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Thesis Prospectus

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The Research Question

China's rapid economic growth has been followed by outstanding levels of environmental degradation. But, instances of pollution and other destructive environmental accidents are not spread evenly across provinces, nor do they correlate significantly with GDP per capita. In 2008, for example, Shandong reported only fourteen instances of pollution and destruction accidents, while Guangxi, whose GDP per capita was only half of Shandong's, reported 89 instances. Conversely, Shanghai, whose GDP per capita is over twice that of Shandong, reported 36 cases of pollution and destruction accidents. This thesis seeks to explain these discrepancies by analyzing various provincial and municipal-level economic and industrial data over a period of 15 years (from 1995 – 2009) to determine what type(s) of industrial and economic policies can maintain growth while curtailing environmental destruction. In the end, the author hopes to answer two questions: First, why have some provinces and municipalities in China been able to develop thriving economies without sacrificing environmental quality? And second, what steps can sub-national governments take to obviate the threat of further environmental degradation while maintaining necessary economic growth?

The thesis will be divided into two sections: a brief qualitative section will outline China's demoralizing history of environmental devastation, from Mao Zedong's idea that "man must conquer nature" (人定胜天) to China's current dependency on coal and other forms of dirty energy, while noting the significant progress the Chinese government has made under the leadership of Hu Jintao and Wen Jiabao. The author will also discuss growth models, criticisms of the environmental Kuznet's curve and theories on vintage capital as they pertain to the relationship between China's growing economy and battered environment. An extensive quantitative section will analyze economic and environmental data, primarily from China's Statistical Bureau, from 1995 to 2009. Most of the research will focus on provincial-level data, but an analysis of national data will also be included. Utilizing simple panel data

methods,¹ the author will determine what policies are best-suited to maintain economic growth while decreasing environmental damage. In the conclusion, the author will provide economic and environmental policy recommendations for both the Central Government in Beijing and lower level government bodies in the various provincial capitals.

Importance of the study

China's breakneck rise to international prominence – both economically and politically – puts it at the forefront of many of the world's most pressing affairs. Sandstorms originating in the Gobi Desert blow across China's eastern seaboard, Japan, Korea and even California, carrying harmful pollutants from China's industrial zones around the world. Furthermore, climate change, which science proves² is exacerbated by man's dependence on fossil fuels and increasing consumption of animal products, threatens national security, the global economy, developing nations, and regional stability. China's economic growth is bound to be mirrored by other developing regions like Africa and Southeast Asia. Jeffrey Sachs phrases it perfectly: "China's economic rise, while improving the well-being of hundreds of millions of people, exemplifies the kind of global stresses that will be pervasive in the coming decades." The importance of this thesis and its results lies not only in the recommendations it will propose to the Chinese government, but also the data analysis contained within the quantitative section by which other developing regions might model their sustainable development policies.

Outline

- I. Introduction
- II. Background
 - a. Mao-era environmental policies and challenges
 - b. Deng-era environmental policies and challenges
 - c. Timeline of Relevant Events

¹ Wooldridge, Jeffrey M. *Introductory Econometrics, Fourth Ed.* Chapters 13-14, "Pooling Cross Sections across Time: Simple Panel Data Methods" and "Advanced Panel Data Methods." South-Western: Mason, OH. 2009.

² <http://climate.nasa.gov/>

- d. Recent changes in China
 - a. Growth of civil society in China
 - b. Youth involvement
 - c. Government awareness
 - d. China's growing international presence
 - i. Copenhagen
 - ii. World Economic Forum
 - iii. Yu Qingtai – "China's interests must come first"³
 - e. Discussion on economic theories surrounding growth, energy and capital
- III. Econometric Analysis
 - a. Introduction of variables
 - i. Description
 - ii. Relevance
 - b. Summary of regression results
 - c. Summary of panel data results
 - d. Analysis of test results
- IV. Conclusion
 - a. Summary
 - b. Recommendations
 - c. Application challenges

Variables

The amount of data pertaining to China's economy and environment is often overwhelming, and discretion is mandatory in choosing effective indicators for analysis. The author will use data from the National Bureau of Statistics of China (中华人民共和国国家统计局) for a fifteen year period from 1995 through 2009. Independent variables will center on relevant industrial policies and will include (but may not be limited to) the following:

1. Government expenditures: Government expenditures for environment (sic) protection; agriculture, forestry and water conservancy; and education⁴ are useful indicators of city and

³ <http://www.chinadialogue.net/article/show/single/en/3792--China-s-interests-must-come-first->

⁴ In a 1976 presentation of their paper "Social Class and Mass Environmental Beliefs: A Reconsideration," Buttel and Flinn demonstrate a strong correlation between education and environmental concern in the population. (Source: Buttel, Frederick H. and William L. Flinn. "Social Class and Mass Environmental Beliefs: A Reconsideration." Paper presented at the annual meeting of the Rural Sociological Society, New York, August 1976.)

- provincial level governments' willingness to invest in areas that are crucial to environmental protection.
2. Tourism: "Foreign exchange earnings from international tourism by region" is a useful indicator of the tourism industry's development. By searching for correlations between tourism income and the
 3. Employment by sector: An analysis of employment by sector among provinces and municipalities will provide useful insight into what types of industry are most closely correlated with the dependent variables.

Dependent variables will be twofold, environmental indicators and economic indicators. Variables will include (but may not be limited to) the following:

1. Environmental Pollution and Destruction Accidents: This variable measures the frequency of environmental disasters, separating them according to type (e.g. water pollution, air pollution, etc.). Economic losses related to these disasters will also be included in the analysis.
2. Economic indicators: An analysis of Chinese policy that ignores economic implications is worthless. The Central Government's emphasis on maintaining economic growth means that the successful analyst will search for solutions that marry environmental awareness with continued economic growth. Socio-economic indicators might include GDP per capita, access to clean water, etc.

Feasibility

Due to the immense amount of data available on environmental and economic issues in China, this thesis is quite capable of providing convincing solutions to China's national environmental issues.

Using the methodology outlined above, the author will assess the various factors that contribute to

China's economic growth and environmental challenges. A background in quantitative research methods and econometrics will allow the author to make policy recommendations to regional authorities that are buttressed by technical analyses of empirical data. The author has also obtained an advanced proficiency in Mandarin Chinese through the National Flagship Chinese Program at the University of Mississippi, which will allow him to explore some Chinese-language resources.

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