A Study of Korean Business Demography

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1. Introduction

Businesses are fundamental in a national economy and continually alter their structures as the stages of creation, expansion, reduction, and destruction are repeated because of the ever-changing economic situation. These structural changes can be used in understanding the current extent and the cause of changes in economic structure and business fluctuation since they can provide an empirically based overview of the composition of the industrial structure. Indeed, there is a growing need and importance for analyzing business demography, including the birth and death of businesses, as the economic situation begins to rapidly transform. Especially, data based on the birth and death of businesses can provide important indicators in terms of this economic dynamism. In this respect, creating data on the birth and death of businesses carries an important significance in that this data can supply basic statistical material in preparing a response to changes in industrial structure and business fluctuation. As a result, conducting research on business demography has already received a lot of attention from many countries, including the OECD countries.
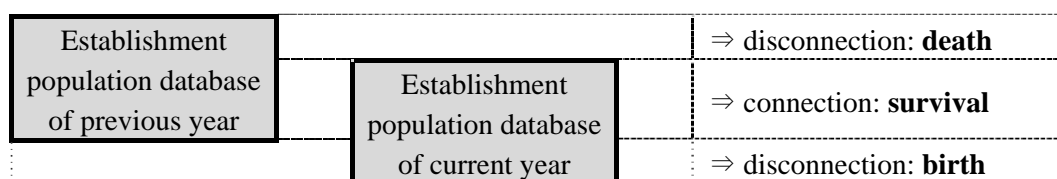
Most of the OECD countries realize the importance of statistics linked to business demography and are creating related statistics to reflect the significance in understanding the life cycle of businesses. In addition, many international organizations, such as the UN and OECD, are actively discussing the topic related to business demography. Korea is also becoming increasingly interested in business demography, including the birth and death of businesses, but in practice, there is a lack of research on this topic despite the growing interest. This type of research would contribute greatly to furthering the development of Korean business demography.

In this paper, the birth and death of Korean establishments is examined using data from 2004 to 2009 from the establishment population database constructed by Statistics Korea. In Korea, businesses are basically classified by two types, enterprise and establishment, based on the SNA (System of National Accounts, 2008). Of these two types, this research produces statistics related to business demography, including birth and death, based on establishments with the reason being that an establishment has a wide range of applications in Korea, as compared with an enterprise, considering that most databases related to businesses which are created by Statistics Korea are composed of establishment units.

2. Determining the business stage of a Korean establishment

Establishments are classified by 'birth', 'survival', or 'death' through the comparison of establishment population databases between previous year and current year. The specific evaluation concerning the business stage of a Korean establishment depends on its unique identification number, which is generated according to "the continuity criterion for identical establishment".

Figure 1. Methods determining the birth and death of establishments using their unique identification numbers

Establishment population database of previous year		⇒ disconnection: **death**
	Establishment population database of current year	⇒ connection: **survival**
		⇒ disconnection: **birth**

The continuity criterion for identical establishments is an application based on "the OECD continuity rules for the enterprise". This continuity criterion depends on three factors concerning each establishment: a principal activity, a main location, and an owner (representative). According to this continuity criterion indicated in Table 1, an establishment fundamentally loses its continuity status if two or more of the three factors are changed at the same time.

Table 1. Continuity criterion for identical establishments

Principal activity		Main location	Owner	Identity of establishment	
Major change	Minor change			Natural person	Legal person
	no change	no change	no change	same	same
	no change	no change	change	same	same
	no change	change	no change	same	same
	no change	change	change	same	same
no change	change	no change	no change	same	same
no change	change	no change	change	different	same
no change	change	change	no change	different	same
no change	change	change	change	different	same
change		no change	no change	different	same
change		no change	change	different	same
change		change	no change	different	same
change		change	change	different	same

3. Results on Korean business demography

In this research, the results of the birth and death of establishments in Korea are produced annually. The reasons for this are that most survey data for constructing the establishment population database is generated annually and that the annual results permit ready comparisons with a lot of other statistical data which is produced annually.

Table 2 represents the number of newly launched establishments and the number of establishments that disappeared from 2004 to 2009. According to the results of Table 2, on average, 595,336 establishments were launched while 577,501 establishments disappeared every year. On the whole, both the number of launched establishments and the number of the establishments that disappeared are slightly decreased after 2005. However, the number of total establishments increased within the time period except in 2008 which experienced the financial crisis. This signifies that the number of launched establishments is greater than that of the establishments that disappeared. In particular, 519,531 establishments were newly launched while 491,665 establishments disappeared in 2009. As compared with 2008, the number of establishments that disappeared greatly decreased as compared to that of the launched establishments even though there was a decrease in both the number of newly launched establishments and number of establishments that disappeared. Launched establishments decreased by 48,594 whereas establishments that disappeared actually decreased by 88,094.

Table 2. Annual number of newly launched establishments and number of establishments that disappeared

Year	Number of launched establishments	Number of establishments that disappeared	Variation in total establishments	Total number of establishments
2004	625,598	619,548	6,050	3,192,336
2005	706,389	687,053	19,336	3,211,672
2006	582,997	556,269	26,728	3,238,400
2007	569,377	530,714	38,663	3,277,063
2008	568,125	579,759	-11,634	3,265,429
2009	519,531	491,665	27,866	3,293,295
Total	3,572,017	3,465,008	107,009	19,478,195
Average	595,336	577,501	17,835	3,246,366

In addition, this research analyzes the survival rate of newly launched establishments during the survival period to produce information on the probability that they will continue to operate without closure of business. The k year survival rate of the establishments which are newly launched at time t is defined by the value of the number of newly launched establishments at time t which continue to operate without closure of business until time (t+k) divided by the total number of newly launched establishments at time t.

Table 3 indicates the result on the annual survival rate of 3,052,486 establishments which were newly launched from 2004 to 2008.

Table 3. Annual survival rates of newly launched establishments

Year	Number of launched establishments	Survived 1-year	Survived 2-year	Survived 3-year	Survived 4-year	Survived 5-year
2004	625,598	437,173 (69.88)	342,350 (54.72)	283,506 (45.32)	237,495 (37.96)	209,083 (33.42)
2005	706,389	516,268 (73.09)	406,299 (57.52)	329,742 (46.68)	284,573 (40.29)	
2006	582,997	430,140 (73.78)	328,314 (56.31)	275,701 (47.29)		
2007	569,377	408,672 (71.78)	325,836 (57.23)			
2008	568,125	424,913 (74.79)				
Total	3,052,486	2,217,166 (72.63)	1,402,799 (56.47)	888,949 (46.42)	522,068 (39.19)	209,083 (33.42)
Average	610,497	443,433 (72.63)	350,700 (56.47)	296,316 (46.42)	261,034 (39.19)	209,083 (33.42)

※ The number means the total number of establishments that survived and the number in parenthesis signifies the survival rate (%) in each year.

According to the results of the annual survival rates of 625,598 establishments which were newly launched in 2004, the one-year, three-year, and five-year survival rates are 69.88%, 45.32%, and 33.42%, respectively. On the whole, the results of Table 3 indicate that the one-year, two-year, and three-year survival rates are approximately 70%, 55%, and 45%, respectively, regardless of the period of analysis. These figures mean that approximately one half of the new establishments in Korea disappeared within three years.

Especially, in the case of the survival rates of newly launched establishments, there are noticeable distinctions depending on the industry and region. Table 4 and Table 5 represent the industrial and regional results based on the average annual survival rate of newly launched establishments, respectively. In principle, industries are categorized by 'Section' (Korean main industrial classification) according to the Korean Standard Industrial Classification (KSIC) system and the regions are categorized by Korean administrative districts.

The industrial results on the average annual survival rate in Table 4 indicate that higher survival rates exist in 'Public administration and defense; compulsory social security' and 'Human health and social work activities' which are contained in the public sector; on the other hand, lower survival rates are found in 'Information and communications', 'Business facilities management and business support services', and 'Construction'.

In addition, the regional results on the average annual survival rate in Table 5 represent that the survival rates of rural areas, including 'Chungcheongbuk' and 'Gyeongsangnam', are almost from 5 to 10 percent higher than those of urban areas, including 'Seoul', 'Incheon', and 'Gyeonggi'. Specifically, the one-year, three-year, and five-year annual survival rates of rural areas are approximately 75%, 50%, and 40%, respectively, while the one-year, three-year, and five-year annual survival rates of urban areas are approximately 70%, 45%, and 30%, respectively.

Table 4. Annual industrial survival rates of newly launched establishments

(unit : %)

Korean Standard Industrial Classification (KSIC)	Survived 1-year	Survived 2-year	Survived 3-year	Survived 4-year	Survived 5-year
Agriculture, forestry and fishing	80.17	70.53	63.82	56.67	43.33
Mining and quarrying	75.07	58.94	49.43	43.48	42.86
Manufacturing	75.02	59.20	49.05	42.20	38.28
Electricity, gas, stream and water supply	75.30	66.02	59.18	48.86	57.58
Sewerage, waste management[1]	71.59	57.04	48.48	45.04	41.12
Construction	69.80	51.49	40.92	33.55	27.83
Wholesale and retail trade	70.84	54.40	44.52	37.53	31.60
Transportation	71.57	55.42	45.51	37.32	32.61
Accommodation and food service activities	71.61	54.13	43.28	35.71	29.08
Information and communications	61.45	43.59	33.89	28.94	23.33
Financial and insurance activities	71.58	57.12	49.50	43.47	39.15
Real estate activities and renting and leasing	72.15	56.72	47.43	40.44	33.59
Professional, scientific and technical activities	70.21	54.37	44.74	37.90	33.05
Business facilities management[2]	65.23	46.85	37.14	30.59	26.05
Public administration and defense[3]	91.10	84.99	78.39	73.66	72.11
Education	77.54	62.52	51.71	43.63	36.44
Human health and social work activities	87.96	80.46	74.19	68.57	60.66
Art, sports and recreation related services	71.75	54.86	44.03	35.57	32.17
Membership organizations, personal services[4]	78.04	63.83	54.44	47.80	41.60
Total industries	72.63	56.47	46.42	39.19	33.42

※ As a matter of convenience, an abbreviation is used in the case of a long classification name.

1) "Sewerage, waste management" includes "Sewerage, waste management, materials recovery and remediation activities".

2) "Business facilities management" includes "Business facilities management and business support services".

3) "Public administration and defense" includes "Public administration and defense; compulsory social security".

4) "Membership organizations, personal services" includes "Membership organizations, repair and other personal services".

Table 5. Annual regional survival rates of newly launched establishments

(unit : %)

Korean administrative districts		Survived 1-year	Survived 2-year	Survived 3-year	Survived 4-year	Survived 5-year
7 Metropolitan Cities & 'Gyeonggi' (urban areas)	Seoul	71.09	54.29	43.83	36.40	30.37
	Busan	72.90	57.25	47.23	40.06	34.98
	Daegu	73.09	56.21	46.11	38.67	32.47
	Incheon	70.80	54.67	44.75	37.14	31.56
	Gwangju	72.61	57.13	46.92	39.52	34.12
	Daejeon	71.27	54.76	44.51	35.75	30.91
	Ulsan	73.73	57.41	47.06	39.09	34.13
	Gyeonggi	70.82	53.74	43.68	36.54	31.22
8 Provinces (rural areas)	Gangwon	75.93	61.03	51.51	44.45	38.31
	Chungcheongbuk	74.07	58.74	49.02	42.45	37.44
	Chungcheongnam	76.85	61.56	51.27	44.65	38.72
	Jeollabuk	75.64	60.45	50.98	43.92	39.67
	Jeollanam	77.98	63.90	54.62	47.48	39.98
	Gyeongsangbuk	75.46	61.13	51.42	44.20	38.35
	Gyeongsangnam	75.26	59.93	50.47	43.76	37.97
	Jeju	76.83	63.42	54.24	47.92	43.15
Total regions		72.63	56.47	46.42	39.19	33.42

Finally, this research analyzes the adjustment patterns of establishments that survived, excluding those that were newly launched and disappeared. The establishments that survived at time t are defined by the establishments that exist at time t among the establishments that existed at time t-1. The research on the adjustment patterns of establishments that survived is regarded as one of the most important research areas in that this type of research can provide more specific information on the life cycle of each establishment; survival and development until death. This research analyzes the adjustment patterns through the classifications of type of industry and type of region, respectively.

The results of the adjustment patterns of establishments that survived indicate that about 0.45% of all establishments change their principal activity as judged by 'Section' in the Korean Standard Industrial Classifications (KSIC) system and approximately 0.05% of all establishments change their main location as judged by the Korean administrative districts every year. Table 6 indicates annual adjustment patterns of establishments that survived.

Table 6. Annual adjustment patterns of establishments that survived

Year	Number of establishment that survived	Movement across industries		Movement across regions		Total number of establishments
		Total number	Adjustment rate (%)	Total number	Adjustment rate (%)	
2005	2,505,283	12,822	0.51	1,198	0.05	3,211,672
2006	2,655,403	8,578	0.32	1,066	0.04	3,238,400
2007	2,707,686	10,744	0.40	474	0.02	3,277,063
2008	2,697,304	18,599	0.69	1,830	0.07	3,265,429
2009	2,773,764	8,820	0.32	1,925	0.07	3,293,295
Total	13,339,440	59,563	0.45	6,493	0.05	16,285,859
Average	2,667,888	11,913	0.45	1,299	0.05	3,257,172

According to the results concerning the movements across industries in Table 6, the movements of establishments that survived between industries gradually increased from 2006 to 2008. It can be assumed that these movements may have been caused by the increase in diversification and the uncertain demarcation

between industries. In the case of the movements across regions, the adjustment rates between regions were comparatively consistent before 2007; on the other hand, the moving rates dramatically increased after 2008.

4. Conclusion

Similar to statistics of human population, business demography describes the life cycle of the businesses. It is a task of great significance which could be utilized to understand business demography in that it would be able to provide an empirically based overview over the composition of the industrial structure. In particular, the birth and death of businesses can be used as important indicators of economic dynamism. Korea is also becoming more and more interested in business demography. However, in practice, there is a lack of research on business demography in Korea despite growing interests in the topic. Therefore, it is anticipated that this paper will contribute to the development of the research on Korean business demography while significantly assisting to understand Korean economic and industrial structure.

REFERENCES

SNA (2008), System of National Accounts 2008

RÉSUMÉ (ABSTRACT) — optional

The data on the birth and death of businesses can provide an important indicator in terms of economic dynamism. In this respect, creating data on the birth and death of businesses carries an important significance in that this data can supply basic statistical material in preparing a response to changes concerning industrial structure and business fluctuation. As a result, the research on business demography, including the birth and death of businesses, has already received a lot of attention from many countries. Also, Korea is becoming increasingly interested in business demography.

This research examines the birth and death of Korean establishments using data from 2004 to 2009 from the establishment population database constructed by Statistics Korea. In Korea, businesses are basically classified by two types, enterprise and establishment. Of these two types, this research produces statistics related to business demography based on the establishment because most databases related to businesses, which are created by Statistics Korea, are composed of establishment units.

Establishments are classified by 'birth', 'survival', or 'death' through the comparison of the establishment population databases between the previous year and current year. The specific evaluation concerning the business stage of a Korean establishment depends on its unique identification number, which is generated according to "the continuity criterion for identical establishment". The continuity criterion for identical establishments is an application based on "the OECD continuity rules for the enterprise". This continuity criterion depends on three factors concerning each establishment: a principal activity, a main location, and an owner (representative). According to this continuity criterion, an establishment fundamentally loses its continuity status if two or more of the three factors are changed at the same time.

First, this research investigates the birth and death of Korean establishments from 2004 to 2009. According to the results on the birth and death of Korean establishments, on average, 595,336 establishments were launched while 577,501 establishments disappeared every year.

In addition, this research analyzes the survival rate of the newly launched establishments during the survival period to produce information on the probability that they will continue to operate without closure of business. According to the results of the survival rates, the one-year, two-year, and three-year survival rates amount to 70%, 55%, and 45%, respectively.

Finally, this research analyzes the adjustment patterns of establishments that survived, excluding those that were newly launched and disappeared. The research on the adjustment patterns of establishments that survived can provide more detailed information on the life cycle of each establishment; survival and development until death. The results indicate that about 0.45% of all establishments change their principal activity and approximately 0.05% of all establishments change their main location every year.