Research on Influence of Computer Technology on Industrial Upgrading and Cooperative Evolution of Environmental Protection Fiscal Policy from Green Finance Perspective

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Abstract. In recent years China's economic level has been increasing constantly traditional industrial structure and fiscal policy cannot meet existing social needs. With the continuous development of computer technology and its application field expanding, it is necessary to apply computer technology to industrial upgrading and green fiscal policy field. This paper discusses the basic situation of green industry policy, status quo of industrial upgrading and computer technology's role in this field. Results show that both are mutually reinforcing relations between computer technology and green industries and industrial structure changes are positively correlated.

Keywords: Computer Technology, Industrial Upgrading, Green Finance, Environmental Protection Fiscal Policy

1. Basic situation of green industry policy

1.1. Definition of green industry
Green industry is a large systematic project which integrates scientific research environmental protection forestry and related industries. Green industry actively adopts clean production technology to adopt harmless or low harm new technology and new technology to reduce raw materials and energy consumption greatly reduce investment high output and low pollution.

1.2. Demand for green industry policy in China economy
China's economic growth has achieved remarkable achievements. However, economic development model also brings serious environmental pollution and resource consumption. In order to cope with increasingly serious ecological environment problems China government has formulated a series of environmental policies such as energy conservation emission reduction standards pollution charging system and compulsory shutdown pollution enterprises etc. These policies have curbed environmental deterioration to some extent but economic activities continue to destroy environmental systems and ecological function continues to deteriorate gradually. There seems to be some contradiction between
economic growth and environmental protection. Traditional views even believe that environmental regulation increases social costs and produces negative externalities for productivity growth.

However, that does not mean that economic growth must be at the expense of environment. Nowadays, China’s economy enters new situation, people's contradiction between demand for better life and insufficient supply capacity of high-quality ecological environment becomes increasingly prominent. Severe ecological environment problem becomes bottleneck restricting economic growth. How to promote coordinated development of economy society and environment becomes a major proposition faced by policymakers and researchers. Therefore, the relevant departments put forward general requirements on economic development mode from the height of ecological civilization construction. This kind of development mode emphasizes promoting green development accelerating establishing green production and consumption legal system and policy direction establishing sound green low carbon cycle development economic system. This means that promoting economic development model green transformation has become an inevitable choice for new era[1].

Essentially speaking green development involves economic growth environmental protection and even promote social harmony among which key problems lie in coordinating existing conflicts of interests and coping with uncertainty risks. Industrial policy plays an important role in promoting industrial structure evolution industrial competitiveness promotion and economic growth. However industrial policy emphasizes industrial development and economic efficiency promotion which promotes economic growth is its main task. Under green development background, policy measures still centered on economic growth obviously cannot meet social development requirements.

1.3. Theory of green industry policy

There is close connection between green industry policies and industrial policies and environmental policies. In practice these policy measures often cross each other and in many cases a policy may be assigned multiple objectives such as economic benefits environmental benefits or social benefits. With environmental problems becoming increasingly serious governments have issued a series of environmental policies which aim not only to protect environment and improve environmental benefits but also to promote industrial structure to green and low carbon development. Therefore, whether green industry policy or industrial policy or environmental policy its essence is to solve market failure problem. In this regard, green industry policy, industrial policy and environmental policy have inherent unity.

However, industrial policy focuses on coping with technological innovation and R & D activities externalities and highly uncertainty. Environmental policy mainly solves environmental externalities problems in economic activities. Protecting ecological environment and internalizing externalities costs are its main tasks. Green industry policy shoulders industrial policy and some environmental policy responsibilities simultaneously. Its broader development essence puts forward higher requirements for constructing realistic policy system.

Figure 1. Basic principles of green industry policy.
It is difficult for governments to identify whether green investment can take advantage of future markets and succeed because green industry development status and profitability can only be determined by future market demand. Therefore, this process is accompanied by high uncertainty and risk, which may lead to failure risks for industrial policies aimed at promoting green development, which is unacceptable for profit-oriented enterprises. Meanwhile, the expected income of green investment depends heavily on internalization degree of environmental externalities. When environmental internalization is low green technology innovation and investment returns are far lower than social benefits resulting in green technological innovation and investment insufficiency. Therefore, compared with traditional industrial policy the difficulty of green industry policy lies in not only dealing with externalities and uncertainty problems of R & D activities but also solving environmental externalities problems [2].

Green industry policy aims at seeking sustainable development within the boundary of ecosystem. Based on social objectives and moral requirements this sustainable development model aims at coordinating market failure seeking optimal allocation efficiency considering additional social preferences and different groups preferences making economic efficiency result more consistent with social value evaluation criteria. Fundamentally speaking, realizing green industry policy goal has three basic points to follow: 1) breaking up old paths of development; 2) creating new development paths; and 3) addressing challenges of high uncertainty and risk [3].

2. Basic status quo of industrial upgrading
The impetus for upgrading industries can be divided into two categories: market push and government push. The first category is based on comparative advantage theory, mainly rely on market dynamics mechanism to upgrade industrial industries. Comparative advantage theory holds that industrial upgrading should fully exert existing comparative advantages and realize upgrading of industry gradient. Second is government supporting leading industries, government as the main driving force, promoting industrial upgrading. China should change from its original industrial upgrading ideas seize opportunities for industrial modularization promote international competitiveness of manufacturing industry and promote industrial upgrading [4].

![Industrial classification in industrial upgrading process.](image)

Figure 2. Industrial classification in industrial upgrading process.
However, enterprises are weak environmental awareness, few small scale, weak competitiveness enterprises still have many. For example, in textile industry to reduce production costs intentionally abnormal use sewage disposal facilities theft discharge phenomenon frequently occurs. Besides, some enterprises have lagged behind production process, pollution control facilities aging, drainage cannot achieve stable standards. There are also enterprises expanding production scale sewage greatly increasing sewage treatment facilities do not follow up sewage treatment cannot be effectively treated. 
Environmental law is not perfect but also key. At present, China's green industry policy against illegal enterprises punishment measures are small, and sometimes cannot accurately capture illegal enterprises.

Moreover, because environmental technology innovation exists high risk and uncertainty when government cannot guarantee profitability of green investment enterprises lack investment motivation. However, with environmental problems and social contradictions intensified, policies that focus solely on solving environmental problems clearly cannot meet realistic needs. To reverse this situation, governments implement stimulus policies such as R & D subsidies and tax incentives to guide companies to invest in green technologies. Meanwhile such measures can also compensate for huge differences between individual income and social income resulting from externalities enhance investment enthusiasm of enterprises. Under this background, realizing coordinated development between economy, environment and society becomes the main policy direction.

3. Role of computer technology in industrial upgrading and environmental protection fiscal policy

Due to these shortcomings computer technology is urgent in industrial upgrading and environmental protection fiscal policy. Below is an example of Internet of things, expounds computer technology for green industry development brought about big impact.

Environmental automatic monitoring system has great breakthrough and innovation significance for Internet of things in environmental protection field. Automatic monitoring system is designed to install various automatic monitoring instruments and data acquisition transmission devices at appropriate points of pollution sources. It connects with communication server of environment monitoring center through various communication channels and realizes online real-time communication. Thus, sensor sensing location environment can be continuously delivered to environmental departments and stored on large database servers for use by various applications systems of environmental information centers[5].

Automatic monitoring of environment is typical application of Internet of things technology. According to the architecture and components of Internet of things it can be found that environmental automatic monitoring equipment in environmental automatic monitoring is sensing layer which collects monitoring information of relevant pollution sources. Environmental protection network transmitting automatic monitoring data is transmission layer which supports environmental information transmission among environmental departments. Various business systems are application layer providing services and interactive interfaces needed for various users.

At present, China's environmental network construction experienced various historical stages such as environmental monitoring network development, pollution source automatic monitoring network construction. Initially it consists of various environmental monitoring networks developed subsequently along with the establishment of automatic monitoring system of pollutants becomes mature gradually. Moreover, China has carried out large scale construction of automatic monitoring network for pollution sources, and automatically monitors exhaust gas and waste water emissions from key pollution sources. Meanwhile, the construction of national, provincial and municipal networks greatly promoted the automation process of environmental monitoring.

With the application of cloud computing technology, environmental Internet of things continues to develop. Under the background of environmental automatic monitoring development many industries introduce most advanced mobile communication technology spatial information management technology[6].Meanwhile enterprises adopt cloud computing concept combine traditional means with modern information technology integrate computer network technology communication technology and spatial information etc. integrate them establish environmental Internet of things. This provides decision support platform for environmental monitoring environmental management environmental simulation, and so on. Environmental protection network establishment increases industrial environment monitoring scope strengthens environmental monitoring management strength. It
effectively improves environmental policy implementation level and contributes to achieving coordinated development of national economy society and environment.

4. Conclusion
Computer technology is an important technical means to promote industrial upgrading and environmental policy. With the continuous improvement of informationization level, through computer network application, can grasp enterprise pollution situation and environmental quality condition at any time, change afterwards supervision as beforehand prevention. Extensive supervision shift towards refinement supervision can greatly improve efficiency. That is, computer technology can effectively promote China's industrial upgrading process and promote environmental fiscal policy in all regions accurately implemented.

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