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BUREAUCRATIC STRUCTURE AND BUREAUCRATIC PERFORMANCE IN LESS DEVELOPED COUNTRIES

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BUREAUCRATIC STRUCTURE AND BUREAUCRATIC PERFORMANCE IN LESS DEVELOPED COUNTRIES

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Recent cross-country empirical analysis has found that privately produced ratings of the performance of the central government bureaucracy in areas such as corruption and red tape are significant predictors of economic performance. We argue that several relatively simple, easily identifiable structural features constitute the key ingredients of effective state bureaucracies and should help to predict these ratings: competitive salaries, internal promotion and career stability, and meritocratic recruitment. We collect a new data set on these features for bureaucracies of 35 less developed countries. Controlling for country income, level of education, and ethnolinguistic diversity, we find that our measures of bureaucratic structure are statistically significant determinants of ratings supplied by two of three country risk agencies. Meritocratic recruitment is the most important structural feature for improving bureaucratic performance, followed by internal promotion and career stability. The importance of competitive salaries could not be clearly established.

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I. Introduction

The important role of the quality of state institutions in the process of economic growth and development is being increasingly recognized in recent research. The revisionist studies of South Korea by Amsden (1989) and Taiwan by Wade (1990) brought into currency the term "developmental state." The World Bank broadened the focus to state institutions in the rest of East (and Southeast) Asia in *The East Asian Miracle: Economic Growth and Public Policy* (1993). The use of institutional ratings produced by country risk services for international investors permitted extension of this line of research to cross-country statistical analysis by Knack and Keefer (1995) and Mauro (1995). Indices of "institutional quality" based on these ratings are now becoming standard explanatory variables in cross-country growth regressions (e.g., Easterly and Levine 1996).

In this paper we will be especially concerned with ratings of the performance of the central government bureaucracy. Keefer and Knack (1993) use ratings by the International Country Risk Guide (ICRG) and by Business and Environmental Risk Intelligence (BERI) of "corruption in government" and "bureaucratic delays," respectively; Mauro uses ratings by Business International (BI) of "corruption" and "bureaucracy and red tape;" and Knack and Keefer (1995) and Easterly and Levine (1996) use an ICRG rating of "bureaucratic quality" in their indices of institutional quality. Keefer and Knack find that better performance on both of their variables is positively and significantly associated with growth in per capita income, Mauro finds that better performance on both of his variables is positively and significantly associated with the private investment share of GDP, and Knack and Keefer and Easterly and Levine find positive and

significant effects of their institutional quality indices on growth in per capita income.

While the cross-country statistical evidence reinforces the idea that differential governmental performance may have an impact on economic growth, it tells us little about what kind of institutional characteristics are associated with lower levels of corruption or red tape. If the findings just listed are meaningful, it is worth identifying which characteristics of government bureaucracies lead to good ratings from the ICRG, BERI, and BI on the variables cited above. This is our aim in the present paper. In a companion paper (Evans and Rauch 1997) we examine the direct impact of bureaucratic structure on economic performance.

To achieve this aim required a major data collection effort. Although it is increasingly recognized that without the help of the central government bureaucracy, it is difficult if not impossible to implement or maintain a policy environment that is conducive to economic growth, this recognition has not spurred any institutional initiative to maintain a data base on the characteristics of state bureaucracies. Certainly there exist many fine case studies, but to our knowledge no previous set of quantitative, internationally comparable data has been assembled on this subject.

Our data collection and analysis will be guided by what we call the "Weberian state hypothesis." Drawing on the original insight of Weber (1968 [1904-1911]), Evans (1992, 1995) argues that replacement of a patronage system for state officials by a professional state bureaucracy is a necessary (though not sufficient) condition for a state to be "developmental." The key institutional characteristics of what he calls "Weberian" bureaucracy include meritocratic recruitment through competitive examinations, Civil Service procedures for hiring and firing rather than political appointments and dismissals, and filling higher levels of the hierarchy through

internal promotion.[1]

To test the Weberian state hypothesis (actually several related hypotheses), we collected original data on various elements of bureaucratic structure for 35 countries. The next section of this paper describes our hypotheses more fully and contrasts them with other views of the determinants of bureaucratic performance. Section III gives the details of how we collected our data. Section IV presents our empirical results, the robustness of which is examined in section V. Our conclusions and suggestions for further research are in section VI.

II. Theoretical approach

In the economics literature, bureaucratic performance is typically addressed using a principal-agent model. The case studies described by Klitgaard (1988) leave little doubt that a powerful and determined outside monitor (principal) can reduce corruption and improve delivery of services by his bureaucratic agents. Milgrom and Roberts (1992) give a comprehensive theoretical treatment of the strategies a principal can use to elicit better performance from his

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[1]In previous work, Rauch (1995) studied the potential impact that bureaucratic professionalism could have on the positive role that the state can play in economic development by providing complementary inputs for the private sector. Specifically, he hypothesized that establishment of a professional bureaucracy in place of political appointees will lengthen the period that public decision makers are willing to wait to realize the benefits of expenditures, leading to allocation of a greater proportion of government resources to long-gestation period projects such as infrastructure. He also hypothesized that this increased government investment in inputs complementary to private capital will increase the rate of economic growth. These hypotheses were tested using data generated by a "natural experiment" in the early part of this century, when a wave of municipal reform transformed the governments of many U. S. cities. Controlling for city and time effects, adoption of Civil Service was found to increase the share of total municipal expenditure allocated to road and sewer investment, while other reforms adopted during this period did not have this effect. This share in turn was found to have a positive effect on growth in city manufacturing employment.

agents, such as performance-based pay and (implicit) tournaments among employees for higher-level positions.[2]

A drawback of the principal-agent approach is that to some extent it assumes away the problem, especially in an LDC context, because the political will to engage in vigorous monitoring and implement appropriate strategies is lacking, or worse yet the principal is himself corrupt. Rose-Ackerman (1997, p. 48) notes that "behind all proposals for civil service reform is an effective set of internal controls or of antibribery laws with vigorous enforcement," leaving one to wonder what can be done if vigorous enforcement is not available. It follows that reforms that make weaker demands on outside monitors or the political system for their implementation and enforcement are of considerable interest.

We believe that the reforms that constitute the Weberian state have this property. Enforcement of meritocratic recruitment requires verification of whether entry into government service has been conditioned on passage of a civil service exam or attainment of a university degree. Implementation of internal promotion requires that higher-level agency positions be filled by current agency employees or at least current members of the civil service. Maintenance of competitive salaries requires a simple comparison with private sector numbers. It is precisely the relative ease with which one can observe whether and to what extent these rules are being followed that makes possible our empirical analysis below. In contrast, consider the effort that must be made to evaluate "performance" in pay for performance schemes (Milgrom and Roberts 1992, pp. 464-469), or the initiative that must be taken to implement "strong financial

[2]Another strand of the literature addresses the effects of interagency competition on corruption (Rose-Ackerman 1978, Shleifer and Vishny 1993). In this paper we only examine intraagency bureaucratic structure.

management systems that audit government accounts and make financial information about the government public" (Rose-Ackerman 1997, pp. 49-50).

How do the ingredients of the Weberian state combine to produce good bureaucratic performance? We first present an argument based on Evans (1992, 1995). Making entry to the bureaucracy conditional on passing a civil service exam or attainment of a university degree, and paying salaries comparable to those for private positions requiring similar skills and responsibility, should produce a capable pool of officials. The stability provided by internal promotion allows formation of stronger ties among them. This improves communication, and therefore effectiveness. It also increases each official's concern with what his colleagues think of him, leading to greater adherence to norms of behavior. Since the officials entered the bureaucracy on the basis of merit, effective performance is likely to be a valued attribute among them rather than, say, how much one can accomplish on behalf of one's clan. The long-term career rewards generated by a system of internal promotion should reinforce adherence to codified rules of behavior. Ideally, a sense of commitment to corporate goals and "esprit de corps" develop.

The work of Rauch (1995) attempts to marry the Weberian state hypothesis to a principal-agent framework. Internal promotion is defined as recruiting the principal from the ranks of the agents. Only the principal exercises power in the sense of deciding (or at least influencing) the mix of services the bureaucracy will supply. Individuals are assumed to differ in their desire to impose their preferences over collective goods on the public. Imposing preferences requires that the bureaucracy as a whole be effective in fulfilling its mission. A principal who values exercise of power highly will spend more time supervising his agents to insure that they are carrying out their tasks (and thereby implementing his preferences), and less time looking for ways to line his own

pockets. With internal promotion, agents who hope to exercise power themselves will be more responsive to any effective supervision in order to increase their chances of becoming principal. Since agents who care about power are more likely to become principal, principals are more likely to care about power and therefore supervise their agents more closely. It follows that given any positive initial level of supervision, internal promotion generates a virtuous circle that increases (in expectation) the value the principal places on exercise of power, tending to increase the extent to which the bureaucracy as a whole carries out its assigned tasks of public goods provision and decrease the extent to which it implicitly taxes the private sector through large-scale corruption. Competitive salaries and meritocratic recruitment are of only secondary importance for bureaucratic performance in this model.

The arguments of both Evans (1992, 1995) and Rauch (1995) for the virtues of the Weberian state are based largely on the effects of selection and the development of norms. A more standard incentive-based analysis may reach different conclusions. Regarding meritocratic recruitment, a civil service system typically entails not only examinations but also civil service protection, and it could be argued that bureaucrats with civil service protection are less motivated to perform since it is more difficult to fire them. Exams and other credentials may not select for relevant skills but instead may function mainly as barriers to entry that shield incumbent officials from competition from qualified outsiders. Similarly, internal promotion may simply prevent the best candidates from being appointed to higher positions when they are open.[3] Only regarding the benefits of competitive salaries will the standard analysis agree, pointing in particular to the

[3]Overall, the Weberian state hypothesis is similar to a "Williamsonian" (1985) argument that governance structures that limit the extent of competition may sometimes have more than compensating benefits.

reduction in the incentives to take bribes given the presumed reduction in the marginal utility of income and increase in the disutility of being fired if one is caught in corrupt activity.

III. Collection of original data

Our collection of data on bureaucratic structure proceeded in three steps. First, we developed and pretested a survey to be filled out by country experts. Second, we identified a sample of countries for which we thought it was feasible to collect accurate data on the core economic agencies. Third, we sent out the final version of our survey with the goal of obtaining responses from at least three experts per country for purposes of cross-validation. We met this goal in all but three cases (see Table A1). This was a very laborious process for two reasons: (1) we had to identify experts and (2) we had to get the experts to respond. If the experts we identified initially did not respond, we had to identify new ones. Although we restricted our sample in anticipation of this difficulty, more than two and one-half years elapsed between the time we began to send out the final version of our survey and the time we completed our data set.[4]

The sample of 35 countries shown in Table A1 began with the 30 "semi-industrialized" countries of Chenery (1980).[5] We believed this would cover a much broader range of

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[4]We sent out questionnaires to 231 experts and received back 126 complete responses. Of these respondents, 103 were academics, split roughly evenly between institutions based in the countries in question and institutions based in more developed countries. Returned questionnaires were often accompanied by copies of the author's published analyses or extensive commentary.

[5]This sample was chosen on the basis of industrial output per capita and the share of industrial production in GDP. It has been analyzed by Feder (1983) and Esfahani (1991).

bureaucratic structure and performance than, say, a sample of more developed countries.[6] For evidence on this point, compare Figures 1a and 1b. These figures show distributions of one of the two most widely available ratings we use below, the rating for corruption produced by the International Country Risk Guide. (Histograms for the other most widely available rating, the ICRG rating of bureaucratic quality, tell the same story.) We see that the distribution for the more developed countries (OECD, less Yugoslavia and the countries included in Chenery (1980))[7] is concentrated at the high end while the distribution for the semi-industrialized countries is much more spread out. These figures also suggest, however, that by excluding countries that were not at least "semi-industrialized" the Chenery sample may be cutting off the lower end of the distribution of bureaucratic performance. For this reason we decided to add five countries that were insufficiently industrialized to be included in the Chenery sample: Haiti, Nigeria, Pakistan, Sri Lanka, and Zaire. These choices were driven by the desire to increase the representation of the Caribbean, South Asian, and Sub-Saharan African regions, and by the belief that there was sufficient scholarship on these countries to enable one to find at least three experts for each of them. Figure 1c shows that, as expected, the distribution of bureaucratic performance was more effectively covered by our sample than by the Chenery sample.

We have already noted that feasibility and maintenance of data quality required us to sample less than the entire universe of countries. The same concerns led us to restrict our

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[6]Moreover, for purposes of our companion study we believed that the role of the state in economic development was more important for this group of countries.

[7]The countries included in Figure 2 are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, United Kingdom, and United States.

coverage of agencies within a country. We chose to focus on the core economic agencies.[8] This choice was obvious given that our companion study concerns the relationship between the characteristics of the agencies surveyed and overall economic performance. Using our data on the bureaucratic structure of core economic agencies to explain the privately produced measures of bureaucratic performance cited in the Introduction creates a problem if these agencies are, for example, "pockets of efficiency" with bureaucratic structures that are more "Weberian" than is typical of the rest of the state bureaucracy. Since these measures of bureaucratic performance are intended to serve the needs of transnational investors, this problem may be somewhat mitigated if these investors mainly deal with officials who are employed by (or heavily influenced by) the core economic agencies.

Our complete survey is reproduced in the Appendix. Many questions were designed for our companion study of the effects of the characteristics of the core economic agencies on economic policy and economic performance. For example, questions 12-13 relate to the existence of public/private information-sharing networks that may aid the formulation of economic policy. The questions that we deemed relevant for this study, and their codings, are reproduced in Table 1. We used the average of the coded expert responses for each country.[9] These questions were

[8]The respondents were asked to choose "the four most important agencies in the central state bureaucracy in order of their power to shape overall economic policy" (see Appendix). The Ministry of Finance was the most commonly listed agency, followed at a distance by the Planning Ministry/Board and Ministry of Trade/Commerce/Industry. Other agencies represented include the President's/Prime Minister's office (or Royal Palace), Central Bank, and Ministry of Defense.

[9]For all questions used in the analysis below, the between-country variance far outweighed the variance among experts assessing the same country.

almost always answered in terms of an assessment of the period 1970-1990 as a whole.[10]

Questions 4-5 in Table 1 address the extent to which recruitment is meritocratic at the entry level. *MERIT* is an equal-weight index of the two questions, where each question and the index itself has been normalized to lie in the range 0-1. Question 8, and to a lesser extent questions 6, 7, and 11, pertain to the extent of internal promotion, while question 10 addresses career stability. *CAREER* is an equal-weight index of questions 6-8 and 10-11. Question 14 concerns the level and question 16 concerns the change of bureaucratic compensation relative to the private sector. *SALARY* is an equal-weight index of these two questions. Descriptive statistics for these three bureaucratic structure indices are given in Table 3.

IV. Testing the Weberian State Hypotheses

We will seek to explain the cross-country variation in the five measures of bureaucratic performance, cited in the Introduction, that are available to us from private ratings services. These are described in Table 2, listed in the order in which we will use them as dependent variables in the data analysis. Two of these measures require additional comment. First, the definition of *BURQUAL* indicates that it measures not only an aspect of bureaucratic performance but also some of the same elements of bureaucratic structure that are addressed by our survey. It follows that while a positive and significant effect of our indices on this variable provides some information, in the absence of similar effects on other measures of bureaucratic performance such a finding could not be considered important evidence in favor of our hypotheses. Second, it

[10]There is some indication on the questionnaires and in the accompanying commentary of more substantial changes in bureaucratic structure after 1990. We return to this point in our Conclusions.

should be noted that unlike *CORRUPT1*, *CORRUPT2* is not necessarily an indicator of bureaucratic performance: it is not clear whether the "corruption or questionable payments" in the definition are made to government officials or to private sector managers such as purchasing agents. In Table 3, descriptive statistics are given for the time averages of the five bureaucratic performance ratings over the years during the period 1970-1990 for which they are available.

In attempting to explain these measures of bureaucratic performance, the question arises as to what control variables to include along with our measures of bureaucratic structure. Given Figures 1a-1c above, and the likely correlation of Weberian state characteristics with country income, it seems clear that we should control for level of development. Our measure of level of development, *RGDP*, will be GDP per capita at the beginning of the time period for which the dependent variable is available, corrected for differences in purchasing power across countries (Summers and Heston 1991).[11] It also seems prudent to control for country level of education. Countries with higher levels of education may be more likely to adopt meritocratic recruitment procedures, and at the same time education could affect bureaucratic performance by enabling the population to better monitor the state bureaucracy, and may also help on the supply side by improving the pool of applicants for the officialdom. Our education measure, *HUMCAP*, is the average years of schooling in the population over age 25, as compiled by Barro and Lee (1993). This variable is available only at five-year intervals, is missing for three countries in our sample (Cote d'Ivoire, Morocco, and Nigeria), and is available only in 1975 for Egypt. Except for Egypt, we use the 1980 value to explain all dependent variables except *BURDELAY*, for which we use the 1970 value. (For consistency we also use the 1980 or 1970 values of *RGDP*.) Finally, we

[11]The actual data are for the variable RGDP1 from Penn World Tables Version 5.6.

control for the ethnic diversity of a country. Easterly and Levine (1996) present both arguments and country anecdotes supporting the view that ethnic diversity generates more competition for government-created rents, leading to greater corruption and poorer bureaucratic performance generally. At the same time, if government patronage is organized along ethnic lines, ethnic diversity may make it more difficult to replace a clientelistic bureaucratic structure with a more rule-based one. We use the same measure of ethnolinguistic fractionalization used by Mauro (1995) and Easterly and Levine (1996), pertaining to the year 1960 and originally collected by the Department of Geodesy and Cartography of the State Geological Committee of the Soviet Union. The variable, *ETHFRAC*, measures the probability that two randomly selected individuals in a country will belong to different ethnolinguistic groups.[12]

For each measure of bureaucratic performance we first examine which control variables should be included in the subsequent analysis using our indices of bureaucratic structure. The dependent variables are the time averages of the variables in Table 2 for which descriptive statistics were given in Table 3. The ordinary least-squares regressions[13] in Table 4 show that *RGDP* is a statistically significant determinant of all five measures of bureaucratic performance, *HUMCAP* is an additional significant determinant of *BURDELAY* and *CORRUPT2*, and *ETHFRAC* has no additional explanatory power for any measure of bureaucratic performance.

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[12]Mauro (1995) used this variable as an instrument for the Business International measure of corruption (our variable *CORRUPT2*).

[13]It could be argued that our measures of bureaucratic performance are qualitative dependent variables and that an alternative estimation technique such as ordered probit is more appropriate. However, an examination of the raw data makes it clear that the agencies that produced these measures perceived their ratings as continuous, cardinal variables: ratings such as 3.5 are not uncommon. Time averaging also makes our dependent variables more like continuous dependent variables.

The only ambiguity concerning which control variables to retain in the subsequent analysis occurs for *BURDELAY*. There inclusion of *HUMCAP* makes *RGDP* insignificant, but also reduces the number of observations by three. We decided to retain *RGDP* and the larger number of observations in the regressions reported below. Retaining *HUMCAP* and dropping three observations does not qualitatively alter any of our findings concerning the effects of the bureaucratic structure variables. Moreover, we always checked that none of the control variables omitted on the basis of these preliminary regressions was statistically significant if reintroduced into the regressions reported below, with the exception of *HUMCAP* in the equations for *BURDELAY*.

In Table 5 we separately add each of our bureaucratic structure indices to the regressions for each of the bureaucratic performance measures. The coefficients on the bureaucratic structure indices are positive in every case except the coefficient on *SALARY* in the *CORRUPT2* equation, and are statistically significant for *MERIT* and *CAREER* in the equations for *CORRUPT1* and *BURQUAL* and for all three bureaucratic structure indices in the equation for *BURDELAY*. It is interesting that the coefficients on *SALARY* are smallest relative to their standard errors for the two dependent variables measuring bureaucratic corruption, contrary to what one might have expected if one used the incentive-based analysis at the end of section II. By using Table 3 in conjunction with Table 5 we can get an idea of the quantitative importance of the effects of bureaucratic structure on bureaucratic performance. An increase in *MERIT* of one standard deviation increases *CORRUPT1* by roughly one third of a standard deviation and *BURQUAL* and *BURDELAY* by roughly one half of a standard deviation. A one-standard-deviation increase in *CAREER* has slightly smaller effects in all cases. A one-standard-deviation increase in *SALARY*

increases *BURDELAY* by 0.62 standard deviations. In short, the effects of bureaucratic structure on bureaucratic performance are neither very large nor trivial.

Since *MERIT* and *CAREER* are both statistically significant explanatory variables for *CORRUPT1*, *BURQUAL*, and *BURDELAY*, we tried including both variables in these regressions. In every case, only *MERIT* retained statistical significance. In other words, given *MERIT*, *CAREER* did not add to our ability to explain bureaucratic performance. On the other hand, both *MERIT* and *CAREER* retained statistical significance when added separately to a regression for *BURDELAY* that included *SALARY*, the former at the five percent level and the latter at the ten percent level.

These results indicate that meritocratic recruitment is the element of Weberian bureaucracy that is most important for improving bureaucratic performance. Internal promotion and career stability are of secondary importance. Whether or not competitive salaries have any effect on bureaucratic performance is unclear.

V. Robustness of the findings

We have already mentioned that any of the control variables omitted on the basis of the regressions in Table 4 remains statistically insignificant when added back in to the regressions in Table 5, with the exception of *HUMCAP* in the equations for *BURDELAY*. It is also the case that adding back in any of these variables never causes a bureaucratic structure index that is significant at conventional levels to become insignificant.[14] Many authors (e.g., Easterly and Levine 1996)

[14]Adding back in *ETHFRAC* causes *SALARY* to become significant at the ten percent level in the *BURQUAL* equation.

prefer using the natural logarithm of *RGDP* to its level, so we tried this as well. Using the natural logarithm of *RGDP* improved the fit of the regressions in Table 5 in some cases and worsened it in others, but never reduced the significance level (one, five, or ten percent) of any of the bureaucratic structure indices.[15] Another potential concern is that the explanatory power of our bureaucratic structure indices only holds between regions of the globe but not within regions. In the cross-country growth regression literature it has been common to include dummy variables for Sub-Saharan Africa or Latin America (e.g., Barro 1991). In our sample a dummy variable for Sub-Saharan Africa takes on the value of one when the country is Cote D'Ivoire, Kenya, Nigeria, or Zaire and zero otherwise, and a dummy variable for Latin America takes on the value of one when the country is Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Haiti, Mexico, Peru, or Uruguay and zero otherwise. The Sub-Saharan Africa dummy is never significant in any of the fifteen regressions reported in Table 5, and the Latin American dummy is significant in only two of these fifteen regressions. In no case does a bureaucratic structure index that is significant at conventional levels become insignificant.[16]

It has been less common in the cross-country growth regression literature to include a dummy variable for East Asia (it is not covered by Levine and Renelt (1992), for example). Nevertheless, since the motivating examples for examining the connection between bureaucratic structure and bureaucratic performance tend to come from East Asia (e.g., World Bank 1993), it

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[15]*SALARY* becomes significant at the ten percent level in the *BURQUAL* equation, but R^2 is lower.

[16]Adding the Sub-Saharan Africa dummy causes *SALARY* to become significant at the ten percent level in the *BURQUAL* equation. When both regional dummies are included, *MERIT* and *CAREER* both drop just below the ten percent significance level in the respective *BURDELAY* equations, but the dummies themselves are not statistically significant.

behooves us to examine whether our results are driven entirely by the contrast between East Asia and the rest of the less developed world. In our sample an East Asia dummy takes on the value of one when the country is Hong Kong, Korea, Malaysia, Philippines, Singapore, Taiwan, or Thailand and zero otherwise. This dummy variable is insignificant in all regressions except those for *BURDELAY*, but there it is not only significant at the one percent level but makes the coefficients on *MERIT* and *CAREER* insignificant, while the coefficient on *SALARY* is reduced but retains significance at the one percent level. The sensitivity of the *BURDELAY* equations to inclusion of an East Asia dummy may reflect the smaller number of observations used to estimate them.[17]

When using a relatively small number of observations, a major concern is that one's results are driven by one or two outliers. Figures 2a-4c show scatter plots of *CORRUPT1*, *BURQUAL*, and *BURDELAY* against *MERIT*, *CAREER*, and *SALARY*, in every case controlling for *RGDP* so that the slopes of the lines in the figures are given by the regression coefficients reported in Table 5. Visual inspection of these figures suggests that the results for *BURDELAY* may not be robust to omission of Singapore (SGP). A computer ranking of observations by how much the coefficient on the relevant bureaucratic structure index would change confirms that Singapore is the most influential observation in Figures 4b and 4c, but shows that India (IND) is the most influential observation (*reducing* the estimated coefficient on *MERIT*) in Figure 4a. Omitting the most influential observation (Singapore) leaves the estimated coefficient on *CAREER* significant at the five percent level and reduces the significance level of the coefficient on *SALARY* from the

[17]Adding the other two regional dummies changes none of these findings.

one to the five percent level.[18]

Given that we find meritocratic recruitment to be the most important element of Weberian bureaucracy for improving bureaucratic performance, the index *MERIT* deserves closer examination. Table 1 shows that one component concerns coverage of the civil service examination system while the other component concerns coverage of the requirement for a university degree. It could be that the university degree component of *MERIT* is actually proxying for a measure of education (the population share of college graduates, say) that is more relevant than *HUMCAP* for predicting bureaucratic performance, and that this is the real source of the explanatory power of *MERIT*. We address this issue in Table 6 by splitting *MERIT* into its two components, which we call *CIVSER* and *UNIV*, and using each of these components in place of *MERIT* in the Table 5 equations for which *MERIT* was statistically significant. We see that, except for *BURDELAY*, the two components have roughly equal explanatory power (and less than that of the combined index), as measured by R^2. Apparently the importance of *MERIT* for bureaucratic performance cannot be explained away in this manner.

Finally, we must note the possibility that the statistical relationships we observe are due to good bureaucratic performance somehow producing high values of our bureaucratic structure indices rather than the other way around. We find this reverse causality to be implausible in part because our reading of the expert commentary accompanying the questionnaires suggests that in

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[18]In all other equations the most influential observation *reduces* the coefficient on the relevant bureaucratic structure index, except for the coefficient on *SALARY* in the equation for *CORRUPT2*. It is worth noting that omission of the most influential observation would make the coefficients on *MERIT* in the equations for *REDTAPE* and *CORRUPT2* both significant at the ten percent level, and the coefficient on *CAREER* in the equation for *REDTAPE* significant at the five percent level.

most cases the bureaucratic structures reported for the period 1970-1990 had already been in place for some time, while the bureaucratic performance measures all pertain to the 1980s except for *BURDELAY*, which starts in 1972. The roots of certain bureaucratic structures may extend back for generations, as is the case in a number of countries for the extent of civil service coverage (Evans 1992, 1995).

VI. Conclusions

Without the help of the state bureaucracy, it is difficult if not impossible to implement or maintain a policy environment that is conducive to economic growth. We have argued that several relatively simple, easily identifiable structural features constitute the key ingredients of effective state bureaucracies: competitive salaries, internal promotion and career stability, and meritocratic recruitment. We collected a new data set on these features for the core economic agencies of 35 less developed countries. Controlling for country income, level of education, and ethnolinguistic diversity, we found that our measures of bureaucratic structure were statistically significant determinants of three out of five privately produced measures of bureaucratic performance that other studies have found to have a positive impact on economic growth and private investment. In particular, our results indicate that meritocratic recruitment is the element of bureaucratic structure that is most important for improving bureaucratic performance. Internal promotion and career stability are of secondary importance. Whether or not competitive salaries have any effect on bureaucratic performance is unclear.

An especially valuable direction in which to extend the research presented in this paper is longitudinal analysis. In particular, the questionnaires and accompanying commentary suggest

that the early 1990s was a period of important changes in the bureaucracies of less developed countries. This provides an opportunity to resurvey the bureaucratic structures of our sample of 35 countries focusing on the period 1990-1995, and test if changes in our bureaucratic structure indices led to significant changes in bureaucratic performance in the latter half of this decade. This should provide insight not only into the robustness of our results but also into the efficacy of the 1990s round of less developed country "administrative reforms."

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Table 1: Construction of bureaucratic structure indices from survey responses

[We are interested primarily in what these bureaucracies looked like in the recent past, roughly 1970 - 1990. In answering the following questions, assume that "higher officials" refers to those who hold roughly the top 500 positions in the core economic agencies you have discussed above.]

Q4. Approximately what proportion of the higher officials in these agencies enter the civil service via a formal examination system?

Codes: 1 = less than 30%, 2 = 30 - 60%, 3 = 60% -90%, 4 = more than 90%

Q5. Of those that do *not* enter via examinations, what proportion have university or post-graduate degrees?

Codes: 1 = less than 30%, 2 = 30 - 60%, 3 = 60% -90%, 4 = more than 90%

$$\textit{MERIT} \text{ index} = [(Q4 - 1)/3 + (Q5 - 1)/3]/2.$$

Q6. Roughly how many of the top levels in these agencies are political appointees (e.g. appointed by the President or Chief Executive)?

Codes: 1 = none, 2 = just agency chiefs, 3 = agency chiefs and vice-chiefs, 4 = all of top 2 or 3 levels.

Q7. Of political appointees to these positions, what proportion are likely to already be members of the higher civil service?

Codes: 1 = less than 30%, 2 = 30 - 70%, 3 = more than 70%

Q8. Of those promoted to the top 2 or 3 levels in these agencies (whether or not they are political appointees), what proportion come from within the agency itself or (its associated ministry(ies) if the agency is not itself a ministry)?

Codes: 1 = less than 50%, 2 = 50 - 70%, 3 = 70% - 90%, 4 = over 90%

Q10. What is roughly the modal number of years spent by a typical higher level official in one of these agencies during his career?

Codes: 1 = 1-5 years, 2 = 5-10 years, 3 = 10 -20 years, 4 = entire career

Table 1: (Continued)

Ql l. What prospects for promotion can someone who enters one of these agencies through a higher civil service examination early in his/her career reasonably expect? Assuming that there are at least a half dozen steps or levels between an entry-level position and the head of the agency, how would you characterize the possibilities for moving up in the agency?

Codes: 2, if respondent circled "if performance is superior, moving up several levels to the level just below political appointees is not an unreasonable expectation" or "in at least a few cases, could expect to move up several levels within the civil service and then move up to the very top of the agency on the basis of political appointments" and *not* "in most cases, will move up one or two levels but no more" or "in most cases, will move up three or four levels, but unlikely to reach the level just below political appointees"; 1 otherwise.

CAREER index = [(4 - Q6)/3 + (Q7 - 1)/2 + (Q8 - 1)/3 + (Q10 - 1)/3 + (Q11-1)]/5.

Q14. How would you estimate the salaries (and perquisites, not including bribes or other extra-legal sources of income) of higher officials in these agencies relative to those of private sector managers with roughly comparable training and responsibilities?

Codes: 1 = less than 50%, 2 = 50 - 80%, 3 = 80% - 90%, 4 = Comparable, 5 = Higher

Q16. Over the period in question (roughly 1970-1990) what was the movement of legal income in these agencies relative to salaries in the private sector?

Codes: 1 = declined dramatically, 2 = declined slightly, 3 = maintained the same position,
4 = improved their position

SALARY index = [(Q14 - 1)/4 + (Q16 - 1)/3]/2.

Table 2: Available Measures of Bureaucratic Performance

Variable	Country Coverage	Time Coverage	Definition
CORRUPT1 *Source*: ICRG Scored 0-6	complete	1982-1990	Low scores indicate "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessment, police protection, or loans" (quoted from Keefer and Knack 1993)
BURQUAL *Source*: ICRG Scored 0-6	complete	1982-1990	High scores indicate "autonomy from political pressure" and "strength and expertise to govern without drastic changes in policy or interruptions in government services"; also existence of an "established mechanism for recruiting and training" (quoted from Keefer and Knack 1993).
BURDELAY *Source*: BERI Scored 1-4	missing Costa Rica, Dominican Republic, Guatemala, Haiti, Hong Kong, Sri Lanka, Syria, Tunisia, and Uruguay	1972-1990	High scores indicate greater "speed and efficiency of the civil service including processing customs clearances, foreign exchange remittances and similar applications" (quoted from Keefer and Knack 1993).
REDTAPE *Source*: BI Scored 0-10	missing Costa Rica, Guatemala, Syria, and Tunisia	1981-1989; only certain years in this period for a few countries	Measures "the regulatory environment foreign firms must face when seeking approvals and permits; the degree to which government represents an obstacle to business" (quoted from Mauro 1995); lower scores indicate greater levels of regulation and/or government obstruction.
CORRUPT2 *Source*: BI Scored 0-10	missing Costa Rica, Guatemala, Syria, and Tunisia	1981-1989; only certain years in this period for a few countries	Measures "the degree to which business transactions involve corruption or questionable payments" (quoted from Mauro 1995); lower scores indicate greater levels of corruption.

Table 3: Descriptive Statistics for
Bureaucratic Structure Indices and Bureaucratic Performance Measures

Variable	Obs	Mean	Std. Dev.	Minimum	Maximum
MERIT	35	0.578	0.252	0.042	1
CAREER	35	0.439	0.192	0.087	0.783
SALARY	35	0.270	0.192	0	0.802
CORRUPT1	35	3.036	1.266	0.167	5.444
BURQUAL	35	3.045	1.008	0.833	5.167
BURDELAY	26	1.675	0.436	0.812	2.945
REDTAPE	31	5.434	1.912	2	10
CORRUPT2	31	5.717	2.100	1	10

See Tables 1 and 2 for variable descriptions.

Table 4: Testing for Significance of Control Variables

Dependent Variable	Intercept	*RGDP*	*HUMCAP*	*ETHFRAC*	n	R^2	Root MSE
CORRUPT1	1.496 (0.274)	0.000436[a] (0.000066)			35	0.567	0.845
CORRUPT1	1.321 (0.388)	0.000391[a] (0.000091)	0.0798 (0.1038)		32	0.563	0.884
CORRUPT1	1.352 (0.431)	0.000451[a] (0.000076)		0.00238 (0.00543)	35	0.570	0.856
BURQUAL	2.297 (0.295)	0.000212[a] (0.000071)			35	0.211	0.909
BURQUAL	2.167 (0.407)	0.000202[b] (0.000096)	0.0335 (0.1088)		32	0.230	0.926
BURQUAL	2.074 (0.462)	0.000235[a] (0.000081)		0.00368 (0.00582)	35	0.221	0.917
BURDELAY	1.391 (0.148)	0.000116[b] (0.000051)			26	0.179	0.404
BURDELAY	1.224 (0.191)	0.000002 (0.000073)	0.1368[c] (0.0674)		23	0.289	0.397
BURDELAY	1.558 (0.255)	0.000092 (0.000059)		-0.00246 (0.00304)	26	0.201	0.407
REDTAPE	3.621 (0.513)	0.000509[a] (0.000121)			31	0.378	1.534
REDTAPE	2.850 (0.681)	0.000410[b] (0.000150)	0.2374 (0.1784)		28	0.475	1.430
REDTAPE	3.297 (0.826)	0.000542[a] (0.000139)		0.00522 (0.01035)	31	0.383	1.555
CORRUPT2	3.632 (0.546)	0.000586[a] (0.000129)			31	0.415	1.634
CORRUPT2	2.487 (0.756)	0.000382[b] (0.000167)	0.4175[b] (0.1980)		28	0.507	1.587
CORRUPT2	2.396 (0.978)	0.000392[b] (0.000184)	0.4150[c] (0.2027)	0.00176 (0.01155)	28	0.508	1.619

1970 values of *RGDP* and *HUMCAP* for *BURDELAY*; 1980 values for all other dependent variables. Standard errors in parentheses. [a]Significant at the one percent level. [b]Significant at the five percent level. [c]Significant at the ten percent level.

Table 5: Testing the Weberian State Hypotheses

Dependent Variable	*CORRUPT1*	*CORRUPT1*	*CORRUPT1*	*BURQUAL*	*BURQUAL*	*BURQUAL*	*BURDELAY*	*BURDELAY*	*BURDELAY*
Intercept	0.751 (0.344)	0.941 (0.382)	1.361 (0.304)	1.391 (0.354)	1.469 (0.386)	2.076 (0.320)	0.909 (0.222)	0.971 (0.210)	1.060 (0.134)
MERIT	1.671[a] (0.542)			2.032[a] (0.558)			0.884[b] (0.329)		
CAREER		1.484[c] (0.741)			2.214[a] (0.749)			0.977[b] (0.379)	
SALARY			0.820 (0.801)			1.342 (0.842)			1.408[a] (0.318)
RGDP	0.000373[a] (0.000063)	0.000409[a] (0.000065)	0.000412[a] (0.000071)	0.000136[b] (0.000064)	0.000171[b] (0.000066)	0.000172[b] (0.000074)	0.000092[c] (0.000046)	0.000103[b] (0.000046)	0.000098[b] (0.000038)
n	35	35	35	35	35	35	26	26	26
R^2	0.666	0.616	0.581	0.442	0.380	0.269	0.375	0.363	0.556
Root MSE	0.754	0.809	0.845	0.776	0.818	0.888	0.360	0.363	0.303

Table 5 (continued): Testing the Weberian State Hypotheses

Dependent Variable	*REDTAPE*	*REDTAPE*	*REDTAPE*	*CORRUPT2*	*CORRUPT2*	*CORRUPT2*
Intercept	2.852 (0.721)	2.808 (0.733)	3.300 (0.560)	2.000 (0.895)	2.153 (0.950)	2.698 (0.851)
MERIT	1.736 (1.166)			1.262 (1.245)		
CAREER		2.140 (1.408)			0.925 (1.554)	
SALARY			2.016 (1.512)			-0.962 (1.688)
RGDP	0.000439[a] (0.000128)	0.000468[a] (0.000122)	0.000444[a] (0.000129)	0.000348[c] (0.000170)	0.000362[b] (0.000172)	0.000422[b] (0.000184)
HUMCAP				0.387[c] (0.200)	0.417[b] (0.201)	0.396[c] (0.204)
n	31	31	31	28	28	28
R^2	0.423	0.425	0.415	0.528	0.515	0.514
Root MSE	1.503	1.501	1.514	1.586	1.608	1.609

1970 value of *RGDP* for *BURDELAY*; 1980 value of *RGDP* (and *HUMCAP)* for all other dependent variables. Standard errors in parentheses. [a]Significant at the one percent level. [b]Significant at the five percent level. [c]Significant at the ten percent level.

Table 6: Civil Service Examination versus University Degree when *MERIT* is significant

Dependent Variable	*CORRUPT1*	*CORRUPT1*	*BURQUAL*	*BURQUAL*	*BURDELAY*	*BURDELAY*
Intercept	1.202 (0.275)	0.417 (0.470)	1.935 (0.286)	2.000 (0.895)	1.217 (0.161)	0.517 (0.350)
CIVSER	1.087[b] (0.409)		1.337[a] (0.425)		0.476[b] (0.225)	
UNIV		1.737[b] (0.639)		2.074[a] (0.668)		1.205[b] (0.447)
RGDP	0.000399[a] (0.000063)	0.000365[a] (0.000066)	0.000166[b] (0.000065)	0.000127[c] (0.000069)	0.000105[b] (0.000048)	0.000077 (0.000047)
n	35	35	35	35	26	26
R^2	0.645	0.649	0.398	0.394	0.312	0.376
Root MSE	0.777	0.774	0.807	0.809	0.377	0.359

CIVSER = (Q4 - 1)/3; *UNIV* = (Q5 - 1)/3 (see Table 1 for definitions of Q4 and Q5). 1970 value of *RGDP* for *BURDELAY*; 1980 value of *RGDP* for all other dependent variables. Standard errors in parentheses. [a]Significant at the one percent level. [b]Significant at the five percent level. [c]Significant at the ten percent level.

Figure 1a: Ratings Distribution for 17 Industrialized Countries

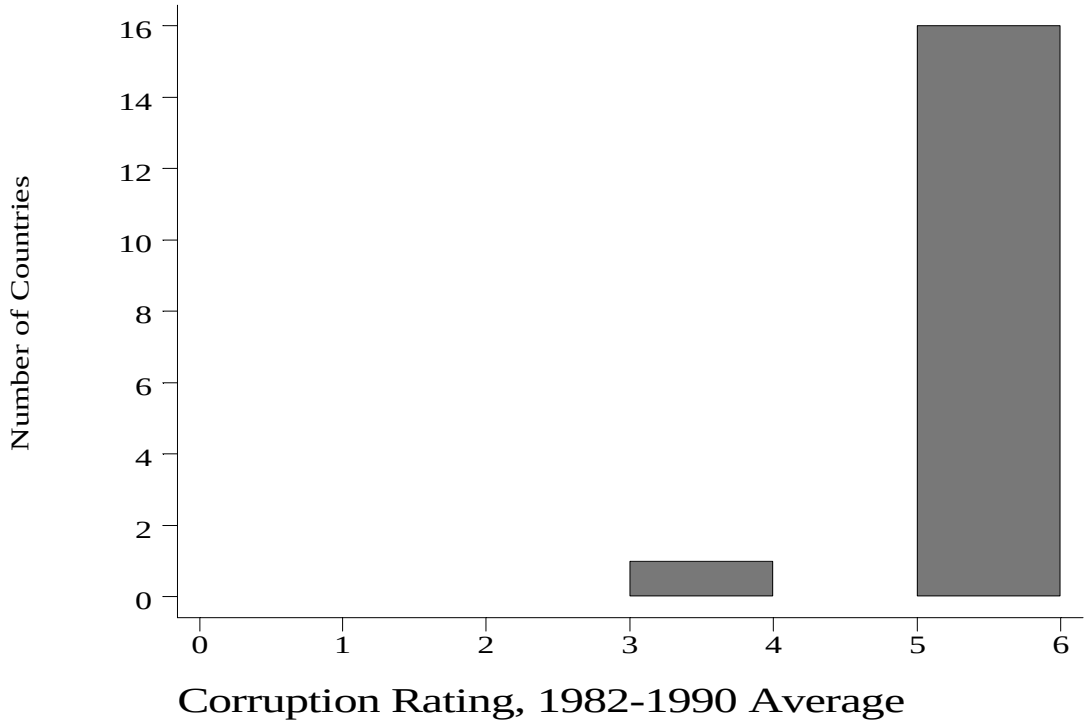


Figure 1b: Ratings Distribution for 30 Semi-Industrialized Countries

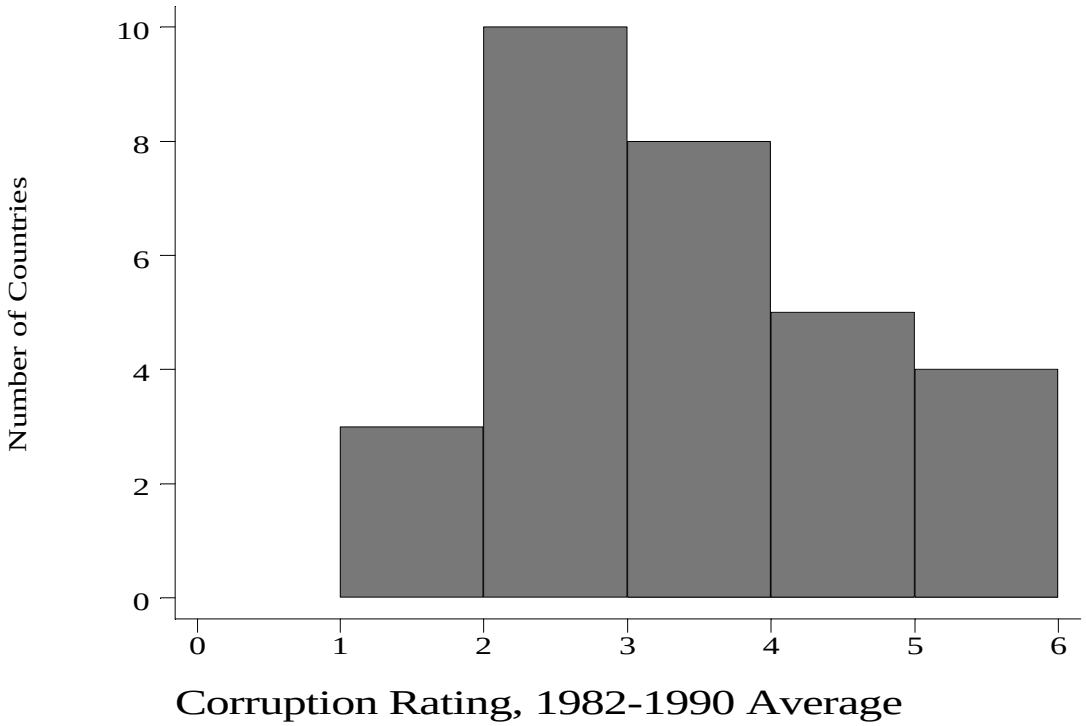
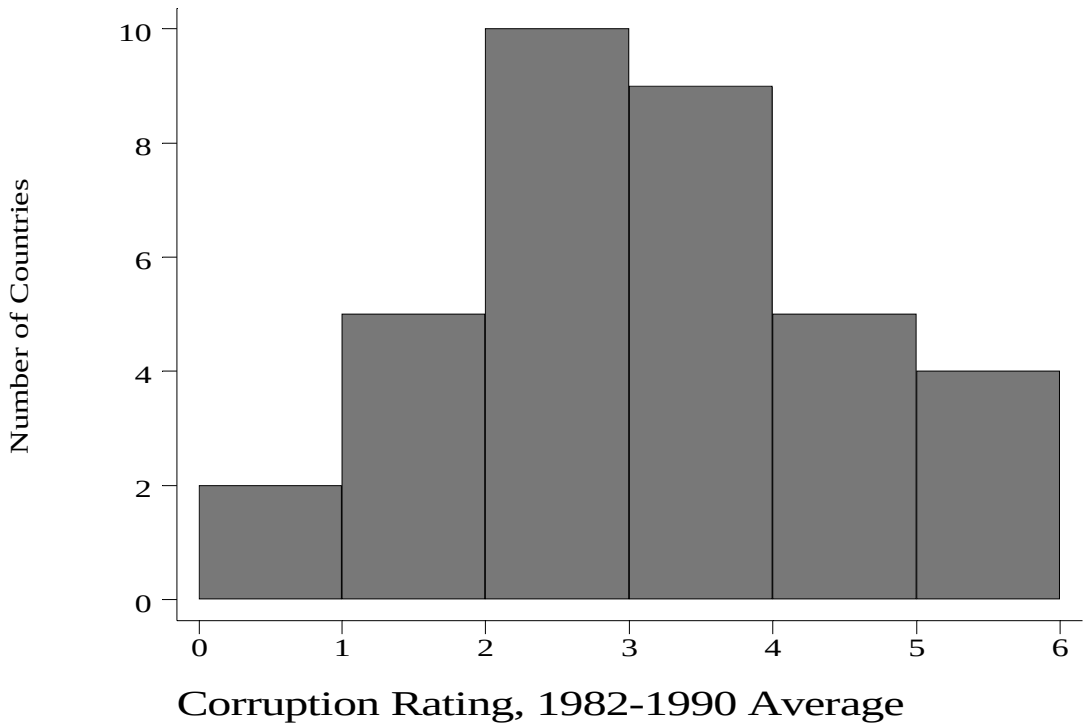


Figure 1c: Ratings Distribution for Sample of 35 Countries



Source: International Country Risk Guide. See text for listings of countries included in each Figure. See Table 2, *CORRUPT1*, for definition of Corruption Rating.

Figure 2a: Plot of *CORRUPT1* against *MERIT*, controlling for *RGDP*

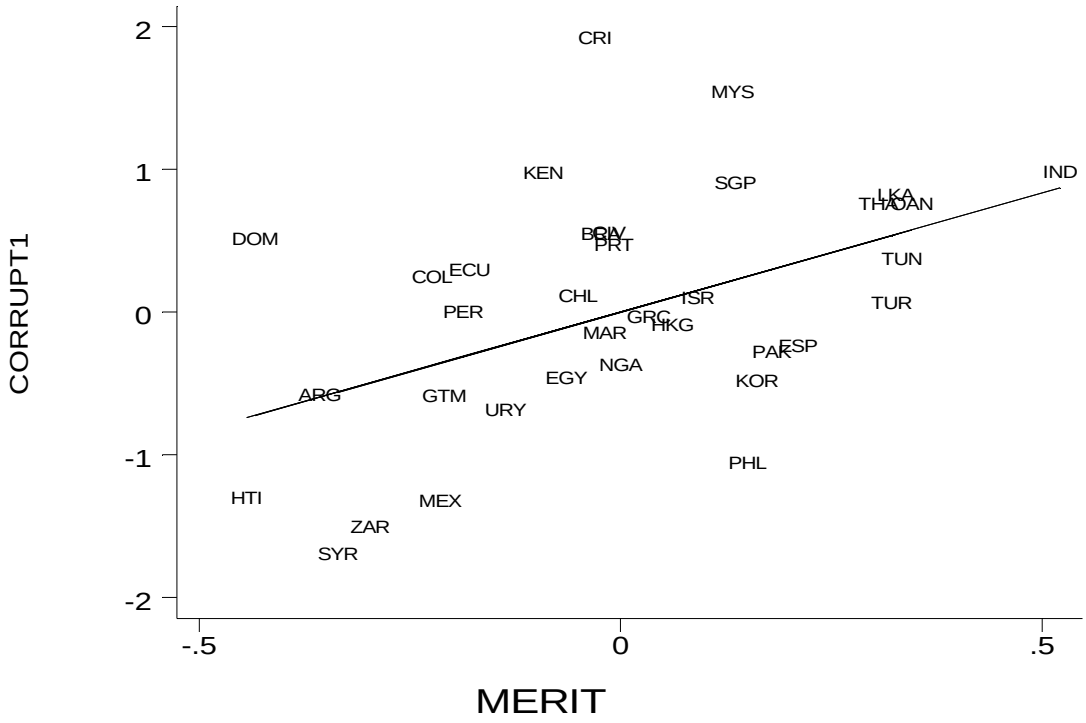


Figure 2b: Plot of *CORRUPT1* against *CAREER*, controlling for *RGDP*

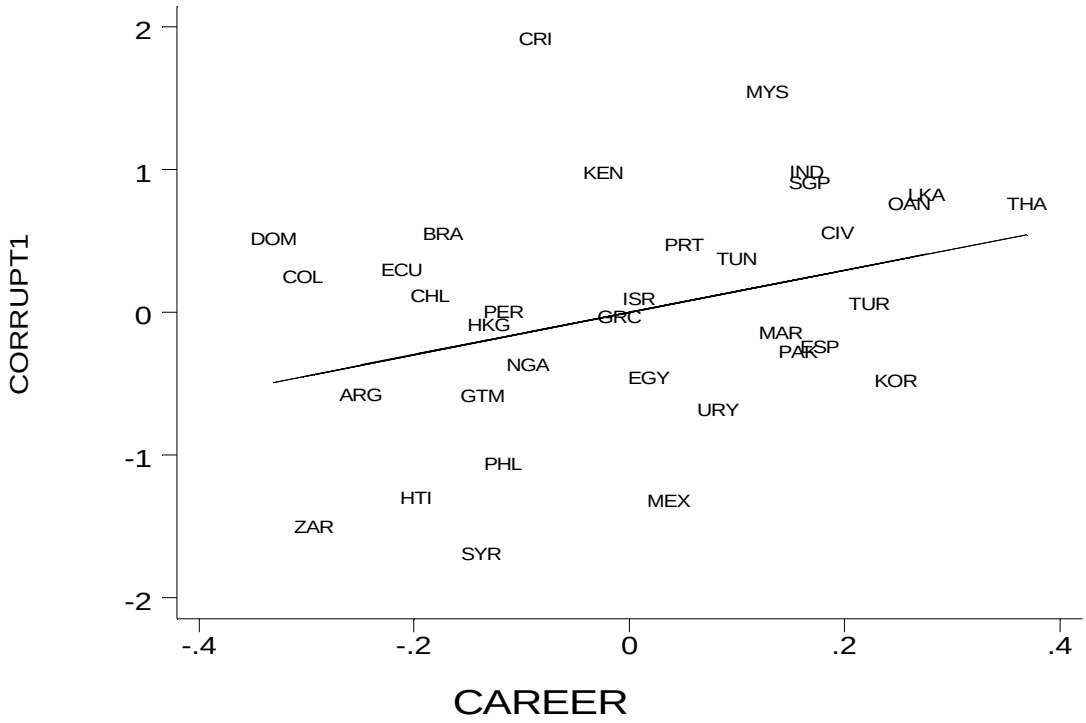


Figure 2c: Plot of *CORRUPT1* against *SALARY*, controlling for *RGDP*

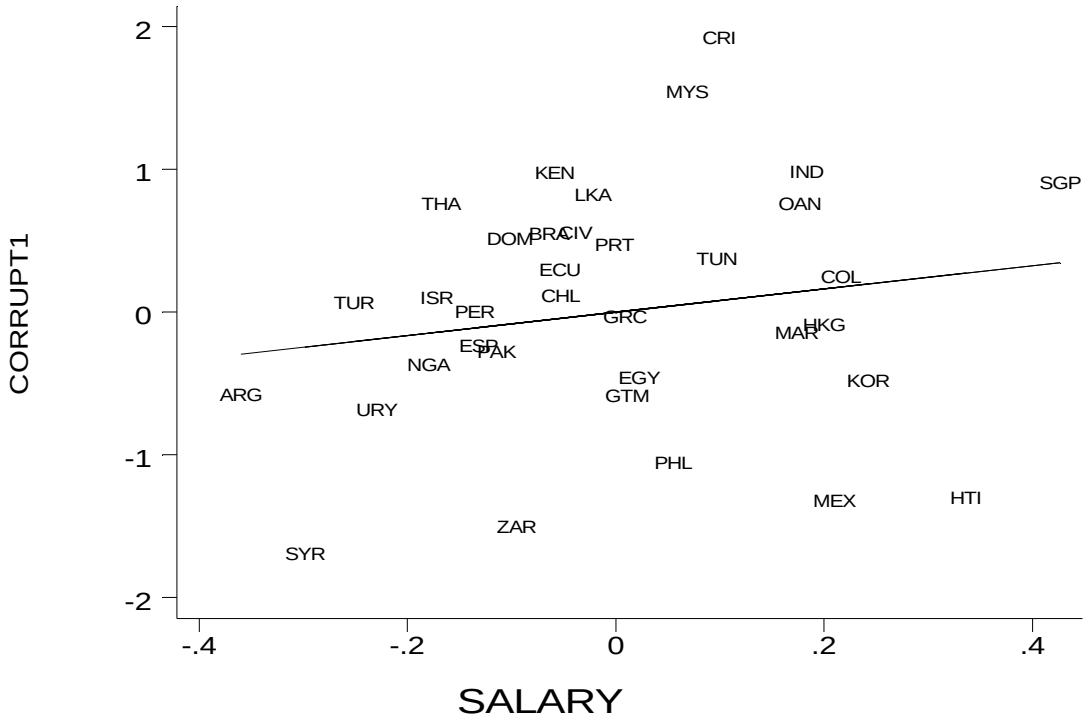


Figure 3a: Plot of *BURQUAL* against *MERIT*, controlling for *RGDP*

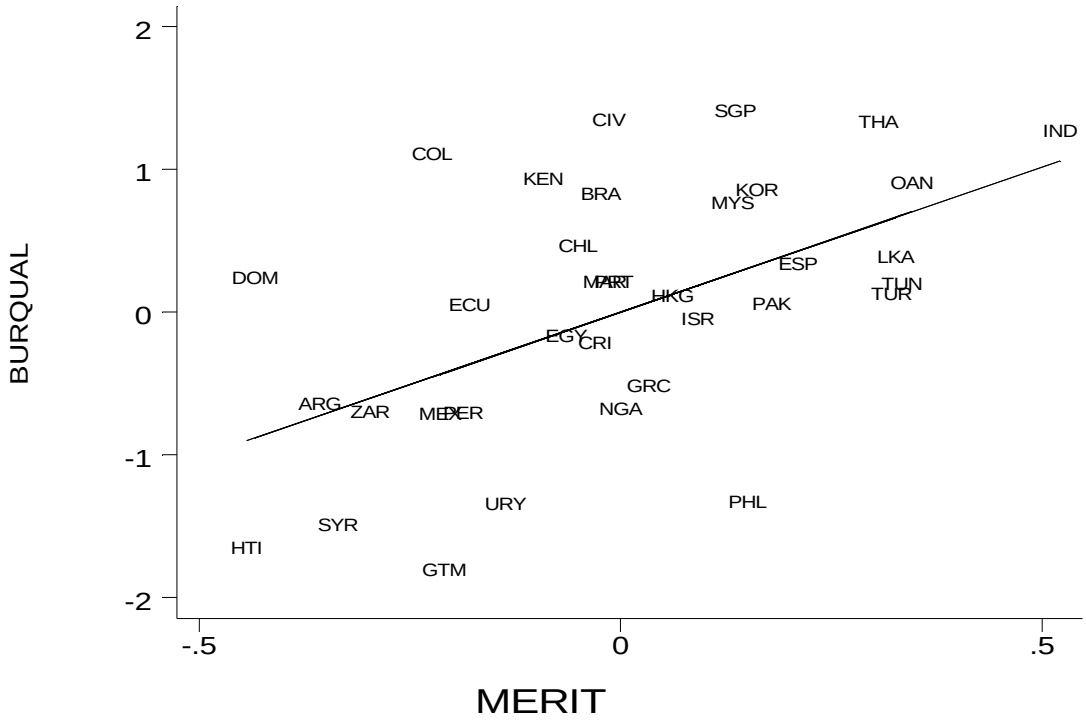


Figure 3b: Plot of *BURQUAL* against *CAREER*, controlling for *RGDP*

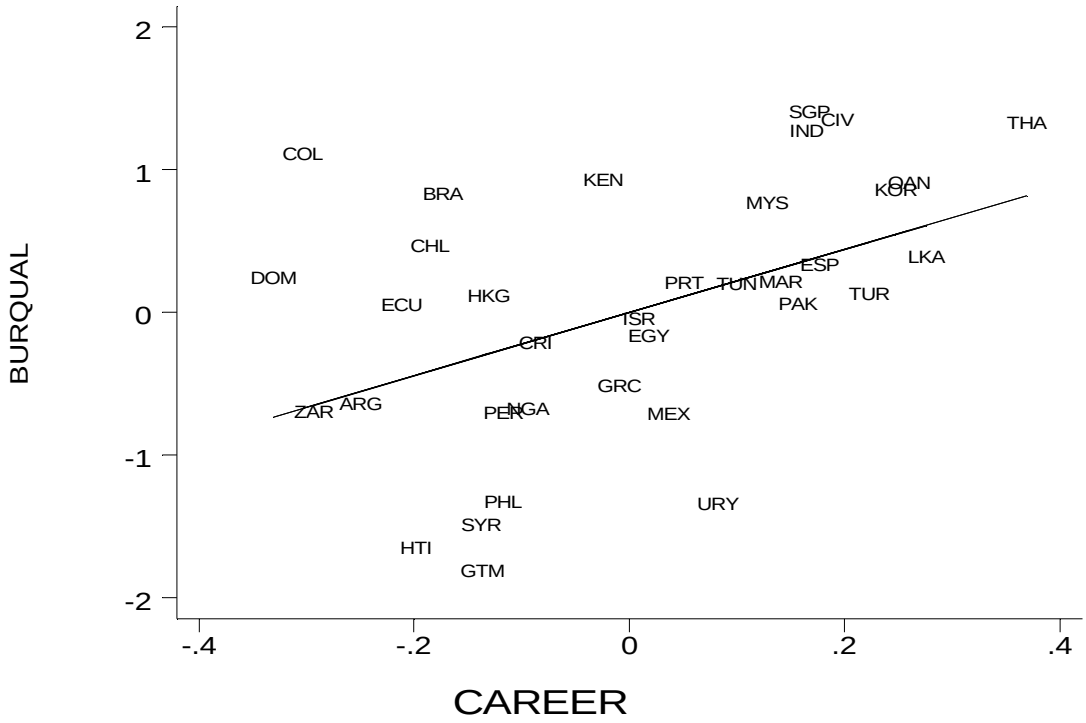


Figure 3c: Plot of *BURQUAL* against *SALARY*, controlling for *RGDP*

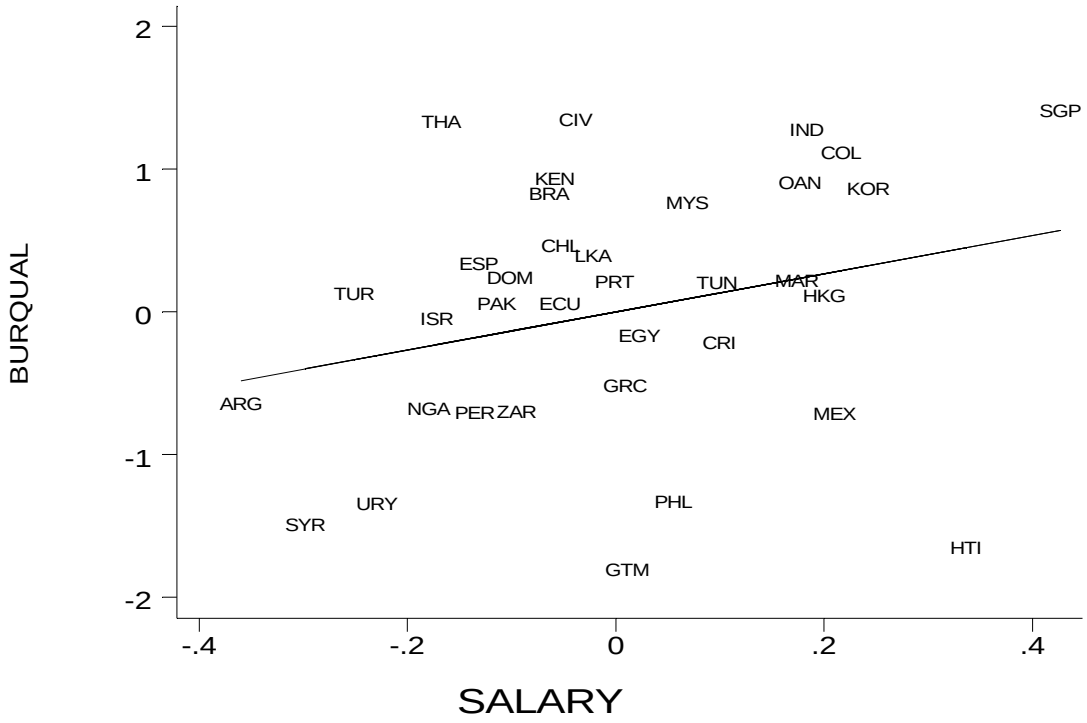


Figure 4a: Plot of *BURDELAY* against *MERIT*, controlling for *RGDP*

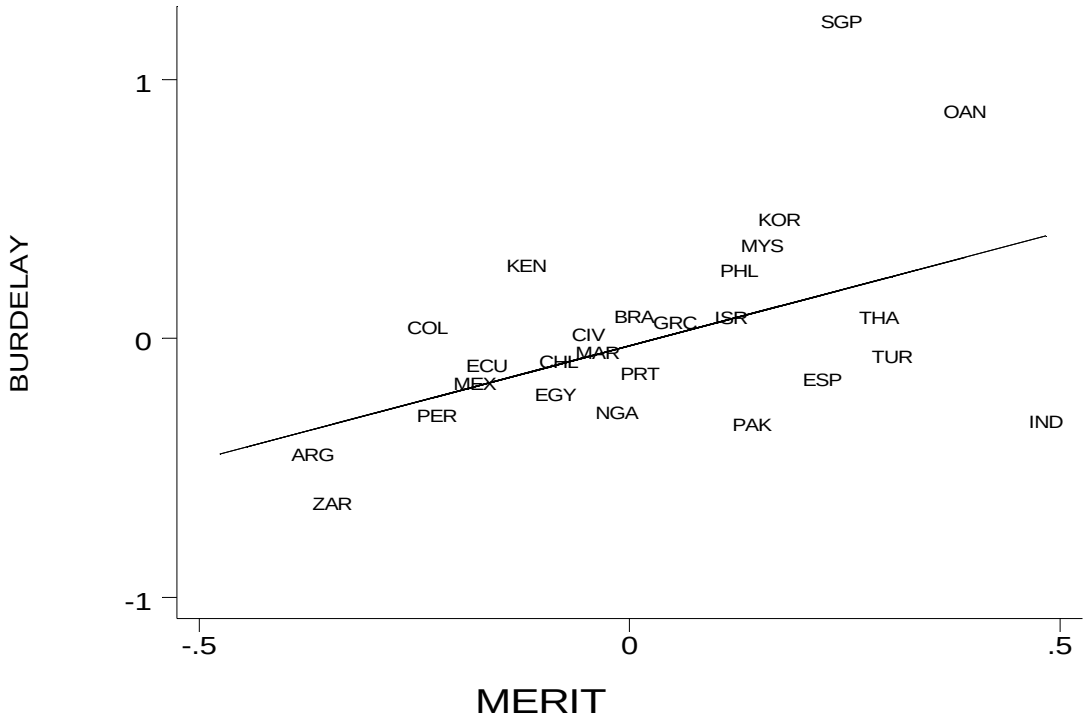


Figure 4b: Plot of *BURDELAY* against *CAREER*, controlling for *RGDP*

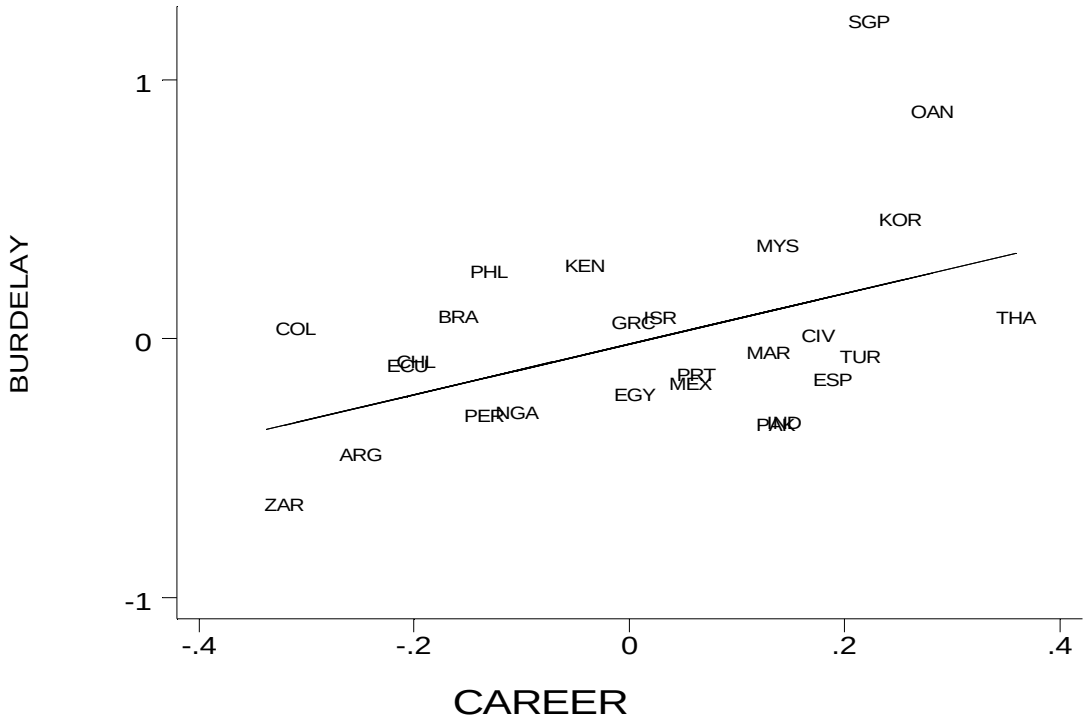


Figure 4c: Plot of *BURDELAY* against *SALARY*, controlling for *RGDP*

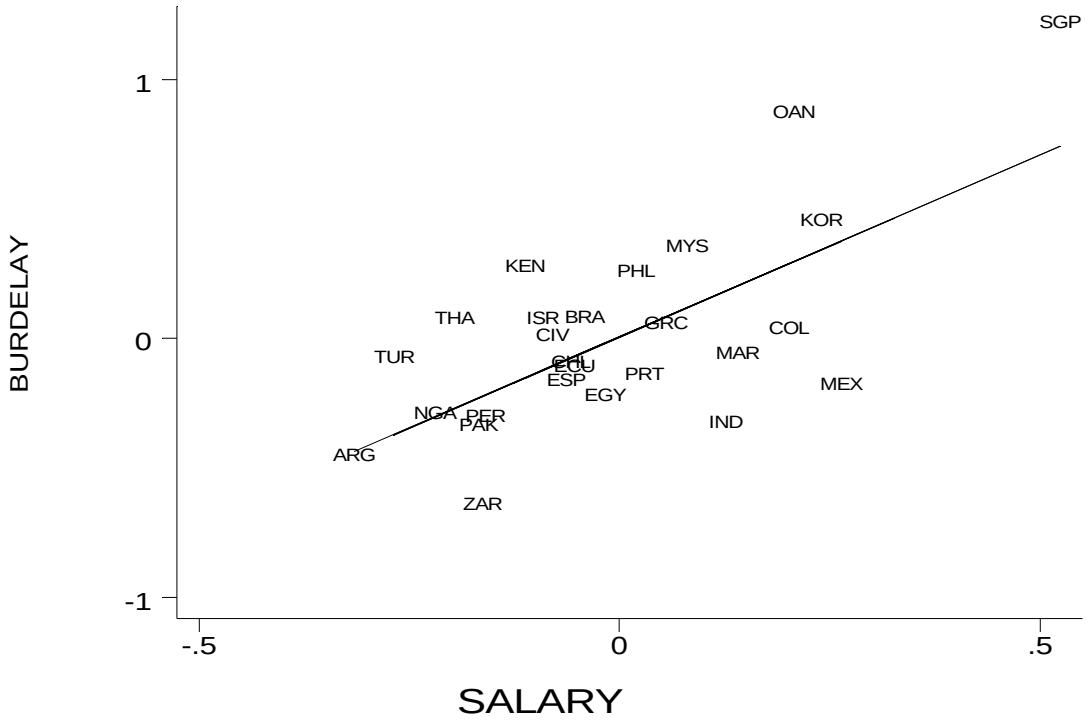


Table A1: Sample of 35 Countries
World Bank Country ID and Number of Expert Survey Respondents Per Country

Country	ID	Number
Argentina	ARG	3
Brazil	BRA	4
Chile	CHL	4
Cote D'Ivoire	CIV	3
Colombia	COL	4
Costa Rica	CRI	3
Dominican Republic	DOM	5
Ecuador	ECU	3
Egypt	EGY	3
Greece	GRC	5
Guatemala	GTM	4
Haiti	HTI	4
Hong Kong	HKG	3
India	IND	3
Israel	ISR	3
Kenya	KEN	3
(S.) Korea	KOR	3
Malaysia	MYS	3
Mexico	MEX	4
Morocco	MAR	2
Nigeria	NGA	3
Pakistan	PAK	3
Peru	PER	5
Philippines	PHL	4
Portugal	PRT	4
Singapore	SGP	4
Spain	ESP	5
Sri Lanka	LKA	5
Syria	SYR	4
Taiwan	OAN	4
Thailand	THA	2
Tunisia	TUN	5
Turkey	TUR	4
Uruguay	URY	2
Zaire	ZAR	3

APPENDIX

ANALYZING ECONOMIC BUREAUCRACY

Overview:

Narrative and Standard Answers: In order to make comparisons across countries more feasible we have provided some standard alternative answers to each question, but we are well aware that these standard answers can't capture the full complexities of real bureaucratic structures. Therefore, we hope that in addition to indicating which standard alternative comes closest to describing your case, you will offer a separate, complementary narrative discussion of how the state bureaucracies you are describing look with regard to these issues. Time Period: We are interested primarily in what these bureaucracies looked like in the recent past roughly 1970 - 1990. If there have been important changes within this period, or between this period and the present please indicate the sub-period to which your answers apply. We would also appreciate any commentary you could add on changes over time in your narrative responses.

Core Economic Agencies:

1. List the four most important agencies in the central state bureaucracy order of their power to shape overall economic policy. (e.g. Ministry of Finance, Ministry of Industry and/or Trade and/or Commerce, Planning Board, agency or Ministry)?

1. _____

2. _____

3. _____

4. _____

2. Which of the following descriptions best fits the role of these agencies in the formulation of economic policy.

1. many new economic policies originate inside them.
2. some new policies originate inside them and they are important "filters" for policy ideas that come from political parties, private elites and the chief executive, often reshaping these ideas in the process.
3. they rarely originate new policies, but are important in turning policies that originate in the political arena into programs that can be implemented.

3. How likely are ideas and policies initiated by these agencies to prevail?

1. no more likely than ideas coming out of other parts of the state bureaucracy.
2. quite likely, even in the face of opposition from other parts of the bureaucracy, as long as the chief executive is neutral or supportive.
3. under the circumstances above and also sometimes even in the face of opposition from the chief executive.

Recruitment and Careers:

[In answering the following questions, assume that "higher officials", refers to those who hold roughly the top 500 positions in the core economic agencies you have discussed above.]

4. Approximately what proportion of the higher officials in these agencies enter the civil service via a formal examination system?

less than 30% **30 - 60%** **60% -90%** **more than 90%**

5. Of those that do <u>not</u> enter via examinations, what proportion have university or post-graduate degrees.

less than 30% **30 - 60%** **60% -90%** **more than 90%**

6. Roughly how many of the top levels in these agencies are political appointees (e.g. appointed by the President or Chief Executive)

1. none.
2. just agency chiefs.
3. agency chiefs and vice-chiefs.
4. all of top 2 or 3 levels.

7. Of political appointees to these positions, what proportion are likely to already be members of the higher civil service?

less than 30% **30 - 70%** **more than 70%**

8. Of those promoted to the top 2 or 3 levels in these agencies (whether or not they are political appointees), what proportion come from within the agency itself or (its associated ministry(ies) if the agency is not itself a ministry)?

less than 50% **50 - 70%** **70% - 90%** **over 90%**

9. Are the incumbents of these top positions likely to be moved to positions of lesser importance when political leadership changes?

almost always **usually** **sometimes** **rarely**

10. What is roughly the modal number of years spent by a typical higher level official in one of these agencies during his career?

1-5 years **5-10 years** **10 -20 years** **entire career**

11. What prospects for promotion can someone who enters one of these agencies through a higher civil service examination early in his/her career reasonably expect? Assuming that there are at least a half dozen steps or levels between and entry-level position and the head of the agency, how would you characterize the possibilities for moving up in the agency? [NB. more than one may apply.]

1. in most cases, will move up one or two levels but no more.
2. in most cases, will move up three or four levels, but unlikely to reach the level just below political appointees.
3. if performance is superior, moving up several levels to the level just below political appointees is not an unreasonable expectation.
4. in at least a few cases, could expect to move up several levels within the civil service and then move up to the very top of the agency on the basis of political appointments.

12. How common is it for higher officials in these agencies to spend substantial proportions of their careers in the private sector, interspersing private and public sector activity?

normal **frequent but not modal** **unusual** **almost never**

13. How common is it for higher officials in these agencies to have significant post-retirement careers in the private sector?

normal **frequent but not modal** **unusual** **almost never**

Salaries:

14. How would you estimate the salaries (and perquisites, not including bribes or other extra-legal sources of income) of higher officials in these agencies relative to those of private sector managers with roughly comparable training and responsibilities?

less than 50% **50 - 80%** **80% - 90%** **Comparable** **Higher**

15. If bribes and other extra-legal perquisites are included what would the proportion be?

less than 50% **50 - 80%** **80% - 90%** **Comparable** **Higher**

16. Over the period in question (roughly 1970-1990) what was the movement of legal income in these agencies relative to salaries in the private sector,

1. maintained the same position.
2. declined slightly.
3. declined dramatically.
4. improved their position.

Civil Service Exams:

[NB: These questions refer to the higher Civil Service more broadly, not just to the top 500 officials in the core agencies.]

17. Since roughly what date have civil service examinations been in place? _____

18. Roughly what proportion of those who take the higher civil service exam pass?

<2% 2-5% 6 - 10% 10% -30% 30-50% >50%

19. Among graduates of the country's most elite university(ies), is a public sector career considered:

1. the best possible career option.
2. the best possible option for those whose families are not already owners of substantial private enterprises.
3. the best option for those who are risk averse.
4. definitely a second best option relative to a private sector career.

20. Among members of the educated middle class who are not in a position to attend the most elite universities is a public sector career considered:

1. the best possible career option.
2. the best possible option for those whose families are not already owners of substantial private enterprises.
3. the best option for those who are risk averse.
4. definitely a second best option relative to a private sector career.

21. Can you suggest two or three other experts (either scholars or practitioners) that you consider particularly knowledgeable with regard to these issues of bureaucratic structure in .... (Please add addresses and FAX or tel. #s if you have them.)

1. Name:_____

Address: _____

_____

FAX or tel. # _____

2. Name:_____

Address: _____

_____

FAX or tel. # _____

3. Name:_____

Address: _____

_____

FAX or tel. # _____

22. What do you consider the two or three best published sources of information on ...'s bureaucracy?

_____

_____

_____

_____

_____