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Economic Liberalization, the Changing Role of the State and "Wagner's Law": China's Development Experience since 1978

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Summary. — The paper applies Wagner's Law of increasing state activity to illustrate the changing function of the state in China as a consequence of economic liberalization. Wagner's Law describes the association between increasing national wealth in progressive states and the rise in state activity and expenditure. This indicates that the causes of bureaucratic expansion are to be sought, not just in terms of political pressures, but the interplay between political considerations and the economic necessities, resulting from the emergence of new property rights. A simple illustrative model is developed to measure the effects of increasing national wealth and the growth of the public sector. This suggests that the patterns of economic development observed by Wagner in 19th century Europe are not unlike those observed in China today.

Key words — Asia, China, economic growth, public sector

1. INTRODUCTION

The relationship between economic growth and the size of the state sector has long been a topic of interest for public policy practitioners and academics alike. Throughout history, the role of the state has been critical in determining particular economic outcomes. Research in this area has in general focused on how economic policies impact upon economic growth. Keynesian theory, for example, indicates that given the existence of idle capacity and other resources, increased government expenditure will increase national income. Studies by authors such as Barro (1991) indicate that a large public sector can impede economic growth. Development theory extensively describes the changing role of the state in economic modernization. Development economists have on the whole argued for increased government spending to mobilize underutilized resources and capital. In reviewing theories of the relationship between economic development and the role of the state, this paper indicates a plausible link between economic growth and the size of the state sector. Wagner's Law of increasing state activity and economic growth provides a valuable framework for illustrating this. Formalized in the 19th century, and more often referred to as a generalization, the "law" describes the association between increasing national wealth in progressive states, and the rise in state activity and expenditures. Applying Wagner's Law to China's allows a politico-economic analysis of increasing state activity under conditions of rapid development, and helps bridge the gap between political theories of development and the empirical measurement of the role of the state.

Wagner is a tantalizing social scientist from the 19th century. He is the author of a "law" which has been recognized as having great potential usefulness in explaining why governments continue to grow in size even within capitalist economies where economic expansion is generated by the private sector. [1] The law

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suggests that in post-industrial society, there is a tendency to push toward an expansion of the public sector. The strength of this trend can be seen from the failure of successive governments to reduce the size of the public sector in the last quarter of a century. Yet, Wagner's contribution has been relegated to the margins of mainstream public finance and corporate governance, undeservedly so because underlying concepts in his law are directly relevant to the process of reform in post-communist transitional economies. While it does not help that Wagner's thesis has not been fully translated into English, the central concepts advanced by him provide a wealth of ideas for further research on the role of the state in economic development.

At a theoretical level, the role of the state been viewed by neoclassical economists as one of addressing market failures. The weakness of this approach centers on its failure to examine the factors that shape how the role of the state evolves over time. A much more useful challenge is to account for changes in property rights and their specification, enforcement, and effectiveness over time (North, 1981). In this regard, China provides a fascinating case study. Despite official claims about the dismantling of the bureaucracy, the size of China's state bureaucracy has continued to grow. Arguments advanced to explain this are typically political in nature and include the slowness of bureaucratic reform, resistance to change, and the entrenchment of bureaucrats. While recognizing these problems, this paper suggests that there is also an economic explanation based on the emergence of new property rights as predicted by Wagner's Law. This indicates that the causes of bureaucratic expansion are to be sought not just in terms of political pressures, but the interplay between political considerations and the economic necessities of development. Economic modernization results in the emergence of new property rights requiring greater state intervention. As national wealth increases, people become accustomed to and expect both a higher level and an improved quality of state services to match rising standards associated with increased GDP in other areas of their lives. Their demand for government services thus changes in relation to the level expected in a previous period as growth occurs, in much the same way, it will be argued here, as their consumption aspirations respond to changes in personal income. Wagner observed the expanding role of the state in the rapidly developing economies of 19th century Europe and the USA. This paper illustrates how Wagner's observations are just as applicable today for countries experiencing rapid economic growth such as China.

There are specific difficulties with measuring Wagner's Law and testing it empirically due to a lack of clarity regarding the exact meaning of the law. The case of China introduces its own difficulties, principally in the area of statistics on bureaucratic reform. There are ample opportunities for obscurity about privatization data. For example, privatization covers people who were formerly state employees and transferred to the private sector with no change in function, as control in enterprises is devolved from the center. Staff may also remain on the public sector payroll even after enterprises have been disposed of by the state. Political and social reasons prevent the government from dismissing them from the nominal payroll. The confusion and lack of precision about statistics on the state sector are reflected in the published data. In the official yearbook, the total number of state employees is stated as 83 million, whereas the official press routinely refer to a figure of 40 million. The most authoritative and more clearly defined data are to be found in the yearbook, and these figures are used in preference to figures reported in the official press.

2. WAGNER'S LAW OF INCREASING STATE ACTIVITY

Adolph Wagner, a German economist in the 19th century, formulated a law of increasing state activity and expenditures in progressive states. Wagner attributed this to the growing administrative and protective actions of government in response to more complex legal and economic relations, increased urbanization, and rising cultural and welfare expenditure. There is some doubt regarding the exact meaning of his "generalization." [2] This may help explain why Wagner has remained on the margins of public finance literature. Goode (1984) suggests that, at best, it can be interpreted as predicting an increase in the ratio of government expenditure to national income as per capita income increases in industrialization. Krzyszaniak (1972) sees Wagner's Law as requiring that expenditure on a given public good increases with an increase in national income. Bahl and Linn (1992) see Wagner's Law as indicating that a growing government

share of output is inevitable, although they note that the reasoning behind this was not clearly stated. Bird (1971) is more precise noting that Wagner's Law describes the growing importance of government expenditure and activity as an inevitable feature of a progressive state. In this regard, Wagner was the first to demonstrate empirically the expansion of administrative and protective functions of the state, cultural and welfare expenditures, and the scale of finance necessary for certain activities that required state involvement. This explanation allows economists a clearer basis for analyzing the association between economic development and the role of the state.

Much of the literature to date has focused on applying Wagner's Law to analyze changes in national income and taxation patterns. Krzyszaniak (1972) applied Wagner's Law to examining government expenditures and the revenue constraint but suggests caution, as such models tend to operate in a "no man's land" between economics and political science. Krzyzaniak describes Wagner's Law as at best political and usually economico-political and cautions that much of the empirical work from such models is in fact falsely interpreted as the importance of their mixed nature is rarely recognized and its implications accounted for.

Bahl and Linn (1992) argue that although the reasons for the growing share of output were not clearly defined, Wagner's thesis has held up for both industrial and developing countries. They further note that analysts tend to use this regularity as a starting point for further analysis citing the Peacock–Wiseman displacement thesis as an example. The Peacock–Wiseman displacement thesis argues that government expenditure undergoes a shift in response to some major crisis or disruption. Hence, it offers a possible explanation for the growth of government expenditure in response to such events as commodity prices, world wars, or global recessions. The same applies to the Applied Social Mobilization Theory, which examines the transition from traditional society using a number of benchmarks (urbanization, industrialization, education, media penetration, etc.).

(a) *Measuring the governments role*

One of the principal difficulties with Wagner's Law, as highlighted in the literature, appears to be the difficulty in finding a suitable proxy to measure either government expenditure or the level of government involvement in the economy. Beck (1981) measures the elasticity of government expenditure in terms of GDP at constant prices for 12 industrial countries over the period 1950–77. This gives a median value of 1.8, indicating that Wagner's Law does hold empirically when government expenditure is used as a proxy for state activity. However, government expenditure may not provide an accurate measure. Goode (1984) notes that ratios of government expenditure to either GDP or GNP may underestimate the extent of state involvement since they fail to reflect the influence of regulations affecting consumption in other sectors. Furthermore, Wagner's generalization may not be a genuine law as large differences can be observed between industrial countries and between periods in the same country. Therefore, it may not offer a firm basis for predicting economic behavior. Bird (1971) is particularly critical of this aspect of Wagner's Law, and notes that although the law appears to hold in aggregate terms for most periods for all the countries tested (Canada, UK, Germany, Sweden, and Japan), its use is basically confined to the industrialization period of development. Bird suggests that most countries are past the stage of development where Wagner's reasonings may have any validity. Despite describing the "law" as a speculative pronouncement that is without predictive significance, Bird notes that it has proved unusually useful.

Overcoming these limitations requires an alternative approach to measuring the role of the state in economic development. Bird's (1971) interpretation of Wagner's Law is important in this regard, as it notes that the increasing role of the state can be accounted for in terms of the growing importance of government *expenditure* and *activity*. Although most previous interpretations of the law have focused on government expenditure, the law does not necessarily require increasing government expenditure in the strict sense. The increasing role of the state may alternatively be measured in terms of government activity. This paper will apply Wagner's Law in terms of the growing level of state activity.

This approach is consistent with the literature on economic development and administrative reform. This has indicated that the role of the state becomes more complex as industrialization progresses, giving rise to a need for an increase in the number of bureaucrats. It also helps explain why economic reforms in China have not been associated with a downsizing of

the state bureaucracy. By using the size of the state sector as a proxy for the growing importance of the state sector, we can more accurately apply the concepts developed by Wagner to developing economies. The result can then be checked for consistency against public expenditure patterns.

3. ADMINISTRATIVE CHANGE AND ECONOMIC DEVELOPMENT

The changing function of the state is widely dealt with in development theory. Despite this, privatization programs tend to assume that smaller is better when it comes to the state's role. In the past, the reform of the public finances and the institution of a social security system have not received the same attention as enterprise reform, thus endangering the transition process (Hussain & Stern, 1993). There was a widespread belief among the transition orthodoxy that the bureaucracy needed to be destroyed as it lacked the necessary skills to bring the economy to the market (Nolan & Wang, 1999). This approach had its serious defects. The failure to create a set of state institutions that guaranteed property rights provided a costly lesson in the transitions of Russia and other East European countries.

At the outset, the state has a central role in economic development. This involves the implementation of programs designed for modernity, and facilitating change within the administrative system itself. The preconditions for economic takeoff require fundamental changes in the traditional economic makeup, changes that radically alter the political and social system (Rostow, 1990). In order to achieve this, the state has major technical tasks to complete. These include ensuring that unified commercial markets develop and organizing the provision of education, a public health service, and other key social and community services. Moreover, only the state can ensure that the financial structure and institutions are adequate to achieve this modernization.

One of the outcomes of modernization for China was the transfer of population from rural to urban and the shift from industry to services. [3] The resulting urbanization, which is part of an inevitable process in the transition from a low-income agricultural society to one based on modern industry, increases the costs to the state. This is evident in the provision of housing, sanitation, policing, and transport, services that cannot quickly be provided by the private sector. The transition from traditional society to modernity produces a gulf between the needs for and the capabilities of government, requiring a significant expansion in the role of government, most notably in the earlier stages of economic development (Hinrichs, 1966). The complexity of manufacturing compared to agriculture, and its greater dependency on a range of support services, means it requires far greater support from the state to facilitate its development. In this regard, the state has a specific role to play in terms of coordinating investment decisions and overcoming market failures. While such an expansion of the state's role is often difficult to quantify in terms of standard economic measures, [4] it should not be treated as a completely unexpected phenomenon.

The size of the state bureaucracy may also be expected to persist even under state privatization programs. The transfer of state enterprises to the private sector may not end state intervention, even in highly competitive markets. While privatization is often intended to replace the monitoring function of bureaucrats with the "invisible hand" of competitive capitalism, continued state intervention is required. This presents itself in the form of state agencies and regulatory bodies necessary for the functioning of competitive markets. Moreover, given the variations in local circumstances, "it cannot to be expected that all bureaucrats will leave business at a broadly similar time" (Yarrow, 1990, p. 167).

(a) *Economic development and the Chinese Communist Party (CCP)*

For the CCP, rapid economic growth introduces new dilemmas and challenges to its political legitimacy. Economic growth and the transition toward a market-based system challenge the traditional power base of the party, forcing a shift in attitudes regarding the party's role in the economy. Typically in the late 20th century, the principal obstacle to economic growth was the CCP's management of the economy. The inadequacies of state planning and the appointment of enterprise managers based on political rather than professional qualifications meant serious distortions of economic signals and incentives combined with inefficient management of resources in the production process. The absence of large-scale competitive markets meant that there was no

obvious signal that the economy was failing to achieve its optimal performance and no mechanism to offer the appropriate rewards or sanctions. A communist party has special difficulty in the transition to market-based reforms. State control of economic resources has traditionally given the party its principal source of patronage. Workers who are compliant with its objectives can be given privileged access to housing and other social benefits, provided these are controlled by state enterprises whose survival is not dependent on profit. The power of the party will be consolidated so long as the management of these enterprises is in the hands of party members whose first obligation is to the party. Political survival under rapid economic growth requires a new type of legitimacy, usually based on achieving improved living standards through improvements in economic performance.

A traditional option for the survival of the party is through using the state bureaucracy to maintain control over all major aspects of national life. Thus, it is not in the interests of the regime to reduce the size of the state bureaucracy but, rather, to multiply and expand its jurisdictions so as to encompass the activities of as much of the population as possible. However, this all-embracing role of the bureaucracy is difficult to maintain once economic liberalization gets under way and market forces are allowed to influence decision making. The management of cultural and media activities provides an illustration of this dilemma. Control of these activities was centralized in the early 1950s, and the CCP now had the political will and institutional means to attempt the control of the entire realm of public culture (Nathan, 1985). The party used its control to protect and legitimize its power. In the era of Mao Zedong, the CCP felt considerable concern about the dangers of independent thought and inquiry among intellectuals and was equally nervous about the effect of published criticism of the party on the loyalty of cadres and public. The party's apprehensions reflected its dismay at the results of its own experiment in removing controls on freedom of thought and expression in what was known as the "Hundred Flowers" campaign of 1957. The revelation of widespread dissatisfaction with the performance of party officials and an outpouring of criticism of the party's record across the nation led to the imposition of harsh measures on intellectuals and vigorous moves to extend the party's control over all aspects of national life. [5] Although the Hundred Flowers campaign was an attempt to promote constructive criticism of the party, the result was to suppress the critics by branding them as "rightists" and imposing tight controls on cultural activities and the media. [6] More recently, attempts by the party to regulate cultural activities have started to give way to profit considerations. The move toward a market-based system after the death of Mao and the introduction of economic reforms by Deng Xiaoping from 1978 has made promoting economic growth essential for legitimizing the role of the party. In the case of media regulation, the party soon realized that given the proliferation of new commercially driven media ventures, it would be physically impossible to exercise effective censorship, except over a handful of key publications. [7] State-run publications are now expected to make a profit. These trends are indicative of a general shift from legitimacy based on orthodoxy and loyalty, toward one based on achieving a level of economic growth.

4. THE REFORM OF CHINA'S STATE BUREAUCRACY

At the outset of reforms, the need to reform China's bureaucracy was clear. Organizational overlapping, unclear jurisdictions, and overstaffing impeded the efficient running of government (Burns, 1993). The shift from Maoist class struggle to economic reforms in 1978 highlighted the inadequacy of the structure in dealing with the needs of a modern economy. By this date, China had abandoned almost all useful legacies of Maoism, hence creating a clumsy and bureaucratic government apparatus (Li, 1993). Mao had recognized that for the system to work, the party in playing a central role in the bureaucracy must be subject to criticism. [8] Mao believed that as long as the party maintained close ties with the masses, and accepted their supervision, the party would undoubtedly lead China to economic success. Mass criticism was discredited by the Cultural Revolution and the corruption of the Gang of Four. A lack of external supervision resulted in cadres functioning in an authoritarian manner becoming entrenched in their positions of authority.

Deng Xiaoping in addressing these problems proposed streamlining the party structure, calling for staff to be cut by up to a third, improving the promotion structures, and increasing

efficiency. [9] However, the central role of the party in the bureaucracy proved difficult to break. China was characterized by a "dual bureaucracy" where the party played an important role in both the system of service delivery and the direct management of the state bureaucracy (Zhang, 1993). For the system to function effectively, the party needed to be separate from the bureaucracy. Such a separation did not occur as party members were appointed to positions of authority within the bureaucracy to maintain party control. Instead, the focus of reform has been on how the party manages the economy. The state council has identified five key issues, which it sees as being of paramount importance in reforming economic management. These include deepening the reform of the state-owned assets management system, improving the macrocontrol system, and strengthening the financial supervision and management system. [10]

Attempts to reform the cadre system drew attention to the problems of administrative appointments. Market-oriented reforms necessitated better educated, more professionally competent officials. A survey by the First Ministry of Machine Building conducted in 1980 showed a relatively low level of educational attainment among high-level cadres. [11] This is unsurprising given the relatively early stage of reforms. Economic modernization has dictated a considerable change in this situation. Since 1983, managers have been required to sit examinations, and those that were found to be incompetent were required to leave their positions. By the end of 2000, more than 92% of Chinese officials above the county level had a two-year college education compared with only 18% in 1978. [12] While a move towards appointments based on merit indicates that the CCP is starting to reform the cadre system, [13] the party still retains its control over appointments.

Enterprise reform has provided one of the more visible examples of bureaucratic streamlining. Reforms have resulted in a withdrawal of ministries from enterprise management. The *SOE Law* (1988) and the *Factory Managerial Responsibility System* removed the party from direct interference in enterprise management (Naughton, 1995). A Company Law (1993) further standardized the relationship between the party and enterprise management. Rather than rushing to auction off enterprises, the state has started to pay more attention to the selection of enterprise management (McMillan & Naughton, 1998).

While China has paid considerable attention to the reduction of enterprise staff as part of SOE reforms, the numbers employed in service organizations have increased considerably. Service organizations are those neither falling into the category of state enterprise nor administrative agency. Service organizations do not have power over other organizations (administrative agencies) and do not aim to make a profit (state enterprises). They include essential public services such as public hospitals, schools, and research institutes. They comprise a significant aspect of China's public sector, of which the state sector remains the largest part. China has approximately 1.3 million service organizations with about 25 million employees, which account for between one-third and one-quarter of state budgetary expenditure (Lam & Perry, 2001). In the past, the boundaries between service organizations, administrative agencies, and state enterprises were unclear. These boundaries are becoming better defined. Privatization and an increasing level of professionalism needed to regulate a market economy have put pressure on service organizations to become more financially independent.

To deal with the complexities of market regulation, organizations such as the China Securities Regulatory Commission have had to become more professional, employing staff with technical expertise in modern securities markets. The independence of these organizations from the central government is seen as critical in their ability to regulate a market economy. The necessities of modernization require a greater role for service organizations in areas such as regulation, welfare, health care, and pensions, thus increasing the resources they require. Recent examples include the creation of a Banking Regulation and Supervision Commission (BRSC), the establishment of a state food and drug administrative body, and the upgrading of the State Administration of Work Safety to strengthen supervision over industrial production and coal mining. [14] This trend illustrates clearly that economic modernization, even in socialist economies, requires an expanded role for the state in the regulation of market activity.

The size and the complexity of the administrative structure have not helped efforts to reform. China is a unitary state run by the CCP. Party committees and organizations at each level of the hierarchy play an important role in coordinating and supervising state institutions. Bureaucratic reform has been particularly elusive at the state council level. When

the PRC was founded in 1949, there were 35 central ministries and commissions. [15] By the 1970s, this number had grown to over 100. The first round of administrative reforms in 1982 saw this number cut to 61. By 1987, the number of ministries and commissions had increased to 72. A second round of reforms saw this number fall to 68, but by 1992, the number had risen to 86. By 1993, the total government staff at all levels had risen to approximately 40 million compared with about 15 million in 1978. This prompted another round of restructuring in 1993 reducing the number of ministries and commissions to 59. Continued inefficiency and overlapping of functions as well as budget pressures forced further streamlining in 1998. This saw the number of civil servants almost halved during 1998–2001. The number of government ministries and commissions were reduced from 40 to 29. Twenty five of the original ministries were retained while the remainder were restructured and transferred to seven newly created state bureaux. [16] In 2001, these were abolished and transformed into the current industrial associations, the staff of which remains on the state payroll.

The intertwining of the CCP and the state bureaucracy further complicates reform. The legitimacy of the party is now based on its ability to reform. Reform however involves a loss of control. If the party no longer controls, then how does it reward the loyalty of its members? The party continues to rule through its control of leadership selection (Burns, 1999). The cadre system facilitates this control. Hence, the party faces a dilemma between maintaining legitimacy and control. The imperative to retain control and social stability has limited its ability to carry out bureaucratic reform. Premier Zhu Rongji had to abandon plans to cut 50% of state and party bureaucracies after fears that the 1997 Asian financial crisis would spread to China. Urban unemployment was seen as bad enough without swelling its ranks with dismissed officials and cadres whose leadership skills could be ominous for political stability (Pye, 1999). History has taught the Chinese leadership the catastrophic consequences of declaring war on the bureaucracy when there are no alternative agencies to replace them (Steinfeld, 1998).

This section has illustrated how the retreat from central planning did not result in a reduction in the overall size of the bureaucracy. The dismantling of state involvement in the economy went hand in hand with, paradoxically, an increasing number of bureaucrats in the state sector. Reform to date has been carried out in largely uncharted waters. China's leaders have had few examples of successful bureaucratic reform in former communist countries to choose from. China also lacked expertise in public administration, despite having a history of sophisticated systems of bureaucracy in such areas as famine relief, water control, transportation, and price stability. [17] In 1981, China had no public administration programs, let alone books on the subject (Zhang, 1993). The extensive nature of China's bureaucracy meant that administrative reform assumed a countrywide dimension. Leadership differences and competing agendas made it difficult to find agreement on a unified policy of reform. [18] In this uncertainty, it was possible for bureaucrats to take advantage of this confusion (Ma, 1996). Future reforms are likely to be costly. Civil service wage reforms and cadre retirement packages have placed large demands on state finances (Burns, 1993). Future growth is likely to create even further pressure for expansion.

5. APPLYING WAGNER'S LAW TO ECONOMIC REFORM IN CHINA

The first 20 years of China's economic reforms have witnessed noticeable increases in the total number of staff in China's state-owned units (see Table 1). A breakdown of these figures by sector reveals some interesting trends. Initially, the state appears to have increased its presence in manufacturing. This has fallen dramatically since 1997, reflecting enterprise reform. On the other hand, the state's presence in the provision of utilities (water, gas, and electricity) has increased. This supports the hypothesis that industrial development requires the state to provide capital-intensive services that may be beyond the capability of the private sector. Similarly, the growth in the number of state employees in the provision of banking and insurance indicates that the state is putting resources into ensuring that adequate financial services are available to promote economic growth. This supports Wagner's contention that the scale of finance necessary may require the intervention of the state. The increasing numbers employed in social services, social welfare, and culture, support the hypothesis that the welfare demands of citizens increase as development progresses. These trends indicate that not only does Wagner's Law hold for industrialized countries (Beck, 1981; Bird,

Table 1. *Number of staff and workers in state-owned units in selected sectors (million persons)*

Year	Total staff	Manufacturing	Supply of utilities	Banking and insurance	Social services	Social welfare	Culture	Govt. and party agencies
1978	74.5	24.49	1.02	0.42	10.7	1.83	0.91	4.17
1980	80.2	26.01	1.12	0.63	13.0	2.17	7.57	4.76
1985	89.9	59.75	1.34	0.93	18.1	2.72	9.25	6.91
1990	103.5	33.95	1.83	1.45	23.6	3.23	11.12	9.03
1991	106.6	34.82	1.93	1.54	25.1	3.40	11.51	9.46
1992	108.9	35.26	2.03	1.66	26.9	3.56	11.83	9.69
1993	109.2	34.44	2.20	1.82	29.3	3.56	11.80	10.14
1994	108.9	33.21	2.30	1.96	30.8	3.68	12.27	10.07
1995	109.5	33.26	2.37	2.03	31.5	3.79	12.65	10.19
1996	109.5	32.18	2.50	2.08	32.9	3.90	13.22	10.68
1997	107.7	30.11	2.57	2.10	34.5	4.02	13.62	10.74
1998	88.1	18.83	2.42	2.08	32.2	4.10	14.08	10.79
1999	83.4	16.48	2.39	2.05	31.9	4.15	14.33	10.84

Source: China Statistical Yearbook, 2000, Table 5-8.

1971), but it should also hold for developing economies such as China.

(a) *Empirical testing of Wagner's Law for China*

It is unfortunate that Wagner's thesis was labeled a law because his "law" is in fact more an analytical tool allowing useful relationships to be identified between the rate of economic growth and changes in the size of the public sector. It also opens the way for these relationships to be quantified making possible comparisons across different countries. In this manner, its main interest is more illustrative than prescriptive. In this section, a simple illustrative model is developed to encompass the theoretical and empirical evidence presented thus far. The model involves utilizing the standard autoregressive method and the partial adjustment model. The autoregressive model allows the incorporation of a lagged variable, as the size of the public sector is dependent on events in a previous time period. The partial adjustment model takes account of technical and intuitional rigidities that limit the speed of government response. The result is a simple dynamic model that illustrates how improvements in national wealth can lead to an increase in the size of public sector as predicted by Wagner.

An obstacle to using Wagner's Law for analytical purposes is that it appears to reject the Keynesian assumption that government expenditure (G) is a function of national income (NI), while the Law assumes that NI is the dependent variable in the equation. Keynes proposed that government expenditure stimulates domestic consumption (C) and Investment (I), which further add to national income through the multiplier effect.

Keynesian Model:

$$NI = f\{C + I + G\}. \tag{1}$$

Krzyszaniak (1972) notes that Wagner's Law may be formulated mathematically as shown in Eqn. (2) where G_i represents government expenditure on the ith group of state services and Y is the national product (national income or GNP). By putting G on the left side of the equation, G is the dependent, to be explained variable. Krzyzaniak suggests that this may cause problems given the relationship between G and Y predicted by the standard economic theory, particularly its Keynesian version:

$$G_i = f(Y, \ldots). \tag{2}$$

In addressing these issues, it is important to note the general weaknesses of the Keynesian model. It is half a century since Friedman (1953) noted that the model has no lags. This implies that for each time unit, a particular level of government expenditure does not depend on what has occurred in the past. The model generally assumes that government expenditure can be altered at will so that the appropriate fluctuations in government expenditure can be achieved by deliberate action without any lags. Hence, it provides little explanation of cyclical fluctuations, which Friedman

notes are simply interpreted as fluctuations in investment. Friedman suggests that lagged reactions are the essence of cyclical fluctuations. Indeed this formed the basis for Friedman's Permanent-Income Hypothesis (1957), which assumes that people base their consumption on the idea of a normal or permanent income. In calculating the permanent income level, people take account of their average income over the past number of years and use this to determine future consumption patterns. Therefore, the multiplier effect may be lessened, as there may be a lagged response.

By applying this scenario to the relationship between the size of the public sector and national wealth, the problems posed by the standard economic theory provide less of an obstacle to our analysis. Indeed Eqns. (3) and (4) indicate an *ex-ante*/*ex-post* relationship is plausible. The standard economic theory may be used to provide a simplistic determination of the level of national income in the previous time period ($t-1$). Eqn. (3) shows that the level of government expenditure in the previous time period is an important determinant of national income. However, Eqn. (4) illustrates that in the current time period (t), government expenditure will be a function of national income in the previous time period ($t-1$):

$$\textit{Ex-ante}: NI_{t-1} = f\{C + I + G\}_{t-1}, \tag{3}$$

$$\textit{Ex-post}: G_t = f(NI)_{t-1}. \tag{4}$$

If the *ex-post* relationship predicted by Eqn. (4) is true, then Eqn. (3) provides an inadequate explanation of the relationship between national income and government expenditure, as it does not make allowance for the fact that government expenditure in the time period $t-1$ will be dependent on national income in the preceding time period $t-2$. This problem refers to the failure of the standard economic theory to incorporate lagged variables. In terms of Wagner's Law, lagged variables are important. Wagner predicted that state activity increases in response to increases in national wealth. Therefore, there may be a lag in the response of the state sector. Hence, if national income increases in the current time period, it is plausible to suggest that the level of public services will not increase instantaneously. Therefore, any model attempting to prove Wagner's Law will find it useful to incorporate a lagged variable. A simplistic version of Wagner's Law without any lagged variables would suggest that the size of the state sector or the demand for government services (GS) in time period t, is a function of the level of national income in the same period t:

$$GS_t = f(NI)_t. \tag{5}$$

If the demand for government services is dependent on the level of economic growth, GDP per capita provides a suitable measure of this. Eqn. (6) introduces a lagged variable for the level the size of the state sector (GS_{t-1}). This suggests that the size of the state sector in the current period is a function of per capita GDP in the current period and the size of the state sector in the previous period (which would in turn be a function of GDP in the previous period):

$$GS_t = f(GDP_t, GS_{t-1}). \tag{6}$$

Eqn. (7) expresses Wagner's Law as a linear equation. It proposes that the size of the state sector in the current time period can be explained by the GDP in the current period and the size of the state sector in the previous period. Transforming the data to their natural logs allows the use of standard OLS regression to measure of the elasticity of the relationship: [19]

$$\ln GS_t = \ln \beta_0 + \ln \beta_1 GDP_t + \ln \beta_2 GS_{t-1} + \epsilon_t. \tag{7}$$

Eqn. (8) estimates the relationship between the size of the state sector (Table 1) and the GDP during 1978–2001 using OLS regression. This indicates that there has been a positive relationship between the growth of the GDP and the size of the state sector. [20] The value 0.12 indicates the responsiveness of the size of the state sector to changes in the GDP. Moreover, as predicted by Wagner, the response is positive:

$$GS_t = 8.49 + 0.12GDP_t + \epsilon_t. \tag{8}$$

After adding a lagged variable for the size of the state sector, the results indicate the level of state involvement in a previous period is significant in explaining the responsiveness of the state sector to changes in the GDP (see Appendix A). The coefficient 0.035 indicates the short-run responsiveness of the size of the state sector to changes in GDP:

$$GS_t = 1.77 + 0.035GDP_t + 0.77GS_{t-1} + \epsilon_t. \tag{9}$$

The next step is to analyze how fast the system is adapting in the long run. The Partial Adjustment Model provides a suitable method to analyze this as it takes account of the cost of change, technical and institutional rigidities in the system, and inertia. [21] In the real world, governments are faced with limited resources and as such must set targets. This allows us to assume that there is an optimal or desired level of state services that the government aims to provide for a given level of GDP. By calculating how fast the system adjusts, the partial adjustment model can be used to estimate the desired long run or equilibrium response of state involvement at a given GDP. This is important as although public spending may be a function of growth itself, the government may find itself having to take the initiative to respond accordingly to provide an adequate public sector. This accounts for possible differences between long-run and short-run equilibrium.

Suppose there is a desired or equilibrium level of state services (GS^*), which the state aims to provide in response to an increase in GDP:

$$GS_t^* = \gamma_0 + \gamma_1 GDP_t. \tag{10}$$

Suppose that the level of state services adjusts partially to this equilibrium level by the fraction δ (the coefficient of adjustment) in each time period such that $0 < \delta \geqslant 1$. After a number of algebraic manipulations (see Appendix A), it is estimated that the system adjusts 23% of the way toward the desired equilibrium level of GS in each time period. In order to find the equation for the equilibrium or desired level of GS, the parameters derived in Appendix A are substituted into Eqn. (10) to give

$$GS_t^* = 7.69 + 0.152 GDP_t. \tag{11}$$

This represents the long run or equilibrium response of the state sector for a given level of GDP. The coefficient $\gamma_1 = 0.152$ represents the ultimate long-run effect that a change in GDP has on the size of the state sector once the system has fully adjusted to the rise in GDP. This estimate is quite close but less than that provided by Eqn. (8), which does not take account of lagged responses. Realistically, it is impossible for governments to attain an equilibrium size of the state sector. They may however use historical fluctuations to estimate the differences in long and short run responses to increases in GDP.

The above estimates are based on the assumption that China's current development path is maintained and that there are no changes to the political environment. For this reason, Wagner's Law must take into account the significance of political factors and not just economic dynamics. The above estimates, both short run and long run, although purely illustrative, do confirm that Wagner's Law is indeed relevant to the economic development of China.

6. IMPLICATIONS FOR CHINA'S ECONOMIC DEVELOPMENT

The previous section begs the question as to whether what Wagner observed in 19th century Europe and the USA is now happening in China. The answer would appear to be yes. For China, this is important as it indicates that economic as well as political factors are at play in determining the size of China's bureaucracy. Moreover, it indicates that China's development experience is not dissimilar to the experience of developed western economies. Given China's current growth rates, it should not be surprising to see the size of the state sector continue to grow. Going forward, this has important implications for China's public finances. It also indicates that the function of the state may not diminish but instead will be modified in a manner designed to facilitate economic modernization. This adjustment will be more notable in certain sectors of the economy. For example, the state's involvement in sectors such as manufacturing is declining, but its function in the provision of social and cultural services is increasing. This shift is also evident within the party itself. The party's legitimacy is increasingly based on it ability to foster economic growth, but it cannot relax its hold on the machinery of government and party membership continues to rise. [22] This analysis suggests that Wagner's Law should be pivotal to broader debates on the wider role of the state in economic development.

The findings of Section 5 provide strong evidence to indicate that as per capita GDP in China increases, so too will the role of the state bureaucracy. As economic modernization progresses, people will become accustomed to a certain level of welfare and service provision. There is little doubt that in terms of government finance, this comes at a price. The statistics on government finance in Table 2 show how the government deficit as a percent of

Table 2. *Selected indicators of China's government finances*

Year	Budgetary balance as % of GDP	Budgetary expenditure as % of GDP	Increase rate of budgetary expenditure (%)
1978	0.28	31.0	33.0
1980	−1.53	27.2	−4.1
1985	0.01	22.4	17.8
1990	−0.79	16.6	9.2
1991	−1.10	15.7	9.8
1992	−0.97	14.0	10.5
1993	−0.85	13.4	24.1
1994	−1.25	12.4	24.8
1995	−0.99	11.7	17.8
1996	−0.78	11.7	16.3
1997	−0.78	12.4	16.3
1998	−1.18	13.8	16.9
1999	−2.12	16.1	22.1
2000	−2.79	17.8	20.5
2001	−2.62	19.7	19.0

Source: China Statistical Yearbook, 2003, Tables 3-1 and 8-1.

GDP has increased relatively faster than the GDP. In 1985 for example, the budget surplus was 0.01% of GDP. By 2000, a budget deficit of 2.78% was recorded. Government expenditure as a percentage of GDP, which had been declining since 1978 when it stood at 31%, also started to increase, rising from 11.7% in 1995 to 19.7% in 2001. Table 3 also shows that since 1993, government expenditure has been increasing at a rate between 16.3% and 24.8%. Although these figures indicate that China will need to raise more tax revenue, the issue is complicated by a backward tax system and an immature financial market on which to raise development finance. If either of these were to be improved, the ability of the state to increase expenditure would increase. In fact, an inefficient tax system places an artificial brake on state expenditure and thus further expansion in the public sector. The need for a more efficient tax system that better reflects China's economic growth level has been recognized by senior officials. [23] This is crucial if China is to avoid the public finance problems of other developing economies where inefficient tax systems and large black economies result in fiscal imbalances. [24]

Table 3. *Budgetary expenditure by function as a percentage of GDP*

Year	Economic construction	Social, cultural, and education	Government administration	Others
1978	19.8	4.1	1.5	1.0
1980	15.8	4.4	1.7	1.0
1985	12.6	4.6	1.9	1.2
1990	1.4	4.0	2.2	1.5
1991	6.6	3.9	1.9	1.7
1992	6.0	3.6	1.7	1.2
1993	5.3	3.4	1.8	1.6
1994	5.1	3.2	1.8	1.1
1995	4.8	3.0	1.7	1.0
1996	4.8	3.1	1.7	1.1
1997	4.9	3.3	1.8	1.3
1998	5.3	3.7	2.0	1.5
1999	6.2	4.4	2.5	1.7
2000	6.4	4.9	3.1	2.0
2001	6.7	5.4	3.7	2.4

Source: China Statistical Yearbook, 2003, Tables 8-8 and 3-1.

A breakdown of government budgetary expenditure by function reveals that expenditure patterns are consistent with Wagner's Law. Table 3 shows that although the state's expenditure on economic construction as a percentage of GDP has fallen since 1978, other areas including social and educational services, and expenditure on administration have risen. While expenditure on social, cultural, and educational activities fell as a percentage of GDP during 1985–95, it has since increased from 3% in 1995 to 5.4% in 2001. This largely coincides with an increasing number of state employees in these areas. A similar trend is evident in economic construction since 1995. The state's expenditure on government administration has more than doubled as a percentage of GDP since 1978, rising from 1.5% in 1978 to 3.7% in 2001. These trends in public spending are consistent with the patterns of public expansion identified in Section 5.

The growth in the role of the state has however been unequally distributed. Table 1 illustrates that the number of state employees in manufacturing has declined considerably. This can in part be attributed to enterprise restructuring. A consequence of this has been a rise in the provision of welfare. Social pressure from redundant enterprise workers has necessitated the establishment of a basic welfare system. [25] Other areas that have seen a significant increase include social services and the provision of public utilities. This is consistent with development literature. As an economy becomes more industrialized, the nature of economic and social relations become more complex, resulting in a demand for greater provision of services. More interesting perhaps are the increases in areas such as banking, culture, and government and party agencies. The increase in banking indicates that the state intends playing a central role in the provision of financial services for China's growing economy. The state steps in to mobilize the provision of capital to those who require it. The increase in the number of state employees in culture and government/party organizations indicates that the CCP may be attempting to protect its legitimacy as economic development progresses as suggested by Kautsky (1972).

The findings of this paper provide a strong rationale for the inclusion of Wagner's Law in mainstream public finance literature. Wagner's Law provides a framework for explaining the political and economic reasons behind state intervention in correcting market failure. Wagner's Law is often viewed as weak as it failed to provide a well-articulated argument on public choice and the allocation of recourses. The use of a lagged response variable somewhat overcomes this problem as it indicates that public expectations on the level of public provision are linked to the level attained in a previous period. Hence, Wagner's Law is politico-economic in nature and can therefore be used to explain broader patterns of public choice. Moreover, this analysis indicates that the "law" has value as a tool not only for improving public sector management but also in determining the suitable level of resources that a government should allocate to the public sector. Benchmarking the size of the public sector for various stages of economic development would allow its removal as an issue from the political sphere. This may be more relevant to developing economies where fears of "crowding out" the private sector give governments less flexibility in the allocation of scarce economic resources. Utilizing Wagner's Law in this manner can therefore provide a greater understanding of the public policy process, particularly in transitional and developing economies.

7. CONCLUSION

In applying Wagner's Law to China, this paper has demonstrated that economic modernization results in an increase in the size of the state sector as measured by the number of state employees. More specifically, the model developed shows that the size of the public sector can be explained by variations in national wealth as measured by GDP per capita and the size of the state sector in the previous time period. This indicates that a combination of political factors and new economic pressures, largely a result of market reforms, are driving the expansion of China's bureaucracy. The paper goes beyond previous attempts at rationalizing Wagner's findings by utilizing a more appropriate measure of state involvement. This allowed the incorporation of the partial adjustment model to show that there is a lagged response. Increases in the size of state involvement in the economy partially adjust toward a desired level in each time period. If viewed in this manner, Wagner's Law can form a useful tool in understanding how the role of the state evolves under conditions of economic modernization. It can be ap-

plied to complement the standard economic theory in order to provide a greater understanding of more complex public finance issues such as how a government allocates recourses, optimum levels of state involvement in correcting market failures, and how the state should finance future public expenditure. Moreover, from a public policy perspective, Wagner's Law suggests that there should be less focus on getting the state out of business and instead a greater emphasis on investigating the state's function in advancing economic growth.

The application of Wagner's Law to China introduces new clarity on the central role of the state in China's economic development. This paper indicates that the state has a central and necessary part to play in China's economic modernization. As modernization progresses, it is evident that the state will have to allocate more and more resources toward creating the necessary institutions to support a market economy as well as stepping in to provide for the needs of its citizens. Since the role of the state is shown to be an essential part of economic development in China, there is little evidence of a crowding out effect or that the state involvement of the state in the economy is stifling economic growth. In fact, this analysis would suggest that the increasing role of the state is a necessary complement to sustainable economic modernization and therefore is unlikely to hinder the development of the private sector. For China's communist party, these findings indicate that party cadres and other state agencies are unlikely to just disappear. Rather than becoming irrelevant, market forces are dictating a shift in how the party derives its legitimacy from more orthodox methods to those based on achieving economic growth and development. Whatever the outcome, Wagner's Law indicates that a combination of political and economic factors mean that bureaucrats are unlikely to disappear for quite some time yet.

NOTES

1. The original version of the law was published in German in 1893 (see Wagner, 1893).

2. The text of Wagner's thesis has not been fully translated into the English language.

3. In 1978, China's urban population stood at 172 million (17.9% of population) compared with 480 million or 37.6% of the total population in 2001 (*Source*: Chain Statistical Yearbook, 2002, Table 4-1).

4. Such a role can nevertheless be conceptualized as part of the provision of "higher quality" public goods relating to institutional development. The author would like to thank an anonymous referee for pointing this out.

5. A good summary of these events is provided by Zheng (1997).

6. See Nathan (1985) for a comprehensive review of the relationship between the state bureaucracy, media, and the Chinese people.

7. These include the Peoples Daily (the official organ of the Communist Party Central Committee), the New China News Agency (the official organ of China's State Council), and the China Daily (the state-owned publication for foreign residents).

8. Mao Tse-tung: "*The Communist Party must accept supervision*," Speech, April 8, 1957. See Peoples Daily Website for selection of Speeches.

9. Deng Xiaoping: "*Streamlining organizations constitutes a revolution*", January 13, 1982.

10. Wang Zhongyu, state councilor and concurrent secretary-general of the State Council on proposed State Council restructuring. "Five Major Points Concerning State Council Restructuring" *People's Daily*, March 7, 2003.

11. The survey of 2,400 enterprises showed that 64.3% of managers had primary or junior secondary education, 21.4% had upper secondary education, and 14.3% had university education (see Gipouloux (1988, p. 114)).

12. "Chinese Officials Better Educated, More Competent Professionally" *Peoples Daily*, June 13, 2001.

13. "Over 10,000 incompetent cadres switched in the past five years" *Peoples Daily*, August 9, 2000.

14. "China to restructure government agencies" *Peoples Daily*, March 6, 2002.

15. The statistics in this paragraph are taken from the People's Daily. "Five Major Points Concerning State Council Restructuring" *People's Daily*, March 7, 2003.

16. These state bureaux were affiliated to the State Economic and Trade Commission and included industries such as coal, petrochemicals, metallurgical products, machine building, textiles, domestic trade, and light industry.

17. See Nolan (2004) for a comprehensive bibliographical overview of the historical role of the state in China.

18. See Shirk (1993) for an analysis of the competing agenda's among reformers.

19. Data are expressed in terms of natural logs (ln).

20. The problem of China's GDP data and their comparability with similar data from other countries does not invalidate this analysis. The drawbacks to China's official statistics, which are subject to increasing official discussion within China, have been long-term features of available data, which have not changed, significantly in the last decade.

21. See Gujarati (2003, pp. 519–521).

22. For data on party growth see *Peoples Daily*, June 30, 2000 and July 1, 2003.

23. "Tax system needs adjustments to boost wealth" *Peoples Daily*, November 29, 2002.

24. "Into the valley of debt" *The Economist*, September 25, 2003.

25. "China's Social Security System Takes Shape" *Peoples Daily*, March 12, 2003.

26. *R*-squared: 0.26. SE: 0.114. *t*-Values are in parentheses. * indicates significance at 5% level. ** denotes a very high level of significance, that is, *p*-value close to 0.

27. *R*-squared: 0.893. SE: 0.042.

28. *R*-squared: 0.71. SE: 0.95.

29. *R*-squared: 0.828. SE: 0.074.

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APPENDIX A

Eqn. (8.1) [26] estimates the relationship between the size of the state sector and GDP:

$$GS_t = \underset{(0.241)^{**}}{8.49} + \underset{(0.044)^{*}}{0.12}GDP_t + \epsilon_t. \tag{8.1}$$

Eqn. (8.2) [27] introduces a lagged variable (GS_{t-1}) as shown in Eqn. (7) to take account of how the size of the state sector is affected by the previous time period:

$$GS_t = \underset{(0.851)}{-0.59} - \underset{(0.023)^{**}}{0.082}GDP_t + \underset{(0.1005)^{**}}{1.11}GS_{t-1} + \epsilon_t. \tag{8.2}$$

The lagged variable indicates that over the period the size of the state sector in the previous time period is significant in determining the size in the current period. The results show a negative coefficient for GDP suggesting that an increase in GDP in the current period will have a negative effect on the size of the state sector. The statistics in Table 1 indicate that this may reflect the declining influence of the state in manufacturing as a result of state enterprise reform. Removing the influence of manufacturing may thus provide a more accurate reflection of the state's involvement in a modernizing economy (i.e., the provision of services, welfare, education, etc.). The results of this exercise (Eqn. (8.3)) [28] indicate a positive relationship; however, in this instance, the responsiveness of the state sector is greater:

$$GS_t = \underset{(0.201)^{**}}{7.29} + \underset{(0.037)^{**}}{0.266}GDP_t + \epsilon_t. \tag{8.3}$$

A lagged variable for the size of the state (minus manufacturing) is introduced in Eqn. (9): [29]

$$GS_t = \underset{(1.42)}{1.77} + \underset{(0.066)}{0.035}GDP_t + \underset{(0.197)^{**}}{0.77}GS_{t-1} + \epsilon_t. \tag{9}$$

Partial Adjustment Model. Suppose that the level of state services adjust partially to the equilibrium level by the fraction δ in each time period such that $0 < \delta \geqslant 1$:

$$GS_t - GS_{t-1} = \delta(GS_t^* - GS_{t-1}). \tag{10.1}$$

Substituting Eqn. (10) (main text) into this gives the following:

$$GS_t - GS_{t-1} = \delta\gamma_0 + \delta_\gamma GNP_t - \delta GS_{t-1}. \tag{10.2}$$

Adding GS_{t+1} to both sides of Eqn. (10.2) gives

$$GS_t = \delta\gamma_0 + \delta\gamma_1 GNP_t + (1-\delta)GS_{t-1}. \tag{10.3}$$

Comparing this to Eqn. (7) in the main text:

$$GS_t = \beta_0 + \beta_1 GDP_t + \beta_2 GS_{t-1} + \epsilon_t,$$

$$\beta_0 = \delta\gamma_0, \quad \beta_1 = \delta\gamma_1, \quad \beta_2 = (1-\delta).$$

This suggests that the long-run response of a change in GDP on the level of state services in the economy depends on the ratio of $\beta_1/\delta = \gamma_1$. Eqn. (9) indicates that the order of these parameters is $\beta_0 = 1.77$, $\beta_1 = 0.035$, $\beta_2 = 0.77$:

$$(1-\delta) = (1-0.77) = 0.23.$$