

A Comprehensive Evaluation of the Government Burden and Cost Reduction Effect Based on the Efficacy Score Method

--Taking Wenzhou as an Example

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Abstract

The 2016 Central Economic Work Conference put "cost reduction" as one of the five key economic tasks this year. "Cost reduction" is also one of the important tasks of supply-side structural reform. Governments in various regions have introduced corresponding burden reduction measures and policies to promote the reduction of real economy costs. In the actual operation process, what are the key items for the government to reduce burdens and taxes? After the policy is implemented, what is the year-on-year growth rate of each item? What is the specific ranking of each project? These issues are worthy of systematic and in-depth study. Based on indicator data such as administrative fee items, taxes, social insurance expenses, and electrical price adjustments in various districts, counties, and cities of Wenzhou, the article qualitatively describes the items and their magnitudes of tax reduction and tax reduction. Comprehensive ranking of preferential strength. Finally, consider the macroscopic reality of the survey area and give relevant suggestions.

Keywords

Burden reduction and tax reduction, Efficacy scoring method, Comprehensive ranking.

1. Introduction

At the 2016 Central Economic Work Conference, "reducing the burden on enterprises" became a bright spot. The Central Economic Work Conference listed "reducing overcapacity, removing inventory, deleveraging, reducing costs, and making up for shortcomings" as the five key tasks in 2016 based on the basic idea of "supply-side reform".

In accordance with local actual conditions, Wenzhou City has issued several opinions on further reducing enterprise costs and reducing the burden on enterprises to promote steady growth and adjustment of the real economy." 40 high-gold, highly targeted measures to reduce burdens will benefit Wenzhou's real economy, create a good business environment, and help steady economic growth. The "Opinions" help companies "easily enter the battlefield" by reducing institutional transaction costs, reducing corporate tax burdens, social insurance premiums, resource element costs, financial costs, and logistics costs, implementing fiscal support policies, optimizing government services, and strengthening security measures. "

In order to more objectively quantify the changes in the government's burden reduction efforts after the introduction of the "Opinions", more accurately grasp the main burdens of enterprises. Based on the "Opinions", we have collected 15 indicators of Wenzhou's districts, counties and cities in 2018 and 2019: administrative and institutional fee reductions (national reductions, provincial reductions, and local reductions), water conservancy fund reductions, and land use taxes Reduction and exemption, VAT reform to reduce the burden, tax incentives for high-tech enterprises (national tax, land tax), pension insurance premiums, medical insurance premiums, unemployment insurance premiums, electricity price adjustments and gas price adjustments. From the overall statistical evaluation of the government burden reduction list in 2018 and 2019, the support for burden reduction and tax reduction.

In the process of calculation, we sometimes encounter the failure of the algorithm due to the missing value problem. For the missing value problem, we use the non-informative distribution representation in the calculation process, mainly using uniform distribution and standard normal distribution.

2. Basic data

2.1 Data processing

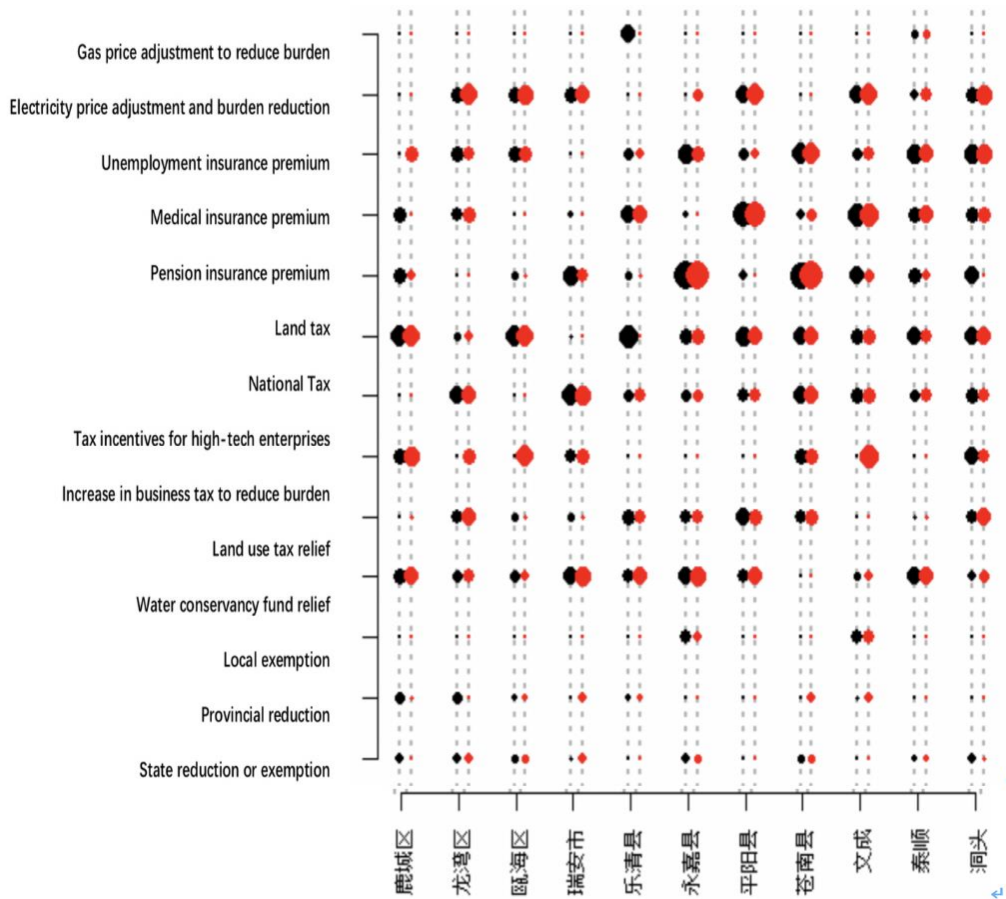


Figure 1: Schematic diagram of government burden reduction in 2018 and 2019

Note: (1) The red circle in the figure represents 2019, and the black circle represents 2018. (2) The smallest point in the figure does not mean that the corresponding indicator of the point has the least government support, but represents uncertain data. It may mean that a county or district government does not support the indicator, or it may be artificial at the data collection or input stage. Missing

(3) The ordinate in the figure corresponds to the smallest sub-indicator. For example, the administrative and institutional fee reduction and exemption include three sub-indicators: national reduction and exemption, provincial reduction and exemption, and local reduction and exemption.

We no longer consider the parent index in the drawing process. Fee reduction and exemption.

In order to better display the data without changing the meaning of the data, we transform the data as follows

$$y_{ij} = \log(x_{ij} + c_1) + c_2, \quad i = 1, 2, \dots, 11; j = 1, 2, \dots, 13$$

Here i and j denote counties, districts, cities and burden reduction indicators respectively, and c_1, c_2 are two tuning constants. c_1 used to guarantee

In the case of x_{ij} missing or equal to 0, our data conversion is meaningful, usually c_1 a constant greater than 1. c_2 is to prevent the value of $\log(x_{ij} + c_1)$ too small, which is prone to floating-point errors

during calculation or to eliminate the difference between the two variables when the data is small when drawing. Generally speaking, we take

$$c_2 = \frac{1}{3} (q_{50\%}(\log(x + c_1)) - \min(\log(x + c_1)))$$

Here $q_{50\%}(\cdot)$ represents the median of (\cdot) , and $\min(\cdot)$ represents the minimum value of (\cdot) . This can make c_2 not have an impact on the overall difference of data, and can increase a smaller value to avoid floating-point errors in the calculation process.

Show the government's burden reduction in 2018 and 2019 in the form of a bubble chart. Among them, the black dot indicates the burden reduction in 2018, and the red indicates the burden reduction in 2019. The larger the dot, the greater the government's support for this indicator. From a preliminary look in Figure 1, compared with 2018, the adjustment of electricity prices in counties and districts in 2019 will increase the burden of burden reduction; the focus of burden reduction in all counties and districts is concentrated on indicators such as pension insurance, medical insurance, and the reform of business tax; 2018 Compared with 2019, the national, provincial, local, and gas price adjustment burden reduction efforts for administrative fee projects are relatively small.

2.2 Evaluation of index growth rate

Comparing the growth rate of government indicators in 2019 over 2018 is one of the most basic indicators for reducing government burdens. Here, R_{hk} represents, $h=1,2,L,11$ represents 11 districts, counties and cities, and $k=1,2,L,15$ represents 15 burden reduction indicators. In fact, there are only 13 indicators, because there are two pairs of parent-child indicators, that is, the administrative fee reduction and exemption includes three sub-indicators: national exemption, provincial exemption and local exemption. High-tech enterprise tax incentives include national tax and local tax. Therefore, if the two parent indicators are removed, there are only 13 sub-indicators. However, we will not remove these two indicators here. There are two reasons: 1. The survey data itself has more missing values. If some indicators are removed, it must be More information will be lost, but when the data is modeled and analyzed in the later part, the linear relationship between the parent and child indicators will inevitably cause a strong correlation between the two, which is not conducive to the fitting of the model; 2. Keep the parent indicator It can help us gain an overall insight into the increase in the reduction and exemption of administrative fees and tax incentives for high-tech enterprises. In order to intuitively quantify the effectiveness of the government's burden reduction work, we calculated the R_{hk} of each district, county, and city in Wenzhou. Table 1 shows the detailed numerical calculation results.

Mining the data in Table 1 can provide us with a lot of useful information, which is summarized as follows:

Compared with 2018, except for the lack of data in Lucheng District, Ou Hai District, and Taishun in 2019 and the lack of data in Wencheng in 2018, other districts, counties and cities have greatly increased the burden of electricity price adjustments, generally exceeding 2.4 times in 2018 the above. Longwan District floated 2.6 times, Rui'an City floated 2.41 times, Yueqing County floated 7.64 times, Yongjia floated 5.7 times, Pingyang County was 8.11 times, Cangnan County was 2.67 times, and Dongtuo County was 8.59 times. Dongtuo County floats the highest.

In 2019, most districts, counties and cities have reduced or exempted the four items of administrative fee reduction, pension insurance premiums, and unemployment insurance premiums to varying degrees. In seven districts, counties and cities, the burden of pension insurance premiums decreased, and five of them fell by more than 80%. There were also 7 districts, counties and cities where unemployment insurance premiums fell, and the burden reduction fell by about 50%.

The reduction and exemption of administrative fee items in most districts, counties and cities has also generally declined in 2019. Among them, the national and provincial reductions in some districts,

counties and cities have both declined. In 2019, the national reduction and exemption in Yongjia County decreased by 98%, the provincial reduction and exemption decreased by 97%, and the overall administrative reduction and exemption decreased by 97%. In Pingyang County, the national reduction and exemption decreased by 42%, the provincial reduction and exemption decreased by 43%, and the overall administrative reduction and exemption decreased by 43%.

Table 1: Statistics on the year-on-year growth rate of various government burden reduction indicators in 2019

County /city name	Administrative fee reduction and exemption	Of which: national exemption	Provincial relief	Local exemption	Water conservancy fund relief	Land use tax relief	VAT reform to reduce burden	Tax incentives for high-tech enterprises
鹿城区	*	*	*	***	2.12	-0.5	***	0.17
龙湾区	1.97	-0.4	86.69	***	0.49	-0.68	0.13	**
瓯海区	***	***	***	***	***	***	***	1.32
瑞安市	0.01	***	**	0.01	-0.07	3.26	4.89	**
乐清县	-0.86	***	***	***	0.5	7.6	**	*
永嘉县	-0.97	-0.98	-0.97	***	-0.27	-0.95	***	-0.08
平阳县	-0.42	-0.42	-0.43	***	2.8	0.65	***	0.11
苍南县	-0.64	15.53	0.19	-0.77	3.6	1.66	**	0.72
文成	-0.65	-0.65	***	***	0.93	0	-0.61	0.82
泰顺	***	-0.46	30.06	***	3.15	8.79	**	**
洞头	0.6	0.6	***	***	0.96	-0.85	0.69	0.19

County/city name	Of which: National Tax	Land tax	Pension insurance premium	Medical insurance	Unemployment insurance premium	Electricity price adjustment to reduce burden	Gas price adjustment to reduce burden
鹿城区	0.08	0.17	-0.92	1.26	0.27	***	***
龙湾区	0.34	-0.73	*	*	-0.64	2.62	***
瓯海区	-0.02	0.35	***	***	***	***	***
瑞安市	-0.03	0.11	-0.89	0.38	-0.64	2.41	***
乐清县	-0.29	*	-0.32	0	-0.11	7.64	-0.17
永嘉县	0.71	-0.11	1.45	0.13	-0.05	5.7	***
平阳县	0.11	0.07	-0.88	0.56	**	8.11	***
苍南县	0.67	0.72	-0.91	0.57	-0.17	2.67	*
文成	*	0.85	-0.83	-0.92	-0.52	**	***
泰顺	***	-0.79	-0.81	-0.85	-0.52	***	***
洞头	1.75	-0.1	*	1.27	0.54	8.59	***

Note: Due to the reasons in the data collection stage and the entry stage, data missing is inevitable. For this reason, we deliberately use * in the above table to indicate missing in 2019, ** to indicate that 2018 is missing, and *** to indicate 2018, 2019 are all missing.

Among the reduction and exemption indicators for administrative and institutional fee items, it is necessary to specifically explain the burden reduction in Longwan District, Cangnan County and Taishun. They represent three situations: the increase in the reduction and exemption of administrative fee items is because the increase in one of its sub-indicators is much greater than the decrease in its sub-indicators; the base of the sub-indicators is different, resulting in a large increase

in the sub-indices with a small base that is not enough to balance the base Small sub-indicators have a small decline; missing data has a great impact on the whole.

Among the longitudinal indicators, the lack of burden reduction in gas prices is relatively serious. There are 9 biennial data missing in 11 districts, counties and cities. Followed by local reductions and exemptions, 8 out of 11 districts, counties and cities are missing for the biennium. Among the horizontal indicators, Ouhai has the most serious deficiency, with 11 of the 15 indicators missing.

3. Introduction to evaluation methods

3.1 Introduction to the efficacy scoring method

We discussed earlier the support for the eight burden reduction indicators in all districts, counties, and cities in 2019 compared with 2018. Previously, we only provided a basic explanation of the changes in various indicators in 2019 from the perspective of numerical analysis, so how to comprehensively evaluate these indicators will be the content we will discuss next. The article mainly longitudinally evaluates the government's support for each indicator. Before conducting comprehensive evaluation, we must first customize a set of reasonable sum evaluation system.

Efficacy scoring method is a method to evaluate the scoring value of various indicators based on the efficacy coefficient. We use this method to evaluate the effect of government burden reduction. The judgment here is achieved through the total ranking of the indicators. For example, when the data is longitudinally analyzed, we will give the ranking of the burden reduction indicators in the longitudinal analysis.

Assuming in the evaluation index system, the first k evaluation indexes x_1, x_2, \dots, x_k hope that the greater the better, these indexes are called positive effect indexes, and the latter $(p - k)$ indexes $x_{k+1}, x_{k+2}, \dots, x_p$ hope that the smaller the better. We call these indexes negative effect indexes. The relationship between indicators often brings some difficulties due to the different dimensions and range of variation of each indicator. The efficiency coefficient is a dimensionless transformation of these indicators, expressed by d_j , namely

$$d_j = d_j(x_j) \quad j = 1, 2, \dots, p$$

And meet

$$0 \leq d_j \leq 1 \quad j = 1, 2, \dots, p$$

When the index reaches 1 hour $d_j = 1$, the worst hour is 0

Here we use linear power coefficients, record the i th index x_{ij} of the j th sample, and arrange the index values of n samples from small to large to obtain the order statistics of each index value

$$x_{1j} \leq x_{2j} \leq \dots \leq x_{nj} \quad j = 1, 2, \dots, p$$

Define d_j as the following piecewise function

$$d_j(x_{ij}) = \begin{cases} j \leq k, j \in N^+ & \begin{cases} 1 & x_{ij} = x_{nj} \\ \frac{x_{ij} - x_{1j}}{x_{nj} - x_{1j}} & \\ 0 & x_{ij} = x_{1j} \end{cases} \\ k < j \leq p, j \in N^+ & \begin{cases} 1 & x_{ij} = x_{1j} \\ \frac{x_{nj} - x_{ij}}{x_{nj} - x_{1j}} & \\ 0 & x_{ij} = x_{nj} \end{cases} \end{cases}$$

Thus, the power scoring standard value of the j index of the i sample is

$$d_j(x_{ij}) \times 100$$

To complete the efficacy scoring method, another problem needs to be solved, that is, how to determine the efficacy weight. Below we introduce two commonly used methods for determining efficacy weight coefficients, one is the equal weight method and the other is the deviation weight method.

Equal rights law

$$\mu_i = \frac{1}{p} \sum_{j=1}^p \varpi_j d_j(x_{ij}), \varpi = \mathbf{I}_p, i = 1, 2, \dots, n \quad \text{Weight of Deviation}$$

Method

$$\mu_i = \frac{1}{p} \sum_{j=1}^p \varpi_j d_j(x_{ij}), \varpi_j = \frac{\sigma_j}{\sum_{j=1}^p \sigma_j}, i = 1, 2, \dots, n$$

Here

$$\sigma_j = \sqrt{\frac{1}{n-1} \sum_{i=1}^{n-1} (d_j(x_{ij}) - \bar{d}_j)^2}$$

$$\bar{d}_j = \frac{1}{n} \sum_{i=1}^n d_j(x_{ij})$$

3.2 Evaluation conclusion

Using the efficacy scoring method, a comprehensive ranking of the preferential power of government relief projects is given. From the perspective of the parent index, the comprehensive ranking of the preferential power of government reduction and exemption projects, from high to low, are tax incentives for high-tech enterprises, land use tax reductions, water conservancy fund reductions, tariff adjustments and burden reductions, medical insurance premiums reductions and exemptions, tax increases to reduce the burden, and pension Insurance premiums, unemployment insurance premiums, administrative business fee reductions and exemptions, gas price adjustments (see Table 2).

In terms of tax incentives for high-tech enterprises, leading enterprises in various regions have benefited a lot from high-tech enterprise policies and tax deduction policies for R&D expenses. In terms of social insurance expenses, since the burden reduction of enterprises, preferential policies such as the 2016 pension insurance exemption for two months and the reduction of some social insurance rates (such as unemployment insurance) are due to the social insurance payment base of Wenzhou City (most places refer to the local social average wage level)) It has been adjusted upwards year after year, and the downward adjustment is lower than the upward adjustment, which makes it difficult to reduce the actual burden of social security. For example, in 2019, a certain group in Wenzhou spent about 180 million yuan on "five insurances and one housing fund", with an average per capita of 8228 yuan, and social security expenses accounted for about 46.35% of total wages. In terms of the VAT reform, the VAT reform has brought some benefits to small and medium-sized enterprises. However, since most of the downstream enterprises supporting the small and medium-sized enterprises in Wenzhou are individual industrial and commercial households, as small-scale taxpayers, there is basically no invoice, and the second is the value-added tax. There are few deduction items. Third, it is impossible to provide real invoices, which makes it difficult to achieve input value-added tax deduction. It is relatively difficult to deduct value-added tax or less effort to

reduce the burden. Regarding electricity price adjustments, although the implementation of the two-part electricity price (industrial and domestic electricity) users' basic electricity price has improved, it is not flexible enough to adapt to the current needs of under-utilized enterprises. The benefits brought by direct electricity trading are very obvious. Some large electricity users have reduced their annual burdens by four or five million yuan. For example, a certain group in Wenzhou reduced the burden by more than one million yuan in 2019. For large industrial users with transformer capacity of 315KVA and above (basically regulated enterprises), Zhejiang Province implements a two-part electricity price-users have to pay basic electricity fees and kWh electricity fees, of which the basic electricity fee is used by the power company for lines and transformers. For reasons such as maintenance and other reasons, enterprises must pay the basic electricity fee during the period when the company applies for the suspension of electricity use. The payment standard is 30-40 yuan/KVA.

Table 2: Comprehensive ranking of government discounts and exemption projects (effectiveness scoring method)

Reduced items	composite index	Ranking
Administrative fee reduction	8.69	12
Of which: State reduction or exemption	9.55	11
Provincial reduction	3.95	15
Local exemption	8.27	13
Water conservancy fund relief	30.96	3
Land use tax relief	31.04	2
Increase in business tax to reduce burden	17.55	8
Tax incentives for high-tech enterprises	35.92	1
Of which: National Tax	18.24	7
Land tax	21.93	5
Pension insurance premium	14.08	9
Medical insurance premium	19.46	6
Unemployment insurance premium	12.39	10
Electricity price adjustment and burden reduction	24.96	4
Gas price adjustment to reduce burden	8.08	14

4. Countermeasures and suggestions

4.1 Simultaneous development of tax burden cost subsidies and supporting facilities

The whole province and all parts of the country are in full swing for enterprise resources, and Wenzhou enterprise resource highland needs to increase horsepower to retain high-quality enterprise resources, so as not to lose the enterprise resource highland. Taxation policy let go of giving financial subsidies to other areas outside the city in the operational space to indirectly reduce the tax burden. One hero and three gangs will make supporting measures in the later stage, learn from the practices of Shenzhen, Suzhou and Shenzhen, establish a tax reduction implementation mechanism, actively remind enterprises of policy changes, and publicize and counsel.

4.2 Manpower cost is subtracted

Reasonably lower the social average wage standard and reduce the social security base; explore the feasibility of adjusting the employment security fund for the disabled according to the average salary of all employees to the head calculation formula; promote the flexibility of the housing provident fund, eliminate the principle of total equality, and implement the principle of live increase and decrease; The skill promotion subsidy policy provides subsidies for employee training expenses.

4.3 Policy on land cost for energy use

Priority is given to supporting high-tech and strategic emerging industry enterprises to participate in direct power transactions. According to the amount of electricity consumption, simplify the approval procedures for the separation of electricity consumption in the dormitory of the employees in the enterprise. The construction of small and small parks will be further increased. Those under construction should be completed and put into production early, the approval process should be accelerated in planning, and construction should be started in time. Taking advantage of the trend of "large demolition and consolidation", speed up the planning and utilization of the land after the demolition, and build a batch of industrial parks that integrate R&D and design, marketing and promotion, standard release, and boutique production.

4.4 Solving the problem of difficult financing and expensive financing

On the one hand, it is necessary to rectify and standardize various intermediary businesses set up by banks for enterprises, cut fees, and reduce corporate financing costs. On the other hand, banks should be encouraged to deepen the "bank-tax interaction" pilot program based on the development characteristics of Wenzhou's small and medium-sized enterprises, and provide bank-guaranteed credit loans to tax-paying enterprises with excellent ratings.

4.5 The cost of logistics is both sea and highway

Highway logistics is a long-term strategy for Wenzhou enterprises. Learning from Ningbo's practice, the tolls of Zhejiang C-licensed trucks on Wenzhou Ring Expressway are even more discounted. Sea transportation strengthens the construction of Wenzhou seaport infrastructure, promotes optimized links, and allows enterprises such as Ningbo Port and Shanghai Port to gradually transfer to Wenzhou Port.

4.6 The "integration" and "clearing" of intermediary costs

Integrate and streamline industry associations, unify charging standards or high-limit clauses; learn from other cities' practices, and establish a list of government transfers of entrusted functions to industry associations and chambers of commerce; technical services commissioned by government departments in the approval process, select services through competition Institutions; establish a record and blacklist system for bad behavior of intermediary organizations.

4.7 Initiative and humanization of government services

Increased initiative in government services. For some approved projects, actively remind the enterprise of the approval progress. Try to launch activities such as "What have I done for the enterprise?" of government agencies and departments, and publish them in public channels such as newspapers; add the "Service Enterprise" module to the cadre evaluation mechanism, improve the comprehensive evaluation system of corporate feedback on government services, and urge administrative personnel Serve the people wholeheartedly. Law enforcement matters are first humanized and proactively prompted warnings, and then law enforcement corrections. Intensify publicity efforts, and do a good job of various publicity work in the early stage of the implementation of the new policy, so that enterprises are familiar with the new policy.

Acknowledgements

Fund project: Wenzhou City Philosophy and Social Science Planning Project (19wsk097), Zhejiang Province Philosophy and Social Science Planning Project (20NDJC335YBM).

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