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*The Political Economy of Central-Local
Relations in China: Inflation and
Investment Controls During the Reform Era*

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The Political Economy of Central-Local Relations in China: Inflation and Investment
Controls during the Reform Era

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Abstract:

Inflation control is deeply political because it has distributional implications. This paper studies the characteristics of the Chinese political system and their impact on controlling inflation demand--the state-sectoral investment component of the aggregate demand. The paper first shows (1) the connections between inflation demand and investment and (2) the divergence in inflation preferences between central and local authorities. Five investment hypotheses are proposed to link two bureaucratic variables of local officials--integration and stability--with preference divergence and monitoring. Preference divergence and monitoring, by theoretical conjectures, are linked with local investment behavior. Evidence from panel data suggests strongly and consistently that integration and instability reduce investment shirking and hence inflation demand. The cross-sectional evidence on provinces is then reconciled with China's aggregate inflation performance and the paper suggests that China's relatively good macroeconomic performance is due to the strength of its political institutions.

The political economy of central/local relations in China: Inflation and investment controls the reform era

Introduction

One of the fundamental differences between China and other transitional economies is that China has implemented economic reforms without any changes in its political system. The Chinese Communist Party is still in power and

In recent years, there have been extensive theoretical and empirical works to systematically track the relations between the characteristics of political or policy-making institutions on the one hand and macroeconomic outcomes on the other. These institutional characteristics range from the stability of the political system, the centralization of the economic policy-making process, the nature of regimes, and political polarization to the legal or actual independence of the central bank.¹ This type of analysis--known as political economy approach--has been mainly applied to developing and mature market economies; yet there are good reasons to believe that the approach is also useful in the context of reforming centrally planned economies (CPEs), for two broad reasons. First, inflation is a serious problem in transitional economies that threatens not only economic reforms but also political stability; second, in reforming CPEs economic policy and implementation are more politicized than in market economies due mainly to the greater and more direct control of economic resources in the hands of politicians. If politics matters for macroeconomic outcomes, it should matter more in CPEs.

This paper applies the political economy approach to analyzing the macroeconomic performance of China since the late 1970s. However, three differences between CPEs with market economies have implications for the focus of analysis. The first difference is that I study the effect of politics on what Robert Gordon [Gordon, 1975 #1074] terms as the *demand* for inflation² rather than on inflation *per se*. The standard price series used to measure inflation (such as consumer price index) may seriously under-estimate inflation in CPEs because many prices are controlled administratively.³ Instead, I use investment performance in the state sector as a proxy for inflation demand, as state-sectoral investment is the most important contributor to inflation in CPEs.

The second difference is that I focus on the *enforcement* of anti-inflation measures, not on making decisions to pursue an anti-inflation policy. In market economies, the orthodox stabilization approach is a combination of reducing expenditures, raising revenues, or stabilizing the currency. In China and in other CPEs, these "normal" macroeconomic policy tools are too passive and the policy effort is exerted administratively to restrain investment or wage spendings

so that pressures on the budget or the currency are alleviated. Responsible fiscal and monetary policies are a result of stabilization programs rather than being the stabilization instruments themselves.

Third, in market economies, conflicts over economic adjustment often involve well-organized economic and social groups aspiring to maximize or defend their shares of the social product. The structuralist thesis views the incidence of inflation as a result of pressures from effectively organized "inflation coalitions," as in the case of a number of Latin American countries in the 1970s [Hirschman, 1985 #626]. In China, however, opposition to austerity programs does not come from social or economic groups, due to the weak organization of their power; the cleavages over the economic policies occur between bureaucratic actors and the central policy authorities. The most powerful group in China opposing inflation control consists of local officials, whose investment behavior is the focus of this study.

The central idea of this paper is that bureaucratic characteristics of the Chinese local officials powerfully influence their investment behavior. Specifically, the greater central control over localities these bureaucratic characteristics denote, the closer the local investment performance is to central policy preferences. This idea is shown by tracking the relations between the predominantly cross-sectional variations in these bureaucratic characteristics and the predominantly cross-sectional variations in local investment behavior. This finding is important both to the Chinese studies and to the political economy research in general. It contradicts the widely-held view among China specialists that the central government is too weak to control inflation and it provides evidence for the general political economy claim that strong political institutions perform vital coordination functions in a reforming CPE.⁴

I begin by reviewing the reasons why investment represents inflation demand in CPEs and why inflation preferences between central and local policy authorities systematically diverge. I then construct a bureaucratic investment model that links the institutional relationships between the anti-inflation central government and inflation-prone local governments with local investment behavior. The final section discusses wider implications of the findings.

Investment policy conflicts in China

This paper only analyzes state-sectoral investments because of their inflationary consequences.⁵ Policy conflicts arise because of the close linkage between inflation and investments and because the central government and localities disagree about how to apportion the costs of containing these pressures. The connection between investment and inflation demand

and the systematic differences in the inflation preferences of central and local authorities are the two assumptions underpinning our modelling attempt.

Investment and inflation

In market economies, investment is typically viewed as increasing the supply capacity of the economy and as moderating demand/supply imbalances. In CPEs, however, two characteristics of state-sectoral investment have inflationary consequences. One is that investments in CPEs can be inefficient, i.e., they are allocated to production of those goods for which, at given prices, lack sufficient demand.⁶ Inefficient investment is inflationary because investment activities consume real economic resources while not increasing the effective supply capacity of the economy.

Even if all the investment decisions are "efficient," at least in the short run, investment can still be inflationary because investment demand is typically "excessive" in CPEs. Excess investment demand means that demand for investment is greater than the level that supply of investment resources--capital and/or labor--can permit.⁷ In the presence of excess investment demand when prices do not adjust to changes in demand, shortages occur, and when prices do adjust, open inflationary pressures mount.⁸ Excess investment demand also prolongs the investment time lags--between the commissioning of an investment project and the time when the project becomes productive--and by extension accentuates inflationary pressures. Investment expansion leads to an instantaneous increase in the factor payments, which translates into higher demand for intermediate and final goods, but the supply response fails to materialize due to the long investment time lags in the CPEs, causing inflationary pressures in the economy.⁹

While inflation is a function of complex and multiple causes, the aforementioned two investment sources of inflation are the *systemic* causes in the sense that they can be traced to the way socialist firms operate rather than to policy mistakes or to stochastic factors. A systematic illustration of this view is in The Economics of Shortage by Kornai [Kornai, 1980 #228]. The gist of his argument is that households and firms are governed by fundamentally different decision rules in their economic behavior. Households operate under "hard-budget constraints," i.e., household spending cannot exceed the levels of their wealth. State-owned firms, on the other hand, face "soft-budget constraints" in the form of fiscal grants and deferred or unserviced bank credits to subsidize enterprise losses. The readiness to prevent bankruptcy in part can be viewed as an act of "a paternalistic state" [Kornai, 1986 #229] and in part can be viewed as a shrewd effort to preserve political and social stability by keeping workers employed [Walder, 1986

#396]. In either case the incentive effect is the same: Soft-budget constraints imply zero risks to firms' investment behavior and zero risks feed incentive to invest. This distinction in the decision rules of households and firms explains the centrality of investments in affecting macroeconomic stability in CPEs. The household demand for goods and services is self-constrained, whereas firms have an "insatiable" investment demand [Kornai, 1980 #228][Bauer, 1978 #925].

Inflation and investment preferences

Since 1979, the Chinese government has launched five rounds of economic austerity to combat inflation, in 1981, 1983, 1986-7, 1989-1991, and in 1993 and each of these five rounds has aimed to rein in the expansion of aggregate demand by reducing the rates of investment growth and, especially, the local investment growth. Because austerity programs invariably seek to curb investment growth, who bears adjustment costs often becomes a question of who reduces investment growth more. Investment conflicts between the central and local governments occur because their investment preferences systematically diverge. I posit that the central government desires a relatively stable investment growth rate, while the local governments want a relatively faster investment growth rate and have a strong incentive to shirk adjustment costs. I further argue that these differences in investment preferences are stable and they occur not between specific national and local officials as individuals; instead, they are rooted in the nature of inflation control as a public good and in the ways Chinese political and economic institutions allocate costs and benefits of stabilization.

The first reason why local officials seek to shirk adjustment costs is the public goods nature of inflation control. A public good is such that it is characterized by *non-excludability*, i.e., one person's consumption of the good cannot prevent other people from consuming it, which means that a private provider of a public good cannot fully recoup its benefits. Macroeconomic stability is a public good: Price stability, lower prices, and alleviated shortages of scarce goods are systemwide benefits that everyone, by virtue of being a member of the system, enjoys. In contrast, the costs of providing inflation control are specific to some individual members. The asymmetrical distribution of costs and benefits of inflation control leads to a usual prisoner's dilemma: Each member has an incentive not to control inflation, even though their joint welfare will be increased if they choose to control inflation.

Inflation control is more of a public good in CPEs and therefore prisoner's dilemma is a more serious concern than in a market economy. In a market economy, a strong political constituency for a low level of inflation is the business community, especially the financial

sector. Business and financial concerns about the eroding effect of inflation on their assets take precedence over unemployment (typically associated with a low level of inflation in the short run). Their concerns about inflation have a strong policy voice: Many officials in the central banks have come from--and usually plan to return to--private financial institutions.¹⁰

In a CPE, state ownership implies weak concerns about the long-term *real* appreciation of the assets. As the size of an enterprise or of the workforce confers prestige and power on those bureaucrats in charge, concerns are stronger about the *nominal* appreciation of the assets and/or about the size of staff wages and benefits and about creating employment opportunities, stances that are consistent with preferences for higher inflation/unemployment tradeoffs and for high investment growth. A natural inference of this public good analogy is that only the central government has the full incentive to control inflation because the central government bears disproportionate economic and political costs of inflation, whereas the local governments have a strong incentive to free ride and, given the connection between inflation and investment, to shirk investment reduction costs.

National and local officials have different but stable preferences for inflation/unemployment tradeoffs. National policy makers are more concerned with high rates of inflation than with high levels of unemployment; local officials have the opposite policy preferences. One reason is that central leaders are "balancers of the last resort": if they do not balance the macroeconomic situation, no one else in the system will. Zero investment risks feed investment expansion, but investment expansion--however rational to the individuals engaging in it--produces economywide consequences, such as shortages or inflation. Investment expansions also increase budgetary deficits, which the central government finances either directly or indirectly.

There are also political costs. Inflation reduces the living standards of those people on fixed incomes and typically these people are civil servants, intellectuals, students, and urban workers with a strong political voice.¹¹ National leaders are more closely identified with the political system and they, more than local officials, shoulder a disproportionate political blame for inflation,¹² despite the fact that on objective grounds much of the inflationary pressures is generated by local economic behavior.

Local officials are also positively motivated to expand investments to generate employment. Local enterprises employ 85 percent of China's non-agricultural workforce and are concentrated in labor-intensive sectors. In contrast, central enterprises not only employ fewer workers per industrial output value but also are usually protected by austerity programs. Thus the

first bite of austerity cuts into local enterprises with more severe employment implications for the localities than for the central ministries.

An official survey conducted in 1991 shows that local officials are more inflation-prone than central officials. For example, 61.6 percent of the central officials rated the economic situation in 1991--a contractionary year--as favorable, whereas only 41.2 percent of the local officials did so; 32.4 percent of local officials were alarmed about credit expansions, compared with 52.8 percent of the central officials. On the unemployment side, 8.3 percent of central officials viewed it as a problem, compared with 29.4 percent of local officials. The same Phillips trade-off divisions apply to bureaucratic ranks. Concerns about inflation are stronger at the higher end of bureaucracy and unemployment concerns are stronger at the lower end: 36.4 percent of the ministerial-level officials thought that industrial growth was too fast in 1991, whereas only 16.9 percent of the bureau-level officials concurred with this view. On the other hand, none of the ministerial-level officials believed that unemployment was a problem whereas 22 percent of bureau-level officials thought so.¹³ These results are summarized in Table 1.

Table 1.

A Bureaucratic Investment Model

A bureaucratic investment model views investment behavior not purely as a function of the economic but also as a function of bureaucratic variables. The simple theoretical framework proposed here analyzes bureaucratic variables as forces shaping preference divergence and informational distribution, which, in turn, shape behavior. The following brief discussion is based on the familiar agency literature in institutional economics.¹⁴

In a classic article, Jensen and Meckling [Jensen, 1976 #1144] posit a problematic relationship between stockholders and managers. Stockholders, the principal, delegate some control rights (such as the right over resource use) to managers, the agent, to perform tasks in the expectation that the managers will maximize the stockholders' utility. Whether managers actually do so or not critically depends on the presence or absence of two factors that often renders a principal-agent relationship problematic. The first factor is a divergence in interests. Jensen and Meckling give the examples of managers pursuing "non-pecuniary" consumption of perquisites out of the firm's resources and risk-averse behavior to avoid uncertain, albeit potentially profitable ventures because of their unwillingness to sacrifice their leisure and effort. Both of these managerial activities are at the expense of the stockholders' interests in maximizing the returns on their equity.

The second factor is the "information asymmetry" between owner and managers. Managers, in general, have superior information about the tasks assigned to them, either because of the technical details attached or their proximity to the tasks, and about their own abilities and preferences. The net effect from the presence of these two factors is managers' "shirking" behavior: Managers will maximize their own interests, whether in leisure or in non-pecuniary consumption, because the costs of these activities are disproportionately borne by the owner and the costs of being detected are small because of information asymmetry. Jensen and Meckling [Jensen, 1976 #1144: 308] posit the control problem in the following way:

If both parties to the relationship are utility maximizers there is good reason to believe that the agent will not always act in the best interests of the principal. The principal can limit divergences from his interest by establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit the aberrant activities of the agent....However, it is generally impossible for the principal or the agent at zero cost to ensure that the agent will make optimal decisions from the principal's viewpoint.

Applying the above framework yields the following observation: Investment shirking behavior at the local level, i.e., evasion in implementing investment reduction, is a function of the degree that investment preferences diverge between the central and local authorities and the ability of the central government to monitor local officials. My investment model posits two causal steps. First, bureaucratic variables cause two kinds of variations among provinces. One is a variation in the extent investment preferences differ with the Center (even though preference divergence with the Center is given); the other is a variation in informational distribution between the Center and the localities or monitoring by the Center. Second, variations in preference divergence and in informational distribution are in turn hypothesized to cause variations in investment behavior.

The model focuses on two characteristics of Chinese local officials. The first one is what I call bureaucratic integration and it refers to the institutional relationship between local officials and the Center; the second characteristic refers to bureaucratic stability. Below, I explain these two characteristics in more detail.

Bureaucratic integration

Bureaucratic integration measures the degree a provincial official is incorporated into the central government.¹⁵ The bureaucratic integration has two dimensions. The first dimension refers to the positions provincial officials occupy. An official can serve in central and provincial

posts concurrently (a concurrent centralist); the most common central post is Politburo membership.¹⁶ The concurrent centralists are most closely integrated into the central political apparatus, as the Politburo is the highest governing body.¹⁷ The second dimension refers to their career backgrounds. Before assuming their current posts, some worked primarily in central agencies in Beijing (centralists); others served in other provinces in equivalent positions (outsiders) and still others climbed to the top exclusively from within the provincial ranks (insiders).¹⁸ Among these three categories, the centralists are the most integrated whereas the insiders are the least integrated.

Provincial representation at the Center or a central presence in the provinces may help reduce the divergence of investment interests between central and local policy makers as highly integrated officials may calculate that their long-term career prospects lie with the Center rather than with their current provincial posts. Also local officials calculate the benefits and costs of their actions according to the probability that their pursuit of local investment interests is detected. High probability of detection increases costs of attaining local investment interests; conversely low probability increases benefits of doing so. Bureaucratic integration can also be hypothesized to be related to monitoring. Highly integrated officials are more easily monitored by the Center than less integrated officials.¹⁹

Bureaucratic stability

Bureaucratic stability is denoted by two variables.²⁰ One is the appointment event; the other refers to tenure duration. Appointment event is a straightforward concept: It occurs when there is a change in leadership and obviously the frequency of appointment events is inversely related to bureaucratic stability. Bureaucratic stability is also related to the length of time an official serves in his/her post. An official who has served for a long time in his/her position can claim more stability than an official who has served for a short time.

My starting premise is that the central personnel control improves information distribution for the Center. When the specific information about the actions of agents is costly to gather, as in the case for investment activities, controlling personnel is informationally efficient. The number of officials is fewer and the criteria to evaluate them do not vary from case to case as compared with investment projects or other economic activities.²¹ Thus appointment process is also an *ex ante* monitoring process as each selection of officials requires an extensive screening of and checking upon backgrounds of the officials under consideration.²² Two implications can then be drawn regarding the two variables denoting bureaucratic stability. First, a new official is

more closely monitored--in the *ex ante* sense--than an old official. Second and analogously, tenure length is negatively associated with frequency of *ex ante* monitoring and thus an official with long tenure is less monitored than an official with short tenure.

Model specifications

Dependent variable: Our primary dependent variable is the logged value of the local state-sectoral capital construction investments (in 100 million yuan), deflated by retail price index and broken down by the twenty-nine provinces and by years ($LI_{(it)}$).²³ Local investments are investments organized, financed, or supervised by the local governments and are projects that the central government seeks to cut during austerity. Thus investment shirking is associated with large values of $LI_{(it)}$ whereas investment compliance is associated with small values of $LI_{(it)}$.

Alternative dependent variables are the logged renovation investments ($RI_{(it)}$) and central/local investment ratio ($CLIR_{(it)}$), all in the state sector and similarly deflated as the $LI_{(it)}$. $RI_{(it)}$ is heavily controlled by local governments and is often an alternative investment outlet when the central policy is to restrict the growth of local capital investment.²⁴ Because central investments primarily reflect the decisions of the central ministries and the bulk of financing costs are borne by them, local officials only affect these decisions or contribute to their costs on the margin. Taking this into account, I formulate central/local investment ratio ($CLIR_{(it)}$) to measure the tradeoff relationship between central and local projects.²⁵

Because $LI_{(it)}$ and $RI_{(it)}$ possess similar characteristics, our *a priori* expectation is that bureaucratic variables affect them similarly. On the other hand, $CLIR_{(it)}$ is a contrary activity from $LI_{(it)}$ and $RI_{(it)}$: During austerity, the Center seeks to direct resources from local to central investment projects while local governments resist doing so because central projects have low profits and their benefits are not fully recouped.²⁶ Thus $CLIR_{(it)}$ captures the central/local investment conflicts aptly: An increment in the rise of central investments is achieved by an increment in the decline of local investments.

Independent variables: Investment is an economic activity and is influenced by many economic variables. The main economic variables are three financial constraints--deflated by the retail price index--on local investment decision making.²⁷ The first is the logged foreign investments ($FI_{(it)}$); during the reform era, foreign investments have become increasingly important in capital formation in provinces such as Guangdong and Fujian and typically foreign investments are protected during austerity and thus $FI_{(it)}$ should be positively related to $LI_{(it)}$. The second financial variable is the logged net provincial capital stock ($NKS_{(it)}$). Large capital stock

requires large capital increments because of the large size of capital depreciation and thus it should be positively associated with annual investments.²⁸ The third financial variable is the logged provincial revenue contributions ($RC_{(it)}$) to the Center, which are negatively related to $LI_{(it)}$ because they reduce resources for domestic investments.²⁹ Also an austerity policy term (AP) is created to code as one those years in which an austerity policy was officially in place and zero otherwise. The austerity years are: 1979, 1980, 1981, 1983, 1986, 1987, 1989, 1990, and 1991.

I estimate the bureaucratic characteristics of the top and secondary officials both jointly and separately and the regression results are consistent with each other. In part for analytical convenience and in part for the recognition that party officials play important roles in economic affairs, I combine the measures of the bureaucratic variables for party and government officials and devise a composite index. Bureaucratic integration ($BINT_{(it)}$) takes values between one and four. One represents insider; two, outsider; three, centralist; and four, concurrent centralist. The composite index is the average value of the sum of $BINT_{(it)}$ for party secretary and governor.³⁰

For top officials, tenure is the average years party secretaries and governors have served in a province ($TENTOP_{(it)}$). The first year of appointment is one, the second year, two, etc. The appointment variable takes the value between zero and two ($APPTOP_{(it)}$): It is coded zero when there is no appointment; one when there is one appointment; and two when there are new appointments for both party secretary and governor. For secondary officials, the tenure variable, $TENSEC_{(it)}$, is also measured in years. Because the total number of officials varies among provinces, the appointment variable for secondary officials is calculated as the proportion of newly added officials in a given year ($APPSEC_{(it)}$). For joint estimations, the tenure and appointment variables for top and secondary officials are combined to produce a composite index for joint tenure ($TENURE_{(it)}$) and for joint appointments ($APP_{(it)}$). Tables 12 and 13 in the appendix summarize the main variables.

Specification of effects

There are three main hypotheses. The first is derived from the view that bureaucratic integration reduces interest divergence and/or facilitates central monitoring.

Hypothesis 1 (H1): *All else being equal, more integrated provincial officials should be closer to central policy preferences than less integrated officials in their investment behavior. This implies that $BINT_{(it)}$ is negatively related to $LI_{(it)}$.*

The second hypothesis is derived from the view that personnel selection performs--and is here used as a proxy for--*ex ante* monitoring:

Hypothesis 2 (H2): *All else being equal, more frequent appointment events are related to more frequent ex ante monitorings and therefore provinces with more frequent appointment events should exhibit less shirking in their investment behavior. This implies that appointment terms are negatively related to $Ll_{(it)}$.*

H2 in turn implies two other variations:

Hypothesis 2a (H2a): *All else being equal, longer tenure durations are associated with less frequent ex ante monitorings and thus provinces with longer tenure durations should exhibit more shirking in their investment behavior. This implies that tenure terms are positively related to $Ll_{(it)}$.*

Hypothesis 2b (H2b): *Because appointment and tenure denote opposite concepts of bureaucratic stability, their effects on $Ll_{(it)}$ must be opposite from each other.*

The model should produce similar results when applied to conceptually similar--but differently formulated--dependent variables and contrary results when applied to conceptually contrary dependent variables. Hence:

Hypothesis 3 (H3): *The coefficients of the bureaucratic terms for $Ll_{(it)}$ and $Rl_{(it)}$ should be opposite from those for $CLIR_{(it)}$.*

Empirical evidence

Generalized Least Squares procedure produces all the regression estimates. The appendix describes the sources of the data and the regression technique used. I have experimented with different forms of our models. One involves contemporaneous vis-a-vis lagged effects; this is especially relevant as far as the impact of an "event" (such as appointment) is concerned. Sometimes, an event may not produce an instantaneous effect for both substantive and technical reasons and therefore a period of lag should be allowed. In the appendix, I perform a number of diagnostic tests on measurement errors and multicollinearity. To that end, two alternative economic specifications are estimated and bureaucratic variables are estimated without economic variables. A stepwise procedure is used to examine the robustness of individual bureaucratic terms.³¹ Finally, I discuss issues related to the direction of causality in the appendix.

Fixed bureaucratic effects

I first assume that the regression coefficients for bureaucratic variables remain constant across time; later, I will relax this assumption and allow their coefficients to vary with the cycles of the macroeconomic policies. The results from the joint and separate estimations are presented in Table 2.

Table 2.

A partial F-statistic test is performed by adding our five substantive variables, $BINT_{(it)}$, $APP_{(it-1)}$, $APPTOP_{(it-1)}$, $APPSEC_{(it-1)}$, and AP (austerity policy) to financial variables and by comparing the generated R^2 values with the R^2 values generated by regressing local investments on financial variables alone. All partial F-statistics--presented in the last row of Table 2--are statistically significant at the 0.05 level, meaning that the addition of the bureaucratic and policy variables is warranted.

All the financial variables have the expected signs and are statistically significant.³² Foreign investments ($FI_{(it)}$) are found to be positively related to local investments and provinces with large net capital stock ($NKS_{(it)}$) have higher levels of local investments, as expected. This suggests that provinces able to attract more foreign investments (such as Guangdong and Fujian) and provinces with many industrial facilities (such as Shanghai) tend to have high local investment growth, *ceteris paribus*. Revenue contributions variable ($RC_{(it)}$) is negatively related to local investments; this confirms our hypothesis that revenue contributions have the effect of reducing the money resources available for domestic capital construction, thus depressing local investments. The suppressive effect of $RC_{(it)}$ is consistent with our knowledge that localities are averse to large tax turnovers to central coffers.³³

All the substantive variables, including the austerity policy term (AP), are significant at least at the 0.05 level. Both H1 and H2 are confirmed. The negative coefficient for $BINT_{(it)}$ suggests that bureaucratic integration acts to curb local investment growth; roughly, in equation (1), as the bureaucratic integration increases by one score, local investments typically declines by 5 percent. The finding on the $BINT_{(it)}$ term illustrates a fundamental feature of the Chinese political system. Although Chinese provinces are strong in economic terms, whether or not they can translate their economic strength into pursuit of their own investment interests depends on the political status of the provincial officials. Close bureaucratic integration reduces investment shirking, while lesser integration allows it. This behavioral pattern indicates that pleasing their superiors in Beijing constitutes a more important objective to officials with stronger bureaucratic ties to the Center than officials with looser ties.

What explains why some provinces are integrated more than others?³⁴ I rank, by BINT values, four economic variables--per capita income, the provincial share of national income, the share of industrial output in the provincial income, and the difference between revenue and expenditure as a proxy measure for revenue contributions to the Center. The results appear in Table 3.

Table 3.

Clearly concurrent centralists preside over provinces that are richer and more industrialized; their per capita income is almost twice as large as others and more than half of their economies are industrial; they also contribute more tax revenues to the Center and loom large in the national economy. The economic differences among centralists, outsiders, and insiders are small; rankings by per capita income, level of industrialization, and share of national income do not correspond to the order of the bureaucratic integration values. An exception is tax contributions; provinces run by centralists contribute far more tax revenues to the Center than provinces presided over by outsiders and insiders. The above findings suggest that $BINT_{(it)}$ term is related to economic or fiscal considerations; the negative $BINT_{(it)}$ coefficient indicates that bureaucratic integration is used for a control purpose--either to supplement the economic control or to compensate for the lack thereof by the Center over the provinces.

H2 is confirmed only when the appointment terms are lagged. $APP_{(it-1)}$, $APPTOP_{(it-1)}$, and $APPSEC_{(it-1)}$ are all negatively related to $LI_{(it)}$.³⁵ A descriptive analysis, presented in Table 4, reveals similar results. In order to capture the concept of change as a result of appointment events, I devise a measure called the "local investment deviation rate," which is the difference between growth in the current year and that in the previous year. I then rank them by the frequency of appointments. To test the hypothesis that the boosting effect is transitory, I also lag the effect of appointment events by one year. Because the deviation rates are highly sensitive to policy changes, I present the findings under the two macroeconomic policy regimes. The appointment events range from 0 to 2, with 0 representing no appointment; 1 representing the appointment of either a governor or of a party secretary; 2 representing appointments of both a governor and a party secretary.

Table 4.

The initial boosting effect from the appointment of two top officials in the same year is enormous; during a non-austerity period the investment deviation rate is 36 percent for the two appointment events (i.e., the investment growth is 36 percent higher than the previous year when there are two appointments), as opposed to 21 percent and 25 percent for one and zero,

respectively. However, it seems that appointment advantages are only significant when both a party secretary and a governor are newly appointed; when there is only one appointment, the effect is not that different from no appointment. Whatever the shirking advantages with new appointments, they are highly transitory. The large difference between joint appointments and the other two categories under the current effect completely disappears under the lagged effect. Indeed, if a province had no appointment in the previous year, in general it can be expected to outperform the other provinces with appointment events. This is indicative of how the Chinese political system works: While newly-appointed officials may want to appease local interests upon assuming office, they are quickly socialized into compliant behavior after the first year on the job.

Investment behavior under an austerity policy period gives strong support to H2. New officials, on cues from the central government to rein in local investment growth, do so more avidly as compared with others. While the difference between one and zero appointments is not great, there is an enormous difference between two appointment events and the other two categories. In general, new party secretaries and governors reduce local investment growth by 10 percent or so more than others and this pattern holds whether the effect is lagged or not. The behavioral shift across policy regimes is evidence of investment opportunism. During a non-austerity policy period, when the central policy is permissible, new officials expand local investments rapidly. But the true test comes when an austerity policy regime is in effect: New officials, as compared with old officials, reduce local investment growth by a far greater margin. In short, the investment behavior of new officials is highly sensitive to macroeconomic policy regimes; if appointments coincide with an austerity policy, new officials reduce investment growth by a far greater margin than other officials. Otherwise, they switch their behavior 180 degrees and expand investment growth in far excess as compared with other officials.

Alternative independent variables

In this section, I apply a number of alternative measure of our bureaucratic independent variables. I use measures of tenure duration, $TENURE_{(it)}$, $TENTOP_{(it)}$, and $TENSEC_{(it)}$, as alternative measures of bureaucratic stability. Tenure term denotes opposite leadership dynamics from the appointment term, for obvious reasons. The more appointment events there are, the shorter tenure duration and vice versa. Tenure duration is positively related to investment shirking because tenure duration is negatively associated with frequency of *ex ante* monitorings

(H2a). Table 5 presents regression results. For illustrative simplicity, I have omitted presenting the financial variables.

Table 5.

Clearly, tenure terms, $TENURE_{(it)}$ and $TENTOP_{(it)}$, are not statistically significant, which contradicts H2a.³⁶ It is, however, plausible to argue that investment shirking, while increasing with tenure durations, may not do so by the same increments. For example, investment shirking may not be a problem with those officials who only serve out their average tenure (i.e., around four years), but it is significant with those officials who serve an "abnormally" long period of time. This happens because leaders with very long tenure may feel that they already enjoy tenure security and therefore see less need to perform well, as judged by the centrally-set criteria. Thus there should be a threshold of tenure duration; before the threshold, there is no investment shirking but once the threshold is crossed, investment shirking is present. This is the revised H2a.

In technical terms, the revised H2a means that the relationship between the $TENURE_{(it)}$ term and $LI_{(it)}$ is not linear; instead, the coefficient of the $TENURE_{(it)}$ term is an increasing function of the $TENURE_{(it)}$ term itself. To operationalize this hypothesis, I create a dummy variable representing unusually long tenures $D_{(It)}$ and an interaction term, $TENUREI_{(it)}$ ($TENURE_{(it)}$ interaction), is created by $TENURE_{(it)} \times D_{(It)}$. Through residual analysis, the threshold is determined to be 5.5 years.³⁷ Thus $D_{(It)}$ is coded 0 when the $TENURE_{(it)}$ is less than 5.5 years and 1 when it exceeds 5.5 years. Only the long tenure term for top officials is statistically significant. The coefficient for the long tenure term is given by $TENTOP_{(it)} + TENTOPI_{(it)}$ (i.e., $0 + 0.02$); the term, $TENTOPI_{(it)}$, is significant at the 0.05 level. This result suggests that while top leaders with "normal" tenure duration are not able to act strongly on their investment preferences, those leaders with extremely long tenure durations are. Equations (2) in Table 2 and (3) in Table 5 together confirm H2b.³⁸ The confirmation of H2a and H2b implies a behavioral change in the career of a typical local official. Investment shirking is curbed initially; over the years, investment shirking is present again over the very long haul of an official's career.

Alternative dependent variables

I extend my analysis to two alternative forms of dependent variables. One is renovation investments, $RI_{(it)}$. As noted before, $RI_{(it)}$ is heavily controlled by the local governments and is functionally similar to $LI_{(it)}$. The other is $CLIR_{(it)}$, which is a contrary investment category from $LI_{(it)}$. Thus, in the case of $RI_{(it)}$ we should expect to obtain similar results with regards to the

coefficients for the bureaucratic terms as $LI_{(it)}$; in the case of $CLIR_{(it)}$, the results should be opposite. This is H3. The regression estimates appear in Table 6.

Table 6.

The AP term is positively related to $CLIR_{(it)}$. This is consistent with our knowledge that austerity policies are at the same time industrial policies to channel resources from local to central projects. Comparisons across the rows illustrate a regular pattern: The coefficient signs of the two bureaucratic terms, $APP_{(it-1)}$ and $BINT_{(it)}$, are internally consistent in the similar investment categories but are different across different investment categories. They are negatively related to $LI_{(it)}$ and $RI_{(it)}$ --two variables denoting pursuit of local investment interests but are positively related to $CLIR_{(it)}$ --roughly, a proxy measure for central investment interests. Because $CLIR_{(it)}$ measures the central/local investment tradeoffs, the positive $APP_{(it-1)}$ and $BINT_{(it)}$ coefficients mean that newly appointed officials and those with closer ties to the Center favor central investment interests *at the expense* of local investment interests. The pattern applies to the tenure terms as well (not presented in Table 6). $TENURE_{(it)}$ and $TENUREI_{(it)}$ are positively related to $LI_{(it)}$ and $RI_{(it)}$ but are negatively related to $CLIR_{(it)}$.³⁹ H3 is thus confirmed.

Our analysis shows that central control over personnel facilitates the implementation of industrial policies. The allocation of investment resources between central and local investment projects, at the margin, is a function of the bureaucratic incentive structures facing local officials. Investment shirking--as measured both in terms of the ability to undertake local projects ($LI_{(it)}$) and the ability to do so at the expense of central projects ($CLIR_{(it)}$)--is absent in those cases where preference divergence and monitoring problems are curbed by frequent office turnovers and high bureaucratic integration.

Varied bureaucratic effects

In the last three sections, I have examined the effect of bureaucratic terms on local investments under the assumption that the effect does not vary. We may very well question this assumption. As we have already seen, the $TENTOP_{(it)}$ coefficient varies with the values of the $TENTOP_{(it)}$, because there is an implicit threshold. A more realistic assumption is that the effect of the bureaucratic terms may systematically relate with time-dependent events, such as changes in macroeconomic policies, economic reforms, or developments in bureaucratic institutions.

I focus on the interaction effect between macroeconomic variables and bureaucratic variables.⁴⁰ The dummy variable is the change in the macroeconomic policy regime, alternating between the austerity and non-austerity periods. It takes the value of one when austerity policy is

in effect and zero when it is not. Our *ex ante* expectations are as follows. First, since the Center is likely to activate, or apply more forcefully, those instruments of control during an austerity period, we would expect the importance of those factors that normally constrain local investments to become more constraining. This is based on the reasoning that those local officials who normally suppress local investment interests should do so more avidly when the central government makes explicit demands on them to do so. Analogously, we should also expect the importance of the expansive bureaucratic variables to decline, i.e., local officials act on their own investment interests less strongly when central macroeconomic policies disapprove of such behavior. These two observations imply that all the interaction terms should be negative. The results appear in Table 7.

Table 7.

Macroeconomic policy change has a clear impact on the size of bureaucratic coefficients. The two constraining variables, $APP_{(it-1)}$ and $BINT_{(it)}$ have statistically significant interaction terms and are negative. The interaction term for the long tenure, although also carrying a negative sign, does not reach statistical significance. During the non-austerity period, the long tenure coefficient is 0.02 ($TENTOP_{(It)}$); -0.08 for the $APP_{(it-1)}$, and 0 or -0.04 for $BINT_{(it)}$;⁴¹ during the austerity period, the three coefficients are: 0.02, -0.18, and -0.04 or -0.08, respectively.⁴² The downward shifts in appointment and integration terms are consistent with our predictions that during the austerity period the normally constraining factors become more constraining; however, normally expansive factor--long tenure duration in this case--is not affected by the macroeconomic policy change.

Conclusion

What are the implications of these cross-sectional findings about China's aggregate macroeconomic performance? The following discussion is merely suggestive and is intended to raise issues for further research.

It is conventional wisdom in the studies of public finance that the central government should be ensured sufficient fiscal resources to carry out stabilization functions;⁴³ World Bank [World Bank, 1990 #365] has warned that fiscal decentralization in China has weakened macroeconomic control. This type of reasoning typically ignores the role of political institutions and can be biased.⁴⁴ The source of bias may have to do with the fact that fiscal divisions between the central and local governments do not reflect the real divisions of authority if the incentive structures of local officials are not appropriately accounted for. Table 8 illustrates a basic

asymmetry between the fiscal position of the central government and inflation performance in China as compared with other developing countries: China's inflation rate is lower or comparable to other developing countries even though the central government possesses about half of the fiscal resources as compared with other central governments.

Table 8.

There are many differences between China and other developing countries that could explain this difference in macroeconomic performance but one of the most important ones has to do with the nature of political institutions. China's political institutions are strong in Huntingtonian sense despite economic reforms.⁴⁵ The traditional research stresses the organizational strength, ideological coherence and discipline of the Chinese system,⁴⁶ while our model describes the strength in terms of the ability to structure incentives such that lower-level officials are motivated to perform according to the specifications laid down by the Center. In China, as our model suggests, the political institutions perform two important functions. One is that they reconcile policy preferences between national policy makers and local bureaucrats; the other is that they facilitate administrative monitorings. Under such an unitary arrangement, local officials act as agents of the central government and thus the divisions between central and local fiscal shares are somewhat artificial.

The emerging consensus in the growing body of political economy literature is that democracies *per se* need not hinder and authoritarian regimes *per se* need not help stabilization policies or economic reforms.⁴⁷ The research here also focuses on the institutional or political variations within the same regime type rather than on the crude distinctions between authoritarian governments and democracies. Weak executives, partisan politics, and fragmented economic policy infrastructure can all "delay" stabilization policies or undermine their implementation regardless of the regime types. In the context of transitional CPEs, the stability of political rule is especially important as the traditional central planning apparatus is being abandoned and as economic resources become more dispersed. In the short run political control can serve as a "surrogate" for macroeconomic policy levers.⁴⁸ Political institutions, as modelled here, act to limit inflation demand when firms themselves have yet to develop financial discipline to restrain their own investment demand. Herein lies one major difference between China and the former Soviet Union or Russia. In China political rules of the game have remained relatively fixed while economic rules of the game are changing rapidly. In other transitional economies, both political and economic rules are being changed simultaneously. The centrality of political institutions may be one of the most important reasons why the macroeconomic courses have

diverged so widely between China and other reforming CPEs and is an *economic* argument against attempting political reforms that undermine these institutions prematurely.

Tables

Table 1 Survey results of central and local officials on their opinions of economic situation in 1991.

Percentage of those in agreement with the following statement:		
By central/local division:	Central officials	Local officials
1) Demand and supply is in equilibrium.	61.6%	41.2%
2) Aggregate demand is insufficient.	30.6%	44.1%
3) Industrial growth is too fast.	83.3%	76.5%
4) Credit growth is too fast.	52.8%	32.4%
5) Unemployment is a problem.	8.3%	29.4%
By bureaucratic ranks:	Ministerial-level officials	Bureau-level officials
1) Industrial growth is too fast.	36.4%	16.9%
2) Unemployment is a problem.	0.0%	22.0%

Source: [Fan Yu, 1992 #1497].

Table 2 Three baseline models

<u>integration variables</u>	<u>Models with appointment and bureaucratic</u>		
	(1)	(2)	(3)
Independent variables:	Joint officials	Top officials	Secondary officials
<u>Substantive variables</u>			
Appointments ($APP_{(it-1)}$)	-0.13* (0.04)	--	--
Top appointments ($APPTOP_{(it-1)}$)	--	-0.02* (0.011)	--
Secondary appointments ($APPSEC_{(it-1)}$)	--	--	-0.12* (0.037)
Bureaucratic integration ($BINT_{(it)}$)	-0.05* (0.023)	-0.065* (0.023)	--
Austerity Policy (AP)	-0.09* (0.016)	-0.10* (0.016)	-0.08* (0.016)
<u>Setting variables</u>			
Intercept	1.13* (0.233)	1.12* (0.23)	1.06* (0.24)
Region _(east)	0.35* (0.21)	0.32** (0.21)	0.34** (0.22)
Region _(interior)	-0.01 (0.085)	-0.02 (0.085)	-0.02 (0.086)
Regions _(west)	0.07 (0.21)	0.05 (0.21)	0.05 (0.22)
Foreign investment ($FI_{(it)}$)	0.21* (0.03)	0.22* (0.03)	0.20* (0.03)
Net capital stock ($NKS_{(it)}$)	0.06* (0.005)	0.06* (0.005)	0.06* (0.005)
Revenue contribution ($RC_{(it)}$)	-0.17** (0.11)	-0.15** (0.11)	-0.21* (0.11)
Adj. R ²	0.63	0.63	0.62
N. of obser.	399	399	399
D-W statistic	1.50	1.57	1.51
Partial F-statistic	23.42*	22.35*	27.74*

Notes: Standard errors are in parentheses. Significance tests are one-tailed. The dependent variable is the logged capital construction investment in the state sector ($LI_{(it)}$).

* $p < 0.05$.

** $p < 0.1$.

Source: See the appendix.

Table 3 Economic characteristics and bureaucratic integration: Annual provincial averages, 1976-1992

Type of bureaucratic leadership:	<u>Provincial characteristics</u>			
	Per capita income (Yuan)	Industrial share (%)	Share of national income (%)	Tax contributions (Billion Yuan)
Concurrent centralists	1,465	54.1	4.75	2.75
Centralists	667	42.0	3.82	2.13
Outsiders	810	42.5	2.63	-0.44
Insiders	797	44.3	4.35	0.59

Source: See the appendix.

Table 4 Local investment deviation rates from the previous year and appointments

Number of appointments (APPTOP)	<u>Non-austerity period</u>	<u>Austerity period</u>	Current effect	Lagged effect
	Current effect	Lagged effect		
Two appointments (2)	36.4	24.9	-21.8	-21.9
One appointment (1)	21.4	23.8	-11.2	-13.2
Zero appointment (0)	25.2	26.0	-10.1	-9.2

Notes: Local investment deviation rates = current year's growth rate - previous year's growth rate.

Current effect: Appointment events in the current year.

Lagged effect: Appointment events in the previous year.

Source: See the appendix.

Table 5 Tenure duration and local investment behavior

Independent variables	Models with tenure and bureaucratic integration variables		
	(1) Joint officials	(2) Top officials	(3) Top officials(a)
<u>Substantive variables</u>			
TENURE _(it)	0.005 (0.011)	--	--
TENTOP _(it)	--	0.005 (0.007)	-0.006 (0.009)
TENTOPI _(it)	--	--	0.02* (0.007)
BINT _(it)	-0.06* (0.022)	-0.06* (0.022)	-0.06* (0.022)
AP	-0.09* (0.016)	-0.09* (0.016)	-0.09* (0.016)
<u>Setting variables</u>			
Intercept	1.13* (0.24)	1.13* (0.255)	1.19* (0.255)
Region _(east)	0.33** (0.214)	0.34** (0.23)	0.34** (0.229)
Region _(int)	-0.02 (0.086)	-0.02 (0.089)	-0.02 (0.088)
Region _(west)	0.03 (0.212)	0.04 (0.228)	0.03 (0.226)
Adj. R ²	0.62	0.60	0.60
No. of obser.	418	418	418
D-W statistic	1.63	1.62	1.70

Notes: Standard errors are in parentheses. Significance tests are one-tailed. Financial variables are not present. $TENTOPI_{(it)} = TENTOP_{(it)} \times D_{(it)}$.

* $p < 0.05$.

** $p < 0.1$.

Source: See the appendix.

Table 6 Local, technical, and central/local investment tradeoffs

Independent variables:	<u>Dependent variables</u>		
	(1) LI _(it)	(2) RI _(it)	(3) CLIR _(it)
<u>Substantive variables:</u>			
APP _(it-1)	-0.13* (0.04)	-0.14* (0.036)	0.06** (0.042)
BINT _(it)	-0.05* (0.023)	-0.02 (0.022)	0.05* (0.015)
AP	-0.09* (0.016)	-0.05* (0.014)	0.03** (0.017)
<u>Setting variables:</u>			
Intercept	1.13* (0.233)	0.88* (0.242)	0.22* (0.08)
Region _(east)	0.35** (0.21)	0.07 (0.219)	-0.11* (0.072)
Region _(int)	-0.01 (0.085)	-0.10 (0.084)	-0.001 (0.052)
Region _(west)	0.07 (0.21)	-0.34** (0.217)	-0.05 (0.072)
Lagged term	--	--	0.43* (0.03)
Adj. R ²	0.63	0.67	0.42
N. of obser.	399	388	410
D-W statistic	1.50	1.68	1.39

Notes: Standard errors are in parentheses. Significance tests are one-tailed. Financial variables are not presented. The models with LI_(it) and RI_(it) contain financial variables; for CLIR_(it), the trial-and-error approach suggests that none of the financial variables is significant and thus the three-year moving averages of the lagged term are used to produce the estimates.

* p < 0.05.

** p < 0.1.

Source: See the appendix.

Table 7 Bureaucratic coefficients as a function of austerity policy

Independent variables:	<u>Models with policy interaction terms</u>	
	(1) Appointment term	(2) Top tenure term
<u>Substantive variables:</u>		
TENTOP _(it)	--	-0.005 (0.009)
TENTOPI _(it)	--	0.02* (0.009)
-Interaction term	--	-0.01 (0.009)
APP _(it-1)	-0.08** (0.054)	--
-Interaction term	-0.10** (0.057)	--
BINT _(it)	-0.03 (0.023)	-0.04** (0.025)
-Interaction term	-0.04* (0.009)	-0.04* (0.009)
<u>Setting variables:</u>		
Intercept	1.09* (0.23)	1.14* (0.253)
Region _(east)	0.33** (0.21)	0.34** (0.227)
Region _(int)	-0.01 (0.08)	-0.01 (0.06)
Region _(west)	0.07 (0.21)	0.04 (0.25)
Adj. R ²	0.63	0.60
N. of obser.	399	418
D-W statistic	1.58	1.75

Notes: Standard errors are in parentheses. Significance tests are one-tailed. TENTOPI_(it) = TENTOP_(it) x D_(it). Financial variables are used as control variables and are not presented.

* p < 0.05.

** p < 0.1.

Source: See the appendix.

Table 8 Central governments' fiscal positions and inflation: China in comparative perspectives (%)

Country	Central Expenditure	Central Revenue	Inflation
China	10.2 ^a (1990-91)	6.1 ^a (1990-91)	12.9 (1988-93) 5.3 (1974-93)
Developing countries	26.4 (1985)	22.7 (1985)	51.0 (1983-87)
-Low-income countries ^b	20.8 (1985)	15.4 (1985)	13.0 (1983-87)

Except for China, the expenditure and revenue figures are shares of GNP. Inflation is measured by the growth rate of GDP deflators. Relevant years are in brackets. All the figures refer to annual averages.

^a: Shares of GDP.

^b: Excluding China and India

Sources: For China, expenditure and revenue figures are from [International Monetary Fund, 1994 #41: 90 and 92]; inflation figures are calculated from [World Bank, 1995 #47: 208-209]. For developing countries, expenditure and revenue figures are from World Bank [World Bank, 1988 #23: 46]; inflation figures are from World Bank [World Bank, 1989 #27: 63].

Appendix

Sources of the Chinese data

The main source of economic data on provinces is *Quanguo gesheng, zizhiqu, zhixiashi lishi tongji ziliao huibian* [Collection of Historical Data of Chinese Provinces, Autonomous Regions, and Directly-Administered Municipalities] compiled by the State Statistical Bureau (1990). I have also used *Zhongguo guding zichan touzi tongji ziliao* [Statistical materials on Fixed-Asset Investment in China] (SSB, 1987; 1989; 1991; 1993), respectively covering the 1950-1985, 1986-1987, 1988-1989, and 1990-1991 periods, as supplemental sources. More disaggregated data are in *Zhongguo tongji yuebao* [Monthly Bulletin of Statistics-China]. For some of the fiscal data for a few provinces, I have drawn from *Zhongguo caizheng tongji* (1950-1988) [Statistics on Chinese Finance (1950-1988)] (Ministry of Finance, 1989).

Bureaucratic data come from two main sources. For the top officials, the party secretaries and governors, their dates of appointment are recorded in *Zhongguo gongchandang zhizheng sishinian* [Forty Years of Rule of the Chinese Communist Party] (1989) and in various issues China Directory; for information on lower-level provincial officials, I have used *Zhonggong nianbao* [Yearbook on Chinese Communism] (between 1977 and 1993), compiled by the Institute for the Study of Chinese Communist Problems in Taipei, Taiwan. Background data on the provincial officials are found in the three editions of Who's Who in the People's Republic of China (1981, 1987, and 1990), compiled by Wolfgang Bartke. Supplemental information on the Chinese leadership is found in Who's Who in China: Current Leaders (1989) published by the Foreign Languages Press in Beijing and Liu and Shen (1992).

Regression technique

The structure of the data is pooling of cross sections of time series. The data cover twenty-nine provinces and run from 1976 to 1992 and thus are cross-sectionally dominant. Generalized Least Squares (GLS) procedure produces all the estimates. It is likely that the threat to homoskedasticity is from time-series trends and therefore I use the Durbin procedure to

produce Rho-estimates lagged by one year. To control for any possible cross-sectional influences on residual variances, I divide all provinces into three exclusive categories (minus Anhui as an implicit fourth category), $Region_{(east)}$, $Region_{(int)}$, and $Region_{(west)}$. I also run regressions with each province as a regional dummy variable (again minus Anhui); the results are not different (Huang 1996). For useful references on the application of the GLS, see Stimson (1985) and Hanushek and Jackson (1977).

Regression diagnostics

In this section, I undertake a number of tests to determine the quality of our model specifications and of our individual estimates. I focus on three areas where our findings can be suspect. The first is the presence of measurement errors, which means that our estimates can change drastically when model specifications are changed. Second, I want to find out if there is multicollinearity among our bureaucratic variables. Here I am less concerned about multicollinearity among economic terms since they are included only to impose control for the structural factors; however, collinearity between economic and bureaucratic terms would be a concern, which I also examine. Third, I examine the possibility that causal chains run from investments to bureaucratic variables, rather than the other way around, as posited by our theoretical conjectures.

The measurement errors are checked by specifying alternative economic models and if our bureaucratic coefficients are reasonably consistent across different model specifications, then measurement errors are not severe. Also this procedure helps us detect any collinearity between economic and bureaucratic terms. Our baseline model is presented in Column (1) of Table 2, i.e., three financial variables plus three bureaucratic variables. In Table 9, I offer three alternative specifications: economic development variables, a lagged investment term, and running the three bureaucratic variables on their own. The results appear in Table 9.

Table 9.

Compared with Column (1) in Table 2, neither the signs of the coefficients nor their magnitudes depend on the underlying economic variables included in the models. The signs for appointment and integration terms ($APP_{(it-1)}$ and $BINT_{(it)}$) remain negative across four very different economic specifications and their magnitudes vary within a very narrow range, between -0.13 to -0.14 for $APP_{(it-1)}$ and between -0.05 to -0.06 for $BINT_{(it)}$. Similarly, the signs and the size of the coefficients for an austerity policy term remain stable across the four model specifications; the signs are negative and the coefficients fluctuate within a narrow band (between -0.07 and -0.10).

Our calculation shows that there is complete independence between the bureaucratic terms and economic terms. The bureaucratic coefficients generated by running bureaucratic variables alone are not different from other models that include various economic variables. This has both technical and substantive significance. Such independence gives us confidence that the coefficients of the bureaucratic terms measure what they are supposed to measure--i.e., various characteristics of provincial personnel selection and control--rather than the spurious effects emanating from the economic variables. Second, because of the uncertainty in the underlying economic models for investment behavior, the statistical independence of the bureaucratic terms ensures the accuracy of the regression estimates of the bureaucratic terms even if we specify the wrong economic variables in our investment models.

When multicollinearity is present, the individual estimates are suspect as they can easily change when a related variable is added or dropped. I adopt a stepwise procedure to detect the presence of multicollinearity between $APP_{(it-1)}$ and $BINT_{(it)}$ and between $TENURE_{(it)}$ and $BINT_{(it)}$. The results are displayed in Table 10; for illustrative simplicity, only the relevant bureaucratic terms are displayed. Our bureaucratic coefficients are stable either when the bureaucratic variables are run together or separately. Thus there is no evidence that bureaucratic terms covary with each other.

Table 10.

It is quite plausible to argue that the causal relationship runs from investments to bureaucratic variables. In this section, I employ Granger test procedures, empirical consistency, and theoretical parsimony to determine the appropriate causal directions. The Granger test procedures establish the temporal sequence between two variables and thus they can establish a necessary condition for causality. The basic idea is that the current and past values of the exogenous variable should be better predictors of the endogenous variable as compared with the future values of the exogenous variable if the causation is unidirectional. In the presence of bidirectionality, the future values of the exogenous variable would also have predictive power.⁴⁹

In Table 11, partial F-statistics are presented. They are generated by adding the future values of the bureaucratic variables--from one to three future lags--to the current and the past values (with two lags) of the bureaucratic variables. In addition, the models include a lagged investment term (by one year) and the three regional terms. The GLS is applied to correct for the serial correlations. The results suggest presence of bidirectionality, especially concerning the appointment terms. Out of the nine F-statistics under three different lag structures, six of them are statistically significant at the 0.05%. Similar results are produced when $LI_{(it)}$ and bureaucratic variables are regressed on each other alternatively as independent and dependent variables, using their current and past values.

Table 11.

The presence of causal bidirectionality, in and of itself, does not invalidate the conjecture that causal relationship runs from the appointment system to local investment behavior; however, it does call into the question whether our conjecture is preferable to its alternatives. There are three reasons why our conjecture may be preferable. First, as Sims (1972) points out, if the exogenous variable can result in a set of expectations that may shape the movement of the endogenous variable, a unidirectional relationship is more likely to appear to be bidirectional than the other way around. Our model is explicitly expectational by attributing local investment behavior to *ex ante* monitoring and bureaucratic status of local officials. If our model is indeed correct, Granger-type bidirectionality should not be surprising.

The second reason applies to the $BINT_{(it)}$ term only. The $BINT_{(it)}$ term itself has already established a temporal order whereby the $BINT_{(it)}$ precedes $LI_{(it)}$ because it is constructed primarily on the basis of the administrative backgrounds of local officials. The classification of local officials into insiders, outsiders, and centralists all draws on information about their past administrative histories; only the coding of the concurrent centralists refers to their contemporaneous status. To avoid conceptual bidirectionality, I regress the $LI_{(it)}$ on $BINT_{(it)}$ excluding all the concurrent centralists. The result remains unchanged; the coefficient and standard error are -0.045^* (0.026), compared with -0.05^* (0.023) in Column (1) of Table 2. Given this result, the alternative conjecture that causal relationship runs from $LI_{(it)}$ to $BINT_{(it)}$ would imply an implausible temporal sequence: Contemporaneous investment behavior causes certain past bureaucratic characteristics.

The third reason is that the alternative conjectures are internally inconsistent for the APP and TENURE terms. If causal relationship runs from $LI_{(it)}$ to bureaucratic variables, then the negative APP term may suggest that central government takes local investment compliance into account in making appointment decisions: Those officials engaging in investment shirking are more quickly removed than those compliant officials. However, the positive long tenure term produces the conjecture that those officials who successfully develop local economies by increasing investment growth are rewarded by being kept in power longer. These two conjectures may be valid separately but not jointly. Jointly the two conjectures would necessarily hypothesize an indeterminate reward structure on the part of the Center: Local officials are rewarded for BOTH promoting AND suppressing local investments. As such the alternative conjecture is inconsistent when both APP and TENURE terms are statistically significant in a single model. When the APP term and the long TENURE term are both included (rather than separately as in the text), the long TENURE term is positive (0.019) and is statistically significant at the 0.05 level. The APP term remains negative (-0.147) and is statistically significant at the 0.05 level.

In contrast, our conjecture that *ex ante* central monitoring via the appointment decisions shapes the local investment behavior is consistent with both the negative APP term and the positive long tenure term. While it is plausible that central appointment decisions are motivated by conflicting motives, on grounds of the modelling consistency and parsimony, the conjecture that the causal relationship runs from bureaucratic variables to $LJ_{(it)}$ is superior.

Table 12.

Table 13.

Table 9 Three alternative model specifications

Independent variables	Three alternative models (1) Developmental variables	(2) Lag term	(3) Bureaucratic variables only
<u>Substantive variables:</u>			
APP _(it-1)	-0.14* (0.039)	-0.13* (0.05)	-0.13* (0.039)
BINT _(it)	-0.06* (0.02)	-0.06* (0.02)	-0.05* (0.023)
AP	-0.07* (0.016)	-0.10* (0.02)	-0.09* (0.016)
<u>Setting variables:</u>			
Intercept	-1.82* (0.44)	0.133 (0.128)	4.42* (0.74)
Region _(east)	0.21 (0.22)	0.05 (0.11)	1.62* (0.81)
Region _(int)	0.05 (0.08)	-0.02 (0.07)	0.05 (0.14)
Region _(west)	0.29** (0.266)	0.02 (0.104)	-0.06 (0.81)
PCI _(it)	0.35* (0.068)	--	--
IND _(it)	0.56* (0.045)	--	--
NT _(it)	-0.46* (0.25)	--	--
Lagged term	--	0.70* (0.02)	--
Adj. R ²	0.57	0.80	0.12
N. of obser.	411	410	413
D-W statistic	1.62	1.30	1.51

Notes: Standard errors are in parentheses. Significant tests are one-tailed.

* p < 0.05.

** p < 0.1.

PCI: Logged per capita income.

IND: Logged industrial income.

NT: Net trade (logged): Provincial income minus utilized provincial income.

Source: See the appendix.

Table 10 Stepwise procedure to check on multicollinearity.

Independent variables:	Models (1) Both APP & BINT	(2) APP only	(3) BINT only	(4) Both TENTOPI & BINT	(5) TENTOPI only
<u>Substantive variables:</u>					
APP _(it-1)	-0.13* (0.04)	-0.14*(0.04)	--	--	--
TENTOPI _(it)	--	--	--	0.02* (0.009)	0.02* (0.007)
BINT _(it)	-0.05* (0.023)	--	-0.06* (0.023)	-0.06* (0.023)	--
Adj. R ²	0.63	0.62	0.59	0.60	0.58
N. of obser.	399	399	418	418	419
D-W statistic	1.50	1.50	1.67	1.70	1.65

Notes: Standard errors are in parentheses. Significance tests are one-tailed. $TENTOPI_{(it)} = TENTOP_{(it)} \times D_{(it)}$. Only the relevant bureaucratic coefficients are presented. Financial variables are used as control variables.

* p < 0.05.

** p < 0.1.

Source: See the appendix.

Table 11F-statistics of the future values of APP, TENURE, and BINT with one to three future lags.

Lag structure	APP	TENURE	BINT
t+3	9.94*	2.81	0.43
t+2	23.32*	13.61*	9.45*
t+1	10.78*	5.09*	1.89

* p < 0.05%.

Source: See the appendix.

Table 12 Summary of the main variables

Variables	Definitions
<u>Dependent variables:</u>	
LI:	Logged values of local investments in 100 million yuan.
RI:	Logged values of renovation investments in 100 million yuan.
CLIR:	Logged values of central to local investment ratios.
<u>Independent variables:</u>	
BINT	Bureaucratic integration with one for insiders, two for outsiders, three for centralists, and four for concurrent centralists.
APPTOP	Appointment events for top officials with zero for no new appointment, one for one appointment, and two for two appointments.
APPSEC	Ratio of newly added secondary officials to the total number of secondary officials.
APP	Ratio of newly added top and secondary officials to the the total number of top and secondary officials.
TENTOP	Average tenure of secretaries and governors measured in years.
TENSEC	Average tenure of secondary officials measured in years.
TENURE	Average tenure of both top and secondary officials measured in years.
AP	Austerity policy term that codes 1979, 1980, 1981, 1983, 1986, 1987, 1989, 1990, 1991 as one and zero otherwise.

Table 13 Means and standard deviations of the main dependent variable (logged) and the bureaucratic independent variables

Dependent variables: Province	LI		BINT		APP		TENURE	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Anhui	2.31	0.56	1.71	0.90	0.23	0.20	3.60	1.37
Beijing	2.80	0.51	3.06	0.97	0.21	0.18	4.03	1.34
Fujian	2.61	0.67	1.97	0.37	0.20	0.14	3.82	0.78
Gansu	1.87	0.79	1.62	0.80	0.25	0.17	3.27	1.04
Guangdong	3.67	1.06	2.00	1.20	0.20	0.16	4.00	0.99
Guangxi	2.34	0.45	1.24	0.50	0.20	0.18	4.00	1.03
Guizhou	1.83	0.47	1.79	0.36	0.18	0.19	4.38	1.42
Hebei	2.73	0.35	2.06	0.66	0.23	0.20	4.14	1.00
Heilongjiang	2.78	0.51	1.32	0.35	0.24	0.20	3.36	0.74
Henan	2.63	0.50	2.00	0.69	0.24	0.15	3.67	1.03
Hubei	2.98	0.56	1.47	0.41	0.17	0.15	4.29	0.80
Hunan	2.60	0.54	1.35	0.99	0.17	0.16	4.55	0.81
Jiangsu	2.99	0.67	1.12	0.22	0.22	0.18	3.69	1.16
Jiangxi	2.20	0.50	1.71	0.36	0.25	0.20	3.49	0.88
Jilin	2.19	0.53	1.82	0.47	0.25	0.21	3.28	1.09
Liaoning	3.11	1.04	1.24	0.36	0.24	0.19	3.57	1.08
Neimenggu	2.26	0.38	1.59	0.20	0.26	0.20	3.80	1.13
Ningxia	1.37	0.41	1.71	0.47	0.20	0.22	3.86	1.22
Qinghua	1.43	0.36	1.53	0.41	0.20	0.20	3.67	1.10
Shaanxi	2.31	0.56	1.88	0.45	0.24	0.18	3.61	1.25
Shandong	3.48	0.46	1.29	0.50	0.26	0.21	3.49	0.90
Shanghai	3.04	0.69	3.06	0.88	0.24	0.21	3.59	1.25
Shanxi	2.55	0.40	1.53	0.48	0.19	0.19	4.02	1.06
Sichuan	3.11	0.67	2.53	1.33	0.22	0.18	3.60	1.10
Tianjin	2.58	0.58	2.29	1.00	0.21	0.17	3.74	0.93
Xinjiang	2.32	0.50	2.18	0.77	0.17	0.17	4.91	1.28
Xizang	1.61	0.43	1.71	0.25	0.17	0.13	5.24	0.98
Yunan	2.35	0.38	1.34	0.40	0.22	0.21	3.89	1.10
Zhejiang	2.63	0.66	1.18	0.30	0.20	0.20	3.83	0.99

Note: Figures refer to the provincial averages and standard deviation values of the 1976-1992 period. For some provinces, it is less than seventeen years due to missing data.

Source: See the appendix.

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Notes

¹ The political economy literature in this area is vast. For a good review on works on industrial countries, see [Alesina, 1989 #892]. For studies on developing countries, see Haggard and Kaufman [Haggard, 1992 #613], and [Edwards, 1994 #1032]. For two studies disputing the anti-inflation effect of central banks, see Maxfield [Maxfield, 1994 #1239] (1994) on developing countries and Posen [Posen, 1994 #1330] on industrial countries.

² Gordon [Gordon, 1975 #1074: 808] uses inflation demand to mean pressures for the government to pursue a more inflationary policy or not to pursue an anti-inflationary policy.

³ For a detailed discussion on the upward or downward biasedness of Chinese retail prices, see Imai [Imai, 1994 #1138].

⁴ See McMillan and Naughton [McMillan, 1992 #1244] and Murphy, Shleifer and Vishny [Murphy, 1992 #1263].

⁵ Non-state investments account for a small share of China's total investments and typically are not inflationary. Non-state investments are not excessive, are typically efficient, and are financed by earnings, which crowds out consumption.

⁶ Students of CPEs are all familiar with warehouses full of goods that cannot be sold and with simultaneous shortages of goods in actual demand. Chinese economists also point out that in the recent years more investment resources are concentrated on nonproduction-related purposes--construction of high-end office buildings or recreational facilities. Because these investment activities do not add directly to the productive capacity of the economy, they can be inflationary by raising the total wage bills and demand for investment goods.

⁷ For a review of excess demand concept, see Kemme [Kemme, 1989 #650].

⁸ This situation of shortage contrasts with that of market economies, which are typically "demand constrained" and exhibit a constant tendency to slip into recession on account of sluggish demand. A specific demonstration of this contrast is revealed in the nature of the inventories held in the two types of economies. While inventories in market economies are final goods as a buffer against demand shocks, in centrally planned

economies they tend to be inputs to production which are to insure against taut planning [Levine, 1969 #670].

⁹ Time lags are not unique to CPEs; what is unique is that the CPE firms tend to have long time lags. CPE firms often maximize as many investment projects as possible; finishing a project and making it productive are of a secondary consideration. The reason for this type of behavior is that a project, once officially approved, guarantees resource commitments to it at some point in the future; thus in order to claim additional resource commitments a rational strategy is to concentrate on initiating projects rather than on completing them. See Grosfeld [Grosfeld, 1989 #606: 364]. On linkage between time lags and inflation, see Imai [Imai, 1994 #1137].

¹⁰ For an analysis along this line, see Woolley [Woolley, 1985 #804].

¹¹ Student protests in 1989 directly followed the inflationary bout in 1988. According to a survey conducted by The People's University in early 1989, in terms of the importance of their concerns, inflation ranked number three among respondents, many of whom were high-ranking government officials at or above the bureau level (see Shijie jingji daobao [World Economic Herald], April 3, 1989, 1). For an analysis of how inflation fed workers' political demands, see Walder [Walder, 1989 #1447: 33-35].

¹² As a Beijing bus passenger once commented on inflation and Deng Xiaoping, who is barely five feet tall, "These days, everything rises, except the height of Deng Xiaoping."

¹³ Top ministerial and provincial officials have the same rank; ministerial-level officials here include top officials working in provinces. Thus the survey here shows that provincial-level officials are more concerned about inflation than county-level officials.

¹⁴ This discussion mainly draws from the following sources: Ross [Ross, 1973 #1362], Jensen and Meckling [Jensen, 1976 #1144], Moe [Moe, 1984 #1250], and [Eggertsson, 1990 #152]. For a concise summary of the theory of the firm, see Hart [Hart, 1989 #1097].

¹⁵ Because there are too many secondary officials, such as vice governors or deputy provincial party secretaries and because background information about them is very incomplete, the bureaucratic integration variable only covers top provincial officials, i.e., party secretaries and governors.

¹⁶ Since the late 1970s, eleven officials have occupied a seat on the Politburo while serving primary administrative functions in the provinces. Compared with the former

Soviet Union, Chinese provinces have traditionally been less widely and less continuously represented on the Politburo, despite a larger pool of provinces. According to Bahry [Bahry, 1987 #76: 27-28], under Khrushchev and Brezhnev, six out of fifteen republics gained Politburo representation.

¹⁷ As Lieberthal and Oksenberg [Lieberthal, 1988 #250] explain, Politburo members are given specific areas of responsibilities and collectively they resolve "major bureaucratic conflicts and deciding upon major policy issues." Obviously, making decisions on retrenchment policies and overseeing the implementation of central investment guidelines fall into this category of activities.

¹⁸ For example, Jiang Zemin, now the party general secretary, was the minister of the electronics industry before becoming the mayor of Shanghai in 1985; Zhao Ziyang, the first party secretary of Sichuan province in the late 1970s, had served in similar positions in Guangdong and Neimenggu.

¹⁹ For example, it would be harder for a provincial party secretary to explain investment intransigence in his/her province when he/she has to sit on the Politburo meetings as compared with someone who does not have to do so.

²⁰ I also include in our discussion secondary provincial officials--defined as anyone who is a member of a provincial standing committees in the party hierarchy or is a vice-governor in the government hierarchy. They are included based upon the recognition that they are important cadres, who usually are assigned a specialized area of responsibility, and that, to the extent they are also appointed by the Center, their inclusion may help illuminate central intentions in personnel matters.

²¹ In any given year, there are 58 top provincial officials and, since 1983 there are about 522 secondary provincial officials in any given year; in contrast, 60,000 and 100,000 investment projects routinely break ground each year. Kaufman [Kaufman, 1960 #221: 155-56], in his study of the American forest service, argues that personnel turnovers check policy deviations because no matter how successfully a ranger can hide his practices, he cannot do so with his successor.

²² For a description of the screening in the appointment process, see Manion [Manion, 1985 #1234] (1985) and Huang [Huang, 1995 #1130].

²³ All of our variables are broken down by the twenty-nine provinces as well as by years. In the subscript, *i*, *i* represents a province and *t* represents a year; thus our dependent

variable, local investment or $LI_{(it)}$, means local investment level in province i and in year t .

²⁴ Renovation investments are used for maintaining current capacity rather than for capacity expansion. But in reality, renovation investments are often diverted to expand capacity when the central government seeks to restrict capital investments.

²⁵ Local officials themselves use $CLIR_{(it)}$ to evaluate the implementation of central investment policies. See Huang [Huang, 1996 #204].

²⁶ The reason for their low profitability is that the central government often imposes price controls on their products--mainly energy and raw materials. Their positive externalities arise because the allocation of their products is inter-regional.

²⁷ The appendix also presents regression results on alternative economic variables.

²⁸ By trial and error, a quadratic term of net capital stock produces the best fit. When a quadratic term is included, this means that the effect of net capital stock on $LI_{(it)}$ is an increasing function of the size of the net capital stock.

²⁹ Because data on actual provincial revenue contributions are incomplete, I use the ratio of revenue collection to local expenditures as a proxy. Although this measure counts budgetary surpluses as revenue contributions, the bias cannot be corrected without further information. The bias should not affect our analysis severely, as our purpose is to bring out differences between those provinces contributing revenues to the Center and those provinces receiving subsidies from the Center. By definition, provinces receiving subsidies from the Center do not have budgetary surpluses and persistent budgetary surpluses are not likely.

³⁰ Due to incomplete information, $BINT_{(it)}$ is devised only for top provincial officials.

³¹ Furthermore, I explore the possible influences on BINT estimates from the high BINT values of Beijing and Shanghai. The diagnostic results are reported in Huang [Huang, 1996 #204].

³² The consistent statistical significance of the regional dummy, $Region_{(east)}$ suggests that there are additional factors contributing to investment growth that are not captured by our explanatory variables. This suggests room for further improvement in model specification.

³³ The internal consistency of our economic variables and the fact that our findings are broadly consistent with other observations about the Chinese economic system suggest

that the economic variables are well-specified. However, it is quite possible that the individual regression estimates are unreliable because of the multicollinearity among some of the economic variables. I ignore this possibility because I do not intend to examine the economic variables in great detail. Our findings from the bureaucratic terms would be flawed if the bureaucratic terms were found to correlate with the economic variables. However, this is not the case.

³⁴ Some scholars point to some rather idiosyncratic factors; Bartke [Bartke, 1990 #82: 457], for example, argues that Shanghai's representation on the Politburo in the 1970s was due to the fact that it was the political base of Jiang Qing. Explanations like this fail to take into account the fact that some provinces, such as Shanghai, Beijing, Tianjin, and Sichuan, have been somewhat continuously represented on the Politburo; the predominance of Shanghai, for example, both preceded and persisted after the political era of Jiang Qing.

³⁵ However, regressing $APP_{(it)}$, $APPTOP_{(it)}$, and $APPSEC_{(it)}$ --i.e., contemporaneous effect-- actually produces *positive coefficients*, although only $APPTOP_{(it)}$ is statistically significant. These coefficients are: 0.05 (0.25) for $APP_{(it)}$, 0.07* (0.03) for $APPTOP_{(it)}$, and 0.03 (0.03) for $APPSEC_{(it)}$. Standard errors are in the parentheses. The lagged version is preferred because of its stronger statistical results and because the contemporaneous version could capture some of the effect from departures on the part of the predecessors from the office.

³⁶ $TENSEC_{(it)}$ is not statistically significant and is omitted from the table for simplicity.

³⁷ Residual analysis reveals that in our baseline models that there is an upward bend when $TENTOP_{(it)}$ is around six; this means that our baseline models tend to overpredict lower values of the $TENTOP_{(it)}$ but underpredict higher values of the $TENTOP_{(it)}$ (i.e., when $TENTOP_{(it)} > 5.5$). The baseline models, to some extent, violate the zero-mean assumption of the regression analysis. Take equation (1) as an example. When the $TENTOP_{(it)}$ is less than six, the mean value of the residual is -0.004, but when the $TENTOP_{(it)}$ exceeds six, the mean value is 0.07. The corrective procedure that adds the $TENTOP_{(it)} \times D_{(it)}$ significantly reduces the mean value of residuals, to 0.02. On technical grounds, it is a better model and as illustrated in the text, it is a better substantive model too.

³⁸ An examination of the local investment deviation rate also confirms this result. On average, if a province has no appointment events for seven years in a row, its investment deviation rate is about 5.24 percent. In contrast, during the same seven-year interval, if there have been appointment events, then the deviation rate is about -2.04 percent.

³⁹ For $RI_{(it)}$, the estimates are: 0.014** (0.01) for $TENURE_{(it)}$ and 0.01** (0.007) for $TENUREI^{**}$. For $CLIR_{(it)}$, the estimates are -0.02* (0.01) for $TENURE_{(it)}$ and 0.00 (0.01) for $TENUREI_{(it)}$. Standard errors are in brackets.

⁴⁰ The interaction effect between time and bureaucratic variables reveals the surprising result that bureaucratic control has actually deepened during the reform era. This is consistent with my overall argument that central control over investment processes has not declined because central administrative control has increased.

⁴¹ $BINT_{(it)}$ is not significant during the inflationary period.

⁴² These are given by: $TENTOP_{(it)} + \text{Interaction term}$, $APP_{(t-1)} + \text{Interaction term}$, and $BINT_{(it)} + \text{Interaction term}$. Because the interaction term for the long tenure is not statistically significant, it is zero.

⁴³ This is based on the reasoning that local jurisdictions either lack incentives or are ineffective in carrying out these functions due to labor and capital mobility across jurisdictions. For a summary discussion, see Oates [Oates, 1972 #296].

⁴⁴ Indeed, in one of the most influential economic studies of federalism, Oates (1972) goes out of his way to say that political definition of federalism does not bear on an economist's concerns. He says (1972: 17):

In contrast to the conception of federalism in political science, it makes little difference to the economist whether or not decision-making at a particular level of government is based on delegated or constitutionally guaranteed authority. What matters is simply that decisions regarding levels of provision of specified public services for a particular jurisdiction (be they made by appointed or elected officials, or directly by the people themselves through some form of voting mechanism) reflect to a substantial extent the interests of the constituency of that jurisdiction.

⁴⁵ Elsewhere, I have shown that political control by the Center has actually been strengthened during the reform era [Huang, 1995 #1130].

⁴⁶ Examples of this research tradition include Schurmann [Schurmann, 1968 #352], Lewis [Lewis, 1963 #245] and Barnett [Barnett, 1967 #79].

⁴⁷ For a summary of this consensus, see Haggard and Webb [Haggard, 1993 #1087]. For empirical demonstrations, see Bates and Krueger [Bates, 1993 #497] and Remmer [Remmer, 1993 #1344].

⁴⁸ In the economic literature, this line of reasoning has been used to support the "gradualist" reform approach and against the "big-bang" approach. As McMillan and Naughton (1992: 135) put it, "In the transforming economy, therefore, the usual capitalist managerial disciplines are absent. The only available substitute is the state. Government officials in a reforming economy must oversee the managers of state-owned firms, as they did when the economy was centrally planned."

⁴⁹ Another way of stating this condition is that future values of the exogenous variable are not different from zero in the case of unidirectionality and are different from zero in the case of bidirectionality. For a detailed explanation of this procedure and application, see Sims [Sims, 1972 #1401]. For a good review of different Granger tests, see Bishop [Bishop, 1979 #937].