

‘Wage and Salary Employment Position Statistics’ based on Administrative Data

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Abstracts

A job consists of worker and employment position, and job is a different concept from the ‘worker’ in the perspective of ‘employment position’. According to Steven J. David’s definition, ‘A job is an employment position filled by a worker.’ (‘Job Creation and Destruction’, 1996). In the case of the multiple jobs, for example, the worker is a singular person and the employment positions are multiple jobs.

Recently, attention to employment position has dramatically increased due to deteriorating job market and unstable employment conditions. Until now, labor statistics has primarily focused on ‘the people’, not ‘the employment position’. Thus, people ambiguously use both workers and jobs because we don’t have a job focused statistic. In addition, we don’t have specific information about the worker’s workplace in the labor statistics.

To overcome these shortcomings, Statistics Korea(KOSTAT) has newly developed ‘Wage and Salary Employment Position Statistics’ which link enterprises and employees utilizing administrative data in June, 2012.

Statistics Korea has produced the statistics by linking source registers such as national tax data, social insurance data(national pension program, state employment insurance program, and industrial accident insurance), etc with the linkage key of personal identification number(PIN)-code and business registration number.

The statistics covers all employees who are enrolled or registered in the administrative registers, and the statistics items are employee’s gender, age, working years, enterprise’s organization type, industrial classification, number of employees, duration year, annual revenue. The reference period is as of December 31, and announcement periodicity is yearly.

Key Words: acquisition, administrative data, identifier, job, PIN-code, source registers

1. Introduction

Recently, the survey environment has been seriously deteriorated because of increasing budget, non-response rate and 1 person household. For example, the budget of Population and Housing Census of Korea has been skyrocketing from about US\$ 83,400,000 in 2000, US\$ 129,000,000 in 2005, US\$ 180,800,000 in 2010, and US\$ 271,200,000 in 2015(estimation). The non-response rate has also increased 16.5%(2005), 17.2%(2007), and 18.3%(2010) in the Household Income and Expenditure Survey.

For reference, 1~2 person household ratio has also dramatically increased 29.6%(1995), 42.2%(2000), and 48.2%(2010). All these changes make field surveys more difficult and have a possibility to reduce the credibility of data quality, as well.

To overcome those difficulties and utilize administrative data for the statistical purpose as a solution, KOSTAT have provided a legal basis by amending Statistics Law in 2007 and National Tax Law in 2009, respectively. Since then, KOSTAT have obtained 138 kinds of administrative registers from many public agencies and developed statistical databases for 74 kinds of administrative data such as resident registration, business registration and V.A.T data.

In addition, recently new demand for developing new statistics utilizing administrative data has increased. For example, even though demand's for job statistics and need for statistical infra of employment policy have been increased, there is no specific job statistics of linking employee and enterprise based on working places. Thus, it is necessary for us to develop 'Wage and Salary Employment Position Statistics' which link enterprises and employees based on registers data.

In advance, to develop job statistics based on the registered data, we assume there are 5 kinds of preconditions which should be satisfied.

- Nationwide quality administrative data
- Linkage key among administrative data
- Legal basis for using administrative data
- Converting administrative data into statistical data
- Social consensus

First of all, Korea's social insurance data and national tax data covers most of employees because all employees who work more than 60 hours per month should subscribe the social insurances by Acts.

In addition, there are reliable common identifiers such as personal identification number(13 digits) and business registration number(10 digits) among registers data by which we can link personal information and enterprise information.

In 2007 and 2009, Statistics Korea and National Tax Service have amended Statistics Law and National Tax Law in order to use administrative data for the statistical purpose. Since then, KOSTAT has obtained various kinds of administrative data from public agencies to use in developing several kinds of new statistics based on the laws. More importantly, there are social consensus on using public registers in making various statistics to meet the public's needs while not interrupting their privacies nor visiting their places, and reducing costs at the same time.

For overseas cases, most OECD countries share tax data to utilize them in statistics. For example, Statistics New Zealand has been producing Linked Employer - Employee Data (LEED) by using and linking payroll data from Inland Revenue and NZ's Business Frame since 1999.

2. Outline

2-1. Basic concept

According to David, Haltiwanger and Schuh, "**A job is an employment position filled by a worker.**" ([Job Creation and Destruction] , 1996). Therefore, filled Jobs for employees means a filled employment position on the reference date by a employee who produce a goods or provide service in return for wage or salary. For example, if 100 employees have jobs, the number of job is 100.

Total jobs are comprised with filled job and vacant job, and filled job are consist of 'wage and salary employment position' and 'non-employment position'. Non-employment positions are mostly for self-employed workers and their family workers. Among those, the target is 'Wage and salary employment position statistics'.

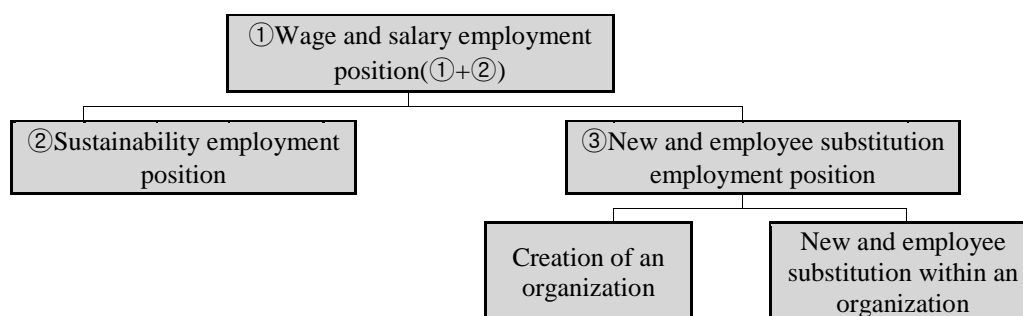
2-2. Definition

① Wage & salary employment position

Wage & salary employment position is a filled employment position on December 31

of the reference year by employees who produce goods or provide service in return for wage or salary.

Wage and salary employment positions comprise i) sustainability employment positions and ii) new & employee substitution employment positions.



② Sustainability employment position

The number of filled employment positions on December 31 of the reference year by a same employee during two periods (2010 - 2011) in the same enterprise.

③ New and employee replacement position

- New employment position due to the creation of an organization during two periods (2010 and 2011). (e.g. establishment of a company or a corporation)
- New and employee substitution employment position due to the expansion of an organization within an organization or retirement of employees during two periods (2010 and 2011).

2-3. Outline of the Statistics

The **purposes** of the Statistics are

- To produce and provide detailed data on the status of employment position according to the size of enterprises and classification of industry by linking employee and enterprises.
- To provide basic data needed for making employment policies and occupation choice for who are looking for the job

The **populations** of the Statistics are

- Wage and salary employment position occupied by who reported the income tax to the National Tax Service, and
- Wage and salary employment position enrolled in the social insurance such as national pension Program, state employment insurance program, and industrial accident insurance.

The **statistics units** are i) employment position and ii) enterprise. We calculated the corporate data by corporative unit, the private enterprises data by employer unit, respectively.

The statistics covers all employees who are enrolled or registered in the administrative registers, and the administrative data which we use in the Statistics are national pension program data, industrial accident insurance, state employment insurance, and national tax data(earned-income tax, Value Added Tax, business income tax, business registration number), etc.

By linking above mentioned registers data with the linkage keys, we have produced 8

statistics items – 3 items for employee(employee' gender, age, working years) and 5 items for enterprise(enterprise's organization type, industrial classification, number of employees, duration year, annual revenue).

Reference Period is 'December 31' of each year and announcement periodicity is 'yearly'.

2-4. Examples

There are some simple examples of sustainability, new & employee replacement position with the case of enterprise A and B as follows,

There were 10 employees occupying 10 jobs in the company A as of December 31, 2010. In 2011, the 1st employee was dismissed because company A reduced ① job position, the 2nd employee retired under an age clause, and 3rd employee was dismissed for a bribery scandal. To replace the vacant positions, two employees were employed in ⑪~⑫ job positions. There were no change at ④~⑩ job positions.

In this case, total jobs has reduced from 10 to 9, and ④~⑩ job positions are sustainability employment position(7), and (②,③) – (⑪,⑫) are new & employee replacement position(2).

Another example is company B case. There were 10 employees occupying 10 jobs in the company B as of December 31, 2010. In 2011, after 1 retirement and 2 new entry have happened, total jobs has increased from 10 to 11. (②~⑩) job positions are sustainability employment position(9), and (①,⑪)–(⑫) are new & employee replacement position(2).

3. Methodology

3-1. Need for linkage

As the scopes of administrative registers are different according to the administrative purpose, linking the data by common identifiers(PIN-code, address, workplace) is necessary to utilize them for statistical purposes.

For instance, whereas there is no tax deduction or tax free industry in the VAT data, but the social insurance data covers them.

3-2. Linking Process

1 stage : Developing employee DB

It is difficult to consolidate 3 data (national pension - employment insurance program - national tax data) at the same time because tax data from National Tax Service has an incomplete personal identification number(PIN) and no age and income data. Thus, we applied next 2 steps to develop employee DB.

First, we linked the national pension data and state employment insurance program by 'PIN-code' as a linkage key to develop employee DB.

Next, previous linked 'national pension & state employment insurance program' and 'national tax data' are also linked by 'combination key of PIN-code and business registration number'.

2 stage : Developing employer DB

As a 2nd stage, we consolidate employer's information and develop employer DB by

extracting employers data in [national pension program, state employment insurance program, business registration data, V.A.T., and establishment survey data] with the linkage key of 'business registration number'.

3 Stage : Developing raw data by consolidating employee and employers info.

There exists workplace number and business registration number in the national pension and industrial accident insurance at the same time. Thus, it is possible to extract workplace number and business registration number from them.

Then, we consolidated subscribers' information and employers' information by linking subscribers with the workplace number, and by linking employers with the business registration number.

4 Stage : Converting administrative data into statistical data

Then, we deleted all overlapping subscribers data by conducting overlapping test at the reference date(Dec. 31). We also got rid of non-employer data(i.e, self-employed) which are included in the employee data. In Korea, self-employed person also can subscribe in the national pension and employment insurance program to support their stable business activities.

To enhance a statistical utilization, we converted employer unit to the establishment unit according to the incorporated registration number and employer's PIN. After this process, we can classify data by 5 types of legal organization - incorporated companies, non-business corporations, government, unincorporated associations, and individual proprietorship.

Last stage : Imputation and Microdata

There are many obstacles in using administrative data for the statistical purpose because of some unregistered data. For example, when subscribing in social insurance, A didn't wrote his education, or B miswrote his/her gender.

Because C didn't subscribed in the national pension program, we don't have monthly income data of C. Because D didn't subscribe in the employment insurance program, we don't have education data of D.

When substituting unregistered data, we applied 'Hotdeck imputation method using similar substitution group' because subscriber's registration is restricted according to age and nationality.

Finally, we produce Microdata which can be used in making statistics Tables and disseminate statistical information at the Statistics portal system of KOSIS Data Service [<http://kosis.go.kr>]

4. Result and Conclusions

Based on this scheme and methodology, Statistics Korea has announced '2010 Wage and salary employment position statistics' and '2011 Wage and salary employment position statistics' in June and December, 2012, respectively.

4-1. Summary of 2011 Wage and Salary Employment Position

As of the end of 2011, the number of wage and salary employment positions was

14,598 thousand, which increased by 3.8% (533 thousand) from 14,065 thousand in 2010. Among them, the number of sustainability employment positions for the period of 2010 to 2011 increased by 1.5% (138 thousand) to 9,457 thousand.

The number of new and employee substitution employment positions increased by 8.3% (395 thousand) to 5,141 thousand in 2011.

- The number of new employment positions due to the creation of an organization (e.g. establishment of a company or a corporation) grew by 245 thousand to 551 thousand.
- The number of new & employee substitution employment positions due to the expansion of an organization within an organization or retirement of employees rose by 150 thousand to 4,590 thousand.

4-2. Wage and salary employment positions by type of legal organization

As for wage and salary employment positions by type of legal organization, employment positions in incorporated companies amounted to 8,607 thousand, which occupied 59.0 percent of the total wage and salary employment positions. This figure was followed by individual proprietorship (2,170 thousand, 14.9%), non-business corporations (1,802 thousand, 12.3%), government (1,664 thousand, 11.4%) and unincorporated associations (355 thousand, 2.4%).

Employment positions in incorporated companies occupied the largest share of wage and salary employment positions, while those in unincorporated associations occupied the smallest share of the employment positions.

Employment positions in incorporated companies amounted to 8,607 thousand, which accounted for 59.0% of the total wage and salary employment positions.

4-3. Conclusion

It's a new paradigm shift from a traditional field survey to use registers data in statistics to reduce respondent's burden and save cost. However, we should keep in mind that basically administrative data is build up and accumulated for a statistics purpose but a specific policy purpose. Therefore, if policies or Acts change, the target group of registers data or subscribers could be converted to fit with the changed policy. Under this circumstance, it will be difficult to produce the Statistics safely or make a time-series of statistics sustainable and reliable. Therefore, it's necessary for us to acquire and utilize additional registers data which can cover more employees in order to stabilize the Statistics and to maintain a time-series stable and unwavering.

In 2013, we will newly produce the items of 'employment position in public sector' including central governments, local governments, public enterprises, subway companies, local public agencies, etc.

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