growth is increasing in Pabna district in 2023. Pabna district also has a locational advantage in economic development. Policymakers get helps from this study to make a regional development plan and to perceive the regional economic growth and sustainability of the region.

Keywords:- Pabna district, national shift share, proportionality shift component, differential shift component, regional economic development

INTRODUCTION

The People's Republic of Bangladesh is a densely populated deltaic country in South Asia bordering the Bay of Bengal, India and Myanmar. Bangladesh is expected to reach a population of 170 million by 2020 within 147,570 square kilometers surface area [1]. This country in the list of the developing nations is blessed with numerous natural resources such as huge reserves of oil, natural gas, coal, timber and so on. Foreign donors are granting financial aids for reformation and infrastructure improvement of the country. The country has made significant progress

in reducing poverty, supported by sustainable economic growth. Based on the per capita international poverty line, it was reduced from 44.2 percent in 1991 to 14.8 percent in 2016/17 [2]. Regional development involves an intervention with the existing pattern of economic or employment related activity of a region and requires knowledge about the region's structure and growth [3]. Absence of inclusiveness in decision making, poor governance and lack of proper development planning create the unsustainable economic growth in Bangladesh. All these reasons work behind

the poverty of people and disintegrated regions in the country. To cope with this problem of each region's regional development has to be analyzed to reinforce the economic sectors.

Shift share analysis determines the extent of national development and the impact of regional and local factors on overall regional employment growth. It is said that traditional shift share component analysis cannot differentiate the impact of regional structures from the local benefits of regional growth [4]. This tool is applied in the analysis of regional productivity, inter-regional comparison, changes in occupational composition, migration turnaround and so on. The different factors of regional productivity as like as Micro finance also contribute in eradicating the poverty as well as contributing to the economic and social development of the entire community [5]. Pabna district, an economic fast growing region of Bangladesh, transforming the agriculture based economy into industrial society create more job opportunities and more educational institutions, banks, real estate sectors is built up in recent years. That's why this region is selected as the study area. The aim of this study is to show regional employment growth and shift share contribution of Pabna district and to make a comparative analysis of the region for sustainable development. This study also compared the employment data of different economic activity sectors based

on three shift share components between 2003 to 2013 and 2013 to 2023 of Pabna district which is an objective of the study. This analysis will be helpful for policymakers, urban planners and regional analysts to determine how much each component contributes to local economic growth and to identify a local economy's competitive industries other regions of Bangladesh as well as any other region of the world with similar context.

STUDY AREA

Pabna, one of the oldest districts of Bangladesh, was established in 1832. It is located between 23°48" and 24°21" north latitudes and between 89°00" and 89°44" east longitudes [6,7]. It is the southern district of Rajshahi Division and one of the "economically important districts" of Bangladesh. The total area of the district is 2,37376.13 sq. km. The total population of Pabna district is 2523179 [7]. The economy of Pabna district is predominantly agricultural and cottage industry based. Weaving and thread work is the important source of income of the people of the district [6]. The other employment economic activity sectors are mining, education, financial institutions, construction and so on. Establishment of several factories in the district, such as pharmaceuticals, cosmetics and textiles, spices, food, and transforming the agricultural economy of Pabna to an industrial society.

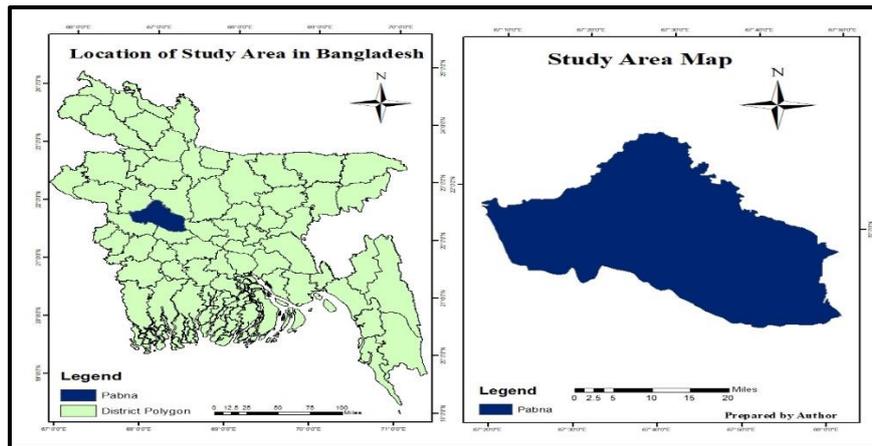


Fig.1:- Location of study area

MATERIALS AND METHODS

To meet the aims of the study, the employment data of different economic activity sectors in all districts of Bangladesh collected for several time frames from the Bangladesh Bureau of Statistics office of Pabna district and website. All districts data had been compiled to find out the national employment change. Then by applying the geometric projection method for calculation of employment data based on past years. This method assumes that the percentage of increase in population from decade to decade is constant. The future persons of every sector of Pabna district have been calculated by the following formula [8].

$$P_n = P (1 + I_g/100)^n$$

Where, P_n = employer of each economic sectors in 2023, I_g = average % increment per decade, P = employer of each economic sectors in 2003 and n = number of decades.

Then, the shift share analysis formula of the regional growth of Pabna district between 2003 to 2013 and 2013 to 2023 had been determined. During the calculation process, the three shift component (national share, proportionality shift and differential shift) for every activity sector of Pabna district had been obtained. Shift share is a regional analysis method that seeks to determine how much national work growth can be attributed to national trends and how much is due to

unique regional factors [9]. Shift-share analysis divides local industry employment change into three categories: The national share component (N) symbolizes the amount by which regional employment could have increased if it had increased at the national rate during the study period. This is the model in areas from which deviations can be measured [10].

The 'Shift' component characterizes any deviations in regional employment growth from the national share. It is positive in terms of prosperous growth and negative in relatively depressed areas. Net shifts in any region can be divided into two components: The 'Proportionally shift Component' (P), occasionally known as the 'structural' or 'industrial mix' component, methods the amount of net regional shift attributable to the composition of industrial sectors in the region.

This section would be positive in areas concentrating in nationally fast growing areas and negative in areas focusing in nationally in slow growing or even decreasing areas [10]. The 'Differential shift' (D) is sometimes referred to as 'locational' or 'regional' element, is the rest. The net measures the extent of regional change as specific industrial sectors in this national region grow faster or slower due to internal local factors. Thus, a region with such good resources or

local resource advantage will have a positive differential shift component, whereas a region with local disadvantages will have a negative component [10].

In algebraic notation, the various components can be expressed as follows:

National Share Component, $N_j = \sum [E_{j0} (E_t/E_o) E_{j0}]$

Proportionality Shift Component, $P_j = \sum [(E_{it}/E_{io}) - (E_t/E_o)] E_{ij0}$

Differential Shift Component, $D_j = \sum [(E_{ijt}/E_{ij0}) - (E_{it}/E_{io})] E_{ij0}$

Total Regional Growth, $G_j = E_{jt} - E_{j0} = N_j + P_j + D_j$

Where, E_j = total employment in region j ;

E = total national employment; o , t =

initial and terminal periods and i = industry subscript.

RESULTS AND DISCUSSION

National Share Component of Pabna District

National share for Pabna district (2003 to 2013) is 128165.0624. It represents the extent to which employment in Pabna could be increased (2003-2013) if it increased at a national rate during the study period.

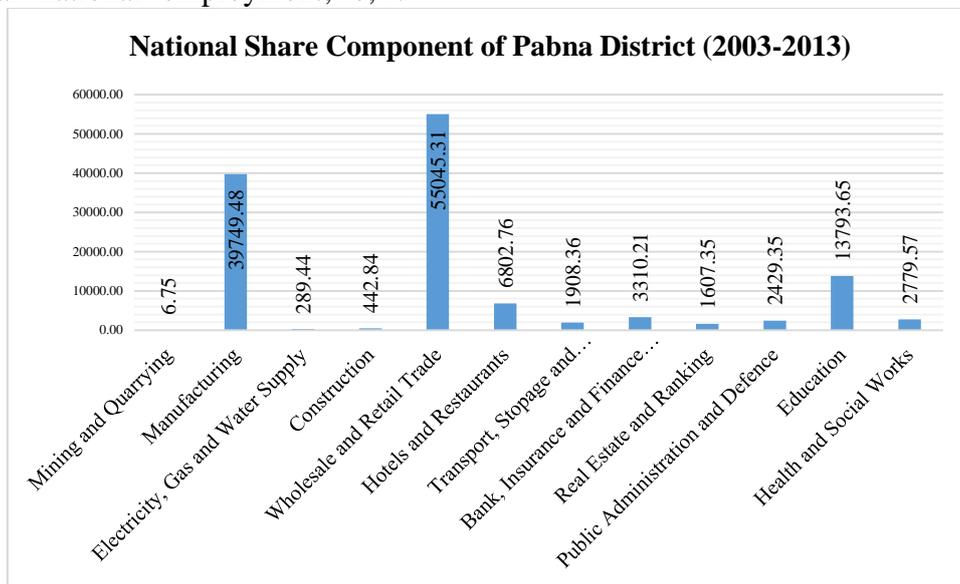


Fig.2:-National share components of different activity sectors based on employment data of Pabna district between 2003 and 2013

Figure 2 indicated that manufacturing and wholesale and retail trade and education sectors were growing more than the

national rate but other sectors position was very low.

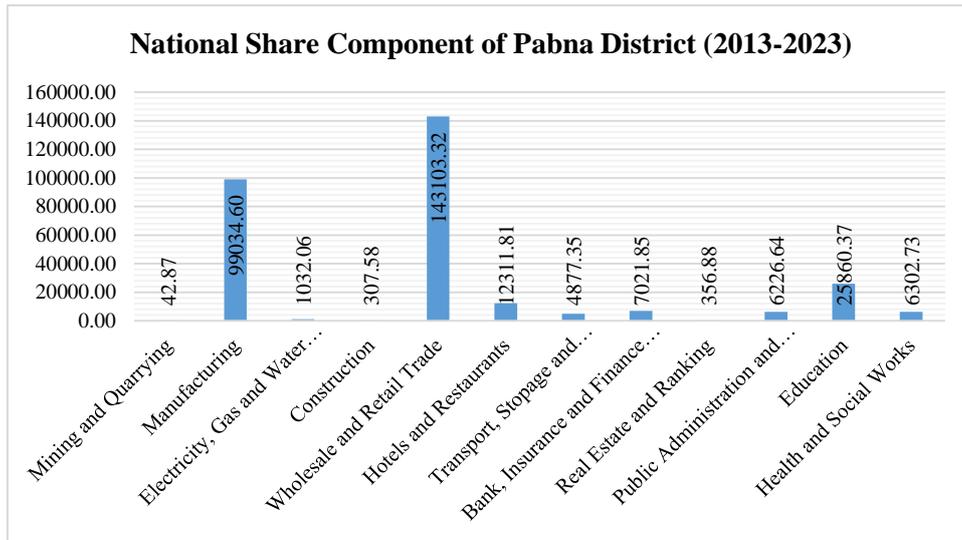


Fig.3:-National share components of different activity sectors based on employment data of Pabna district (2013-2023)

National share component for Pabna district (2013 to 2023) is 306478.0381. From Figure 3, it can be interpreted that the employment growth rate at Pabna district over the study period will be less than the national growth rate. The most growing sector of this region will be the wholesale and retail trade sector more than

the national rate. By comparison above two figure 2 and 3, most of the sector's employment will be growing slowly from 2013 to 2023 than the previous years except construction, wholesale and trade sector. The total differential shift component is too much from 2013 to 2023 than before 10 years.

Proportionality Shift Component of Pabna District

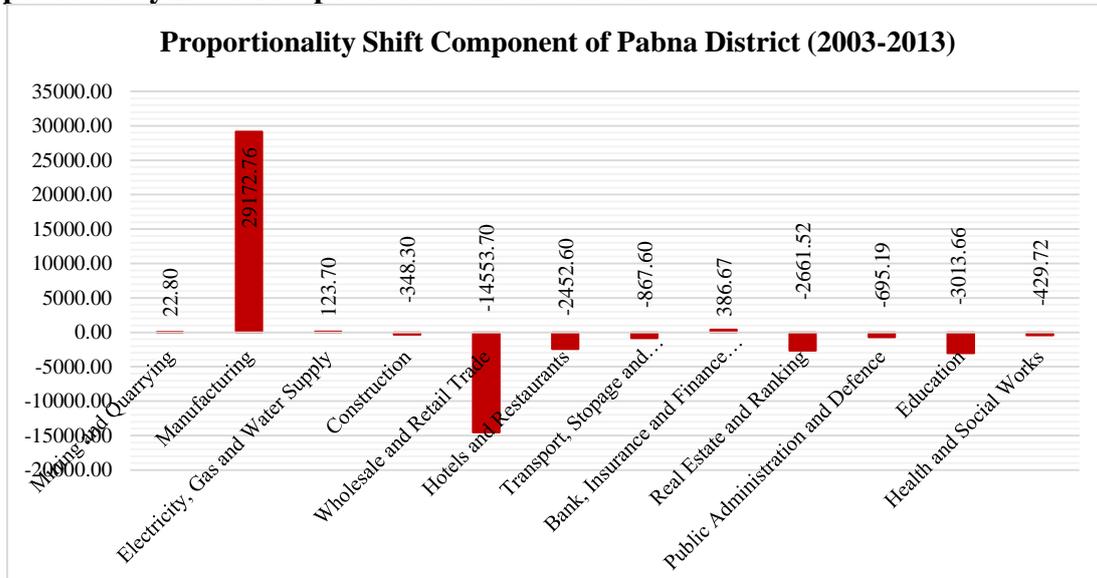


Fig.4:-Proportionality shift components of different activity sectors based on employment data of Pabna district (2003-2013)

The value of 4683.638342 illustrates a net shift in Pabna district which is responsible

for the composition of the industrial sector in this district. This factor was positive

because the region was one of the fastest growing sectors in the nation, especially in the areas of mining and drilling, power,

water and gas supply, and other sectors such as banking, insurance and finance which have shown in Figure 4.

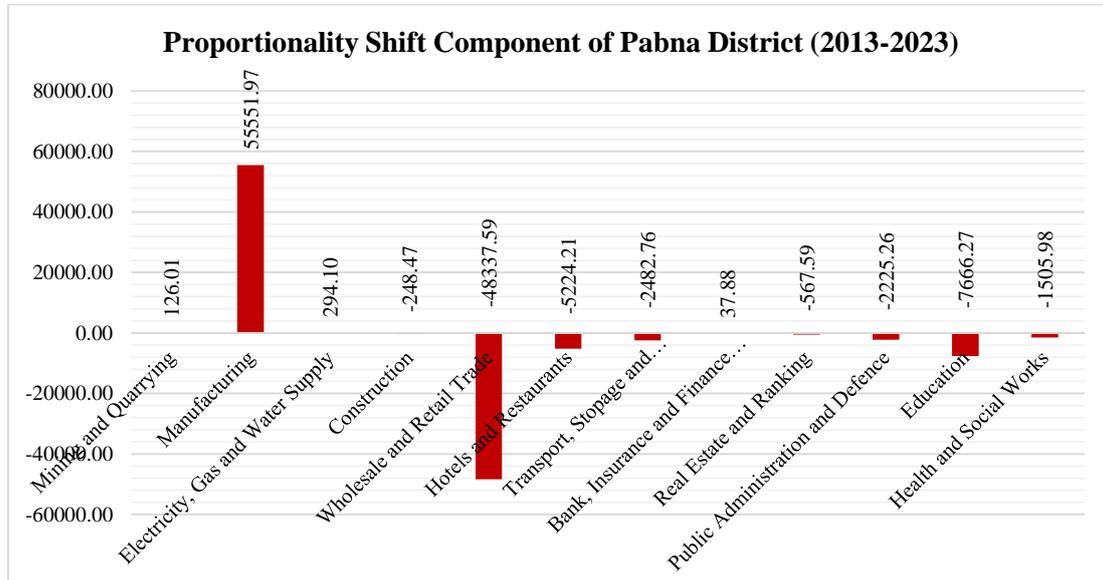


Fig.5:-Proportionality shift components of different activity sectors based on employment data of Pabna district (2013-2023)

The amount -12248.17795 indicated the less net shift than the previous periods. It is cleared that; the more employment opportunities will be decreasing in the

region in 2023. Manufacturing sector's high value of Pabna district indicated the more specializing in nationally growing sector.

Differential Shift Component of Pabna District

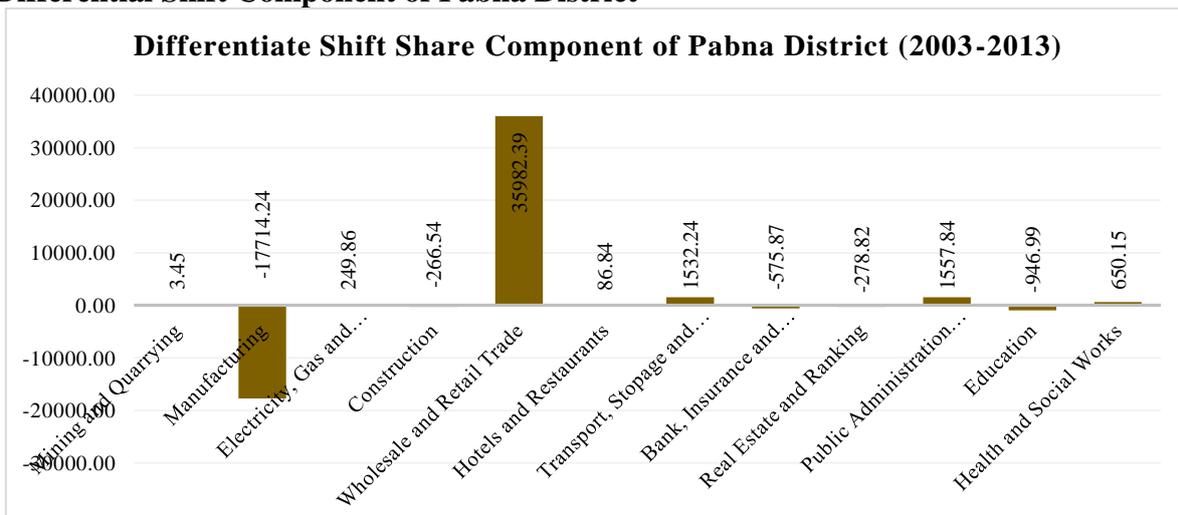


Fig.6:-Differential shift components of different activity sectors based on employment data of Pabna district (2003-2013)

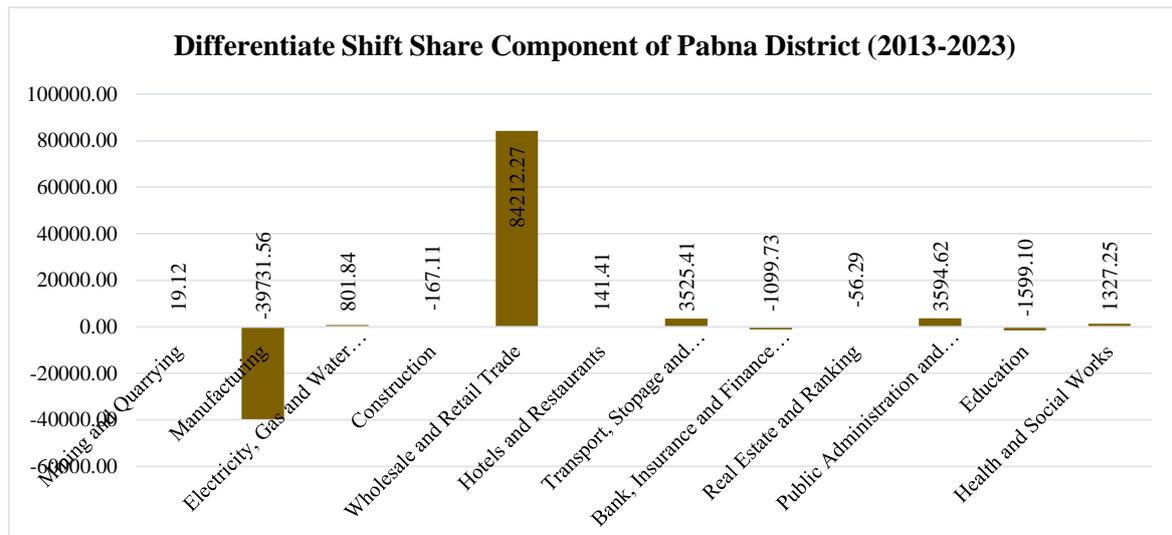


Fig.7:-Differential shift components of different activity sectors based on employment data of Pabna district (2013-2023).

This component is positive in two periods for Pabna district which indicated that this region has a locational advantage and it has enough resources (Figure 6 and 7). In the 2003-2013 period, most of the sectors were growing except manufacturing, construction, bank insurance and finance institutions and education sector than nationally owing to internal locational factors. In 2013-2023 period, the Figure 7 also showed the same result. But the total differential shift component value is more in 2013-2023 than the previous period. Total regional employment growth in Pabna district (2003-2013) is 153129 is a positive value but less than (2013-2023) period is 345198. This amount will give us a progressive status of employment growth in Pabna district in future days.

CONCLUSION

Shift share analysis is an effective tool for studying the industrial structure of a region and regional competitiveness. In Pabna district, the total regional growth is positive in two periods and it also depicted that the total employment will be increasing 146506, 319245, and 712196 in 2003, 2013 and 2023 years in respectively. This study also found all positive results of three components such as national shift

share, proportionality shift share and differential shift component. From these findings, it can be said that Pabna district has enough resources and locational advantages in economic development. However, in order to strengthen the economic condition of Pabna district, some areas like construction, real estate, transport, stoppage and communication sectors need to be improved.

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APPENDICES

Table 1:-Employment Data Projection

Activity Sector	Persons in 2003	Persons in 2013	Persons in 2023
Mining and Quarrying	7	40	228
Manufacturing	41200	92408	207263
Electricity, Gas and Water Supply	300	963	3091
Construction	459	287	179
Wholesale and Retail Trade	57054	133528	312506
Hotels and Restaurants	7051	11488	18717
Transport, Stoppage and Communication	1978	4551	10470
Bank, Insurance and Finance Institution	3431	6552	12512
Real Estate and Ranking	1666	333	66
Public Administration and Defense	2518	5810	13405
Education	14297	24130	40725
Health and Social Works	2881	5881	12004
Others	13664	33274	81027
All Sector	146506	319245	695653

Table 2:-Total Regional Growth of Pabna District (2003-2013)

Activity Sector	National Shift share Component	Proportional Shift Component	Differential Shift Component	Total
Mining and Quarrying	6.753552618	22.79967666	3.446770726	26.10646
Manufacturing	39749.48112	29172.76227	-17714.24339	86636.49
Electricity, Gas and Water Supply	289.4379693	123.6974072	249.8646235	163.2708
Construction	442.8400931	-348.2963854	-266.5437077	361.0874
Wholesale and Retail Trade	55045.31301	-14553.69942	35982.38642	4509.227
Hotels and Restaurants	6802.757073	-2452.598589	86.84151609	4263.317
Transport, Stoppage and Communication	1908.361011	-867.597514	1532.236503	-491.473
Bank, Insurance and Finance Institution	3310.205576	386.6676969	-575.8732729	4272.747
Real Estate and Ranking	1607.345523	-2661.523985	-278.8215385	-775.357
Public Administration and	2429.349356	-695.1890064	1557.83965	176.3207

Defense				
Education	2429.349356	-3013.65969	-946.9891358	362.6788
Health and Social Works	2779.569299	-429.724117	650.1548181	1699.69
All Sector	116800.7629	4683.638342	20280.29925	101204.1

Table 3:-Total Regional Growth of Pabna District (2013-2023)

Activity Sector	National Shift share Component	Proportional Shift Component	Differential Shift Component	Total
Mining and Quarrying	38.59172924	130.2838666	19.69583272	149.1798
Manufacturing	89154.6129	65431.9567	-39731.50009	194318.1
Electricity, Gas and Water Supply	929.0958816	397.0686771	802.0654413	524.0991
Construction	276.8956573	-217.7800928	-166.6624054	225.778
Wholesale and Retail Trade	128826.9106	-34061.17672	84212.43197	10553.3
Hotels and Restaurants	11083.54464	-3995.951296	141.4884891	6946.105
Transport, Stoppage and Communication	4390.773995	-1996.17608	3525.38338	-1130.79
Bank, Insurance and Finance Institution	6321.32525	738.3989363	-1099.71486	8159.439
Real Estate and Ranking	321.276146	-531.9852862	-55.73083572	-154.978
Public Administration and Defense	5605.448673	-1604.069947	3594.538669	406.8401
Education	23280.46067	-5086.354362	-1598.296695	19792.4
Health and Social Works	5673.948992	-877.1980326	1327.164348	3469.587
All Sector	275902.8851	18327.01636	50970.86324	243259