

# Discussion about Resolving Excess Capacity in Steel Industry

Jiaping Xiong

School of Economics, Jinan University, Guangzhou, China

Email: 83731286@qq.com

**How to cite this paper:** Xiong, J.P. (2017) Discussion about Resolving Excess Capacity in Steel Industry. *Journal of Service Science and Management*, 10, 156-165.  
<https://doi.org/10.4236/jssm.2017.102014>

**Received:** February 16, 2017

**Accepted:** April 14, 2017

**Published:** April 17, 2017

Copyright © 2017 by author and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

---

## Abstract

Overcapacity in China's steel industry and the resulting problems of lower profits, even losses and bankruptcy in iron and steel enterprises are serious. This paper summarizes the causes of overcapacity in the steel industry from three aspects of market factors, government factors and the mix of market and government factors. As the traditional method of demand-side management to resolve the excess capacity having been in trouble, this paper discusses the way to reasonably resolve the excess capacity of the steel industry from the aspect of structural reform of supply-side.

## Keywords

Overcapacity of Iron and Steel Industry, Resolve the Excess Capacity from Demand Side, Structural Reforms of Supply Side

---

## 1. Introduction

After more than and 10 years of rapid development, China's iron and steel industry has affected by the global economic downturn and the domestic downturn pressure on the economy. Steel prices continued to fall and the iron and steel enterprises overwhelmed, which showed that overcapacity problem is serious. This paper will analyze the causes of the excess capacity in the steel industry, and show that the traditional demand side management cannot solve the problem of the current steel industry completely. In order to change this trend, it is necessary to explore new ways to resolve the excess capacity of the steel industry from the supply side structural reform.

## 2. Grim Situation of Overcapacity in China's Iron and Steel Industry

### 2.1. Global Economic Downturn and Growing Trade Friction

Since the financial crisis, the real economy has been sluggish. Later the European

debt crisis also increased the uncertainty of the global economic development prospects. In 2015, demand reduction, yield reduction, losses, layoffs were presented in the global steel industry. These phenomena showed the current difficult situation of iron and steel industry. In the background of falling prices and reduction in the supply and demand, many of the world's large steel companies have released layoffs and shrinking production plan. In 2016, the US and Europe countries launched the investigation on safeguard measures for China's iron and steel products, which led that China's steel industry became the largest industry suffering trade remedy investigation. The intensification of trade friction is not only reflected in the increase in quantity, but also in the degree of deepening. In May 2016, the U.S. International Trade Commission launched investigation on Chinese steel products and the investigation procedures are very strict, if the enterprise has been identified as a violation, its product may be permanently shut out of America. The bleak development prospects of the global economy and the increasing trade friction between countries have brought great challenges to the development of China's steel industry.

## 2.2. China's Iron and Steel Industry Has Entered the Critical Period of Cutting Production Capacity

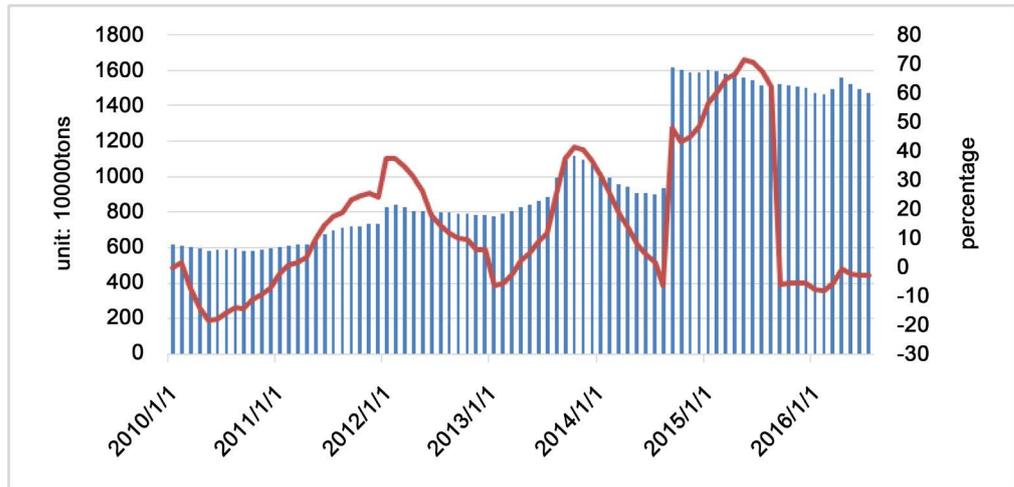
According to the National Bureau of statistics data in 2014, steel production was 1.125 billion tons, in 2015 the output was 1.123 billion tons, down by about 0.1 percentage points. According to China's steel demand forecast report released by the China Metallurgical Industry Planning Research Institute shows that in 2016 China's steel consumption of about 0.648 billion tons, down by 3%. China's iron and steel production remains high, and a sharp decline in demand, leading to an increase in steel stocks. From January 2010 to June 2016, China's steel stocks show in the figures:

As can be seen from **Figure 1**, before September in 2014, steel stock volatility is relatively stable, and after this period, steel stocks have experienced the rapid increase and have maintained a high level of about 15 million tons. Although the growth rate in 2015 fell slightly to zero in September and steel stocks showed a negative growth, the steel stocks did not significantly reduced.

Due to the contradiction between supply and demand in the steel industry, steel prices have been low and the steel industry profits have been falling. The following chart is the general situation of profitability in China's iron and steel industry in the past 15 years.

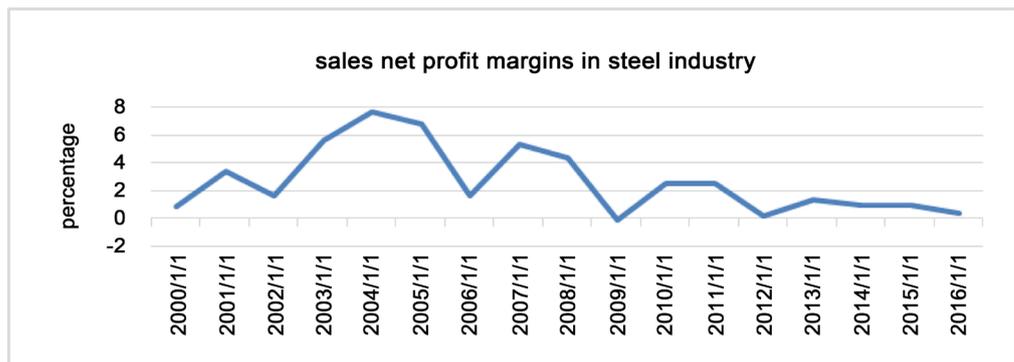
As we can see from **Figure 2**, China's steel industry sales net profit margin has even declined to the level of negative earnings. By 2015, the steel industry net profit fell to about 1%. Continued decline in profits has led to a number of losses or even bankruptcy in iron and steel industry.

According to the Ministry, the objectives and tasks to cut the production capacity of the steel industry in 2016 is 45 million tons. By the end of July 2016, the amount of iron and steel production capacity has reached 13 million tons. Steel prices rebounded slightly but still at a low price; crude steel production contin-



Data source: WIND database; The blue line presents china’s steel stock; The red line presents its growth rate.

**Figure 1.** China’s steel stock and its growth rate in recent 6 years.



Data source: WIND database.

**Figure 2.** The profitability of China’s iron and steel industry in recent 16 years.

ued to decline, but still excess. China’s iron and steel enterprises are small and scattered; homogenization of competition problem is serious. The situation of mergers and acquisitions in steel industry is not ideal, but recently Baoshan Iron & Steel Company and Wuhan Iron & Steel Company officially merged means that mergers and acquisitions in the steel industry have taken a crucial step forward. From the overall situation, although resolving overcapacity in the steel industry has entered a new stage of rapid implementation, but China’s steel industry overcapacity still belongs to the absolute excess capacity.

### 3. Analysis of Overcapacity in China’s Iron and Steel Industry

The domestic scholars’ research on the causes of overcapacity in China’s iron and steel industry can be divided into three categories, namely, market factors, government factors and the double factors.

Scholars who support the theory of market factors argue that market failure and other market factors are the causes of excess production capacity of iron and steel in China. Yifu Lin proposed “wave phenomenon” to explain the overcapacity. Scholars who support the theory of government factor think that govern-

ment failure and other government factors lead to overcapacity in steel production. [1] Ligu Wang, who believes that China's excess capacity is a system of excess. Government uses the right of supervision to seek for rent, resulting in China's industry overcapacity [2]. Jiang Feitao believes that the local government officials promotion system makes the local officials use land ownership of local monopoly and the financial system to provide low-cost land subsidies and tax breaks and other enterprises, so that the enterprise investment behavior is distorted, resulting in excess capacity [3], the study also showed that subsidies will quickly form excess capacity [4].

The government market theory of double factors consider that China's steel industry overcapacity is caused by two factors of market and government, such as Fan Linkai found that on one hand, China's gradual reform process is not perfect and private enterprises gradually own the cost advantage, and the constantly expanding capacity erodes state-owned enterprise's market share, thus lead to overcapacity in state-owned enterprises. On the other hand, the central and local governments implement the policy of controlling excess capacity which results in more serious overcapacity [5].

This paper argues that China's iron and steel industry overcapacity caused by the market and government factors. In short-term, market factors play an important role in overcapacity; in the long term, the market will be full disclosure of information and the market system will be gradually perfect, so the distortion of enterprise investment behavior can be eliminated. In fact, the government mainly caused overcapacity of China's iron and steel industry in long-term. Although the central government decided to limit the steel production capacity in 2003, for so many years the steel industry overcapacity does not fall. Because local government does not limit steel production instead of engineering construction and capacity expansion in order to seek development and achievement, resulting in overcapacity.

## **4. The Demand Side to Resolve Excess Capacity in the Steel Industry Encountered Difficulties**

### **4.1. China's Steel Exports are Restricted**

As is shown in **Table 1**, steel exports in China keep increasing, but its growth rate reached a peak of 50.4% in 2014 and then suddenly dropped a lot. On the one hand, because of the adjustment of the world economy after the financial crisis, China's steel exports have been restrained to a certain extent; on the other hand, China's steel exports have been influenced by the increasing international trade friction.

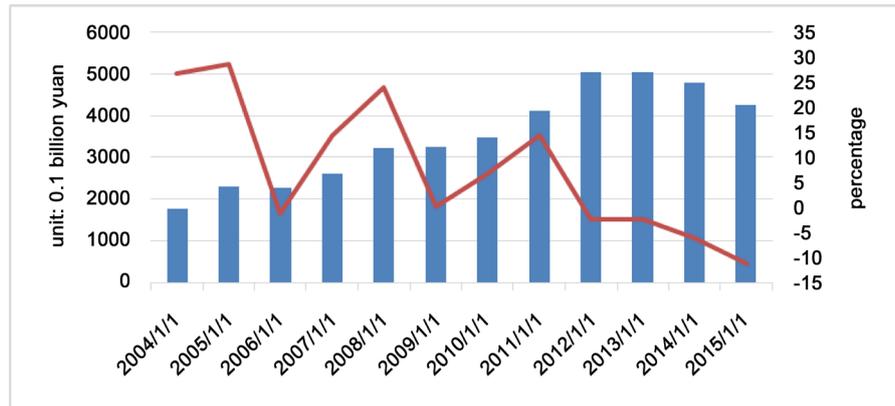
### **4.2. China's Domestic Investment in the Steel Industry Continued to Decline**

From **Figure 3** we can see that from 2004 to 2012, the amount of investment in fixed assets in the steel industry is in a period of rapid rise. Although the growth rate of fixed investment volatility is relatively large, the average level is relatively

**Table 1.** China’s steel exports in recent 5 years.

Year	2011	2012	2013	2014	2015
Steel exports (10,000 tons)	4887	5573	6234	9378	11,240
Growth rate (%)	-----	14.0	11.9	50.4	19.9

Data source: 2011-2015 China iron and steel industry yearbook.



Data source: WIND database; The blue presents the fixed assets investment in the iron and steel industry; The red presents its growth rate.

**Figure 3.** China’s fixed assets investment in the iron and steel industry in the past 12 years.

high. From the beginning of 2012, the domestic fixed asset investment in the steel industry began to slow down, while solid investment growth fell sharply, by the end of 2015, solid investment growth has dropped to –11%. Overall, China’s iron and steel industry investment in fixed assets is now in recession, combined with the actual situation of overcapacity in China’s steel industry, this state will continue in the next period of time. In addition to the impact of the global economy mentioned above, the domestic macroeconomic is also a very important factor. China’s economy is in the stage of structural adjustment, facing downward pressure, according to the National Bureau of statistics, China’s GDP growth in 2015 was 6.9%, the lowest level since the lowest level in 25 years. The steel industry investment will inevitably be affected by the domestic investment. On the other hand, the steel industry profit margins continued to slump and the investment return rate is too low, in the role of the market, not only new investment in the industry decline, the original capital also gradually withdraw from the iron and steel industry, making China’s steel industry investment growth fall faster.

### 4.3. Insufficient Domestic Demand for Iron and Steel

In addition to a small part of demand for steel exports, the rest are largely dependent on domestic demand. Iron and steel industry is an important middle reaches of the industry, the upper reaches of non-ferrous metals, electricity, coal and other industries, the downstream convergence of machinery, real estate, home appliances and light industry, automobile, shipbuilding and other indus-

tries. The demand of downstream industries affects upstream industry supply. In steel demand, real estate and infrastructure accounted for the largest part. Through the analysis of production situation of construction industry, we can understand the basic situation of domestic steel consumption.

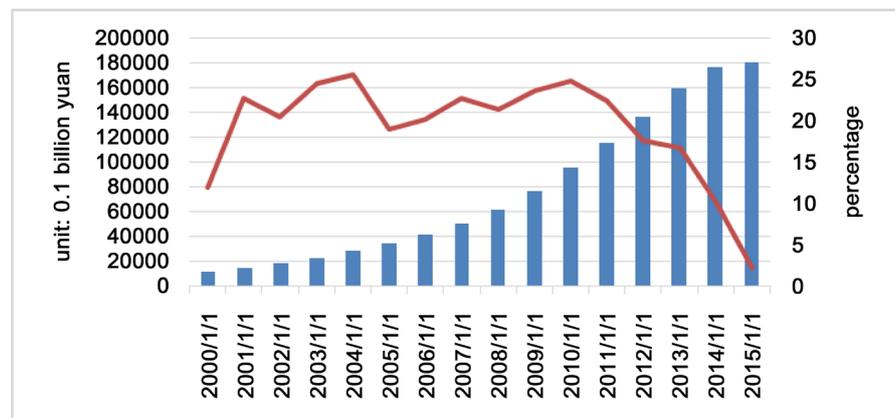
As is shown in **Figure 4**, the total output value of construction industry maintains high growth in 13 years. From the beginning of 2014, the growth rate has suffered a sharp decline and has dropped to 2.29% in 2015. Although the total output value of construction industry has been increasing, the growth rate slowed down a lot. In the long run, the overcapacity in construction industry can hardly be avoided, which will impact demand in the steel industry and result in a decrease in the domestic demand for steel products.

## 5. Supply Side Structural Reform is an Important Way to Resolve Overcapacity in the Steel Industry

Although exports, investment and consumption of the “three carriages” are facing heavy pressure, government should not give up resolving steel over capacity from the demand side, especially to increase the implementation of the “The Belt and Road” strategy. In addition, we must look for new impetus to economic growth from the supply side. The supply side structural reform to solve the overcapacity problem in steel industry is to adjust the steel industry structure in the foundation of cutting production capacity, to achieve the optimal allocation of labor, land and capital, to optimize product quality and structure, to realize the balance of steel industry supply and demand and to enhance the internal power of the industrial sustainable development.

### 5.1. Reducing Production Capacity and Controlling New Capacity

To reduce excess capacity from the supply side, steel enterprises play the main role. They should be the decision-maker and be allowed to invest labor, capital and other resources into more effective place. When dealing with zombie com-



Data source: WIND database; The blue presents the Gross output value of China's construction industry; The red presents its growth rate.

**Figure 4.** Gross output value of China's construction industry and its growth rate in recent 16 years.

panies, the market should be guaranteed to play a decisive role in the allocation of resources, such as forcing to withdraw excess capacity. For those with difficulties in operating, poor efficiency, hopelessness in reversing and mainly relying on government subsidies or bank credit, the relevant departments should implement relevant laws and regulations and the illegal construction project should be cleaned out. At the same time, the government should prohibit the blind construction of new capacity projects, mainly for those who have the homogeneity of new capacity and excess capacity, control the total production capacity.

The biggest obstacle to reduce steel production is likely to be local government intervention. Iron and steel industry is an important pillar industry in our country. In addition to reducing the production capacity, placing the departing employees is also difficult. This problem may have a greater impact on social stability, which needs to be solved as soon as possible. In order to pursue economic efficiency and maintain the employment rate, some local officials hinder the withdrawal of local steel companies, and even maintain the production of steel with government subsidies.

## **5.2. Upgrading the Supply Structure of the Iron and Steel Industry**

Iron and steel industry products should be adjusted according to market demand. Although the market demand for steel products mostly is general quality of steel, the existing varieties cannot meet the market demand for special and excellent grades. It needs innovation to drive steel industry to break the limit of the low-end and homogeneous products. Steel industry should pay attention to high-grade and mature varieties of steel, such as high-speed rail, nuclear power, marine engineering and so on, striving to narrow the gap with foreign advanced level. In the process of industrial upgrading, on the one hand, enterprises should find and solve the problems from the perspective of consumers, such as upgrading the standard of steel products, improving the quality of steel products, providing diversified products and service, which may create a good image of the consumer impression and strengthen brand building. The iron and steel industry should strengthen ties and cooperation with the upstream and downstream industries to extend the industrial chain and to develop deep processing of products to improve product width, length and depth, and to promote the upgrading of products. Except those, to increase investment in scientific research and development is also necessary. To promote the comprehensive upgrading of enterprises, companies should not only accelerate the pace of technological innovation and transformation, but also increase the intensity of innovation and transformation. On the other hand, we should guide the iron and steel industry to combine with the Internet industry, breaking the traditional steel industry development mode, achieving intelligent service from purchase to sales, improving the efficiency of iron and steel enterprises.

The upgrading of steel industry can not only accelerate the process of cutting excessive capacity, but also provide the source of power for the future development of the steel industry. But technological innovation needs a lot of talent and

capital investment and long-term development process, which will cause great difficulty in the development of Chinese steel industry.

### **5.3. To Speed up the Process of Merger and Reorganization of Iron and Steel Enterprises**

To promote mergers and acquisitions in the iron and steel industry can reallocate the resource, optimize the resource structure, reduce transaction costs, improve market efficiency and form a national and even global iron and steel enterprise. Mergers and acquisitions is also an important means to rapidly improve the industrial concentration of the steel industry, reduce competition, improve bargaining power, and enhance the influence of iron and steel enterprises. From the point of view of regional mergers and acquisitions, areas with rapid economic growth can be more easily integrated. Cross-regional mergers and acquisitions can improve the control of the market, expand the production scale and occupy a larger consumer market. From the view of production, mergers and acquisitions can speed up the steel varieties optimization, structure upgrading and development, professional choice. From the view of extension of the industrial chain, mergers and acquisitions can strengthen the connection of steel industry and downstream industries and the control of product sales and suppliers for iron and steel enterprises, reduce uncertainty and get more profit. Enterprises can also be based on their own situation and needs to explore more suitable mergers and acquisitions from other aspects, such as cross-border, cross ownership.

Factors influencing the merger and reorganization of China's steel industry are various, such as the downturn of iron and steel industry, the financial means, the obstacles of the system and the distribution of benefits. Problems after integration and reorganization are also of concern.

### **5.4. Relevant Laws and Regulations Play an Important Role**

After the implementation of the new environmental protection law in 2014, many iron and steel enterprises are under the environmental standards. In addition to the environmental protection law, iron and steel production capacity also faces the "People's Republic of China laws and regulations" as well as the "energy conservation law", "people's Republic of China product quality law" and "People's Republic of China safety production law". Iron and steel production capacity must abide by the laws and law enforcement must be strict. We must strengthen the environmental enforcement status, improve staff quality and skills related to environmental protection, set up environmental monitoring equipment and manage environmental protection enforcement team to ensure the implementation of energy saving and environmental protection laws and regulations. In a comprehensive examination of the environmental protection of iron and steel enterprises, government should not only strengthen the supervision and inspection of the quality of steel products, but also treat all the enterprises with unified environmental law enforcement standards. Government de-

partments should strictly be in accordance with environmental standards and requirements of the task, strengthen the supervision and inspection of iron and steel enterprises energy saving and environmental protection, increase penalties for illegal enterprises and related personnel. To investigate the environmental violations of steel enterprises thoroughly also need to mobilize the enthusiasm of the people who should be encouraged to report violations of corporate environment and play the role of social supervision. Although there are many laws to control the production of iron and steel enterprises, these laws and regulations authority is not enough and the mechanism of public participation is imperfect. For example, China's environmental protection law is not the basic law of the environment, and can only play a role in the guidance and supplement. In reality, the local government agencies control the local environmental protection departments. Some local government leaders may deliberately neglect the inspection or punishment implementation of illegal enterprises, in order to improve economic performance, which results in the useless of environmental departments.

### **5.5. The Implementation of National Policies to Guide the Exit of Excess Capacity**

The development of iron and steel enterprises, especially state-owned enterprises, should be incorporated into the national development strategy, the national development strategy direct the future development for enterprises, such as city construction, construction of the underground pipe gallery, beautiful countryside, green building and "The Belt and Road" initiative, which can be opportunities for development of iron and steel enterprises. The industrial policy should be made according to the present situation, and need to be guaranteed the smooth implementation of the policy. The government should formulate flexible credit policies for iron and steel enterprises, and guide financial institutions to implement the relevant credit policies, and use credit policies to promote the structural adjustment of iron and steel enterprises. Financial institutions need to strengthen the loan risk analysis of iron and steel enterprises and the establishment of a sound risk monitoring system, and should be in strict accordance with the relevant standards and policies for the iron and steel enterprises loans and other financial support. The local government can promote overcapacity for specialized deployments, such as requiring financial institutions to provide credit support for new capacity projects and high quality enterprises. For those which are lack of legal procedures, financial institutions should not give credit.

In order to resolve the excess capacity, government departments issued the financial and credit policy support. The bank is the most important financing channels of China's iron and steel enterprises, but the relationship between banks and enterprises is nervous, because of China's iron and steel industry in recent years having difficulties in business. Banks have taken a credit limit not to lend to the steel industry, which can clean out some of backward production capacity of enterprises, but for those which need for some technological transfor-

mation, upgrading and merger and reorganization, the banks have given not enough support. This may result from the implementation of the same lending standards for all iron and steel enterprises, which put restrictions on these loans to enterprises. Therefore, the government should introduce policies for the financial sector to develop a detailed implementation plan to ensure that the plan can be refined to implement effectively.

In general, to resolve overcapacity of the steel industry in the supply-side reform is a significant and meaning decision which needs a long process to achieve the established objectives. In this process, it is indispensable for the government to play the role of macro-control policies to guide economic entity and need for the steel enterprises to follow the market rules to make reasonable production plan. The goals to resolve excess capacity of iron and steel industry will meet the needs of the steel market and promote stable economic development.

## References

- [1] Lin, J.Y.F., Wu, H.-M. and Xing, Y.Q. (2010) "Wave Phenomena" and Formation of Excess Capacity. *Economic Research*, **10**, 4-19.
- [2] Wang, L.G. and Ju, L. (2012) Local Government Intervention, Enterprise Overinvestment and Over Capacity: 26 Industry Samples. *Industrial Economy*, **12**, 52-62.
- [3] Jiang, F.T., Geng, Q., Lv, D.G. and Li, X.P. (2012) Mechanism of Excess Capacity Based on China's Regional Competition and Market Distortion. *China Industrial Economics*, **6**, 44-56.
- [4] Geng, Q., Jiang, F.T. and Fu, T. (2011) Policy-Related Subsidies, Overcapacity and China's Economic Fluctuation—Empirical Testing Based on RBC Model. *China Industrial Economics*, **5**, 27-36.
- [5] Fan, L.K., Li, X.P. and Ying, S.S. (2015) The Realistic Bases and Formation Mechanism of Excess Capacity Based on Incremental Reform. *China Industrial Economics*, **1**, 19-31.



**Submit or recommend next manuscript to SCIRP and we will provide best service for you:**

Accepting pre-submission inquiries through Email, Facebook, LinkedIn, Twitter, etc.

A wide selection of journals (inclusive of 9 subjects, more than 200 journals)

Providing 24-hour high-quality service

User-friendly online submission system

Fair and swift peer-review system

Efficient typesetting and proofreading procedure

Display of the result of downloads and visits, as well as the number of cited articles

Maximum dissemination of your research work

Submit your manuscript at: <http://papersubmission.scirp.org/>

Or contact [jssm@scirp.org](mailto:jssm@scirp.org)